

10FF Sockets

RELAY SOCKETS

CE

cUL US

File No.: E253370



Features

- The dielectric strength can reach 2000VAC and the insulation resistance is 1000MΩ
- Two mounting types are available: screw mounting and DIN rail mounting.
- With finger protection device are available
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection.
- Components available: metallic retainer, plug-in modules
- Applicable relay types: HF10FF/HF10FH
- Environmental friendly product (RoHS compliant)

ORDERING INFORMATION


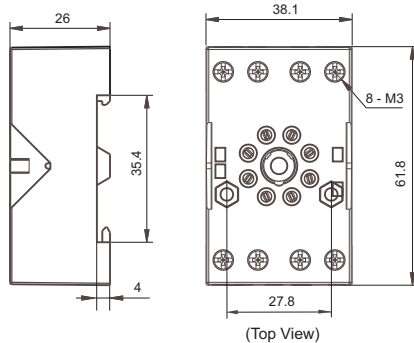
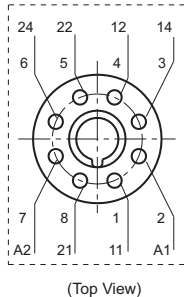
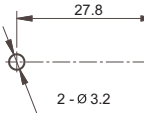
Type	10FF	-1Z	-C1
Contact arrangement	1Z: 1 Form C 2Z: 2 Form C 3Z: 3 Form C		
Termination&mounting	C1: Screw terminal, DIN rail or Screw mounting, Without finger protection device C2/C3/C4: Screw terminal, DIN rail mounting, With finger protection device		

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Max wire size		Wire Strip Length	Screw Torque
					mm ²	AWG		
10FF-2Z-C3	250VAC	10A	-40 °C to 70°C	2000VAC	1 x4 / 2 x2.5	1 x12 / 2 x14	7mm	0.6N · m
10FF-2Z-C4	250VAC	10A	-40 °C to 70°C	2000VAC	1 x4 / 2 x2.5	1 x12 / 2 x14	7mm	0.6N · m
10FF-3Z-C3	250VAC	10A	-40 °C to 70°C	2000VAC	1 x4 / 2 x2.5	1 x12 / 2 x14	7mm	0.6N · m
10FF-3Z-C4	250VAC	10A	-40 °C to 70°C	2000VAC	1 x4 / 2 x2.5	1 x12 / 2 x14	7mm	0.6N · m

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Accessory Available
10FF-2Z-C3  Screw terminal DIN rail or Screw mounting With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		*metallic retainer 10FF-H1




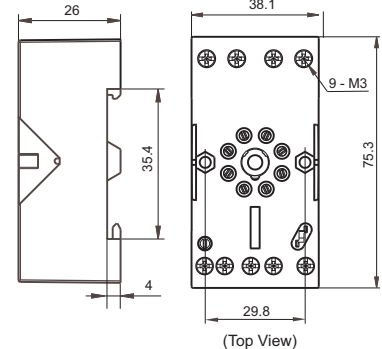
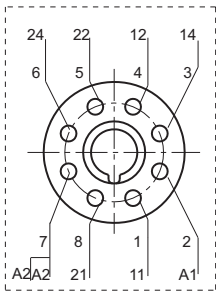
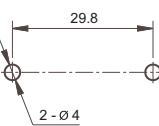

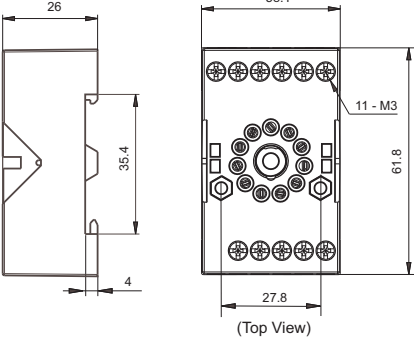
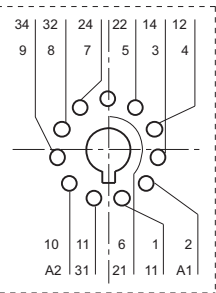
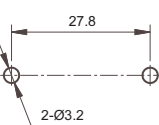

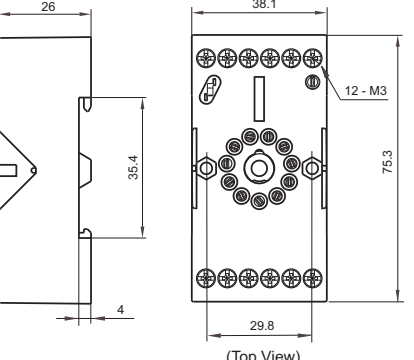
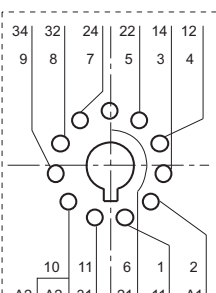
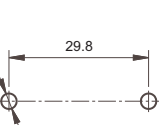
HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Accessory Available
10FF-2Z-C4  Screw terminal DIN rail or Screw mounting With finger protection device Applicable for 2 poles	 <p>(Top View)</p>	 <p>(Top View)</p>		*metallic retainer 10FF-H1 *plug-in module HFFAA to HFFHU
10FF-3Z-C3  Screw terminal DIN rail or Screw mounting With finger protection device Applicable for 3 poles	 <p>(Top View)</p>	 <p>(Top View)</p>		*metallic retainer 10FF-H1
10FF-3Z-C4  Screw terminal DIN rail or Screw mounting With finger protection device Applicable for 3 poles	 <p>(Top View)</p>	 <p>(Top View)</p>		*metallic retainer 10FF-H1 *plug-in module HFFAA to HFFHU

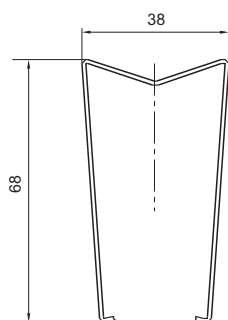
Notes: * If need accessory, please order with type.

DIMENSION OF RELATED ACCESSORY (AVAILABLE)

Unit: mm

Retainer

10FF-H1(metallic retainer)



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. As for related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. Main outline dimension(L, W, H) ≥ 50 mm, tolerance should be ± 1 mm; outline dimension < 20 mm and < 50 mm, tolerance should be ± 0.5 mm; outline dimension ≤ 20 mm, tolerance should be ± 0.3 mm.
4. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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13F Sockets

RELAY SOCKETS

CE

cULus

File No.: E253370



Features

- The dielectric strength can reach 2000VAC and the insulation resistance is 1000 MΩ
- Three mounting types are available: PCB mounting, screw mounting and DIN rail mounting
- With finger protection device
- Components available: metallic retainer
- Applicable relay types: HF13F
- Environmental friendly product (RoHS compliant)

ORDERING INFORMATION


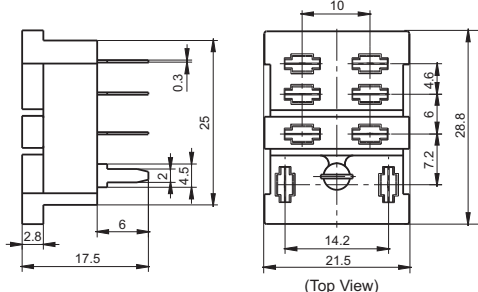
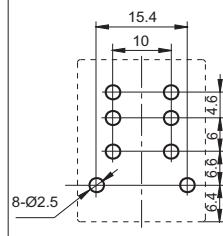

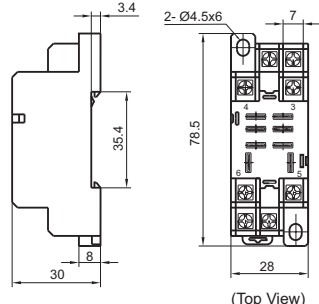
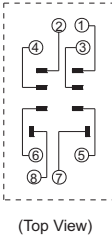
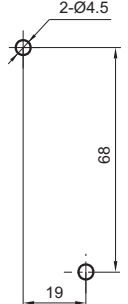
Type	13F	-2Z	-C1
Contact arrangement	2Z: 2 Form C		
Termination&mounting	A2: PCB terminal, PCB mounting C1: Screw terminal, DIN rail or Screw mounting, Without finger protection device C2: Screw terminal, DIN rail or Screw mounting, With finger protection device		

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Max wire size		Wire Strip Length	Screw Torque
					mm ²	AWG		
13F-1Z-A2	250VAC	15A	-40 °C to 70°C	2000VAC	---	---	---	---
13F-2Z-C1	250VAC	15A	-40 °C to 70°C	2000VAC	2 x 2.5	2 x14	7mm	1.0N · m
13F-2Z-C2	250VAC	15A	-40 °C to 70°C	2000VAC	2 x 2.5	2 x14	7mm	1.0N · m

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Accessory Available
13F-2Z-A2  PCB terminal, PCB mounting	 <p>(Top View)</p>			metallic retainer 18FF-H1
13F-2Z-C1  Screw terminal, DIN rail or Screw mounting, Without finger protection device	 <p>(Top View)</p>	 <p>(Top View)</p>		metallic retainer 18FF-H2 (be used in sets)




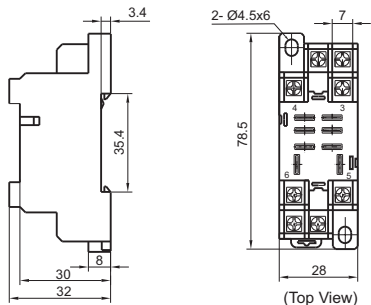
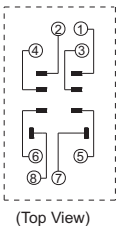
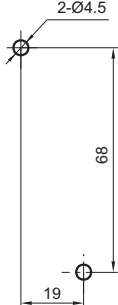
HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.01

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

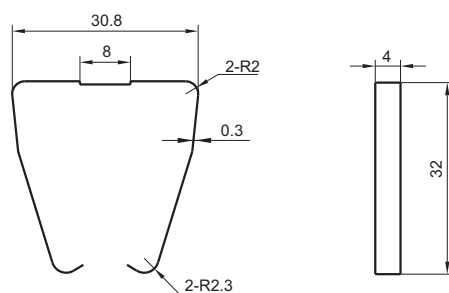
Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Accessory Available
13F-2Z-C2  Screw terminal, DIN rail or Screw mounting, With finger protection device	 <p>(Top View)</p>	 (Top View)		metallic retainer 18FF-H2 (be used in sets)

DIMENSION OF RELATED ACCESSORY (AVAILABLE)

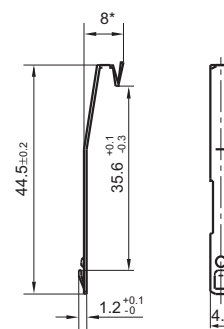
Unit: mm

Retainer

18FF-H1 (metallic retainer)



18FF-H2 (metallic retainer)



Remark: 18FF-H2 retainer has to be used in sets, please pay special attention while placing the order.

Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. As for other related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. Main outline dimension (L, W, H) ≥ 50 mm, tolerance should be ± 1 mm; outline dimension > 20 mm and < 50 mm, tolerance should be ± 0.5 mm; outline dimension ≤ 20 mm, tolerance should be ± 0.3 mm.
4. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.


Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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14FF Sockets

RELAY SOCKETS



CE

cULUS

File No.: E253370

Features

- The dielectric strength can reach 5000VAC(I/O) and the insulation resistance is 1000 MΩ
- Three mounting types are available: PCB, screw mounting and DIN rail mounting.
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection
- Applicable relay types: HF115F/115F-A/115FP, HF14FF/14FW/140FF/141FF
- Environmental friendly product (RoHS compliant)

ORDERING INFORMATION


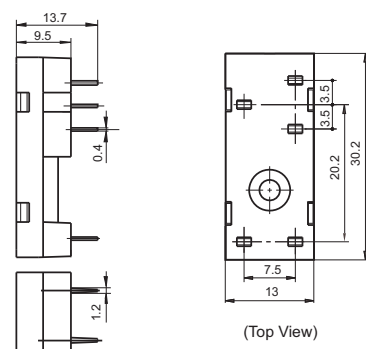
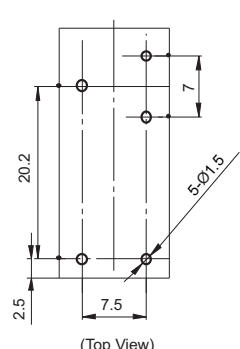
	14FF	-1Z	-C2
Type	14FF: Relay's applicable type, See table below 140FF: Applicable HF14FW/140FF Realy		
Contact arrangement	1Z: 1 Form C 2Z: 2 Form C		
Termination&mounting	A1: PCB terminal,PCB or Screw mounting C2,C3: Screw terminal,DIN rail or Screw mounting,With finger protection device C4: Screwless terminal,DIN rail mounting,With finger protection device		

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Max wire size		Wire Strip Length	Screw Torque
					mm ²	AWG		
14FF-1Z-A1	250VAC	10A	-40 °C to 70°C	5000VAC	---	---	---	---
14FF-1Z-C2	250VAC	10A	-40 °C to 70°C	5000VAC	1 x 4 / 2 x 2.5	1 x 12 / 2 x 14	7mm	0.6N · m
14FF-1Z-C3	250VAC	10A	-40 °C to 70°C	5000VAC	1 x 4 / 2 x 2.5	1 x 12 / 2 x 14	7mm	0.6N · m
14FF-2Z-A1	250VAC	10A	-40 °C to 70°C	5000VAC	---	---	---	---
14FF-2Z-C2	250VAC	10A	-40 °C to 70°C	5000VAC	1 x 4 / 2 x 2.5	1 x 12 / 2 x 14	7mm	0.6N · m
14FF-2Z-C3	250VAC	10A	-40 °C to 70°C	5000VAC	1 x 4 / 2 x 2.5	1 x 12 / 2 x 14	7mm	0.6N · m
14FF-2Z-C4	250VAC	10A	-40 °C to 70°C	5000VAC	1 x 4 / 2 x 2.5	1 x 12 / 2 x 14	9mm	---

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Accessory Available
14FF-1Z-A1  PCB terminal, PCB or Screw mounting Applicable for HF14FF/141FF	 <p>(Top View)</p>	 <p>(Top View)</p>	*metallic retainer 14FF-H2




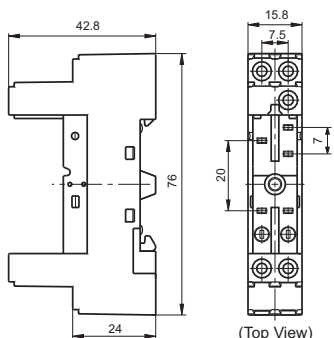
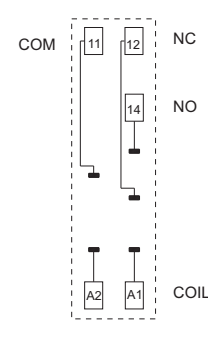

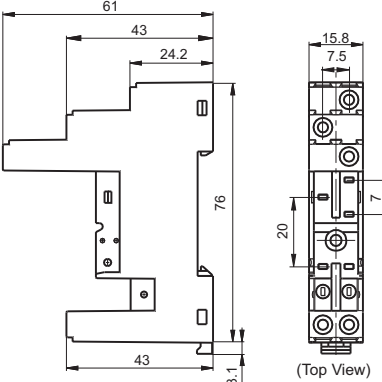
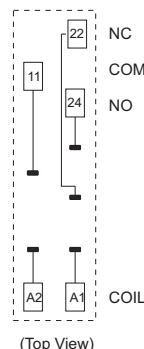

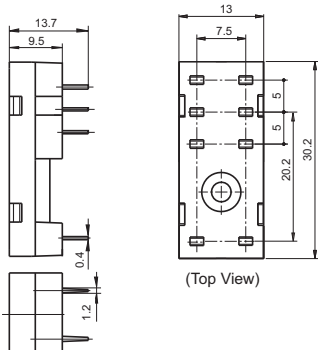
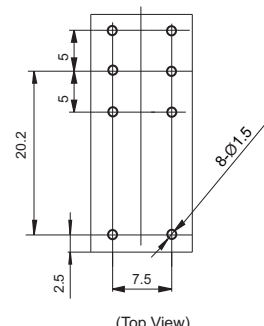

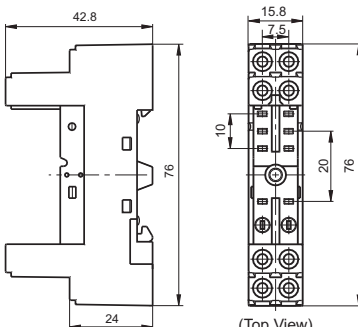
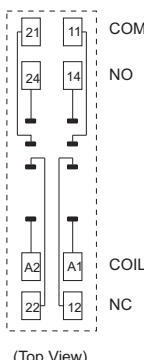
HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED


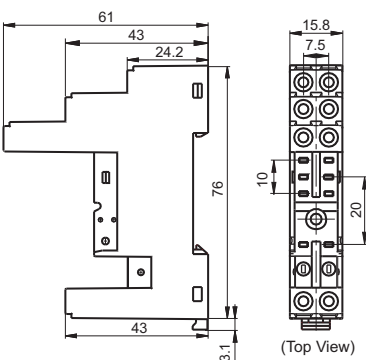
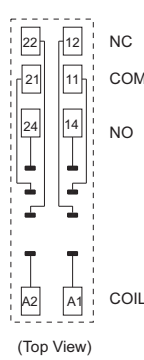

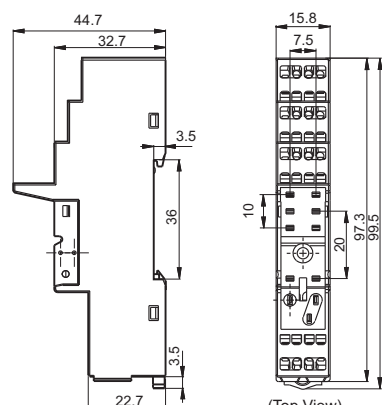
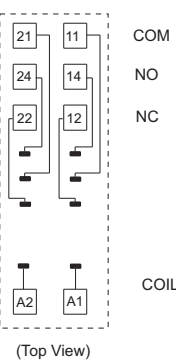
2017 Rev. 1.00

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Accessory Available
14FF-1Z-C2  Screw terminal, PCB or Screw mounting With finger protection device Applicable for HF14FF/141FF	 (Top View)	 (Top View)	*plastic retainer 14FF-H5 14FF-H6 *plug-in module HFAA to HFHU marker 14FF-M1
14FF-1Z-C3  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for HF14FF/141FF	 (Top View)	 (Top View)	*plastic retainer 14FF-H5 14FF-H6 *plug-in module HFAA to HFHU marker 14FF-M1
14FF-2Z-A1  PCB terminal, PCB or Screw mounting Applicable for HF14FW/140FF, HF115F/115F-A/115FP 3 type & 4 type	 (Top View)	 (Top View)	*metallic retainer 14FF-H1 14FF-H3
14FF-2Z-C2  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for HF14FW/140FF, HF115F/115F-A/115FP 3 type & 4 type. When applying to 3 type, 2NC, 2NO and 2COM should be paralleled.	 (Top View)	 (Top View)	*plastic retainer 14FF-H4 14FF-H6 *plug-in module HFAA to HFHU marker 14FF-M1

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT Unit: mm

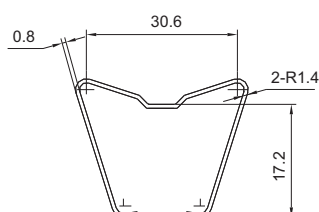
Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Accessory Available
14FF-2Z-C3  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for HF14FW/140FF, HF115F/115F-A/115FP 3 type & 4 type. When applying to 3 type, 2NC, 2NO and 2COM should be paralleled.	 (Top View)	 (Top View)	*plastic retainer 14FF-H4 14FF-H6 *plug-in module HFAA to HFHU marker 14FF-M1
14FF-2Z-C4  Spring-loaded terminal DIN rail mounting With finger protection device Applicable for HF14FW/140FF, HF115F/115F-A/115FP 3 type & 4 type. When applying to 3 type, 2NC, 2NO and 2COM should be paralleled separately.	 (Top View)	 (Top View)	*plastic retainer 14FF-H4 14FF-H6 *plug-in module HFAA to HFHU marker 14FF-M1

Notes: * If need accesscry,please order with type.

DIMENSION OF RELATED ACCESSORY (TO BE ORDERED SEPARATELY) Unit: mm

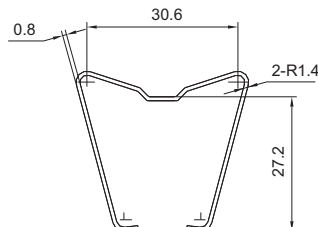
Retainer

14FF-H1(metallic retainer)



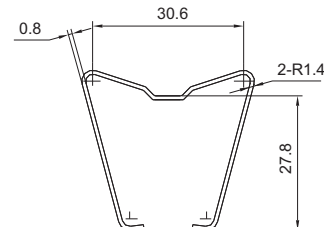
Remark: Applicable for HF115F/115F-A.

14FF-H2(metallic retainer)



Remark: Applicable for HF14FF.

14FF-H3(metallic retainer)

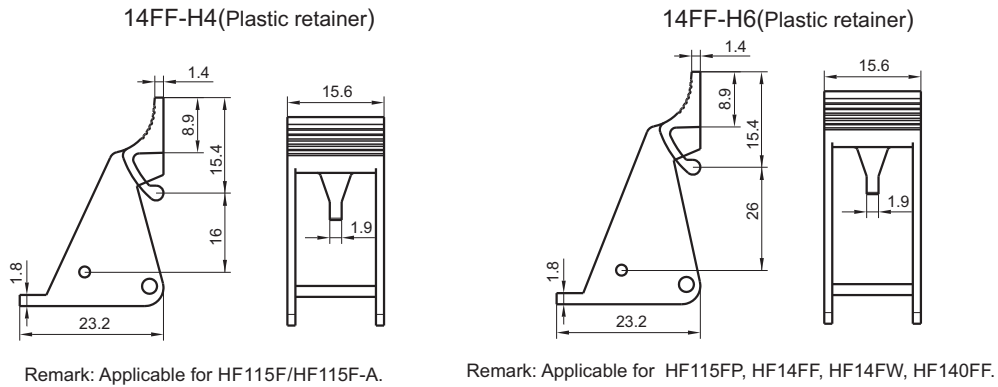


Remark: Applicable for HF115FP, HF14FW, HF140FF.

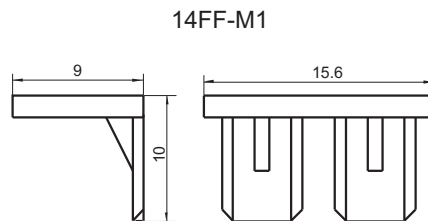
DIMENSION OF RELATED ACCESSORY (TO BE ORDERED SEPARATELY)

Unit: mm

Retainer



Marker



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. Socket which can be mounted with markers is furnished with a marker; If need markers, please order with type.
3. Main outline dimension(L, W, H) ≥ 50 mm, tolerance should be ± 1 mm; outline dimension > 20 mm and < 50 mm, tolerance should be ± 0.5 mm; outline dimension ≤ 20 mm, tolerance should be ± 0.3 mm.
4. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

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18FF Sockets

RELAY SOCKETS

CE

CULUS

File No.: E253370



Features

- The dielectric strength can reach 2000VAC and the insulation resistance is 1000MΩ
- Three mounting types are available: PCB mounting screw mounting and DIN rail mounting.
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection.
- Components available: retainer, marker and plug-in module
- Applicable relay types: HF18FF/HF18FH
- Environmental friendly product (RoHS compliant)

ORDERING INFORMATION

Type	18FF	-2Z	-C1
Contact arrangement	2Z:2 Form C 3Z: 3 Form C 4Z: 4 Form C		
Termination & mounting	A2: PCB terminal, PCB or Screw mounting C1: Screw terminal, DIN rail or Screw mounting, Without finger protection device C2/C4/C5/C8: Screw terminal, DIN rail mounting, With finger protection device C9: Screwless terminal, DIN rail mounting, With finger protection device		

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Max wire size		Wire Strip Length	Screw Torque
					mm ²	AWG		
18FF-2Z-A2	250VAC	7A	-40 °C to 70 °C	2000VAC	—	—	—	—
18FF-2Z-C1	250VAC	7A	-40 °C to 70 °C	2000VAC	2 x1.5	2 x16	7mm	0.8N · m
18FF-2Z-C2	250VAC	7A	-40 °C to 70 °C	2000VAC	2 x1.5	2 x16	7mm	0.8N · m
18FF-2Z-C4	250VAC	7A	-40 °C to 70 °C	2000VAC	1 x4 / 2 x2.5	1 x12 / 2 x14	7mm	0.6N · m
18FF-2Z-C5	250VAC	7A	-40 °C to 70 °C	2000VAC	1 x4 / 2 x2.5	1 x12 / 2 x14	7mm	0.6N · m
18FF-2Z-C8	250VAC	7A	-40 °C to 70 °C	2000VAC	2 x1.5	2 x16	7mm	0.6N · m
18FF-2Z-C9	250VAC	7A	-40 °C to 70 °C	2000VAC	2 x1.5	2 x16	7mm	—
18FF-3Z-C4	250VAC	7A	-40 °C to 70 °C	2000VAC	1 x4 / 2 x2.5	1 x12 / 2 x14	7mm	0.6N · m
18FF-3Z-C5	250VAC	7A	-40 °C to 70 °C	2000VAC	1 x4 / 2 x2.5	1 x12 / 2 x14	7mm	0.6N · m
18FF-4Z-A2	250VAC	7A	-40 °C to 70 °C	2000VAC	—	—	—	—
18FF-4Z-C1	250VAC	7A	-40 °C to 70 °C	2000VAC	2 x1.5	2 x16	7mm	0.8N · m
18FF-4Z-C2	250VAC	7A	-40 °C to 70 °C	2000VAC	2 x1.5	2 x16	7mm	0.8N · m
18FF-4Z-C4	250VAC	7A	-40 °C to 70 °C	2000VAC	1 x4 / 2 x2.5	1 x12 / 2 x14	7mm	0.6N · m
18FF-4Z-C5	250VAC	7A	-40 °C to 70 °C	2000VAC	1 x4 / 2 x2.5	1 x12 / 2 x14	7mm	0.6N · m
18FF-4Z-C8	250VAC	7A	-40 °C to 70 °C	2000VAC	2 x1.5	2 x16	7mm	0.6N · m
18FF-4Z-C9	250VAC	7A	-40 °C to 70 °C	2000VAC	2 x1.5	2 x16	7mm	—




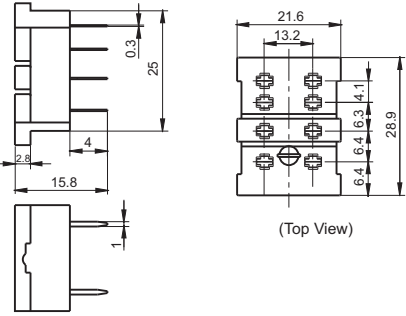
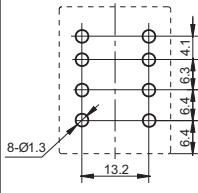

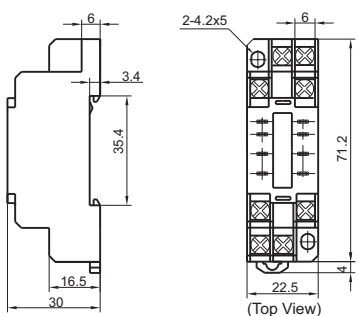
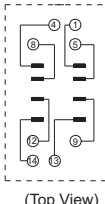


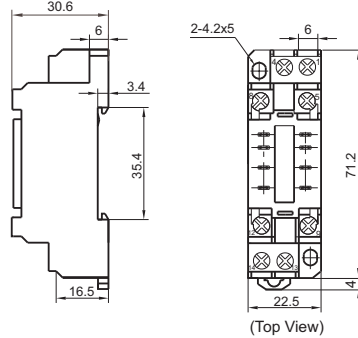
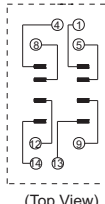
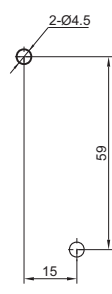

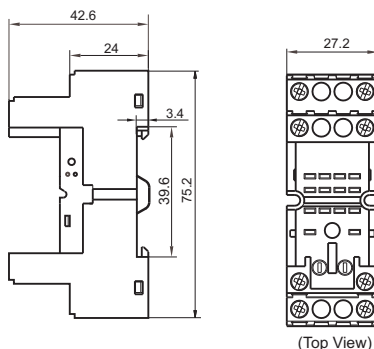
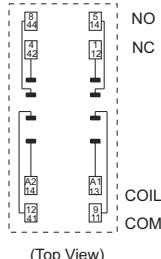
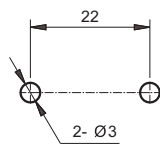
HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.20


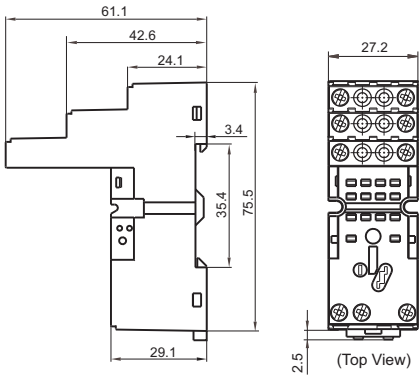
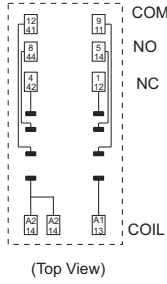
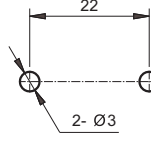

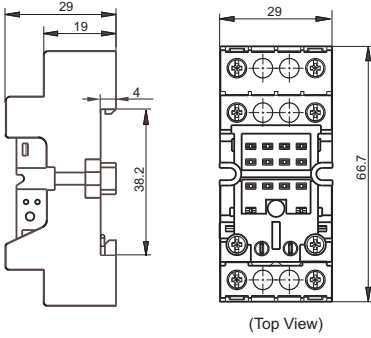
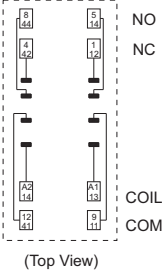
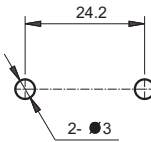

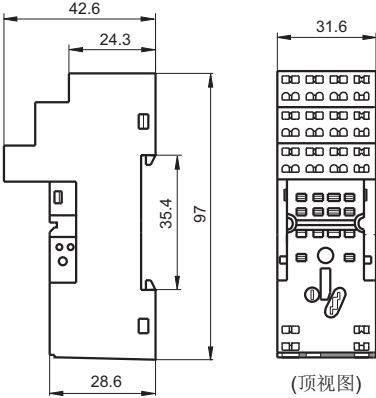
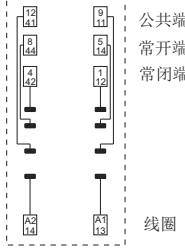

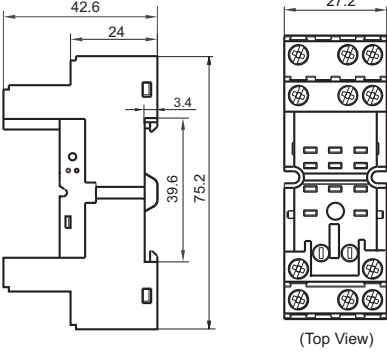
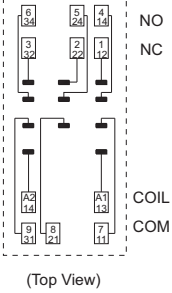
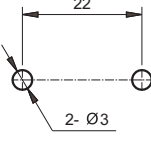
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Accessory Available
<p>18FF-2Z-A2</p>  <p>PCB Terminal, PCB mounting Applicable for 2 poles</p>	 <p>(Top View)</p>			<p>*metallic retainer 18FF-H1</p>
<p>18FF-2Z-C1</p>  <p>Screw Terminal, DIN rail or Screw mounting, Without finger protection device Applicable for 2 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>*metallic retainer 18FF-H2 (be used in sets)</p>
<p>18FF-2Z-C2</p>  <p>Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>*metallic retainer 18FF-H2 (be used in sets)</p>
<p>18FF-2Z-C4</p>  <p>Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>*plastic retainer 18FF-H4</p> <p>*metallic retainer 18FF-H5</p> <p>*plug-in module HFAA to HFHU</p> <p>marker 18FF-M1</p>


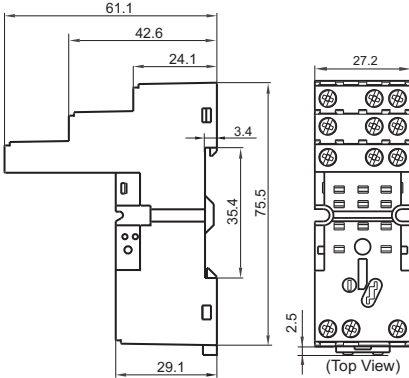
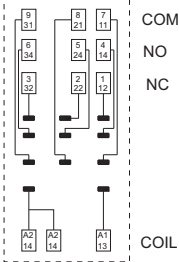
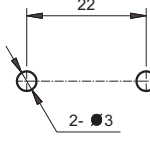

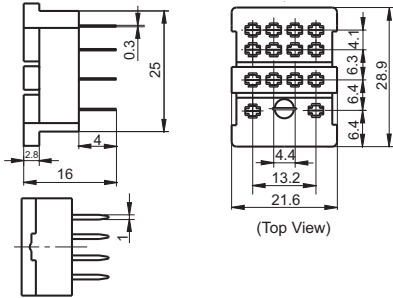
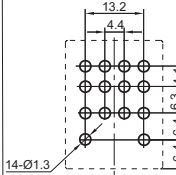

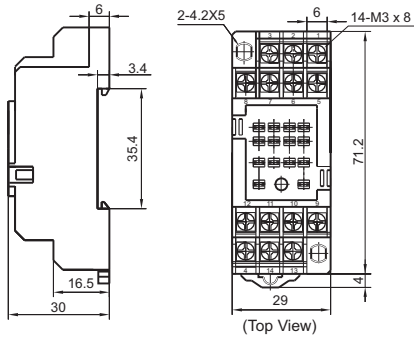
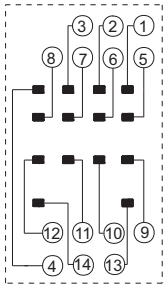
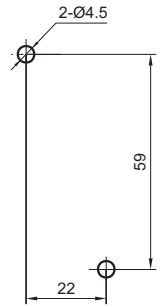

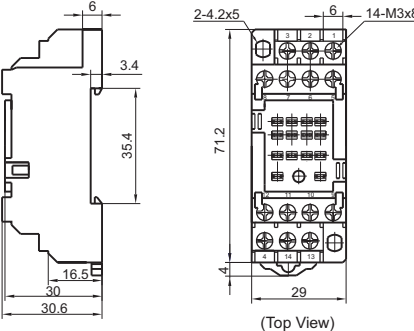
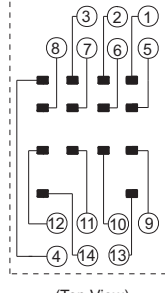
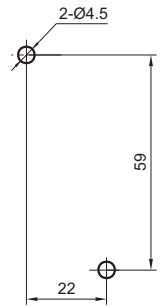
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Accessory Available
18FF-2Z-C5  <p>Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>*plastic retainer 18FF-H4</p> <p>*metallic retainer 18FF-H5</p> <p>*plug-in module HFAA to HFHU</p> <p>marker 18FF-M1</p>
18FF-2Z-C8  <p>Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>*metallic retainer 18FF-H5</p> <p>*plastic retainer 18FF-H4</p> <p>*plug-in module HFAA to HFHU</p> <p>marker 18FF-M3</p>
18FF-2Z-C9  <p>Spring-loaded terminal, DIN rail mounting, With finger protection device Applicable for 2 poles</p>	 <p>(顶视图)</p>	 <p>(顶视图)</p>		<p>*plastic retainer 18FF-H4</p> <p>*metallic retainer 18FF-H5</p> <p>*plug-in module HFAA to HFHU</p> <p>marker 18FF-M3</p>
18FF-3Z-C4  <p>Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 3 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>*plastic retainer 18FF-H4</p> <p>*metallic retainer 18FF-H5</p> <p>*plug-in module HFAA to HFHU</p> <p>marker 18FF-M1</p>


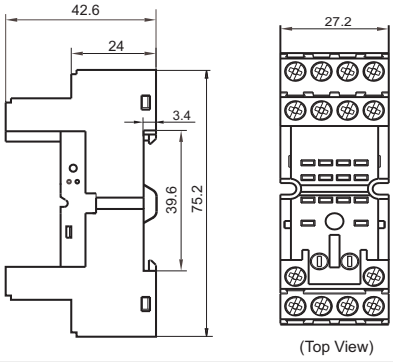
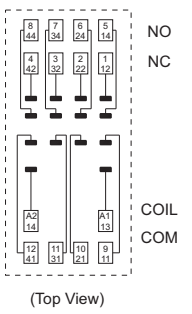
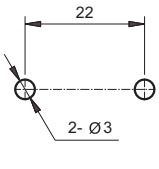

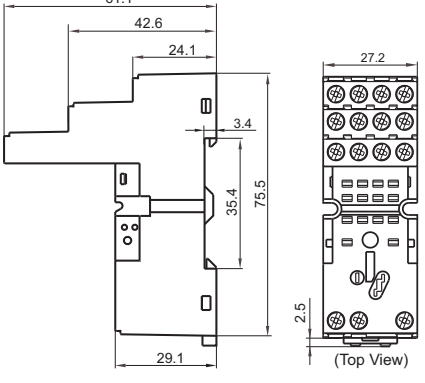
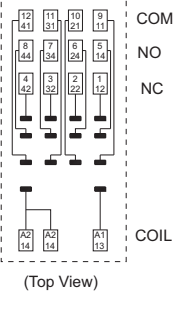
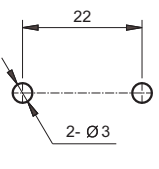

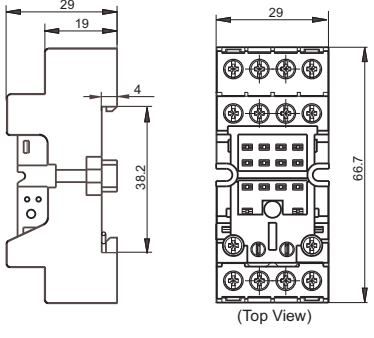
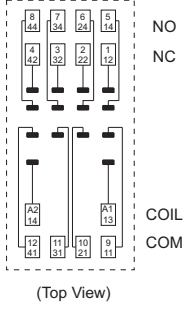
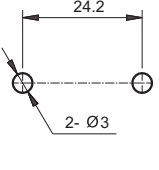

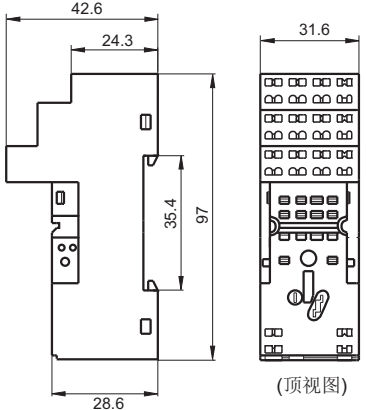
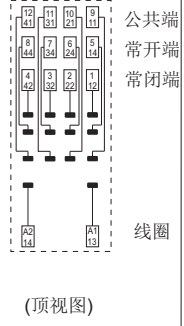
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Accessory Available
18FF-3Z-C5  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 3 poles	 (Top View)	 (Top View)	 (Top View)	*plastic retainer 18FF-H4 *metallic retainer 18FF-H5 *plug-in module HFAA to HFHU marker 18FF-M1
18FF-4Z-A2  PCB Terminal, PCB mounting Applicable for 4 poles	 (Top View)		 (Top View)	*metallic retainer 18FF-H1
18FF-4Z-C1  Screw Terminal, DIN rail or Screw mounting, Without finger protection device Applicable for 4 poles	 (Top View)	 (Top View)	 (Top View)	*metallic retainer 18FF-H2 (be used in sets)
18FF-4Z-C2  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles	 (Top View)	 (Top View)	 (Top View)	*metallic retainer 18FF-H2 (be used in sets)

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Accessory Available
18FF-4Z-C4  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles	 (Top View)	 (Top View)		*plastic retainer 18FF-H4 *metallic retainer 18FF-H5 *plug-in module HFAA to HFHU marker 18FF-M1
18FF-4Z-C5  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles	 (Top View)	 (Top View)		*plastic retainer 18FF-H4 *metallic retainer 18FF-H5 *plug-in module HFAA to HFHU marker 18FF-M1
18FF-4Z-C8  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles	 (Top View)	 (Top View)		*metallic retainer 18FF-H5 *plastic retainer 18FF-H4 *plug-in module HFAA to HFHU marker 18FF-M3
18FF-4Z-C9  Spring-loaded terminal, DIN rail mounting, With finger protection device Applicable for 4 poles	 (顶视图)	 (顶视图)		*塑料卡簧 18FF-H4 *金属卡簧 18FF-H5 *插入式模块 HFAA ~ HFHU 标识板 18FF-M3

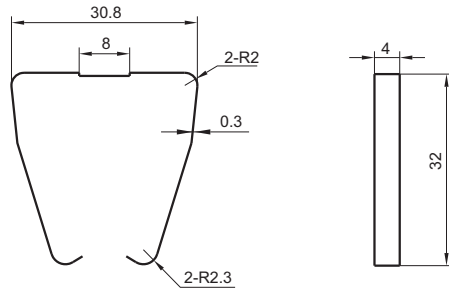
Notes: * If need accesscry,please order with type.

DIMENSION OF RELATED ACCESSORY (AVAILABLE)

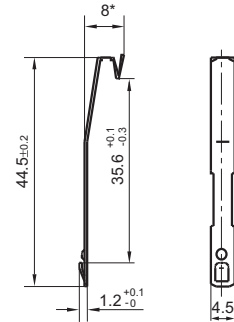
Unit: mm

Retainer

18FF-H1 (metallic retainer)



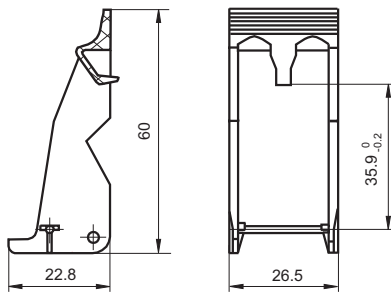
18FF-H2 (metallic retainer)



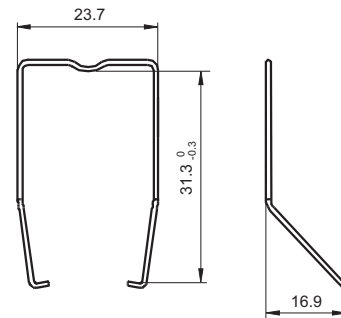
Remark: 18FF-H2 retainer has to be used in sets, please pay special attention while placing the order.

Retainer

18FF-H4 (plastic retainer)



18FF-H5 (metallic retainer)

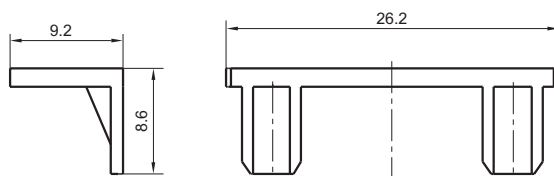


DIMENSION OF RELATED ACCESSORY (AVAILABLE)

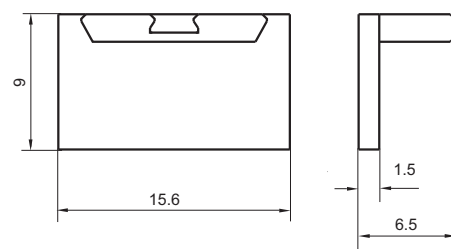
Unit: mm

Marker

18FF-M1



18FF-M3



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. Socket which can be mounted with markers is furnished with a marker; If need markers ,please order with type.
3. Main outline dimension(L, W, H) ≥ 50 mm, tolerance should be ± 1 mm; outline dimension > 20 mm and < 50 mm, tolerance should be ± 0.5 mm; outline dimension ≤ 20 mm, tolerance should be ± 0.3 mm.
4. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

41F Sockets

RELAY SOCKETS

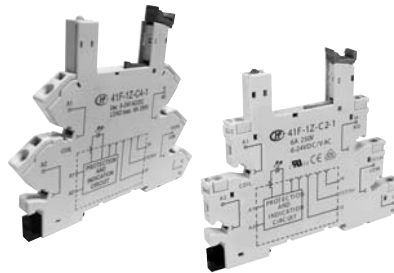
CE

cULus

File No.: E253370

DE

File No.: 40020043



Features

- The dielectric strength can reach 4000VAC and the insulation resistance is 1000MΩ
- With finger protection device
- Ensure secure retention and easy ejection of relays
- Built-in protection circuit can indicate the power status, protect the circuit and expand the range of relay input voltage
- Components available: marker, jumper and separator
- Applicable relay types: HF41F
- Environmental friendly product (RoHS compliant)

ORDERING INFORMATION

Type	41F	-1Z	-C2	-1/2/3/4/5
Contact arrangement	1Z:1 Form C			
Termination & mounting	A2: PCB terminal, PCB mounting C2: Screw terminal, DIN rail mounting, With finger protection device C4: Spring-loaded terminal, DIN rail mounting, With finger protection device			
Voltage of module	1, 2, 3, 4, 5: See table above for corresponding information with relay's coil voltage			

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Input Voltage	Relay's Applicable Rated Voltage	Polarity of Input Voltage	Max wire size		Wire Strip Length	Screw Torque
							mm ²	AWG		
41F-1Z-C2-1	250VAC	6A	-40 °C to 70 °C	(12 to 24)V AC/DC	(12 to 24)V DC	No requirement	1 x 2.5 / 1 x 1.5	1 x 14 / 1 x 16	7mm	0.5N · m
41F-1Z-C2-2	250VAC	6A	-40 °C to 70 °C	(48 to 60)V AC/DC	(48 to 60)V DC	No requirement	1 x 2.5 / 1 x 1.5	1 x 14 / 1 x 16	7mm	0.5N · m
41F-1Z-C2-3	250VAC	6A	-40 °C to 55 °C	(110 to 125)V AC/DC	60V DC	No requirement	1 x 2.5 / 1 x 1.5	1 x 14 / 1 x 16	7mm	0.5N · m
41F-1Z-C2-4	250VAC	6A	-40 °C to 55 °C	(220 to 240)V AC/DC	60V DC	No requirement	1 x 2.5 / 1 x 1.5	1 x 14 / 1 x 16	7mm	0.5N · m
41F-1Z-C2-5	250VAC	6A	-40 °C to 70 °C	(6 to 24)V DC	(6 to 24)V DC	Requirement	1 x 2.5 / 1 x 1.5	1 x 14 / 1 x 16	7mm	0.5N · m
41F-1Z-C4-1	250VAC	6A	-40 °C to 70 °C	(12 to 24)V AC/DC	(12 to 24)V DC	No requirement	1 x 2.5	1 x 14	7mm	---
41F-1Z-C4-2	250VAC	6A	-40 °C to 70 °C	(48 to 60)V AC/DC	(48 to 60)V DC	No requirement	1 x 2.5	1 x 14	7mm	---
41F-1Z-C4-3	250VAC	6A	-40 °C to 55 °C	(110 to 125)V AC/DC	60V DC	No requirement	1 x 2.5	1 x 14	7mm	---
41F-1Z-C4-4	250VAC	6A	-40 °C to 55 °C	(220 to 240)V AC/DC	60V DC	No requirement	1 x 2.5	1 x 14	7mm	---
41F-1Z-C4-5	250VAC	6A	-40 °C to 70 °C	(6 to 24)V DC	(6 to 24)V DC	Requirement	1 x 2.5	1 x 14	7mm	---
41F-1Z-A2-1	250VAC	6A	-40 °C to 70 °C	(6 to 24)V DC	(6 to 24)V DC	Requirement	---	---	---	---
41F-1Z-A2-2	250VAC	6A	-40 °C to 70 °C	(48 to 60)V DC	(48 to 60)V DC	Requirement	---	---	---	---

Note: When the 41F-1Z-C2/C4-1 socket is applied to the relay of 12VDC nominal voltage, the relay of which pick-up voltage =70% nominal voltage should be required and the special order of relay allowed. 41F-1Z-C2/C4-4 is not allowed in continuous electricity conditions.




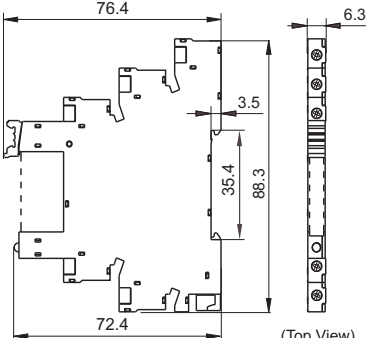
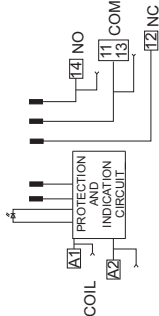

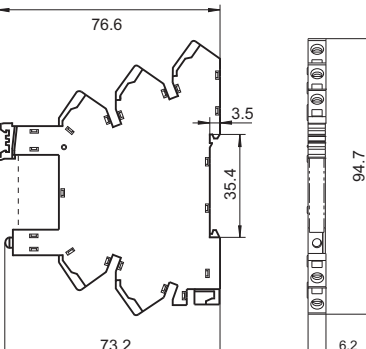
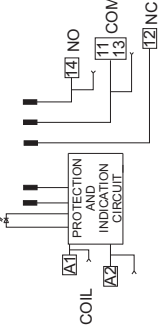

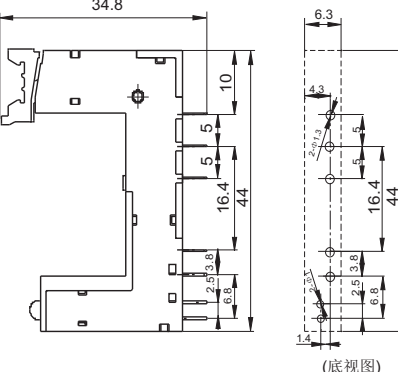
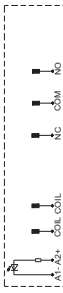
HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	Accessory Available
<p>41F-1Z-C2-1/2/3/4/5</p>  <p>Screw terminal, DIN rail mounting, With finger protection device Certified by VDE and UL/CUL</p>	 <p>(Top View)</p>		<p>*marker 41F-M 41F-M1</p> <p>*jumper 41F-J1(blue) 41F-J1R(red) 41F-J1B(black)</p> <p>*separator 41F-S</p>
<p>41F-1Z-C4-1/2/3/4/5</p>  <p>Spring-loaded terminal, DIN rail mounting, With finger protection device</p>			<p>*marker 41F-M 41F-M1</p> <p>*jumper 41F-J1(blue) 41F-J1R(red) 41F-J1B(black)</p> <p>*separator 41F-S</p>
<p>41F-1Z-A2-1/2</p>  <p>PCB terminal, PCB mounting</p>	 <p>(底视图)</p>		<p>*marker 41F-M</p>

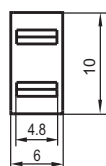
Notes: * If need accesscry,please order with type.

DIMENSION OF RELATED ACCESSORY (AVAILABLE)

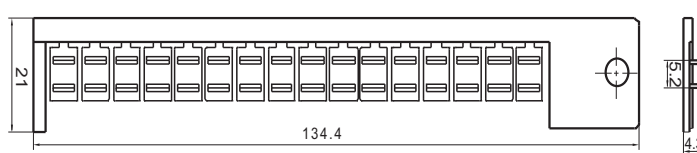
Unit: mm

Marker

41F-M



41F-M1

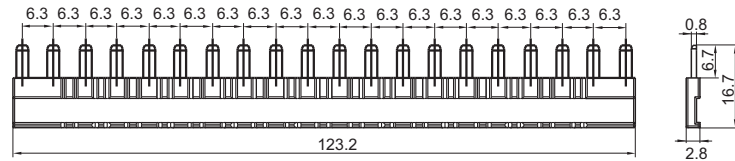


DIMENSION OF RELATED ACCESSORY (AVAILABLE)

Unit: mm

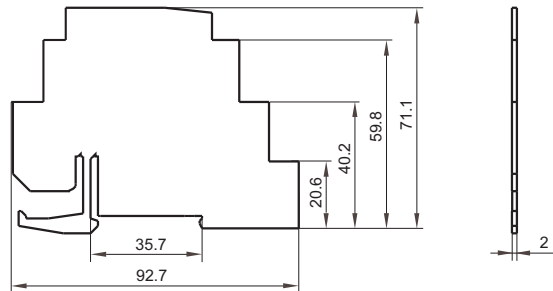
Jumper

41F-J1(blue)、41F-J1R(red)、41F-J1B(black)



Separator

41F-S



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. As for related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. Main outline dimension(L, W, H) $\geq 50\text{mm}$, tolerance should be $\pm 1\text{mm}$; outline dimension $> 20\text{mm}$ and $< 50\text{mm}$, tolerance should be $\pm 0.5\text{mm}$; outline dimension $\leq 20\text{mm}$, tolerance should be $\pm 0.3\text{mm}$.
4. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

Disclaimer

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118F Sockets

RELAY SOCKETS

CE



Features


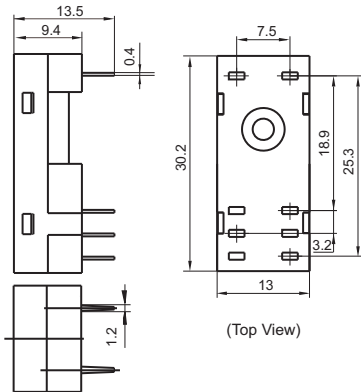
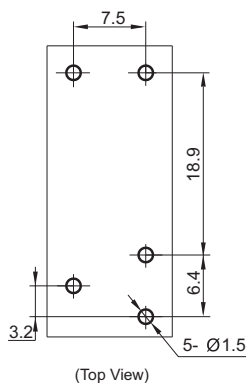

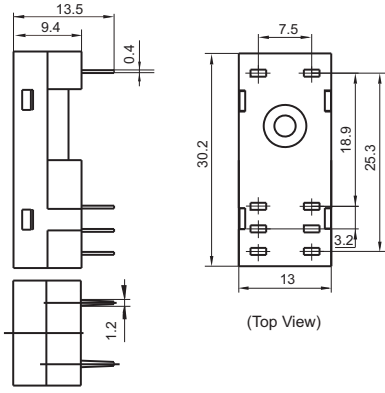
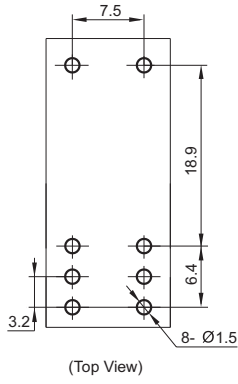
- The dielectric strength can reach 5000VAC and the insulation resistance is 1000MΩ
- Two mounting types are available: PCB and screw mounting.
- Applicable relay types: HF118F
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.
118F-1Z-A1-1	250VAC	10A	-40 °C to 70°C	5000VAC
118F-2Z-A1	250VAC	10A	-40 °C to 70°C	5000VAC

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	Accessory Available
<p>118F-1Z-A1-1</p>  <p>PCB terminal, PCB or Screw mounting Applicable for HF118F 1 type</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>* metallic retainer 118F-H1</p>
<p>118F-2Z-A1</p>  <p>PCB terminal, PCB or Screw mounting Applicable for HF118F 3 and 4 type</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>* metallic retainer 118F-H1</p>

Notes: * If need accessry,please order with type.



HONGFA RELAY

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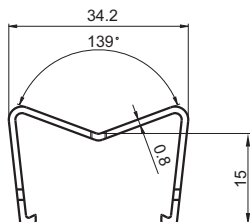
2017 Rev. 1.01

DIMENSION OF RELATED ACCESSORY (AVAILABLE)

Unit: mm

Retainer

118F-H1(metallic retainer)



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. As for related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. Main outline dimension(L, W, H) $\geq 50\text{mm}$, tolerance should be $\pm 1\text{mm}$; outline dimension $> 20\text{mm}$ and $< 50\text{mm}$, tolerance should be $\pm 0.5\text{mm}$; outline dimension $\leq 20\text{mm}$, tolerance should be $\pm 0.3\text{mm}$.

Disclaimer

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A4-4Z-C2-X

Relay Socket



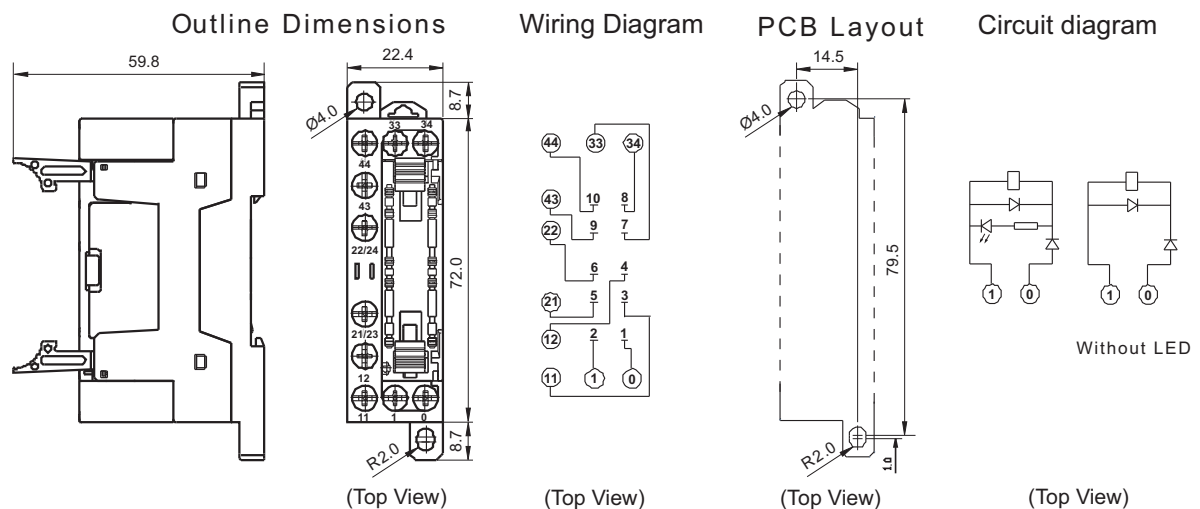
Features

Ambient temperature :	-25 °C ~ 55 °C
Rated voltage:	250VAC
Rated current :	6A
Input voltage:	6 ~ 110VDC
Dielectric strength :	2500VAC
Terminal torque:	1.0Nm
Wire strip length :	7mm
Max wire size :	mm ² 2x1.5
	AWG 2x16
Applicable relay type :	HFA4

ORDERING INFORMATION

	A4	-4Z	-C2	-X
Type				
Contact arrangement	4Z: 4 Pole			
Termination & mounting			C2: Screw Terminal, DIN rail mounting, With finger protection device	
Voltage of module			D24: Realy's applicable rated voltage: 6, 9, 12,18, 24 VDC D60: Realy's applicable rated voltage: 36, 48, 60 VDC D110: Realy's applicable rated voltage: 85,110 VDC Nil: Without LED	

OUTLINE DIMENSIONS, WIRING DIAGRAM, PC BOARD LAYOUT AND CIRCUIT DIAGRAM Unit: mm



Notes: Main outline dimension(L, W, H) ≥50mm, tolerance should be ±1mm; outline dimension >20mm and <50mm, tolerance should be ±0.5mm; outline dimension ≤20mm, tolerance should be ±0.3mm.

Disclaimer

This datasheet is for the customers' reference. All the specifications are subject to change without notice.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF3503

DELAYING RELAY



Typical Applications

Heating control、Start control、Fan Control

Features

- Use MCU control circuit to ensure stable performance and high precision
- Solid base design, stable structure
- Surface mounting technology, advanced craftwork
- Ingress protection: IP50

ELECTRICAL PARAMETER

Type	Nominal Voltage VDC	Operating Voltage VDC	Delay Time s	Rated Load A	Electrical endurance OPS	Voltage drop mV/5A max.
HF3503/12-G40A2	12	9 to 16	2.0 ± 0.5	40	1 x 10 ⁵	150
HF3503/12-L15B9-B	12	9 to 16	9.0 ± 2.0	15	1 x 10 ⁵	150
HF3503/12-G15B480	12	9 to 16	480 ± 60	15	1 x 10 ⁵	150
HF3503/24-G20A5	24	18 to 32	5.0 ± 1.0	20	1 x 10 ⁵	150
HF3503/12-G15B600	12	9 to 16	600 ± 60	15	1 x 10 ⁵	150
HF3503/24-G15A8-B	24	18 to 32	8.0 ± 1.5	15	1 x 10 ⁵	150
HF3503/12-G15A8-B	12	9 to 16	8.0 ± 1.5	15	1 x 10 ⁵	150

When demand of time delay is different from above, please contact Hongfa for more technology support.

OTHER PARAMETERS

Ambient temperature	-40°C to 85°C	
Vibration resistance	Sine	10Hz to 200Hz 49m/s ²
	Random	10Hz to 1000Hz 19.6m/s ²
Shock resistance	196m/s ²	
Weight	Approx. 35g	
Mechanical data	Cover retention: 160N min.	
	Terminal retention: 100N min.	

ORDERING INFORMATION

Type	HF3503 / 12 -G 40 A 2 -B (XXX)					
	Suffix (A-Z) is for specific extending application					
Nominal voltage	12: 12VDC 24: 24VDC					
Trigger level	G: High electric level start up L: Low electric level start up					
Electrical current specification	15: 15A 20: 20A 40: 40A					
Delayed mode	A: On delay B: Off delay					
Delayed time	2: 2s 10: 10s					
Packing style	B: With bracket Nil: Without bracket					
Special code ¹⁾	XXX: Customer special requirement Nil: Standard					

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

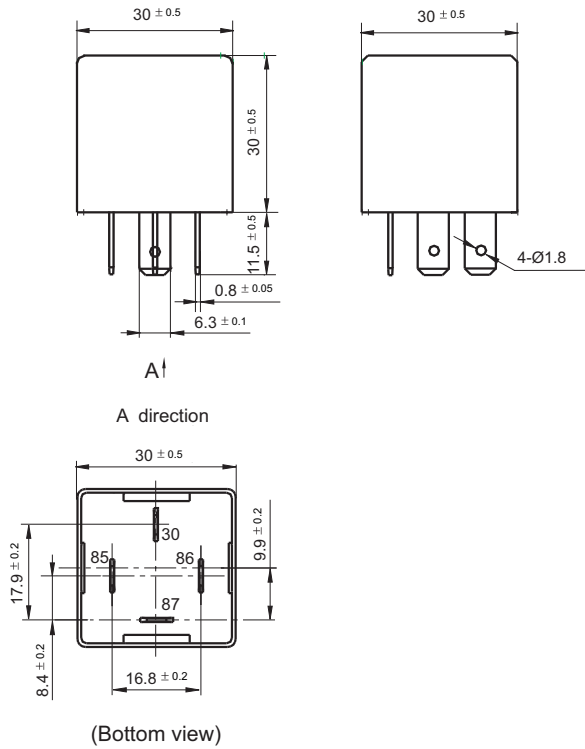
2015 Rev. 1.00

OUTLINE DIMENSIONS, WIRING DIAGRAM, LOGIC DIAGRAM

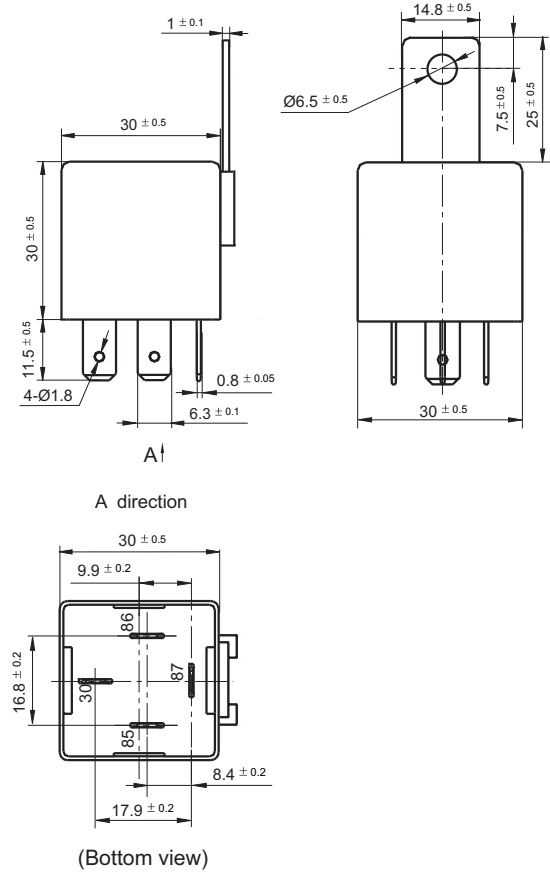
Unit: mm

Outline Dimensions

HF3503/□□-□□□□□(XXX)



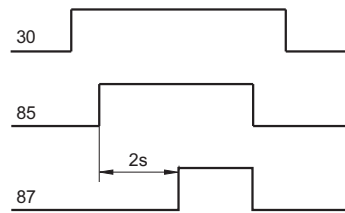
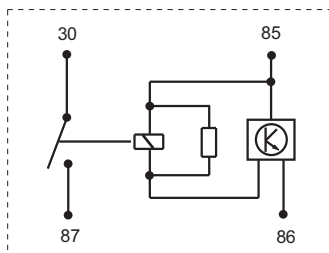
HF3503/□□-□□□□□-B(XXX)



OUTLINE DIMENSIONS, WIRING DIAGRAM, LOGIC DIAGRAM

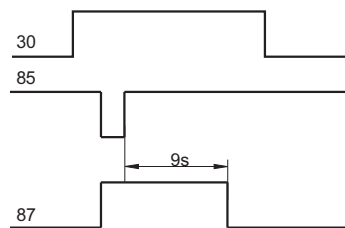
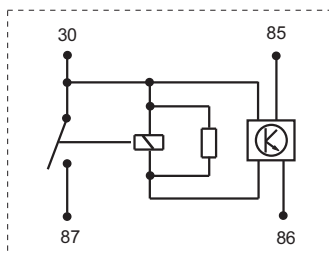
Unit: mm

HF3503/12-G40A2(XXX)



- 1) The terminal 30 is connected with positive electrode of power supply, terminal 87 is connected with load, the terminal 86 is connected with nature, the terminal 85 is connected with control signal. As shown in logic diagram, the terminal 30 and 87 will be connected when terminal 85 received a 12V start-up signal and delayed $2s \pm 0.5s$.

HF3503/12-L15B9-B(XXX)

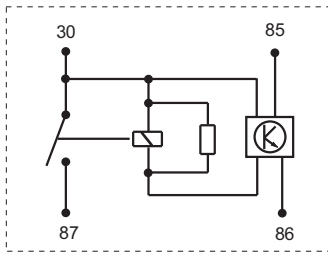


- 1) The terminal 30 is connected with positive electrode of power supply, terminal 87 is connected with load, the terminal 86 is connected with nature, the terminal 85 is connected with control signal. As shown in logic diagram, the terminal 30 and 87 will be connected when terminal 85 received a low level start-up signal, the terminal 30 and 87 will be opened when 85 terminal start-up signal disappeared and delayed $9s \pm 2s$.

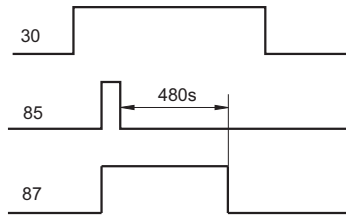
OUTLINE DIMENSIONS, WIRING DIAGRAM, LOGIC DIAGRAM

Wiring Diagram

HF3503/12-G15B480(XXX)

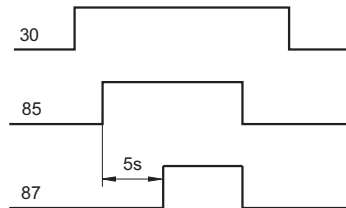
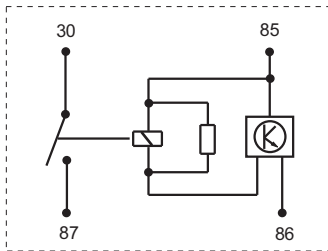


Logic Diagram



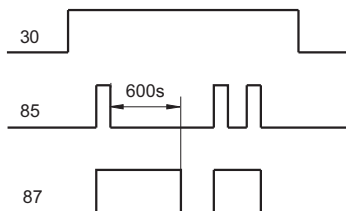
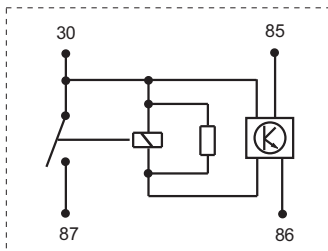
- 1) The terminal 30 is connected with positive electrode of power supply, terminal 87 is connected with load, the terminal 86 is connected with nature, the terminal 85 is connected with control signal. As shown in logic diagram, the terminal 87 and 30 will be connected when terminal 85 received a 12V start-up signal, the terminal 87 and 30 will be opened when terminal 85 start-up signal disappeared and delayed 480s±60s.

HF3503/24-G20A5(XXX)



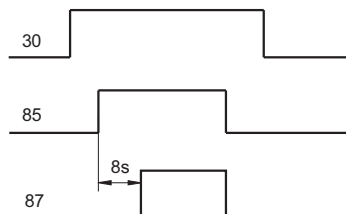
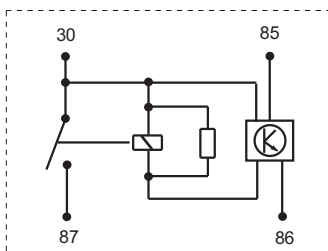
- 1) The terminal 30 is connected with positive electrode of power supply, terminal 87 is connected with load, the terminal 86 is connected with nature, the terminal 85 is connected with control signal. As shown in logic diagram, the terminal 30 and 87 will be connected when terminal 85 received a 24V start-up signal and delayed 5s±1s.

HF3503/12-G15B600(XXX)



- 1) The terminal 30 is connected with positive electrode of power supply, terminal 87 is connected with load, the terminal 86 is connected with nature, the terminal 85 is connected with control signal. As shown in logic diagram, the terminal 87 and 30 will be connected when terminal 85 received a 12V start-up signal, the terminal 87 and 30 will be opened when terminal 85 start-up signal disappeared and delayed 600s±60s. During the delay period after connection, the terminal 87 and 30 will be opened when terminal 85 receive start-up signal.

HF3503/24-G15A8-B(XXX)
HF3503/12-G15A8-B(XXX)



- 1) The terminal 30 is connected with positive electrode of power supply, terminal 87 is connected with load, the terminal 86 is connected with nature, the terminal 85 is connected with control signal. As shown in logic diagram, the terminal 87 and 30 will be connected when terminal 85 received a start-up signal and delayed for 8s±1.5s.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF3501/ HF3508

FLASHER



Typical Applications

Turn signal & Hazard warning lamp control

Features

- Special integrate circuit, good performance
- Special high-performance contacts, ultra-long Electrical endurance
- Surface mounting technology, advanced craftwork
- Solid base design, stable structure
- Ingress protection: IP50

TYPE

Type	Product series name	Dimensions	Output mode
HF3501	Automotive flasher	(30 × 30 × 40) mm	Single output
HF3508 ¹⁾	Miniature automotive flasher	(30 × 30 × 30) mm	Single output

1) The application of HF3508 series can be expanded to halogen lamp load of (21W+5W)+5W(LED).

CHARACTERISTICS

Type		HF3501	HF3508
Nominal voltage		12VDC / 24VDC	12VDC
Operating voltage	12V System	9VDC to 16VDC	9VDC to 16VDC
	24V System	18VDC to 32VDC	—
Nominal load	Turning mode	2×21W + 5W	2×21W + 5W
	Hazard mode	2×(2×21W + 5W)	2×(2×21W + 5W)
	Lamp outage mode	21W + 5W	21W + 5W
Flash frequency		(60 to 110)ops / min	(60 to 110)ops / min
Lamp failure flash frequency		(140 to 230)ops / min	(140 to 230)ops / min
Electrical endurance	Turning 15s on/15s off 12V	1000h	1000h
	Hazard continuously 12V	360h	360h
	Turning 15s on/15s off 24V	400h	—
	Hazard continuously 24V	200h	—
Duty cycle		30% to 70%	30% to 70%
Ambient temperature		-40°C to 85°C	-40°C to 85°C
Vibration resistance		10Hz to 200Hz 49m/s ²	10Hz to 200Hz 49m/s ²
Shock resistance		196m/s ²	196m/s ²
Unit weight		Approx.40g	Approx.30g
Mechanical performance	Cover retention	160N min.	160N min.
	Terminal retention	100N min.	100N min.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2015 Rev. 1.00

ORDERING INFORMATION

HF3501 / HF3508 /		12	-H	-B	R	(XXX)
Type	Suffix (A-Z) is for specific extending application					
Nominal voltage	12: 12VDC 24: 24VDC (Only for HF3501)					
Contact arrangement	H: 1 Form A					
Mounting mode	B: With bracket Nil: Without bracket					
Polarity logic	R: Reverse polarity Nil: Positive polarity					
Special code ¹⁾	XXX: Customer special requirement Nil: Standard					

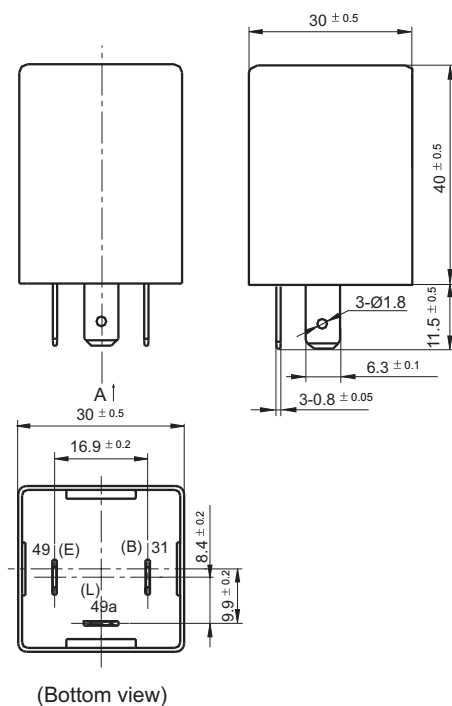
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM

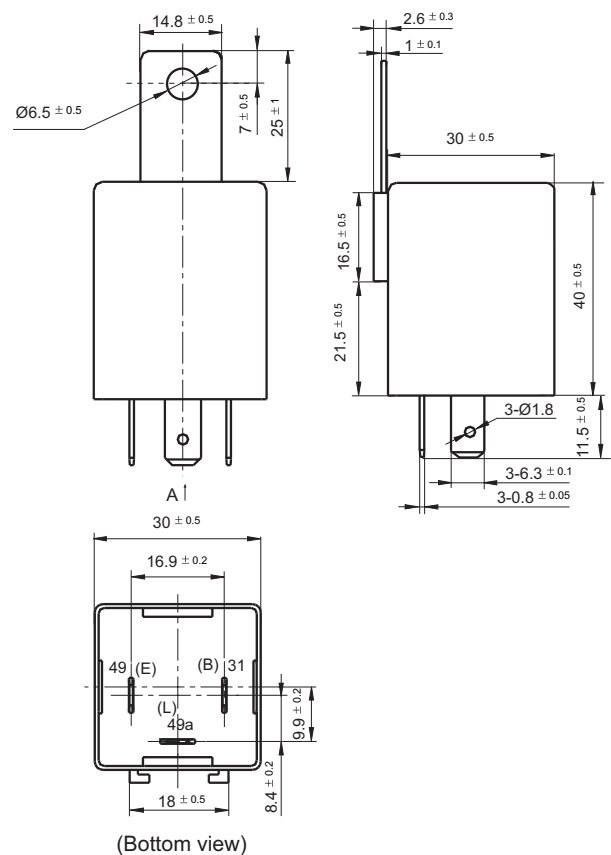
Unit: mm

OUTLINE DIMENSIONS

HF3501/□□-H-□(XXX)

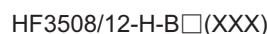


HF3501/□□-H-B□(XXX)



Unit: mm

HF3508/12-H-□(XXX)



1) As shown in wiring diagram (combine bottom view), the terminal 49(B) is connected with positive electrode of power supply of 12V. The 31(E) terminal is connected with negative electrode of power supply, the 49a(L) is connected with lamp load. When lamp load is $2 \times 21W + 5W$ or $4 \times 21W + 2 \times 5W$, the flasher will control lamp to flash by the frequency of (60 to 110) times per minute. When lamp load is $1 \times 21W + 5W$ (one lamp of 21W is broken down), the flasher will control lamp to flash by frequency of (140 to 230) times per minute.

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HF3506/ HF3506A

FLASHER



Features

- Use MCU control circuit to ensure stable performance
- Surface mounting technology, advanced craftwork
- Solid base design, stable structure
- Ingress protection: IP50
- Double output

Typical Applications

Turn signal & Hazard warning lamp control

TYPE

Type	Nominal voltage VDC	Operating voltage range VDC	Nominal lamp load W	Control mode
HF3506/12-L	12	10 to16	2 x 21+5	with IG function
HF3506A/12-G	12	10 to16	2 x 21+5	without IG function

CHARACTERISTICS

Flash frequency	(60 to 110)ops / min		
Lamp failure flash frequency	(140 to 230)ops / min		
Duty Cycle	30% to 70%		
Electrical endurance	1000h(15s on,15s off, rate load)		
	360h(continuous, alarming)		
Internal voltage drop	500mV (5A) max.		
Ambient temperature	-40°C to 85°C		
Vibration resistance	10Hz to 200Hz , 49m/s ²		
Shock resistance	196m/s ²		
Unit weight	Approx. 35g		
Mechanical performance	Cover retention	160N min.	
	Terminal retention	100N min.	

ORDERING INFORMATION

Type	HF3506 / HF3506A/ Suffix (A-Z) is for specific extending application	12	-G	-B	(XXX)
Nominal voltage	12: 12VDC				
Trigger level	G: High level start up L: Low level start up				
Mounting mode	B: With bracket Nil: Without bracket				
Special code ¹⁾	XXX: Customer special requirement Nil: Standard				

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.



HONGFA RELAY

ISO9001, ISO/TS16949 , ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

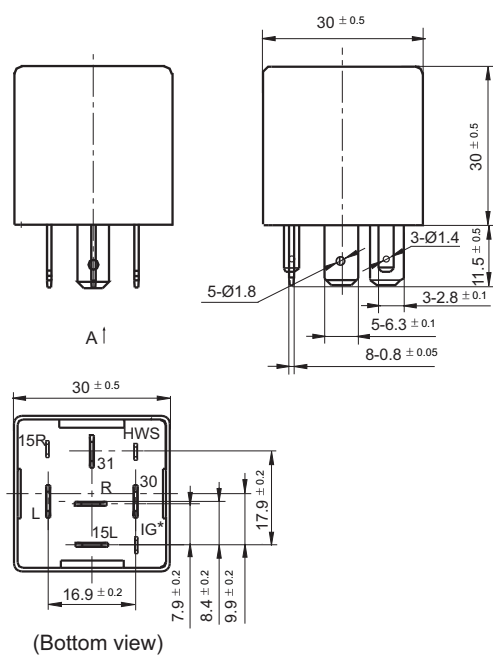
2015 Rev. 1.00

OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

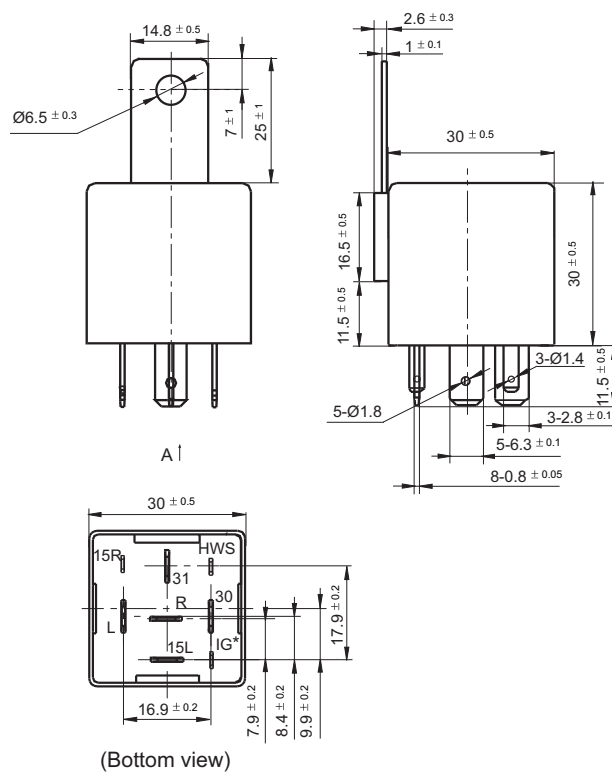
OUTLINE DIMENSIONS

HF3506/□□-□(XXX)



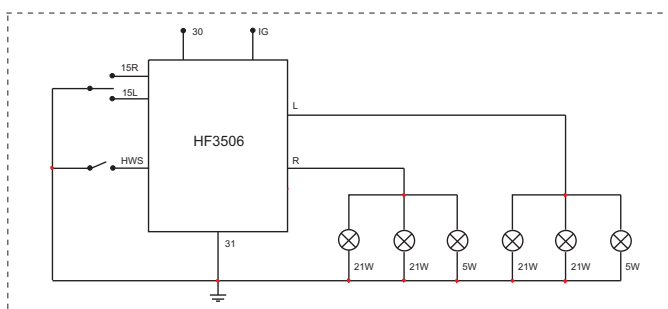
Remark: * There is no IG terminal for HF3506A.

HF3506/□□-□-B(XXX)



WIRING DIAGRAM

HF3506/12-L-□(XXX)



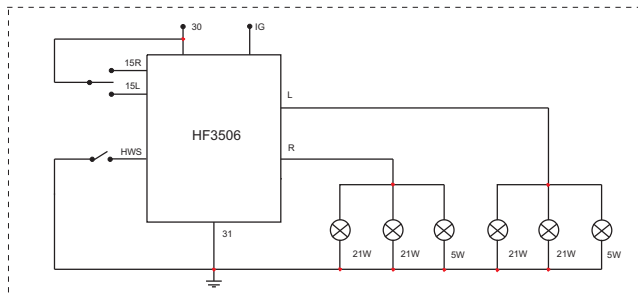
As shown in wiring diagram, the terminal 30 is connected with positive electrode of power supply. The 31 terminal is connected with negative electrode of power supply, the IG terminal is connected with IG power supply, 15R is connected with turn right lamp switch (active low), 15L is connected with turn left lamp switch (active low), HWS terminal is connected with hazard warning switch (active low), R terminal is connected with turn right lamp load, L terminal is connected with turn left lamp load. When load is $2 \times 21W + 5W$ or $4 \times 21W + 2 \times 5W$, the flasher will control lamp to flash by the frequency of (60 to 110) times per minute. When load is $21W + 5W$ (one lamp of 21W is broken down), the flasher will control lamp to flash by frequency of (140 to 230) times per minute.

OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

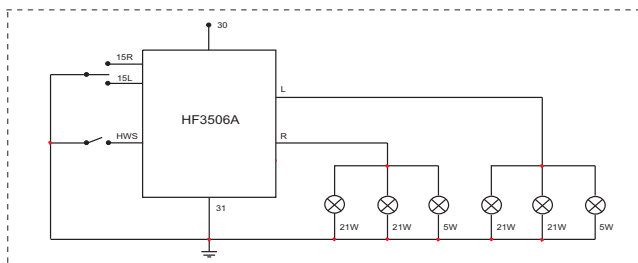
WIRING DIAGRAM

HF3506/12-G-□(XXX)



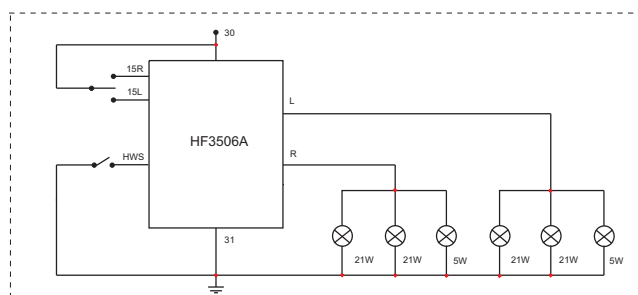
As shown in wiring diagram, the terminal 30 is connected with positive electrode of power supply. The 31 terminal is connected with negative electrode of power supply, the IG terminal is connected with IG power supply, 15R is connected with turn right lamp switch (active high), 15L is connected with turn left lamp switch (active high), HWS terminal is connected with hazard warning switch (active low), R terminal is connected with turn right lamp load, L terminal is connected with turn left lamp load. When load is $2 \times 21W + 5W$ or $4 \times 21W + 2 \times 5W$, the flasher will control lamp to flash by the frequency of (60 to 110) times per minute. When load is $21W + 5W$ (one lamp of 21W is broken down), the flasher will control lamp to flash by frequency of (140 to 230) times per minute.

HF3506A/12-L-□(XXX)



As shown in wiring diagram, the terminal 30 is connected with positive electrode of power supply. The 31 terminal is connected with negative electrode of power supply, 15R is connected with turn right lamp switch (active low), 15L is connected with turn left lamp switch (active low), HWS terminal is connected with hazard warning switch (active low), R terminal is connected with turn right lamp load, L terminal is connected with turn left lamp load. When load is $2 \times 21W + 5W$ or $4 \times 21W + 2 \times 5W$, the flasher will control lamp to flash by the frequency of (60 to 110) times per minute. When load is $21W + 5W$ (one lamp of 21W is broken down), the flasher will control lamp to flash by frequency of (140 to 230) times per minute.

HF3506A/12-G-□(XXX)



As shown in wiring diagram, the terminal 30 is connected with positive electrode of power supply. The 31 terminal is connected with negative electrode of power supply, 15R is connected with turn right lamp switch (active high), 15L is connected with turn left lamp switch (active high), HWS terminal is connected with hazard warning switch (active low), R terminal is connected with turn right lamp load, L terminal is connected with turn left lamp load. When load is $2 \times 21W + 5W$ or $4 \times 21W + 2 \times 5W$, the flasher will control lamp to flash by the frequency of (60 to 110) times per minute. When load is $21W + 5W$ (one lamp of 21W is broken down), the flasher will control lamp to flash by frequency of (140 to 230) times per minute.

Disclaimer

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We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF3505/HF3505A

FOG-LAMP CONTROLLER



Features

- Use MCU control circuit to ensure stable performance
- Surface mounting technology, advanced craftwork
- Solid base design, stable structure
- Ingress protection: IP50

Typical Applications

Rear Fog Lamp control

TYPE

Type	Product series name	Dimensions	Main characteristics
HF3505	Fog-lamp controller	(30 × 30 × 30)mm	2 channels enabling signal
HF3505A	Fog-lamp controller	(30 × 30 × 30)mm	3 channels enabling signal with reset (negative edge) function

CHARACTERISTICS

Nominal Voltage	12VDC	
Operating voltage range	9VDC to 16VDC	
Nominal load	Lamp load	5A 13.5VDC
Contact voltage drop	150mV 5A	
Electrical endurance	5×10 ⁴ OPS (at rated load)	
Ambient temperature	-40°C to 85°C	
Vibration resistance	10Hz to 200Hz 49m/s ²	
Shock resistance	196m/s ²	
Unit weight	Approx.30g	
Mechanical data	Cover retention	160N min.
	Terminal retention	100N min.

ORDERING INFORMATION

Type	HF3505 / HF3505A/ Suffix(A-Z) is for specific extending application	12	-G	-B	(XXX)
Nominal voltage	12: 12VDC				
Trigger level	G: High level start up L: Low level start up				
Mounting mode	B: With bracket Nil: Without bracket				
Special code ¹⁾	XXX: Customer special requirement Nil: Standard				

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.



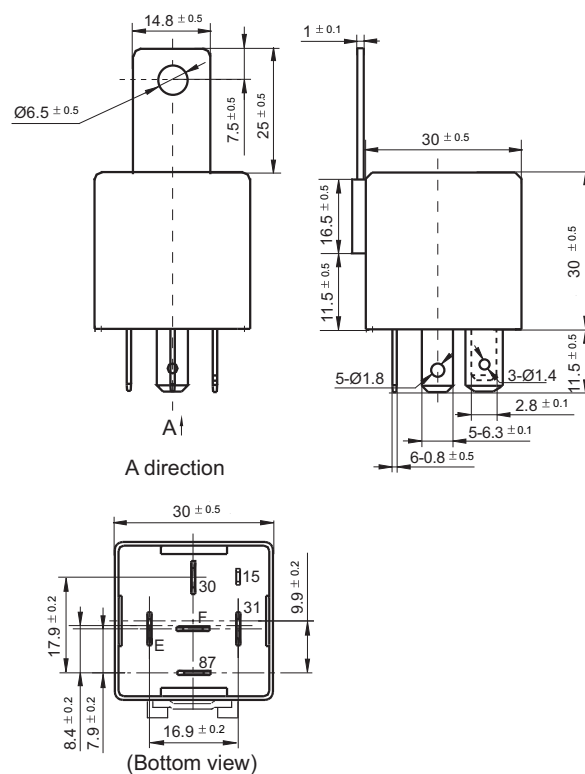
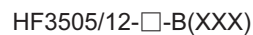
HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

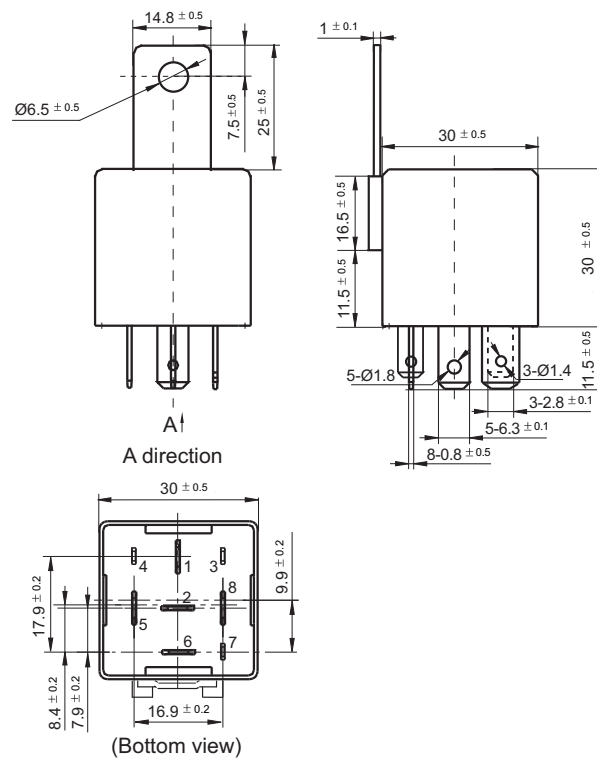
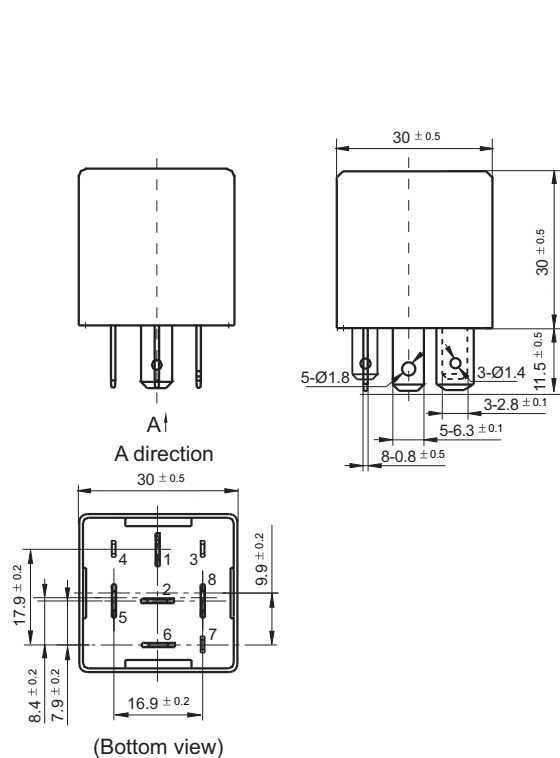
2015 Rev. 1.00

Unit: mm

HF3505/12-□(XXX)



HF3505A/12-□-B(XXX)

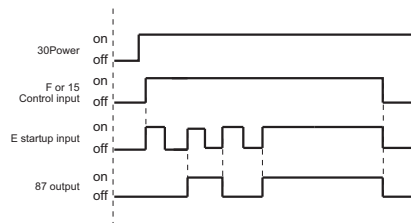
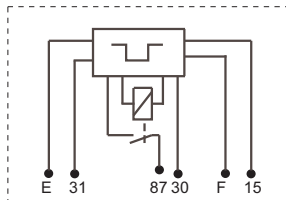


OUTLINE DIMENSIONS, WIRING DIAGRAM, LOGIC DIAGRAM

Wiring Diagram

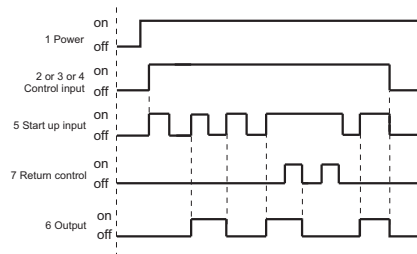
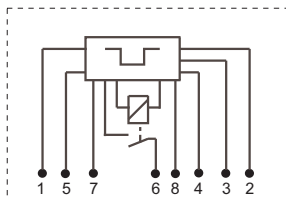
Logic Diagram

HF3505



- 1) As shown in left diagram, for HF3505, the terminal 30 is connected with positive electrode of power supply, the terminal 31 is connected with negative electrode of power supply, the terminal F or terminal 15 is connected with switch, terminal 87 is connected with load.
- 2) Fog lamp energized control: When terminal 15 or F is at position of ready to connect (high voltage 9VDC to 16VDC), switch signal terminal E will change the connection of lamp load from off to on or from on to off when receive a signal. And the control will be changed along with the change of signal. The detail is as shown on left logic control diagram.

HF3505A



- 1) The terminal 1 is connected with positive electrode of power supply, the terminal 8 is connected with negative electrode of power supply, the terminal 2, 3, 4 is the signal input terminal, terminal 5 is the input terminal to start up or shut down signal, terminal 6 is the connection terminal for load. Terminal 7 is the input for reposition signal.
- 2) Fog lamp energized control: When any one of terminals 2, 3, 4 receive the function signal (high voltage 9VDC to 16VDC), and the terminal 5 receive the start-up terminal (effective for comes-up), then the lamp load will change from off to on, on the contrary the lamp load will change from on to off. The lamp condition will be changed along with the change of signal. The detail is as shown on logic control diagram.

Disclaimer

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HF3FA/...(215)

SUBMINIATURE HIGH POWER RELAY



File No.: E134517



File No.: 40023708



File No.:CQC12002076529



Features

- Flammability class according to UL94, V-0
- Subminiature, standard PCB layout
- Flux proofed and plastic sealed type available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (19.0 x 15.5 x 15.5) mm

CONTACT DATA

Contact arrangement	1A	1C	
		NO	NC
Contact resistance	100mΩ max.(at 1A 6VDC)		
Contact material	AgSnO ₂		
Contact rating (Res. load)	6A 250VAC 6A 28VDC	6A 250VAC 1) 6A 28VDC 1)	5A 250VAC
Max. switching voltage	277VAC/28VDC		250VAC
Max. switching current	6A	6A	5A
Max. switching power	1500VA		
Mechanical endurance	1 x 10 ⁷ OPS		
Electrical endurance	H type:1 x 10 ⁵ OPS (6A 250VAC Resistive load, Room temp., 1s on 9s off)		
	Z type:5 x 10 ⁴ OPS (NO: 5A/NC: 5A 250VAC, Resistive load, Room temp., 3s on 3s off)		

Notes: 1) Applicable when NC is not energized with load.

CHARACTERISTICS

Insulation resistance		100MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	750VAC 1min
Operate time (at nomi. volt.)		10ms max.
Release time (at nomi. volt.)		5ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 7.0g
Construction		Plastic sealed, Flux proofed

Notes: 1)The data shown above are initial values.

COIL

Coil power Approx. 360mW

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.3	3.9	25 x (1±10%)
5	3.75	0.5	6.5	70 x (1±10%)
6	4.50	0.6	7.8	100 x (1±10%)
9	6.75	0.9	11.7	225 x (1±10%)
12	9.00	1.2	15.6	400 x (1±10%)
15	11.25	1.5	19.5	625 x (1±10%)
18	13.5	1.8	23.4	900 x (1±10%)
24	18.0	2.4	31.2	1600 x (1±10%)
48	36.0	4.8	54.4	6400 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	1 Form A	6A 250VAC at 85°C 6A125VAC
	1 Form C	NO/NC:5A/5A 277VAC at 85°C NO:6A 250VAC at 85°C
VDE	1 Form A	6A 250VAC at 85°C
	1 Form C	NO:6A 250VAC at 85°C NO/NC:5A/5A 250VAC at 85°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.
3)For sealed type, the vent-hole cover should be excised.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2015 Rev. 1.11

ORDERING INFORMATION

HF3FA / 012 -H S T (215) (XXX)	
Type	
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48VDC
Contact arrangement	H: 1 Form A Z: 1 Form C
Construction ¹⁾	S: Plastic sealed Nil: Flux proofed
Contact material	T: AgSnO ₂ Nil: AgCdO
Product special code	
Special code ³⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

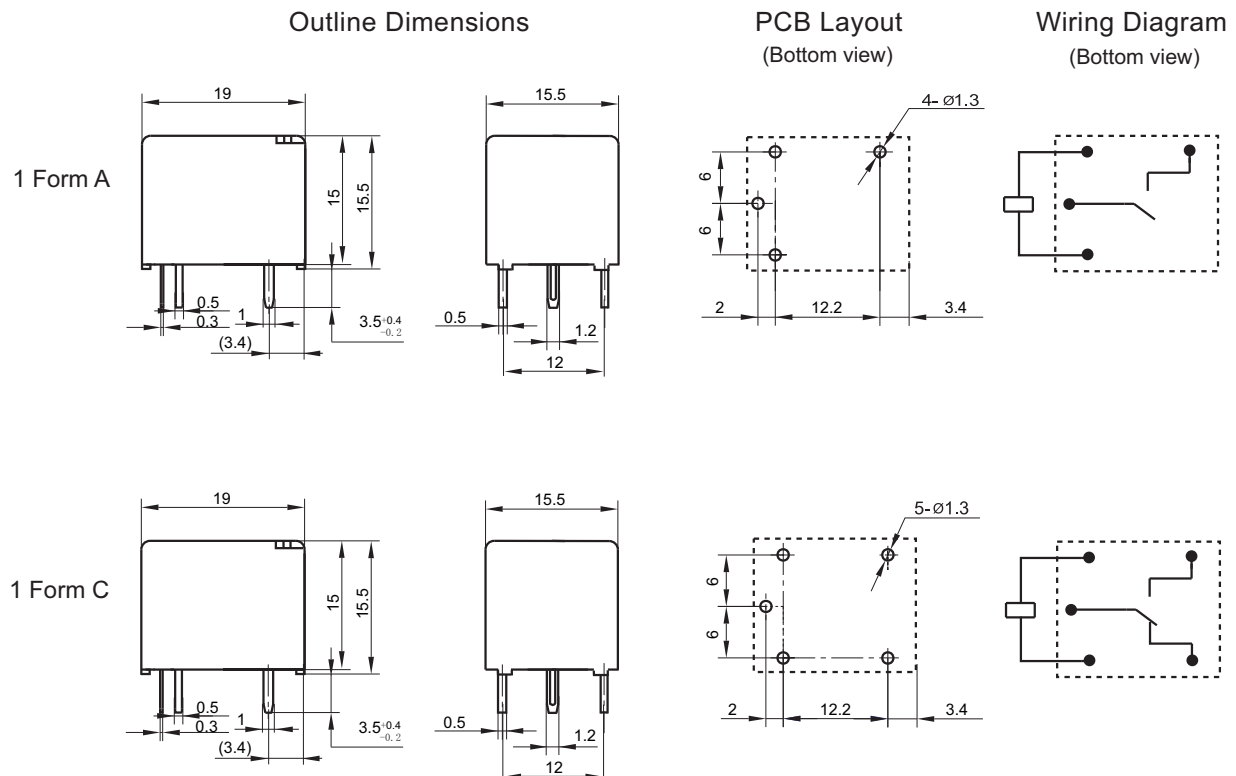
We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

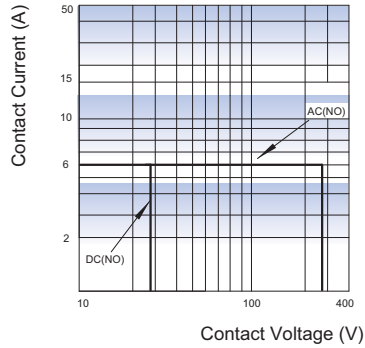


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

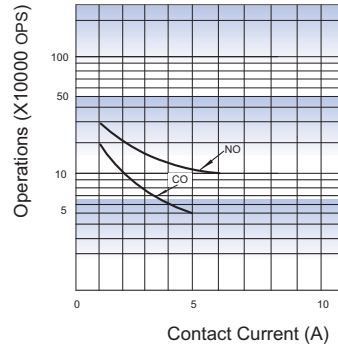
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

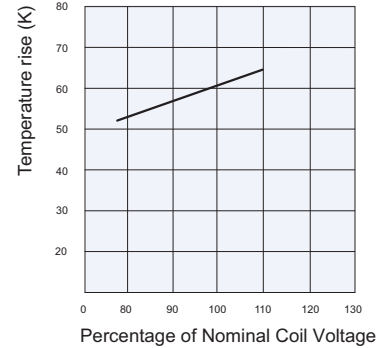
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



Test conditions:

NO: 6A 250VAC/28VDC, Flux proofed,
Room temp., 1s on 9s off
CO: 5A 250VAC, Flux proofed,
Room temp., 3s on 3s off

Test conditions: at 85°C, 6A
Mounting distance: 10mm

Disclaimer

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HF3FA

SUBMINIATURE HIGH POWER RELAY



File No.: E134517



File No.: 40023708



File No.:CQC12002076529



Features

- 15A switching capability
- Flammability class according to UL94, V-0
- CTI 250 available
- Product in accordance to IEC 60335-1 available
- 1 Form A and 1 Form C configurations
- Subminiature, standard PCB layout
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (19.0 x 15.5 x 15.5) mm

CONTACT DATA

Contact arrangement	1A	1C	
		NO	NC
Contact resistance	100mΩ max.(at 1A 6VDC)		
Contact material	AgSnO ₂		
Contact rating (Res. load)	10A 277VAC 10A 28VDC	10A 277VAC ¹⁾ 10A 28VDC ¹⁾	5A 250VAC
Max. switching voltage	277VAC/28VDC		250VAC
Max. switching current	15A	10A	5A
Max. switching power	2770VA /280W		
Mechanical endurance	1 x 10 ⁷ OPS		
Electrical endurance	H type:1 x 10 ⁵ OPS (10A 250VAC Resistive load, Room temp., 3s on 3s off)		
	Z type:5 x 10 ⁴ OPS (NO: 5A/NC: 5A 250VAC, Resistive load, Room temp., 5s on 5s off)		

Notes: 1) Applicable when NC is not energized with load.

CHARACTERISTICS

Insulation resistance		100MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	750VAC 1min
Operate time (at nomi. volt.)		10ms max.
Release time (at nomi. volt.)		5ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 7.0g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.

COIL

Coil power Approx. 360mW

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.3	3.9	25 x (1±10%)
5	3.75	0.5	6.5	70 x (1±10%)
6	4.50	0.6	7.8	100 x (1±10%)
9	6.75	0.9	11.7	225 x (1±10%)
12	9.00	1.2	15.6	400 x (1±10%)
15	11.25	1.5	19.5	625 x (1±10%)
18	13.5	1.8	23.4	900 x (1±10%)
24	18.0	2.4	31.2	1600 x (1±10%)
48	36.0	4.8	54.4	6400 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	1 Form A	10A 250VAC at 85°C 8A 277VAC at 85°C 6A 250VAC at 105°C 15A 125VAC TV-5 120VAC
	1 Form C	NO/NC: 5A/5A 277VAC at 85°C
VDE	1 Form A	6A 250VAC at 105°C 10A 250VAC at 85°C
	1 Form C	NO: 10A 250VAC at 85°C NO: 6A 250VAC at 105°C NO/NC: 5A/5A 250VAC at 85°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.
3) For sealed type, the vent-hole cover should be excised.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

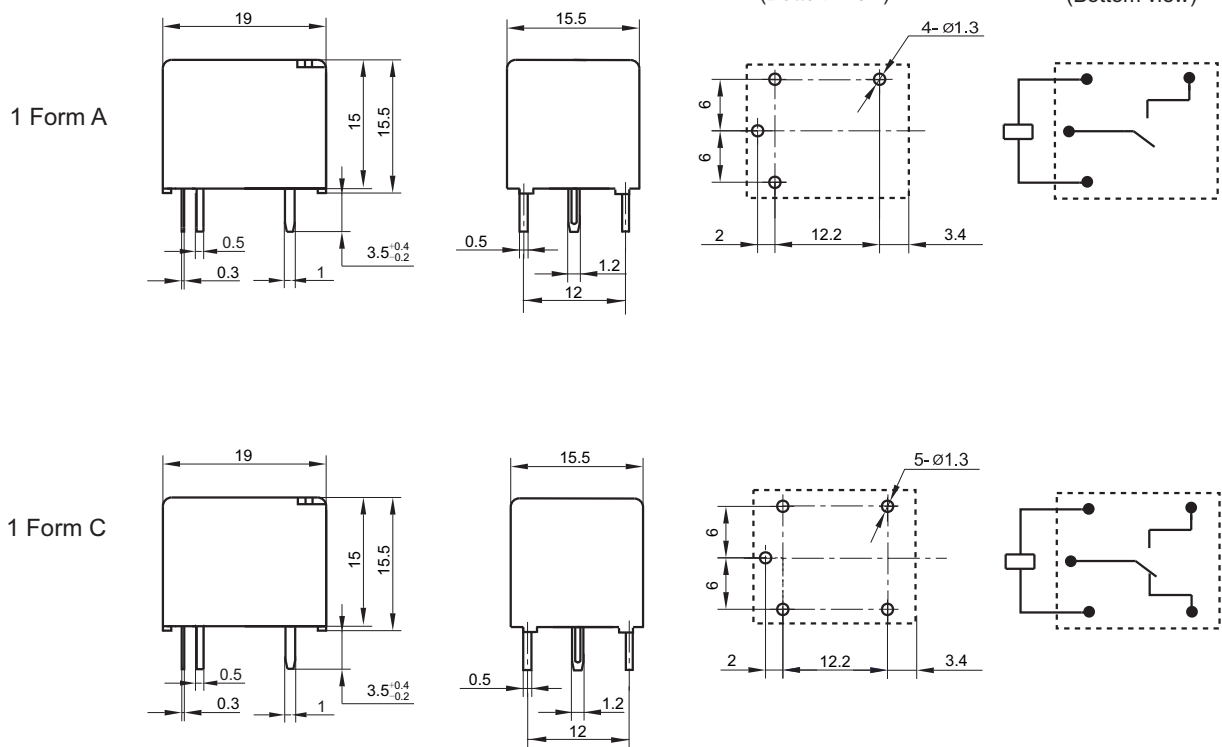
2017 Rev. 1.00

ORDERING INFORMATION			
Type	HF3FA / 012	-H	S T F (XXX)
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48VDC		
Contact arrangement	H: 1 Form A	Z: 1 Form C	
Construction ¹⁾	S: Plastic sealed Nil: Flux proofed		
Contact material	T: AgSnO ₂ Nil: AgCdO		
Insulation system	F: Class F		
Special code ³⁾	XXX: Customer special requirement		Nil: Standard

3) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

Unit: mm

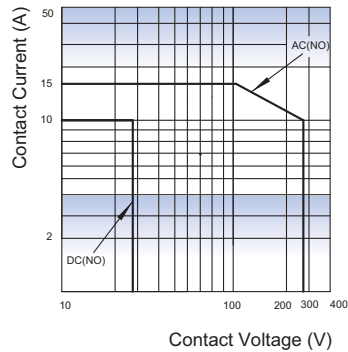
Wiring Diagram (Bottom view)



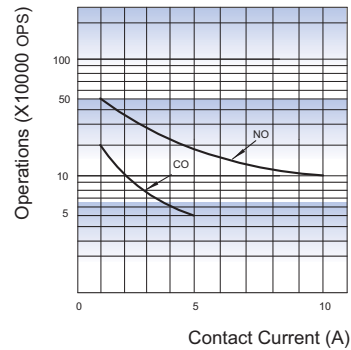
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



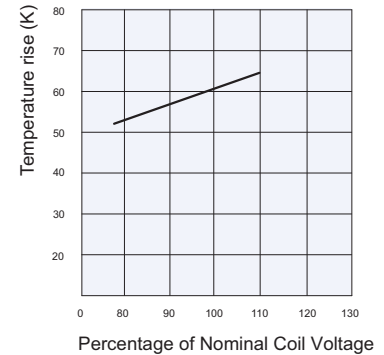
ENDURANCE CURVE



Test conditions:

NO: Resistive load, Flux proofed,
Room temp., 1s on 9s off
CO: Resistive load, Flux proofed,
Room temp., 3s on 3s off

COIL TEMPERATURE RISE



Test conditions: at 85°C, 6A
Mounting distance: 10mm

Disclaimer

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HF3FD

SUBMINIATURE HIGH POWER RELAY



File No.: E134517



File No.: 40014057



File No.: CQC14002114760



Features

- 15A switching capability
- Flammability class according to UL94, V-0
- Product in accordance to IEC 60335-1 available
- 1 Form A and 1 Form C configurations
- Subminiature, standard PCB layout
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (19.0 x 15.2 x 15.5) mm

CONTACT DATA

Contact arrangement	1A	1C
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	AgSnO ₂	
Contact rating (Res. load)	10A 250VAC	NO: 10A 250VAC/28VDC NO/NC: 5A/5A 250VAC
Max. switching voltage	277VAC/30VDC	
Max. switching current	15A	10A
Max. switching power	2770VA / 300W	
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance ¹⁾	HT type: 5 x 10 ⁴ OPS (10A 250VAC, Resistive load, at 85°C, 5s on 5s off)	

CHARACTERISTICS

Insulation resistance	100MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	2000VAC 1min
	Between open contacts	750VAC 1min
Operate time (at nomi. volt.)	10ms max.	
Release time (at nomi. volt.)	5ms max.	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 105°C	
Termination	PCB	
Unit weight	Approx. 10g	
Construction	Plastic sealed, Flux proofed	

- Notes:** 1) For sealed type, the vent-hole cover should be excised.
 2) The data shown above are initial values.
 3) Please find coil temperature curve in the characteristic curves below.
 4) UL insulation system: Class F, Class B.

COIL

Coil power	Approx. 360mW
------------	---------------

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.3	3.9	25 x (1±10%)
5	3.75	0.5	6.5	70 x (1±10%)
6	4.50	0.6	7.8	100 x (1±10%)
9	6.75	0.9	11.7	225 x (1±10%)
12	9.00	1.2	15.6	400 x (1±10%)
18	13.5	1.8	23.4	900 x (1±10%)
24	18.0	2.4	31.2	1600 x (1±10%)
48	36.0	4.8	62.4	6400 x (1±10%)

Notes: * Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/ CUL	AgSnO ₂	1 Form A	10A 250VAC at 85°C
		1 Form C	NO/NC: 5A/5A 250VAC at 85°C NO: 1/2HP 125VAC NO: TV-5 120VAC
VDE	AgSnO ₂	1 Form A	10A 250VAC at 85°C
		1 Form C	NO/NC: 5A/5A 250VAC at 85°C NO: 10A 250VAC at 85°C

- Notes:** 1) All values unspecified are at room temperature.
 2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

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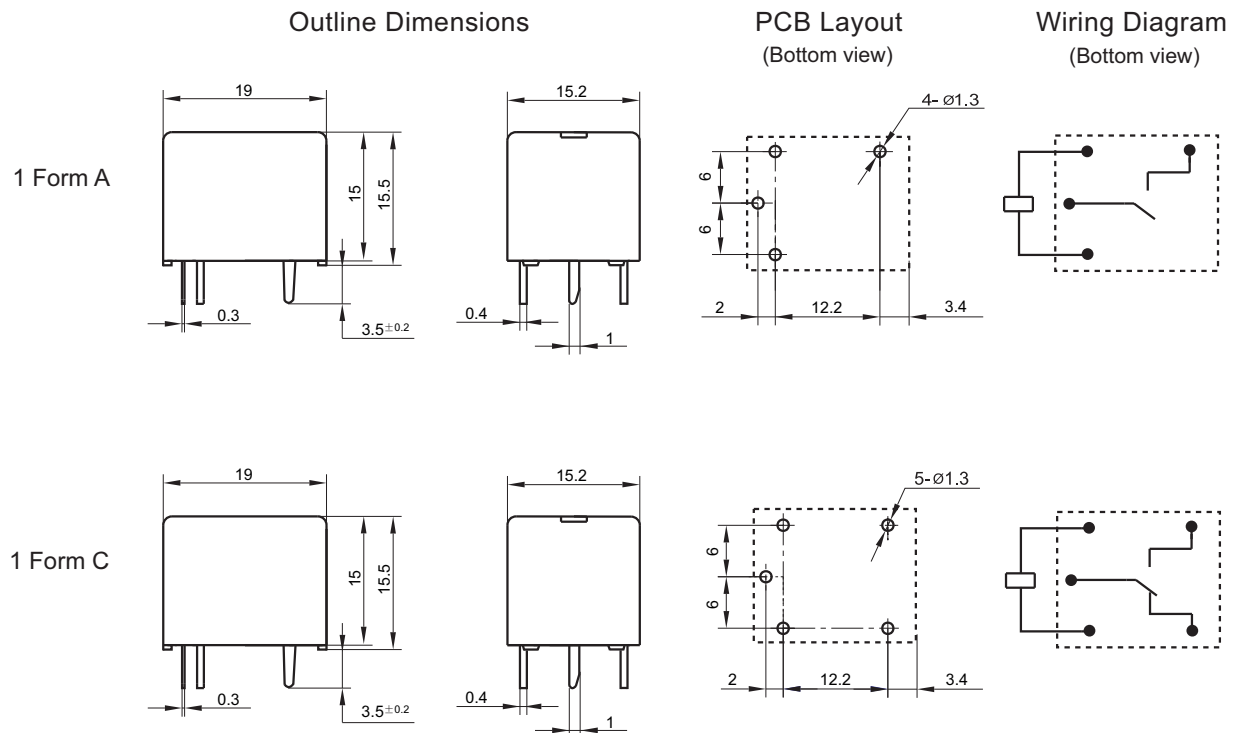
ORDERING INFORMATION

		HF3FD /		012	-H	S	T	F	(XXX)
Type									
Coil voltage		3, 5, 6, 9, 12, 18, 24, 48VDC							
Contact arrangement		H: 1 Form A		Z: 1 Form C					
Construction ^{1) 2)}		S: Plastic sealed		Nil: Flux proofed					
Contact material		T: AgSnO ₂							
Insulation standard		F: Class F		Nil: Class B					
Special code ³⁾		XXX: Customer special requirement				Nil: Standard			

- Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
- 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 3) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

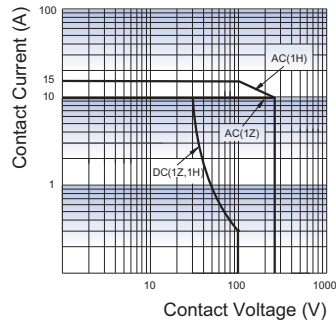
Unit: mm



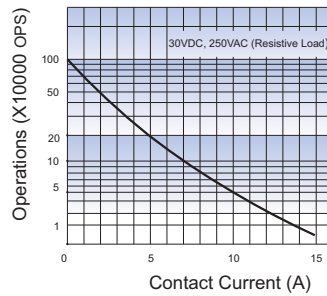
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
- 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



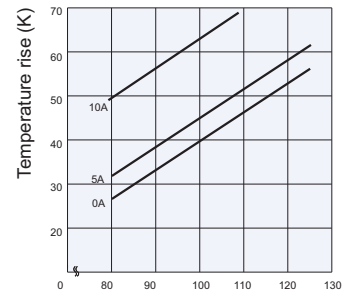
ENDURANCE CURVE



Test conditions:

NO, Flux proofed type,
Room temp., 1s on 9s off.

COIL TEMPERATURE RISE



Percentage of Nominal Coil Voltage
(Relay mounting distance should
be less than 10mm.)

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF3FF

SUBMINIATURE HIGH POWER RELAY



File No.:E134517



File No.:40025218



File No.:R50148356



File No.:CQC13002098175



Features

- 15A switching capability
- 1 Form A and 1 Form C configurations
- Subminiature, standard PCB layout
- Plastic sealed and flux proofed types available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (19.0 x 15.2 x 15.5) mm

CONTACT DATA

Contact arrangement	1A	1C	
		NO	NC
Contact resistance	100mΩ max.(at 1A 6VDC)		
Contact material	AgSnO ₂ , AgCdO		
Contact rating (Res. load)	10A 277VAC 10A 28VDC	10A 277VAC ¹⁾ 10A 28VDC ¹⁾	5A 250VAC
Max. switching voltage	277VAC / 28VDC		250VAC
Max. switching current	15A	10A	5A
Max. switching power	2770VA / 280W		1250VA
Mechanical endurance	1 x 10 ⁷ OPS		
Electrical endurance	1H type: 1x 10 ⁵ OPS (10A 250VAC, Resistive load, Room temp., 1s on 9s off) 1Z type: 5 x 10 ⁴ OPS (NO: 5A/NC: 5A 250VAC, Resistive load, Room temp., 5s on 5s off)		

Notes: 1) Applicable when NC is not energized with load.

CHARACTERISTICS

Insulation resistance	100MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	1500VAC 1min
	Between open contacts	750VAC 1min
Operate time (at nomi. volt.)	10ms max.	
Release time (at nomi. volt.)	5ms max.	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 70°C	
Termination	PCB	
Unit weight	Approx. 10g	
Construction	Plastic sealed, Flux proofed	

Notes: 1) The data shown above are initial values.

COIL

Coil power	5VDC to 24VDC: Approx. 360mW; 48VDC: Approx. 510mW
------------	---

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.80	0.5	6.5	70 x (1±10%)
6	4.50	0.6	7.8	100 x (1±10%)
9	6.80	0.9	11.7	225 x (1±10%)
12	9.00	1.2	15.6	400 x (1±10%)
18	13.5	1.8	23.4	900 x (1±10%)
24	18.0	2.4	31.2	1600 x (1±10%)
48	36.0	4.8	62.4	4500 x (1±10%)
48 ¹⁾	36.0	4.8	62.4	6400 x (1±10%)

Notes: 1) There are 2 types for 48V--510mW and 360mW. The coil resistance for 510mW type is 4500ohm while for that for 360mW type is 6400ohm. If 360mW type is required, please add a special suffix (068) in the ordering information.

2) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	1 Form A	10A 277VAC 10A 28VDC 15A 125VAC at 70°C 1/2HP 125VAC (AgSnO ₂)
	1 Form C	NO:10A 277VAC NO:10A 28VDC NO:10A 120VAC at 70°C NC:10A 120VAC at 70°C
VDE (only AgSnO ₂)	1 Form A	10A 250VAC at 70°C 12A 125VAC
	1 Form C	NO/NC:5A/5A 250VAC at 70°C NO:10A 250VAC at 70°C NO:12A 125VAC

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

3) For sealed type, the vent-hole cover should be excised.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

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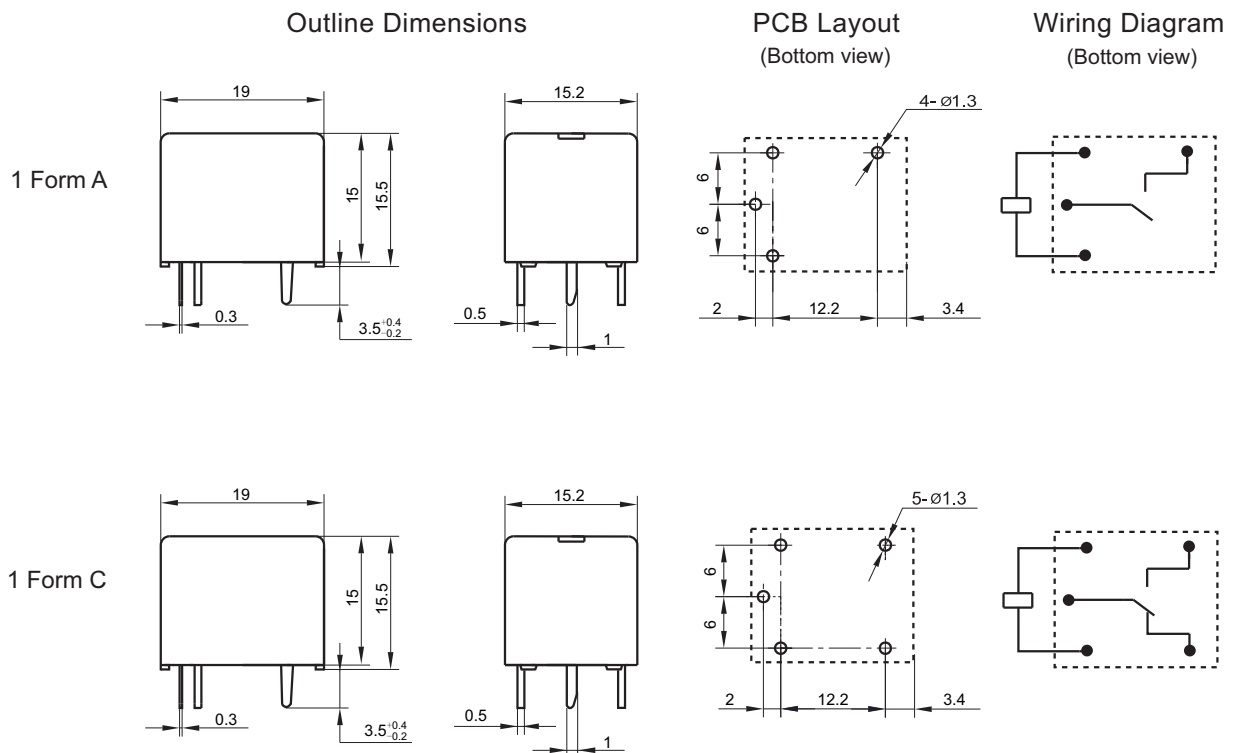
ORDERING INFORMATION

	HF3FF / 012 -1H S T (XXX)			
Type				
Coil voltage	5, 6, 9, 12, 18, 24, 48VDC			
Contact arrangement	1H:1 Form A	1Z:1 Form C		
Construction ^{1) 2)}	S: Plastic sealed	Nil: Flux proofed		
Contact material	T: AgSnO ₂	Nil: AgCdO		
Special code ³⁾	XXX: Customer special requirement	Nil: Standard		

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).
We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

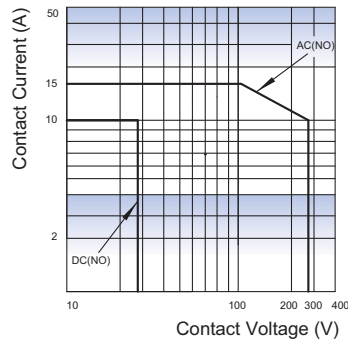
Unit: mm



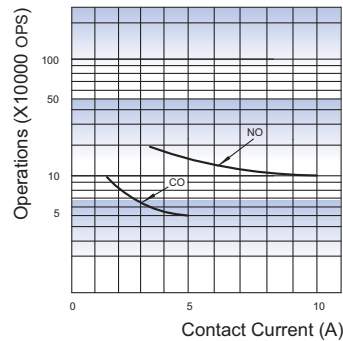
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



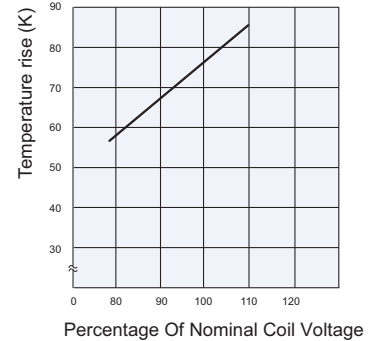
ENDURANCE CURVE



Test conditions:

NO, Resistive load, 277VAC/28VDC,
Flux proofed, Room temp., 1s on 9s off
CO, Resistive load, 250VAC,
Flux proofed, Room temp., 5s on 5s off.

COIL TEMPERATURE RISE



Testing conditions:

10A at 70°C.
Mounting distance: 10mm

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF3FF-M

AUTOMOTIVE RELAY



Typical Applications

Anti-theft lock, Central door lock

Features

- 15A switching capability
- Subminiature, standard PCB layout
- 1 Form A & 1 Form C contact arrangement
- Plastic sealed and Flux proofed types available
- RoHS & ELV compliant

CHARACTERISTICS


Contact arrangement	1A, 1C
Voltage drop (initial) ¹⁾	Typ: 20mV (at 10A) Max.: 250mV (at 10A)
Max. continuous current ²⁾	10A
Max. switching current ³⁾	15A
Max. switching voltage	30VDC
Min.contact load	1A 6VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	1×10 ⁷ OPS (300OPS/min)
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength ⁴⁾	Between contacts: 750VAC Between coil & contacts: 1500VAC
Operate time	Typ: 5ms Max.: 10ms (at nomi. vol.)

Release time ⁵⁾	Typ: 3ms Max.: 10ms
Ambient temperature	-40°C to 85°C
Vibration resistance ⁶⁾	10Hz to 55Hz 1.5mm DA
Shock resistance ⁶⁾	98m/s ²
Termination	PCB ⁷⁾
Construction	Plastic sealed, Flux proofed
Unit weight	Approx. 10g

- 1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).
- 2) For NO contacts, measured when applying 100% rated voltage on coil.
- 3) At 23°C, 13.5VDC (100 cycles, resistive load).
- 4) 1min, leakage current less than 1mA.
- 5) The value is measured when voltage drops suddenly from nominal voltage to 0VDC and coil is not paralleled with suppression circuit.
- 6) When energized, opening time of NO contacts shall not exceed 100μs, when non-energized, opening time of NC contacts shall not exceed 100μs, meantime, NO contacts shall not be closed.
- 7) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C, (5±0.3)s.

CONTACT DATA ¹⁾

at 23°C

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram
			1C		1A	On s	Off s			
			NO	NC	NO					
13.5VDC	Resistive	Make	15	5	15	5	5	1×10 ⁵	HF3FF-M/M1: AgSnO ₂ HF3FF-M2: AgNi	
		Break	15	5	15	5	5			

1) When the load voltage is at 24VDC or higher, or the applications conditions are different from the table above, please submit the detailed application conditions to Hongfa to get more support.



HONGFA RELAY

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COIL DATA

at 23°C

Type	Nominal voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Coil resistance $\times(1\pm10\%) \Omega$	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
						at 23°C	at 85°C
HF3FF-M	9	6.75	0.90	180	0.45	11.7	10.8
	12	9.00	1.20	320	0.45	15.6	14.4
	24	18.00	2.40	1280	0.45	31.2	28.8
HF3FF-M1	9	5.85	0.65	126	0.64	11.3	10.3
	12	7.80	0.90	225	0.64	15.0	13.8
	24	15.6	1.80	900	0.64	30.0	27.6
HF3FF-M2	9	5.15	0.60	100	0.80	10.8	9.9
	12	6.80	0.80	180	0.80	14.4	13.2
	24	13.70	1.60	720	0.80	28.8	26.4

1) Max. allowable overdrive voltage is stated with no load applied.

ORDERING INFORMATION

HF3FF-M /		012	-1H	S	(XXX)
Type	HF3FF-M: 0.45W HF3FF-M1: 0.64W HF3FF-M2: 0.80W				
Coil voltage	009: 9VDC 012: 12VDC 024: 24VDC				
Contact arrangement	1H: 1 Form A 1Z: 1 Form C				
Construction	S: Plastic sealed ¹⁾ Nil: Flux proofed				
Special code ²⁾	XXX: Customer special requirement Nil: Standard				

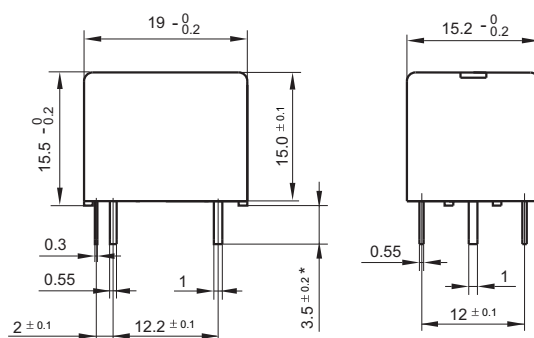
Notes: 1) If washing or surface treatment is required after the relay is assembled on PCB, please provide with the conditions in details for our confirmation or our recommendation with suitable products.

2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions (1 Form A / 1 Form C)



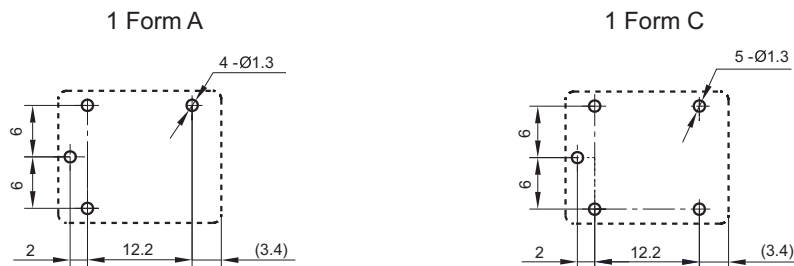
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Wiring Diagram (Bottom view)



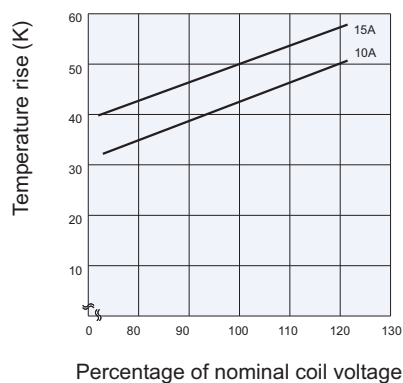
PCB Layout (Bottom view)



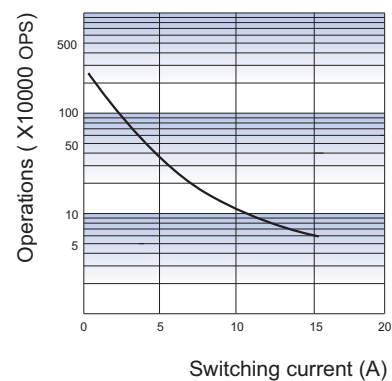
Remark: 1) * The additional tin top is max. 1mm.
2) The tolerance without indicating for PCB layout is always ± 0.1 mm.

CHARACTERISTIC CURVES

COIL TEMPERATURE RISE



ENDURANCE CURVE



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF3F-L

SUBMINIATURE HIGH POWER LATCHING RELAY



File No.: E134517



File No.:40040757



File No.:CQC15002121475



Features

- Subminiature high power latching relay
- Low coil power
1 coil latching: approx. 0.4W
2 coils latching: approx. 0.8W
- 15A switching capability
- 1 Form A and 1 Form C configurations
- Subminiature, standard PCB layout
- Plastic sealed and flux proofed types available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (19.0 x 15.2 x 15.5) mm

CONTACT DATA

Contact arrangement	1A	1C
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	AgSnO ₂	
Contact rating (Res. load)	10A 277VAC/30VDC	
Max. switching voltage	277VAC / 30VDC	
Max. switching current	15A	10A
Max. switching power	2770VA / 300W	
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1HT: 6 x 10 ³ OPS (15A 120VAC, Incandescent lamp, at 60°C, 1s on 59s off) 1 x 10 ⁴ OPS (10A 277VAC, Resistive load, at 60°C, 1s on 9s off) 2 x 10 ⁴ OPS (12A 277VAC, General use, at 70°C, 1s on 9s off)	

CHARACTERISTICS

Insulation resistance	100MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	2000VAC 1min
	Between open contacts	750VAC 1min
Set time (at nomi. volt.)	8ms max.	
Reset time (at nomi. volt.)	5ms max.	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	PCB	
Unit weight	Approx. 9g	
Construction	Plastic sealed, Flux proofed	

Notes: 1) For sealed type, the vent-hole cover should be excised.
2) The data shown above are initial values.

COIL

Coil power	1 coil latching: Approx. 0.4W 2 coils latching: Approx. 0.8W
------------	---

COIL DATA

at 23°C

1 coil latching

Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	Pulse Width (ms) min.	Max. Voltage VDC	Coil Resistance Ω
5	4.0	4.0	100	10	62.5x (1±10%)
6	4.8	4.8	100	12	90x (1±10%)
9	7.2	7.2	100	18	202.5x (1±10%)
12	9.6	9.6	100	24	360x (1±10%)
24	19.2	19.2	100	48	1440x (1±10%)
48	38.4	38.4	100	96	5760x (1±10%)

2 coils latching

Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	Pulse Width (ms) min.	Max. Voltage VDC	Coil Resistance Ω
5	4.0	4.0	100	10	31.5+31.5x (1±10%)
6	4.8	4.8	100	12	45+45x (1±10%)
9	7.2	7.2	100	18	101.5+101.5x (1±10%)
12	9.6	9.6	100	24	180+180x (1±10%)
24	19.2	19.2	100	48	720+720x (1±10%)
48	38.4	38.4	100	96	2880+2880x (1±10%)

SAFETY APPROVAL RATINGS

UL/CUL	NO:10A 277/250/125VAC, Resistive at 60°C NO:12A 277/250/125VAC, General use at 70°C NO: Standard ballast 5.5A 277/220/120VAC at 60°C NO: Electronic ballast 5A, 120VAC at 60°C NO: Electronic ballast 5A, 277VAC at 70°C*
	NO: Tungsten (incandescent) 15A 120VAC at 60°C NO: Tungsten (incandescent) 5A 277VAC at 60°C NO: 1/6HP 240/120VAC at 85°C NO: TV-10 125VAC at 70°C
VDE	NO: 10A 250VAC, Resistive, at 85°C NO/NC: 5A 250VAC, Resistive, at 85°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.
3) * These ratings are tested with zero crossing device.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

	HF3F-L /		12	-1H	L1	T	-R	(XXX)
Type								
Coil voltage	5, 6, 9, 12, 24, 48VDC							
Contact arrangement	1H:1 Form A		1Z:1 Form C					
Sort	L1: 1 coil latching		L2: 2 coils latching					
Contact material	T: AgSnO ₂							
Polarity	R: Reverse polarity		Nil: Standard polarity					
Special code ³⁾	XXX: Customer special requirement				Nil: Standard			

Notes: 1) Water cleaning or surface process is not suggested after the flux-proofed relays are assembled on PCB.

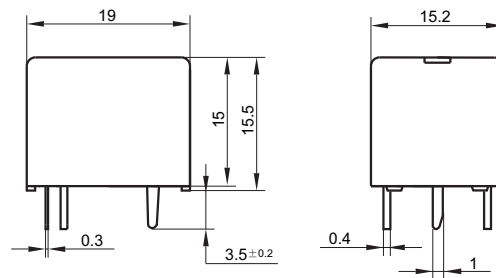
2) Flux-proofed relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.

3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

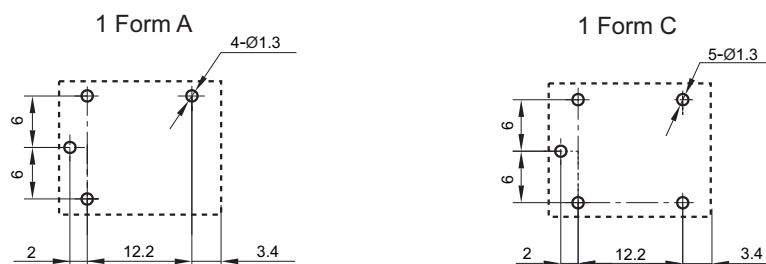
Unit: mm

Outline Dimensions



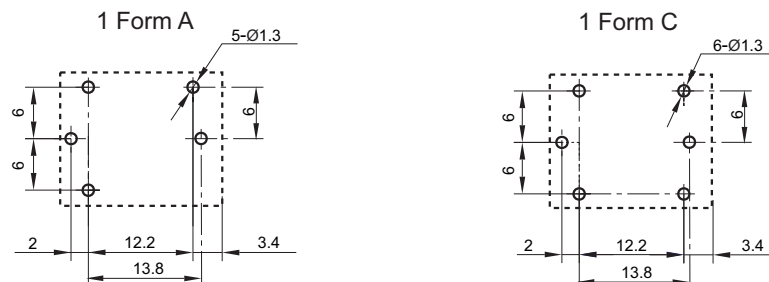
PCB Layout (Bottom view)

1 coil latching



PCB Layout (Bottom view)

2 coils latching



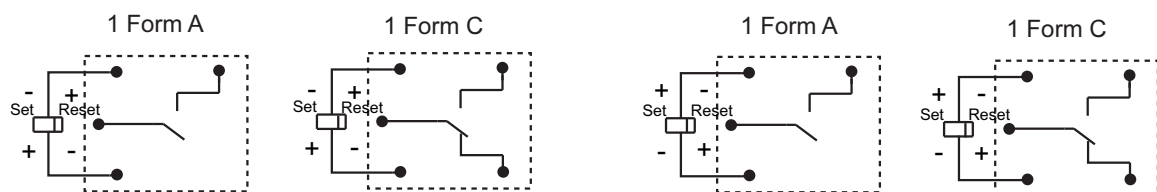
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

Wiring Diagram (Bottom view)

1 coil latching

Standard Polarity

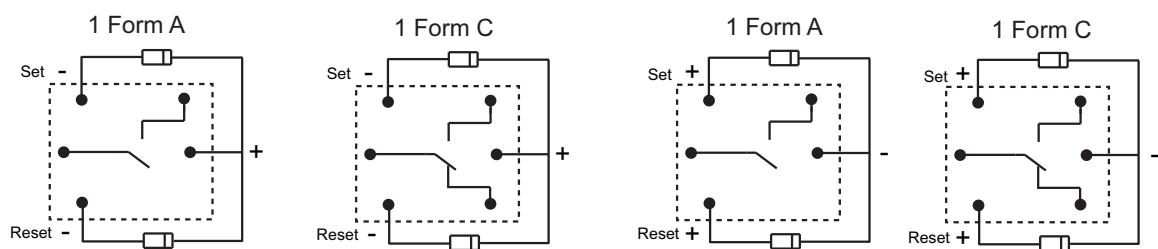
Reverse Polarity



2 coils latching

Standard Polarity

Reverse Polarity



Notice

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be more than 100 ms. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Keep the product away from strong magnetic field during transportation, storage and application, to avoid change of set/reset voltage.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF7FD

SUBMINIATURE HIGH POWER RELAY



File No.:E134517



File No.: 40008374



File No.:CQC09002037921



Features

- 12A switching capability
- Ambient temperature meets 105°C
- High performance, Low profile
- Product in accordance to IEC 60335-1 available
- 2kV dielectric strength (between coil and contacts)
- UL94, V-0, CTI250 flammability class
- Double pins type available
- 1 Form A and 1 Form C configurations
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (22.0 x 16.0 x 16.4) mm

CONTACT DATA

Contact arrangement	1A	1C
Contact resistance	100mΩ max.(at 1A 24VDC)	
Contact material	AgSnO ₂ , AgCdO	
Contact rating (Res. load)	16A 250VAC 12A 250VAC 10A 250VAC	12A 125VAC NO: 10A 250VAC NC: 7A 250VAC
Max. switching voltage	250VAC / 28VDC	
Max. switching current	16A	10A
Max. switching power	4000VA / 280W	2500VA / 196W
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance (See approval reports for more details)	1A	Flux proofed: 1 x 10 ⁵ OPS Plastic sealed: 5 x 10 ⁴ OPS (10A 277VAC, Resistive load, Room temp, 1s on 9s off)
	1C	Flux proofed: 5x 10 ⁴ OPS Plastic sealed: NO: 5 x 10 ⁴ OPS NC: 1x 10 ⁴ OPS (7A 277VAC, Resistive load, Room temp, 1s on 9s off)

CHARACTERISTICS

Insulation resistance	100MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	2000VAC 1min
	Between open contacts	750VAC 1min
Operate time (at nomi. volt.)	10ms max.	
Release time (at nomi. volt.)	5ms max.	
Humidity	5% to 85% RH	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Ambient temperature	HF7FD: -40°C to 85°C HF7FD-T: -40°C to 105°C	
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Termination	PCB	
Unit weight	Approx. 9.5g	
Construction	Plastic sealed, Flux proofed	

- Notes:** 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL

Coil power	Approx. 360mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.3	3.9	25 x (1±10%)
5	3.75	0.5	6.5	70 x (1±10%)
6	4.50	0.6	7.8	100 x (1±10%)
9	6.75	0.9	11.7	225 x (1±10%)
12	9.00	1.2	15.6	400 x (1±10%)
18	13.5	1.8	23.4	900 x (1±10%)
24	18.0	2.4	31.2	1600 x (1±15%)
48	36.0	4.8	62.4	6400 x (1±15%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	1 Form A	HF7FD	12A 250VAC (at 85°C, AgSnO ₂ , Double pin) 10A 277VAC 10A 28VDC
		HF7FD-T (AgSnO ₂)	16A 250VAC (at 40°C) 10A 250VAC (at 105°C) 8A 250VAC (at 105°C) 1/2HP 125VAC (at 40°C) 1/2HP 250VAC (at 40°C)
	1 Form C		12A 125VAC 7A 277VAC 7A 28VDC
VDE	1 Form A	12A 250VAC (AgSnO ₂ , Double pin) 10A 250VAC	
	1 Form C	7A 250VAC	

- Notes:** 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

HF7FD / 012 -1H P S T G F (XXX)	
Type HF7FD: 85°C, HF7FD-T: 105°C	
Coil voltage 3, 5, 6, 9, 12, 18, 24, 48VDC	
Contact arrangement 1H: 1 Form A 1Z: 1 Form C	
Pin version P: Double pins type Nil: Single pin type	
Construction ¹⁾ S: Plastic sealed Nil: Flux proofed	
Contact material T: AgSnO ₂ Nil: AgCdO	
Contact plating G: Gold plated Nil: No gold plated	
Insulation standard F: Class F Nil: Class B	
Special code ⁴⁾ XXX: Customer special requirement Nil: Standard	

Notes: 1) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended.
 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
 3) If plastic sealed type is selected for cleaning purpose, the vent-hole cover should be excised after cleaning.
 4) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

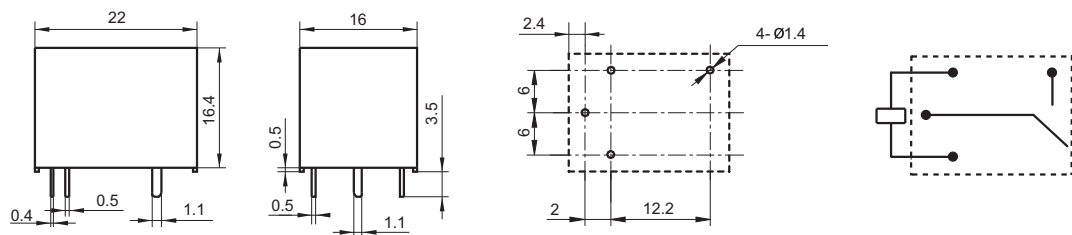
Unit: mm

Outline Dimensions

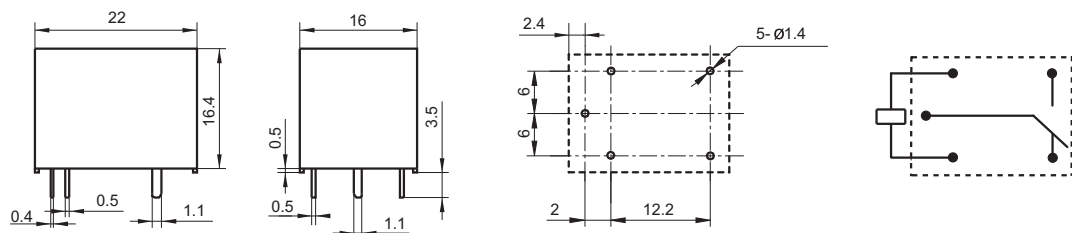
PCB Layout
(Bottom view)

Wiring Diagram
(Bottom View)

1 Form A (Single pin type)



1 Form C (Single pin type)



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

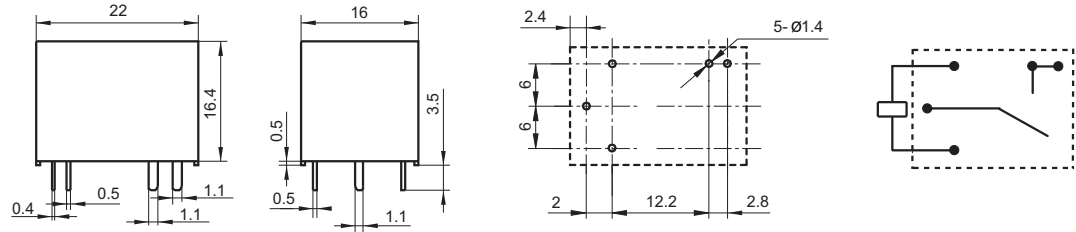
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Outline Dimensions

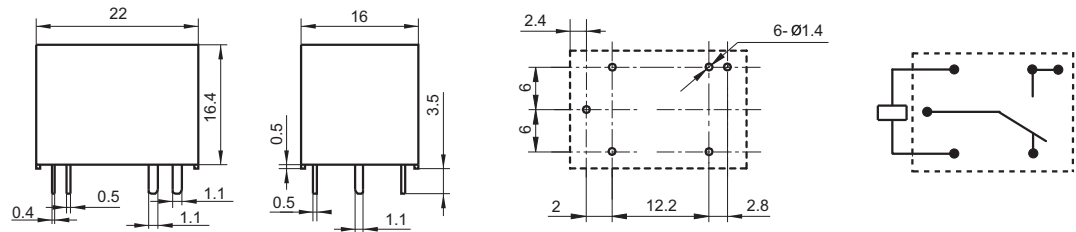
PCB Layout (Bottom view)

Wiring Diagram (Bottom View)

1 Form A (Double pins type)



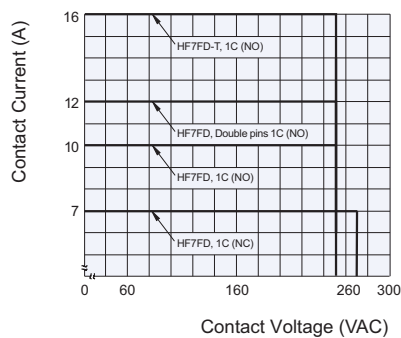
1 Form C (Double pins type)



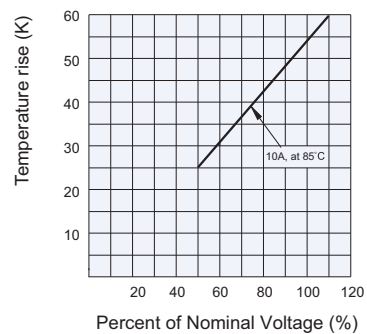
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) Tin-dipped joint is tolerable after terminal tin-dipping as long as the terminal length including the joint is less than 4.0mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



COIL TEMPERATURE RISE



Disclaimer

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HF7FF

SUBMINIATURE INTERMEDIATE POWER RELAY

cULus

File No.:E134517



File No.:CQC09002028260



Features

- 10A switching capability
- 1 Form A and 1 Form C configurations
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (22.5 x 16.5 x 16.5) mm

CONTACT DATA

Contact arrangement	1A, 1C
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂ , AgCe
Contact rating (Res. load)	5A 250VAC/30VDC 10A 250VAC/28VDC
Max. switching voltage	250VAC / 30VDC
Max. switching current	10A
Max. switching power	2400VA / 280W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	1HT, 1ZT type: 1 x 10 ⁴ OPS (10A 250VAC, Resistive load, Room temp., 1s on 9s off) 1H, 1Z type: 1 x 10 ⁴ OPS (5A 250VAC, Resistive load, Room temp., 1s on 9s off)

CHARACTERISTICS

Insulation resistance		100MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	1500VAC 1min
	Between open contacts	750VAC 1min
Operate time (at nomi. volt.)		10ms max.
Release time (at nomi. volt.)		5ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		PCB
Unit weight		Approx. 9.5g
Construction		Plastic sealed, Flux proofed

- Notes:** 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B, Class A.

COIL

Coil power	5VDC to 24VDC: Approx. 360mW 48VDC: Approx. 510mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.40	0.3	3.6	25 x (1±10%)
5	4.00	0.5	6.0	70 x (1±10%)
6	4.80	0.6	7.2	100 x (1±10%)
9	7.20	0.9	10.8	225 x (1±10%)
12	9.60	1.2	14.4	400 x (1±10%)
18	14.4	1.8	21.6	900 x (1±10%)
24	19.2	2.4	28.8	1600 x (1±10%)
48	38.4	4.8	57.6	4500 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL (AgCe)	1 Form C	NO: 10A 277VAC NO/NC: 5A 277VAC NO: 5A 30VDC NC: 2FLA 4LRA 120VAC
	1 Form A	10A 277VAC 6A 30VDC
UL/CUL (AgSnO ₂)	1 Form C	12A 277VAC 12A 28VDC
	1 Form A	12A 277VAC 12A 28VDC

- Notes:** 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

	HF7FF /		012	-1H	T	S	F	(XXX)
Type								
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48VDC							
Contact arrangement	1H: 1 Form A		1Z: 1 Form C					
Contact material	T: AgSnO ₂ (10A)		Nil: AgCe (5A)					
Construction ¹⁾	S: Plastic sealed		Nil: Flux proofed					
Insulation standard	F: Class F		B: Class B		Nil: Class A			
Special code ⁴⁾	XXX: Customer special requirement		Nil: Standard					

Notes: 1) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications.

If the ambience allows, flux proofed type is preferentially recommended.

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) If the application belongs to inductive load, AgSnO₂In₂O₃ contact material is recommended. Please add a special suffix (325) to stand for this special contact material in the ordering information.

4) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

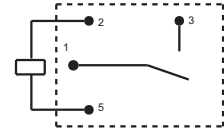
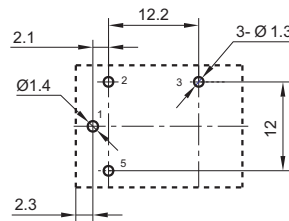
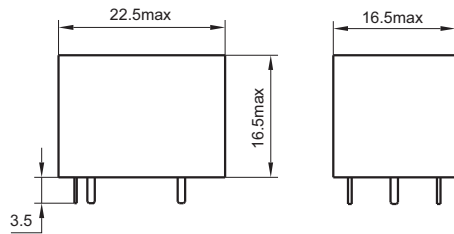
Unit: mm

Outline Dimensions

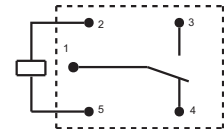
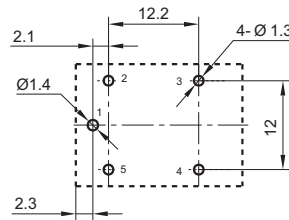
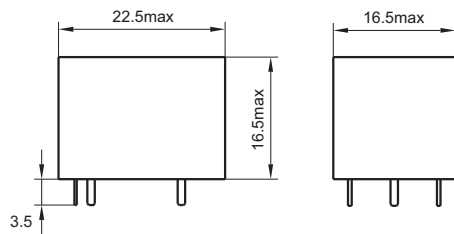
PCB Layout
(Bottom view)

Wiring Diagram
(Bottom view)

1 Form A



1 Form C

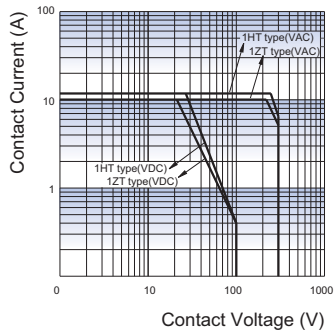


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.

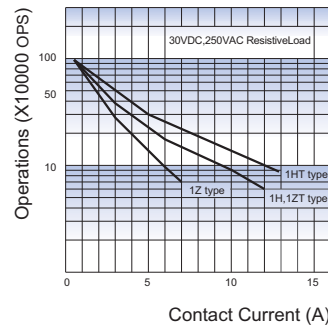
2) The tolerance without indicating for PCB layout is always ±0.1mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



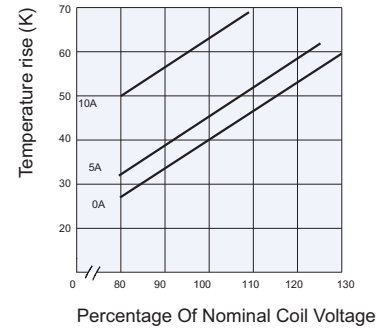
ENDURANCE CURVE



Test conditions:

NO, Resistive load, Flux proofed,
Room temp., 1s on 9s off.

COIL TEMPERATURE RISE



Disclaimer

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HF8

SUBMINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:40025189



Features

- 4kV impulse withstand voltage (between coil and contacts)
- 1 Form A and 1 Form C configurations
- Subminiature, high sensitive, PCB layout
- Plastic sealed type for automatic wave soldering
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (21.3 x 16.2 x 14.4) mm

CONTACT DATA

Contact arrangement	1A, 1C
Contact resistance	100mΩ max.(at 1A 24VDC)
Contact material	AgNi
Contact rating (Res. load)	HF8: 6A 300VAC/28VDC HF8A: 6A 277VAC/30VDC
Max. switching voltage	300VAC / 30VDC
Max. switching current	6A
Max. switching power	1800VA / 300W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	Plastic sealed:1 x 10 ⁴ OPS Flux proofed, Standard type:1 x 10 ⁵ OPS Flux proofed, Sensitive type:5 x 10 ⁴ OPS (NO, 6A 300VAC, Resistive load, Room temp., 1s on 9s off)

CHARACTERISTICS

Insulation resistance		100MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	2000VAC 1min
	Between open contacts	750VAC 1min
Operate time (at nomi. volt.)		6ms max.
Release time (at nomi. volt.)		3ms max.
Humidity		5% to 85% RH
Ambient temperature		-55°C to 90°C
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Termination		PCB
Unit weight		Approx. 11g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B, Class A.

COIL

Coil power	Standard: Approx. 450mW (48VDC: Approx. 600mW)
	Sensitive: Approx. 330mW

COIL DATA

at 23°C

Standard type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.15	3.90	20 x (1±10%)
5	3.75	0.25	6.50	56 x (1±10%)
6	4.50	0.30	7.80	80 x (1±10%)
9	6.75	0.45	11.7	180 x (1±10%)
12	9.00	0.60	15.6	320 x (1±10%)
18	13.5	0.90	23.4	720 x (1±10%)
24	18.0	1.20	31.2	1280 x (1±10%)
48	36.0	2.40	62.4	3800 x (1±10%)

Sensitive type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.15	3.90	28 x (1±10%)
5	3.75	0.25	6.50	80 x (1±10%)
6	4.50	0.30	7.80	110 x (1±10%)
9	6.75	0.45	11.7	250 x (1±10%)
12	9.00	0.60	15.6	440 x (1±10%)
18	13.5	0.90	23.4	1000 x (1±10%)
24	18.0	1.20	31.2	1780 x (1±10%)
48	36.0	2.40	62.4	7120 x (1±10%)

Notes: 1) When requiring pick-up voltage < 75% of nominal voltage, special order allowed.

2) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

SAFETY APPROVAL RATINGS

UL/CUL	Medium Duty HF8-1CH/1AH	6A 28VDC 6A 300VAC
	General Duty HF8-1C/1A	2A 28VDC 2A 300VAC 3A 120VAC
	HF8A	6A 30VDC(NO/NC) 6A 277VAC(NO/NC)
VDE	HF8....A	2.5A 250VAC COSØ=0.4 2.5A 250VAC COSØ=0.5 5A 250VAC COSØ=1 6A 250VAC COSØ=1

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

	HF8 HF8A	-1C	H	-12	D	S	E	F	(XXX)
Type	HF8: Standard type HF8A: Low cost type								
Contact arrangement:	1A: 1 Form A 1C: 1 Form C								
Contact capacity	H: Medium Duty (6A) Nil: General Duty (3A/2A)								
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48VDC								
Coil voltage form	D: DC								
Coil power	S: Sensitive Nil: Standard								
Construction ¹⁾	E: Plastic sealed Nil: Flux proofed								
Insulation standard	F: Class F A: Class A (VDE version, Only for HF8-1AH/1CH) Nil: Class B								
Special code ³⁾	XXX: Customer special requirement Nil: Standard								

Notes: 1) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended.

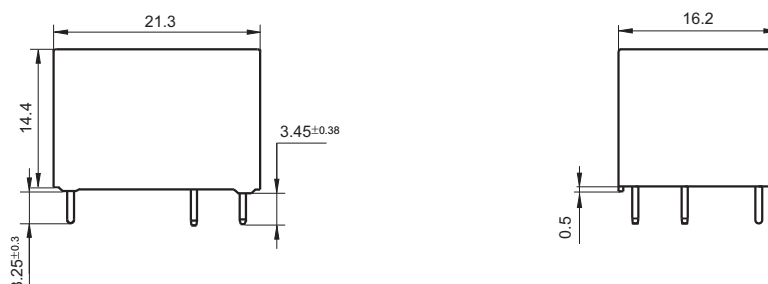
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

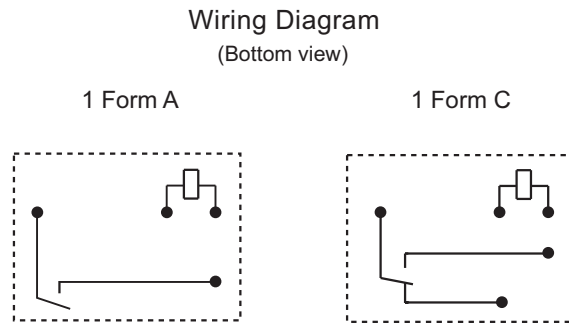
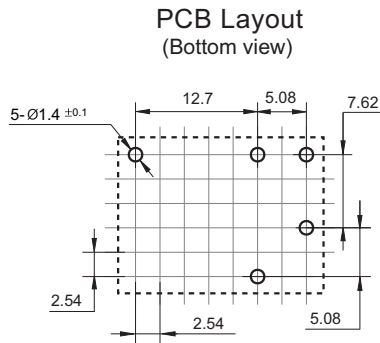
Unit: mm

Outline Dimensions



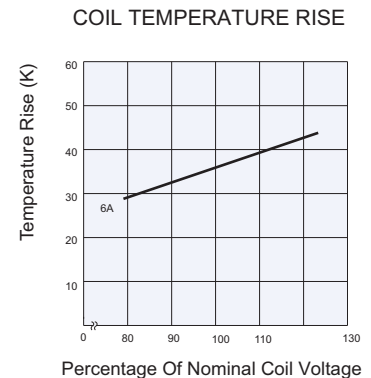
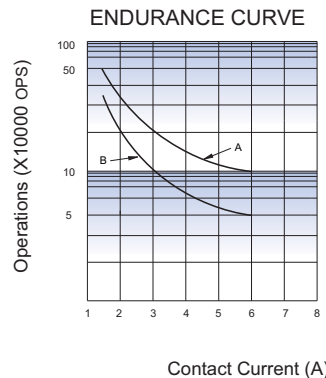
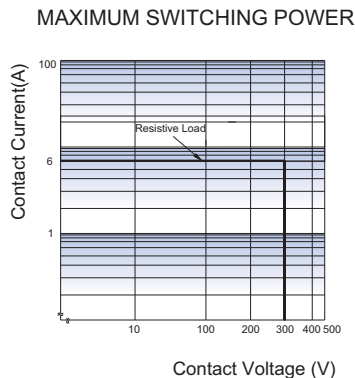
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm



- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.54mm.
 4) Tin-dipped joint is tolerable after terminal tin-dipping as long as the terminal length including the joint is less than 4.0mm.

CHARACTERISTIC CURVES



Notes:

- Curve A: HF8-1CH Standard type
Curve B: HF8-1CH Sensitive type
- Test conditions:
NO, 6A 300VAC, Resistive load,
Flux proofed, Room temp.
1s on 9s off

Disclaimer

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HF10FF

MINIATURE HIGH POWER RELAY



File No.:134517



Features

- 10A switching capability
- Long endurance
- Industry standard 8 or 11 round terminals
- Sockets available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (35.0 x 35.0 x 55.0) mm

CONTACT DATA

Contact arrangement	2C, 3C
Contact resistance	100mΩ max.(at 1A 24VDC)
Contact material	See ordering info.
Contact rating (Res. load)	2C: 10A 250VAC/30VDC 3C: (NO)10A 250VAC/30VDC (NC) 5A 250VAC/30VDC
Max. switching voltage	250VAC / 30VDC
Max. switching current	10A
Max. switching power	2500VA / 300W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	2Z type: 1 x 10 ⁵ OPS (10A 250VAC/30VDC, Resistive load, Room temp., 1s on 9s off) 3Z type: 1 x 10 ⁵ OPS (NO:10A 250VAC/30VDC; NC:5A 250VAC/30VDC, Resistive load, Room temp., 1s on 9s off)

CHARACTERISTICS

Insulation resistance		500MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	1500VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		30ms max.
Release time (at nomi. volt.)		30ms max.
Temperature rise (at nomi. volt.)		100K max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 55°C
Termination		Octal and Undecal Type Plug
Unit weight		Approx.90g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	DC type: Approx. 1.5W; AC type: Approx. 2.7VA
------------	--

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VDC min.	Max. Voltage VDC ²⁾	Coil Resistance Ω
6	4.80	0.60	7.20	23.5 x (1±10%)
12	9.60	1.20	14.4	95 x (1±10%)
24	19.2	2.40	28.8	430 x (1±10%)
48	38.4	4.80	57.6	1630 x (1±10%)
60	48.0	6.0	72.0	1920 x (1±10%)
100	80.0	10.0	120	6800 x (1±10%)
110	88.0	11.0	132	7300 x (1±10%)

Nominal Voltage VAC	Pick-up Voltage VAC max. ¹⁾	Drop-out Voltage VAC min.	Max. Voltage VAC ²⁾	Coil Resistance Ω
6	4.80	1.80	7.20	3.9 x (1±10%)
12	9.60	3.60	14.4	16.9 x (1±10%)
24	19.2	7.20	28.8	70 x (1±10%)
48	38.4	14.4	57.6	315 x (1±10%)
110/120	88.0	36.0	132	1600 x (1±10%)
220/230	176	69.0	253	6800 x (1±10%)

Notes: 1) Under ambient temperature, applying more than 80% of rating voltage to coil, relay will take action accordingly. But in order to meet the stated product performance, please apply rated voltage to coil.

2) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	10A 250VAC/30VDC 1/3HP 120VAC 1/3HP 240VAC 1/2HP 277VAC
--------	--

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

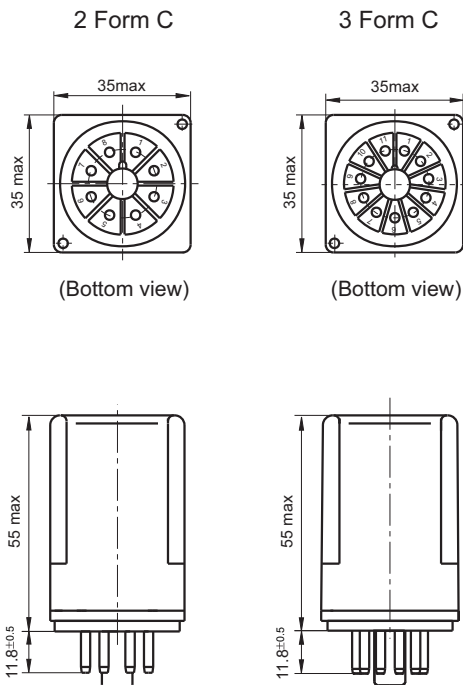
HF10FF / 012 A -2Z D T G (XXX)	
Type	
Coil voltage	DC: 6, 12, 24, 48, 60, 100, 110V AC: 6, 12, 24, 48, 110/120, 220/230V
Coil voltage form	A: AC D: DC
Contact arrangement	2Z: 2 Form C 3Z: 3 Form C 3Z-1: 3 Form C (Different Wiring Diagram)
LED	D: With LED Nil: Without LED
Contact material	T: AgSnO ₂ Nil: AgCdO
Contact plating	G: Gold plated Nil: No gold plated
Special code ¹⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

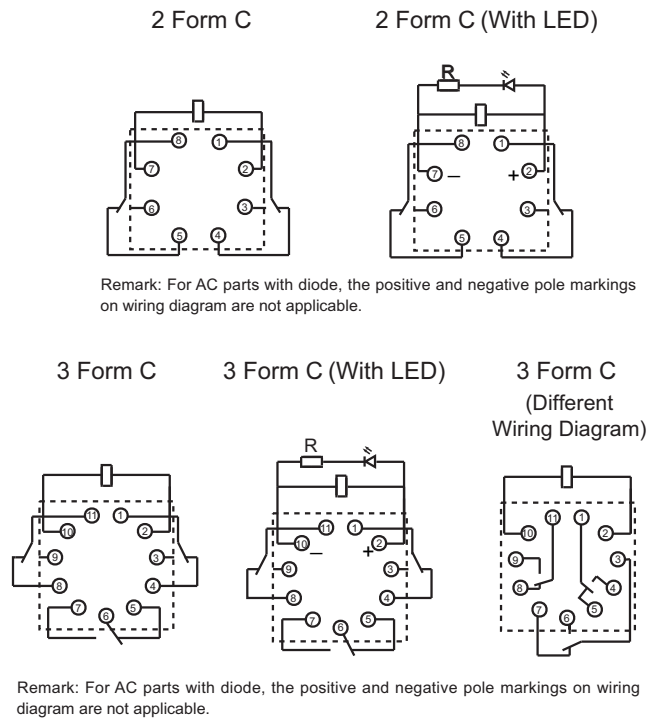
Unit: mm

Outline Dimensions



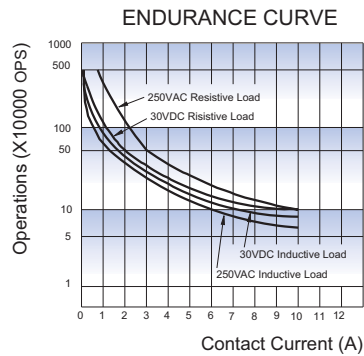
Wiring Diagram

(Bottom view)

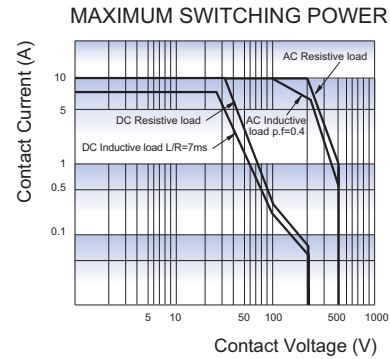


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES



Test conditions:
Room temp., 1s on 9s off



Relay Sockets



Features


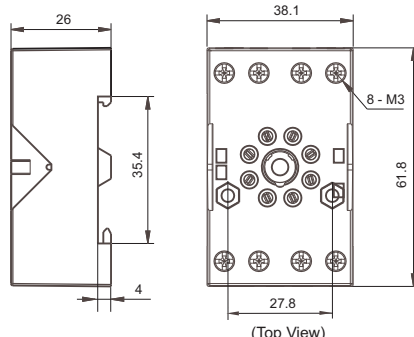
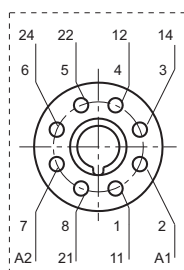
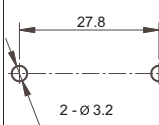
- The dielectric strength can reach 2000VAC and the insulation resistance is 1000MΩ
- Two mounting types are available: screw mounting and DIN rail mounting.
- With finger protection device are available
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection.
- Components available: metallic retainer, plug-in modules
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length
10FF-2Z-C3	250VAC	10A	-40 °C to 70 °C	2000VAC	0.6N · m	7mm
10FF-2Z-C4	250VAC	10A	-40 °C to 70 °C	2000VAC	0.6N · m	7mm
10FF-3Z-C3	250VAC	10A	-40 °C to 70 °C	2000VAC	0.6N · m	7mm
10FF-3Z-C4	250VAC	10A	-40 °C to 70 °C	2000VAC	0.6N · m	7mm


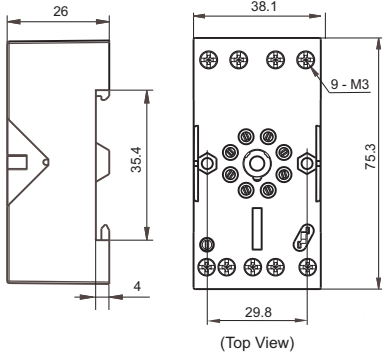
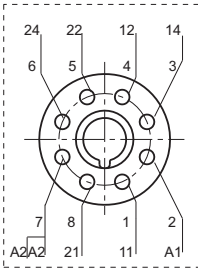
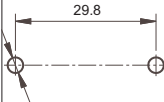

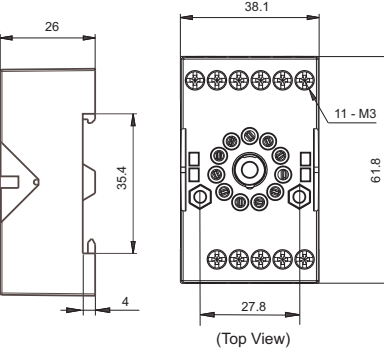
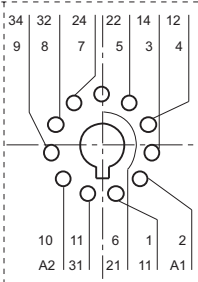
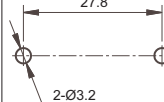

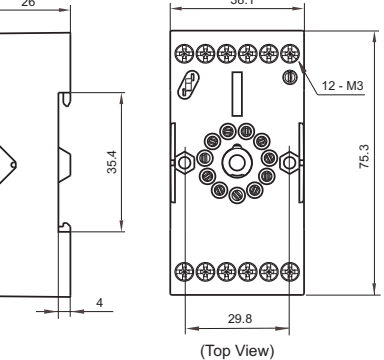
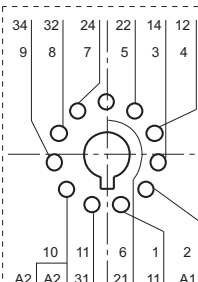
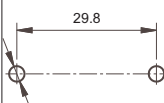
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
10FF-2Z-C3  Screw terminal DIN rail or Screw mounting With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		metallic retainer 10FF-H1

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

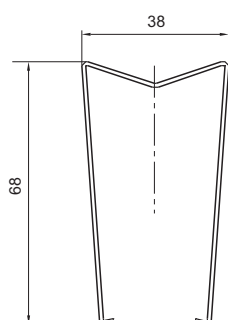
Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
10FF-2Z-C4  Screw terminal DIN rail or Screw mounting With finger protection device Applicable for 2 poles	 <p>(Top View)</p>	 <p>(Top View)</p>		metallic retainer 10FF-H1 plug-in module HFFAA to HFFHU*
10FF-3Z-C3  Screw terminal DIN rail or Screw mounting With finger protection device Applicable for 3 poles	 <p>(Top View)</p>	 <p>(Top View)</p>		metallic retainer 10FF-H1
10FF-3Z-C4  Screw terminal DIN rail or Screw mounting With finger protection device Applicable for 3 poles	 <p>(Top View)</p>	 <p>(Top View)</p>		metallic retainer 10FF-H1 plug-in module HFFAA to HFFHU*

Notes: * Please refer to the product datasheet if plug-in module is required.

DIMENSION OF RELATED COMPONENT (AVAILABLE)

Unit: mm

Retainer 10FF-H1 (Metallic retainer)



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. As for related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. The above is only an example of typical socket and related component type which is suitable to HF10FF relay. If you have any special requirements, please contact us.
4. Main outline dimension(L, W, H) ≥ 50 mm, tolerance should be ± 1 mm;
outline dimension > 20 mm and < 50 mm, tolerance should be ± 0.5 mm;
outline dimension ≤ 20 mm, tolerance should be ± 0.3 mm.
5. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF10FH

MINIATURE HIGH POWER RELAY



File No.:134517



Features

- 10A switching capability
- Long endurance
- Industry standard 8 or 11 round terminals
- Sockets available
- With push button
- Smoke cover type available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (35.5 x 35.5 x 55.3) mm

CONTACT DATA

Contact arrangement	2C, 3C
Contact resistance	100mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂ , AgCdO
Contact rating (Res. load)	2C: 10A 250VAC/30VDC 3C: (NO)10A 250VAC/30VDC (NC) 5A 250VAC/30VDC
Max. switching voltage	250VAC / 30VDC
Max. switching current	10A
Max. switching power	2500VA / 300W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	2Z type: 1 x 10 ⁵ OPS (10A 250VAC/30VDC, Resistive load, Room temp., 1s on 9s off) 3Z type: 1 x 10 ⁵ OPS (NO:10A 250VAC/30VDC; NC:5A 250VAC/30VDC Resistive load, Room temp., 1s on 9s off)

CHARACTERISTICS

Insulation resistance		500MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	2000VAC 1min
Operate time (at nomi. volt.)		30ms max.
Release time (at nomi. volt.)		30ms max.
Temperature rise (at nomi. volt.)		100K max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 55°C
Termination		Octal and Undecal Type Plug
Unit weight		Approx. 90g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	DC type: Approx. 1.5W; AC type: Approx. 2.7VA
------------	--

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VDC min.	Max. Voltage VDC ²⁾	Coil Resistance Ω
6	4.80	0.60	7.20	23.5 x (1±10%)
12	9.60	1.20	14.4	95 x (1±10%)
24	19.2	2.40	28.8	430 x (1±10%)
48	38.4	4.80	57.6	1630 x (1±10%)
60	48.0	6.00	72.0	1920 x (1±10%)
100	80.0	10.0	120	6800 x (1±10%)
110	88.0	11.0	132	7300 x (1±10%)

Nominal Voltage VAC	Pick-up Voltage VAC max. ¹⁾	Drop-out Voltage VAC min.	Max. Voltage VAC ²⁾	Coil Resistance Ω
6	4.80	1.80	7.20	3.9 x (1±10%)
12	9.60	3.60	14.4	16.9 x (1±10%)
24	19.2	7.20	28.8	70 x (1±10%)
48	38.4	14.4	57.6	315 x (1±10%)
110/120	88.0	36.0	132	1600 x (1±10%)
220/230	176	69.0	253	6800 x (1±10%)

Notes: 1) Under ambient temperature, applying more than 80% of rating voltage to coil, relay will take action accordingly. But in order to meet the stated product performance, please apply rated voltage to coil.

2) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	10A 250VAC/30VDC 1/3HP 240VAC 1/3HP 120VAC 1/2HP 277VAC
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Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.10

ORDERING INFORMATION

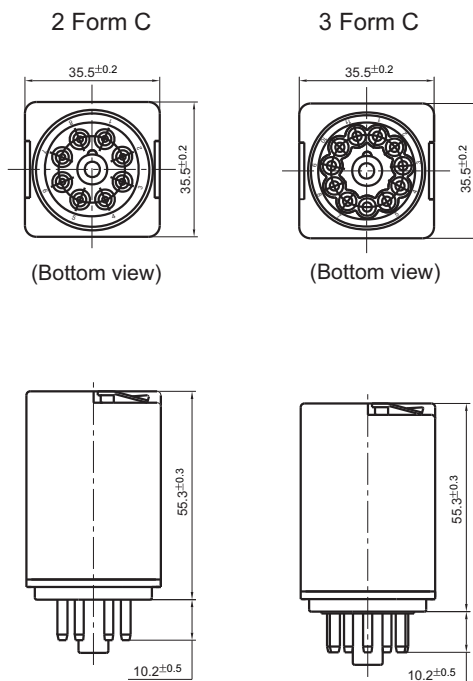
HF10FH / 012 A -2Z D T G (XXX)		
Type		
Coil voltage	DC: 6, 12, 24, 48, 60, 100, 110V AC: 6, 12, 24, 48, 110/120, 220/230V	
Coil voltage form	A: AC	D: DC
Contact arrangement	2Z: 2 Form C 3Z: 3 Form C 3Z-1: 3 Form C (Different Wiring Diagram)	
LED	D: With LED	Nil: Without LED
Contact material	T: AgSnO ₂	Nil: AgCdO
Contact plating	G: Gold plated	Nil: No gold plated
Special code ¹⁾	XXX: Customer special requirement	Nil: Standard

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

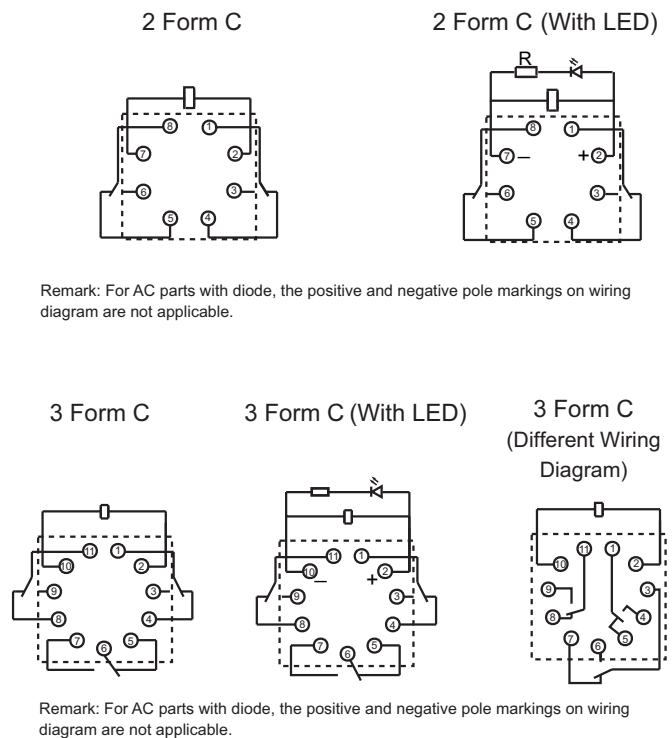
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions



Wiring Diagram
(Bottom view)

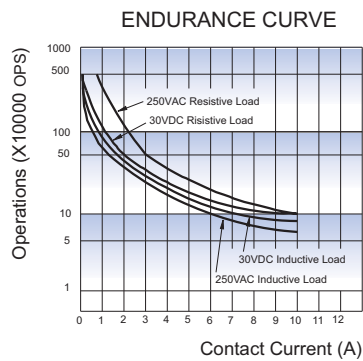


Remark: For AC parts with diode, the positive and negative pole markings on wiring diagram are not applicable.

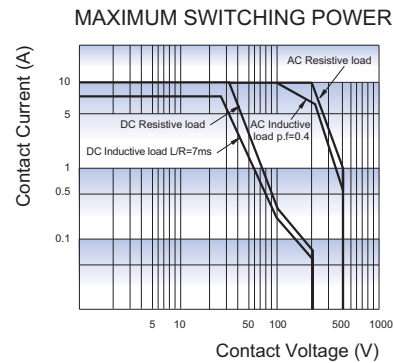
Remark: For AC parts with diode, the positive and negative pole markings on wiring diagram are not applicable.

Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES



Test conditions:
Room temp., 1s on 9s off



Relay Sockets



Features


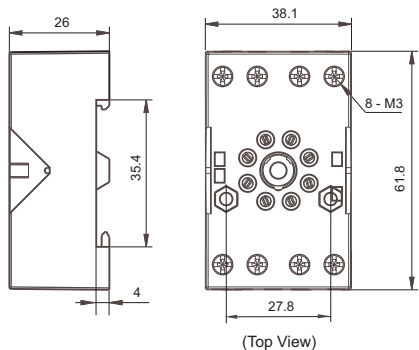
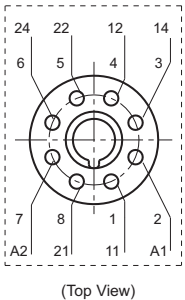
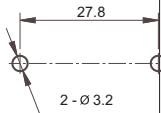
- The dielectric strength can reach 2000VAC and the insulation resistance is 1000MΩ
- Two mounting types are available: screw mounting and DIN rail mounting.
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection.
- Components available: metallic retainer, plug-in modules
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length
10FF-2Z-C3	250VAC	10A	-40 °C to 70°C	2000VAC	0.6N · m	7mm
10FF-2Z-C4	250VAC	10A	-40 °C to 70°C	2000VAC	0.6N · m	7mm
10FF-3Z-C3	250VAC	10A	-40 °C to 70°C	2000VAC	0.6N · m	7mm
10FF-3Z-C4	250VAC	10A	-40 °C to 70°C	2000VAC	0.6N · m	7mm


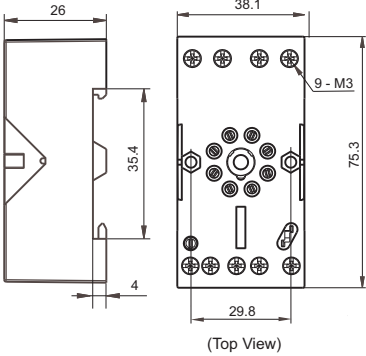
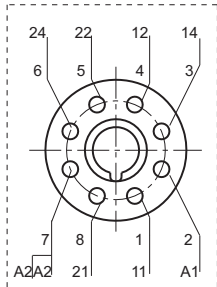
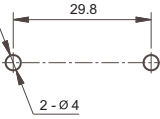

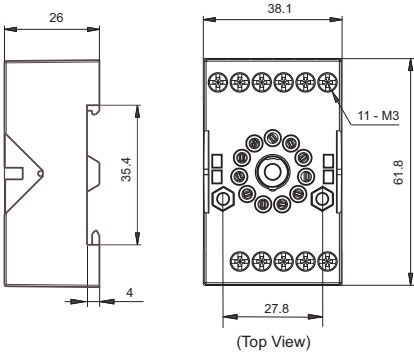
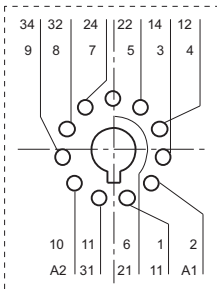
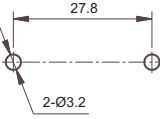

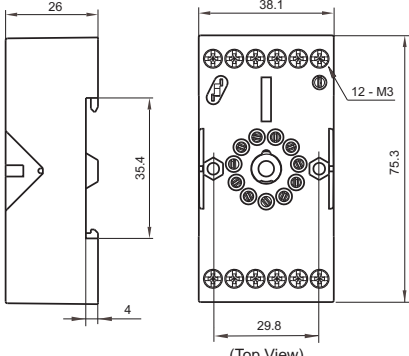
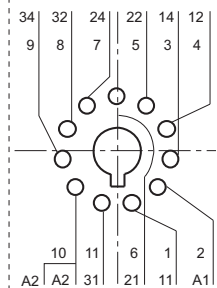
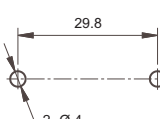
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
10FF-2Z-C3  Screw terminal DIN rail or Screw mounting With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		metallic retainer 10FF-H1

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
10FF-2Z-C4  Screw terminal DIN rail or Screw mounting With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		metallic retainer 10FF-H1 plug-in module HFFAA to HFFHU*
10FF-3Z-C3  Screw terminal DIN rail or Screw mounting With finger protection device Applicable for 3 poles	 (Top View)	 (Top View)		metallic retainer 10FF-H1
10FF-3Z-C4  Screw terminal DIN rail or Screw mounting With finger protection device Applicable for 3 poles	 (Top View)	 (Top View)		metallic retainer 10FF-H1 plug-in module HFFAA to HFFHU*

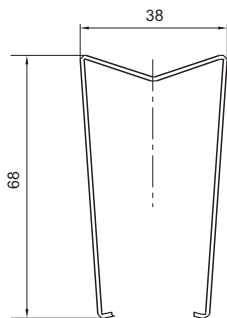
Notes: * Please refer to the product datasheet if plug-in module is required.

DIMENSION OF RELATED COMPONENT (AVAILABLE)

Unit: mm

Retainer

10FF-H1 (Metallic retainer)



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. As for related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. The above is only an example of typical socket and related component type which is suitable to HF10FH relay. If you have any special requirements, please contact us.
4. Main outline dimension(L, W, H) $\geq 50\text{mm}$, tolerance should be $\pm 1\text{mm}$;
outline dimension $> 20\text{mm}$ and $< 50\text{mm}$, tolerance should be $\pm 0.5\text{mm}$;
outline dimension $\leq 20\text{mm}$, tolerance should be $\pm 0.3\text{mm}$.
5. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF12FF

SUBMINIATURE HIGH POWER RELAY



File No.:E134517



File No.:R50176080



File No.:CQC09002036155



Features

- 12A switching capability
- 1 Form A configuration
- Subminiature, standard PCB layout
- Plastic sealed and flux proofed types available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (18.4 x 15.2 x 10.2) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	100mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	10A 277VAC/30VDC 12A 125VAC
Max. switching voltage	277VAC
Max. switching current	12A
Max. switching power	2770VA / 300W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	1 x 10 ⁵ OPS (10A 250VAC, Resistive load, Room temp., 1s on 1s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		8ms max.
Release time (at nomi. volt.)		5ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 6g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class B

COIL

Coil power	Approx. 450mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.15	3.90	20 x (1±10%)
5	3.75	0.25	6.50	55 x (1±10%)
6	4.50	0.30	7.80	80 x (1±10%)
9	6.75	0.45	11.7	180 x (1±10%)
12	9.00	0.60	15.6	320 x (1±10%)
18	13.5	0.90	23.4	720 x (1±10%)
24	18.0	1.20	31.2	1280 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	12A 125VAC 10A 277VAC 13.5A 125VAC 10A 30VDC TV-5 1/4HP 125VAC / 250VAC
TÜV	12A 125VAC 10A 277VAC

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2015 Rev. 1.00

ORDERING INFORMATION

Type	HF12FF /	012	-H	S	(XXX)
Coil voltage	3, 5, 6, 9, 12, 18, 24VDC				
Contact arrangement	H: 1 Form A				
Construction ^{1) 2)}	S: Plastic sealed Nil: Flux proofed				
Special code ³⁾	XXX: Customer special requirement Nil: Standard				

Notes: 1) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended.

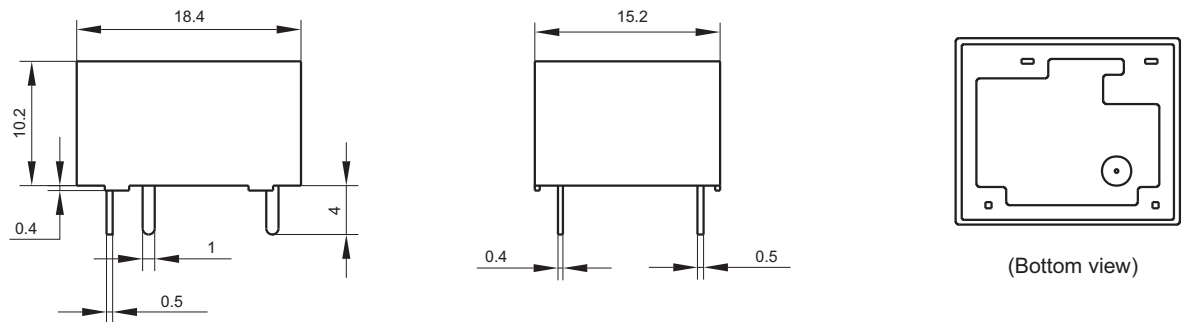
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa.

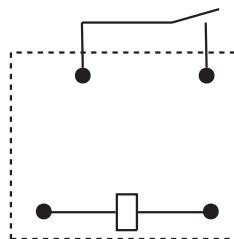
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

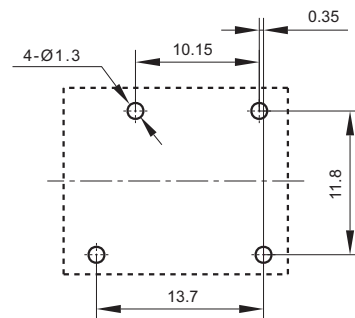
Outline Dimensions



Wiring Diagram (Bottom view)



PCB Layout (Bottom view)

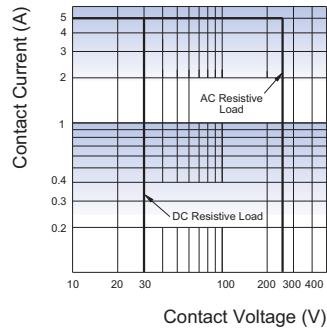


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.

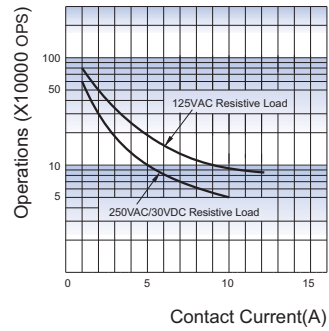
2) The tolerance without indicating for PCB layout is always ± 0.1 mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER

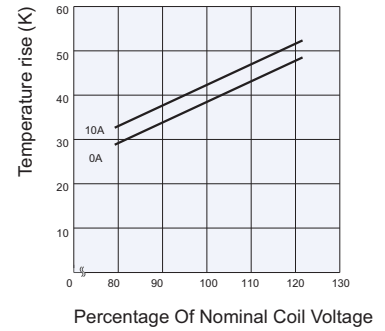


ENDURANCE CURVE



Test conditions:
Room temp., 1s on 1s off

COIL TEMPERATURE RISE



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF13F

MINIATURE INTERMEDIATE POWER RELAY



File No.:E133481



File No.:R50154518



File No.:CQC09002030028 (DC type)
CQC09002030029 (AC type)



Features

- 1C: 15A; 2C:10A switching capability
- Various terminals available
- Sockets available
- Conform to the CE low voltage directive
- 1 & 2 pole configurations
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (28.0 x 21.5 x 35.0)mm

CONTACT DATA

Contact arrangement	1A,1C	2A,2C
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	See ordering info.	
Contact rating (Res. load)	15A 250VAC/30VDC	10A 250VAC/30VDC
Max. switching voltage	250VAC / 30VDC	
Max. switching current	15A	10A
Max. switching power	3750VA/450W	2500VA/300W
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1Z type: 1 x 10 ⁵ OPS (15A 250VAC, Resistive load, Room temp., 1s on 9s off)	
	1Z type: 1 x 10 ⁵ OPS (15A 30VDC, Resistive load, Room temp., 1s on 9s off)	
	2Z type: 1 x 10 ⁵ OPS (10A 250VAC, Resistive load, Room temp., 1s on 9s off)	
	2Z type: 1 x 10 ⁵ OPS (10A 30VDC, Resistive load, Room temp., 1s on 9s off)	

CHARACTERISTICS

Insulation resistance		500MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	1500VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	1500VAC 1min
Operate time (at nomi. volt.)		25ms max.
Release time (at nomi. volt.)		25ms max.
Temperature rise (no-load, at nomi.volt.)		60K max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		PCB, Plug-in
Unit weight		Approx. 37g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	DC type: Approx. 0.9W to 1.1W AC type: Approx. 1.2VA to 1.8VA
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VDC min.	Max. Voltage VDC ²⁾	Coil Resistance Ω
5	4.0	0.5	5.5	27.5 x (1±10%)
6	4.8	0.6	6.6	40 x (1±10%)
12	9.6	1.2	13.2	160 x (1±10%)
24	19.2	2.4	26.4	650 x (1±10%)
48	38.4	4.8	52.8	2600 x (1±10%)
110	88.0	11.0	121	11000 x (1±10%)
125	100	12.5	137.5	14000 x (1±10%)
220	176	22.0	242	53750 x (1±10%)

Nominal Voltage VAC	Pick-up Voltage VAC max. ¹⁾	Drop-out Voltage VAC min.	Max. Voltage VAC ²⁾	Coil Resistance Ω
6	4.80	1.8	6.6	11.5 x (1±10%)
12	9.60	3.6	13.2	46 x (1±10%)
24	19.2	7.2	26.4	184 x (1±10%)
48	38.4	14.4	52.8	735 x (1±10%)
120	96.0	36.0	132	4550 x (1±10%)
220/240	176.0	72.0	264	14400 x (1±10%)

Notes: 1) Under ambient temperature, applying more than 80% of rating voltage to coil, relay will take action accordingly. But in order to meet the stated product performance, please apply rated voltage to coil.

2) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	AgCdO	1 Form C	15A 250VAC/30VDC
	AgCe	1 Form C	15A 250VAC/30VDC
		2 Form C	10A 250VAC/30VDC 1/3 HP 240VAC/120VAC
TÜV	AgCdO AgCe	2 Form C	10A 250VAC/30VDC

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

	HF13F /		A	012	-2Z	1	1	D	(XXX)
Type									
Coil voltage form	A: AC		Nil: DC						
Coil voltage	DC: 5VDC to 220VDC								
	AC: 6VAC to 240VAC								
Contact arrangement	1H: 1 Form A		2H: 2 Form A						
	1Z: 1 Form C		2Z: 2 Form C						
Mounting termination	1: Socket		2: PCB		5: Flange-Mounting				
Contact material	1: AgCe		Nil: AgCdO						
LED	D: With LED		Nil: Without LED						
Special code ²⁾	XXX: Customer special requirement		Nil: Standard						

Notes: 1) We also can supply the special type with terminals numbered 1,2,3,4,5,6,7,8.

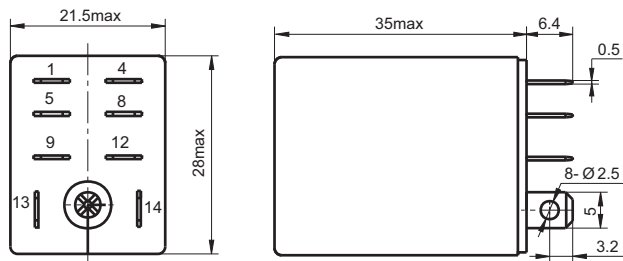
2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

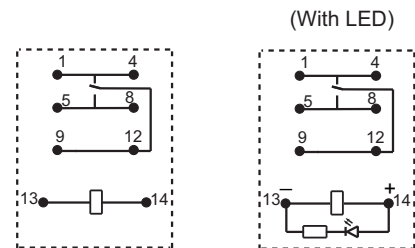
Unit: mm

HF13F/□□□□-1Z1□

Outline Dimensions



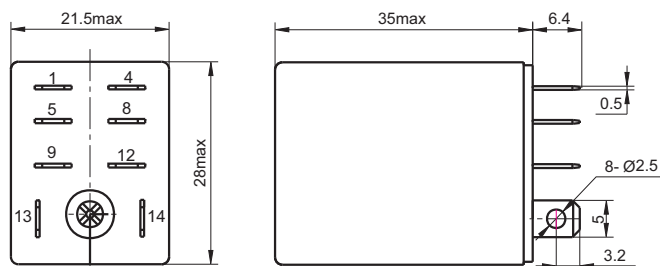
Wiring Diagram
(Bottom view)



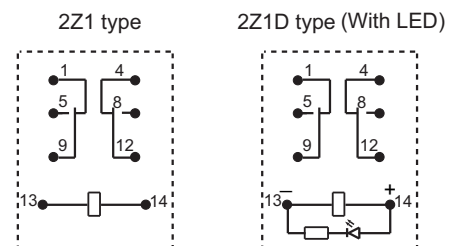
Remark: For AC parts with diode, the positive and negative pole markings on wiring diagram are not applicable.

HF13F/□□□□-2Z1□

Outline Dimensions



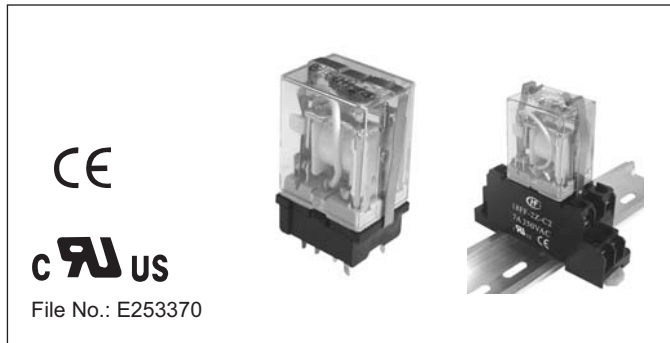
Wiring Diagram
(Bottom view)



Remark: For AC parts with diode, the positive and negative pole markings on wiring diagram are not applicable.

Unit: mm

Relay Sockets



Features


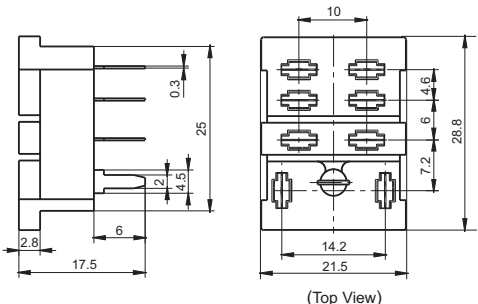
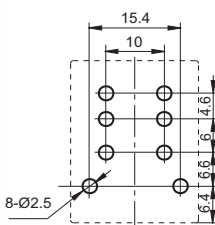

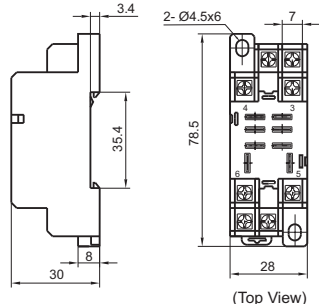
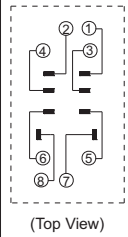
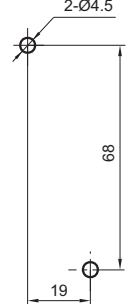

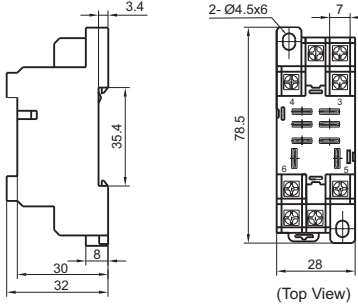
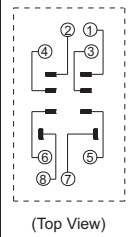
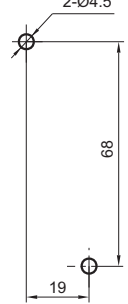
- The dielectric strength can reach 2000VAC and the insulation resistance is 1000 MΩ
- Three mounting types are available: PCB mounting, screw mounting and DIN rail mounting.
- With finger protection device
- Components available: metallic retainer
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length
13F-2Z-A2	250VAC	15A	-40 °C to 70°C	2000VAC	—	—
13F-2Z-C1	250VAC	15A	-40 °C to 70°C	2000VAC	1.0N · m	7mm
13F-2Z-C2	250VAC	15A	-40 °C to 70°C	2000VAC	1.0N · m	7mm

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

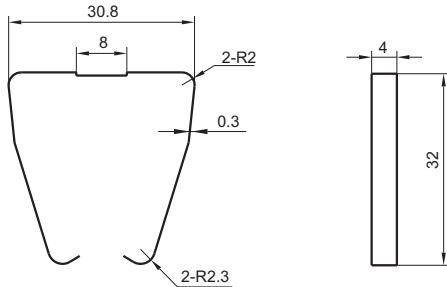
Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
13F-2Z-A2  PCB terminal, PCB mounting	 (Top View)			metallic retainer 18FF-H1
13F-2Z-C1  Screw terminal, DIN rail or Screw mounting, Without finger protection device	 (Top View)	 (Top View)		metallic retainer 18FF-H2 (be used in sets)
13F-2Z-C2  Screw terminal, DIN rail or Screw mounting, With finger protection device	 (Top View)	 (Top View)		metallic retainer 18FF-H2 (be used in sets)

DIMENSION OF RELATED COMPONENT (AVAILABLE)

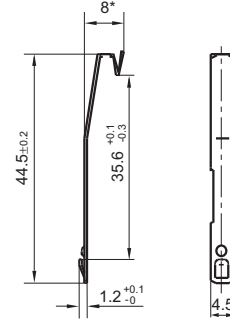
Unit: mm

Retainer

18FF-H1 (Metallic retainer)



18FF-H2 (Metallic retainer)



Note: 18FF-H2 retainer has to be used in sets, please pay special attention while placing the order.

Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. As for other related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. The above is only an example of typical socket and related component type which is suitable to HF13F relay. If you have any special requirements, please contact us.
4. Main outline dimension(L, W, H) $\geq 50\text{mm}$, tolerance should be $\pm 1\text{mm}$; outline dimension $>20\text{mm}$ and $<50\text{mm}$, tolerance should be $\pm 0.5\text{mm}$; outline dimension $\leq 20\text{mm}$, tolerance should be $\pm 0.3\text{mm}$.
5. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF14FF

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:R50140759



File No.:CQC10002046169



Features

- 10A switching capability
- 5kV dielectric strength (between coil and contacts)
- Sockets available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 13.0 x 26.0) mm

CONTACT DATA

Contact arrangement	1A, 1C
Contact resistance	50mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂ , AgNi, AgCdO
Contact rating	Resistive: 10A 277VAC/30VDC TV-5 120VAC
Max. switching voltage	277VAC / 30VDC
Max. switching current	10A
Max. switching power	2770VA / 300W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	1 x 10 ⁵ OPS (10A 277VAC, Resistive load, Room temp., 1s on 9s off) 1 x 10 ⁵ OPS (10A 30VDC, Resistive load, Room temp., 1s on 9s off)

Notes: For plastic sealed type, the venting-hole should be excised in electrical endurance test.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		5ms max.
Vibration resistance		10Hz to 55Hz 1.5mm DA
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		PCB
Unit weight		Approx. 18g
Construction		Plastic sealed, Flux proofed

- Notes:** 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B.

COIL

Coil power	Approx. 530mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.3	4.2	17 x (1±10%)
5	3.75	0.5	7.0	47 x (1±10%)
6	4.50	0.6	8.4	68 x (1±10%)
9	6.75	0.9	12.6	160 x (1±10%)
12	9.00	1.2	16.8	275 x (1±10%)
18	13.5	1.8	25.2	620 x (1±10%)
24	18.0	2.4	33.6	1100 x (1±10%)
48	36.0	4.8	67.2	4170 x (1±10%)
60	45.0	6.0	84.0	7000 x (1±10%)

- Notes:** 1) When requiring pick-up voltage < 75% of nominal voltage, special order allowed.
2) * Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.
3) Under ambient temperature, applying more than 80% of rating voltage to coil, relay will take action accordingly. But in order to meet the stated product performance, please apply rated voltage to coil.

SAFETY APPROVAL RATINGS

UL/CUL	AgCdO	1 Form A	TV-5 120VAC 10A 277VAC General purpose 10A 30VDC Resistive 1/3HP 250VAC 1/4HP 125VAC
		1 Form C	TV-5 120VAC 10A 277VAC General purpose 10A 30VDC Resistive 1/3HP 250VAC NO:1/4HP 125VAC
	AgSnO ₂ AgNi		10A 277VAC General purpose 10A 30VDC Resistive 1/3HP 250VAC 1/4HP 125VAC TV-5 120VAC
	TÜV		AgCdO AgSnO ₂ 10A 250VAC 10A 30VDC

- Notes:** 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

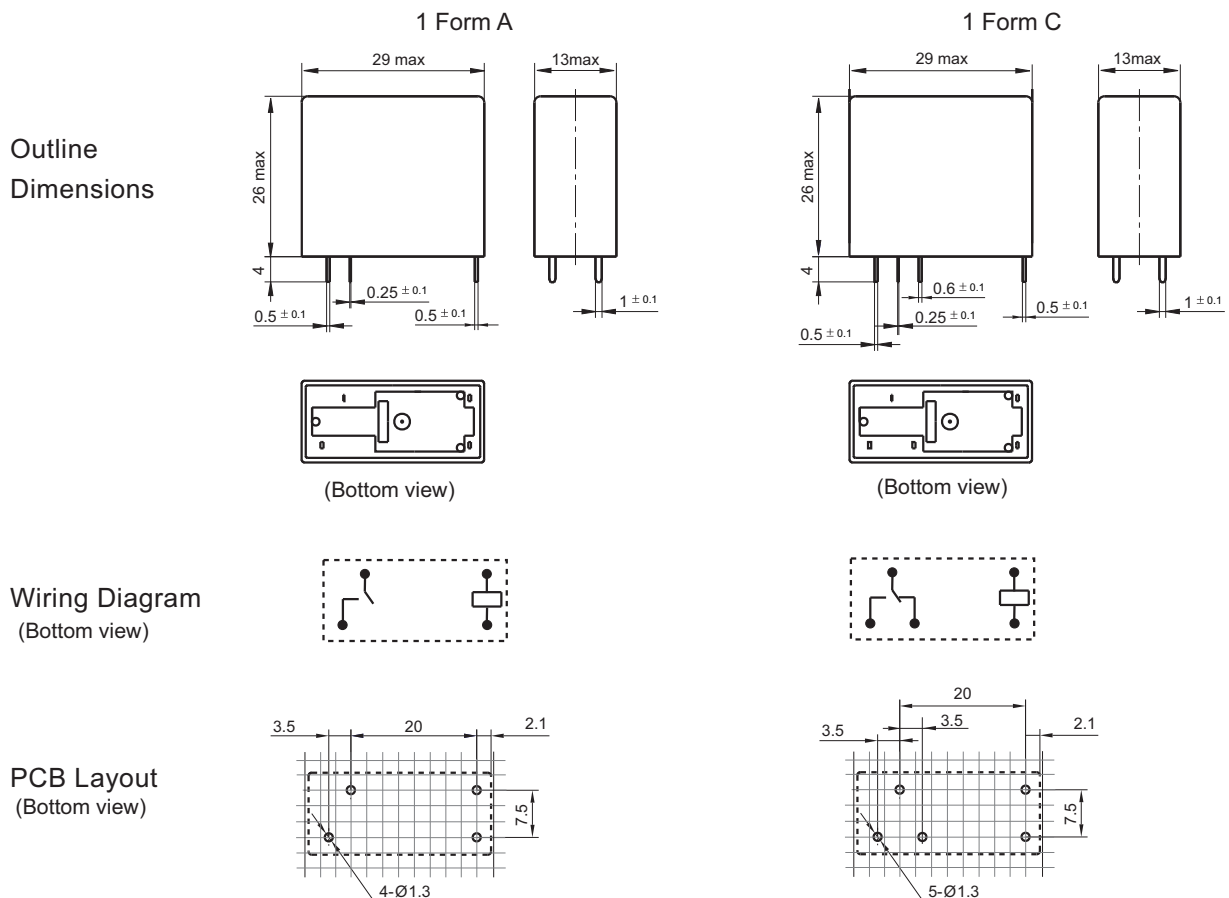
ORDERING INFORMATION

	HF14FF / 012 -1H S T F (XXX)					
Type						
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48, 60VDC					
Contact arrangement	1H: 1 Form A 1Z: 1 Form C					
Construction ¹⁾	S: Plastic sealed(No smoky-gray cover) Nil: Flux proofed					
Contact material	T: AgSnO ₂ 3: AgNi Nil: AgCdO					
Insulation standard	F: Class F Nil: Class B					
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard					

- Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
- 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 3) The standard type is made of black cover. If smoke cover is required, please add a special suffix (611) when ordering. Please take note that smoke cover is only available for flux proofed type.
- 4) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

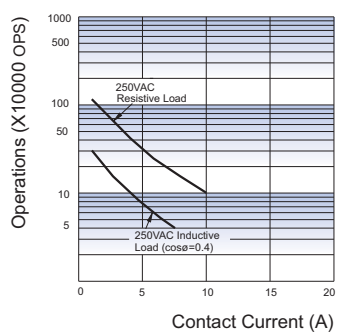
Unit: mm



- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
- 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
- 3) The width of the gridding is 2.5mm.

CHARACTERISTIC CURVES

ENDURANCE CURVE

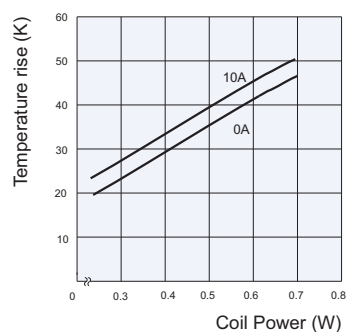


Test conditions:

No contact, Resistive load,

Flux proofed, Room temp., 1s on 9s off.

COIL TEMPERATURE RISE



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF14FF

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:R50140759



File No.:CQC10002046169



Features

- 10A switching capability
- 5kV dielectric strength (between coil and contacts)
- Sockets available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 13.0 x 26.0) mm

CONTACT DATA

Contact arrangement	1A, 1C
Contact resistance	50mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂ , AgNi, AgCdO
Contact rating	Resistive: 10A 277VAC/30VDC TV-5 120VAC
Max. switching voltage	277VAC / 30VDC
Max. switching current	10A
Max. switching power	2770VA / 300W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	1 x 10 ⁵ OPS (10A 277VAC, Resistive load, Room temp., 1s on 9s off) 1 x 10 ⁵ OPS (10A 30VDC, Resistive load, Room temp., 1s on 9s off)

Notes: For plastic sealed type, the venting-hole should be excised in electrical endurance test.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		5ms max.
Vibration resistance		10Hz to 55Hz 1.5mm DA
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		PCB
Unit weight		Approx. 18g
Construction		Plastic sealed, Flux proofed

- Notes:** 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL

Coil power	Approx. 530mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
3	2.25	0.3	4.2	17 x (1±10%)
5	3.75	0.5	7.0	47 x (1±10%)
6	4.50	0.6	8.4	68 x (1±10%)
9	6.75	0.9	12.6	160 x (1±10%)
12	9.00	1.2	16.8	275 x (1±10%)
18	13.5	1.8	25.2	620 x (1±10%)
24	18.0	2.4	33.6	1100 x (1±10%)
48	36.0	4.8	67.2	4170 x (1±10%)
60	45.0	6.0	84.0	7000 x (1±10%)

Notes: 1) When requiring pick-up voltage < 75% of nominal voltage, special order allowed.

2) * Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

3) Under ambient temperature, applying more than 80% of rating voltage to coil, relay will take action accordingly. But in order to meet the stated product performance, please apply rated voltage to coil.

SAFETY APPROVAL RATINGS

UL/CUL	AgCdO	1 Form A	TV-5 120VAC 10A 277VAC General purpose 10A 30VDC Resistive 1/3HP 250VAC 1/4HP 125VAC
		1 Form C	TV-5 120VAC 10A 277VAC General purpose 10A 30VDC Resistive 1/3HP 250VAC NO:1/4HP 125VAC
	AgSnO ₂ AgNi		10A 277VAC General purpose 10A 30VDC Resistive 1/3HP 250VAC 1/4HP 125VAC TV-5 120VAC
	TÜV		AgCdO AgSnO ₂ 10A 250VAC 10A 30VDC

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

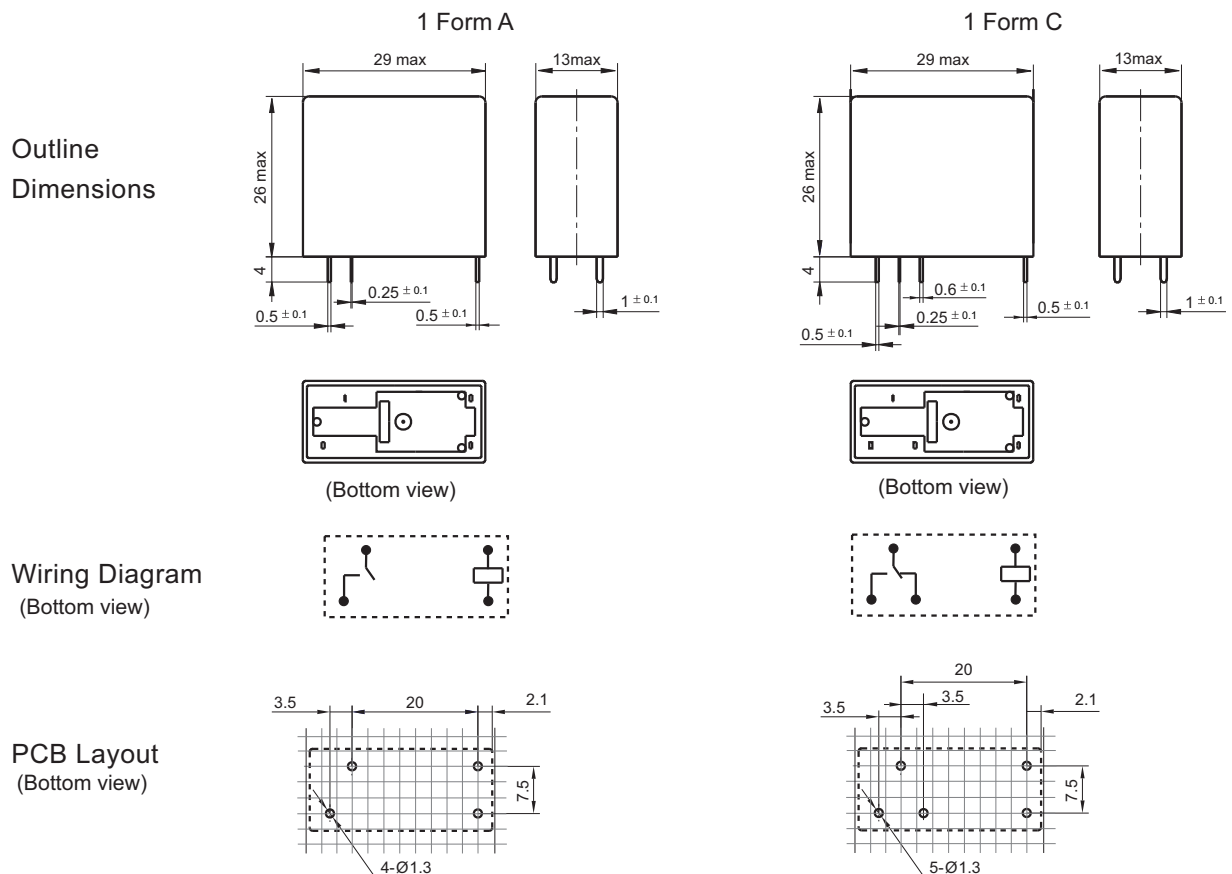
ORDERING INFORMATION

Type	HF14FF / 012 -1H S T F (XXX)					
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48, 60VDC					
Contact arrangement	1H: 1 Form A 1Z: 1 Form C					
Construction ¹⁾	S: Plastic sealed (No smoky-gray cover) Nil: Flux proofed					
Contact material	T: AgSnO ₂ 3: AgNi Nil: AgCdO					
Insulation standard	F: Class F Nil: Class B					
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard					

- Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc).
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) The standard type is made of black cover. If smoke cover is required, please add a special suffix (611) when ordering. Please take note that smoke cover is only available for flux proofed type.
4) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

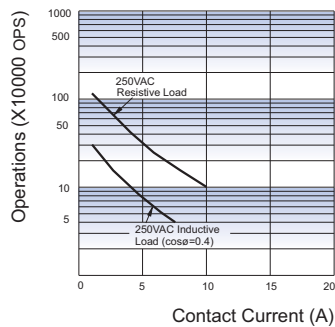
Unit: mm



- Remark:** 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1mm, tolerance should be ±0.2mm; outline dimension > 1mm and ≤ 5mm, tolerance should be ±0.3mm; outline dimension > 5mm, tolerance should be ±0.4mm.
2) The tolerance without indicating for PCB layout is always ±0.1mm.
3) The width of the gridding is 2.5mm.

CHARACTERISTIC CURVES

ENDURANCE CURVE

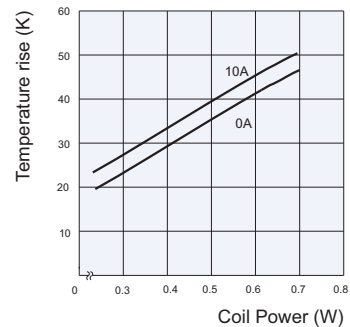


Test conditions:

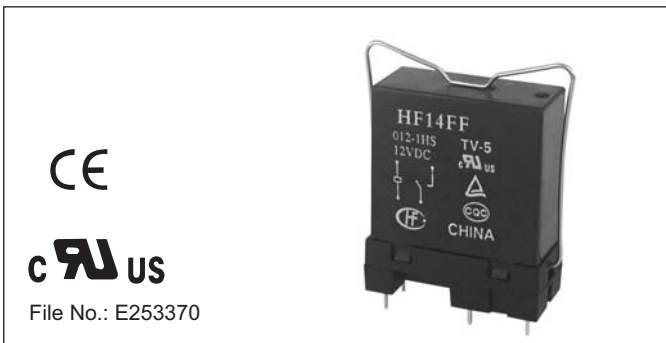
NO, Resistive load,

Flux proofed, Room temp., 1s on 9s off.

COIL TEMPERATURE RISE



Relay Sockets



Features


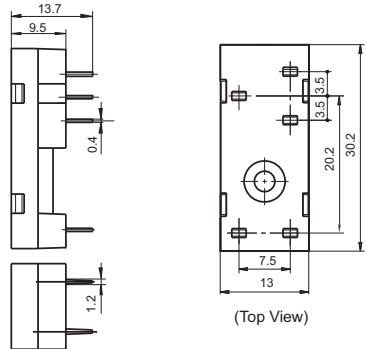
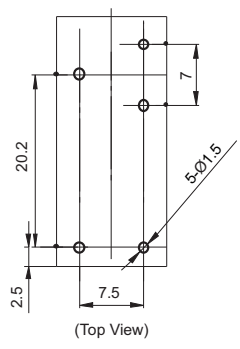
- The dielectric strength can reach 5000VAC(I/O) and the insulation resistance is 1000MΩ
- Three mounting types are available: PCB, screw mounting and DIN rail mounting.
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection.
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length
14FF-1Z-A1	250VAC	10A	-40 °C to 70 °C	5000VAC	—	—
14FF-1Z-C2	250VAC	10A	-40 °C to 70 °C	5000VAC	0.6N · m	7mm
14FF-1Z-C3	250VAC	10A	-40 °C to 70 °C	5000VAC	0.6N · m	7mm


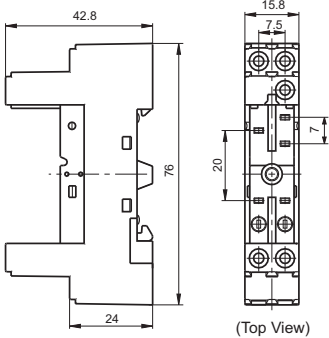
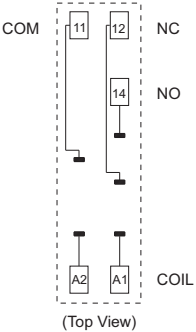

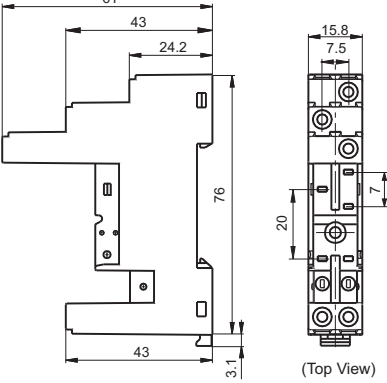
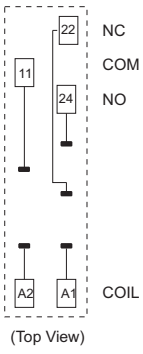
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
14FF-1Z-A1  PCB terminal, PCB or Screw mounting	 <p>(Top View)</p>	 <p>(Top View)</p>	metallic retainer 14FF-H2

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
<div>14FF-1Z-C2</div> <div></div> <div>Screw terminal, PCB or Screw mounting With finger protection device</div>	<div></div> <div>(Top View)</div>	<div></div> <div>(Top View)</div>	<div>plastic retainer 14FF-H6</div> <div>marker 14FF-M1</div> <div>plug-in module HFAA to HFHU*</div>
<div>14FF-1Z-C3</div> <div></div> <div>Screw terminal DIN rail or Screw mounting With finger protection device</div>	<div></div> <div>(Top View)</div>	<div></div> <div>(Top View)</div>	<div>plastic retainer 14FF-H6</div> <div>marker 14FF-M1</div> <div>plug-in module HFAA to HFHU*</div>

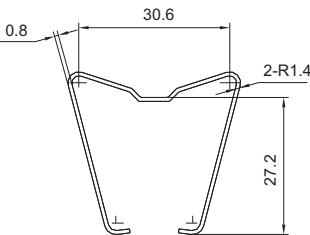
Notes: * Please refer to the product datasheet if plug-in module is required.

DIMENSION OF RELATED COMPONENT (AVAILABLE)

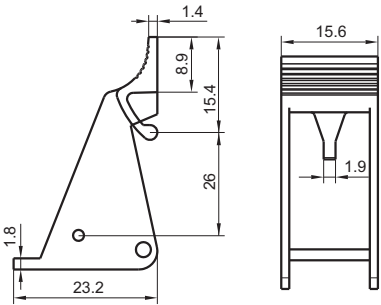
Unit: mm

Retainer

14FF-H2 (Metallic retainer)

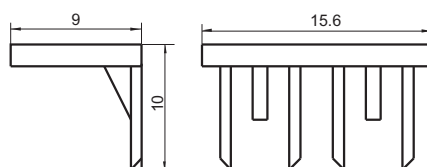


14FF-H6 (Plastic retainer)



Marker

14FF-M1



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. Socket which can be mounted with markers is furnished with a marker; as for other related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. The above is only an example of typical socket and related component type which is suitable to HF14FF relay. If you have any special requirements, please contact us.
4. Main outline dimension(L, W, H) ≥ 50 mm, tolerance should be ± 1 mm; outline dimension > 20 mm and < 50 mm, tolerance should be ± 0.5 mm; outline dimension ≤ 20 mm, tolerance should be ± 0.3 mm.
5. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF14FW

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:40023508



File No.:CQC10002046170



Features

- 20A switching capability
- 4kV dielectric strength (between coil and contacts)
- Meeting VDE 0700, 0631 reinforce insulation
- 1 Form A, 1 Form B and 1 Form C configurations
- Sockets available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 13.0 x 26.5) mm

CONTACT DATA

Contact arrangement	1A, 1B, 1C
Contact resistance	50mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂ , AgCdO
Contact rating	Resistive: 16A 240VAC/24VDC 1HP 240VAC TV-8 125VAC (NO contact)
Max. switching voltage	277VAC / 30VDC
Max. switching current	20A
Max. switching power	5540VA / 480W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	1 x 10 ⁵ OPS (NO or NC, 16A 240VAC, Resistive load, Room temp., 1s on 9s off) 5 x 10 ⁴ OPS (NO or NC, 16A 24VDC, Resistive load, Room temp., 1s on 9s off)

Notes: For plastic sealed type, the venting-hole should be excised in electrical endurance test.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		5ms max.
Ambient temperature		-40°C to 85°C
Humidity		5% to 85% RH
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Termination		PCB
Unit weight		Approx. 18.5g
Construction		Plastic sealed, Flux proofed

- Notes:** 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B.

COIL

Coil power	Standard: Approx.720mW Sensitive: Approx.530mW
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COIL DATA

at 23°C

Standard type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	3.6	0.5	5.5	36 x (1±10%)
6	4.3	0.6	6.6	50 x (1±10%)
9	6.5	0.9	9.9	115 x (1±10%)
12	8.6	1.2	13.2	200 x (1±10%)
18	13.0	1.8	19.8	460 x (1±10%)
24	17.3	2.4	26.4	820 x (1±10%)
48	34.6	4.8	52.8	3300 x (1±10%)
60	43.2	6.0	66.0	5100 x (1±10%)

Sensitive type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	3.60	0.5	7.0	47 x (1±10%)
6	4.30	0.6	8.4	68 x (1±10%)
9	6.50	0.9	12.6	160 x (1±10%)
12	8.60	1.2	16.8	275 x (1±10%)
18	13.0	1.8	25.2	620 x (1±10%)
24	17.3	2.4	33.6	1100 x (1±10%)
48	34.6	4.8	67.2	4170 x (1±10%)
60	43.2	6.0	84.0	7000 x (1±10%)

- Notes:** 1) When requiring pick-up voltage < 72% of nominal voltage, special order allowed.
2) Suggesting to use the sensitive type.
3) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.
4) Under ambient temperature, applying more than 80% of rating voltage to coil, relay will take action accordingly. But in order to meet the stated product performance, please apply rated voltage to coil.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

SAFETY APPROVAL RATINGS

UL/CUL	Standard, Sensitive	AgSnO ₂	20A/16A/12A 277VAC Resistive 1HP (8 FLA) 240VAC TV-8 125VAC 16A 240VAC General Use 20A/16A/12A 24VDC 10FLA 60LRA 250VAC
		AgCdO	20A/16A/12A 277VAC Resistive 1HP (8 FLA) 240VAC 16A 240VAC General Use 20A/16A/12A 24VDC 20A 125VAC General Use
	(136)	AgSnO ₂	20A 125VAC Resistive 20A 277VAC/250VAC/125VAC General Use 16A 277VAC/250VAC/125VAC Resistive 20A 30VDC Resistive 1/2HP 250VAC/125VAC TV-10 125VAC 10FLA 60LRA 250VAC
VDE (Coil power is 530mW)	AgSnO ₂	1 Form A	20A 250VAC at 70°C 16A 30VDC at 70°C
		1 Form C	16A 250VAC at 70°C 16A 30VDC at 70°C NO:20A 250VAC at 70°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF14FW /	012	-H	S	P	T	F	(XXX)
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60VDC							
Contact arrangement	H: 1Form A D: 1 Form B Z: 1 Form C							
Construction ¹⁾	S: Plastic sealed(No smoky-gray cover) Nil: Flux proofed							
Coil power	P: Standard Nil: Sensitive							
Contact material	T: AgSnO ₂ Nil: AgCdO							
Insulation standard	F: Class F Nil: Class B							
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard							

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

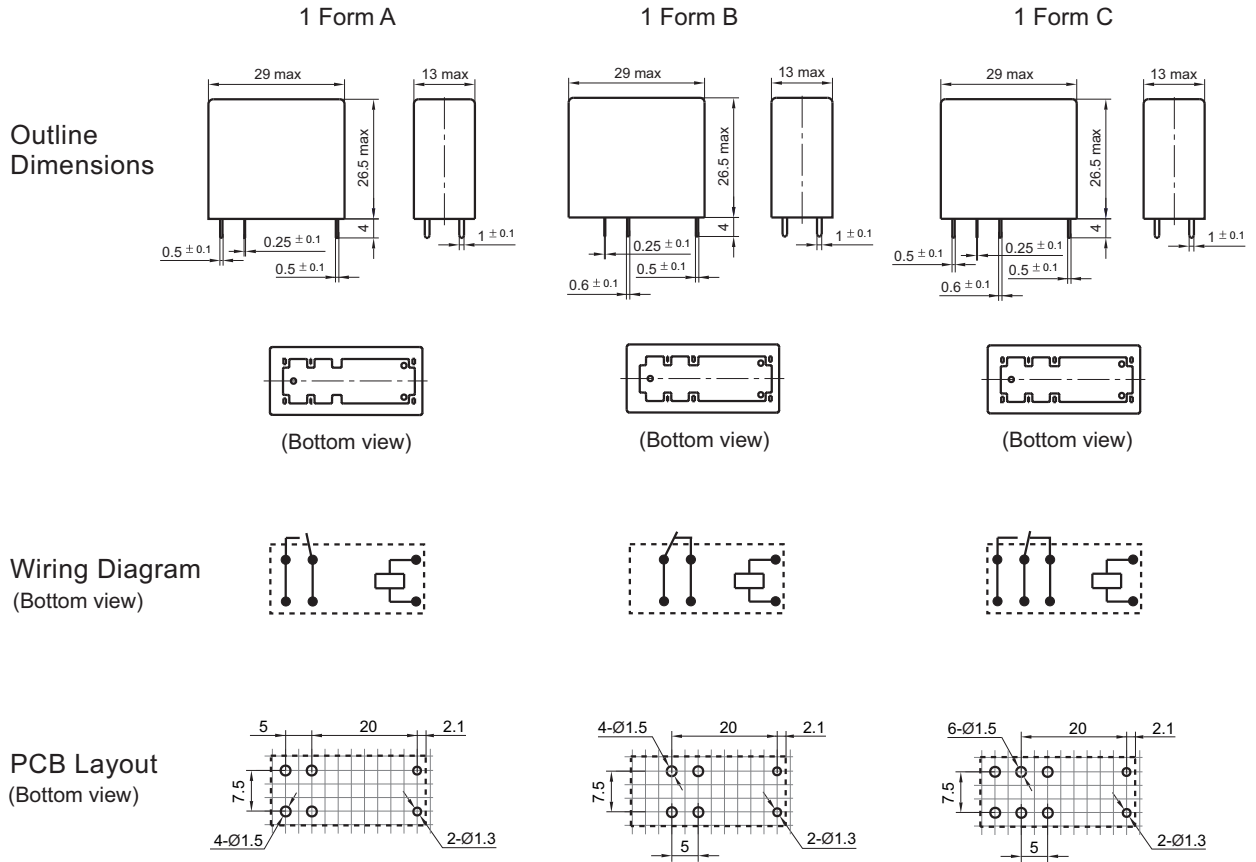
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The standard type is made of black cover. If smoky-gray cover is required, please add a special suffix (611) when ordering. Please take note that smoky-gray cover is only available for flux proofed.

4) The customer special requirement express as special code after evaluating by Hongfa.

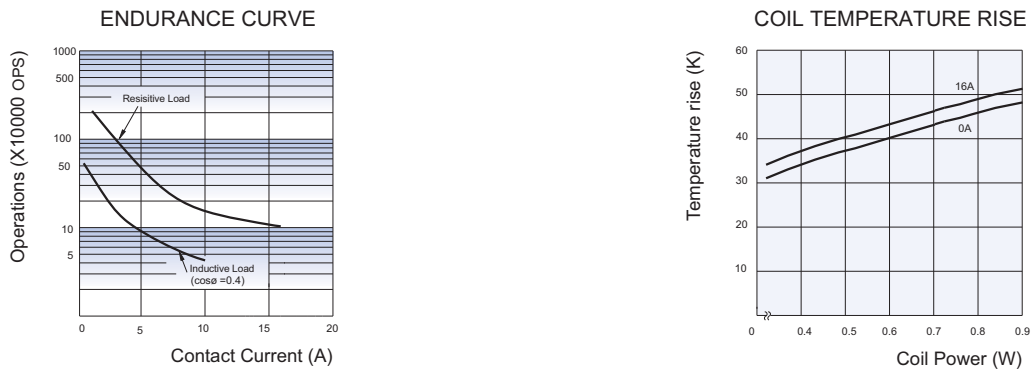
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm



- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.5mm .

CHARACTERISTIC CURVES



Test conditions:

No contact, Resistive load,
 Flux proofed, Room temp., 1s on 9s off.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF14FW

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:40023508



File No.:CQC09002030293



Features

- 20A switching capability
- 4kV dielectric strength (between coil and contacts)
- Meeting VDE 0700, 0631 reinforce insulation
- 1 Form A, 1 Form B and 1 Form C configurations
- Sockets available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 13.0 x 26.5) mm

CONTACT DATA

Contact arrangement	1A, 1B, 1C
Contact resistance	50mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂ , AgCdO
Contact rating	Resistive: 16A 240VAC/24VDC 1HP 240VAC TV-8 125VAC (NO contact)
Max. switching voltage	277VAC / 30VDC
Max. switching current	20A
Max. switching power	5540VA / 480W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	1 x 10 ⁵ OPS (NO or NC, 16A 240VAC, Resistive load, Room temp., 1s on 9s off) 5 x 10 ⁴ OPS (NO or NC, 16A 24VDC, Resistive load, Room temp., 1s on 9s off)

Notes: For plastic sealed type, the venting-hole should be excised in electrical endurance test.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		5ms max.
Ambient temperature		-40°C to 85°C
Humidity		5% to 85% RH
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Termination		PCB
Unit weight		Approx. 18.5g
Construction		Plastic sealed, Flux proofed

- Notes:** 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B.

COIL

Coil power	Standard: Approx.720mW Sensitive: Approx.530mW
------------	---

COIL DATA

at 23°C

Standard type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	3.6	0.5	5.5	36 x (1±10%)
6	4.3	0.6	6.6	50 x (1±10%)
9	6.5	0.9	9.9	115 x (1±10%)
12	8.6	1.2	13.2	200 x (1±10%)
18	13.0	1.8	19.8	460 x (1±10%)
24	17.3	2.4	26.4	820 x (1±10%)
48	34.6	4.8	52.8	3300 x (1±10%)
60	43.2	6.0	66.0	5100 x (1±10%)

Sensitive type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	3.60	0.5	7.0	47 x (1±10%)
6	4.30	0.6	8.4	68 x (1±10%)
9	6.50	0.9	12.6	160 x (1±10%)
12	8.60	1.2	16.8	275 x (1±10%)
18	13.0	1.8	25.2	620 x (1±10%)
24	17.3	2.4	33.6	1100 x (1±10%)
48	34.6	4.8	67.2	4170 x (1±10%)
60	43.2	6.0	84.0	7000 x (1±10%)

- Notes:** 1) When requiring pick-up voltage < 72% of nominal voltage, special order allowed.
2) Suggesting to use the sensitive type.
3) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.
4) Under ambient temperature, applying more than 80% of rating voltage to coil, relay will take action accordingly. But in order to meet the stated product performance, please apply rated voltage to coil.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.10

SAFETY APPROVAL RATINGS

UL/CUL	Standard, Sensitive	AgSnO ₂	20A/16A/12A 277VAC Resistive 1HP (8 FLA) 240VAC TV-8 125VAC 16A 240VAC General Use 20A/16A/12A 24VDC 10FLA 60LRA 250VAC
		AgCdO	20A/16A/12A 277VAC Resistive 1HP (8 FLA) 240VAC 16A 240VAC General Use 20A/16A/12A 24VDC 20A 125VAC General Use
	(136)	AgSnO ₂	20A 125VAC Resistive 20A 277VAC/250VAC/125VAC General Use 16A 277VAC/250VAC/125VAC Resistive 20A 30VDC Resistive 1/2HP 250VAC/125VAC TV-10 125VAC 10FLA 60LRA 250VAC
VDE (Coil power is 530mW)	AgSnO ₂	1 Form A	20A 250VAC at 70°C 16A 30VDC at 70°C
		1 Form C	16A 250VAC at 70°C 16A 30VDC at 70°C NO:20A 250VAC at 70°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF14FW /	012	-H	S	P	T	F	(XXX)
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60VDC							
Contact arrangement	H: 1Form A D: 1 Form B Z: 1 Form C							
Construction ¹⁾	S: Plastic sealed(No smoky-gray cover) Nil: Flux proofed							
Coil power	P: Standard Nil: Sensitive							
Contact material	T: AgSnO ₂ Nil: AgCdO							
Insulation standard	F: Class F Nil: Class B							
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard							

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

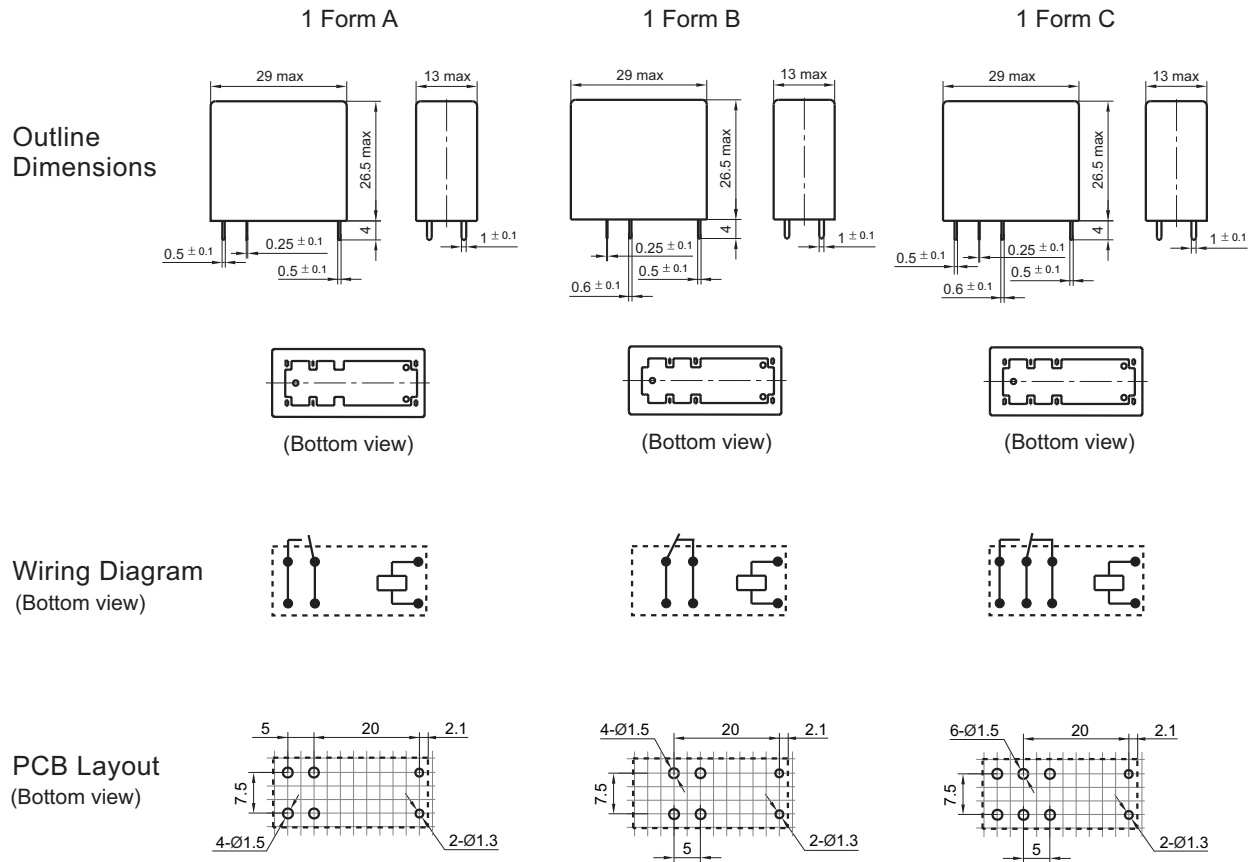
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The standard type is made of black cover. If smoky-gray cover is required, please add a special suffix (611) when ordering. Please take note that smoky-gray cover is only available for flux proofed.

4) The customer special requirement express as special code after evaluating by Hongfa.

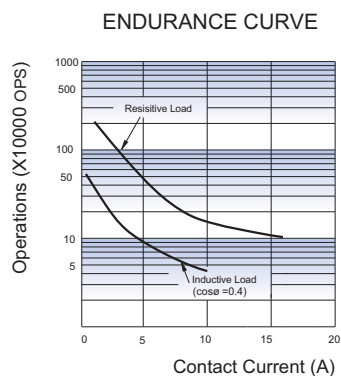
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm



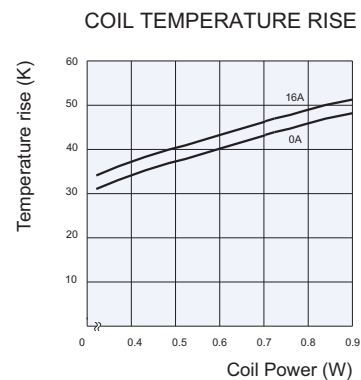
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.5mm.

CHARACTERISTIC CURVES

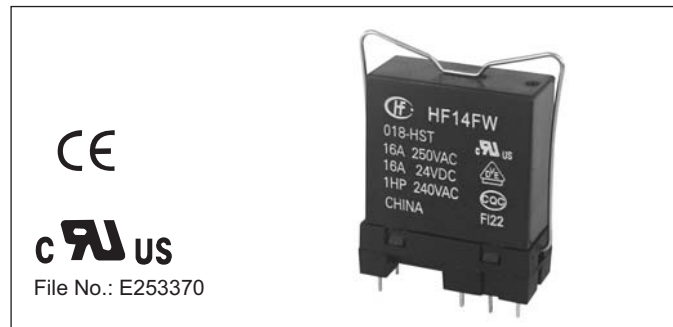


Test conditions:

NO, Resistive load,
Flux proofed, Room temp., 1s on 9s off.



Relay Sockets



Features


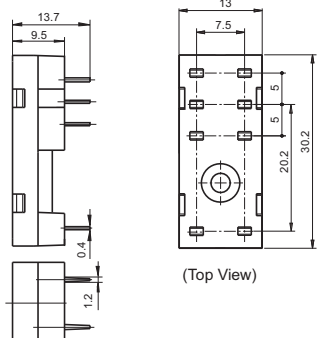
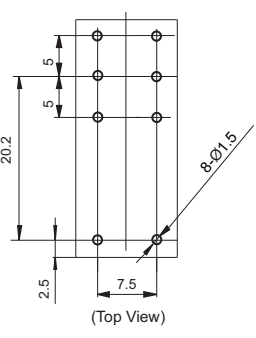

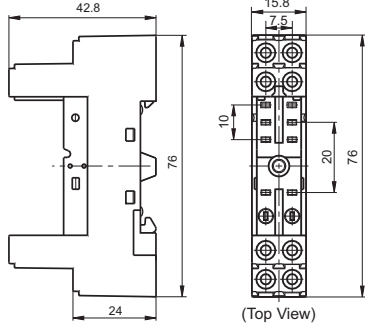
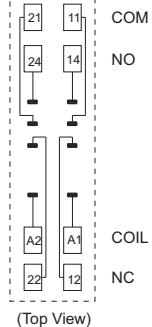

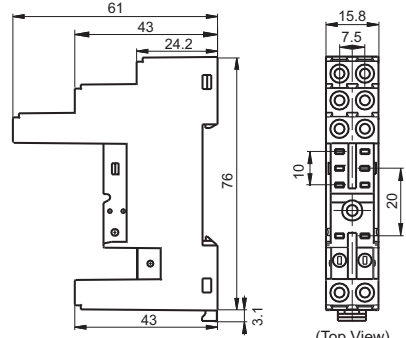
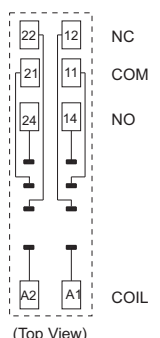
- The dielectric strength can reach 5000VAC(I/O) and the insulation resistance is 1000MΩ
- Three mounting types are available: PCB, screw mounting and DIN rail mounting
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length
14FF-2Z-A1	250VAC	10A	-40 °C to 70 °C	5000VAC	—	—
14FF-2Z-C2	250VAC	10A	-40 °C to 70 °C	5000VAC	0.6N·m	7mm
14FF-2Z-C3	250VAC	10A	-40 °C to 70 °C	5000VAC	0.6N·m	7mm
14FF-2Z-C4	250VAC	10A	-40 °C to 70 °C	5000VAC	—	9mm


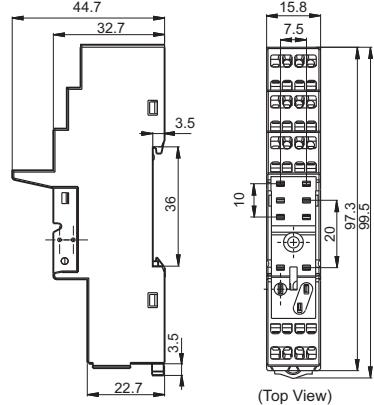
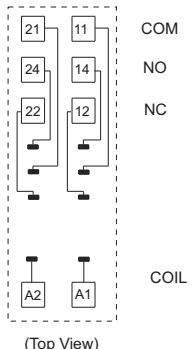
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
14FF-2Z-A1  PCB terminal, PCB or Screw mounting	 (Top View)	 (Top View)	metallic retainer 14FF-H3
14FF-2Z-C2  Screw terminal DIN rail or Screw mounting With finger protection device	 (Top View)	 (Top View)	plastic retainer 14FF-H6 marker 14FF-M1 plug-in module HFAA to HFHU*
14FF-2Z-C3  Screw terminal DIN rail or Screw mounting With finger protection device	 (Top View)	 (Top View)	plastic retainer 14FF-H6 marker 14FF-M1 plug-in module HFAA to HFHU*

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
14FF-2Z-C4  Spring-loaded terminal DIN rail mounting With finger protection device	 (Top View)	 (Top View)	plastic retainer 14FF-H6 marker 14FF-M1 plug-in module HFAA to HFHU*

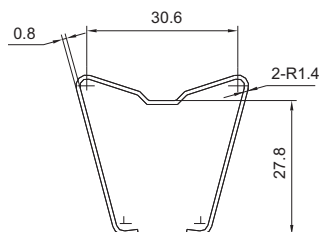
Notes: * Please refer to the product datasheet if plug-in module is required.

DIMENSION OF RELATED COMPONENT (AVAILABLE)

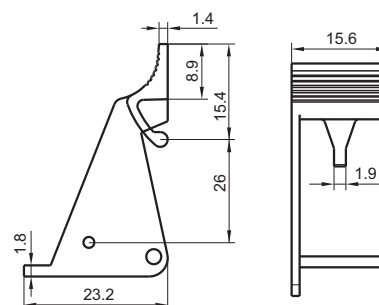
Unit: mm

Retainer

14FF-H3 (Metallic retainer)

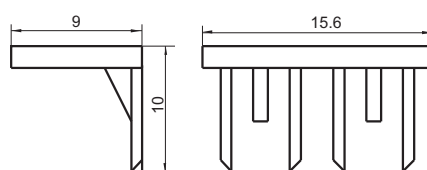


14FF-H6 (Plastic retainer)



Marker

14FF-M1



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. Socket which can be mounted with markers is furnished with a marker; as for other related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. The above is only an example of typical socket and related component type which is suitable to HF14FW relay. If you have any special requirements, please contact us.
4. Main outline dimension(L, W, H) ≥ 50 mm, tolerance should be ± 1 mm; outline dimension > 20 mm and < 50 mm, tolerance should be ± 0.5 mm; outline dimension ≤ 20 mm, tolerance should be ± 0.3 mm.
5. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF18FF

MINIATURE INTERMEDIATE POWER RELAY

c RU US

File No.:E133481



File No.:R50147087



File No.:CQC09002030026 (DC type)
CQC09002030027 (AC type)



Features

- 7A switching capability (2C, 3C type)
- 1.5kV dielectric strength (between coil and contacts)
- Gold plated contact available
- Conform to the CE low voltage directive
- Sockets available
- 2 to 4 pole configurations
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (28.0 x 21.5 x 35.0) mm

CONTACT DATA

Contact arrangement	2C, 3C	4C
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	See ordering info.	
Contact rating (Res. load)	7A 250VAC/30VDC	5A 250VAC/30VDC
Max. switching voltage	250VAC / 30VDC	
Max. switching current	7A	5A
Max. switching power	210W 1750VA	150W 1250VA
Mechanical endurance	2 x 10 ⁷ OPS	
Electrical endurance	2Z/3Z type: 1 x 10 ⁵ OPS (7A 250VAC, Resistive load, Room temp., 1s on 9s off)	
	2Z/3Z type: 1 x 10 ⁵ OPS (7A 30VDC, Resistive load, Room temp., 1s on 9s off)	
	4Z type: 1 x 10 ⁵ OPS (5A 250VAC, Resistive load, Room temp., 1s on 9s off)	
	4Z type: 1 x 10 ⁵ OPS (5A 30VDC, Resistive load, Room temp., 1s on 9s off)	

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	1500VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	1500VAC 1min
Operate time (at nomi. volt.)	DC type: 25ms max.	
Release time (at nomi. volt.)	DC type: 25ms max.	
Temperature rise (no-load, at nomi.volt.)	60K max.	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1mm DA	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 70°C	
Termination	PCB, Plug-in	
Unit weight	Approx. 37g	
Construction	Dust protected	

Notes: 1) The data shown above are initial values.

COIL

Coil power	DC type: Approx. 0.9W to 1.1W; AC type: Approx. 1.2VA to 1.8VA
------------	---

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VDC min.	Max. Voltage VDC ²⁾	Coil Resistance Ω
5	4.0	0.50	5.5	27.5 x (1±10%)
6	4.8	0.60	6.6	40 x (1±10%)
12	9.6	1.20	13.2	160 x (1±10%)
24	19.2	2.40	26.4	650 x (1±10%)
48	38.4	4.80	52.8	2600 x (1±15%)
110	88.0	11.0	121	11000 x (1±15%)

Nominal Voltage VAC	Pick-up Voltage VAC max. ¹⁾	Drop-out Voltage VAC min.	Max. Voltage VAC ²⁾	Coil Resistance Ω
6	4.80	1.80	6.6	11.5 x (1±10%)
12	9.60	3.60	13.2	46 x (1±10%)
24	19.2	7.20	26.4	184 x (1±10%)
48	38.4	14.4	52.8	735 x (1±10%)
120	96.0	36.0	132	4550 x (1±15%)
220/240	176.0	72.0	264	14400 x (1±15%)

Notes: 1) Under ambient temperature, applying more than 80% of rating voltage to coil, relay will take action accordingly. But in order to meet the stated product performance, please apply rated voltage to coil.

2) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	2 Form C	7A 250VAC/30VDC
	3 Form C 4 Form C	5A 250VAC/30VDC
TÜV	2 Form C 3 Form C	7A 250VAC/30VDC
	4 Form C	5A 250VAC/30VDC

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.10

ORDERING INFORMATION

Type	HF18FF /	A	012	-2Z	1	G	D (XXX)
Coil voltage form	A: AC Nil: DC						
Coil voltage	DC: 5VDC to 110VDC AC: 6VAC to 240VAC						
Contact arrangement	2Z: 2 Form C 3Z: 3 Form C 4Z: 4 Form C						
Mounting Termination (See the following)	1: Socket 2: PCB 5: Flange-Mounting						
Contact material	T: AgSnO ₂ Nil: AgCe G: AgCe + Au plated TG: AgSnO ₂ + Au plated						
LED	D: With LED Nil: Without LED						
Special code ²⁾	XXX: Customer special requirement Nil: Standard						

Notes: 1) We also can supply the special type with terminals numbered 1,4,5,8,9,12,13,14 for 2 poles.

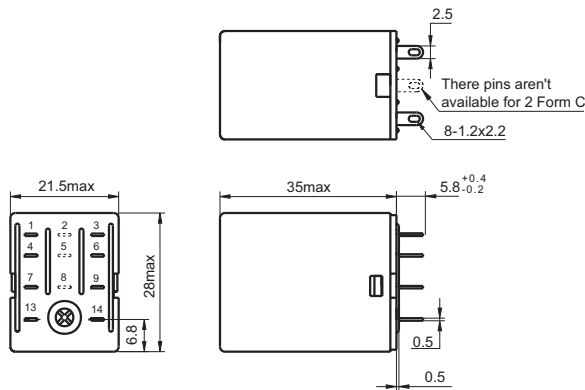
2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

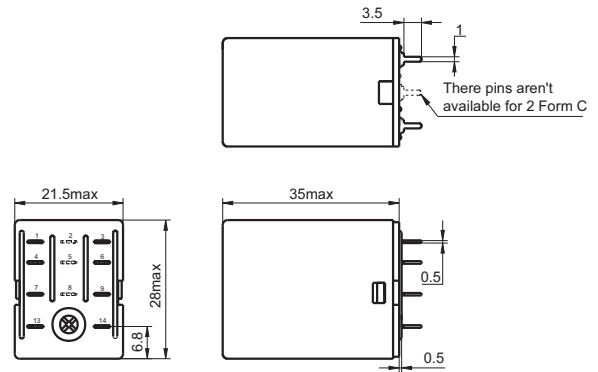
Unit: mm

Outline Dimensions

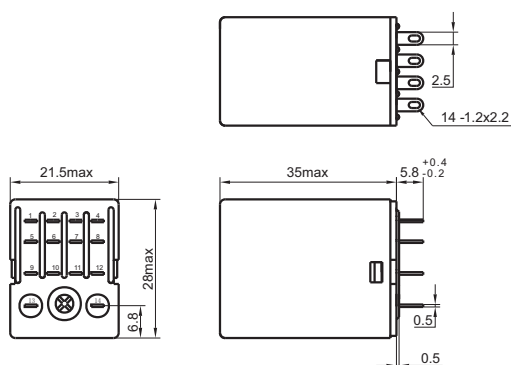
HF18FF/□□□□-2Z1□□/3Z1□□□



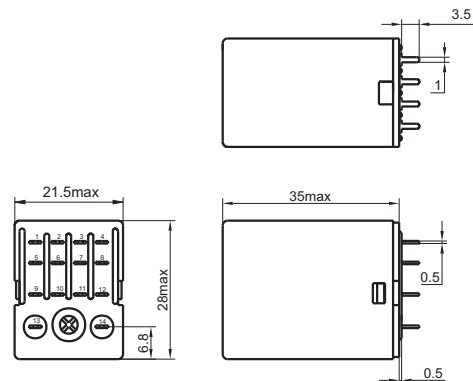
HF18FF/□□□□-2Z2□□/3Z2□□□



HF18FF/□□□□-4Z1□□□



HF18FF/□□□□-4Z2□□□

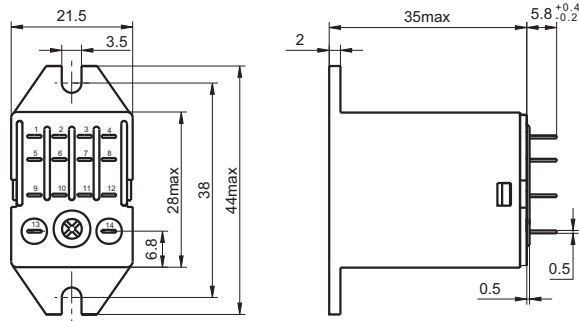


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

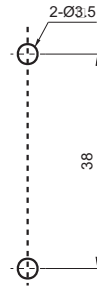
Unit: mm

HF18FF/□□□□-4Z5□□□

Outline Dimensions

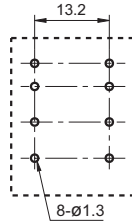


Mounting Holes

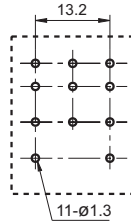


PCB Layout
(Bottom view)

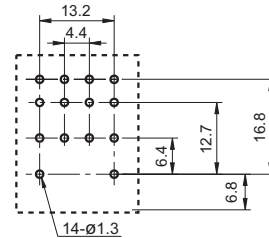
2 Form C



3 Form C

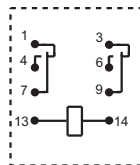


4 Form C

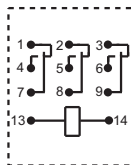


Wiring Diagram
(Bottom view)

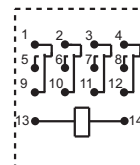
2 Form C



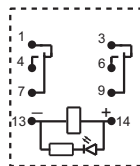
3 Form C



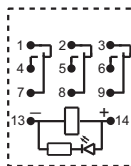
4 Form C



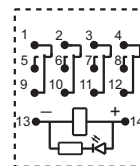
2 Form C (With LED)



3 Form C (With LED)

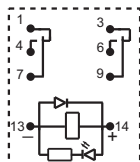


4 Form C (With LED)

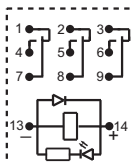


Remark: For AC parts with diode, the positive and negative pole markings on wiring diagram are not applicable.

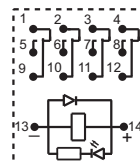
2 Form C
(DC, With fly-wheel diode)



3 Form C
(DC, With fly-wheel diode)



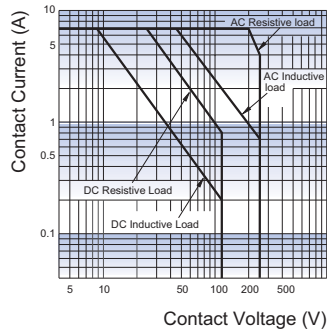
4 Form C
(DC, With fly-wheel diode)



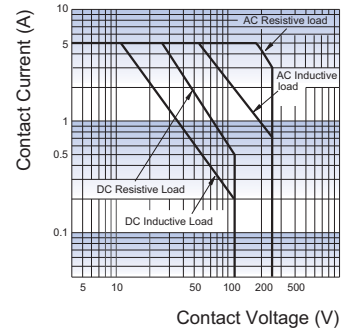
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER
(2, 3 Form C)



MAXIMUM SWITCHING POWER
(4 Form C)



Relay Sockets



Features

- The dielectric strength can reach 2000VAC and the insulation resistance is 1000MΩ
- Three mounting types are available: PCB mounting screw mounting and DIN rail mounting.
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection.
- Components available: retainer, marker and plug-in module
- Environmental friendly product (RoHS compliant)


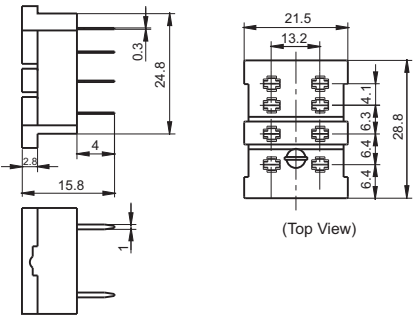
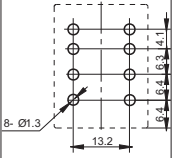

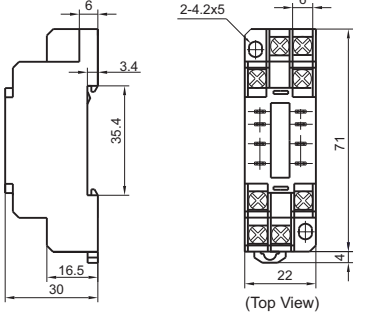
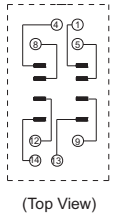
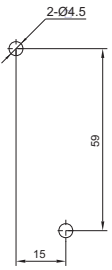

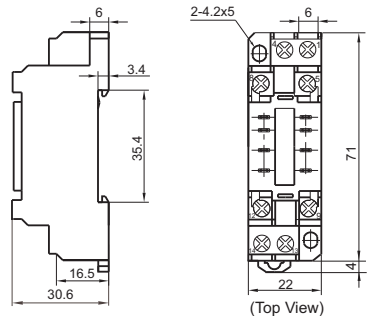
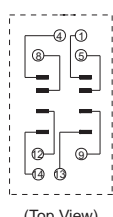
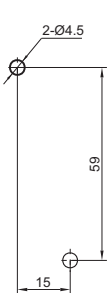

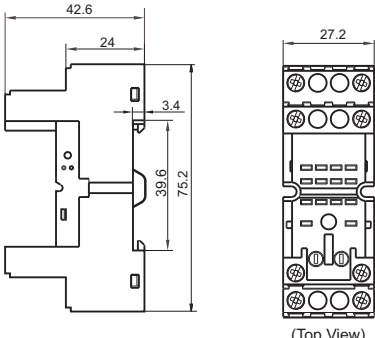
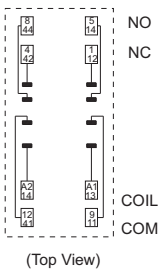
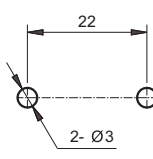

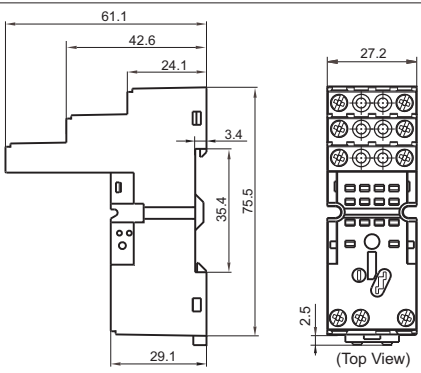
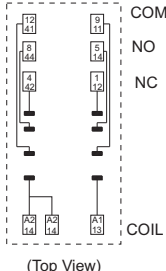
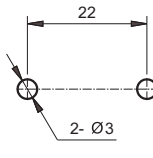
CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length
18FF-2Z-A2	250VAC	7A	-40 °C to 70°C	2000VAC	—	—
18FF-2Z-C1	250VAC	7A	-40 °C to 70°C	2000VAC	0.8N · m	7mm
18FF-2Z-C2	250VAC	7A	-40 °C to 70°C	2000VAC	0.8N · m	7mm
18FF-2Z-C4	250VAC	7A	-40 °C to 70°C	2000VAC	0.6N · m	7mm
18FF-2Z-C5	250VAC	7A	-40 °C to 70°C	2000VAC	0.6N · m	7mm
18FF-2Z-C8	250VAC	7A	-40 °C to 70°C	2000VAC	0.6N · m	7mm
18FF-2Z-C9	250VAC	7A	-40 °C to 70°C	2000VAC	—	7mm
18FF-3Z-C4	250VAC	7A*/10A*	-40 °C to 70°C	2000VAC	0.6N · m	7mm
18FF-3Z-C5	250VAC	7A*/10A*	-40 °C to 70°C	2000VAC	0.6N · m	7mm
18FF-4Z-A2	250VAC	7A*	-40 °C to 70°C	2000VAC	—	—
18FF-4Z-C1	250VAC	7A*/10A*	-40 °C to 70°C	2000VAC	0.8N · m	7mm
18FF-4Z-C2	250VAC	7A*/10A*	-40 °C to 70°C	2000VAC	0.8N · m	7mm
18FF-4Z-C4	250VAC	7A*/10A*	-40 °C to 70°C	2000VAC	0.6N · m	7mm
18FF-4Z-C5	250VAC	7A*/10A*	-40 °C to 70°C	2000VAC	0.6N · m	7mm
18FF-4Z-C8	250VAC	7A*	-40 °C to 70°C	2000VAC	0.6N · m	7mm
18FF-4Z-C9	250VAC	7A	-40 °C to 70°C	2000VAC	—	7mm

Remark: For sockets marked *, their group of current totally should be not more than 20A.


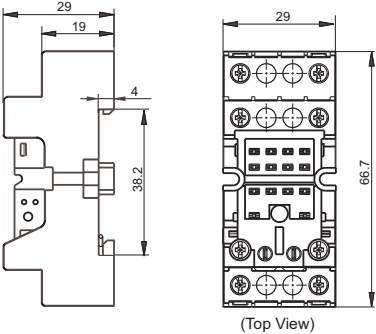
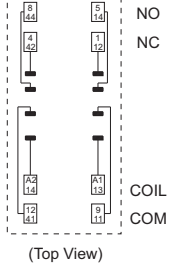
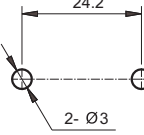

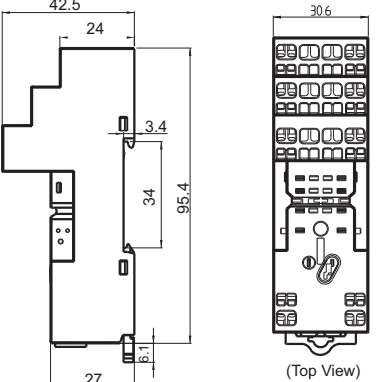
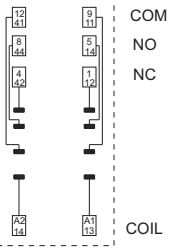

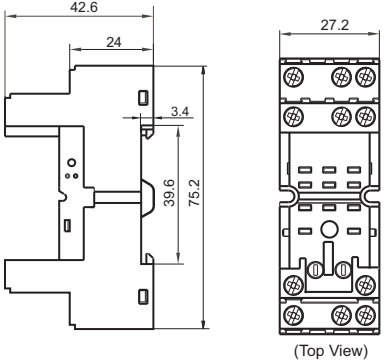
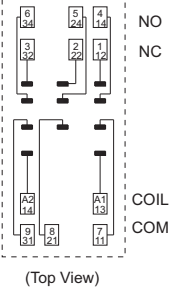
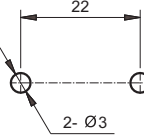

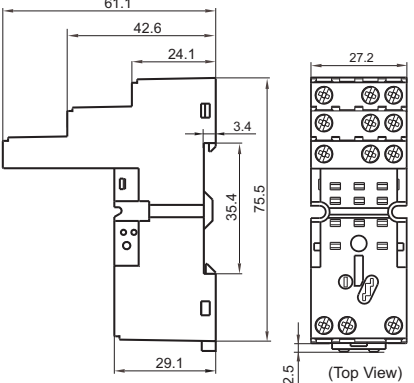
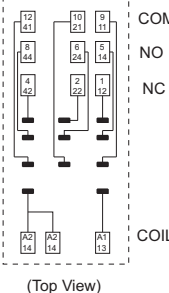
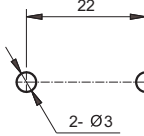
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
18FF-2Z-A2  PCB Terminal, PCB mounting Applicable for 2 poles	 (Top View)			metallic retainer 18FF-H1
18FF-2Z-C1  Screw Terminal, DIN rail or Screw mounting, Without finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		metallic retainer 18FF-H2 (be used in sets)
18FF-2Z-C2  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		metallic retainer 18FF-H2 (be used in sets)
18FF-2Z-C4  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		plastic retainer 18FF-H4 metallic retainer 18FF-H5 marker 18FF-M1 plug-in module HFAA to HFHU*
18FF-2Z-C5  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 2 poles	 (Top View)	 (Top View)		plastic retainer 18FF-H4 metallic retainer 18FF-H5 marker 18FF-M1 plug-in module HFAA to HFHU*


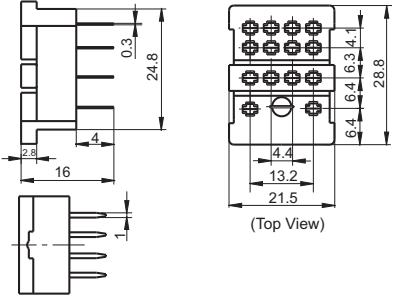
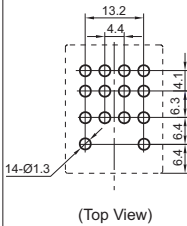

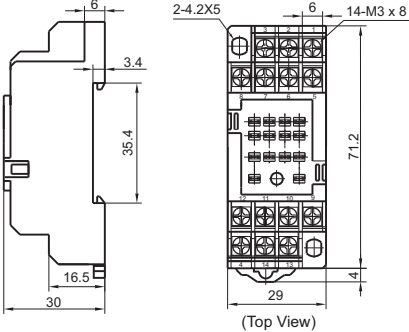
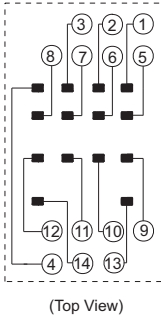
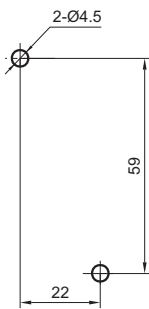

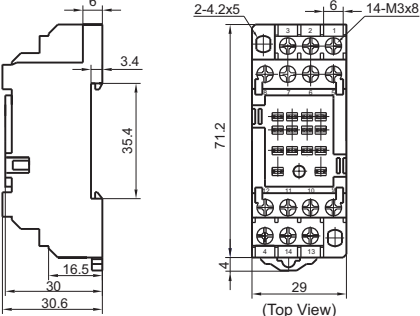
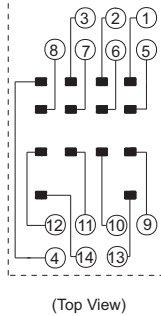


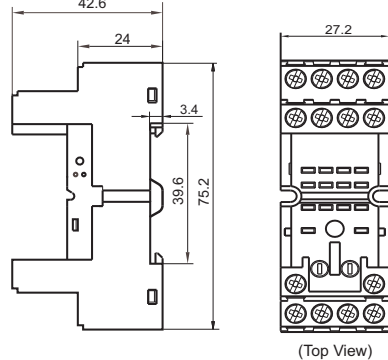
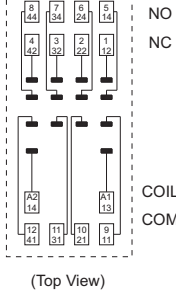
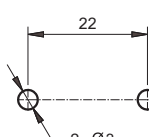
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
18FF-2Z-C8  <p>Screw Terminal, DIN rail or Screw mounting. With finger protection device Applicable for 2 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		plastic retainer 18FF-H4 marker 18FF-M3
18FF-2Z-C9  <p>Spring-loaded terminal DIN rail mounting With finger protection device Applicable for 2 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		plastic retainer 18FF-H4 metallic retainer 18FF-H5 plug-in module HFAA ~ HFHU* marker 18FF-M3
18FF-3Z-C4  <p>Screw Terminal, DIN rail or Screw mounting. With finger protection device Applicable for 3 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		plastic retainer 18FF-H4 metallic retainer 18FF-H5 marker 18FF-M1 plug-in module HFAA to HFHU*
18FF-3Z-C5  <p>Screw Terminal, DIN rail or Screw mounting. With finger protection device Applicable for 3 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		plastic retainer 18FF-H4 metallic retainer 18FF-H5 marker 18FF-M1 plug-in module HFAA to HFHU*


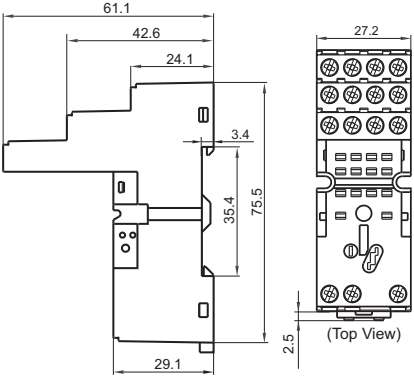
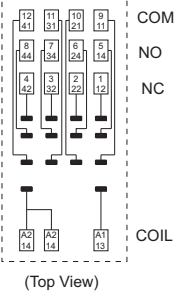
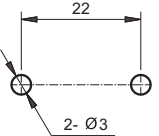

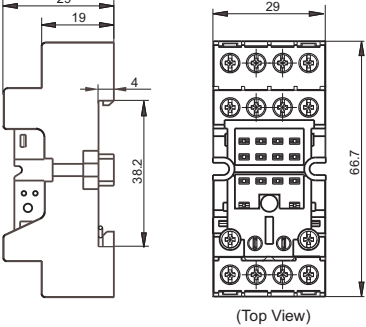
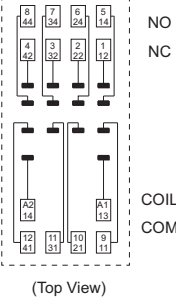
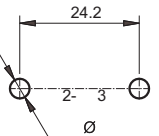

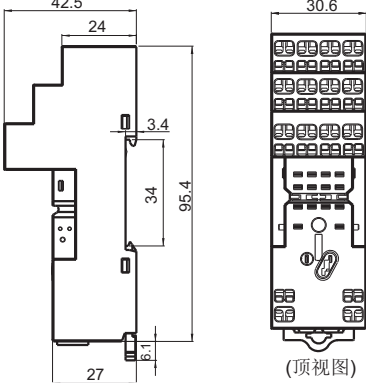
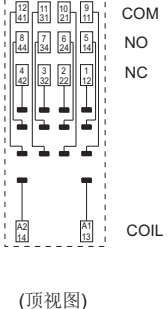
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
<p>18FF-4Z-A2</p>  <p>PCB Terminal, PCB mounting Applicable for 4 poles</p>	 <p>(Top View)</p>		 <p>(Top View)</p>	<p>metallic retainer 18FF-H1</p>
<p>18FF-4Z-C1</p>  <p>Screw Terminal, DIN rail or Screw mounting, Without finger protection device Applicable for 4 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>metallic retainer 18FF-H2 (be used in sets)</p>
<p>18FF-4Z-C2</p>  <p>Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>metallic retainer 18FF-H2 (be used in sets)</p>
<p>18FF-4Z-C4</p>  <p>Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		<p>plastic retainer 18FF-H4 metallic retainer 18FF-H5 marker 18FF-M1 plug-in module HFAA to HFHU*</p>

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	PCB Layout	Components Available
18FF-4Z-C5  <p>Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		plastic retainer 18FF-H4 metallic retainer 18FF-H5 marker 18FF-M1 plug-in module HFAA to HFHU*
18FF-4Z-C8  <p>Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for 4 poles</p>	 <p>(Top View)</p>	 <p>(Top View)</p>		plastic retainer 18FF-H4 marker 18FF-M3
18FF-4Z-C9  <p>Spring-loaded terminal DIN rail mounting With finger protection device Applicable for 2 poles</p>	 <p>(顶视图)</p>	 <p>(顶视图)</p>		塑料卡簧 18FF-H4 金属卡簧 18FF-H5 插入式模块 HFAA ~ HFHU* 标识板 18FF-M3

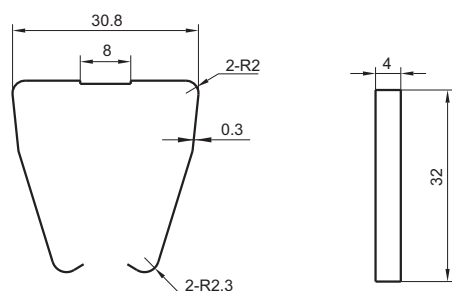
Notes: * Please refer to the product datasheet if plug-in module is required.

DIMENSION OF RELATED COMPONENT (AVAILABLE)

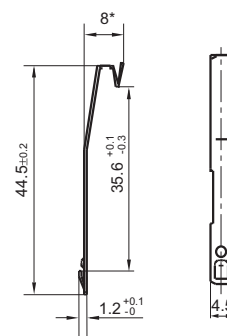
Unit: mm

Retainer

18FF-H1 (Metallic retainer)



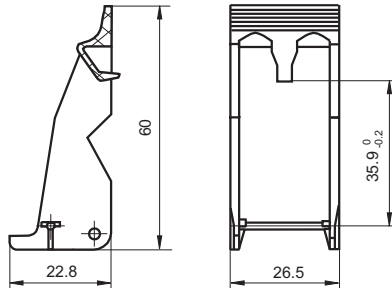
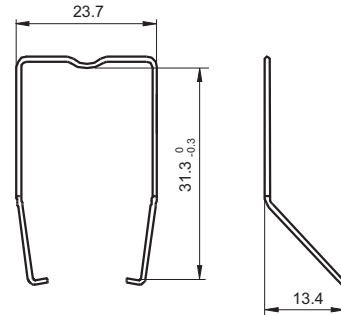
18FF-H2 (Metallic retainer)



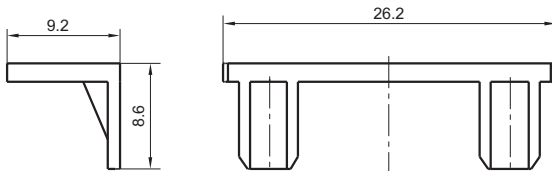
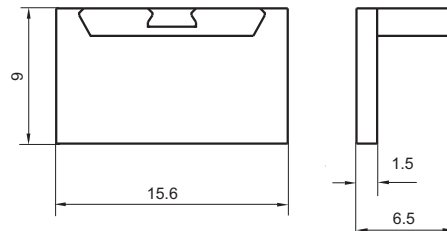
Note: 18FF-H2 retainer has to be used in sets, please pay special attention while placing the order.

DIMENSION OF RELATED COMPONENT (AVAILABLE)

Unit: mm

Retainer**18FF-H4 (Plastic retainer)****18FF-H5 (Metallic retainer)****DIMENSION OF RELATED COMPONENT (AVAILABLE)**

Unit: mm

Marker**18FF-M1****18FF-M3****Things to be noticed when selecting sockets:**

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. Socket which can be mounted with markers is furnished with a marker; as for other related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. The above is only an example of typical socket and related component type which is suitable to HF18FF relay. If you have any special requirements, please contact us.
4. Main outline dimension (L, W, H) ≥ 50 mm, tolerance should be ± 1 mm; outline dimension > 20 mm and < 50 mm, tolerance should be ± 0.5 mm; outline dimension ≤ 20 mm, tolerance should be ± 0.3 mm.
5. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF21FF

SUBMINIATURE HIGH POWER RELAY



File No.:E133481



Features

- 15A switching capability
- 1 Form A, 1 Form B and 1 Form C configurations
- Standard PCB layout
- Plastic sealed and dust protected types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (20.2 x 16.5 x 20.2) mm

CONTACT DATA

Contact arrangement	1A, 1B	1C
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	AgSnO ₂	
Contact rating	15A 120VAC	10A 120VAC/24VDC
Max. switching voltage	120VAC / 30VDC	
Max. switching current	15A	10A
Max. switching power	1800VA / 240W	
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1H type: 1 x 10 ⁵ OPS (15A 120VAC, Resistive load, Room temp., 1s on 9s off)	

CHARACTERISTICS

Insulation resistance	100MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	1500VAC 1min
	Between open contacts	750VAC 1min
Operate time (at nomi. volt.)	10ms max.	
Release time (at nomi. volt.)	5ms max.	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 70°C	
Termination	PCB	
Unit weight	Approx. 13g	
Construction	Plastic sealed, Dust protected	

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B.

COIL

Coil power	5VDC to 24VDC: Approx. 360mW; 48VDC: Approx. 530mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.75	0.5	6.5	70 x (1±10%)
6	4.50	0.6	7.8	100 x (1±10%)
9	6.75	0.9	11.7	225 x (1±10%)
12	9.00	1.2	15.6	400 x (1±10%)
18	13.5	1.8	23.4	900 x (1±10%)
24	18.0	2.4	31.2	1600 x (1±15%)
48	36.0	4.8	62.4	4500 x (1±15%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	1 Form C	10A 120VAC
	1 Form A	15A 120VAC TV-5 120VAC
	1 Form B	15A 120VAC 1800VA at 25°C, Ballast 6.5A 277VAC 1800VA at 25°C, Ballast
	1 Form B F type	8.3A 120VAC 1000VA at 90°C, Ballast 3.6A 277VAC 1000VA at 90°C, Ballast

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

Type	HF21FF / 012 -1H S T F (XXX)					
Coil voltage	5, 6, 9, 12, 18, 24, 48VDC					
Contact arrangement	1H: 1 Form A 1D: 1 Form B 1Z: 1 Form C					
Construction ¹⁾	S: Plastic sealed Nil: Dust protected					
Contact material	T: AgSnO ₂					
Insulation standard	F: Class F Nil: Class B					
Special code ³⁾	XXX: Customer special requirement Nil: Standard					

Notes: 1) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, dust protected type is preferentially recommended.

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa.

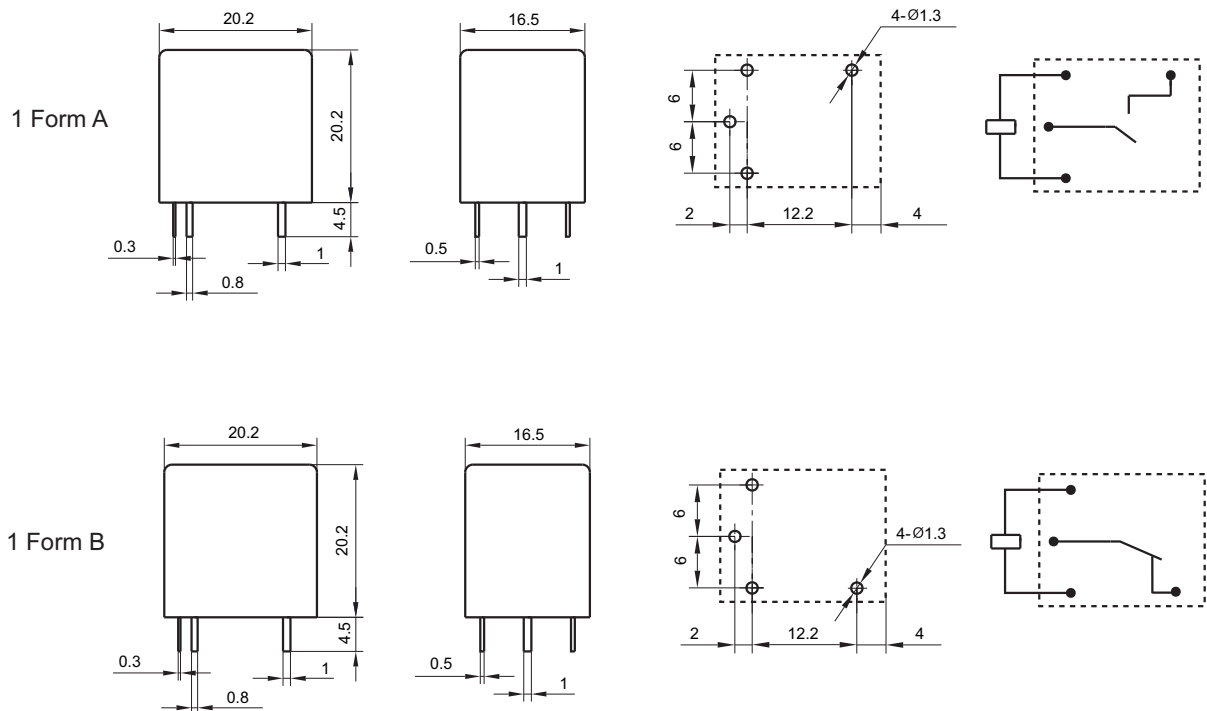
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

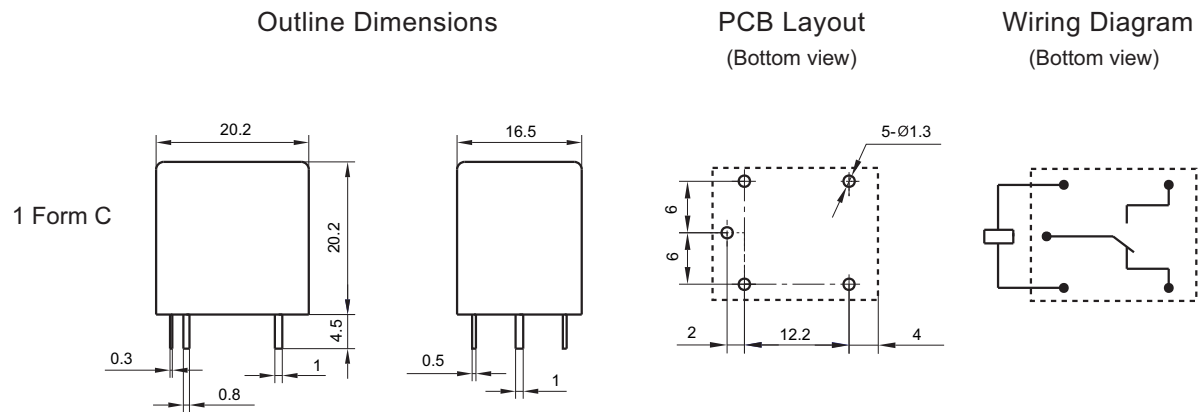
PCB Layout
(Bottom view)

Wiring Diagram
(Bottom view)



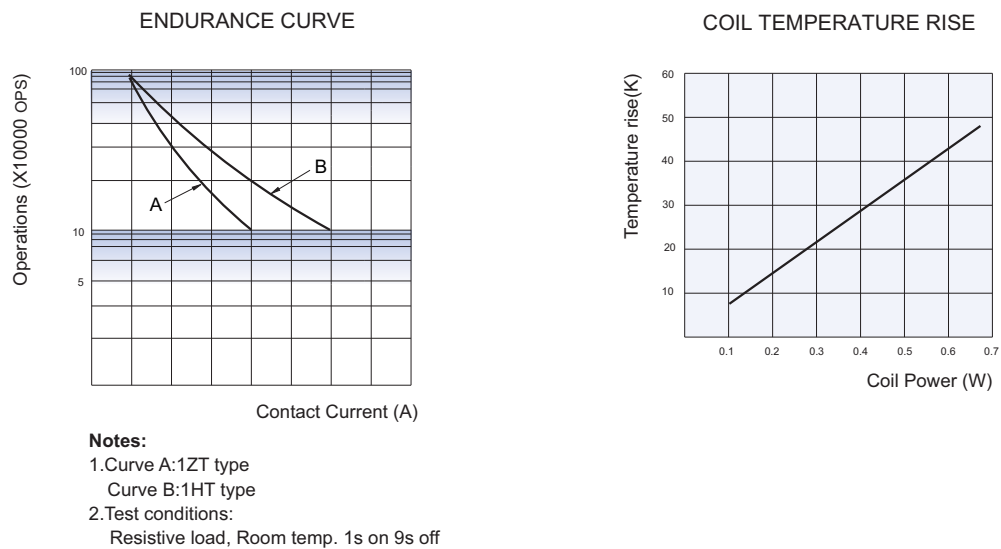
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF25F

SUBMINIATURE HIGH POWER RELAY



File No.:E134517



File No.:40026917



File No.:R50207576



File No.:CQC09002028692



Features

- Small and for microwave oven
- 20A switching capability
- 1.5HP 250VAC approved by UL standard
- 5kV impulse withstand voltage (between coil and contacts)
- PCB & QC layouts
- Flux proofed types available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (22.8 x 12.3 x 24.4) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating	Resistive: 20A 250VAC 1.5HP 250VAC
Max. switching voltage	250VAC / 30VDC
Max. switching current	20A
Max. switching power	5000VA / 480W
Mechanical endurance	2 x 10 ⁶ ops
Electrical endurance	1 x 10 ⁵ ops (20A 250VAC, Resistive load, Room temp., 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		5ms max.
Humidity		5% to 85% RH
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Ambient temperature		-40°C to 85°C
Vibration resistance		10Hz to 55Hz 1.5mm DA
Termination		PCB & QC
Unit weight		Approx. 16.5g
Construction		Flux proofed

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class A

COIL

Coil power	Approx. 500mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.75	0.25	6.50	50 x (1±10%)
6	4.50	0.30	7.80	72 x (1±10%)
9	6.75	0.45	11.7	162 x (1±10%)
12	9.00	0.60	15.6	288 x (1±10%)
18	13.5	0.90	23.4	648 x (1±10%)
24	18.0	1.20	31.2	1152 x (1±10%)

Notes: 1) When requiring pick-up voltage <75% of nominal voltage, special order allowed.

2) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	20A 250VAC 16A 30VDC 1.5HP 250VAC
VDE	20A 250VAC 16A 30VDC
TÜV	20A 250VAC 16A 30VDC

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

Type	HF25F /	012	-H	1	(XXX)
Coil voltage	5, 6, 9, 12, 18, 24VDC				
Contact arrangement	H: 1 Form A				
Version	1: 1 type 2: 2 type 3: 3 type 4: 4 type Nil: Standard type				
Special code ²⁾	XXX: Customer special requirement		Nil: Standard		

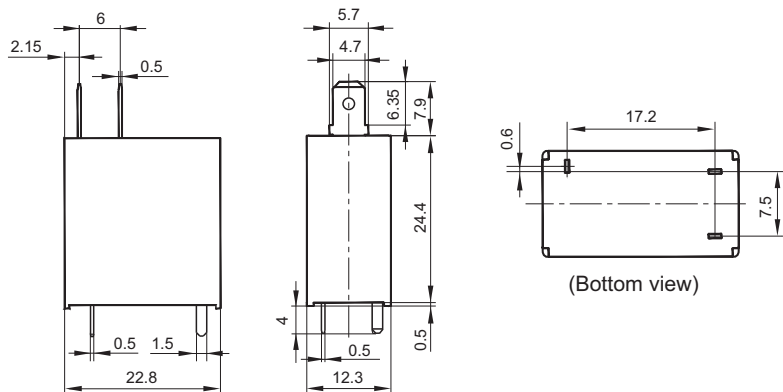
Notes: 1) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

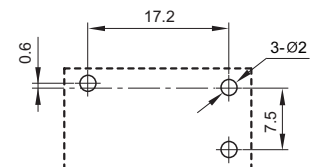
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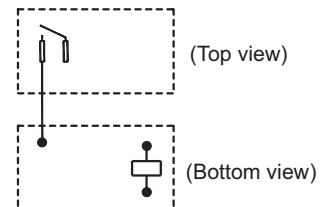
Outline Dimensions



PCB Layout (Bottom view)

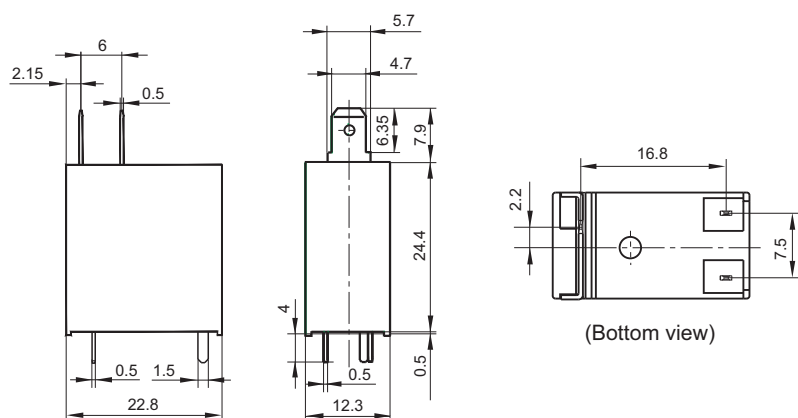


Wiring Diagram

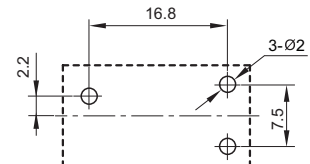


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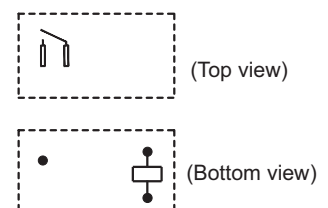
Outline Dimensions



PCB Layout (Bottom view)



Wiring Diagram

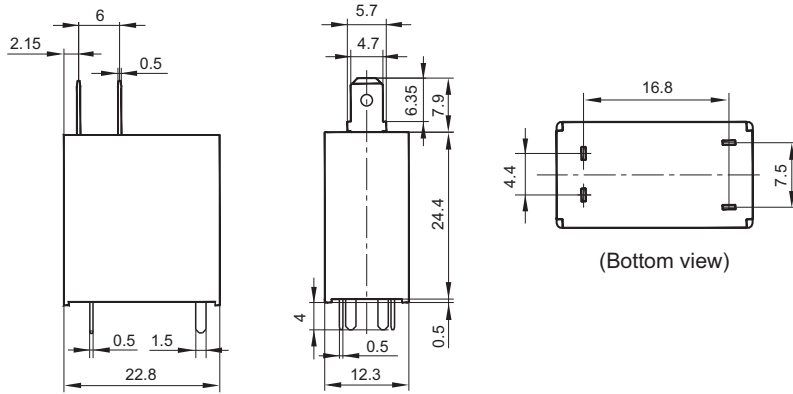


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

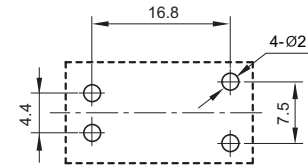
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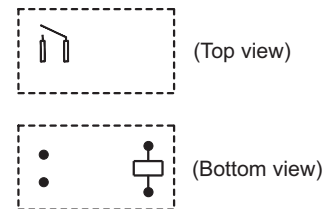
Outline Dimensions



PCB Layout (Bottom view)

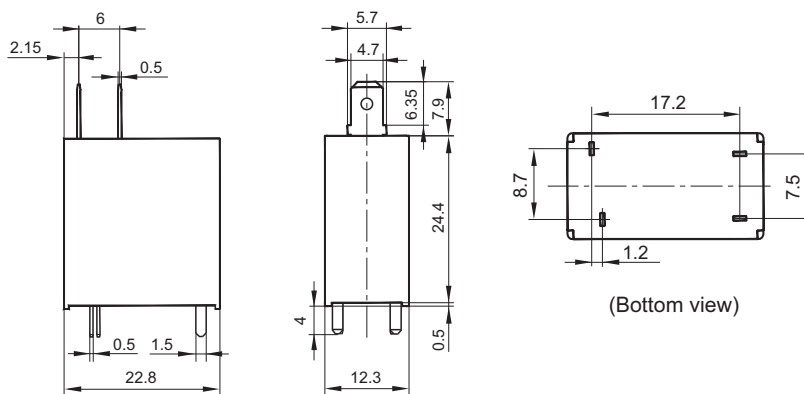


Wiring Diagram

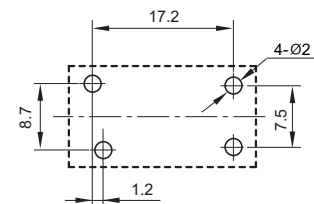


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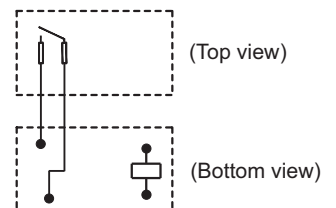
Outline Dimensions



PCB Layout (Bottom view)



Wiring Diagram

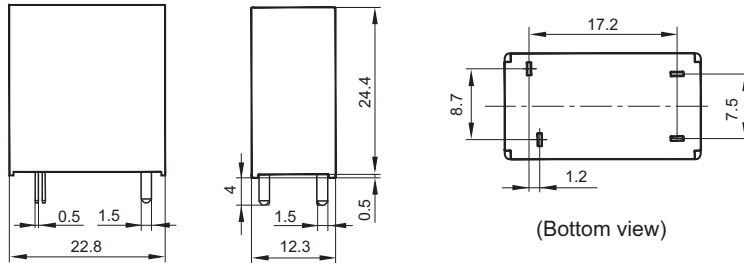


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

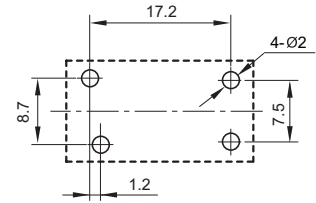
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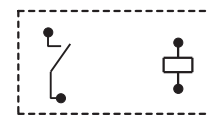
Outline Dimensions



PCB Layout (Bottom view)



Wiring Diagram

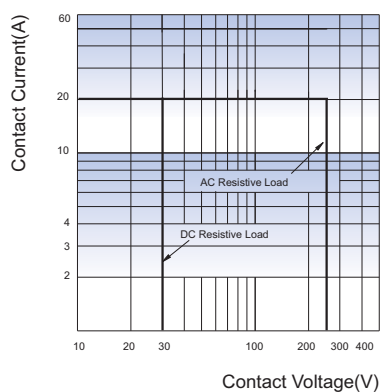


(Bottom view)

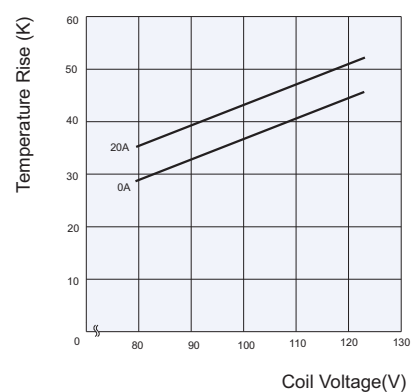
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



COIL TEMPERATURE RISE



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF32F

SUBMINIATURE INTERMEDIATE POWER RELAY



File No.: E134517



File No.: 40012204



File No.: CQC12002076528



Features

- 10A switching capability
- 1 Form A and 1 Form C configurations
- Subminiature, standard PCB layout
- Plastic sealed and flux proofed types available
- UL insulation system: Class F
- Product in accordance to IEC 60335-1 available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (18.4 x 10.2 x 15.3) mm

CONTACT DATA

Contact arrangement	1A, 1C			
Contact resistance	100mΩ max(at 1A 6VDC)			
Contact material	AgNi, AgCdO			
Contact rating (Res. load)	1A		1C	
	H type: 5A 250VAC 5A 30VDC 10A 125VAC	HL type: 3A 250VAC 3A 30VDC	NO 5A 250VAC 5A 30VDC 10A 125VAC	NC 3A 250VAC 3A 30VDC
Max. switching current	10A			3A
Max. switching power	1250VA/150W			750VA/90W
Max. switching voltage	250VAC/30VDC			
Mechanical endurance	5 x 10 ⁶ OPS			
Electrical endurance	H type: 1 x 10 ⁵ OPS (5A 250VAC, Resistive load, Room temp., 1s on 1s off)			
	HL type: 1 x 10 ⁵ OPS (3A 250VAC, Resistive load, Room temp., 1s on 1s off)			
	Z type: 1 x 10 ⁵ OPS (NO:3A/NC:3A, 250VAC, Resistive load, Room temp., 1.5s on 1.5s off)			

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)	8ms max.	
Release time (at nomi. volt.)	5ms max.	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 70°C	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Termination	PCB	
Unit weight	Approx. 6g	
Construction	Plastic sealed, Flux proofed	

Notes: 1) The data shown above are initial values.

COIL

Coil power	Standard: Approx. 450mW; Sensitive: Approx. 200mW
------------	--

COIL DATA

at 23°C

Standard type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.15	3.9	20 x (1±10%)
5	3.75	0.25	6.5	55 x (1±10%)
6	4.50	0.30	7.8	80 x (1±10%)
9	6.75	0.45	11.7	180 x (1±10%)
12	9.00	0.60	15.6	320 x (1±10%)
18	13.5	0.90	23.4	720 x (1±10%)
24	18.0	1.20	31.2	1280 x (1±10%)
48	36.0	2.40	62.4	5120 x (1±10%)

Sensitive type (Only for 1 Form A)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.15	4.5	45 x (1±10%)
5	3.75	0.25	7.5	125 x (1±10%)
6	4.50	0.30	9.0	180 x (1±10%)
9	6.75	0.45	13.5	400 x (1±10%)
12	9.00	0.60	18.0	720 x (1±10%)
18	13.5	0.90	27.0	1600 x (1±10%)
24	18.0	1.20	36.0	2800 x (1±10%)
48	36.0	2.40	72.0	11520 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

SAFETY APPROVAL RATINGS

UL/CUL	1 Form A	AgCdO, AgNi	H type: 5A 250VAC /30VDC at 70°C 10A 125VAC at 70°C HL type: 3A 250VAC /30VDC at 70°C
		AgCdO	H type: 1/10HP 125VAC at 70°C 1/6HP 250VAC at 70°C 10LRA /1.5FLA 120VAC at 70°C HL type: 5A 125VAC at 70°C
	1 Form C	AgCdO, AgNi	3A 250VAC/30VDC at 70°C
VDE	1 Form A	AgCdO, AgNi	H type: 5A 250VAC /30VDC at 70°C HL type: 3A 250VAC /30VDC at 70°C
	1 Form C	AgCdO, AgNi	3A 250VAC/30VDC at 70°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF32F / 012 -H S L Q 3 (XXX)
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48VDC
Contact arrangement	H: 1 Form A Z: 1 Form C
Construction ¹⁾	S: Plastic sealed Nil: Flux proofed
Coil Power	L: Sensitive (Only for 1 Form A) Nil: Standard
Contact Capacity	Q: High Capacity (Only for Sensitive) Nil: Standard
Contact material	3: AgNi Nil: AgCdO
Special code ³⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended.

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

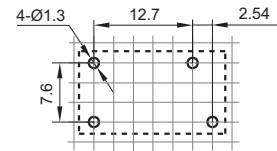
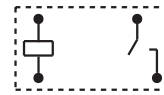
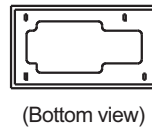
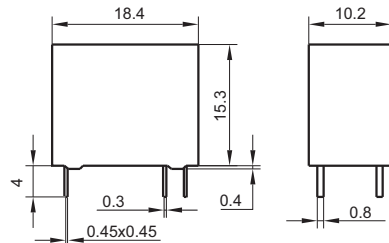
Unit: mm

Outline Dimensions

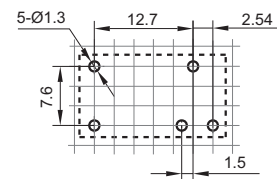
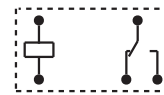
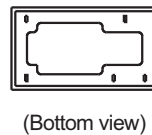
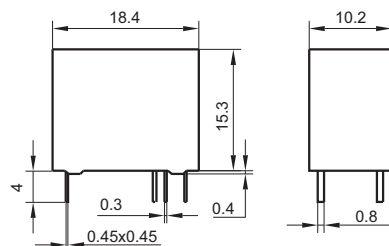
Wiring Diagram (Bottom view)

PCB Layout (Bottom view)

1 Form A



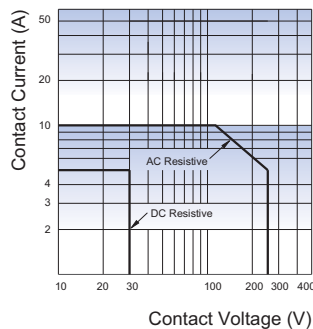
1 Form C



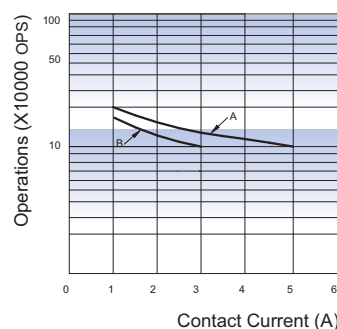
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

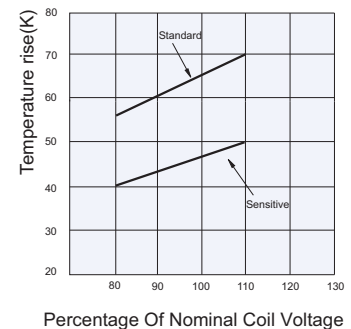
MAXIMUM SWITCHING POWER



EDURANCE CURVE



COIL TEMPERATURE RISE



Notes:

- Curve A: H type
Curve B: HL type, Z type

2. Test conditions:

- H type: Resistive load, 5A 250VAC, Room temp., 1s on 1s off
- HL type: Resistive load, 5A 250VAC, Room temp., 1s on 1s off
- Z type: NO/NC, Resistive load, 3A 250VAC, Room temp., 1.5s on 1.5s off

Test conditions:

- Standard: 5A at 70°C
- Sensitive: 3A at 70°C
- Mounting distance: 5mm

Disclaimer

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HF32FA

SUBMINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:40006182



File No.:CQC09002028689



Features

- 5A switching capability
- Creepage/clearance distance>8mm
- 5kV dielectric strength (between coil and contacts)
- 1 Form A meets VDE 0700, 0631 reinforce insulation
- 1 Form C meets VDE 0631 reinforce insulation
- UL insulation system: Class F
- Product in accordance to IEC 60335-1 available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (17.6 x 10.1 x 12.3) mm

CONTACT DATA

Contact arrangement	1A, 1C	
Contact resistance	70mΩ max.(at 1A 6VDC)	
Contact material	AgNi	
Contact rating (Res. Load)	1A	1C
	Standard/Sensitive	Standard
	5A 250VAC 5A 30VDC	3A 250VAC 3A 30VDC
Max. switching voltage	250VAC / 30VDC	
Max. switching current	5A	
Max. switching power	1250VA / 150W	
Mechanical endurance	1 x 10 ⁶ OPS	
Electrical endurance	H type: 1 x 10 ⁵ OPS (5A 250VAC, Resistive load, Room temp., 1.5s on 1.5s off)	
	Z type: 1 x 10 ⁵ OPS (NO/NC, 3A 250VAC, Resistive load, Room temp., 1.5s on 1.5s off)	

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)	8ms max.	
Release time (at nomi. volt.)	4ms max.	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Shock resistance*	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance*	NO	10Hz to 55 Hz 1.65mm DA
	NC	10Hz to 55 Hz 0.6mm DA
Termination	PCB	
Unit weight	Approx.4.6g	
Construction	Plastic sealed, Flux proofed	

Notes: 1) *Index is not in relay length direction.
2) The data shown above are initial values.
3) Please find coil temperature curve in the characteristic curves below.

COIL

Coil power	Sensitive: Approx. 200mW; Standard: Approx. 450mW
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HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA

at 23°C

Standard type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ¹⁾	Coil Resistance Ω
3	2.25	0.15	3.9	20 x (1±10%)
5	3.75	0.25	6.5	55 x (1±10%)
6	4.50	0.30	7.8	80 x (1±10%)
9	6.75	0.45	11.7	180 x (1±10%)
12	9.00	0.60	15.6	320 x (1±10%)
18	13.5	0.90	23.4	720 x (1±10%)
24	18.0	1.20	31.2	1280 x (1±10%)
48 ²⁾	36.0	2.40	62.4	5120 x (1±10%)

Sensitive type (Only for 1 Form A)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ¹⁾	Coil Resistance Ω
3	2.25	0.15	5.1	45 x (1±10%)
5	3.75	0.25	8.5	125 x (1±10%)
6	4.50	0.30	10.2	180 x (1±10%)
9	6.75	0.45	15.3	400 x (1±10%)
12	9.00	0.60	20.4	720 x (1±10%)
18	13.5	0.90	30.6	1600 x (1±10%)
24	18.0	1.20	40.8	2800 x (1±10%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.
2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

SAFETY APPROVAL RATINGS

UL/CUL	1 Form A	5A 250VAC 5A 30VDC 1/8HP 125VAC/250VAC TV-2 C300
	1 Form C	3A 250VAC 3A 30VDC
VDE		5A 250VAC at 85°C 2A 250VAC cosφ=0.5 at 85°C 1 Form A, Sensitive: 3A 400VAC at 85°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.

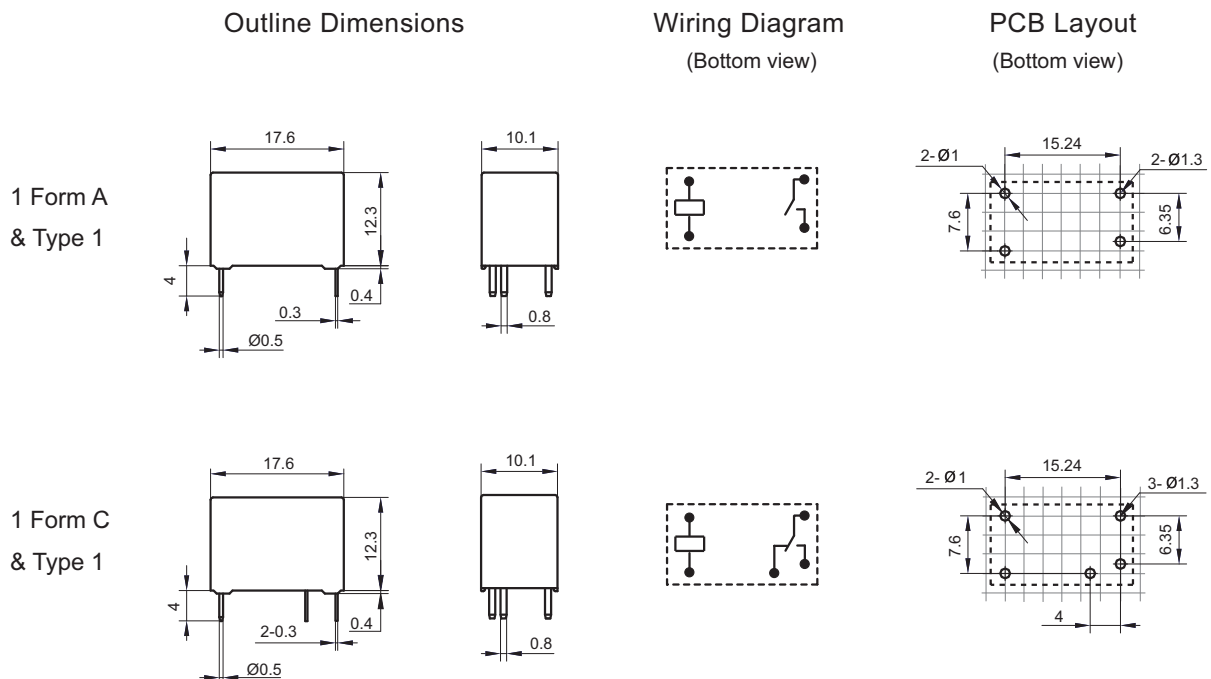
ORDERING INFORMATION

Type		HF32FA / 012 -H S L 1 G (XXX)						
Coil voltage		3, 5, 6, 9, 12, 18, 24, 48VDC						
Contact arrangement		H: 1 Form A		Z: 1 Form C				
Construction ¹⁾²⁾		S: Plastic sealed		Nil: Flux proofed				
Coil power		L: Sensitive (Only for 1 Form A)			Nil: Standard			
Termination		1: Type 1		2: Type 2				
Contact plating ³⁾		G: Gold plated		Nil: No gold plated				
Special code ⁴⁾		XXX: Customer special requirement			Nil: Standard			

- Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).
We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc).
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.
4) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

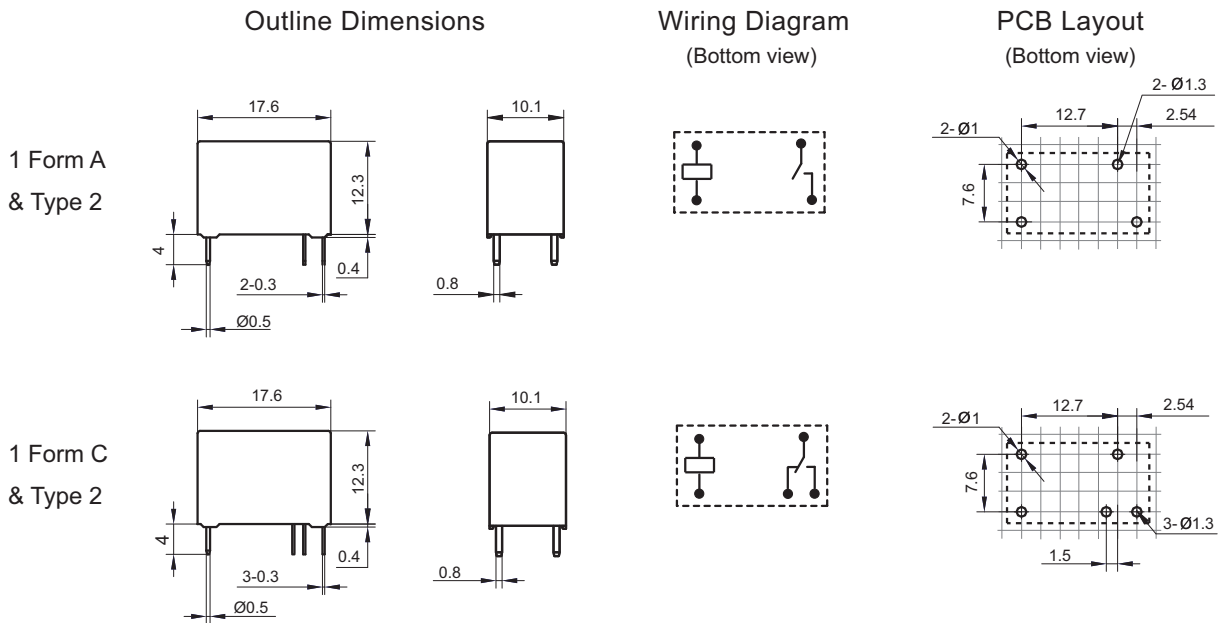
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

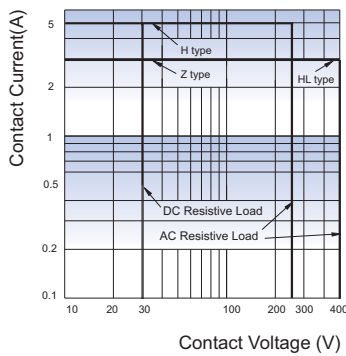
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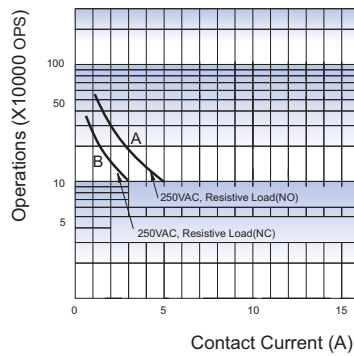
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



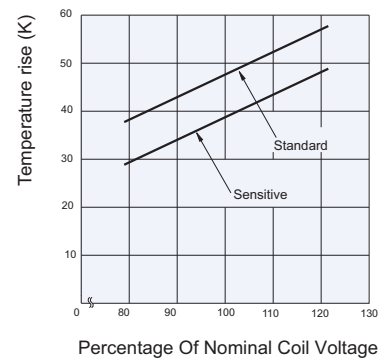
ENDURANCE CURVE



Notes:

- 1) Curve A: H type,
Curve B: Z type
- 2) Test conditions: Flux proofed,
Room temp., 1.5s on 1.5s off.

TEMPERATURE RISE



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HF32FA-G

SUBMINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:40006182



File No.:CQC09002028689



Features

- 10A switching capability
- Creepage/clearance distance>8mm
- 5kV dielectric strength (between coil and contacts)
- UL insulation system: Class F
- Meets VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (17.6 x 10.1 x 12.3) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	70mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. Load)	10A 250VAC
Max. switching voltage	250VAC
Max. switching current	10A
Max. switching power	2500VA
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	1 x 10 ⁴ OPS (10A 250VAC, Resistive load, at 85°C, 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		8ms max.
Release time (at nomi. volt.)		4ms max.
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Shock resistance*	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance*		10Hz to 55 Hz 1.65mm DA
Termination		PCB
Unit weight		Approx.4.6g
Construction		Plastic sealed, Flux proofed

Notes: 1) *Index is not in relay length direction.
2) The data shown above are initial values.
3) Please find coil temperature curve in the characteristic curves below.

COIL

Coil power	Standard: Approx. 450mW; Sensitive: Approx. 230mW
------------	--

COIL DATA

at 23°C

Standard type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ¹⁾	Coil Resistance Ω
3	2.25	0.15	3.9	20 x (1±10%)
5	3.75	0.25	6.5	55 x (1±10%)
6	4.50	0.30	7.8	80 x (1±10%)
9	6.75	0.45	11.7	180 x (1±10%)
12	9.00	0.60	15.6	320 x (1±10%)
18	13.5	0.90	23.4	720 x (1±10%)
24	18.0	1.20	31.2	1280 x (1±10%)
48 ²⁾	36.0	2.40	62.4	5120 x (1±10%)

Sensitive type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ¹⁾	Coil Resistance Ω
3	2.25	0.15	5.1	38 x (1±10%)
5	3.75	0.25	8.5	108 x (1±10%)
6	4.50	0.30	10.2	155 x (1±10%)
9	6.75	0.45	15.3	350 x (1±10%)
12	9.00	0.60	20.4	620 x (1±10%)
18	13.5	0.90	30.6	1390 x (1±10%)
24	18.0	1.20	40.8	2480 x (1±10%)
48 ²⁾	36.0	2.40	81.6	9920 x (1±10%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.
2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

SAFETY APPROVAL RATINGS

UL/CUL	10A 250VAC at 85°C B300
VDE	10A 250VAC at 85°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

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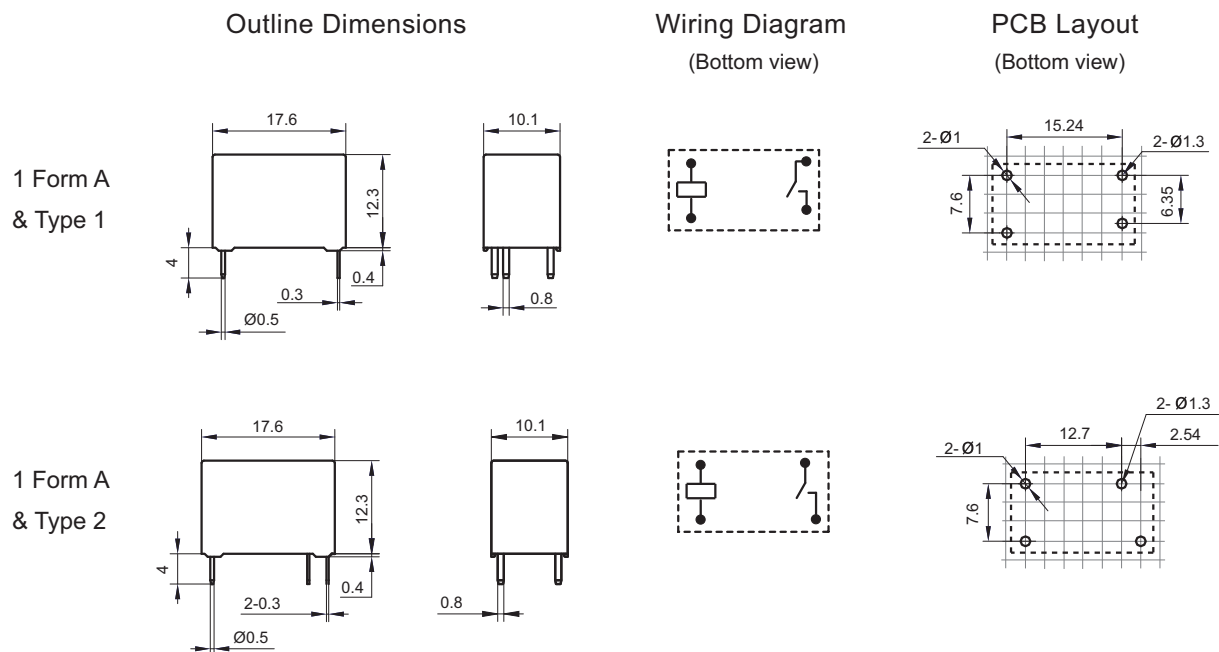
ORDERING INFORMATION

HF32FA-G / 012 -H S L 1 G (XXX)	
Type	
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48VDC
Contact arrangement	H: 1 Form A
Construction ¹⁾²⁾	S: Plastic sealed Nil: Flux proofed
Coil power	L: Sensitive Nil: Standard
Termination	1: Type 1 2: Type 2
Contact plating ³⁾	G: Gold plated Nil: No gold plated
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).
We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc).
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.
4) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

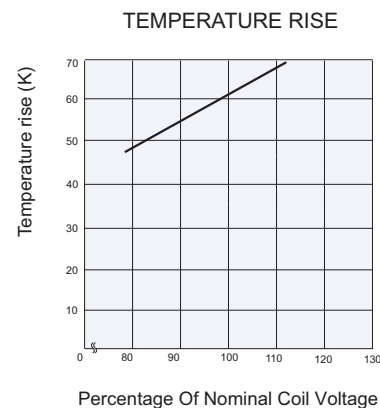
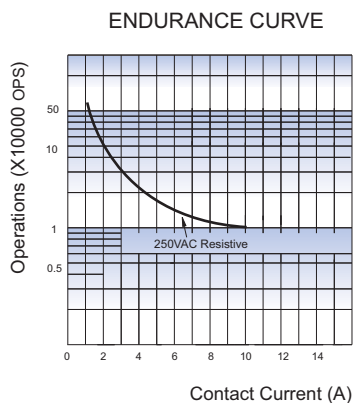
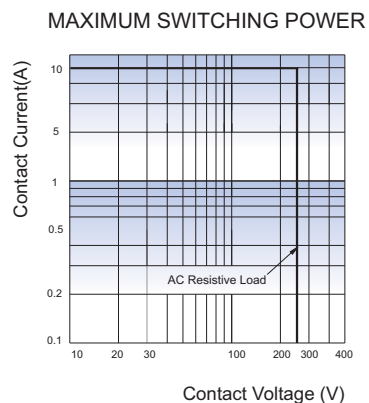
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES



Test conditions: Flux proofed, at 85°C
5s on 5s off

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF32FA-T

SUBMINIATURE INTERMEDIATE HIGH TEMPERATURE POWER RELAY



File No.:E134517



File No.:40006182



File No.:CQC09002028689



Features

- High temperature: 105°C
- 5A switching capability
- 1 Form A configuration
- Creepage/clearance distance>8mm
- 5kV dielectric strength (between coil and contacts)
- UL insulation system: Class F
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (17.6 x 10.1 x 12.3) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	70mΩ max.(at 1A 6VDC)
Contact material	AgNi
Contact rating (Res. load)	5A 250VAC 5A 30VDC
Max. switching voltage	250VAC/30VDC
Max. switching current	5A
Max. switching power	1250VA/150W
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	1 x 10 ⁵ OPS (5A 250VAC, Resistive load, Room temp., 1.5s on 1.5s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		8ms max.
Release time (at nomi. volt.)		4ms max.
Humidity		5% to 85% RH
Ambient temperature		-40°C to 105°C
Shock resistance*	Functional	98m/s²
	Destructive	980m/s²
Vibration resistance*		10Hz to 55Hz 1.65mm DA
Termination		PCB
Unit weight		Approx.4.6g
Construction		Plastic sealed, Flux proofed

Notes: 1) *Index is not in relay length direction.
2) The data shown above are initial values.
3) Please find coil temperature curve in the characteristic curves below.

COIL

Coil power	Sensitive: Approx. 200mW
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COIL DATA

at 23°C

Sensitive type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.15	5.1	45 x (1±10%)
5	3.75	0.25	8.5	125 x (1±10%)
6	4.50	0.30	10.2	180 x (1±10%)
9	6.75	0.45	15.3	400 x (1±10%)
12	9.00	0.60	20.4	720 x (1±10%)
18	13.5	0.90	30.6	1600 x (1±10%)
24	18.0	1.20	40.8	2800 x (1±10%)

Notes: * Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	5A 250VAC
VDE	5A 250VAC at 105°C 3A 400VAC at 105°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

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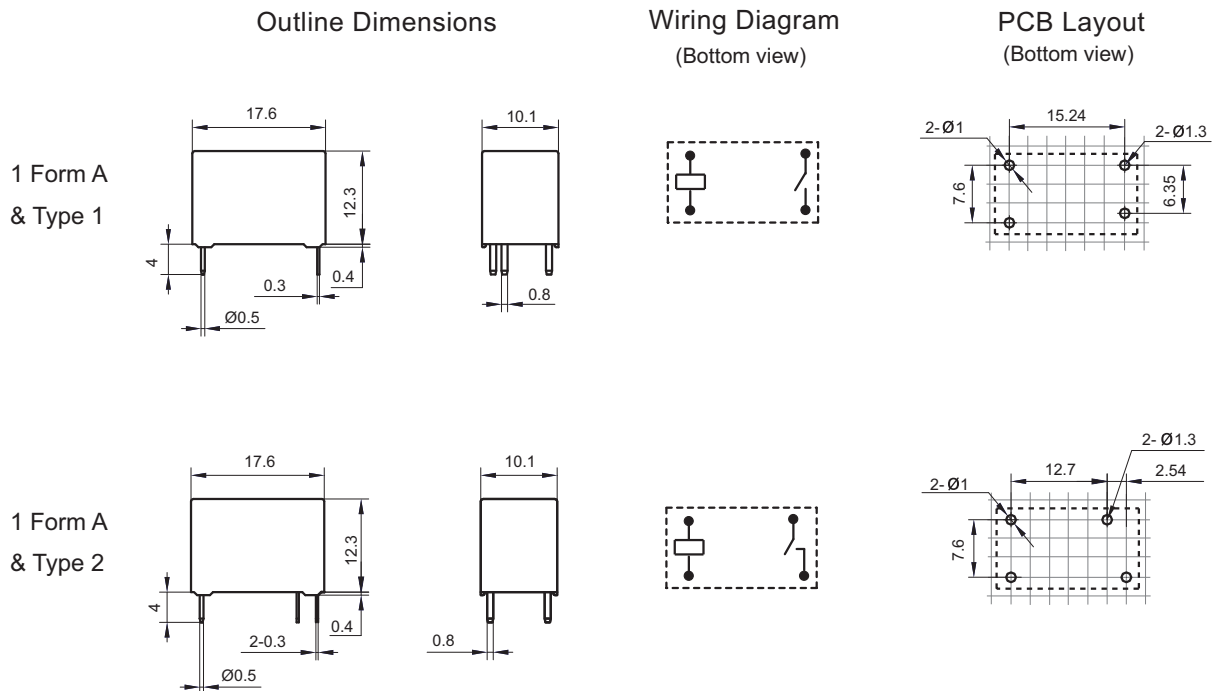
ORDERING INFORMATION

	HF32FA-T / 012 -H S L 1 G (XXX)						
Type							
Coil voltage	3, 5, 6, 9, 12, 18, 24VDC						
Contact arrangement	H: 1 Form A						
Construction ¹⁾²⁾	S: Plastic sealed		Nil: Flux proofed				
Coil power	L: Sensitive						
Termination	1: Type 1		2: Type 2				
Contact plating ³⁾	G: Gold plated		Nil: No gold plated				
Special code ⁴⁾	XXX: Customer special requirement		Nil: Standard				

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).
We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.
4) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

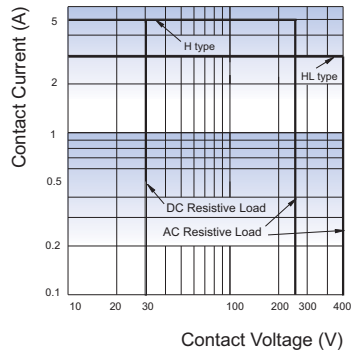
Unit: mm



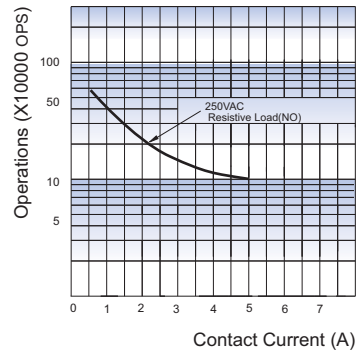
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

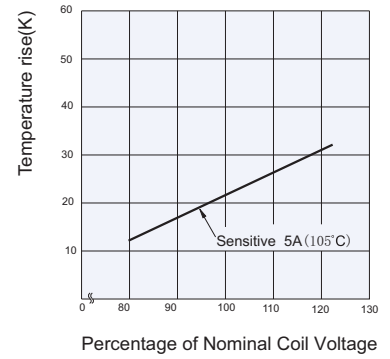
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



TEMPERATURE RISE



Test conditions: Flux proofed,
Room temp., 1.5s on 1.5s off

Disclaimer

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HF32F-G

SUBMINIATURE INTERMEDIATE POWER RELAY



File No.: E134517



File No.: 40012204



File No.: CQC12002076528



Features

- 10A switching capability
- 1 Form A configuration
- Subminiature, standard PCB layout
- Plastic sealed and flux proofed types
- Product in accordance to IEC 60335-1 available
- UL insulation system: Class F
- Outline Dimensions: (18.4 x 10.2 x 15.3) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂ , AgNi, AgCdO
Contact rating (Res. load)	10A 250VAC 10A 30VDC
Max. switching voltage	250VAC / 30VDC
Max. switching current	10A
Max. switching power	2500VA / 300W
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	1 x 10 ⁵ OPS (10A 250VAC, Resistive load, Room temp., 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		8ms max.
Release time (at nomi. volt.)		5ms max.
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Termination		PCB
Unit weight		Approx. 6g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.

COIL

Coil power	Approx. 450mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.15	3.9	20 x (1±10%)
5	3.75	0.25	6.5	55 x (1±10%)
6	4.50	0.30	7.8	80 x (1±10%)
9	6.75	0.45	11.7	180 x (1±10%)
12	9.00	0.60	15.6	320 x (1±10%)
18	13.5	0.90	23.4	720 x (1±10%)
24	18.0	1.20	31.2	1280 x (1±10%)
48	36.0	2.40	62.4	5120 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	10A 277VAC / 250VAC / 30VDC at 85°C
	12A 125VAC at 85°C
VDE	10A 250VAC at 85°C
	4A 400VAC at 85°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

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ORDERING INFORMATION

	HF32F-G /		012	-H	S	3	(XXX)
Type							
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48VDC						
Contact arrangement	H: 1 Form A						
Construction ¹⁾	S: Plastic sealed Nil: Flux proofed						
Contact material	T: AgSnO ₂ 3: AgNi Nil: AgCdO						
Special code ³⁾	XXX: Customer special requirement Nil: Standard						

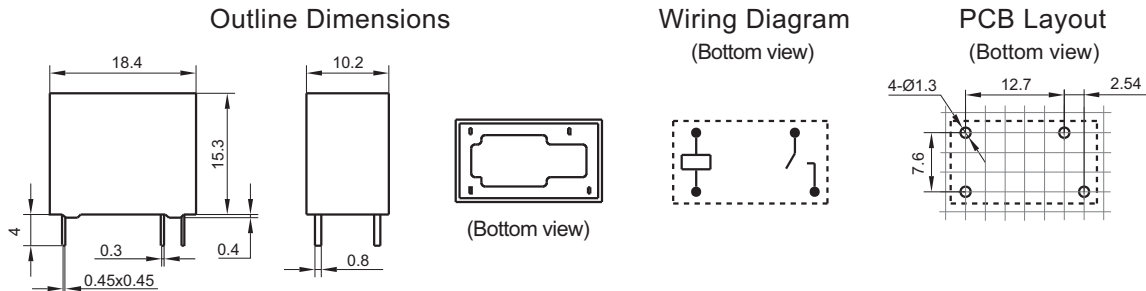
Notes: 1) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; please test the relay in real applications. If the ambience allows, flux proofed is preferentially recommended.

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

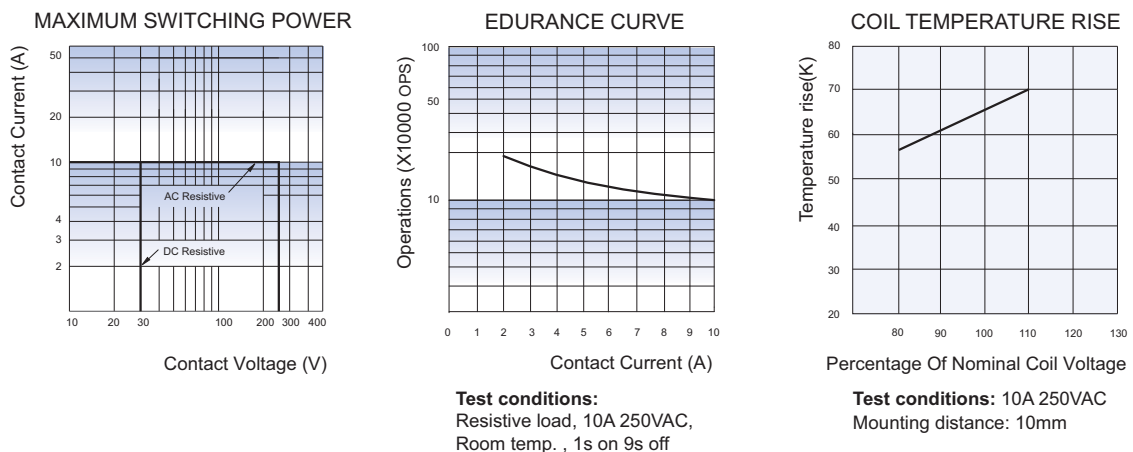


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES



Disclaimer

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HF32FV

SUBMINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:40012204



File No.:CQC14002120720



Features

- 5A switching capability
- Creepage distance: 6.5mm (between coil & contacts)
- Dielectric strength 4kV (between coil and contacts)
- 1 Form A configurations
- Standard PCB layout
- Plastic sealed and flux proofed types available
- Product in accordance to IEC 60335-1 available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (18.4 x 10.2 x 15.3) mm

CONTACT DATA

Contact arrangement	1A	
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	AgSnO ₂ , AgCdO, AgNi	
Contact rating (Res. load)	Standard	Sensitive
	5A 250VAC 5A 30VDC	3A 250VAC 3A 30VDC
Max. switching voltage	277VAC / 30VDC	
Max. switching current	5A	3A
Max. switching power	1250VA / 150W	750VA / 90W
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	Standard	1 x 10 ⁵ OPS (5A 250VAC Resistive load, at room temp., 1s on 9s off) 5 x 10 ⁴ OPS (5A 250VAC Resistive load, at 85°C, 1s on 9s off)
	Sensitive	1 x 10 ⁵ OPS (3A 250VAC Resistive load, at room temp., 1s on 9s off) 5 x 10 ⁴ OPS (3A 250VAC Resistive load, at 85°C, 1s on 9s off)

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Surge withstand voltage	6kV(1.2 / 50μs)	
Operate time (at nomi. volt.)	8ms max.	
Release time (at nomi. volt.)	5ms max.	
Coil temperature rise(at nomi. volt.)	60k max.	
Shock * resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *	Functional	10Hz to 55Hz 1.5mm DA
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	PCB	
Unit weight	Approx. 6g	
Construction	Plastic sealed, Flux proofed	

Notes: 1) The data shown above are initial values.

2) *Index is not in relay length direction.

3) In order to obtain better electrical endurance, it's better not use this product in the high temperature environment.

COIL

Coil power	Standard: Approx. 450mW; Sensitive: Approx. 200mW
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COIL DATA

at 23°C

Standard Type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.15	3.9	20 x (1±10%)
5	3.75	0.25	6.5	55 x (1±10%)
6	4.50	0.30	7.8	80 x (1±10%)
9	6.75	0.45	11.7	180 x (1±10%)
12	9.00	0.60	15.6	320 x (1±10%)
18	13.5	0.90	23.4	720 x (1±10%)
24	18.0	1.20	31.2	1280 x (1±10%)
48	36.0	2.40	62.4	5120 x (1±10%)

Sensitive Type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.15	4.5	45 x (1±10%)
5	3.75	0.25	7.5	125 x (1±10%)
6	4.50	0.30	9.0	180 x (1±10%)
9	6.75	0.45	13.5	400 x (1±10%)
12	9.00	0.60	18.0	720 x (1±10%)
18	13.5	0.90	27.0	1600 x (1±10%)
24	18.0	1.20	36.0	2800 x (1±10%)
48	36.0	2.40	72.0	11520 x (1±10%)

Notes: * Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

SAFETY APPROVAL RATINGS

UL/CUL	AgSnO ₂	5A 277VAC /250VAC General Use at 40°C 5A 277VAC/250VAC General Use at 85°C 5A 30VDC Resistive at 85°C 300W 120VAC Tungsten at 40°C 1/4HP 250VAC at 85°C 3A 277VAC/250VAC General Use (Sensitive) at 85°C 3A 30VDC Resistive (Sensitive) at 85°C TV-3 120VAC at 40°C
	AgCdO	5A 277VAC/250VAC General Use at 85°C 5A 30VDC Resistive at 85°C
VDE	AgSnO ₂	250VAC 4(2) Inductive load at 85°C 5A 30VDC Resistive at 85°C 5A 277VAC/250VAC Resistive at 85°C 3A 277VAC/250VAC Resistive at 85°C 3A 30VDC Resistive (Sensitive) at 85°C
	AgCdO	5A 277VAC/250VAC Resistive at 85°C 5A 30VDC Resistive at 85°C
CQC	AgSnO ₂	5A 277VAC/250VAC Resistive at 85°C 5A 30VDC Resistive at 85°C
	AgCdO	3A 277VAC/250VAC Resistive (Sensitive) at 85°C 5A 277VAC/250VAC Resistive at 85°C 5A 30VDC Resistive at 85°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF32FV / 12 -H S L T F G (XXX)
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48VDC
Contact arrangement	H: 1 Form A
Construction ¹⁾²⁾	S: Plastic sealed Nil: Flux proofed
Coil power	L: Sensitive ³⁾ Nil: Standard
Contact material	T: AgSnO ₂ Nil: AgCdO 3: AgNi
Insulation standard	F: Class F
Contact plating ⁴⁾	G: Gold plated Nil: No gold plated
Customer special code ⁵⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

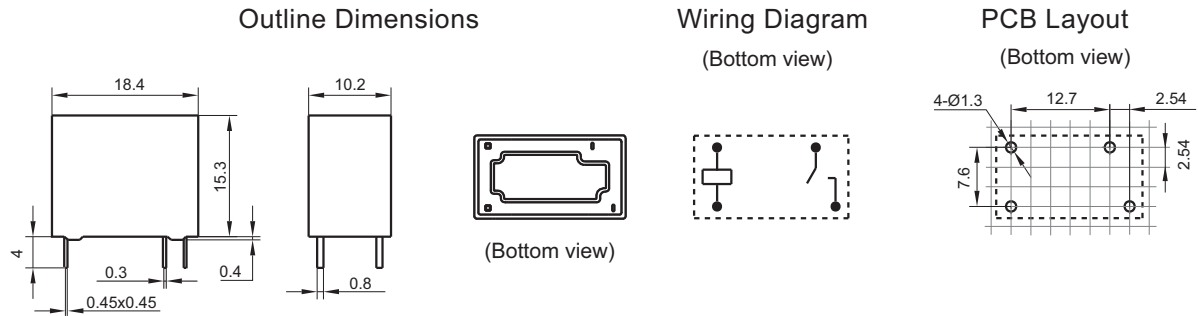
3) Sensitive loading: 3A.

4) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.

5) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT); e.g.(590) stands for product in accordance to TV-3 loading.

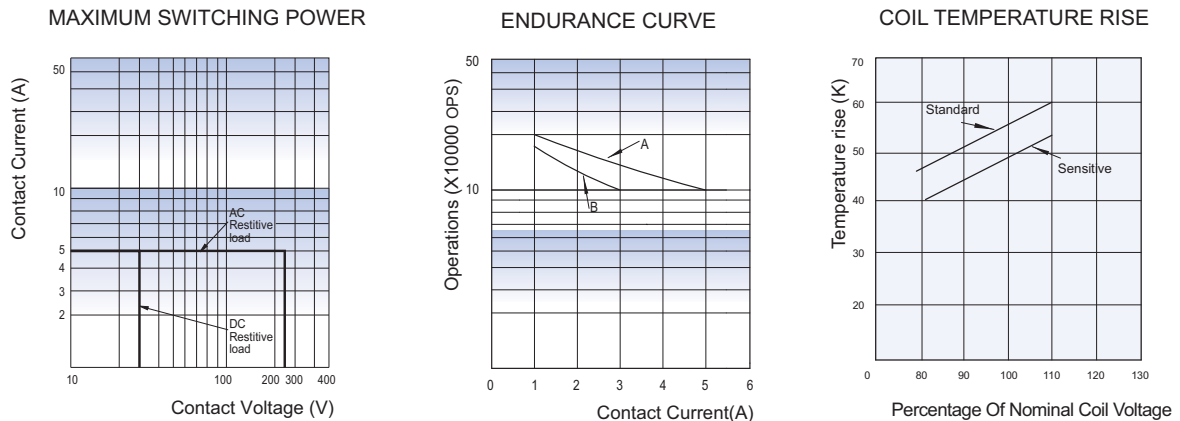
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.54mm.

性能曲线图



Remark:

- Curve A: standard
Curve B: sensitive
- Testing conditions:
Standard: flux proofed, resistive load, 5A 250VAC, at room temp. 1s on 9s off.
Sensitive: flux proofed, resistive load, 3A 250VAC, at room temp. 1s on 9s off.

Testing conditions:

Standard: 5A at 85°C.
 Sensitive: 3A at 85°C
 Mounting distance: 5mm

Disclaimer

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HF32FV-G

SUBMINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:40012204



File No.:CQC14002120720



Features

- 10A switching capability
- Creepage distance: 6.5mm (between coil & contacts)
- Dielectric strength 4kV (between coil and contacts)
- 1 Form A configurations
- Standard PCB layout
- Plastic sealed and flux proofed types available
- Product in accordance to IEC60335-1 available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (18.4 x 10.2 x 15.3) mm

CONTACT DATA

Contact arrangement	1A	
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	AgSnO ₂ , AgCdO	
Contact rating (Res. load)	Standard	Sensitive
	10A 250VAC 10A 30VDC	8A 250VAC 8A 30VDC
Max. switching voltager	277VAC / 30VDC	
Max. switching current	10A	8A
Max. switching power	2500VA/300W	2000VA/ 240W
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	Standard	1 x 10 ⁵ OPS (10A 250VAC Resistive load, at room temp., 1s on 9s off) 5 x 10 ⁴ OPS (10A 250VAC Resistive load, at 85°C, 1s on 9s off)
	Sensitive	1 x 10 ⁵ OPS (8A 250VAC Resistive load, at room temp., 1s on 9s off) 5 x 10 ⁴ OPS (8A 250VAC Resistive load, at 85°C, 1s on 9s off)

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Surge withstand voltage	6kV(1.2 / 50μs)	
Operate time (at nomi. volt.)	8ms max.	
Release time (at nomi. volt.)	5ms max.	
Coil temperature rise(at nomi. volt.)	70k max.	
Shock * resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *	Functional	10Hz to 55Hz 1.5mm DA
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	PCB	
Unit weight	Approx. 6g	
Construction	Plastic sealed, Flux proofed	

Notes: 1) The data shown above are initial values.

2) *Index is not in relay length direction.

3) In order to obtain better electrical endurance, it's better not use this product in the high temperature environment.

COIL

Coil power	Standard: Approx. 450mW; Sensitive: Approx. 200mW
------------	--

COIL DATA

at 23°C

Standard Type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.15	3.9	20 x (1±10%)
5	3.75	0.25	6.5	55 x (1±10%)
6	4.50	0.30	7.8	80 x (1±10%)
9	6.75	0.45	11.7	180 x (1±10%)
12	9.00	0.60	15.6	320 x (1±10%)
18	13.5	0.90	23.4	720 x (1±10%)
24	18.0	1.20	31.2	1280 x (1±10%)
48	36.0	2.40	62.4	5120 x (1±10%)

Sensitive Type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.15	4.5	45 x (1±10%)
5	3.75	0.25	7.5	125 x (1±10%)
6	4.50	0.30	9.0	180 x (1±10%)
9	6.75	0.45	13.5	400 x (1±10%)
12	9.00	0.60	18.0	720 x (1±10%)
18	13.5	0.90	27.0	1600 x (1±10%)
24	18.0	1.20	36.0	2800 x (1±10%)
48	36.0	2.40	72.0	11520 x (1±10%)

Notes: * Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

SAFETY APPROVAL RATINGS

UL/CUL	AgSnO ₂	10A 277VAC /250VAC Resistive at 40°C 10A 277VAC/250VAC Resistive at 85°C 8A 277VAC/250VAC General Use (Sensitive) at 85°C TV-5 120VAC 40°C TV-3 120VAC(Sensitive) at 40°C
	AgCdO	10A 277VAC/250VAC General Use at 85°C 10A 30VDC Resistive at 85°C 10A 277VAC /250VAC Resistive at 105°C 10A 277VAC/250VAC Resistive at 45°C 8A 277VAC/250VAC Resistive (Sensitive) at 85°C
VDE	AgSnO ₂	10A 277VAC/250VAC Resistive at 85°C 8A 277VAC/250VAC Resistive(Sensitive) at 85°C
	AgCdO	10A 277VAC/250VAC Resistive at 85°C
CQC	AgSnO ₂	10A 277VAC/250VAC Resistive at 85°C 8A 277VAC/250VAC Resistive (Sensitive) at 85°C
	AgCdO	10A 277VAC/250VAC Resistive at 85°C

Notes: 1) Opening the vent hole under contact material AgSnO₂ testing.
2) All values unspecified are at room temperature.
3) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

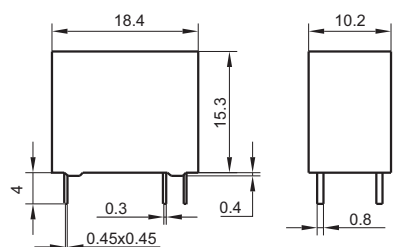
Type	HF32FV-G / 12 -H S L T F G (XXX)
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48VDC
Contact arrangement	H: 1 Form A
Construction ¹⁾²⁾	S: Plastic sealed Nil: Flux proofed
Coil power	L: Sensitive ³⁾ Nil: Standard
Contact material	T: AgSnO ₂ Nil: AgCdO
Insulation standard	F: Class F
Contact plating ⁴⁾	G: Gold plated Nil: No gold plated
Special code ⁵⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) Sensitive loading: 8A.
4) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.
5) The customer special requirement express as special code after evaluating by Hongfa. e.g. (335) stands for product in accordance to IEC 60335-1 (GWT); (590) stands for product in accordance to TV loading. For standard type is TV-5, for sensitive type is TV-3.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

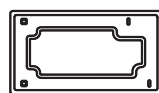
Unit: mm

Outline Dimensions

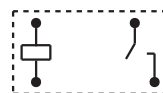


Wiring Diagram

(Bottom view)

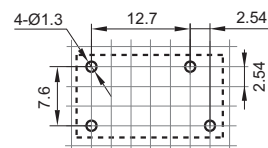


(Bottom view)



PCB Layout

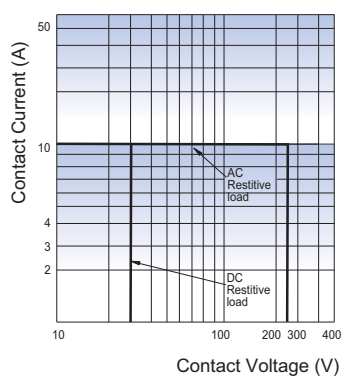
(Bottom view)



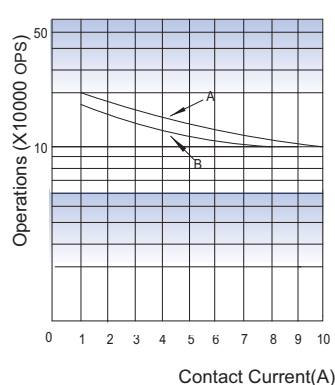
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.54mm.

性能曲线图

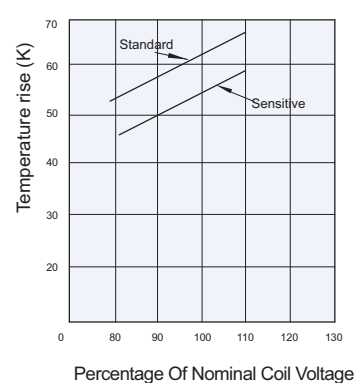
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



Remark:

- Curve A: standard
Curve B: sensitive
- Testing conditions:
Standard: flux proofed, resistive load, 10A/250VAC, at room temp. 1s on 9s off.
Sensitive: flux proofed, resistive load, 8A/250VAC, at room temp. 1s on 9s off.

Testing conditions:

Standard: 10A at 85°C.
 Sensitive: 8A at 85°C
 Mounting distance: 10mm

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF33F

SUBMINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:125661



File No.:CQC12002076530



Features

- 10A switching capability
- Creepage distance: 8mm (coil & contacts)
- Clearance distance: NO type 4.5mm, NC type 4mm
- 1 Form A and 1 Form C configurations
- Subminiature, standard PCB layout
- Plastic sealed and flux proofed types available
- UL insulation system: Class F
- Product in accordance to IEC 60335-1 available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (20.5 x 10.2 x 15.3) mm

CONTACT DATA

Contact arrangement	1A, 1C		
Contact resistance	100mΩ max.(at 1A 24VDC)		
Contact material	AgSnO ₂ , AgNi, AgCdO		
Contact rating (Res. load)	1A	1C	
		NO	NC
	5A 250VAC 5A 30VDC 10A 125VAC	5A 250VAC 5A 30VDC 10A 125VAC	3A 250VAC 3A 30VDC
	Max. switching current	10A	3A
Max. switching power	1250VA / 150W		750VA / 90W
Max. switching voltage	250VAC / 30VDC		
Mechanical endurance	5 x 10 ⁶ OPS		
Electrical endurance	H type:1 x 10 ⁵ OPS (5A 250VAC, Resistive load, Room temp., 1s on 9s off)		
	Z type:1 x 10 ⁵ OPS (NO:5A/NC:3A 250VAC,Resistive load, Room temp., 1.5s on 1.5s off)		

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)	8ms max.	
Release time (at nomi. volt.)	5ms max.	
Ambient temperature	-40°C to 70°C	
Humidity	5% to 85% RH	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.6mm DA	
Termination	PCB	
Unit weight	Approx. 7g	
Construction	Plastic sealed, Flux proofed	

Notes: 1) The data shown above are initial values.

COIL

Coil power	Standard: Approx. 450mW; Sensitive: Approx. 200mW
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COIL DATA

at 23°C

Standard Type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.15	3.9	20 x (1±10%)
5	3.75	0.25	6.5	55 x (1±10%)
6	4.50	0.30	7.8	80 x (1±10%)
9	6.75	0.45	11.7	180 x (1±10%)
12	9.00	0.60	15.6	320 x (1±10%)
18	13.5	0.90	23.4	720 x (1±10%)
24	18.0	1.20	31.2	1280 x (1±10%)
48	36.0	2.40	62.4	5120 x (1±10%)

Sensitive type (Only for 1 Form A)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.15	4.5	45 x (1±10%)
5	3.75	0.25	7.5	125 x (1±10%)
6	4.50	0.30	9.0	180 x (1±10%)
9	6.75	0.45	13.5	400 x (1±10%)
12	9.00	0.60	18.0	720 x (1±10%)
18	13.5	0.90	27.0	1600 x (1±10%)
24	18.0	1.20	36.0	2800 x (1±10%)
48	36.0	2.40	72.0	11520 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

SAFETY APPROVAL RATINGS

UL/CUL	1 Form A	AgCdO	5A 250VAC/30VDC at 40°C 8A 250VAC at 40°C 10A 125VAC at 40°C 10A 277VAC COSØ =0.4 at 40°C 1/10HP 125VAC, 1/6HP 250VAC at 40°C
		AgNi	5A 250VAC/30VDC at 70°C 8A 250VAC at 70°C 10A 125VAC at 70°C 10A 277VAC COSØ =0.4 at 70°C 1/10HP 125VAC, 1/6HP 250VAC at 70°C
		AgSnO ₂	5A 250VAC/30VDC at 70°C 10A 125VAC at 70°C
	1 Form C	AgCdO	3A 250VAC at 40°C 3A 30VDC at 40°C
		AgNi AgSnO ₂	3A 250VAC at 70°C 3A 30VDC at 70°C
	1 Form C	AgCdO AgNi	NC: 3A 250VAC at 70°C*
VDE	1 Form A	AgNi	5A 250VAC at 85°C
		AgCdO	5A 250VAC at 70°C*
		AgSnO ₂	5A 250VAC at 70°C
	1 Form C	AgCdO AgNi	NC: 3A 250VAC at 70°C*

Notes: 1) *The vent hole is kept open during load approval;
2) For AgSnO₂ Contact type, the vent-hole cover should be excised.
3) All values unspecified are at room temperature.
4) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

	HF33F /		012	-H	S	L	3	G	F	(XXX)
Type										
Coil voltage		3, 5, 6, 9, 12, 18, 24, 48VDC								
Contact arrangement		H: 1 Form A		Z: 1 Form C						
Construction ¹⁾		S: Plastic sealed		Nil: Flux proofed						
Coil power		L: Sensitive (Only for 1 Form A)				Nil: Standard				
Contact material		T: AgSnO ₂		3: AgNi		Nil: AgCdO				
Contact plating		G: Gold plated		Nil: No gold plated						
Insulation standard		F: Class F								
Special code ³⁾		XXX: Customer special requirement				Nil: Standard				

Notes: 1) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended.
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

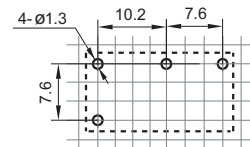
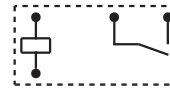
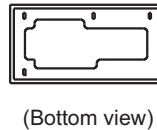
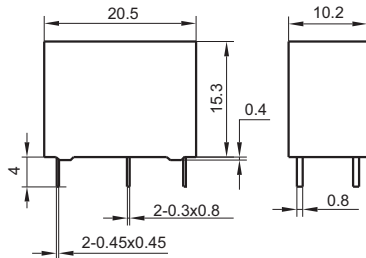
Unit: mm

Outline Dimensions

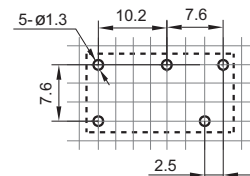
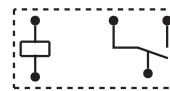
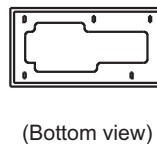
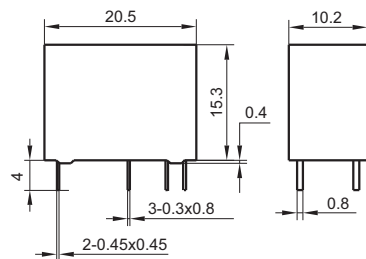
Wiring Diagram (Bottom view)

PCB Layout (Bottom view)

1 Form A



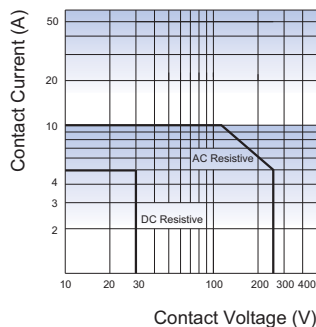
1 Form C



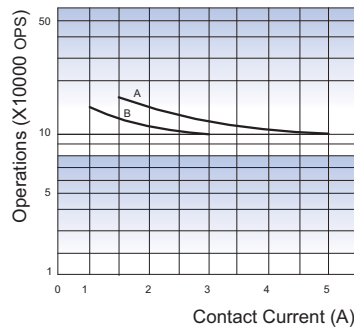
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

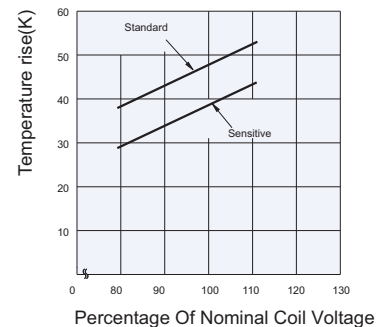
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



Notes:

- Curve A: NO contact
Curve B: NC contact
- Test conditions:
Curve A: NO, Resistive load, Room temp.,
flux proofed, 250VAC/30VDC, 1s on 9s off
Curve B: NC, Resistive load, Room temp.,
flux proofed, 250VAC/30VDC, 1s on 9s off

Notes:

- Standard: 5A at 70°C
 Sensitive: 5A at 70°C
 Mounting distance: 10mm

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF36F

SUBMINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:R50356442



File No.:CQC16002159838



Features

- 10A switching capability
- TV-5 125VAC approved by UL standard (only for 1 Form A)
- Plastic sealed and flux proofed types available
- 1 Form A and 1 Form C configurations
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (23.8 x 9.5 x 24.5) mm

CONTACT DATA

Contact arrangement	1A, 1C
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂ , AgCdO
Contact rating	10A 250VAC 10A 30VDC TV-5 125VAC
Max. switching voltage	250VAC / 30VDC
Max. switching current	10A
Max. switching power	2500VA / 300W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	5 x 10 ⁴ OPS (10A 250VAC, Resistive load, Room temp., 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	NO: 4000VAC 1min NC: 3000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		5ms max.
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Shock resistance	Functional	196m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Termination		PCB
Unit weight		Approx. 12g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class A

COIL

Coil power	Standard: Approx. 530mW; Sensitive: Approx. 250mW
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COIL DATA

at 23°C

Standard type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.75	0.25	6.5	47 x (1±10%)
6	4.50	0.30	7.8	68 x (1±10%)
9	6.75	0.45	11.7	155 x (1±10%)
12	9.00	0.60	15.6	270 x (1±10%)
18	13.5	0.90	23.4	620 x (1±10%)
24	18.0	1.20	31.2	1080 x (1±10%)
48	36.0	2.40	62.4	4400 x (1±10%)

Sensitive type (Only for 1 Form A)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.75	0.25	6.5	100 x (1±10%)
6	4.50	0.30	7.8	145 x (1±10%)
9	6.75	0.45	11.7	325 x (1±10%)
12	9.00	0.60	15.6	575 x (1±10%)
18	13.5	0.90	23.4	1300 x (1±10%)
24	18.0	1.20	31.2	2310 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	1 Form C	10A 250VAC 10A 30VDC
	1 Form A	10A 250VAC 10A 30VDC TV-5 125VAC
TÜV		10A 250VAC COSØ =1 10A 30VDC L/R=0

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

Type	HF36F / 012 -H S L T (XXX)					
Coil voltage	5, 6, 9, 12, 18, 24, 48VDC					
Contact arrangement	H: 1 Form A		Z: 1 Form C			
Construction ¹⁾	S: Plastic sealed		Nil: Flux proofed			
Coil power	L: Sensitive (Only for 1 Form A)		Nil: Standard			
Contact material	T: AgSnO ₂		Nil: AgCdO			
Special code ³⁾	XXX: Customer special requirement		Nil: Standard			

Notes: 1) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended.

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

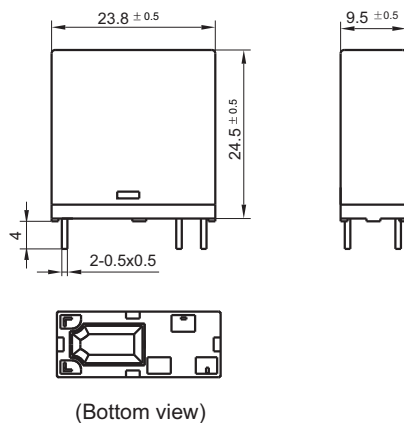
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

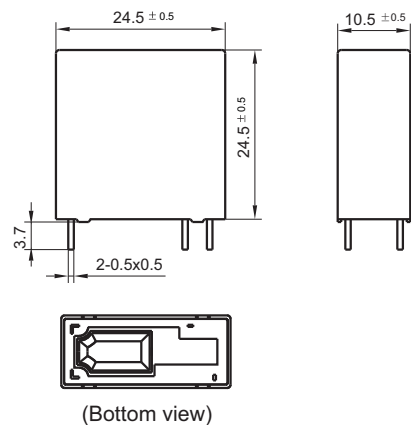
Unit: mm

Outline Dimensions

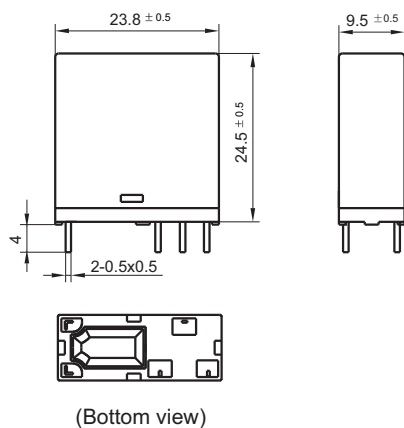
1 Form A & Flux proofed



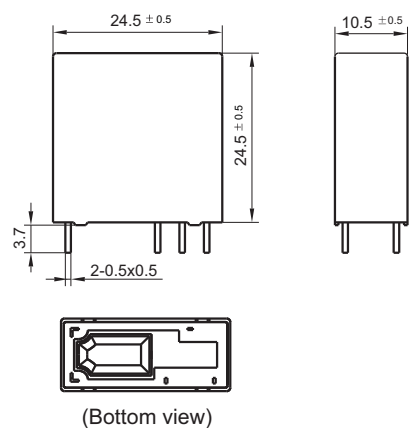
1 Form A & Plastic sealed



1 Form C & Flux proofed



1 Form C & Plastic sealed

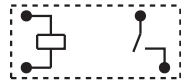


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

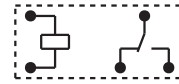
Unit: mm

Wiring Diagram
(Bottom view)

1 Form A

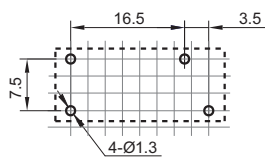


1 Form C

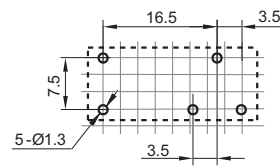


PCB Layout
(Bottom view)

1 Form A



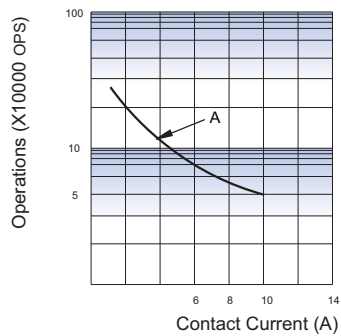
1 Form C



- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
3) The width of the gridding is 2.5mm .

CHARACTERISTIC CURVES

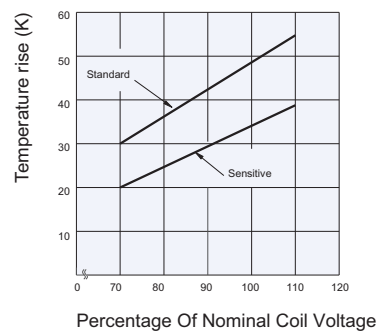
ENDURANCE CURVE



Notes:

- (1) Curve A: H type
- (2) Test conditions:
10A 250VAC, Resistive load,
Room temp., 1s on 9s off

COIL TEMPERATURE RISE



Disclaimer

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HF36FD

SUBMINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:R50356444



File No.:CQC16002159846



Features

- 10A switching capability
- TV-8 125VAC approved by UL standard (118A inrush current)
- Ideal for device power reduction
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (23.8 x 9.5 x 24.5) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating	10A 250VAC 5A 250VAC 5A 30VDC TV-8 125VAC
Max. switching voltage	250VAC / 30VDC
Max. switching current	10A
Max. switching power	2500VA / 150W
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	5 x 10 ⁴ OPS (10A 250VAC, Resistive load, Room temp., 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage		10kV (1.2 / 50μs)
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		5ms max.
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Shock resistance	Functional	196m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Termination		PCB
Unit weight		Approx.12g
Construction		Flux proofed

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class A

COIL

Coil power	Standard: Approx. 530mW; Sensitive: Approx. 250mW
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COIL DATA

at 23°C

Standard type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.75	0.25	6.5	47 x (1±10%)
6	4.50	0.30	7.8	68 x (1±10%)
9	6.75	0.45	11.7	155 x (1±10%)
12	9.00	0.60	15.6	270 x (1±10%)
18	13.5	0.90	23.4	620 x (1±10%)
24	18.0	1.20	31.2	1080 x (1±10%)
48	36.0	2.40	62.4	4400 x (1±10%)

Sensitive type

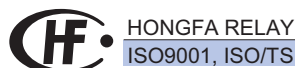
Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	4.00	0.25	6.5	100 x (1±10%)
6	4.80	0.30	7.8	145 x (1±10%)
9	7.20	0.45	11.7	325 x (1±10%)
12	9.60	0.60	15.6	575 x (1±10%)
18	14.4	0.90	23.4	1300 x (1±10%)
24	19.2	1.20	31.2	2310 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	10A 250VAC 5A 250VAC TV-8 125VAC
TÜV	10A 250VAC 5A 250VAC/30VDC

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

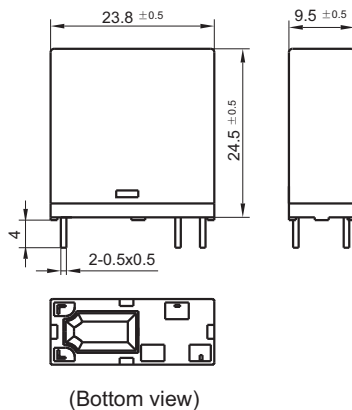
Type	HF36FD / 012 -H L T (XXX)
Coil voltage	5, 6, 9, 12, 18, 24, 48VDC
Contact arrangement	H: 1 Form A
Coil power	L: Sensitive Nil: Standard
Contact material	T: AgSnO ₂
Special code ³⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) Water cleaning or surface process is not suggested after the flux-proofed relays are assembled on PCB.
 2) Flux-proofed relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.
 3) The customer special requirement express as special code after evaluating by Hongfa.

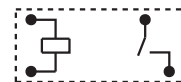
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

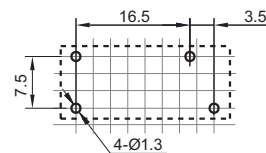
Outline Dimensions



Wiring Diagram
(Bottom view)



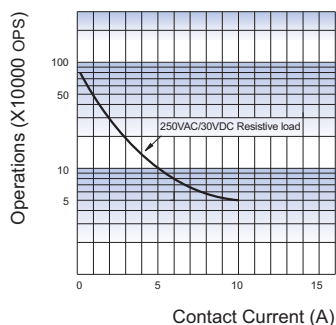
PCB Layout
(Bottom view)



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.5mm.

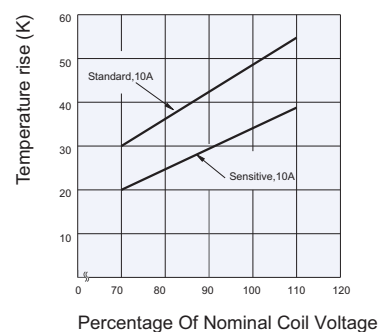
CHARACTERISTIC CURVES

ENDURANCE CURVE



Test conditions:
 10A 250VAC, Resistive load,
 Room temp., 1s on 9s off.

COIL TEMPERATURE RISE



Disclaimer

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HF37F

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:40025378



File No.:CQC13002102287



Features

- 30A switching capability
- 70A withstands inrush current
- TV-15 (at 120VAC) available
- 1 Form A configuration
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (35.2 x 32.2 x 24.0) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂ , AgCdO
Contact rating (Res. load)	30A 250VAC
Max. switching voltage	277VAC
Max. switching current	30A
Max. switching power	7500VA
Mechanical endurance	5 x 10 ⁶ OPS
Electrical endurance	1HT, 1H type: 6 x 10 ³ OPS (30A 250VAC, Resistive load, at 40°C, 1s on 9s off) 1H type: 5 x 10 ⁴ OPS (23A cosφ=1 250VAC, Resistive load, at 70°C, 1.5s on 1.5s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1200VAC 1min
Operate time (at nomi. volt.)		20ms max.
Release time (at nomi. volt.)		5ms max.
Shock resistance	Functional	196m/s²
	Destructive	980m/s²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Ambient temperature		-40°C to 70°C
Humidity		5% to 85% RH
Termination		QC
Unit weight		Approx. 55g
Construction		Dust protected

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class A

COIL

Coil power	Approx. 1.2W
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.50	0.50	6.0	20.8 x (1±10%)
6	4.20	0.60	7.2	30 x (1±10%)
9	6.30	0.90	10.8	67.5 x (1±10%)
12	8.40	1.20	14.4	120 x (1±10%)
24	16.8	2.40	28.8	480 x (1±10%)
48	33.6	4.80	57.6	1920 x (1±10%)
60	42.0	6.00	72.0	3000 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	AgSnO ₂	30A 250VAC 2HP 125VAC/250VAC TV-15 120VAC
	AgCdO	30A 250VAC 2HP 125VAC/250VAC TV-15 120VAC
VDE	AgCdO	23A 250VAC at 70°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

Type		HF37F /	012	-1H	T	(XXX)
Coil voltage		5, 6, 9, 12, 24, 48, 60VDC				
Contact arrangement		1H: 1 Form A				
Contact material		T: AgSnO ₂ Nil: AgCdO				
Special code ²⁾		XXX: Customer special requirement		Nil: Standard		

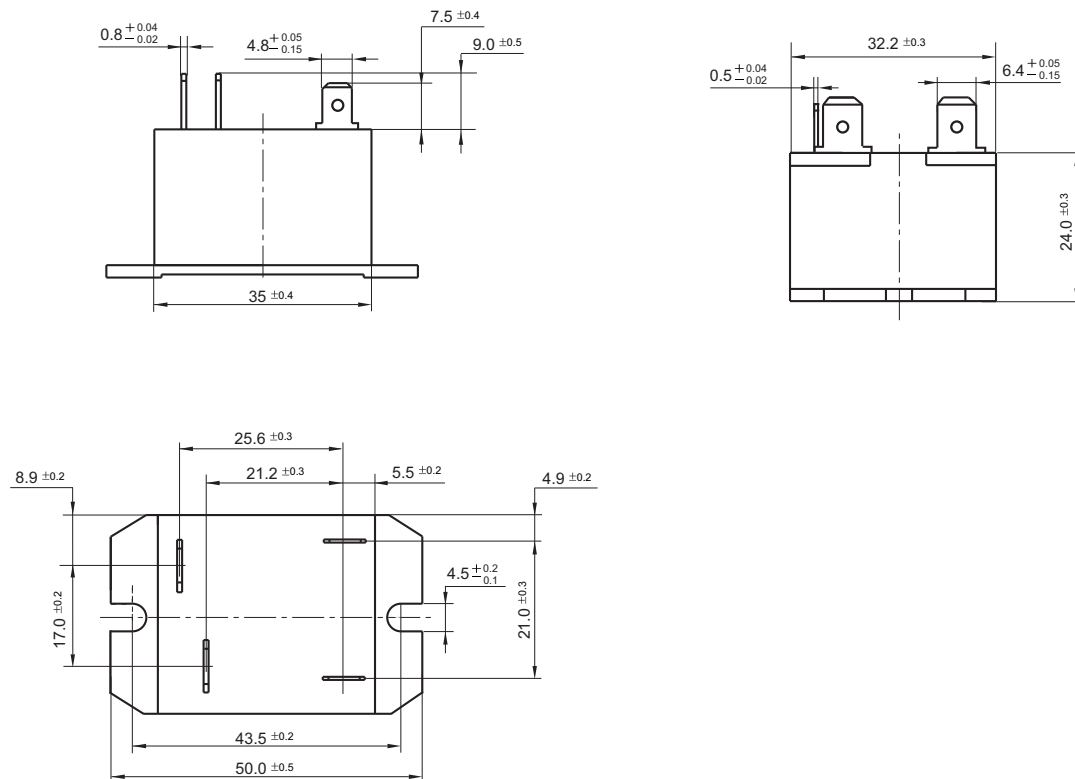
Notes: 1) The terminal for HF37F is QC type. Please don't weld directly on terminal.

2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

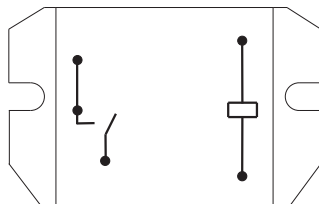
Outline Dimensions



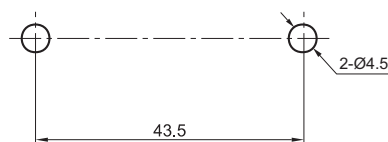
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Wiring Diagram (Top view)



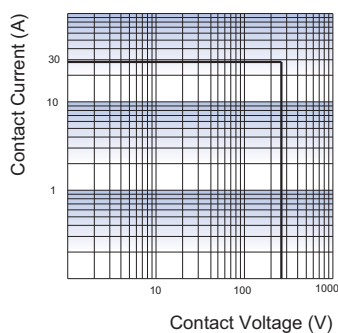
Mounting holes



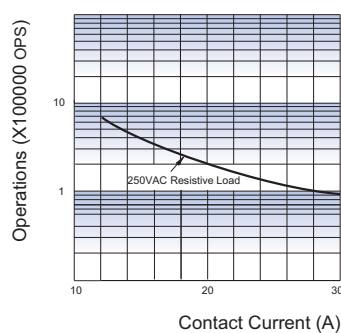
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



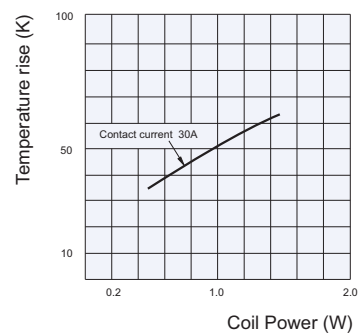
ENDURANCE CURVE



Notes:

- 1) Curve: 1HT type (or 1H type)
- 2) Test conditions: at 70°C , 1s on 9s off.

COIL TEMPERATURE RISE



Disclaimer

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HF41F

SUBMINIATURE POWER RELAY



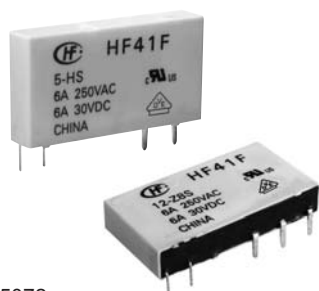
File No.: E133481



File No.: 40020043



File No.: CQC09002035072



Features

- Slim size (width 5mm)
- High breakdown voltage 4kV (between coil and contacts)
- Surge voltage up to 6kV (between coil and contacts)
- Meeting VDE 0700, 0631 reinforce insulation
- High sensitive: Approx.170mW
- Sockets available
- 1 Form A and 1 Form C configurations
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (28.0 x 5.0 x 15.0) mm

CONTACT DATA

Contact arrangement	1A, 1C
Contact resistance	No gold plated:100mΩ max. (at 1A 6VDC) Gold plated: 30mΩ max. (at 1A 6VDC)
Contact material	AgSnO ₂ , AgNi
Contact rating (Res. load)	6A 250VAC / 30VDC
Max. switching voltage	400VAC / 125VDC
Max. switching current	6A
Max. switching power	1500VA / 180W
Mechanical endurance	1 x 10 ⁷ ops
Electrical endurance	H type: 6 x 10 ⁴ ops (6A 250VAC/30VDC, Resistive load, AgNi, at 85°C, 1s on 9s off) Z type: 3 x 10 ⁴ ops (NO, 6A 250VAC/30VDC, Resistive load, AgNi, at 85°C, 1s on 9s off) 1 x 10 ⁴ ops (NC, 6A 250VAC/30VDC, Resistive load, AgNi, at 85°C, 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	1000VAC 1 min
Operate time (at nomi.volt.)		8ms max.
Release time (at nomi.volt.)		4ms max.
Shock resistance ¹⁾	Functional	49m/s ²
	Destructive	980m/s ²
Vibration resistance ¹⁾		10Hz to 55Hz 1mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 5g
Construction		Plastic sealed, Flux proofed

- Notes: 1) Index is that of relay without socket.
2) The data shown above are initial values.
3) Please find coil temperature curve in the characteristic curves below.
4) Please do not install a SPDT(1 Form C) type relay on either of the smallest sides or facing downward.
5) UL insulation system: Class A.

COIL

Coil power	5VDC to 24VDC: Approx. 170mW
	48VDC, 60VDC: Approx. 210mW

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ²⁾	Coil Resistance Ω
5	3.75	0.25	7.5	147 x (1±10%)
6	4.50	0.30	9.0	212 x (1±10%)
9	6.75	0.45	13.5	476 x (1±10%)
12	9.00	0.60	18	848 x (1±10%)
18	13.5	0.90	27	1906 x (1±15%)
24	18.0	1.20	36	3390 x (1±15%)
48 ³⁾	36.0	2.40	72	10600 x (1±15%)
60 ³⁾	45.0	3.00	90	16600 x (1±15%)

Notes: 1) When require pick-up voltage ≤ 70% nominal voltage, special order allowed .

2) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

3) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

SAFETY APPROVAL RATINGS

UL/CUL	6A 30VDC at 85°C
	6A 277VAC at 85°C
	R300 B300
VDE	6A 30VDC at 85°C 6A 250VAC at 85°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION					
Type	HF41F /	12	-H	8	S T G (XXX)
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60VDC				
Contact arrangement	H: 1 Form A	Z: 1 Form C			
Version ¹⁾	8: Flat pack version Nil: Vertical version				
Construction ²⁾³⁾	S: Plastic sealed Nil: Flux proofed				
Contact material	T: AgSnO ₂ Nil: AgNi				
Contact plating ⁴⁾	G: Gold plated Nil: No gold plated				
Special code ⁵⁾	XXX: Customer special requirement Nil: Standard				

- 2) We recommend flux proofed types for a clean environment (free from contaminations like H_2S , SO_2 , NO_2 , dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H_2S , SO_2 , NO_2 , dust, etc.).
- 3) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 4) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.
- 5) The customer special requirement express as special code after evaluating by Hongfa. e.g. (210) stands for pick-up voltage less than 70% of nominal voltage. e.g. (414) stands for wide coil pin type.

Unit: mm

Technical drawings showing the dimensions for Form A and Form C, both in vertical and flat pack versions.

Form A Vertical version: The main view shows a rectangular component with a width of 28 and a height of 15. The bottom edge features a series of mounting tabs. Dimensions for the tabs include a total width of 16.38, with individual tab widths of 3.78 and 5.04. The distance between the tabs is 1. The bottom edge thickness is 0.5, and the overall bottom edge height is 0.9. A side view shows a thickness of 5.

Form C Vertical version: The main view shows a rectangular component with a width of 28 and a height of 15. The bottom edge features a series of mounting tabs. Dimensions for the tabs include a total width of 16.38, with individual tab widths of 3.78 and 5.04. The distance between the tabs is 1. The bottom edge thickness is 0.5, and the overall bottom edge height is 0.9. A side view shows a thickness of 5.

Form A Flat pack version: The main view shows a rectangular component with a width of 28 and a height of 15. The bottom edge features a series of mounting tabs. Dimensions for the tabs include a total width of 16.38, with individual tab widths of 3.78 and 5.04. The distance between the tabs is 1. The bottom edge thickness is 0.5, and the overall bottom edge height is 0.9. A side view shows a thickness of 5.

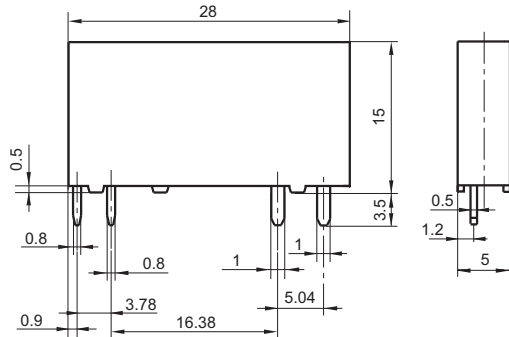
Form C Flat pack version: The main view shows a rectangular component with a width of 28 and a height of 15. The bottom edge features a series of mounting tabs. Dimensions for the tabs include a total width of 16.38, with individual tab widths of 3.78 and 5.04. The distance between the tabs is 1. The bottom edge thickness is 0.5, and the overall bottom edge height is 0.9. A side view shows a thickness of 5.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

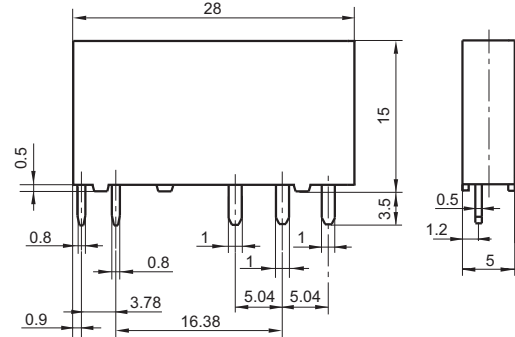
Unit: mm

Outline Dimensions

1 Form A
Special code: (414)



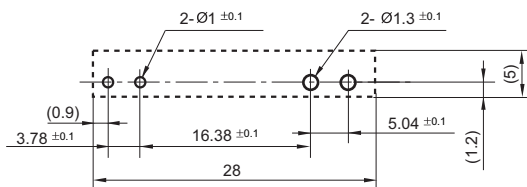
1 Form C



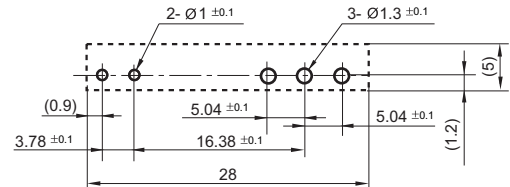
PCB Layout (Bottom view)

1 Form A

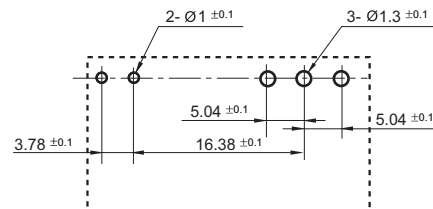
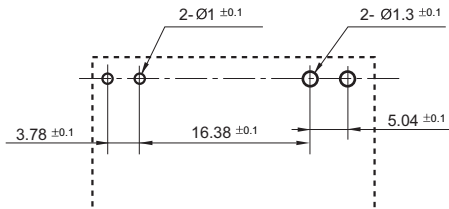
Vertical version



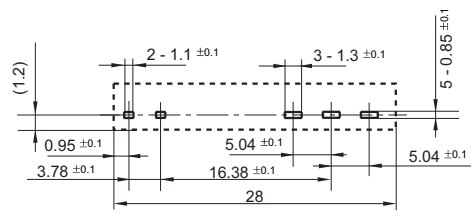
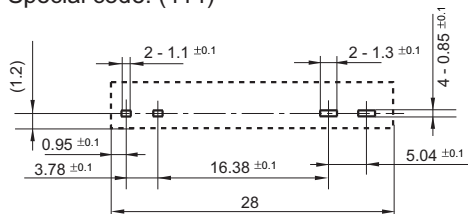
1 Form C



Flat pack version

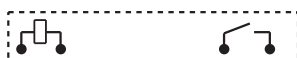


Special code: (414)



Wiring Diagram (Bottom view)

1 Form A



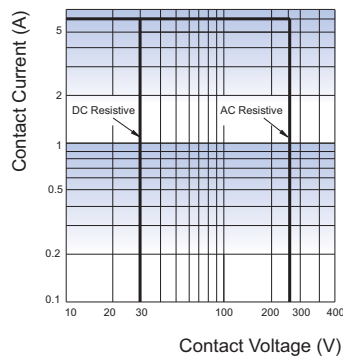
1 Form C



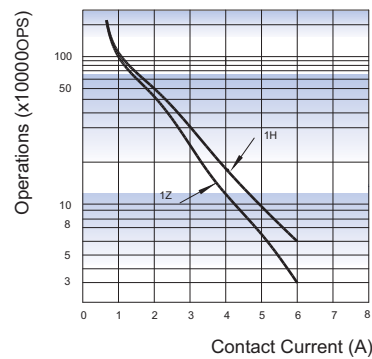
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layouts is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



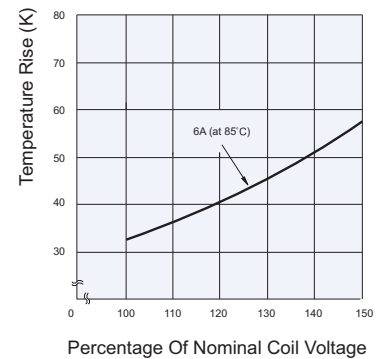
ENDURANCE CURVE



Test conditions:

NO, AgNi, Resistive load, 250VAC,
Flux proofed, Room temp., 1s on 9s off.

COIL TEMPERATURE RISE



Test conditions:

6A 85°C
(Typical curve of 24VDC standard type)

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF41F

SUBMINIATURE POWER RELAY



File No.: E133481



File No.: 40020043



File No.: CQC09002035072



Features

- Slim size (width 5mm)
- High breakdown voltage 4kV (between coil and contacts)
- Surge voltage up to 6kV (between coil and contacts)
- Meeting VDE 0700, 0631 reinforce insulation
- High sensitive: Approx.170mW
- Sockets available
- 1 Form A and 1 Form C configurations
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (28.0 x 5.0 x 15.0) mm

CONTACT DATA

Contact arrangement	1A, 1C
Contact resistance	100mΩ max. (at 1A 6VDC) Gold plated: 30mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂ , AgNi
Contact rating (Res. load)	6A 250VAC / 30VDC
Max. switching voltage	400VAC / 125VDC
Max. switching current	6A
Max. switching power	1500VA / 180W
Mechanical endurance	1 x 10 ⁷ ops
Electrical endurance	H type: 6 x 10 ⁴ ops (6A 250VAC/30VDC, Resistive load, AgNi, at 85°C, 1s on 9s off) Z type: 3 x 10 ⁴ ops (NO, 6A 250VAC/30VDC, Resistive load, AgNi, at 85°C, 1s on 9s off) 1 x 10 ⁴ ops (NC, 6A 250VAC/30VDC, Resistive load, AgNi, at 85°C, 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	1000VAC 1 min
Operate time (at nomi.volt.)		8ms max.
Release time (at nomi.volt.)		4ms max.
Shock resistance ¹⁾	Functional	49m/s ²
	Destructive	980m/s ²
Vibration resistance ¹⁾		10Hz to 55Hz 1mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 5g
Construction		Plastic sealed, Flux proofed

- Notes:** 1) Index is that of relay without socket.
 2) The data shown above are initial values.
 3) Please find coil temperature curve in the characteristic curves below.
 4) Please do not install a SPDT(1 Form C) type relay on either of the smallest sides or facing downward.
 5) UL insulation system: Class A.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL

Coil power	5VDC to 24VDC: Approx. 170mW 48VDC, 60VDC: Approx. 210mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ²⁾	Coil Resistance Ω
5	3.75	0.25	7.5	147 x (1±10%)
6	4.50	0.30	9.0	212 x (1±10%)
9	6.75	0.45	13.5	476 x (1±10%)
12	9.00	0.60	18	848 x (1±10%)
18	13.5	0.90	27	1906 x (1±15%)
24	18.0	1.20	36	3390 x (1±15%)
48 ³⁾	36.0	2.40	72	10600 x (1±15%)
60 ³⁾	45.0	3.00	90	16600 x (1±15%)

- Notes:** 1) When require pick-up voltage ≤ 70% nominal voltage, special order allowed.
 2) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.
 3) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

SAFETY APPROVAL RATINGS

UL/CUL	6A 30VDC at 85°C
	6A 277VAC at 85°C
	R300 B300
VDE	6A 30VDC at 85°C 6A 250VAC at 85°C

- Notes:** 1) All values unspecified are at room temperature.
 2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF41F /	12	-H	8	S	T	G	(XXX)
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60VDC							
Contact arrangement	H: 1 Form A		Z: 1 Form C					
Version ¹⁾	8: Flat pack version		Nil: Vertical version					
Construction ²⁾³⁾	S: Plastic sealed		Nil: Flux proofed					
Contact material	T: AgSnO ₂		Nil: AgNi					
Contact plating ⁴⁾	G: Gold plated		Nil: No gold plated					
Special code ⁵⁾	XXX: Customer special requirement		Nil: Standard					

Notes: 1) We recommend flux proofed types for the flat pack version.

2) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

3) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

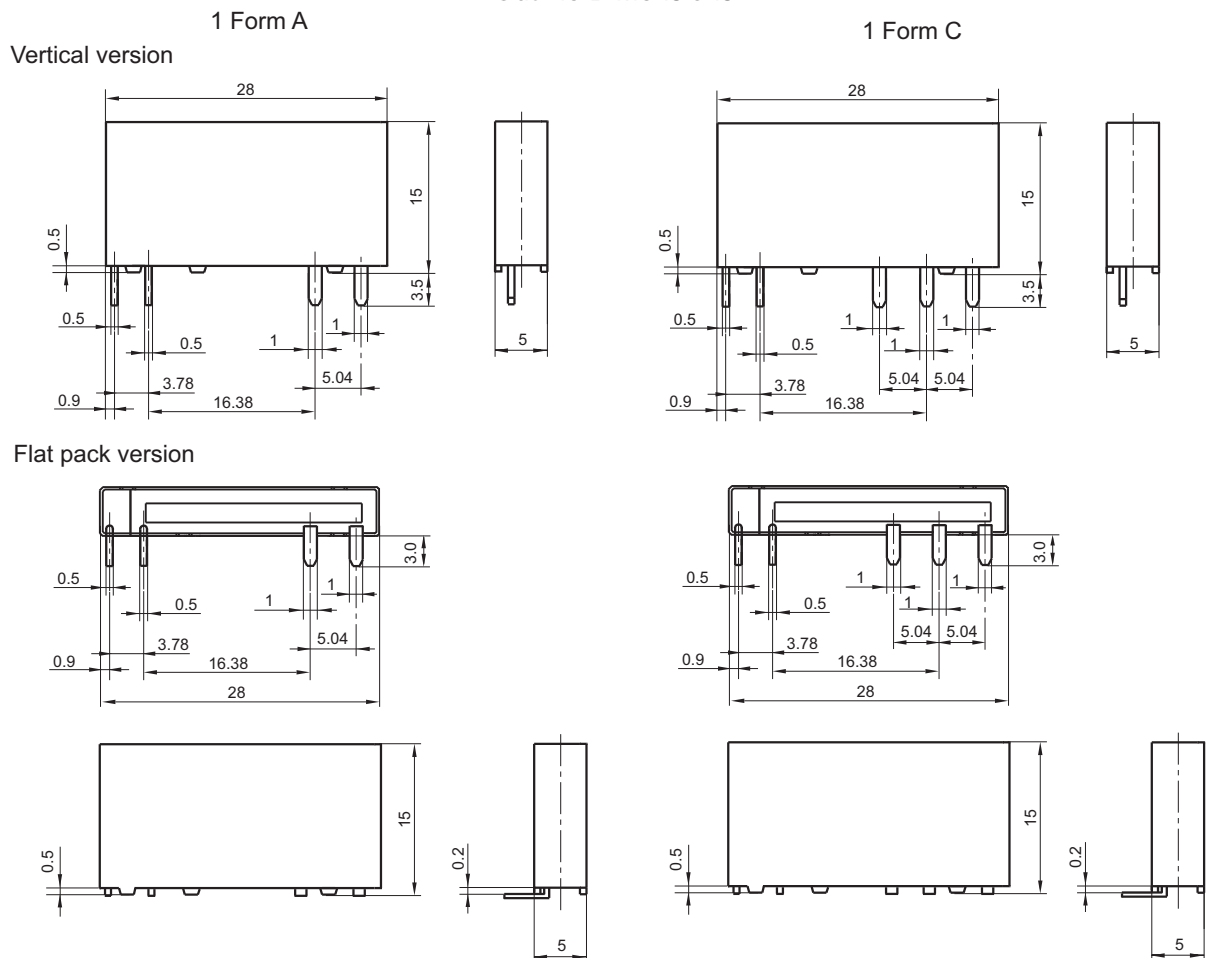
4) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.

5) The customer special requirement express as special code after evaluating by Hongfa. e.g. (210) stands for pick-up voltage less than 70% of nominal voltage. e.g. (414) stands for wide coil pin type.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions



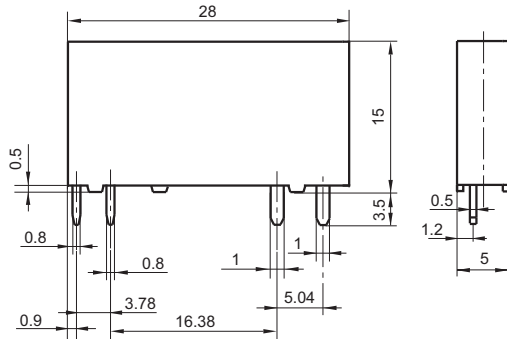
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

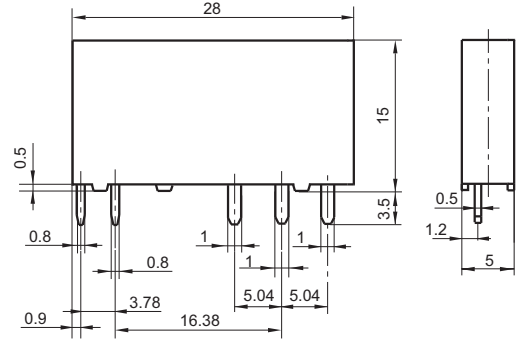
Outline Dimensions

1 Form A

Special code: (414)



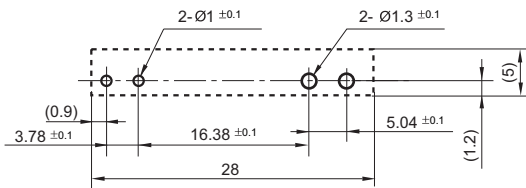
1 Form C



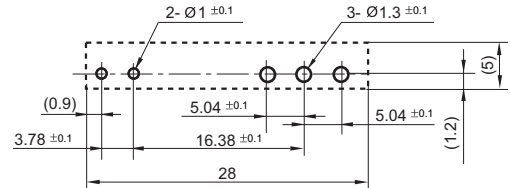
PCB Layout (Bottom view)

1 Form A

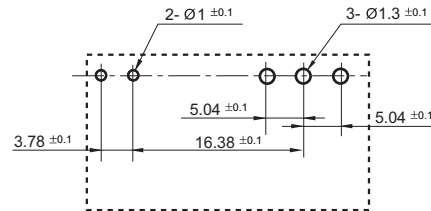
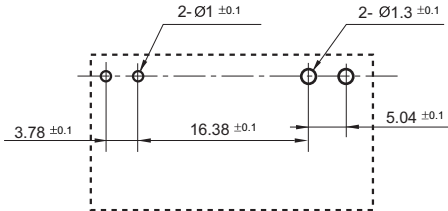
Vertical version



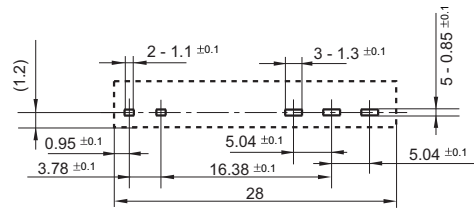
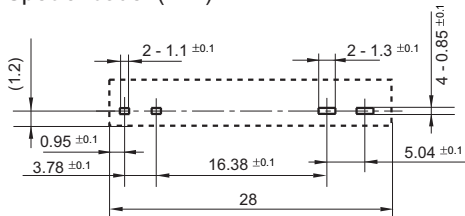
1 Form C



Flat pack version



Special code: (414)



Wiring Diagram (Bottom view)

1 Form A



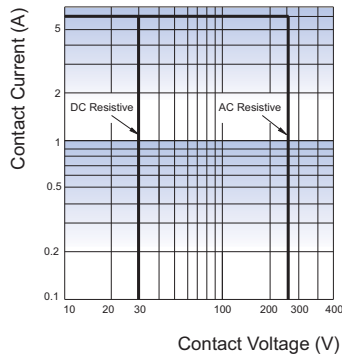
1 Form C



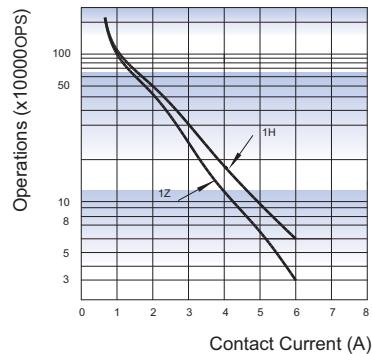
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layouts is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



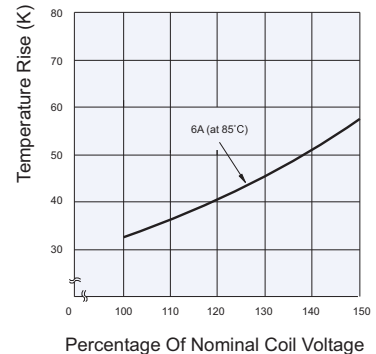
ENDURANCE CURVE



Test conditions:

NO, AgNi, Resistive load, 250VAC,
Flux proofed, Room temp., 1s on 9s off.

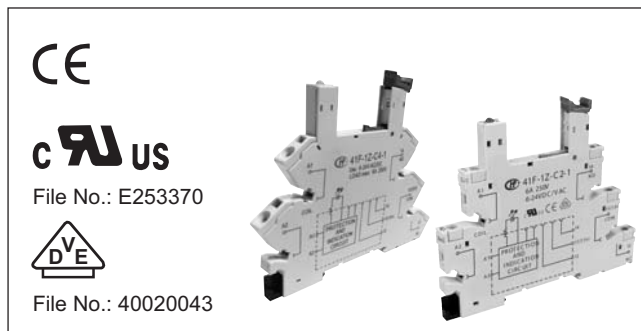
COIL TEMPERATURE RISE



Test conditions:

6A 85°C
(Typical curve of 24VDC standard type)

Relay Sockets



Features

- The dielectric strength can reach 5000VAC and the insulation resistance is 1000MΩ
- With finger protection device
- Ensure secure retention and easy ejection of relays
- Built-in protection circuit can indicate the power status, protect the circuit and expand the range of relay input voltage
- Components available: marker, jumper and separator
- Environmental friendly product (RoHS compliant)

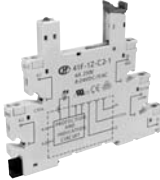
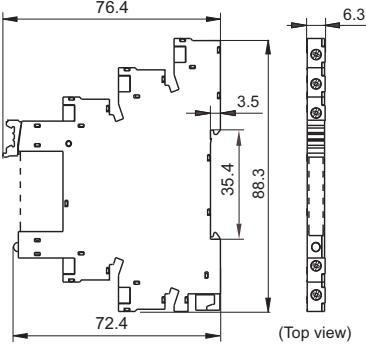
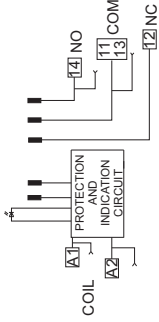

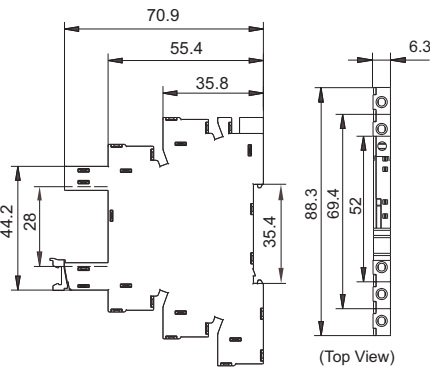
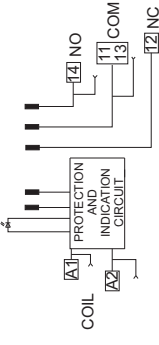

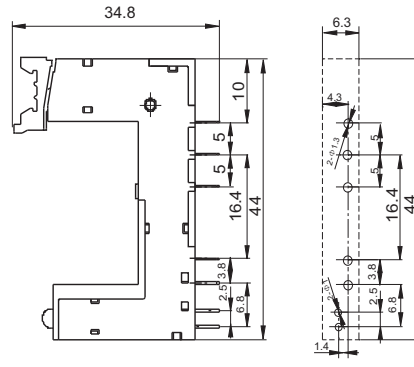

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Input Voltage	Relay's Applicable Rated Voltage	Polarity of Input Voltage	Screw Torque	Wire Strip Length
41F-1Z-C2-1	250VAC	6A	-40 °C to 70 °C	(12 to 24)V AC/DC	(12 to 24)VDC	No requirement	0.5N · m	7mm
41F-1Z-C2-2	250VAC	6A	-40 °C to 70 °C	(48 to 60)V AC/DC	(48 to 60)VDC	No requirement	0.5N · m	7mm
41F-1Z-C2-3	250VAC	6A	-40 °C to 55 °C	(110 to 125)V AC/DC	60VDC	No requirement	0.5N · m	7mm
41F-1Z-C2-4	250VAC	6A	-40 °C to 55 °C	(220 to 240)V AC/DC	60VDC	No requirement	0.5N · m	7mm
41F-1Z-C2-5	250VAC	6A	-40 °C to 70 °C	(6 to 24)VDC	(6 to 24)VDC	Requirement	0.5N · m	7mm
41F-1Z-C4-1	250VAC	6A	-40 °C to 70 °C	(12 to 24)V AC/DC	(12 to 24)VDC	No requirement	-	7mm
41F-1Z-C4-2	250VAC	6A	-40 °C to 70 °C	(48 to 60)V AC/DC	(48 to 60)VDC	No requirement	-	7mm
41F-1Z-C4-3	250VAC	6A	-40 °C to 55 °C	(110 to 125)V AC/DC	60VDC	No requirement	-	7mm
41F-1Z-C4-4	250VAC	6A	-40 °C to 55 °C	(220 to 240)V AC/DC	60VDC	No requirement	-	7mm
41F-1Z-C4-5	250VAC	6A	-40 °C to 70 °C	(6 to 24)VDC	(6 to 24)VDC	Requirement	-	7mm
41F-1Z-A2-1	250VAC	6A	-40 °C to 70 °C	(6 to 24)V DC	(6 to 24)V DC	Requirement	-	-
41F-1Z-A2-2	250VAC	6A	-40 °C to 70 °C	(48 to 60)V DC	(48 to 60)V DC	Requirement	-	-

Note: When the 41F-1Z-C2/C4-1 socket is applied to the relay of 12VDC nominal voltage, the relay of which pick-up voltage =70% nominal voltage should be required and the special order of relay allowed. 41F-1Z-C2/C4-4 is not allowed in continuous electricity conditions.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram	Components Available
<p>41F-1Z-C2-1/2/3/4/5</p>  <p>Screw terminal, DIN rail mounting, With finger protection device Certified by VDE and UL/CUL</p>	 <p>(Top view)</p>		<p>marker 41F-M 41F-M1</p> <p>jumper 41F-J1(blue) 41F-J1R(red) 41F-J1B(black)</p> <p>separator 41F-S</p>
<p>41F-1Z-C4-1/2/3/4/5</p>  <p>Spring-loaded terminal, DIN rail mounting, With finger protection device</p>	 <p>(Top View)</p>		<p>marker 41F-M 41F-M1</p> <p>jumper 41F-J1(blue) 41F-J1R(red) 41F-J1B(black)</p> <p>separator 41F-S</p>
<p>41F-1Z-A2-1/2</p>  <p>PCB terminal, PCB mounting</p>			<p>*marker 41F-M</p>

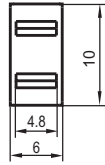
Notes: * If need accesscry,please order with type.

DIMENSION OF RELATED COMPONENT (AVAILABLE)

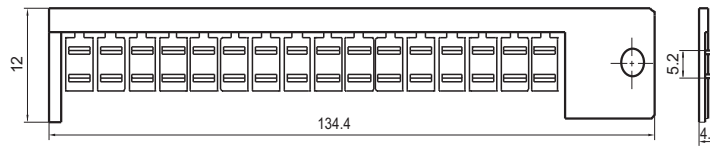
Unit: mm

Marker

41F-M

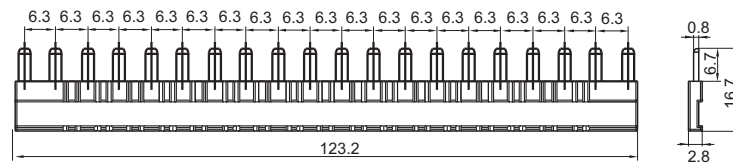


41F-M1



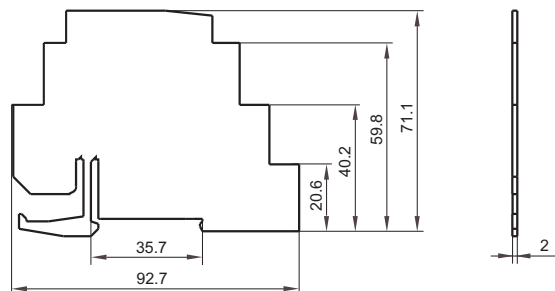
Jumper

41F-J1(blue)、41F-J1R(red)、41F-J1B(black)



Separator

41F-S



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. As for related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. The above is only an example of typical socket and related component type which is suitable to HF41F relay. If you have any special requirements, please contact us.
4. Main outline dimension(L, W, H) $\geq 50\text{mm}$, tolerance should be $\pm 1\text{mm}$; outline dimension $> 20\text{mm}$ and $< 50\text{mm}$, tolerance should be $\pm 0.5\text{mm}$; outline dimension $\leq 20\text{mm}$, tolerance should be $\pm 0.3\text{mm}$.
5. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

Disclaimer

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HF42F

SUBMINIATURE INTERMEDIATE POWER RELAY



File No.:E133481



File No.:R50356443



File No.:CQC09002034521



Features

- 5A switching capability
- TV-3 125VAC approved by UL standard
- 2 Form A slim configuration
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (24.4 x 12.8 x 24.8) mm

CONTACT DATA

Contact arrangement	2A
Contact resistance	100mΩ max. (at 1A 6VDC)
Contact material	AgSnO ₂ , AgCdO
Contact rating (Res. load)	5A 250VAC/30VDC
Max. switching voltage	250VAC / 30VDC
Max. switching current	5A
Max. switching power	1250VA / 150W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	5 x 10 ⁴ OPS (5A 250VAC, Resistive load, Room temp., 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2000VAC 1min
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		10ms max.
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Termination		PCB
Unit weight		Approx. 14.5g
Construction		Plastic sealed

- Notes:** 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class A

COIL

Coil power	Approx. 530mW
------------	---------------

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.75	0.25	6.5	47 x (1±10%)
6	4.50	0.30	7.8	68 x (1±10%)
9	6.75	0.45	11.7	155 x (1±10%)
12	9.00	0.60	15.6	270 x (1±10%)
18	13.5	0.90	23.4	620 x (1±10%)
24	18.0	1.20	31.2	1080 x (1±10%)
48	36.0	2.40	62.4	4400 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	5A 250VAC 5A 30VDC TV-3 125VAC
TÜV	5A 250VAC 5A 30VDC

- Notes:** 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

	HF42F /	012	-2H	S	T	(XXX)
Type						
Coil voltage	5, 6, 9, 12, 18, 24, 48VDC					
Contact arrangement	2H: 2 Form A					
Construction ¹⁾	S: Plastic sealed					
Contact material	T: AgSnO ₂ Nil: AgCdO					
Special code ²⁾	XXX: Customer special requirement Nil: Standard					

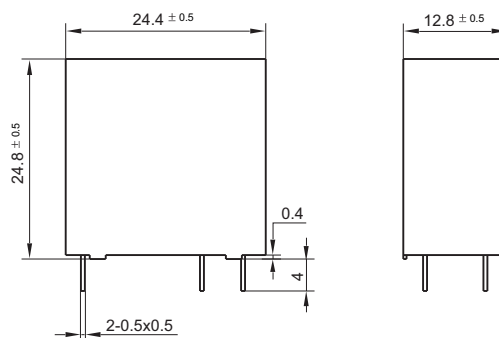
Notes: 1) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

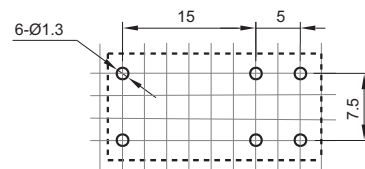
Outline Dimensions



Wiring Diagram (Bottom view)



PCB Layout (Bottom view)



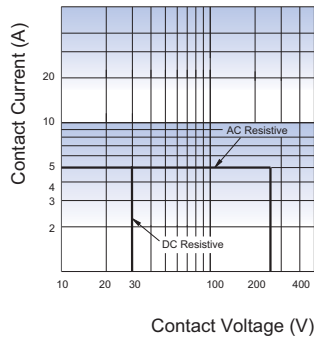
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

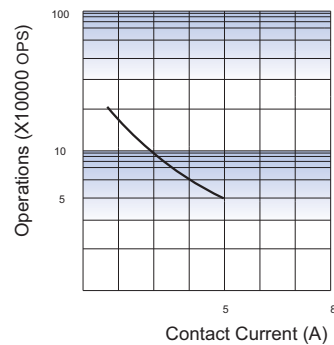
3) The width of the gridding is 2.5mm.

CHARACTERISTIC CURVES

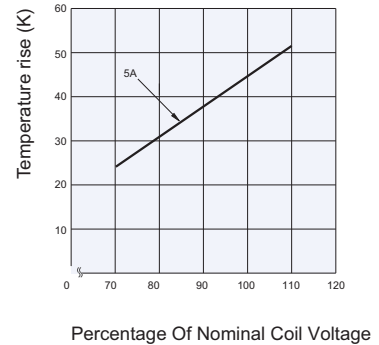
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



Test conditions:

5A 250VAC, Resistive load,
Room temp., 1s on 9s off

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF46F

SUBMINIATURE INTERMEDIATE POWER RELAY



File No.: E134517



File No.: 40025215



File No.: CQC08001024932



Features

- 5A switching capability
- 10kV impulse withstand voltage (between coil and contacts)
- Meets VDE 0631 reinforce insulation
- Highly efficient magnetic circuit for high sensitivity: 200mW
- Extremely small footprint utilizing PCB area
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (20.5 x 7.2 x 15.3) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	100mΩ max. (at 1A 6VDC)
Contact material	AgSnO ₂ , AgNi
Contact rating (Res. load)	3A 250VAC/30VDC 5A 250VAC/30VDC
Max. switching voltage	277VAC / 30VDC
Max. switching current	5A
Max. switching power	1385VA / 150W
Mechanical endurance	5 x 10 ⁶ OPS
Electrical endurance	1 x 10 ⁵ OPS (5A 250VAC, Resistive load, AgNi, at 85°C, 1s on 1s off) 5 x 10 ⁴ OPS (5A 250VAC, Resistive load, AgSnO ₂ , at 85°C, 3s on 3s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & movable contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. volt.)		10ms max.
Release time (at nomi. volt.)		10ms max.
Shock resistance 1)	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance 1)		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 3g
Construction		Plastic sealed

Notes: 1) Shock malfunction: 49m/s² for the length direction.
Vibration: 10Hz to 55Hz 1mm DA for the length direction.
2) The data shown above are initial values.
3) UL insulation system: Class F, Class B.

COIL

Coil power	Approx. 200mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.18	3.90	45 x (1±10%)
5	3.75	0.25	6.50	125 x (1±10%)
6	4.50	0.30	7.80	180 x (1±10%)
9	6.75	0.45	11.7	405 x (1±10%)
12	9.00	0.60	15.6	720 x (1±10%)
18	13.5	0.90	23.4	1620 x (1±10%)
24	18.0	1.20	31.2	2880 x (1±10%)

Notes: * Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	AgNi	5A 125VAC/250VAC at 85°C
		5A 277VAC/30VDC at 85°C
		3A 125VAC/250VAC at 85°C
		3A 277VAC/30VDC at 85°C
UL/CUL	AgSnO ₂	5A 125VAC/250VAC at 85°C
		5A 277VAC/30VDC at 85°C
		3A 125VAC/250VAC at 85°C
		3A 277VAC/30VDC at 85°C
VDE	AgNi	5A 250VAC/30VDC at 85°C
	AgSnO ₂	5A 250VAC/30VDC at 85°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

HF46F / 12 -H S 1 T G F (XXX)	
Type	
Coil voltage	3, 5, 6, 9, 12, 18, 24VDC
Contact arrangement	H: 1 Form A
Construction ¹⁾²⁾	S: Plastic sealed
Termination	1: type 1
Contact material ³⁾	T: AgSnO ₂ Nil: AgNi
Contact plating	G: Gold plated Nil: No gold plated
Insulation standard	F: Class F Nil: Class B
Special code ⁵⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc).

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) For the loads which can bring high inrush current when relay contacts connect instantly (eg. lamp, capacitive load), AgSnO₂ contact material is recommended on priority.

4) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.

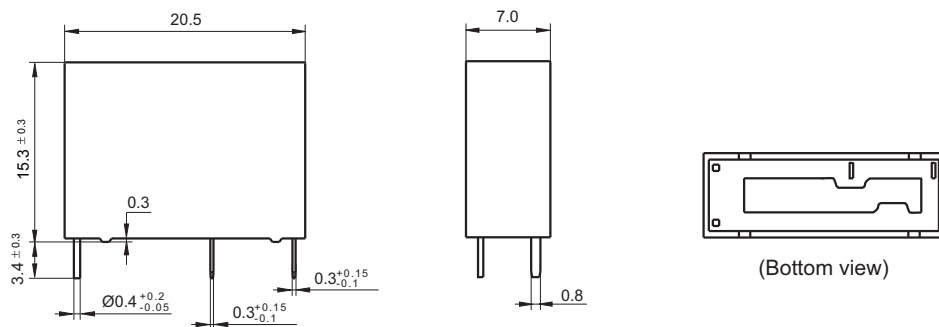
5) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

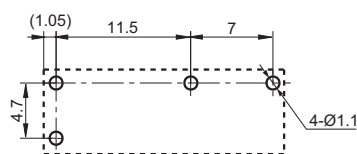
Unit: mm

Outline Dimensions

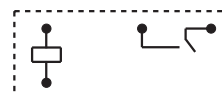
HF46F/□□-HS1□□ (XXX)



PCB Layout (Bottom view)



Wiring Diagram (Bottom view)

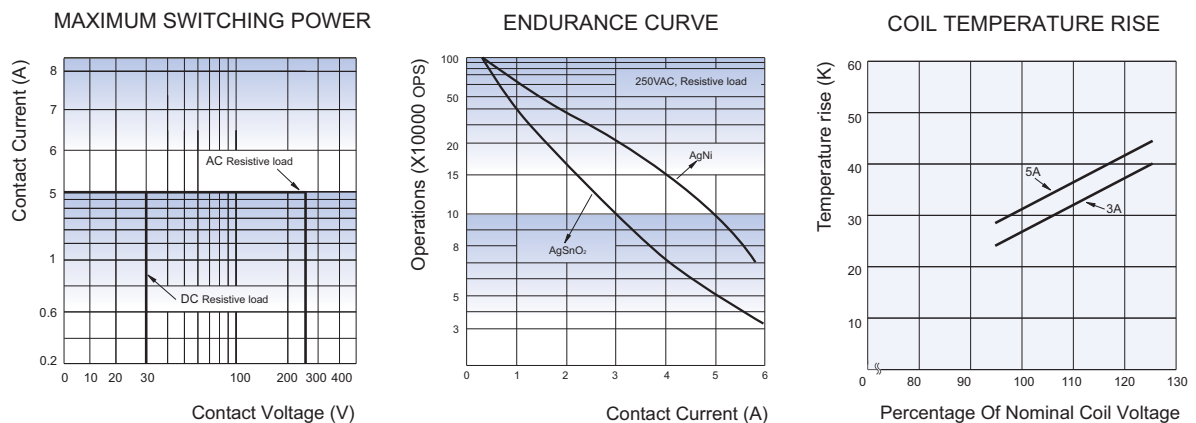


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES



Test conditions:

AgNi, at 85°C, 1s on 1s off,
AgSnO₂, at 85°C, 3s on 3s off

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF46F-G

SUBMINIATURE INTERMEDIATE POWER RELAY



File No.: E134517



File No.: 40025215



File No.: CQC08001024932



Features

- 10A switching capability
- 10kV impulse withstand voltage (between coil and contacts)
- Meets VDE 0631 reinforce insulation
- Highly efficient magnetic circuit for high sensitivity: 200mW
- Extremely small footprint utilizing PCB area
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (20.5 x 7.2 x 15.3) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂ , AgNi
Contact rating (Res. load)	7A 250VAC / 30VDC
Max. switching voltage	277VAC / 30VDC
Max. switching current	10A
Max. switching power	2770VA / 300W
Mechanical endurance	5 x 10 ⁶ OPS
Electrical endurance	5 x 10 ⁴ OPS (7A 250VAC, Resistive load, AgNi, at 105°C, 3s on 3s off)
	6 x 10 ⁴ OPS (7A 250VAC, Resistive load, AgSnO ₂ , at 85°C, 3s on 3s off)
	1 x 10 ⁴ OPS (10A 250VAC, Resistive load, AgNi, at 85°C, 1s on 9s off)
	1 x 10 ⁴ OPS (10A 250VAC, Resistive load, AgSnO ₂ , at 85°C, 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & movable contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. volt.)		10ms max.
Release time (at nomi. volt.)		10ms max.
Shock resistance ¹⁾	Functional	98m/s²
	Destructive	980m/s²
Vibration resistance ¹⁾		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 3g
Construction		Plastic sealed

Notes: 1) Shock malfunction: 49m/s² for the length direction.
Vibration: 10Hz to 55Hz 1mm DA for the length direction.
2) The data shown above are initial values.
3) UL insulation system: Class F, Class B.

COIL

Coil power	Approx. 200mW
------------	---------------

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.18	3.90	45 x (1±10%)
5	3.75	0.25	6.50	125 x (1±10%)
6	4.50	0.30	7.80	180 x (1±10%)
9	6.75	0.45	11.7	405 x (1±10%)
12	9.00	0.60	15.6	720 x (1±10%)
18	13.5	0.90	23.4	1620 x (1±10%)
24	18.0	1.20	31.2	2880 x (1±10%)

Notes: * Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	AgNi	10A 125VAC/250VAC at 85°C 10A 277VAC/30VDC at 85°C 7A 125VAC/250VAC at 105°C 7A 277VAC/30VDC at 105°C
		10A 125VAC/250VAC at 85°C 10A 277VAC/30VDC at 85°C 7A 125VAC/250VAC at 85°C 7A 277VAC/30VDC at 85°C TV-3
	AgSnO ₂	7A 250VAC/30VDC at 105°C 10A 250VAC/30VDC at 85°C
		7A 250VAC/30VDC at 85°C 10A 250VAC/30VDC at 85°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

HF46F-G / 12 -H S 1 T G F (XXX)	
Type	
Coil voltage	3, 5, 6, 9, 12, 18, 24VDC
Contact arrangement	H: 1 Form A
Construction ¹⁾²⁾	S: Plastic sealed
Termination	1: type 1
Contact material ³⁾	T: AgSnO ₂ Nil: AgNi
Contact plating	G: Gold plated Nil: No gold plated
Insulation standard	F: Class F Nil: Class B
Special code ⁵⁾	XXX: Customer special requirement Nil: Standard

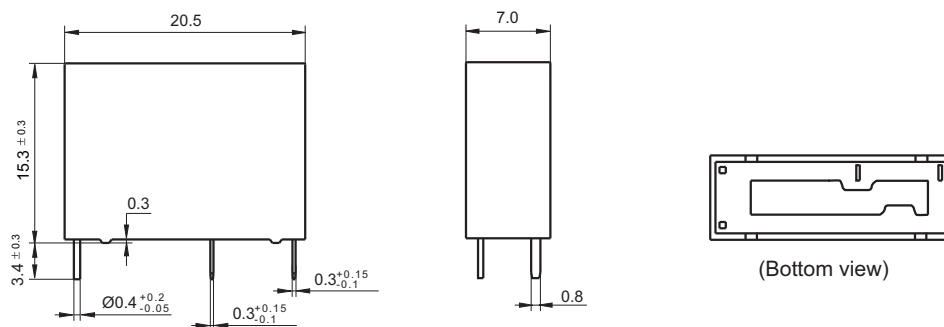
- Notes:** 1) We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc).
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) For the loads which can bring high inrush current when relay contacts connect instantly (eg. lamp, capacitive load), AgSnO₂ contact material is recommended on priority.
4) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.
5) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

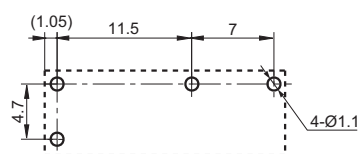
Unit: mm

Outline Dimensions

HF46F-G/□□-HS1□□ (XXX)



PCB Layout (Bottom view)



Wiring Diagram (Bottom view)

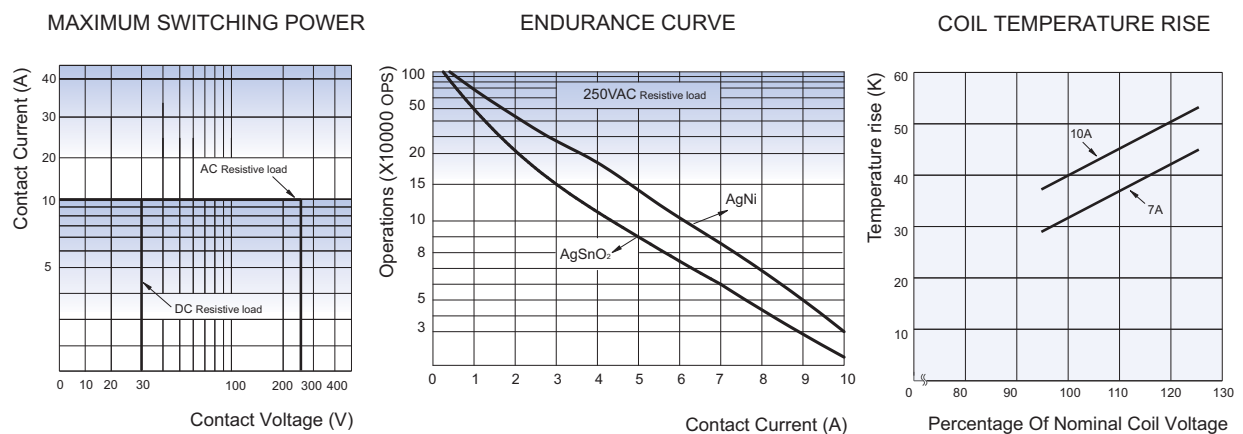


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES



Test conditions: at 85°C, 3s on 3s off

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF49FD

MINIATURE POWER RELAY



File No. : E133481



File No. : 40033644



File No. : R50149334



File No.:CQC10002049162



Features

- 5A switching capability
- 3kV dielectric strength (between coil and contacts)
- Slim size (width 5mm, height 12.5mm)
- High sensitive: Min. 120mW
- Meets IEC61131-2 reinforce insulation
- Creepage/clearance distance: Min. 3.5mm
- Sockets available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (20.0 x 5.0 x 12.5) mm

CONTACT DATA

Contact arrangement	1A
Contact Resistance (at 1A 6VDC)	No gold plated: 100mΩ max. Gold plated: 50mΩ max.
Contact material	AgSnO ₂ , AgNi
Contact rating (Res. load)	5A 250VAC/30VDC
Max. switching voltage	250VAC /30VDC
Max. switching current	5A
Max. switching power	1250VA / 150W
Min. contact load ¹⁾	No gold plated: 5VDC 10mA Gold plated: 5VDC 1mA
Mechanical endurance	2 x 10 ⁷ OPS
Electrical endurance	1 x 10 ⁵ OPS (3A 250VAC/30VDC, Resistive load, AgNi, at 85°C, 1s on 9s off) 5 x 10 ⁴ OPS (5A 250VAC/30VDC, Resistive load, AgNi, Room temp., 1s on 9s off)

Notes: 1) Min. contact load is reference value. Please perform the confirmation test with the actual load before usage since reference value may change according to switching frequencies, environmental conditions and expected life cycles.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	3000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage(between coil & contacts)		6kV (1.2 / 50μs)
Operate time (at nomi.volt.)		10ms max.
Release time (at nomi.volt.)		5ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 3g
Construction		Plastic sealed

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B, Class A.

COIL

Coil power	Approx. 120mW (at 5VDC to 18VDC) Approx. 180mW (at 24VDC)
------------	--

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.50	0.25	6.0	208 x (1±10%)
6	4.20	0.30	7.2	300 x (1±10%)
9	6.30	0.45	10.8	675 x (1±10%)
12	8.40	0.60	14.4	1200 x (1±10%)
18	12.6	0.90	21.6	2700 x (1±15%)
24	16.8	1.20	28.8	3200 x (1±15%)

Notes: 1) All above data are tested when the relays terminals are downward position. Other positions of the terminals, the pick-up and drop-out voltages will have ±5% tolerance. For example, when the relay terminals are transverse position, the max. pick-up voltage change is 75% of nominal voltage.

2) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

3) 24VDC 120mW type are also available, please see ordering information for more details.

SAFETY APPROVAL RATINGS

UL/CUL	1H1 type	AgSnO ₂	3A 250VAC COSØ=1 at 85°C 3A 30VDC L/R =0ms at 85°C
		AgNi	5A 250VAC COSØ=1 5A 30VDC L/R =0ms
	1H2 type	AgNi	3A 250VAC COSØ=1 at 85°C 3A 30VDC L/R =0ms at 85°C 5A 250VAC COSØ=1 5A 30VDC L/R =0ms
VDE			5A 250VAC COSØ=1 at 85°C 5A 30VDC L/R =0ms at 85°C
TÜV			5A 250VAC COSØ=1 at 70°C 5A 30VDC L/R =0ms at 70°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.01

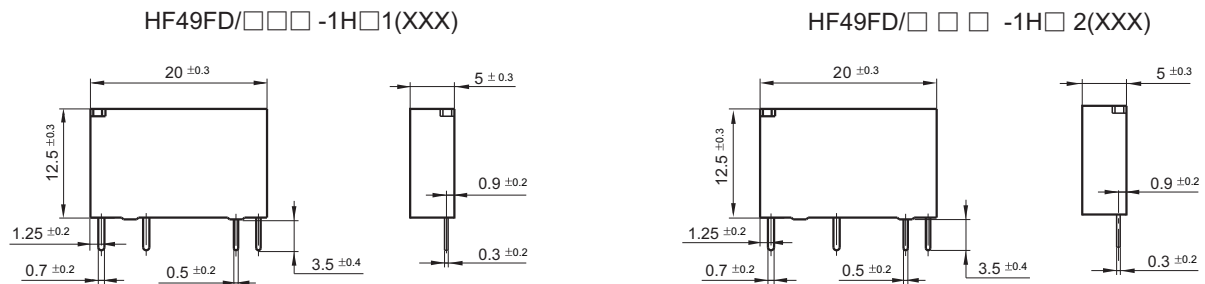
ORDERING INFORMATION

Type	HF49FD / 012 -1H 1 2 G T F L (XXX)						
Coil voltage	5, 6, 9, 12, 18, 24VDC						
Contact arrangement	1H: 1 Form A						
Contact version	1: Single contact 2: Bifurcated contact(Only for gold plated)						
Space between terminals	(See the following) 1: 5.08mm 2: 7.62mm						
Contact plating	G: Gold plated Nil: No gold plated (Only for single contact)						
Contact material	T: AgSnO ₂ (Only for single contact) Nil: AgNi						
Insulation standard	F: Class F B: Class B Nil: Class A						
Coil power	L: Sensitive (Only for 24VDC) Nil: Standard						
Special code ²⁾	XXX: Customer special requirement Nil: Standard						

Notes: 1) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
 2) The customer special requirement express as special code after evaluating by Hongfa.
 3) If customer need to fix HF49FD in 49F socket (HF49FD+49F socket) in application, please choose HF49FD relay with suffix (009) or suffix (086).

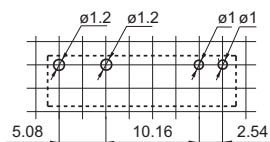
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Outline Dimensions

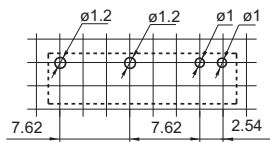


PCB Layout (Bottom view)

HF49FD/□□□ -1H□1(XXX)



HF49FD/□□□ -1H□2(XXX)



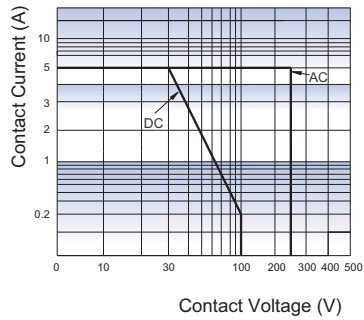
Wiring Diagram (Bottom view)



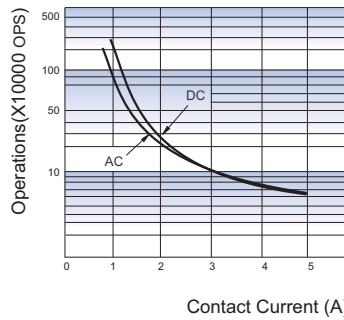
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.
 2) The tolerance without indicating for PCB layout is always ± 0.1 mm.
 3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

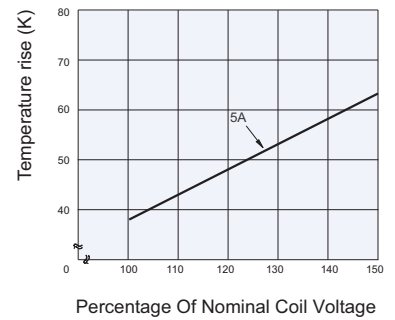
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



Test conditions:

1H1 type: AgNi, Resistive load, 250VAC/30VDC,
Room temp., 1s on 9s off.

Test conditions:

5A 85°C
(Typical curve of 24VDC standard type)

Disclaimer

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HF49FD

MINIATURE POWER RELAY



File No. : E133481



File No. : 40033644



File No. : R50149334



File No.:CQC10002049162



Features

- 5A switching capability
- 3kV dielectric strength (between coil and contacts)
- Slim size (width 5mm, height 12.5mm)
- High sensitive: Min. 120mW
- Meets IEC61131-2 reinforce insulation
- Creepage/clearance distance: Min. 3.5mm
- Sockets available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (20.0 x 5.0 x 12.5) mm

CONTACT DATA

Contact arrangement	1A
Contact Resistance (at 1A 6VDC)	No gold plated: 100mΩ max. Gold plated: 50mΩ max.
Contact material	AgSnO ₂ , AgNi
Contact rating (Res. load)	5A 250VAC/30VDC
Max. switching voltage	250VAC /30VDC
Max. switching current	5A
Max. switching power	1250VA / 150W
Min. contact load ¹⁾	No gold plated: 5VDC 10mA Gold plated: 5VDC 1mA
Mechanical endurance	2 x 10 ⁷ OPS
Electrical endurance	1 x 10 ⁵ OPS (3A 250VAC/30VDC, Resistive load, AgNi, at 85°C, 1s on 9s off) 5 x 10 ⁴ OPS (5A 250VAC/30VDC, Resistive load, AgNi, Room temp., 1s on 9s off)

Notes: 1) Min. contact load is reference value. Please perform the confirmation test with the actual load before usage since reference value may change according to switching frequencies, environmental conditions and expected life cycles.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	3000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage(between coil & contacts)		6kV (1.2 / 50μs)
Operate time (at nomi.volt.)		10ms max.
Release time (at nomi.volt.)		5ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 3g
Construction		Plastic sealed

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B, Class A.

COIL

Coil power	Approx. 120mW (at 5VDC to 18VDC) Approx. 180mW (at 24VDC)
------------	--

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC at 85°C *	Coil Resistance Ω
5	3.50	0.25	6.0	208 x (1±10%)
6	4.20	0.30	7.2	300 x (1±10%)
9	6.30	0.45	10.8	675 x (1±10%)
12	8.40	0.60	14.4	1200 x (1±10%)
18	12.6	0.90	21.6	2700 x (1±15%)
24	16.8	1.20	28.8	3200 x (1±15%)

Notes: 1) All above data are tested when the relays terminals are downward position. Other positions of the terminals, the pick-up and drop-out voltages will have ±5% tolerance. For example, when the relay terminals are transverse position, the max. pick-up voltage change is 75% of nominal voltage.

2) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

3) 24VDC 120mW type are also available, please see ordering information for more details.

SAFETY APPROVAL RATINGS

UL/CUL	1H1	AgSnO ₂	3A 250VAC COSφ=1 at 85°C 3A 30VDC L/R =0ms at 85°C
		AgNi	5A 250VAC COSφ=1 5A 30VDC L/R =0ms
	1H2	AgNi	3A 250VAC COSφ=1 at 85°C 3A 30VDC L/R =0ms at 85°C 5A 250VAC COSφ=1 5A 30VDC L/R =0ms
VDE			5A 250VAC COSφ=1 at 85°C 5A 30VDC L/R =0ms at 85°C
TÜV			5A 250VAC COSφ=1 at 70°C 5A 30VDC L/R =0ms at 70°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.11

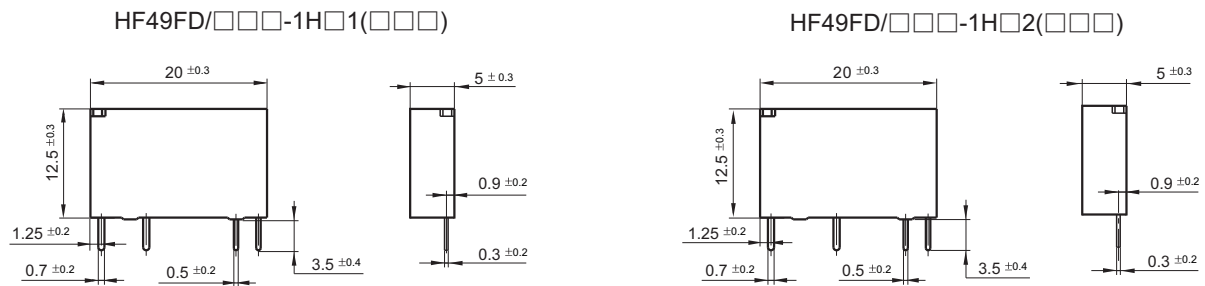
ORDERING INFORMATION

HF49FD / 012 -1H 1 2 G T F L (XXX)									
Type									
Coil voltage	5, 6, 9, 12, 18, 24VDC								
Contact arrangement	1H: 1 Form A								
Contact version	1: Single contact 2: Bifurcated contact(Only for gold plated)								
Space between terminals	(See the following) 1: 5.08mm 2: 7.62mm								
Contact plating	G: Gold plated Nil: No gold plated (Only for single contact)								
Contact material	T: AgSnO ₂ (Only for single contact) Nil: AgNi								
Insulation standard	F: Class F B: Class B Nil: Class A								
Coil power	L: Sensitive (Only for 24VDC) Nil: Standard								
Special code ²⁾	XXX: Customer special requirement Nil: Standard								

Notes: 1) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
 2) The customer special requirement express as special code after evaluating by Hongfa.
 3) If customer need to fix HF49FD in 49F socket (HF49FD+49F socket) in application, please choose HF49FD relay with suffix (009) or suffix (086).

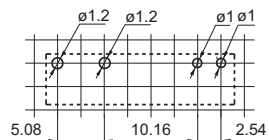
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Outline Dimensions

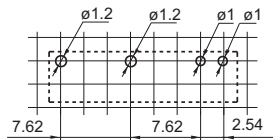


PCB Layout (Bottom view)

HF49FD/□□□-1H□1(□□□)



HF49FD/□□□-1H□2(□□□)



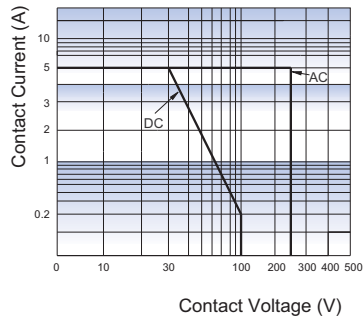
Wiring Diagram (Bottom view)



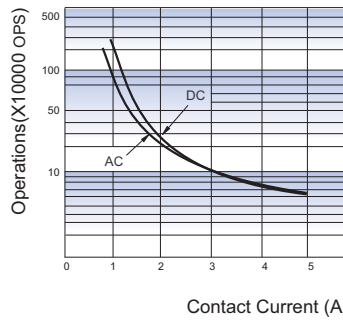
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.
 2) The tolerance without indicating for PCB layout is always ± 0.1 mm.
 3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



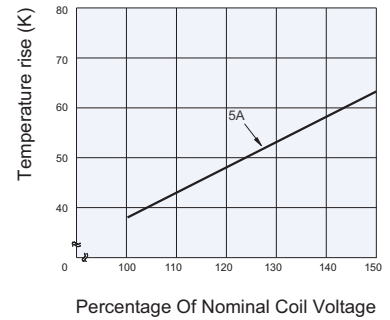
ENDURANCE CURVE



Test conditions:

1H1: AgNi, Resistive load, 250VAC/30VDC,
Room temp., 1s on 9s off.

COIL TEMPERATURE RISE



Test conditions:

5A 85°C
(Typical curve of 24VDC standard type)

Disclaimer

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HF62F

MINIATURE HIGH POWER RELAY



File No.:E133481



File No.:R50147086



File No.:CQC09002028470



Features

- 20A switching capability
- 5kV dielectric strength (between coil and contacts)
- 10kV impulse withstand voltage (between coil and contacts)
- creepage distance: 8mm
- PCB & QC layouts available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.6 x 24.2) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	50mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	16A 250VAC 16A 30VDC
Max. switching voltage	277VAC / 30VDC
Max. switching current	20A
Max. switching power	4000VAC / 480W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	1 x 10 ⁵ OPS (16A 250VAC, Resistive load, Room temp., 3s on 3s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		20ms max.
Release time (at nomi. volt.)		10ms max.
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Termination		T type: PCB D type, Standard: PCB & QC
Unit weight		Approx. 15g
Construction		Flux proofed

- Notes:** 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B.

COIL

Coil power	Approx. 540mW
------------	---------------

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	4.0	0.5	6.50	47 x (1±10%)
6	4.8	0.6	7.80	68 x (1±10%)
9	7.2	0.9	11.7	155 x (1±10%)
12	9.6	1.2	15.6	270 x (1±10%)
18	14.4	1.8	23.4	620 x (1±10%)
24	19.2	2.4	31.2	1100 x (1±10%)
48	38.4	4.8	62.4	4400 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	16A 250VAC 16A 30VDC 20A 125VAC
TÜV	16A 250VAC COSØ=1 16A 30VDC COSØ=1

- Notes:** 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

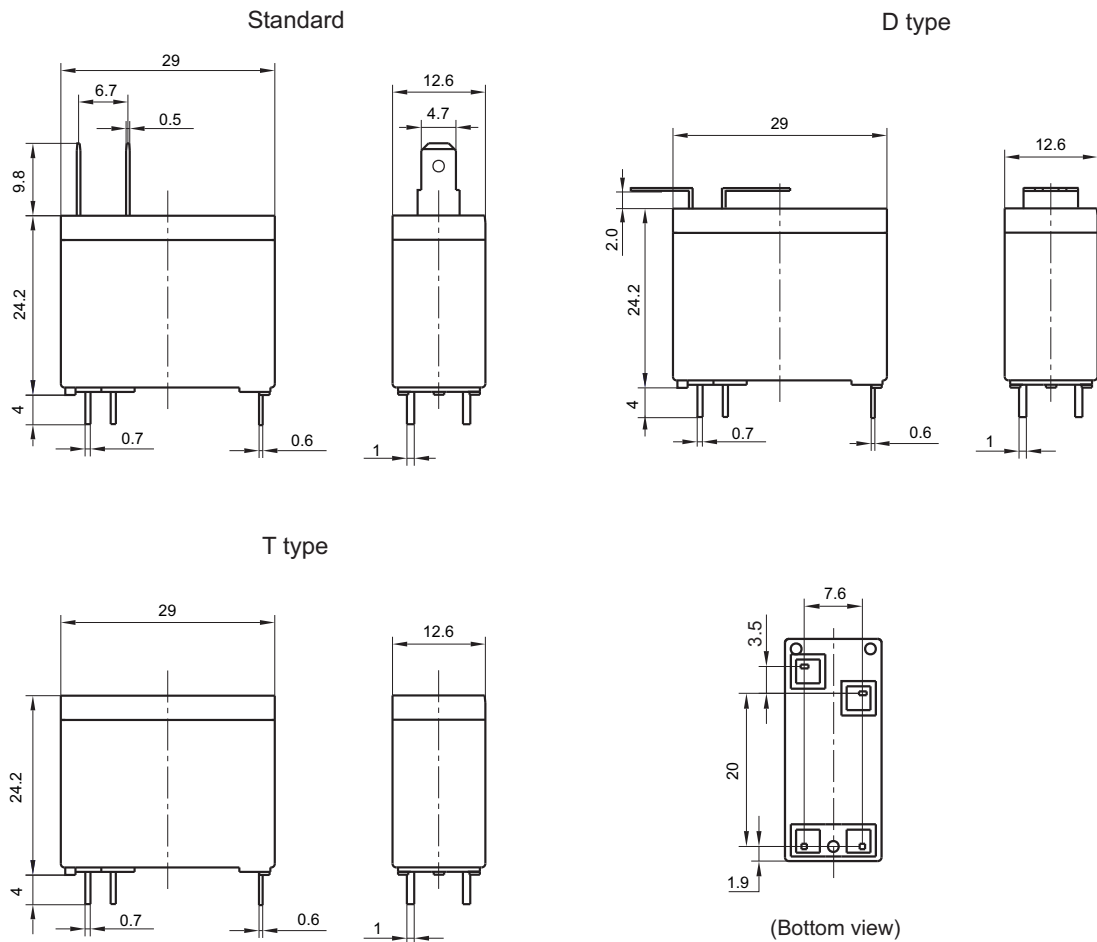
	HF62F / 012 -1H T F (XXX)			
Type				
Coil voltage	5, 6, 9, 12, 18, 24, 48VDC			
Contact arrangement	1H: 1 Form A			
Termination	T: PCB	D: PCB & Bended QC	Nil: PCB & QC	
Insulation Standard	F: Class F Nil: Class B			
Special code ¹⁾	XXX: Customer special requirement		Nil: Standard	

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

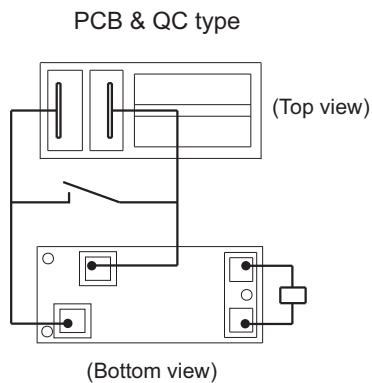
Outline Dimensions



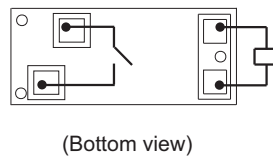
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

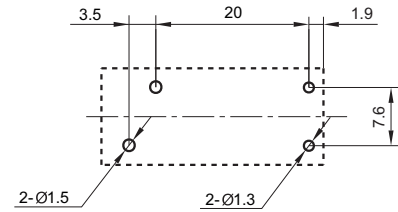
Wiring Diagram



PCB type



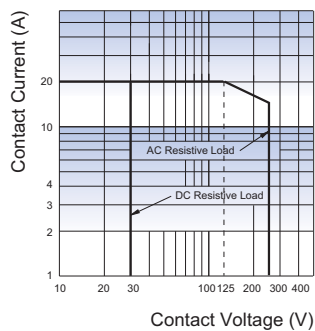
PCB Layout
(Bottom view)



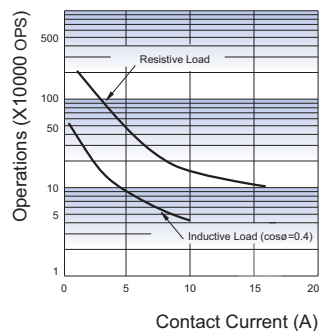
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER

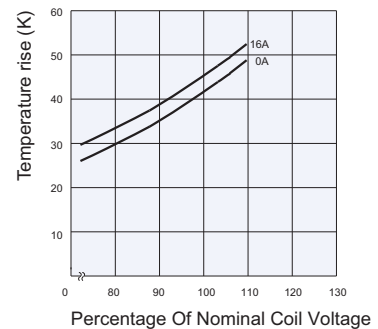


ENDURANCE CURVE



Test conditions:
Room temp., 3s on 3s off

COIL TEMPERATURE RISE



Disclaimer

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HF78F

MINIATURE HIGH POWER RELAY



File No.: E133481



File No.: R50375929



File No.: CQC17002171481



Features

- Small and for microwave oven
- 20A switching capability
- 4.0kV dielectric strength (between coil and contacts)
- Low height: 28.5 mm
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (25.5 x 12.5 x 28.5) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	50mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating	16A 250VAC/24VDC 16A 30VDC
Max. switching voltage	277VAC / 32VDC
Max. switching current	20A
Max. switching power	4432VA / 512W
Mechanical endurance	1 x 10 ⁷ OPS

CHARACTERISTICS

Insulation resistance		1200MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1500VAC 1min
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		5ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB & QC
Unit weight		Approx. 16g
Construction		Flux proofed

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.

COIL

Coil power	540mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.40	0.3	3.9	17.2 x (1±10%)
5	4.00	0.5	6.5	47.7x (1±10%)
6	4.80	0.6	7.8	68.8x (1±10%)
12	9.60	1.2	15.6	270 x (1±10%)
24	19.2	2.4	31.2	1100 x (1±10%)
36	28.8	3.6	46.8	2475x (1±15%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	16A 250VAC/30VDC 20A 125VAC
TÜV	16A 250VAC/30VDC 20A 125VAC

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY
ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

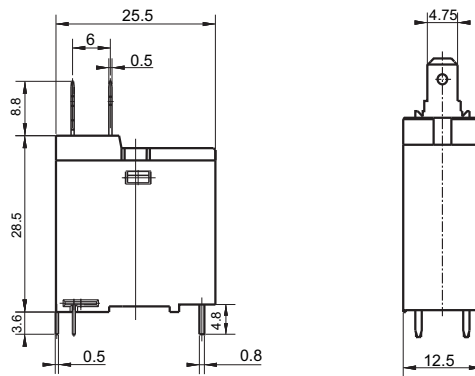
	HF78F / 12 -H 3 T F (XXX)					
Type						
Coil voltage	3, 5, 6, 12, 24, 36VDC					
Contact arrangement	1H: 1 Form A					
Termination	S: Plastic sealed Nil: Dust protected					
Contact material	T: AgSnO ₂					
Insulation standard	F: Class F					
Special code ¹⁾	XXX: Customer special requirement Nil: Standard					

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

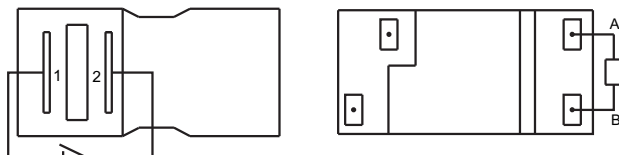
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

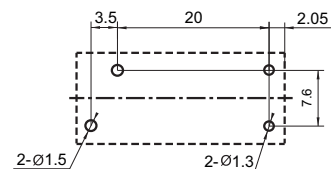
Outline Dimensions



Wiring Diagram
(Bottom view)



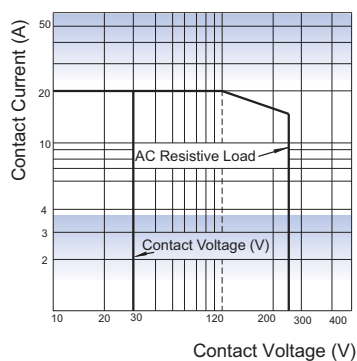
PCB Layout
(Bottom view)



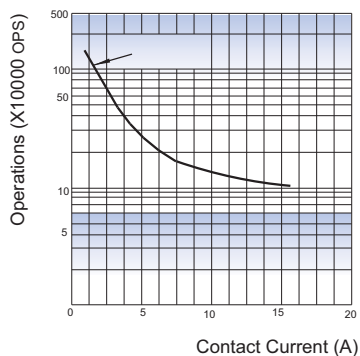
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.
2) The tolerance without indicating for PCB layout is always ± 0.1 mm.

CHARACTERISTIC CURVES

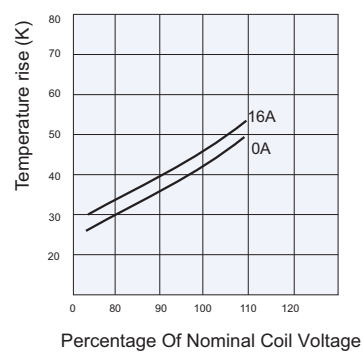
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



Disclaimer

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HF84F

HIGH POWER RELAY



File No.:E134517 (AC type)



Features

- 16A switching capability
- 2.5kV dielectric strength (between coil and contacts)
- Panel mount types available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (47.0 x 32.0 x 28.5)mm

CONTACT DATA

Contact arrangement	1A, 1B, 1C	
Contact resistance	50mΩ max.(at 1A 24VDC)	
Contact material	AgCe	
Contact rating (Res.load)	1A, 1C	1B
	16A 250VAC, Resistive load	8A 250VAC, General load
Max. switching voltage	250VAC	
Max. switching current	16A	
Max. switching power	4000VAC	
Mechanical endurance	1 x 10 ⁶ OPS	
Electrical endurance	7 type: 3 x 10 ⁴ OPS (8A 250VAC, General use, at 40°C, 1s on 9s off)	
	1, 4 type: 1 x 10 ⁵ OPS (16A 250VAC, Resistive load, at 65°C, 1s on 9s off)	

CHARACTERISTICS

Insulation resistance	500MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)	DC type: 25ms max.	
Release time (at nomi. volt.)	DC type: 25ms max.	
Temperature rise (at nomi. volt.)	90K max.	
Shock resistance (Functional)	147m/s ² 11ms	
Vibration resistance	10Hz to 55Hz 2.54mm DA	
Ambient temperature	-40°C to 65°C	
Humidity	5% to 85% RH	
Termination	QC	
Unit weight	Approx. 75g	
Construction	Dust protected	

Notes: 1) The data shown above are initial values.
2) UL insulation system: Class A

COIL

Coil power	DC type: 2.1W ; AC type: 3.5VA
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
6	4.50	0.6	6.6	17.5 x (1±10%)
9	6.75	0.9	9.9	40 x (1±10%)
12	9.00	1.2	13.2	70 x (1±10%)
24	18.0	2.4	26.4	280 x (1±10%)
48	36.0	4.8	52.8	1120 x (1±10%)
120	90.0	12.0	132	7000 x (1±10%)

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Max. Voltage VAC *	Coil Resistance Ω
6	5.1	1.2	6.6	4.8 x (1±10%)
12	10.2	2.4	13.2	19 x (1±10%)
24	20.4	4.8	26.4	90 x (1±10%)
48	40.6	9.6	52.8	300 x (1±10%)
120	102	24	132	2000 x (1±10%)
240	204	48	264	7200 x (1±10%)
277	235	55.4	304.7	11000 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL (AC type)	HF84F-1	8FLA, 25LRA 250VAC at 40°C 16A 250VAC Resistive at 65°C 8A 250VAC General use at 40°C
	HF84F-4	8FLA, 25LRA 250VAC at 40°C 16A 250VAC Resistive at 65°C 8A 250VAC General use at 40°C
	HF84F-7	8FLA, 25LRA 250VAC at 40°C 8A 250VAC General use at 40°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

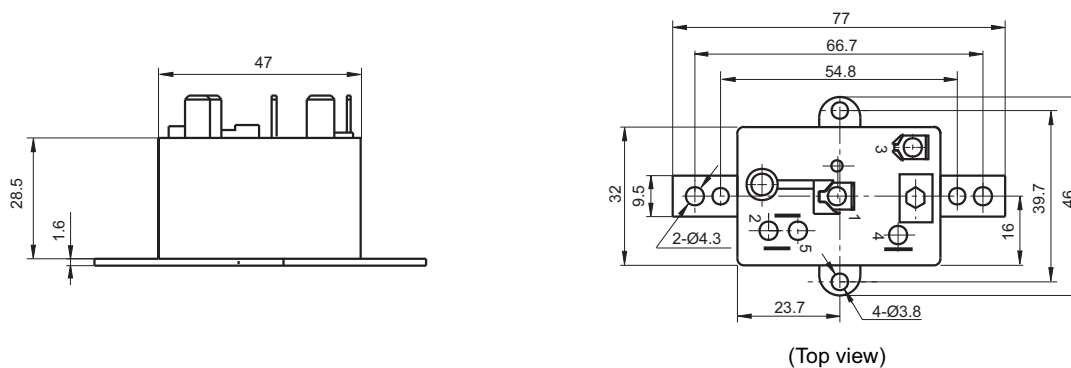
Type	HF84F	-1	A	24	(XXX)
Contact arrangement	1: 1 Form C 4: 1 Form A 7: 1 Form B				
Coil voltage form	D: DC A: AC				
Coil voltage	AC: 6VAC to 277VAC DC: 6VDC to 120VDC (No UL approved)				
Special code ¹⁾	XXX: Customer special requirement Nil: Standard				

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

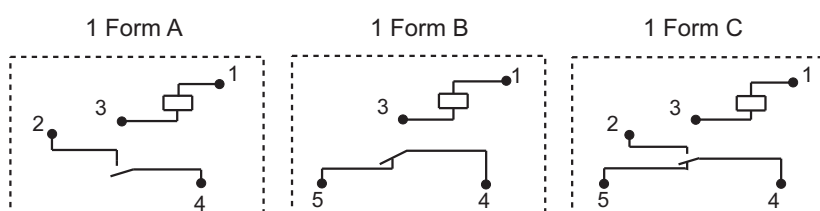
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

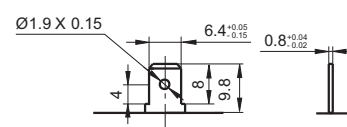
Outline Dimensions



Wiring Diagram (Top view)



Terminals type



Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Disclaimer

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HF92F

MINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:40016109



File No.:CQC09002037814 (DC type)

CQC14002114447 (AC type)



Features

- 30A switching capability
- Creepage distance: 8mm
- 4kV dielectric strength (between coil and contacts)
- UL insulation system: Class F
- Plastic sealed and dust protected types available
- PCB & QC layouts available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (52.0 x 33.7 x 26.7) mm

CONTACT DATA

Contact arrangement	2A, 2C
Contact resistance	50mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂ , AgCdO
Contact rating (Res. load)	NO: 30A 250VAC; 30A 277VAC NC: 3A 250VAC; 3A 277VAC
Max. switching voltage	277VAC
Max. switching current	30A
Max. switching power	8310VA
Mechanical endurance	5 x 10 ⁶ OPS
Electrical endurance	1 x 10 ⁵ OPS (NO: 30A 277VAC, Resistive load, Room temp., 1s on 9s off) 1 x 10 ⁵ OPS (NC: 3A 277VAC, Resistive load, Room temp., 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1500VAC 1min
	Between contact poles	2000VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2/50μs)
Operate time (at nomi. volt.)		DC type: 25ms max.
Release time (at nomi. volt.)		DC type: 25ms max.
Temperature rise (at nomi. volt.)		AC type:90K max. DC type:70K max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.65mm DA
Humidity		5% to 85% RH
Ambient temperature		AC: -40°C to 65°C DC: -40°C to 85°C
Termination		PCB, QC
Unit weight		Approx. 86g
Construction		Plastic sealed, Flux proofed

Notes: The data shown above are initial values.

COIL

Coil power	DC type: Approx. 1.7W; AC type: Approx. 4.0VA
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COIL DATA

at 23°C

DC type

Coil Code	Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
005D	5	3.8	0.5	8.0	15.3x (1±10%)
006D	6	4.5	0.6	9.6	22x (1±10%)
012D	12	9	1.2	19.2	86x (1±10%)
024D	24	18	2.4	38.4	350x (1±10%)
048D	48	36	4.8	76.8	1390x (1±10%)
110D	110	82.5	11	176	7255x (1±10%)

AC type (at 50Hz)

Coil Code	Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Max. Voltage VAC *	Coil Resistance Ω
024A5	24	19.2	4.8	26.4	45x (1±10%)
120A5	120	96	24	132	1125x (1±10%)
208A5	208	166.4	41.6	229	3278x (1±10%)
220A5	220	176	44	242	3800x (1±10%)
240A5	240	192	48	264	4500x (1±10%)
277A5	277	221.6	55.4	305	5960x (1±10%)

AC type (at 60Hz)

Coil Code	Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Max. Voltage VAC *	Coil Resistance Ω
024A6	24	19.2	4.8	26.4	35.7x (1±10%)
120A6	120	96	24	132	830x (1±10%)
208A6	208	166.4	41.6	229	2600x (1±10%)
220A6	220	176	44	242	2870x (1±10%)
240A6	240	192	48	264	3800x (1±10%)
277A6	277	221.6	55.4	305	4700x (1±10%)



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA

at 23°C

AC type (at 50Hz/60Hz)

Coil Code	Nominal Voltage VAC	Pick-up Voltage VAC max.		Drop-out Voltage VAC min.		Max. Voltage VDC*	Coil Resistance Ω
		50Hz	60Hz	50Hz	60Hz		
120A	120	88	96	22	24	132	950 x (1±10%)
208A	208	160	166.4	40	41.6	229	2841 x (1±10%)
240A	240	176	192	44	48	264	3800 x (1±10%)
277A	277	200	221.6	50	55.4	305	5485 x (1±10%)

Notes: * Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL ¹⁾	NO	30A 277VAC 1HP 120VAC 2.5HP 240VAC 110 LRA/25.3 FLA 240VAC (DC type)
	NC	3A 277VAC
VDE ¹⁾ (AgSnO ₂)	NO	30A 250VAC 20A 250VAC
	NC	3A 250VAC

Notes: 1) UL certified loads are tested at 40°C. VDE certified loads are tested at 85°C (DC products) or 50°C (AC products).
2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF92F	-012D	-2C	2	2	F	(XXX)
Coil Code	XXX D: DC type(5,6,12,24,48,110VDC) XXX A5: AC type 50Hz(24,120,208,220,240,277VAC) XXX A6: AC type 60Hz(24,120,208,220,240,277VAC) XXX A: AC type 50Hz/60Hz(120,208,240,277VAC)						
Contact arrangement	2A: 2 Form A 2C: 2 Form C						
Termination ¹⁾	1: PCB 2, 3: QC						
Contact material	1: AgSnO ₂ 2: AgCdO						
Construction ²⁾	S: Plastic sealed F: Flux proofed						
Special code ³⁾	XXX: Customer special requirement Nil: Standard						

Notes: 1) For QC terminals, no soldering or washing is allowed. For PCB terminals, please refer to us for soldering condition and part specification for necessary washing or surface processing after it is soldered to PCB.

2) We recommend dust protected types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).
We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

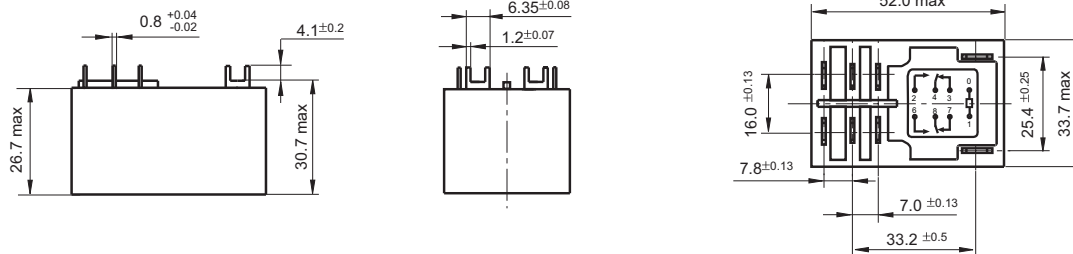
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

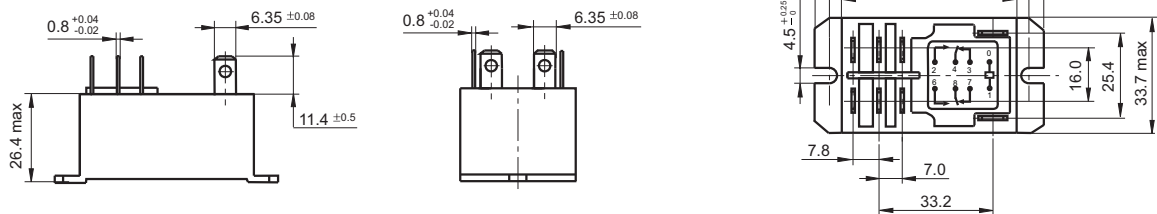
Unit: mm

Outline Dimensions

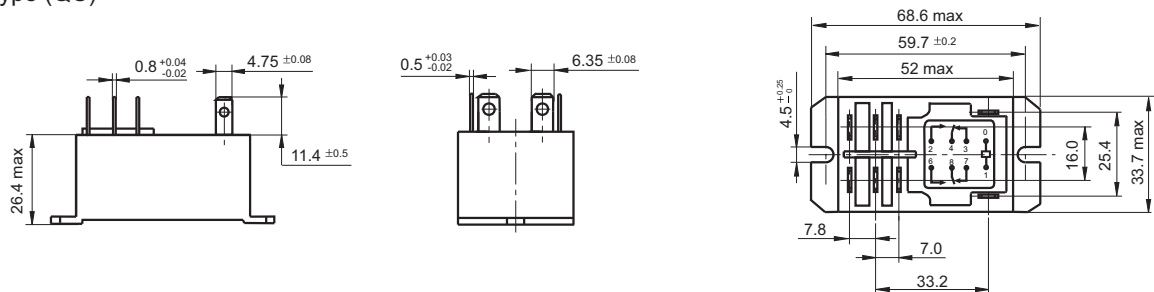
1 Type (PCB)



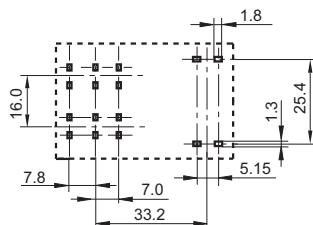
2 Type (QC)



3 Type (QC)

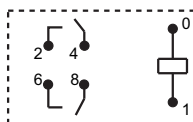


PCB Layout (Bottom view)

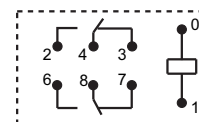


Wiring Diagram (Bottom view)

2 Form A

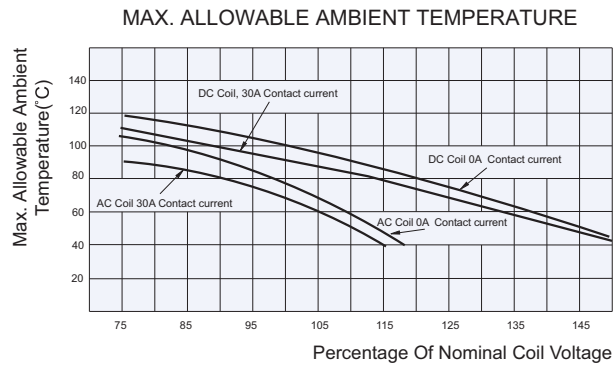


2 Form C



- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF94F

HIGH POWER RELAY



File No.:E134517 (AC type)



Features

- 25A switching capability
- 2kV dielectric strength
(between coil and contacts)
- Panel mount, various terminal types
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (47.0 x 32.0 x 28.5) mm

CONTACT DATA

Contact arrangement	1A, 1B, 1C, 1A + 1B
Contact resistance	200mΩ max.(at 1A 24VDC)
Contact material	AgCe, AgCdO
Contact rating (Res.load)	18A 277VAC
Max. switching voltage	277VAC
Max. switching current	18A
Max. switching power	4986VA
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	5 x 10 ⁴ OPS (25A 277VAC, Resistive load, AgCdO, at 65°C, 1s on 9s off) 3 x 10 ⁴ OPS (3A 277VAC, General load, AgCe, at 65°C, 1s on 9s off)

CHARACTERISTICS

Insulation resistance		500MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	2000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		DC type: 25ms max.
Release time (at nomi. volt.)		DC type: 25ms max.
Temperature rise (at nomi. volt.)		90K max.
Shock resistance (Functional)		98m/s ²
Vibration resistance		10Hz to 55Hz 0.5mm DA
Ambient temperature		-40°C to 65°C
Humidity		5% to 85% RH
Termination		QC
Unit weight		Approx. 85g
Construction		Dust protected

Notes: 1) The data shown above are initial values.

COIL

Coil power	DC type: Approx. 2.4W; AC type: Approx. 4.0VA
------------	--

COIL DATA

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
6	4.50	0.6	6.6	17.5 x (1±10%)
9	6.75	0.9	9.9	40 x (1±10%)
12	9.00	1.2	13.2	70 x (1±10%)
24	18.0	2.4	26.4	280 x (1±10%)
48	36.0	4.8	52.8	1120 x (1±10%)
120	90.0	12.0	132	7000 x (1±10%)

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Max. Voltage VAC *	Coil Resistance Ω
6	5.1	1.2	6.6	4.8 x (1±10%)
12	10.2	2.4	13.2	19 x (1±10%)
24	20.4	4.8	26.4	77 x (1±10%)
48	40.8	9.6	52.8	280 x (1±10%)
120	102	24	132	2000 x (1±10%)
240	204	48	264	7250 x (1±10%)
277	235	55.4	304.7	11000 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

SAFETY APPROVAL RATINGS

UL/CUL	HF94F-10	NO	AgCdO	12FLA,60LRA,120VAC at 65°C 8FLA,48LRA,250VAC at 65°C 8FLA,48LRA,277VAC at 65°C 7FLA,42LRA,277VAC at 65°C 25A,277VAC,Resistive at 65°C
			AgCe	3A,277VAC,Gen Useat 65°C 277VAC pilot duty,10A inrush,1A break at 65°C
	HF94F-11	NC	AgCdO	14FLA,84LRA,125VAC at 40°C 8FLA,48LRA,250VAC at 65°C 8FLA,48LRA,277VAC at 65°C 7FLA,42LRA,277VAC at 65°C 25A,277VAC,Resistive at 65°C
			AgCe	3A,277VAC,Gen Use at 65°C 277VAC pilot duty,10A inrush,1A break at 65°C
	HF94F-12	NO/NC	AgCdO	14FLA,84LRA,125VAC at 40°C 8FLA,48LRA,250VAC at 65°C 8FLA,48LRA,277VAC at 65°C 7FLA,42LRA,277VAC at 65°C 25A,277VAC,Resistive at 65°C
			AgCe	3A,277VAC,Gen Use at 65°C 277VAC pilot duty,10A inrush,1A break at 65°C
	HF94F-13	NO/NC	AgCdO	12FLA,60LRA,120VAC at 65°C 8FLA,48LRA,250VAC at 65°C 8FLA,48LRA,277VAC at 65°C 7FLA,42LRA,277VAC at 65°C 18A,277VAC,Resistive at 65°C 25A,277VAC,Resistive at 65°C
			AgCe	3A,277VAC,Gen Use at 65°C 277VAC pilot duty,10A inrush,1A break at 65°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF94F	-10	A	24	E	-1	(XXX)
Contact arrangement	10: 1 Form A 11: 1 Form B 12: 1 Form C 13: 1 Form A+1 Form B						
Coil voltage form	A: AC D: DC						
Coil voltage	AC: 6VAC to 277VAC DC: 6VDC to 120 VDC (No UL approved)						
Contact material	E: AgCe Nil: AgCdO						
Mounting	1: Flang, Mounting Distance 54.8mm. diameter Ø3.8mm 2: Flang, Mounting Distance 66.7mm. diameter Ø4.8mm Nil: Metal Bracket						
Special code ¹⁾	XXX: Customer special requirement Nil: Standard						

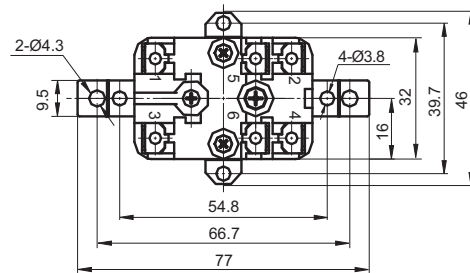
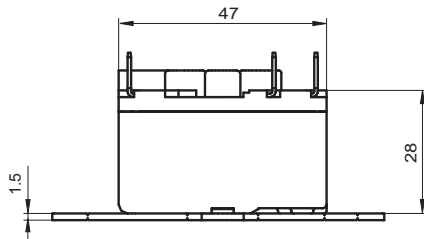
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

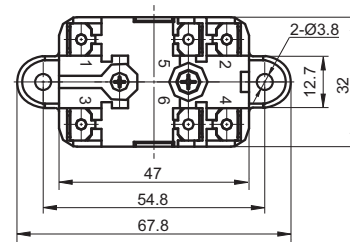
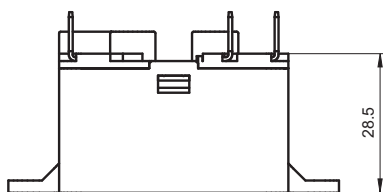
Outline Dimensions

Metal Bracket



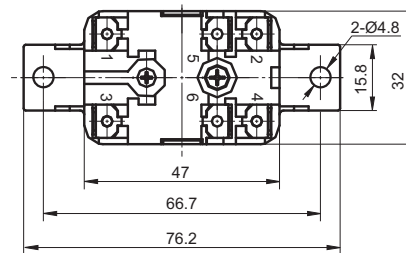
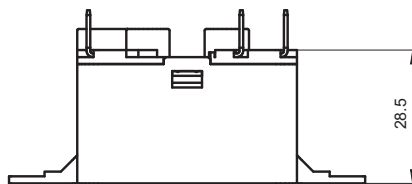
(Top view)

Flang, Mounting Distance 54.8mm



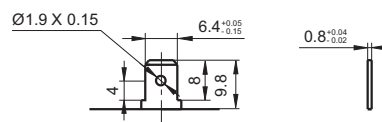
(Top view)

Flang, Mounting Distance 66.7mm



(Top view)

Terminals type

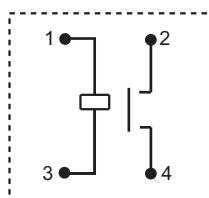


Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

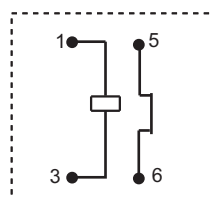
Wiring Diagram

(Top view)

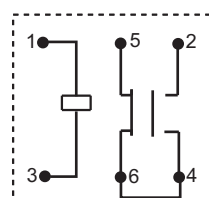
1 Form A



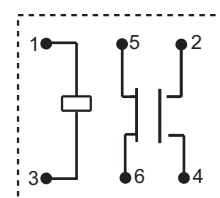
1 Form B



1 Form C



1A+1B



Disclaimer

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HF102F

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:40024142



File No.:CQC13002098165



Features

- 4.5kV dielectric strength (between coil and contacts)
- Heavy load up to 5000VA
- Ideal for motor switching
- PCB & QC layouts available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (30.5 x 16.0 x 23.5) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂ , AgCdO
Contact rating	Resistive: 20A 250VAC Motor: 2HP 240VAC
Max. switching voltage	250VAC
Max. switching current	Resistive: 25A
Max. switching power	6250VA
Mechanical endurance	2 x 10 ⁶ ops
Electrical endurance	1 x 10 ⁵ ops (20A 250VAC, Resistive load, at 85°C, 1.5s on 1.5s off)

COIL

Coil power	Approx. 900mW
------------	---------------

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.5	0.5	6.0	27.8 x (1±10%)
12	8.4	1.2	14.4	160 x (1±10%)
24	16.8	2.4	28.8	640 x (1±10%)
48	33.6	4.8	57.6	2560 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4500VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		20ms max.
Release time (at nomi. volt.)		10ms max.
Temperature rise (at nomi. volt.)		60K max.
Shock resistance	Functional	196m/s²
	Destructive	980m/s²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Ambient temperature		-25°C to 85°C
Humidity		5% to 85% RH
Termination		HF102F: PCB & QC HF102F-P: PCB
Unit weight		Approx. 23g
Construction		Dust protected

Notes: The data shown above are initial values.

SAFETY APPROVAL RATINGS

UL/CUL	25A 250VAC
	20A 250VAC
	1HP 120VAC
	2HP 240VAC
VDE	25A 250VAC at 55°C
	20A 250VAC at 85°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

Type	HF102F /		T	12VDC	(XXX)
	HF102F-P: PCB HF102F: PCB & QC				
Contact material	T: AgSnO ₂	Nil: AgCdO			
Coil voltage	5, 12, 24, 48VDC				
Special code ²⁾	XXX: Customer special requirement		Nil: Standard		

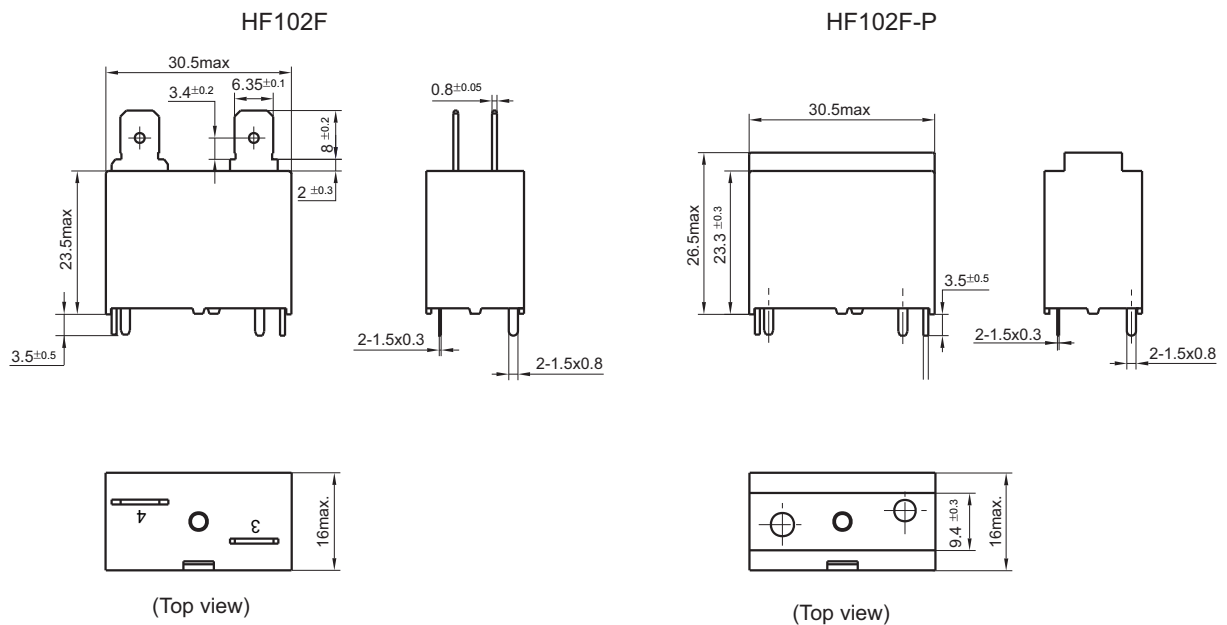
Notes: 1) HF102F is dust protected version which cannot be washed.

2) The customer special requirement express as special code after evaluating by Hongfa.

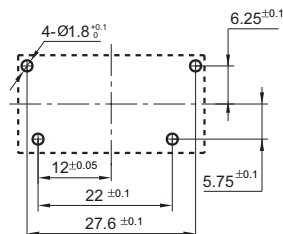
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

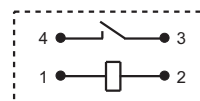
Outline Dimensions



PCB Layout (Bottom view)



Wiring Diagram

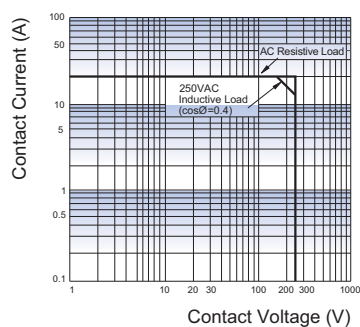


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

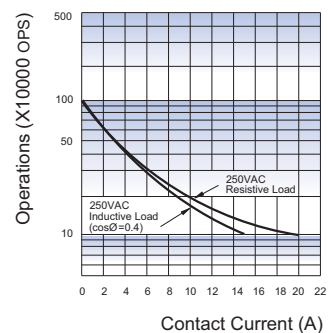
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



ENDURANCE CURVE



Test conditions:

Room temp. 1s on 9s off

Disclaimer

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HF105F-1

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:40025518 (DC Type)



File No.:CQC09002031229(Ningbo Factory, DC Type)
CQC12002071130(Ningbo Factory, AC Type)
CQC16002140270(Xiamen Factory, DC Type)



Features

- 40A switching capability
- 4kV dielectric strength (between coil and contacts)
- Heavy load up to 7200VA
- PCB coil terminals, ideal for heavy duty load
- Unenclosed, Plastic sealed and dust protected types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (32.3 x 27.1x 20.0) mm

CONTACT DATA

Contact arrangement	1A	1B	1C (NO)	1C (NC)
Contact resistance	50mΩ max. (at 1A 24VDC)			
Contact material	AgSnO ₂ , AgCdO			
Max. switching capacity	7200VA/560W	3600VA/280W	4800VA/560W	2400VA/280W
Max. switching voltage	277VAC / 28VDC			
Max. switching current	40A	15A	20A	10A
HF105F-1 rating	30A 240VAC 20A 28VDC	15A 240VAC 10A 28VDC	20A 240VAC 20A 28VDC	10A 240VAC 10A 28VDC
HF105F-1L rating	25A 240VAC 20A 28VDC	15A 240VAC 10A 28VDC	20A 240VAC 20A 28VDC	10A 240VAC 10A 28VDC
Mechanical endurance	1 x 10 ⁷ OPS			
Electrical endurance	1H type(Non-plastic sealed): 1 x 10 ⁵ OPS (28A 277VAC, Resistive load, AgCdO, Room temp., 1s on 9s off)			

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	2500VAC/4000VAC 1min
	Between open contacts	1500VAC 1min
Operate time (at nomi. volt.)	DC type: 15ms max.	
Release time (at nomi. volt.)	DC type: 10ms max.	
Ambient temperature	DC: -55°C to 85°C AC: -55°C to 60°C	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Termination	PCB	
Unit weight	Approx.36g	
Construction	Unenclosed (Only for DC coil), Plastic sealed, Dust protected	

Notes: 1) For plastic sealed type, the venting-hole should be opened in test.

2) The data shown above are initial values.

3) Please find coil temperature curve in the characteristic curves below.

4) UL insulation system: Class F, Class B.

COIL

Coil power	DC type: Approx. 900mW; AC type: Approx. 2VA
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SAFETY APPROVAL RATINGS

UL/ CUL	1 Form A		AgSnO ₂ AgCdO	30A 277VAC 40A 277VAC 2HP 250VAC 1HP 125VAC
			AgCdO	30A 28VDC 28A 277VAC 277VAC(FLA=20)(LRA=60)
	1 Form B		AgCdO	15A 277VAC 10A 28VDC 1/2HP 250VAC 1/4HP 125VAC 277VAC(FLA=10)(LRA=33)
	1 Form C	NO	AgSnO ₂ AgCdO	30A 277VAC 2HP 250VAC 1HP 125VAC
			AgCdO	20A 277VAC 20A 28VDC 277VAC(FLA=20)(LRA=60)
		NC	AgSnO ₂ AgCdO	20A 277VAC 1/2HP 250VAC 1/4HP 125VAC
AgCdO			10A 277VAC 10A 28VDC 277VAC(FLA=10)(LRA=33)	

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA

at 23°C

DC type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.75	0.5	6.5	27 x (1±10%)
6	4.50	0.6	7.8	40 x (1±10%)
9	6.75	0.9	11.7	97 x (1±10%)
12	9.00	1.2	15.6	155 x (1±10%)
15	11.25	1.5	19.5	256 x (1±10%)
18	13.50	1.8	23.4	380 x (1±10%)
24	18.00	2.4	31.2	660 x (1±10%)
48	36.00	4.8	62.4	2560 x (1±10%)
70	52.50	7.0	91	5500 x (1±10%)
110	82.50	11	143	13450 x (1±10%)

AC type

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Max. Voltage VDC *	Coil Resistance Ω
12	9.6	2.4	15.6	25 x (1±10%)
24	19.2	4.8	31.2	100 x (1±10%)
120	96.0	24.0	156	2500 x (1±10%)
208	166.4	41	270.4	11000 x (1±10%)
220	176	44	286	13490 x (1±10%)
240	192	48	286	13490 x (1±10%)
277	220	54	360.1	15000 x (1±10%)

- Notes:** 1) When requiring pick-up voltage < 80% of nominal voltage, special order allowed.
 2) The data shown above are initial values at 50Hz. When requiring 60Hz, special order allowed.
 3) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

ORDERING INFORMATION

Type		HF105F-1 / 018 D T -1H S T F (XXX)	
		HF105-1: 30A (Unenclosed, only for DC coil) HF105-1L: 25A (Unenclosed, only for DC coil) HF105F-1: 30A HF105F-1L: 25A	
Coil voltage		DC: 5VDC to 110VDC AC: 12VAC to 277VAC	
Coil voltage form		D: DC A: AC	
Termination		6: With Pin NO.6, Dielectric Strength Between Coil and Contact: 2500VAC T: Without Pin NO.6, Dielectric Strength Between Coil and Contact: 4000VAC Nil: Without Pin NO.6, Dielectric Strength Between Coil and Contact: 2500VAC	
Contact arrangement		1H: 1 Form A 1D: 1 Form B 1Z: 1 Form C	
Construction ¹⁾²⁾		S: Plastic sealed Nil: Dust protected (For HF105F-1, HF105F-1L) Unenclosed (For HF105-1, HF105-1L)	
Contact material		T: AgSnO ₂ Nil: AgCdO	
Insulation standard		F: Class F Nil: Class B	
Special code ³⁾		XXX: Customer special requirement Nil: Standard	

Notes: 1) We recommend dust protected types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

HF105F-1

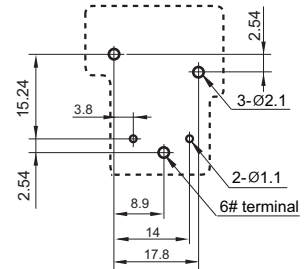
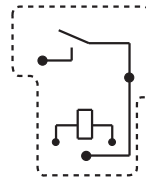
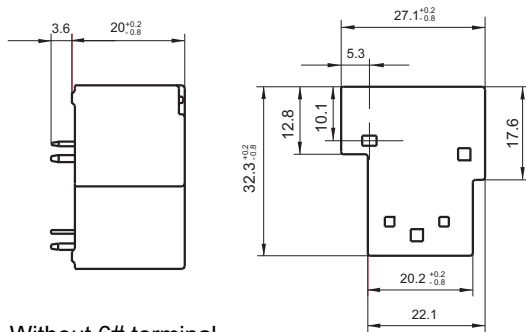
1 Form A

Outline Dimensions

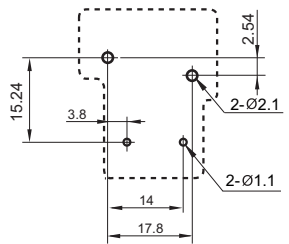
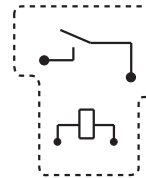
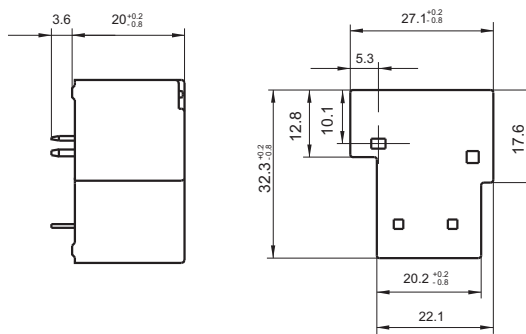
Wiring Diagram
(Bottom view)

PCB Layout
(Bottom view)

With 6# terminal

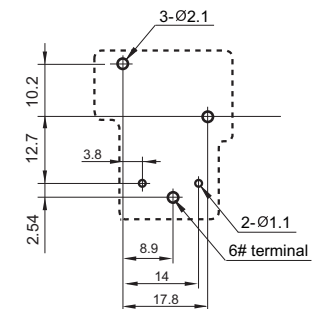
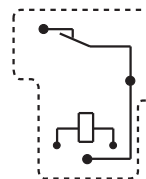
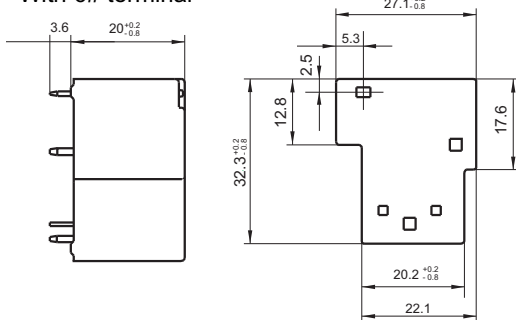


Without 6# terminal

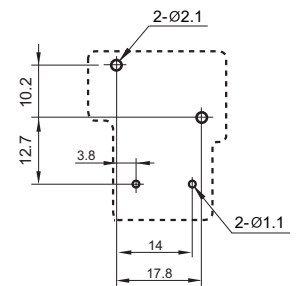
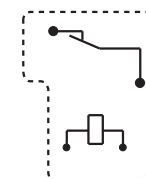
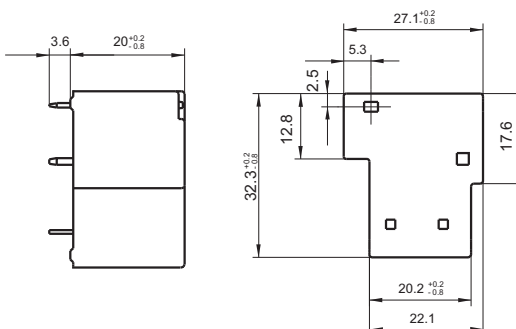


1 Form B

With 6# terminal



Without 6# terminal



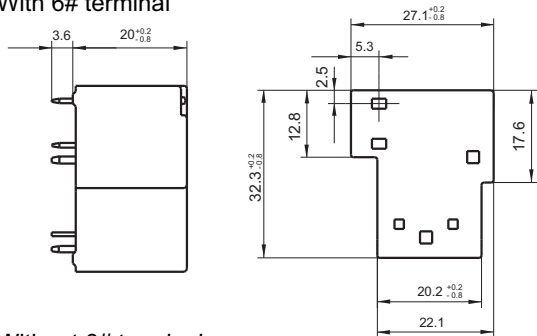
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

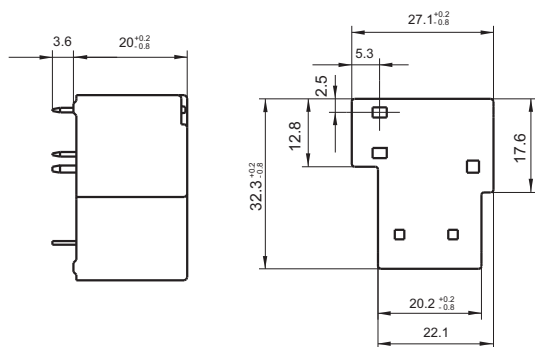
1 Form C

Outline Dimensions

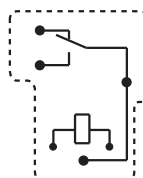
With 6# terminal



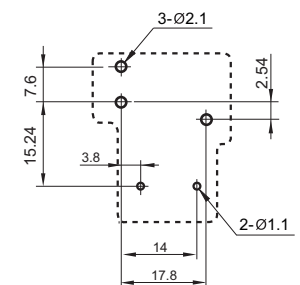
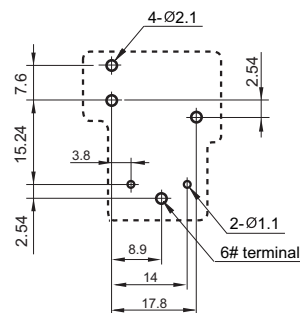
Without 6# terminal



Wiring Diagram (Bottom view)



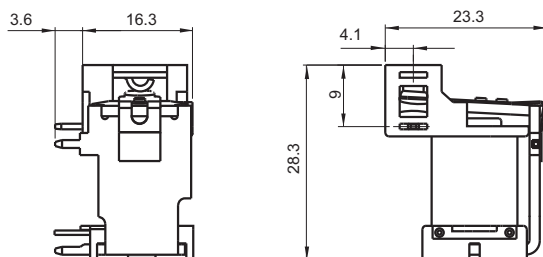
PCB Layout (Bottom view)



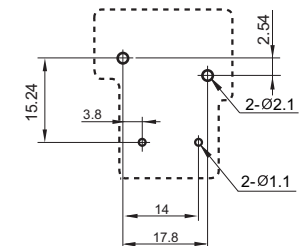
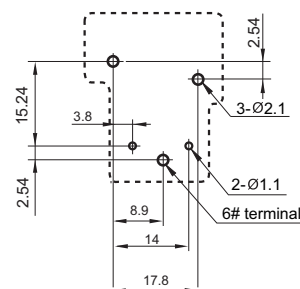
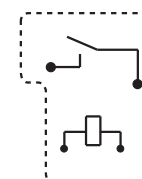
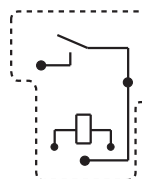
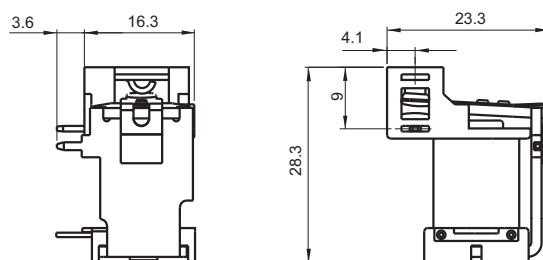
HF105-1

1 Form A

With 6# terminal



Without 6# terminal



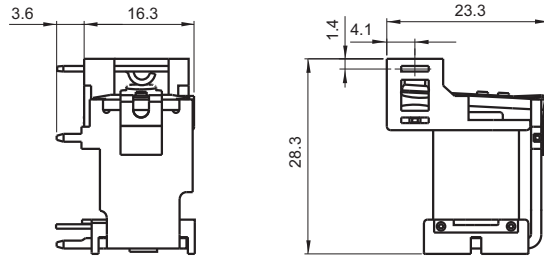
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

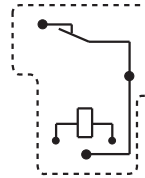
1 Form B

Outline Dimensions

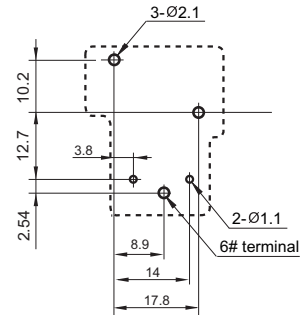
With 6# terminal



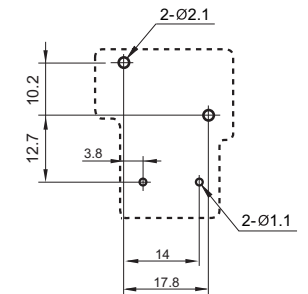
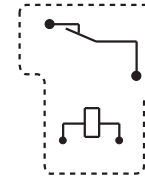
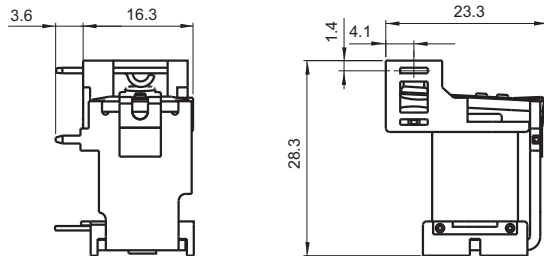
Wiring Diagram (Bottom view)



PCB Layout (Bottom view)

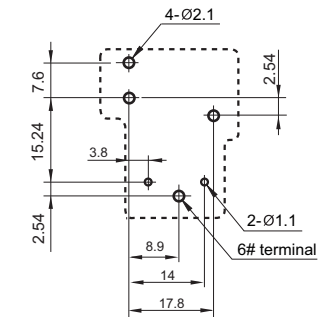
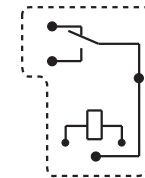
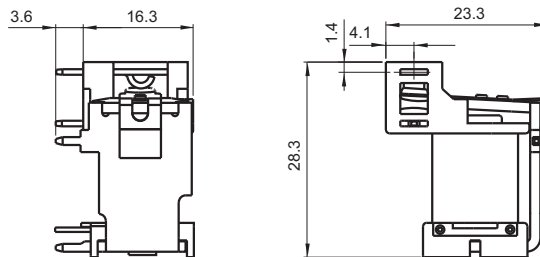


Without 6# terminal

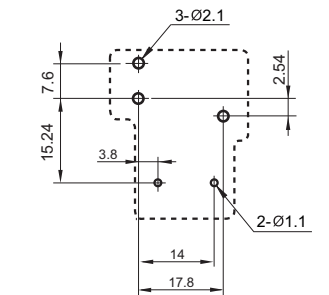
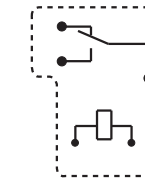
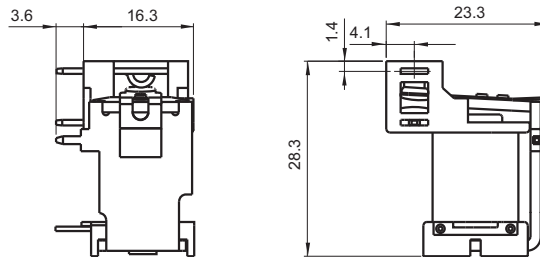


1 Form C

With 6# terminal



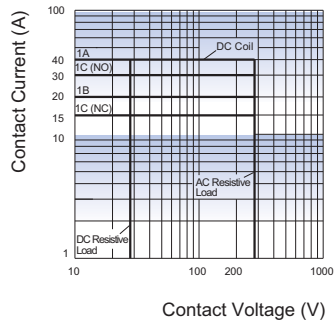
Without 6# terminal



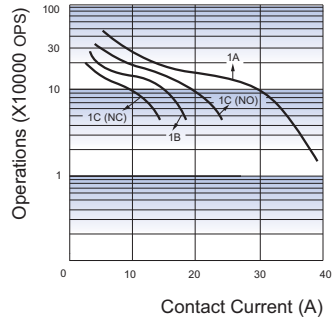
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

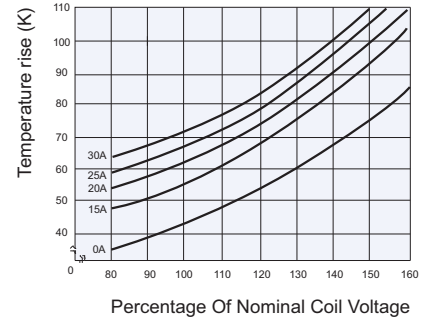
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



Test conditions:

Resistive load, Dust protected,
AgCdO, Room temp., 1s on 9s off.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF105F-2

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:40025518 (DC type)



File No.:CQC09002031229(DC type)



Features

- 40A switching capability
- Heavy load up to 7200VA
- PCB coil terminals, ideal for heavy duty load
- Plastic sealed and dust protected types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (32.4 x 27.5 x 27.8)mm

CONTACT DATA

Contact arrangement	1A	1B	1C (NO)	1C (NC)
Contact resistance	50mΩ max.(at 1A 24VDC)			
Contact material	AgSnO ₂ , AgCdO			
Max. switching capacity	7200VA/560W	3600VA/280W	4800VA/560W	2400VA/280W
Max. switching voltage	277VAC/28VDC			
Max. switching current	40A	15A	20A	10A
HF105F-2 rating	30A 240VAC 20A 28VDC	15A 240VAC 10A 28VDC	20A 240VAC 20A 28VDC	10A 240VAC 10A 28VDC
HF105F-2L rating	25A 240VAC 20A 28VDC	15A 240VAC 10A 28VDC	20A 240VAC 20A 28VDC	10A 240VAC 10A 28VDC
Mechanical endurance	1 x 10 ⁷ OPS			
Electrical endurance	1H type(Non-plastic sealed): 1 x 10 ⁵ OPS (28A 277VAC, Resistive load, AgCdO, Room temp., 1s on 9s off)			

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	1500VAC 1min
Operate time (at nomi. volt.)	DC type: 15ms max.	
Release time (at nomi. volt.)	DC type: 10ms max.	
Ambient temperature	DC: -55°C to 85°C AC: -55°C to 60°C	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Termination	PCB & QC	
Unit weight	Approx. 36g	
Construction	Plastic sealed, Dust protected	

- Notes: 1) For plastic sealed type, the venting-hole should be opened in test.
2) The data shown above are initial values.
3) Please find coil temperature curve in the characteristic curves below.
4) UL insulation system: Class F, Class B.

COIL

Coil power	DC type: Approx. 900mW; AC type: Approx. 2VA
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SAFETY APPROVAL RATINGS

UL/ CUL	1 Form A	AgSnO ₂ AgCdO	30A 277VAC 40A 277VAC 2HP 250VAC 1HP 125VAC
		AgCdO	30A 28VDC 28A 277VAC 277VAC(FLA=20)(LRA=60)
	1 Form B	AgCdO	15A 277VAC 10A 28VDC 1/2HP 250VAC 1/4HP 125VAC 277VAC(FLA=10)(LRA=33)
		AgCdO	30A 277VAC 2HP 250VAC 1HP 125VAC
	1 Form C	AgCdO	20A 277VAC 20A 28VDC 277VAC(FLA=20)(LRA=60)
		AgCdO	20A 277VAC 1/2HP 250VAC 1/4HP 125VAC 10A 277VAC 10A 28VDC 277VAC(FLA=10)(LRA=33)

- Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA

at 23°C

DC type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.75	0.5	6.5	27 x (1±10%)
6	4.50	0.6	7.8	40 x (1±10%)
9	6.75	0.9	11.7	97 x (1±10%)
12	9.00	1.2	15.6	155 x (1±10%)
15	11.25	1.5	19.5	256 x (1±10%)
18	13.50	1.8	23.4	380 x (1±10%)
24	18.00	2.4	31.2	660 x (1±10%)
48	36.00	4.8	62.4	2560 x (1±10%)
70	52.50	7.0	91	5500 x (1±10%)
110	82.50	11	143	13450 x (1±10%)

AC type

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Max. Voltage VDC *	Coil Resistance Ω
12	9.6	2.4	15.6	25 x (1±10%)
24	19.2	4.8	31.2	100 x (1±10%)
120	96.0	24.0	156	2500 x (1±10%)
208	166.4	41	270.4	11000 x (1±10%)
220	176	44	286	13490 x (1±10%)
240	192	48	286	13490 x (1±10%)
277	220	54	360.1	15000 x (1±10%)

- Notes:** 1) When requiring pick-up voltage < 80% of nominal voltage, special order allowed.
 2) The data shown above are initial values at 50Hz. When requiring 60Hz, special order allowed.
 3) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

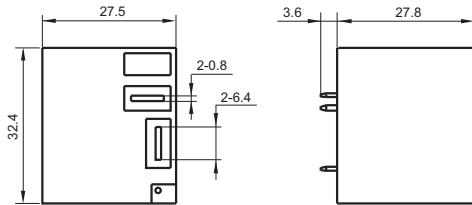
ORDERING INFORMATION

HF105F-2 / 018		D	-1H	S	T	F	(XXX)
Type	HF105F-2: 30A HF105F-2L: 25A						
Coil voltage	DC: 5VDC to 110VDC AC: 12VAC to 277VAC						
Coil voltage form	D: DC	A: AC					
Contact arrangement	1H:1 Form A	1D:1 Form B	1Z:1 Form C				
Construction ¹⁾	S: Plastic sealed	Nil: Dust protected					
Contact material	T: AgSnO ₂	Nil: AgCdO					
Insulation standard	F: Class F	Nil: Class B					
Special code ³⁾	XXX: Customer special requirement		Nil: Standard				

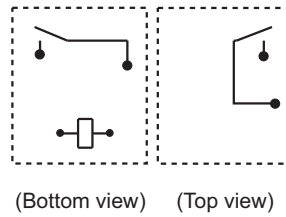
- Notes:** 1) We recommend dust protected types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).
 We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
 3) The customer special requirement express as special code after evaluating by Hongfa.

1 Form A

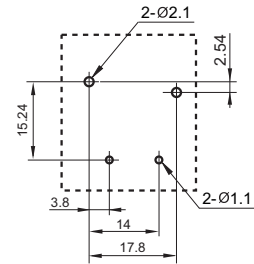
Outline Dimensions



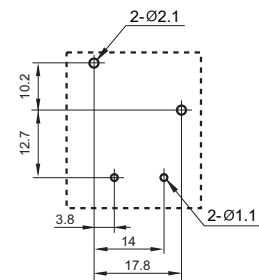
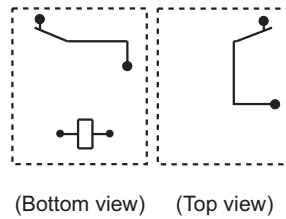
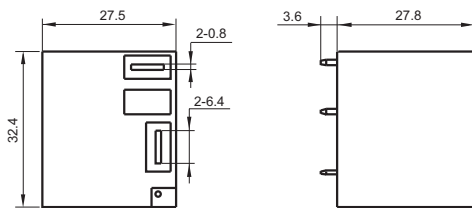
Wiring Diagram



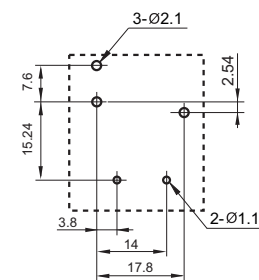
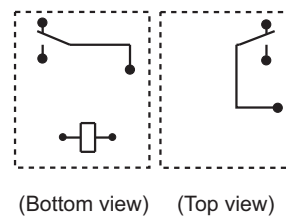
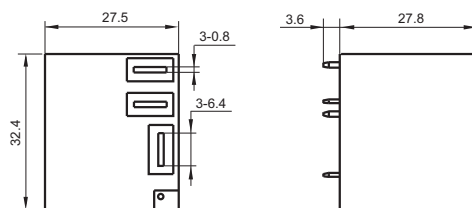
PCB Layout
(Bottom view)



1 Form B



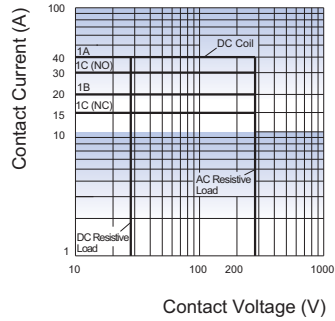
1 Form C



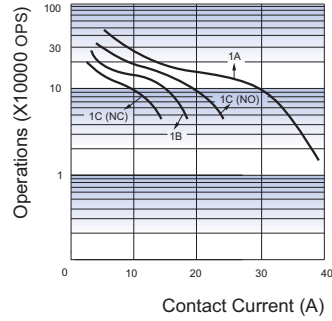
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER

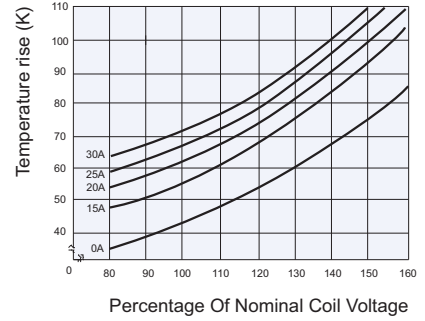


ENDURANCE CURVE



Test conditions:
Resistive load, Dust protected,
AgCdO, Room temp., 1s on 9s off.

COIL TEMPERATURE RISE



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF105F-4

MINIATURE HIGH POWER RELAY

c us

File No.:E134517



File No.:40025518 (DC type)



File No.:CQC09002031229(DC type)



Features

- 40A switching capability
- 2.5kV dielectric strength
(between coil and contacts)
- Heavy load up to 7200VA
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (50 x 27.2 x 27.8) mm

CONTACT DATA

Contact arrangement	1A	1B	1C (NO)	1C (NC)
Contact resistance	50mΩ max.(at 1A 24VDC)			
Contact material	AgSnO ₂ , AgCdO			
Max. switching capacity	7200VA/560W	3600VA/280W	4800VA/560W	2400VA/280W
Max. switching voltage	277VAC/28VDC			
Max. switching current	40A	15A	20A	10A
HF105F-4 rating	30A 240VAC 20A 28VDC	15A 240VAC 10A 28VDC	20A 240VAC 20A 28VDC	10A 240VAC 10A 28VDC
HF105F-4L rating	25A 240VAC 20A 28VDC	15A 240VAC 10A 28VDC	20A 240VAC 20A 28VDC	10A 240VAC 10A 28VDC
Mechanical endurance	1 x 10 ⁷ OPS			
Electrical endurance	1H type(Non-plastic sealed): 1 x 10 ⁵ OPS (28A 277VAC, Resistive load, AgCdO, Room temp., 1s on 9s off)			

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	1500VAC 1min
Operate time (at nomi. volt.)	DC type: 15ms max.	
Release time (at nomi. volt.)	DC type: 10ms max.	
Ambient temperature	DC: -55°C to 85°C AC: -55°C to 60°C	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Termination	QC	
Unit weight	Approx. 36g	
Construction	Plastic sealed, Dust protected	

Notes: 1) For plastic sealed type, the venting-hole should be opened in test.

2) The data shown above are initial values.

3) Please find coil temperature curve in the characteristic curves below.

4) UL insulation system: Class F, Class B.

COIL

Coil power	DC type: Approx. 900mW; AC type: Approx. 2VA
------------	---

SAFETY APPROVAL RATINGS

UL/ CUL	1 Form A	AgSnO ₂ AgCdO	30A 277VAC 40A 277VAC 2HP 250VAC 1HP 125VAC
		AgCdO	30A 28VDC 28A 277VAC 277VAC(FLA=20)(LRA=60)
	1 Form B	AgCdO	15A 277VAC 10A 28VDC 1/2HP 250VAC 1/4HP 125VAC 277VAC(FLA=10)(LRA=33)
		AgCdO	30A 277VAC 2HP 250VAC 1HP 125VAC
	1 Form C	AgCdO	20A 277VAC 20A 28VDC 277VAC(FLA=20)(LRA=60)
		AgCdO	20A 277VAC 1/2HP 250VAC 1/4HP 125VAC 10A 277VAC 10A 28VDC 277VAC(FLA=10)(LRA=33)

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA

at 23°C

DC type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.75	0.5	6.5	27 x (1±10%)
6	4.50	0.6	7.8	40 x (1±10%)
9	6.75	0.9	11.7	97 x (1±10%)
12	9.00	1.2	15.6	155 x (1±10%)
15	11.25	1.5	19.5	256 x (1±10%)
18	13.50	1.8	23.4	380 x (1±10%)
24	18.00	2.4	31.2	660 x (1±10%)
48	36.00	4.8	62.4	2560 x (1±10%)
70	52.50	7.0	91	5500 x (1±10%)
110	82.50	11	143	13450 x (1±10%)

AC type

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Max. Voltage VDC*	Coil Resistance Ω
12	9.6	2.4	15.6	25 x (1±10%)
24	19.2	4.8	31.2	100 x (1±10%)
120	96.0	24.0	156	2500 x (1±10%)
208	166.4	41	270.4	11000 x (1±10%)
220	176	44	286	13490 x (1±10%)
240	192	48	286	13490 x (1±10%)
277	220	54	360.1	15000 x (1±10%)

- Notes:** 1) When requiring pick-up voltage < 80% of nominal voltage, special order allowed.
 2) The data shown above are initial values at 50Hz. When requiring 60Hz, special order allowed.
 3) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

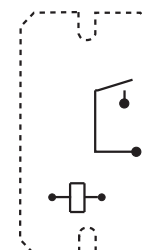
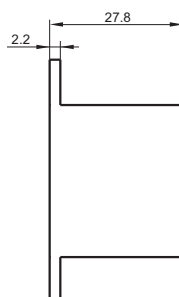
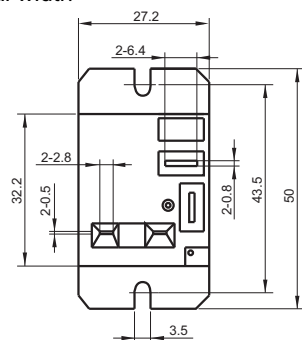
ORDERING INFORMATION

Type		HF105F-4: 30A HF105F-4L: 25A		HF105F-4 / 018 D K -1H S T F (XXX)	
Coil voltage		DC: 5VDC to 110VDC AC: 12VAC to 277VAC			
Coil voltage form		D: DC A: AC			
Coil terminal width		K: 4.8mm Nil: 2.8mm			
Contact arrangement		1H:1 Form A 1D:1 Form B 1Z:1 Form C			
Construction ¹⁾		S: Plastic sealed Nil: Dust protected			
Contact material		T: AgSnO ₂ Nil: AgCdO			
Insulation standard		F: Class F Nil: Class B			
Special code ³⁾		XXX: Customer special requirement Nil: Standard			

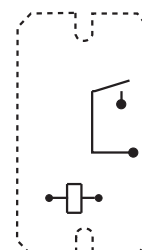
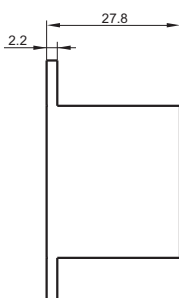
- Notes:** 1) We recommend dust protected types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
 3) The customer special requirement express as special code after evaluating by Hongfa.

Outline Dimensions

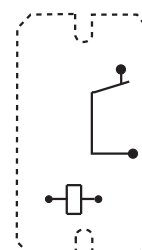
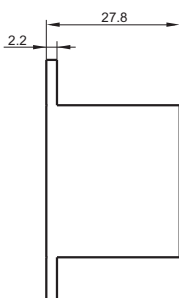
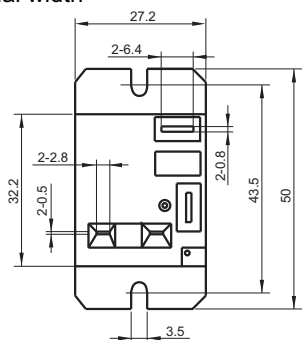
2.8mm Terminal width



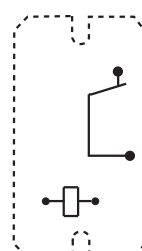
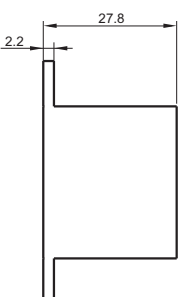
Technical drawing of the front view of a mechanical part. The drawing shows a rectangular component with a total width of 27.2 and a total height of 50. The top edge features a central semi-circular cutout with a radius of 2.6. The bottom edge has a central semi-circular cutout with a radius of 3.5. The left side has a vertical dimension of 32.2 from the bottom to the top of the main body, with a 2.0.5 offset from the bottom edge. The right side has a vertical dimension of 43.5 from the bottom to the top of the main body, with a 2.0.8 offset from the bottom edge. The top edge also has a 2.4.8 offset from the left side. The drawing includes various internal features, including a central rectangular slot and several smaller rectangular and circular features.



2.8mm Terminal width



Technical drawing of a mechanical part, likely a bracket or support, showing dimensions in millimeters. The drawing includes a top view and a side view. Key dimensions are: overall width 27.2, overall height 50, and various internal features with dimensions like 2.6.4, 2.4.8, 2.4.5, 2.0.8, and 3.5.



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

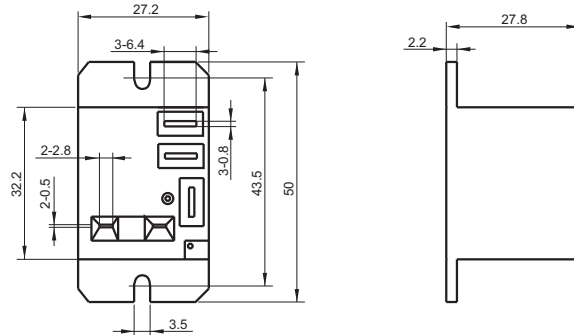
Unit: mm

1 Form C

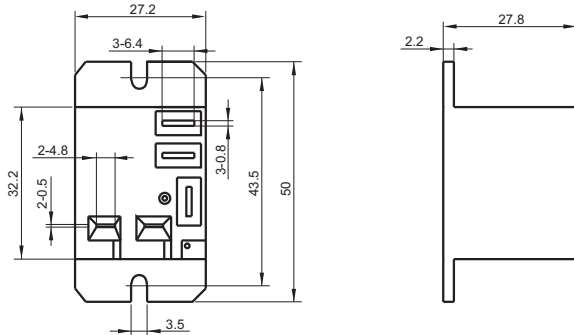
Outline Dimensions

Wiring Diagram (Top view)

2.8mm Terminal width



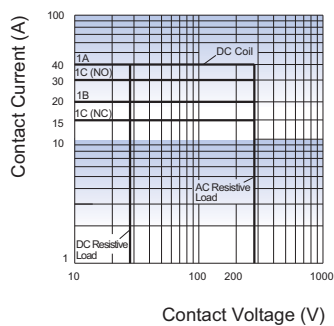
4.8mm Terminal width



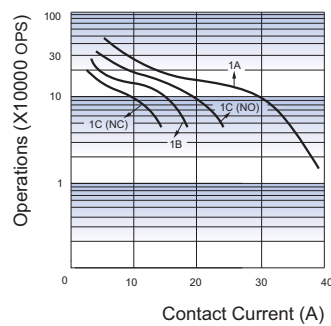
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER

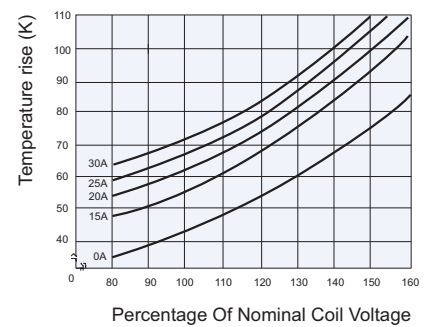


ENDURANCE CURVE



Test conditions:
Resistive load, Dust protected,
AgCdO, Room temp., 1s on 9s off.

COIL TEMPERATURE RISE



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF105F-5

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:40025518 (DC type)



File No.:CQC09002031229(DC type)



Features

- 40A switching capability
- Heavy load up to 7200VA
- PCB coil terminals, ideal for heavy duty load
- Plastic sealed and dust protected types available
- 4kV dielectric strength (between coil and contacts)
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (32.4 x 27.3 x 27.8) mm

CONTACT DATA

Contact arrangement	1A	1B	1C (NO)	1C (NC)
Contact resistance	50mΩ max.(at 1A 24VDC)			
Contact material	AgSnO ₂ , AgCdO			
Max. switching capacity	7200VA/560W	3600VA/280W	4800VA/560W	2400VA/280W
Max. switching voltage	277VAC / 28VDC			
Max. switching current	40A	15A	20A	10A
HF105F-5 rating	30A 240VAC 20A 28VDC	15A 240VAC 10A 28VDC	20A 240VAC 20A 28VDC	10A 240VAC 10A 28VDC
HF105F-5L rating	25A 240VAC 20A 28VDC	15A 240VAC 10A 28VDC	20A 240VAC 20A 28VDC	10A 240VAC 10A 28VDC
Mechanical endurance	1 x 10 ⁷ ops			
Electrical endurance	1H type(Non-plastic sealed): 1 x 10 ⁵ ops (28A 277VAC, Resistive load, AgCdO, Room temp., 1s on 9s off)			

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	2500VAC/4000VAC 1min
	Between open contacts	1500VAC 1min
Operate time (at nomi. volt.)	DC type: 15ms max.	
Release time (at nomi. volt.)	DC type: 10ms max.	
Ambient temperature	DC: -55°C to 85°C AC: -55°C to 60°C	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Termination	PCB & QC	
Unit weight	Approx. 36g	
Construction	Plastic sealed, Dust protected	

Notes: 1) For plastic sealed type, the venting-hole should be opened in test.

2) The data shown above are initial values.

3) Please find coil temperature curve in the characteristic curves below.

4) UL insulation system: Class F, Class B.

COIL

Coil power	DC type: Approx. 900mW; AC type: Approx. 2VA
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SAFETY APPROVAL RATINGS

UL/ CUL	1 Form A	AgSnO ₂	30A 277VAC 40A 277VAC 2HP 250VAC 1HP 125VAC
		AgCdO	30A 28VDC 28A 277VAC 277VAC(FLA=20)(LRA=60)
	1 Form B	AgCdO	15A 277VAC 10A 28VDC 1/2HP 250VAC 1/4HP 125VAC 277VAC(FLA=10)(LRA=33)
		AgCdO	30A 277VAC 2HP 250VAC 1HP 125VAC
	1 Form C	AgCdO	20A 277VAC 20A 28VDC 277VAC(FLA=20)(LRA=60)
		AgCdO	20A 277VAC 1/2HP 250VAC 1/4HP 125VAC
	NC	AgCdO	10A 277VAC 10A 28VDC 277VAC(FLA=10)(LRA=33)
		AgCdO	10A 277VAC 10A 28VDC 277VAC(FLA=10)(LRA=33)

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA

at 23°C

DC type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.75	0.5	6.5	27 x (1±10%)
6	4.50	0.6	7.8	40 x (1±10%)
9	6.75	0.9	11.7	97 x (1±10%)
12	9.00	1.2	15.6	155 x (1±10%)
15	11.25	1.5	19.5	256 x (1±10%)
18	13.50	1.8	23.4	380 x (1±10%)
24	18.00	2.4	31.2	660 x (1±10%)
48	36.00	4.8	62.4	2560 x (1±10%)
70	52.50	7.0	91	5500 x (1±10%)
110	82.50	11	143	13450 x (1±10%)

AC type

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Max. Voltage VDC *	Coil Resistance Ω
12	9.6	2.4	15.6	25 x (1±10%)
24	19.2	4.8	31.2	100 x (1±10%)
120	96.0	24.0	156	2500 x (1±10%)
208	166.4	41	270.4	11000 x (1±10%)
220	176	44	286	13490 x (1±10%)
240	192	48	286	13490 x (1±10%)
277	220	54	360.1	15000 x (1±10%)

- Notes:** 1) When requiring pick-up voltage < 80% of nominal voltage, special order allowed.
 2) The data shown above are initial values at 50Hz. When requiring 60Hz, special order allowed.
 3) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

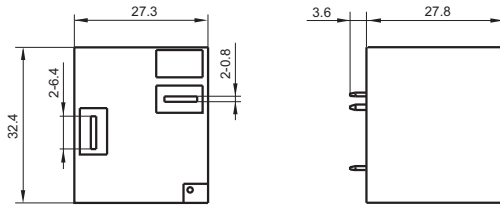
ORDERING INFORMATION

HF105F-5 / 018 D T -1H S T F (XXX)	
Type	HF105F-5: 30A HF105F-5L: 25A
Coil voltage	DC: 5VDC to 110VDC AC: 12VAC to 277VAC
Coil voltage form	D: DC A: AC
Dielectric strength (between coil & contacts)	T: 4000VAC Nil: 2500VAC
Contact arrangement	1H: 1 Form A 1D: 1 Form B 1Z: 1 Form C
Construction ¹⁾	S: Plastic sealed Nil: Dust protected
Contact material	T: AgSnO ₂ Nil: AgCdO
Insulation standard	F: Class F Nil: Class B
Special code ³⁾	XXX: Customer special requirement Nil: Standard

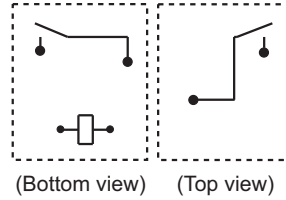
- Notes:** 1) We recommend dust protected types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).
 We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
 3) The customer special requirement express as special code after evaluating by Hongfa.

1 Form A

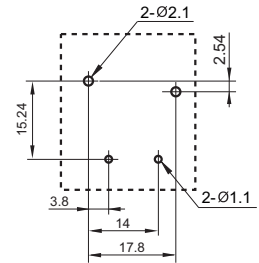
Outline Dimensions



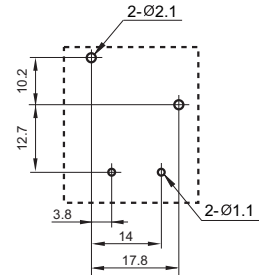
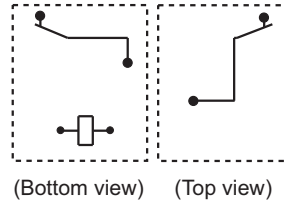
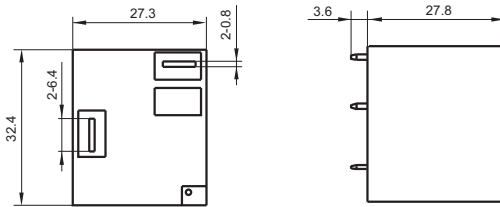
Wiring Diagram



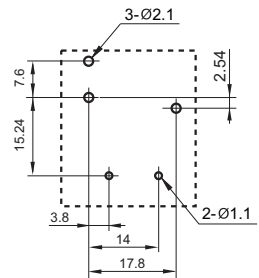
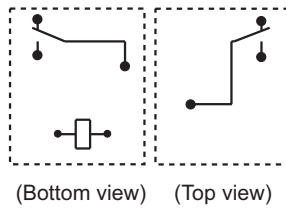
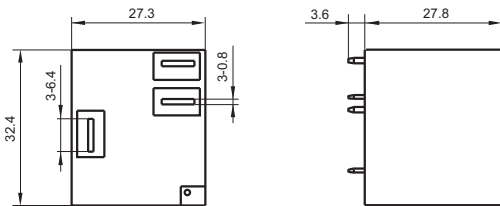
PCB Layout
(Bottom view)



1 Form B



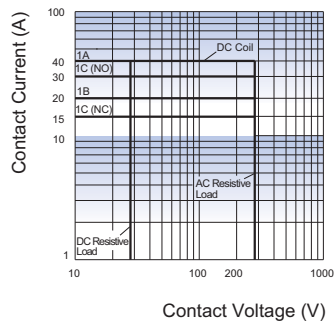
1 Form C



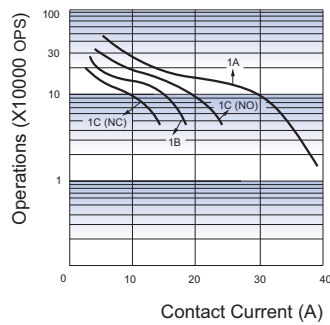
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

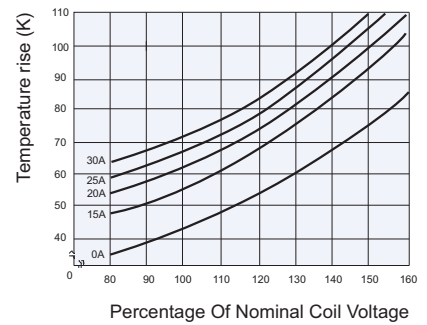
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



Test conditions:
Resistive load, Dust protected,
AgCdO, Room temp., 1s on 9s off.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF115F

MINIATURE HIGH POWER RELAY

cw US

File No.:E134517



File No.:116934



File No.:CQC08002028130



Features

- Low height: 15.7 mm
- 16A switching capability
- 5kV dielectric strength (between coil and contacts)
- Creepage distance: 10mm
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- Sockets available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.7 x 15.7) mm

CONTACT DATA

Contact arrangement	1A, 1B, 1C	2A, 2B, 2C
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	See ordering info.	
Contact rating (Res. load)	12A/16A 250VAC	8A 250VAC
Max. switching voltage	440VAC / 300VDC	
Max. switching current	12A / 16A	8A
Max. switching power	3000VA / 4000VA	2000VA
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1H3B type: 1 x 10 ⁶ OPS (16A 250VAC, Resistive load, AgNi, Room temp., 1s on 9s off) 2H4B type: 5 x 10 ⁴ OPS (8A 250VAC, Resistive load, AgNi, Room temp., 1s on 9s off)	

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2500VAC 1min
Surge voltage (between coil & contacts)	10kV (1.2 / 50μs)	
Operate time (at nomi. volt.)	15ms max.	
Release time (at nomi. volt.)	8ms max.	
Temperature rise (at nomi. volt.)	55K max.	
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *	10Hz to 150Hz 10g/5g	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	PCB	
Unit weight	Approx. 13.5g	
Construction	Plastic sealed, Flux proofed	

Notes: 1) The data shown above are initial values.

2) * Index is not in relay length direction.

3) UL insulation system: Class F, Class B.

COIL

Coil power	Approx. 400mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC 1)	Coil Resistance Ω
5	3.50	0.5	7.5	62 x (1±10%)
6	4.20	0.6	9.0	90 x (1±10%)
9	6.30	0.9	13.5	202 x (1±10%)
12	8.40	1.2	18	360 x (1±10%)
18	12.60	1.8	27	810 x (1±10%)
24	16.80	2.4	36	1440 x (1±10%)
48 ²⁾	33.60	4.8	72	5760 x (1±15%)
60 ²⁾	42.00	6.0	90	7500 x (1±15%)
110 ²⁾	77.00	11.0	165	25200 x (1±15%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

SAFETY APPROVAL RATINGS

VDE

Contact material	Specifications	Ratings	Ambient Temperature
AgCdO	HF115F....2(H;Z)(S)4(G)(F)	8A 250VAC	at 70°C
	HF115F....1H(S)(1;2)(G)(F)	12A 250VAC	at 70°C
		10A 250VAC	at 70°C
	HF115F....1Z(S)(1;2)(G)(F)	12A 250VAC	at 70°C
	HF115F....1H(S)3(G)(F)	16A 250VAC	at 70°C
		10A 250VAC	at 70°C
		9A 250VAC COSØ =0.4	at 70°C
AgNi	HF115F....2(H;Z)(S)4B(G)(F)	16A 250VAC	at 70°C
		9A 250VAC COSØ =0.4 (NO only)	at 70°C
	HF115F....1H(S)(1;2)B(G)(F)	5A 400VAC	at 85°C
		8A 250VAC	at 85°C
	HF115F....1Z(S)(1;2)B(G)(F)	12A 250VAC	at 85°C
	HF115F....1H(S)3B(G)(F)	12A 250VAC	at 85°C
		16A 250VAC	at 85°C
	HF115F....1Z(S)3B(G)(F)	9A 250VAC COSØ =0.4	at 70°C
		16A 250VAC (NO only)	at 85°C
		12A 250VAC	at 85°C
		9A 250VAC COSØ =0.4 (NO only)	at 70°C
		10(4)A 250VAC (NO only)	at 65°C
AgSnO ₂	HF115F....2(H;Z)(S)4A(G)(F)	12(2)A 250VAC (NO only)	at 65°C
		8A 250VAC	at 85°C
	HF115F....1(H;Z)(S)(1;2)A(G)(F)	12A 250VAC	at 85°C
	HF115F....1H(S)3A(G)(F)	16A 250VAC	at 85°C
		9A 250VAC COSØ =0.4	at 70°C
	HF115F....1Z(S)3A(G)(F)	16A 250VAC (NO only)	at 85°C
		9A 250VAC COSØ =0.4 (NO only)	at 70°C

UL/CUL

Version 1 or 2 (AgCdO)	12A 277VAC	Version 3 (AgSnO ₂)	16A 277 VAC
	1/2HP 250VAC		1/3HP 125VAC
	1/3HP 125VAC		1/2HP 250VAC
Version 1 or 2 (AgSnO ₂)	12A / 277VAC	Version 3 (AgNi)	B300
	B300		R300
	R300		16A 277VAC
Version 1 or 2 (AgNi)	12A 277VAC	Version 4 (AgCdO)	5FLA, 30LRA 250VAC
Version 3 (AgCdO)	16A 277 VAC		10A 250VAC
	9A 250VAC at 105°C		8A 277VAC
	1HP 250VAC		1/2HP 250VAC
	1/2HP 125VAC		1/4HP 125VAC
	TV-5 125VAC	Version 4 (AgSnO ₂)	8A 277VAC
		Version 4 (AgNi)	8A 277VAC

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF115F / 012 -1H S 1 A F (XXX)						
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60, 110VDC						
Contact arrangement	1H: 1 Form A 1D: 1 Form B 1Z: 1 Form C 2H: 2 Form A 2D: 2 Form B 2Z: 2 Form C						
Construction ¹⁾²⁾	S: Plastic sealed			Nil: Flux proofed			
Version	1: 3.5mm 1 pole 12A 3: 5.0mm 1 pole 16A			2: 5.0mm 1 pole 12A 4: 5.0mm 2 pole 8A			
Contact material ³⁾	A: AgSnO ₂ B: AgNi AG: AgSnO ₂ + Au plated			Nil: AgCdO G: AgCdO+ Au plated BG: AgNi+ Au plated			
Insulation standard	F: Class F Nil: Class B						
Special code ⁴⁾	XXX: Customer special requirement			Nil: Standard			

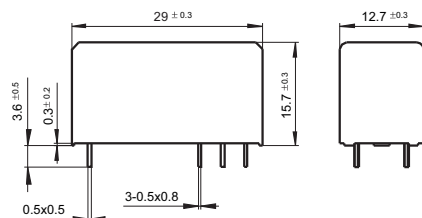
Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
2) Contact is recommend for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB
3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.
4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (335) stands for product in accordance to IEC 60335-1 (GWT); e.g. (253) stands for Reflow soldering version, for 1 pole type.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

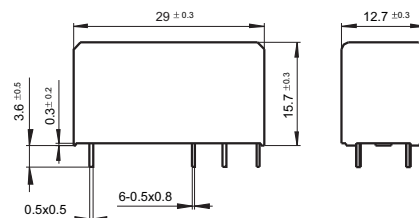
Unit: mm

Outline Dimensions

3.5mm Pinning (HF115F/ □□□ -□□ -□ -1 -□□)



5mm Pinning (HF115F/ □□□ -□□ -□ -2/3/4 -□□)



Wiring Diagram (Bottom view)

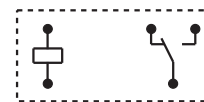
3.5/5mm Pinning, 1 Pole, 12A, HF115F/ □□□ -1 □ -□ -1/2 -□□



1 Form A

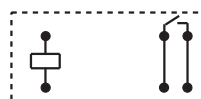


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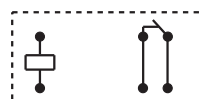


1 Form C

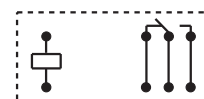
5mm Pinning, 1 Pole, 16A, HF115F/ □□□ -1 □ -□ -3 -□□



1 Form A

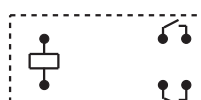


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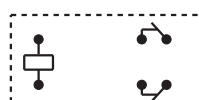


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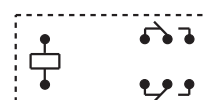
5mm Pinning, 2 Pole, 8A, HF115F/ □□□ -2 □ -□ -4 -□□



2 Form A



2 Form B

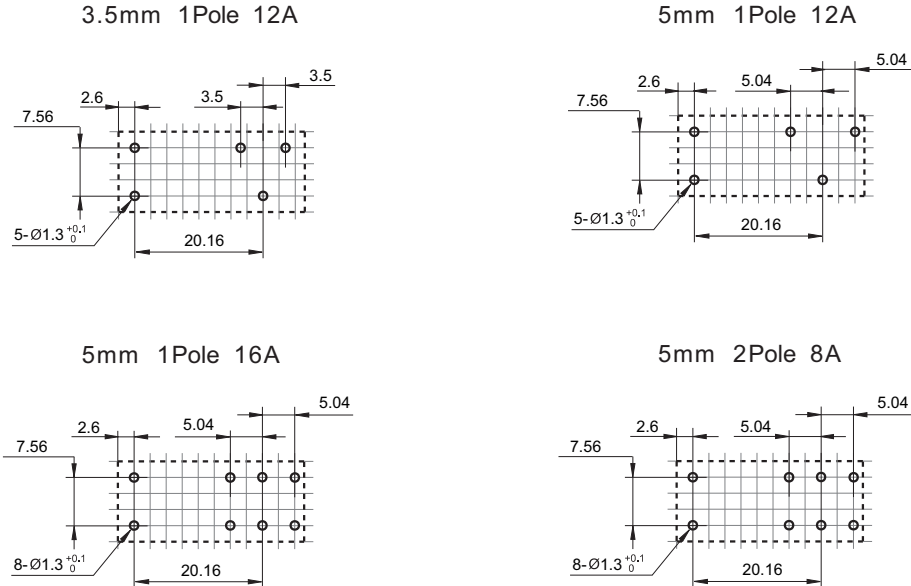


2 Form C

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

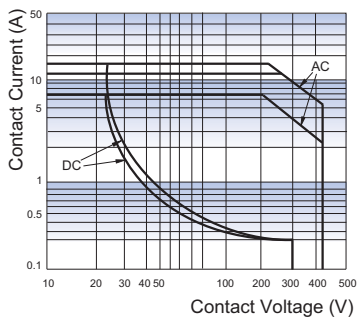
PCB Layout (Bottom view)



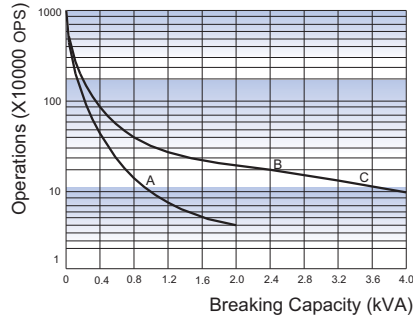
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.52mm.

CHARACTERISTIC CURVES

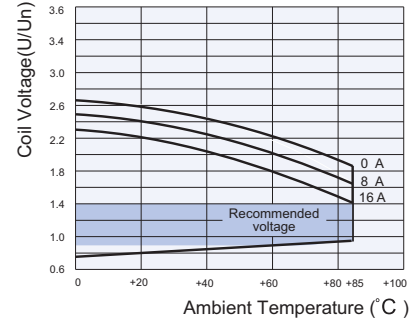
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL OPERATING RANGE (DC) *



Remark:

- Curve A: 2H4B type
Curve B: 1H1B type(or 1H2B type)
Curve C: 1H3B type
- Test conditions:
NO, Resistive load, 250VAC,
Flux proofed, Room temp., 1s on 9s off.

Notes: * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life.
An energising voltage over the above range may damage the insulation of relay coil.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF115F

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:116934



File No.:CQC08002028130



Features

- Low height: 15.7 mm
- 16A switching capability
- 5kV dielectric strength (between coil and contacts)
- Creepage distance: 10mm
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- Sockets available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.7 x 15.7) mm

CONTACT DATA

Contact arrangement	1A, 1B, 1C	2A, 2B, 2C
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	See ordering info.	
Contact rating (Res. load)	12A/16A 250VAC	8A 250VAC
Max. switching voltage	440VAC / 300VDC	
Max. switching current	12A / 16A	8A
Max. switching power	3000VA / 4000VA	2000VA
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1H3B type: 1 x 10 ⁵ OPS (16A 250VAC, Resistive load, Room temp., 1s on 9s off) 2H4B type: 5 x 10 ⁴ OPS (8A 250VAC, Resistive load, Room temp., 1s on 9s off)	

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2500VAC 1min
Surge voltage (between coil & contacts)	10kV (1.2 / 50μs)	
Operate time (at nomi. volt.)	15ms max.	
Release time (at nomi. volt.)	8ms max.	
Temperature rise (at nomi. volt.)	55K max.	
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *	10Hz to 150Hz 10g/5g	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	PCB	
Unit weight	Approx. 13.5g	
Construction	Plastic sealed, Flux proofed	

Notes: 1) The data shown above are initial values.

2) * Index is not in relay length direction.

3) UL insulation system: Class F, Class B.

COIL

Coil power	Approx. 400mW
------------	---------------

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC 1)	Coil Resistance Ω
5	3.50	0.5	7.5	62 x (1±10%)
6	4.20	0.6	9.0	90 x (1±10%)
9	6.30	0.9	13.5	202 x (1±10%)
12	8.40	1.2	18	360 x (1±10%)
18	12.60	1.8	27	810 x (1±10%)
24	16.80	2.4	36	1440 x (1±10%)
48 ²⁾	33.60	4.8	72	5760 x (1±15%)
60 ²⁾	42.00	6.0	90	7500 x (1±15%)
110 ²⁾	77.00	11.0	165	25200 x (1±15%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

SAFETY APPROVAL RATINGS

VDE

Contact material	Specifications	Ratings	Ambient Temperature
AgCdO	HF115F....2(H;Z)(S)4(G)(F)	8A 250VAC	at 70°C
	HF115F....1H(S)(1;2)(G)(F)	12A 250VAC	at 70°C
		10A 250VAC	at 70°C
	HF115F....1Z(S)(1;2)(G)(F)	12A 250VAC	at 70°C
	HF115F....1H(S)3(G)(F)	16A 250VAC	at 70°C
		10A 250VAC	at 70°C
		9A 250VAC COSØ =0.4	at 70°C
AgNi	HF115F....2(H;Z)(S)4B(G)(F)	16A 250VAC	at 70°C
		9A 250VAC COSØ =0.4	at 70°C
	HF115F....1H(S)(1;2)B(G)(F)	5A 400VAC	at 85°C
		8A 250VAC	at 85°C
	HF115F....1Z(S)(1;2)B(G)(F)	12A 250VAC	at 85°C
	HF115F....1H(S)3B(G)(F)	12A 250VAC	at 85°C
		16A 250VAC	at 85°C
	HF115F....1Z(S)3B(G)(F)	9A 250VAC COSØ =0.4	at 70°C
		16A 250VAC (NO only)	at 85°C
		12A 250VAC	at 85°C
		9A 250VAC COSØ =0.4 (NO only)	at 70°C
		10(4)A 250VAC (NO only)	at 65°C
AgSnO ₂	HF115F....2(H;Z)(S)4A(G)(F)	12(2)A 250VAC (NO only)	at 65°C
		8A 250VAC	at 85°C
	HF115F....1(H;Z)(S)(1;2)A(G)(F)	12A 250VAC	at 85°C
	HF115F....1H(S)3A(G)(F)	16A 250VAC	at 85°C
		9A 250VAC COSØ =0.4	at 70°C
	HF115F....1Z(S)3A(G)(F)	16A 250VAC (NO only)	at 85°C
		9A 250VAC COSØ =0.4 (NO only)	at 70°C

UL/CUL

Version 1 or 2 (AgCdO)	12A 277VAC	Version 3 (AgSnO ₂)	16A 277 VAC
	1/2HP 250VAC		1/3HP 125VAC
	1/3HP 125VAC		1/2HP 250VAC
Version 1 or 2 (AgSnO ₂)	12A / 277VAC	Version 3 (AgNi)	B300
	B300		R300
	R300		16A 277VAC
Version 1 or 2 (AgNi)	12A 277VAC	Version 4 (AgCdO)	5FLA, 30LRA 250VAC
Version 3 (AgCdO)	16A 277 VAC		10A 250VAC
	9A 250VAC at 105°C		8A 277VAC
	1HP 250VAC		1/2HP 250VAC
	1/2HP 125VAC		1/4HP 125VAC
	TV-5 125VAC	Version 4 (AgSnO ₂)	8A 277VAC
		Version 4 (AgNi)	8A 277VAC

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

HF115F / 012 -1H S 1 A F (XXX)	
Type	
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60, 110VDC
Contact arrangement	1H: 1 Form A 1D: 1 Form B 1Z: 1 Form C 2H: 2 Form A 2D: 2 Form B 2Z: 2 Form C
Construction ¹⁾²⁾	S: Plastic sealed Nil: Flux proofed
Version	1: 3.5mm 1 pole 12A 2: 5.0mm 1 pole 12A 3: 5.0mm 1 pole 16A 4: 5.0mm 2 pole 8A
Contact material ³⁾	A: AgSnO ₂ B: AgNi Nil: AgCdO G: AgCdO+ Au plated AG: AgSnO ₂ + Au plated BG: AgNi+ Au plated
Insulation standard	F: Class F Nil: Class B
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard

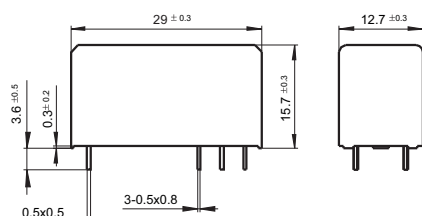
Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc).
2) Contact is recommend for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB
3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.
4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (335) stands for product in accordance to IEC 60335-1 (GWT); e.g. (253) stands for Reflow soldering version, for 1 pole type.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

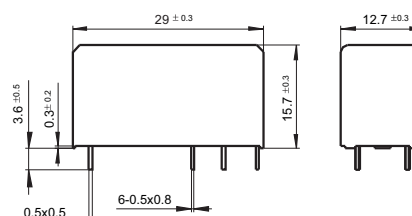
Unit: mm

Outline Dimensions

3.5mm Pinning (HF115F/□□□-□□-□-1-□□)



5mm Pinning (HF115F/□□□-□□-□-2/3/4-□□)

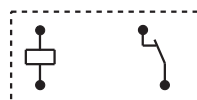


Wiring Diagram (Bottom view)

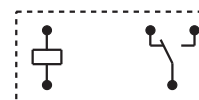
3.5/5mm Pinning, 1 Pole, 12A, HF115F/□□□-1□-□-1/2-□□



1 Form A

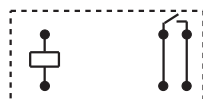


1 Form B



1 Form C

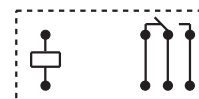
5mm Pinning, 1 Pole, 16A, HF115F/□□□-1□-□-3-□□



1 Form A

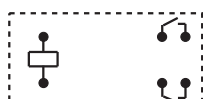


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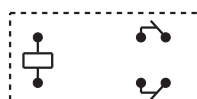


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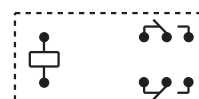
5mm Pinning, 2 Pole, 8A, HF115F/□□□-2□-□-4-□□



2 Form A



2 Form B



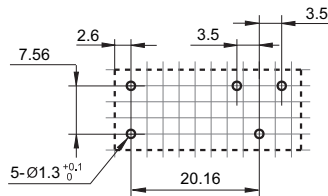
2 Form C

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

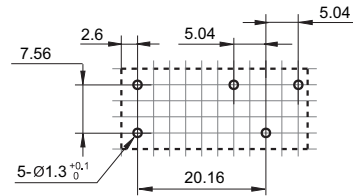
Unit: mm

PCB Layout (Bottom view)

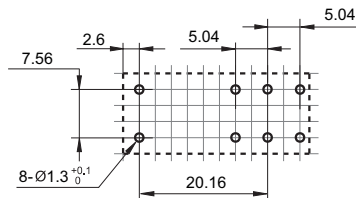
3.5mm 1Pole 12A



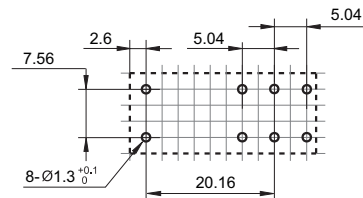
5mm 1Pole 12A



5mm 1Pole 16A



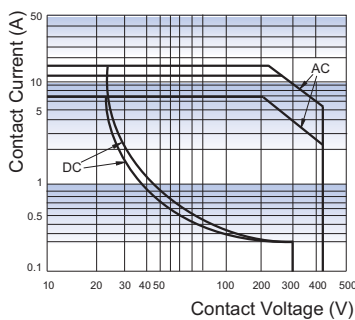
5mm 2Pole 8A



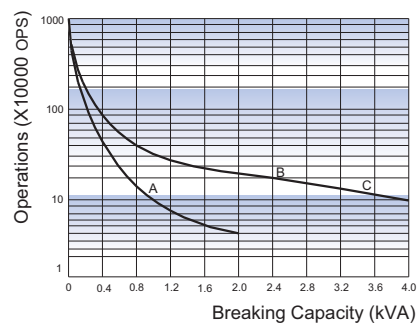
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.52mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



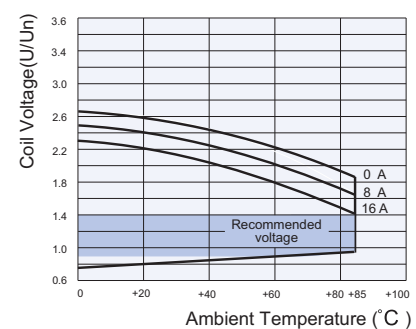
ENDURANCE CURVE



Remark:

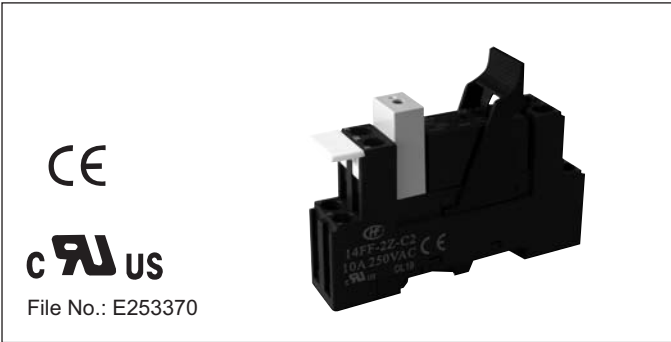
- Curve A: 2H4B type
Curve B: 1H1B type(or 1H2B type)
Curve C: 1H3B type
- Test conditions:
NO, Resistive load, 250VAC,
Flux proofed, Room temp., 1s on 9s off.

COIL OPERATING RANGE (DC) *



Notes: * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life.
 An energising voltage over the above range may damage the insulation of relay coil.

Relay Sockets



Features


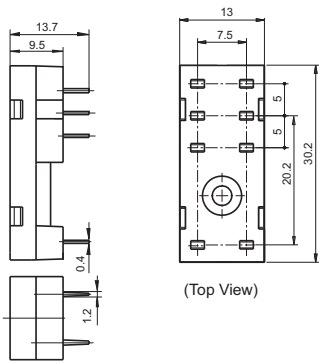
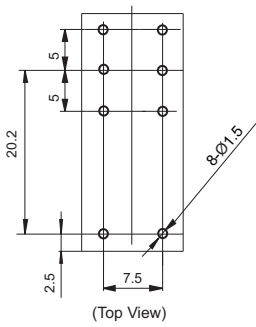

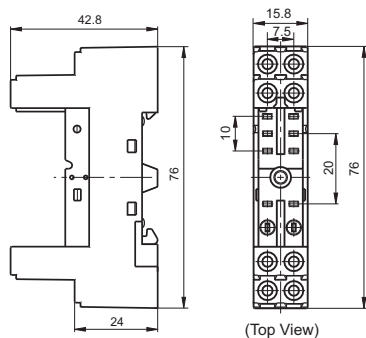
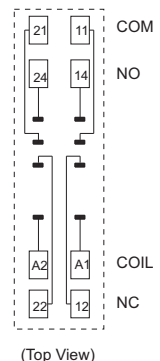
- The dielectric strength can reach 5000VAC(I/O) and the insulation resistance is 1000MΩ
- Three mounting types are available: PCB, screw mounting and DIN rail mounting.
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection.
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length
14FF-2Z-A1	250VAC	10A	-40℃ to 70℃	5000VAC	—	—
14FF-2Z-C2	250VAC	10A	-40℃ to 70℃	5000VAC	0.6N·m	7mm
14FF-2Z-C3	250VAC	10A	-40℃ to 70℃	5000VAC	0.6N·m	7mm
14FF-2Z-C4	250VAC	10A	-40℃ to 70℃	5000VAC	—	9mm


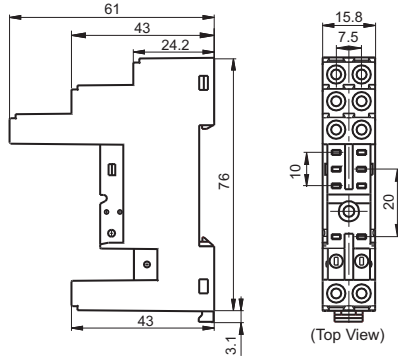
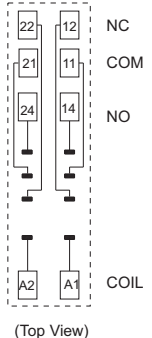

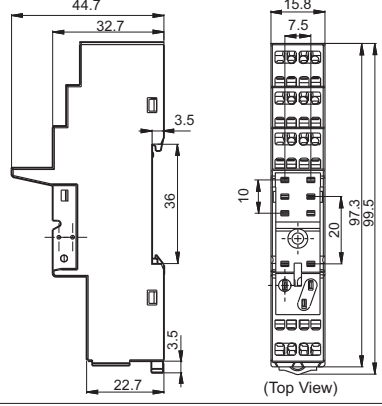
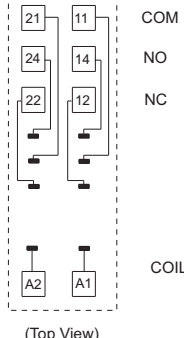
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
<p>14FF-2Z-A1</p>  <p>PCB terminal, PCB or Screw mounting Applicable for HF115F/ XXX-1XX3XXX HF115F/ XXX-1XX4XXX When it is HF115F/XXX-1XX3XXX, two pole of socket load must connect in parallel.</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>metallic retainer 14FF-H1</p>
<p>14FF-2Z-C2</p>  <p>Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for HF115F/ XXX-1XX3XXX HF115F/ XXX-1XX4XXX When it is HF115F/XXX-1XX3XXX, "21"- "11", "24"- "14", "22"- "12" of socket must connect in parallel.</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>plastic retainer 14FF-H4</p> <p>marker 14FF-M1</p> <p>plug-in module HFAA to HFHU*</p>

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
14FF-2Z-C3  Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for HF115F/ XXX-1XX3XXX HF115F/ XXX-1XX4XXX When it is HF115F/XXX-1XX3XXX, "21"-11", "24"-14", "22"-12" of socket must connect in parallel.	 (Top View)	 (Top View)	plastic retainer 14FF-H4 marker 14FF-M1 plug-in module HFAA to HFHU*
14FF-2Z-C4  Spring-loaded terminal DIN rail mounting With finger protection device Applicable for HF115F/ XXX-1XX3XXX HF115F/ XXX-1XX4XXX When it is HF115F/XXX-1XX3XXX, "21"-11", "24"-14", "22"-12" of socket must connect in parallel.	 (Top View)	 (Top View)	plastic retainer 14FF-H4 marker 14FF-M1 plug-in module HFAA to HFHU*

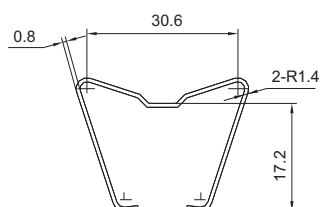
Notes: * Please refer to the product datasheet if plug-in module is required.

DIMENSION OF RELATED COMPONENT (AVAILABLE)

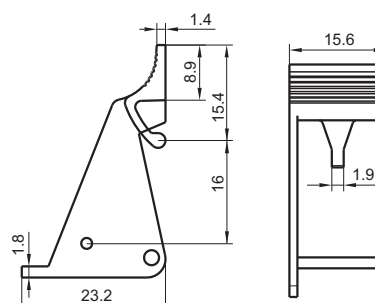
Unit: mm

Retainer

14FF-H1 (Metallic retainer)

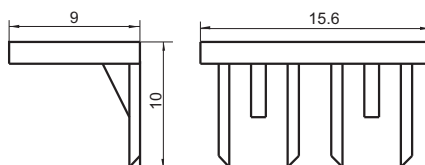


14FF-H4 (Plastic retainer)



Marker

14FF-M1



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. Socket which can be mounted with markers is furnished with a marker; as for other related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. The above is only an example of typical socket and related component type which is suitable to HF115F relay. If you have any special requirements, please contact us.
4. Main outline dimension(L, W, H) ≥ 50 mm, tolerance should be ± 1 mm; outline dimension > 20 mm and < 50 mm, tolerance should be ± 0.5 mm; outline dimension ≤ 20 mm, tolerance should be ± 0.3 mm.
5. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF115F-A

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:116934



File No.:CQC16002153854



Features

- AC voltage coil type
- 16A switching capability
- 1 & 2 pole configurations
- 5kV dielectric strength (between coil and contacts)
- Low height: 15.7 mm
- Creepage distance: 10mm
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- Sockets available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.7 x 15.7) mm

CONTACT DATA

Contact arrangement	1A, 1B, 1C	2A, 2B, 2C
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	See ordering info.	
Contact rating (Res. load)	12A/16A 250VAC	8A 250VAC
Max. switching voltage	440VAC / 300VDC	
Max. switching current	12A / 16A	8A
Max. switching power	3000VA / 4000VA	2000VA
Mechanical endurance	1 x 10 ⁶ OPS	
Electrical endurance	1H3B type: 5 x 10 ⁴ OPS (16A 250VAC, Resistive load, Room temp., 1s on 9s off) 2H4B type: 5x 10 ⁴ OPS (8A 250VAC, Resistive load, Room temp., 1s on 9s off)	

COIL

Coil power	Approx. 0.75VA
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COIL DATA (at 50Hz) at 23°C

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Coil Current mA	Coil DC Resistance Ω
24	18.00	3.60	31.6	350 x (1±10%)
115	86.30	17.30	6.6	8100 x (1±15%)
230	172.50	34.50	3.2	32500 x (1±15%)

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2500VAC 1min
Temperature rise (at nomi. volt.)	85K max.	
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *	10Hz to 150Hz 10g/5g	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 70°C	
Termination	PCB	
Unit weight	Approx. 13.5g	
Construction	Plastic sealed, Flux proofed	

Notes: 1) The data shown above are initial values.
2) * Index is not that of relay length direction.

SAFETY APPROVAL RATINGS

UL/CUL	12A 250VAC 16A 250VAC 8A 250VAC
VDE (AgNi, AgNi+Au)	12A 250VAC at 70°C 16A 250VAC at 70°C 8A 250VAC at 70°C
VDE (AgSnO ₂ , AgSnO ₂ +Au)	12A 250VAC at 70°C 8A 250VAC at 70°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

Type	HF115F-A / 024 -1H S 1 A F (XXX)						
Coil voltage	24, 115, 230VAC						
Contact arrangement	1H: 1 Form A 1D: 1 Form B 1Z: 1 Form C 2H: 2 Form A 2D: 2 Form B 2Z: 2 Form C						
Construction ^{1) 2)}	S: Plastic sealed Nil: Flux proofed						
Version	1: 3.5mm 1 pole 12A 2: 5.0mm 1 pole 12A 3: 5.0mm 1 pole 16A 4: 5.0mm 2 pole 8A						
Contact material ³⁾	A: AgSnO ₂ B: AgNi Nil: AgCdO G: AgCdO+Au plated AG: AgSnO ₂ +Au plated BG: AgNi+Au plated						
Insulation standard	F: Class F						
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard						

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.
4) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

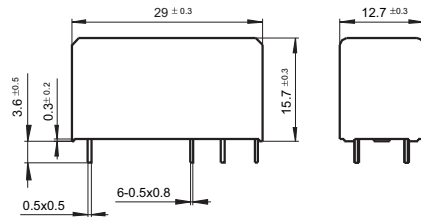
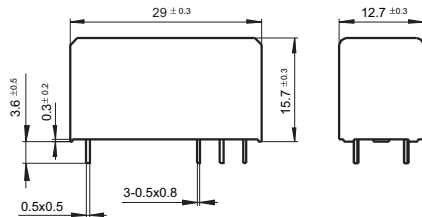
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

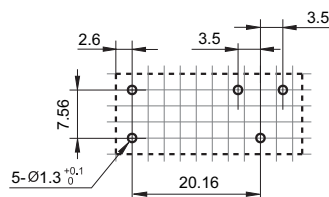
3.5mm Pinning (HF115F-A/ □□□ -□□ -□ -1 -□□)

5mm Pinning (HF115F-A/ □□□ -□□ -□ -2/3/4 -□□)

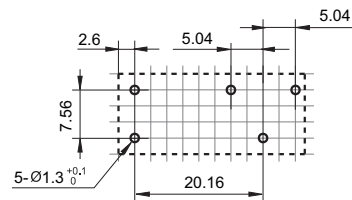


PCB Layout (Bottom view)

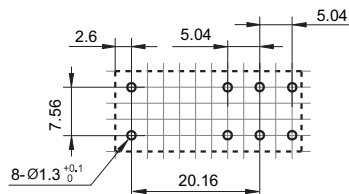
3.5mm 1Pole 12A



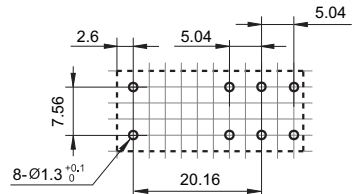
5mm 1Pole 12A



5mm 1Pole 16A



5mm 2Pole 8A



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1mm, tolerance should be ±0.2mm; outline dimension > 1mm and ≤ 5mm, tolerance should be ±0.3mm; outline dimension > 5mm, tolerance should be ±0.4mm.
2) The tolerance without indicating for PCB layout is always ±0.1mm.
3) The width of the gridding is 2.52mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Wiring Diagram (Bottom view)

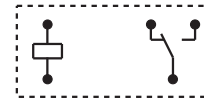
HF115F-A/ □□□ -□□ -□ -1/2 -□□, 3.5/5mm Pinning, 1 Pole, 12A



1 Form A



1 Form B

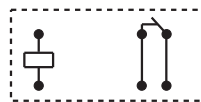


1 Form C

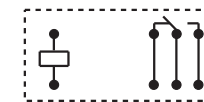
HF115F-A/ □□□ -□□ -□ -3 -□□, 5mm Pinning, 1 Pole, 16A



1 Form A

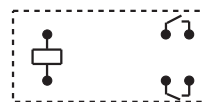


1 Form B

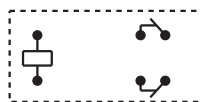


1 Form C

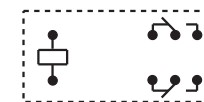
HF115F-A/ □□□ -□□ -□ -4 -□□, 5mm Pinning, 2 Pole, 8A



2 Form A



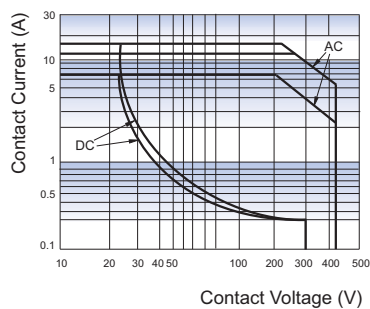
2 Form B



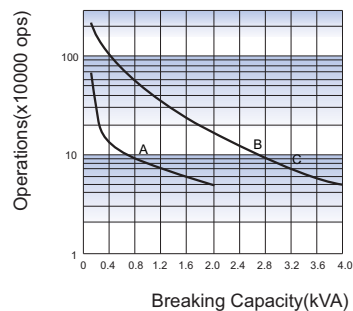
2 Form C

CHARACTERISTIC CURVES

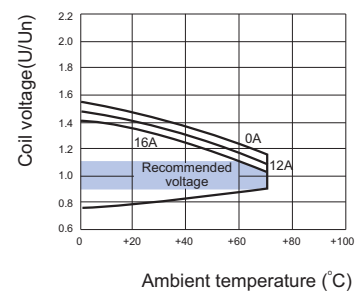
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL OPERATING RANGE (AC) *



Notes:

- Curve A: 2H4B type
Curve B: 1H1B type (or 1H2B type)
Curve C: 1H3B type
- Test conditions:
NO, Resistive load, 250VAC,
Flux proofed, Room temp., 1s on 9s off.

Notes: *

The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life.

An energising voltage over the abover range may damage the insulation of relay coil.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF115F-A

MINIATURE HIGH POWER RELAY

CE **UL** **US**

File No.:E134517



File No.:116934



File No.:CQC16002153854



Features

- AC voltage coil type
- 16A switching capability
- 1 & 2 pole configurations
- 5kV dielectric strength (between coil and contacts)
- Low height: 15.7 mm
- Creepage distance: 10mm
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- Sockets available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.7 x 15.7) mm

CONTACT DATA

Contact arrangement	1A, 1B, 1C	2A, 2B, 2C
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	See ordering info.	
Contact rating (Res. load)	12A/16A 250VAC	8A 250VAC
Max. switching voltage	440VAC / 300VDC	
Max. switching current	12A / 16A	8A
Max. switching power	3000VA / 4000VA	2000VA
Mechanical endurance	1 x 10 ⁶ OPS	
Electrical endurance	1H3B type: 5 x 10 ⁴ OPS (16A 250VAC, Resistive load, Room temp., 1s on 9s off) 2H4B type: 5 x 10 ⁴ OPS (8A 250VAC, Resistive load, Room temp., 1s on 9s off)	

COIL

Coil power	Approx. 0.75VA
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COIL DATA (at 50Hz)

at 23°C

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Coil Current mA	Coil DC Resistance Ω
24	18.00	3.60	31.6	350 x (1±10%)
115	86.30	17.30	6.6	8100 x (1±15%)
230	172.50	34.50	3.2	32500 x (1±15%)

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2500VAC 1min
Temperature rise (at nomi. volt.)	85K max.	
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *	10Hz to150Hz 10g/5g	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 70°C	
Termination	PCB	
Unit weight	Approx. 13.5g	
Construction	Plastic sealed, Flux proofed	

Notes: 1) The data shown above are initial values.
2) * Index is not that of relay length direction.

SAFETY APPROVAL RATINGS

UL/CUL	12A 250VAC 16A 250VAC 8A 250VAC
VDE (AgNi, AgNi+Au)	12A 250VAC at 70°C 16A 250VAC at 70°C 8A 250VAC at 70°C
VDE (AgSnO ₂ , AgSnO ₂ +Au)	12A 250VAC at 70°C 8A 250VAC at 70°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.10

ORDERING INFORMATION

Type	HF115F-A / 024 -1H S 1 A F (XXX)
Coil voltage	24, 115, 230VAC
Contact arrangement	1H: 1 Form A 1D: 1 Form B 1Z: 1 Form C 2H: 2 Form A 2D: 2 Form B 2Z: 2 Form C
Construction ^{1) 2)}	S: Plastic sealed Nil: Flux proofed
Version	1: 3.5mm 1 pole 12A 2: 5.0mm 1 pole 12A 3: 5.0mm 1 pole 16A 4: 5.0mm 2 pole 8A
Contact material ³⁾	A: AgSnO ₂ B: AgNi Nil: AgCdO G: AgCdO+Au plated AG: AgSnO ₂ +Au plated BG: AgNi+Au plated
Insulation standard	F: Class F
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard

- Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclear environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
- 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.
- 4) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

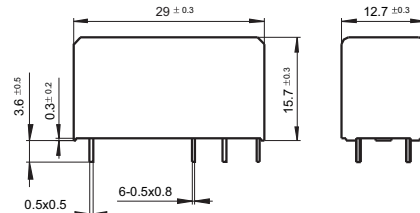
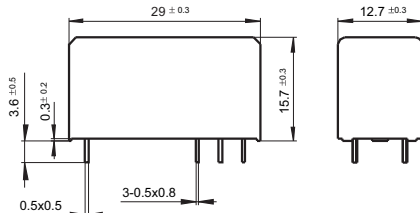
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

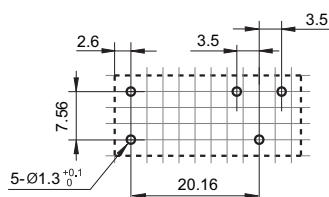
3.5mm Pinning (HF115F-A/□□□-□□-□-1-□□)

5mm Pinning (HF115F-A/□□□-□□-□-2/3/4-□□)

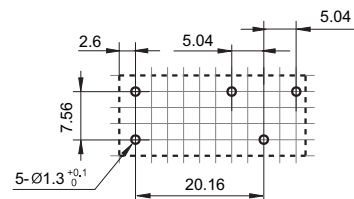


PCB Layout (Bottom view)

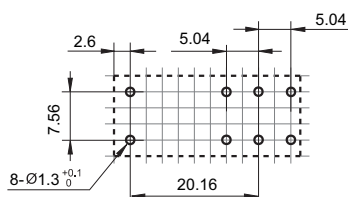
3.5mm 1Pole 12A



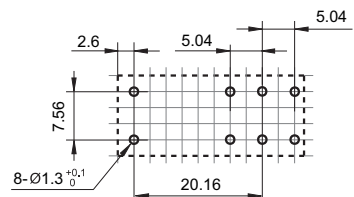
5mm 1Pole 12A



5mm 1Pole 16A



5mm 2Pole 8A



- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1mm, tolerance should be ±0.2mm; outline dimension > 1mm and ≤ 5mm, tolerance should be ±0.3mm; outline dimension > 5mm, tolerance should be ±0.4mm.
- 2) The tolerance without indicating for PCB layout is always ±0.1mm.
- 3) The width of the gridding is 2.52mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

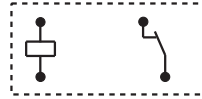
Unit: mm

Wiring Diagram (Bottom view)

HF115F-A/□□□-□□-□-1/2-□□, 3.5/5mm Pinning, 1 Pole, 12A



1 Form A



1 Form B

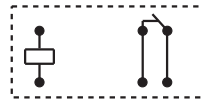


1 Form C

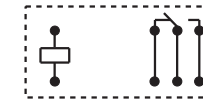
HF115F-A/□□□-□□-□-3-□□, 5mm Pinning, 1 Pole, 16A



1 Form A



1 Form B

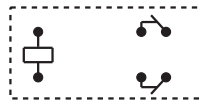


1 Form C

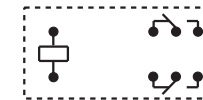
HF115F-A/□□□-□□-□-4-□□, 5mm Pinning, 2 Pole, 8A



2 Form A



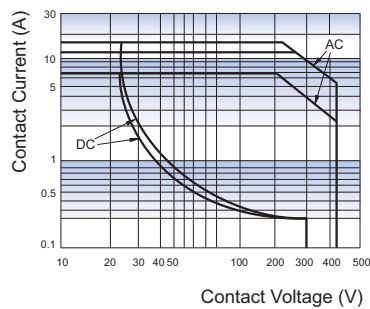
2 Form B



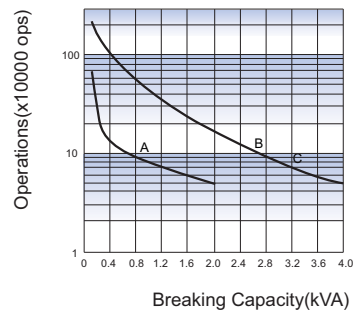
2 Form C

CHARACTERISTIC CURVES

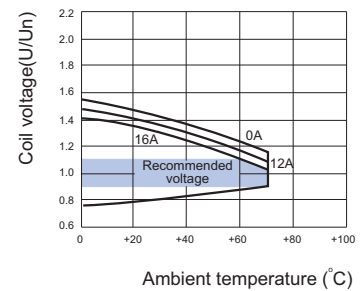
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL OPERATING RANGE (AC) *



Notes:

- Curve A: 2H4B type
Curve B: 1H1B(or 1H2B) type
Curve C: 1H3B type
- Test conditions:
NO, Resistive load, 250VAC
Flux proofed, Room temp., 1s on 9s off.

Notes:

* The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life.
An energising voltage over the above range may damage the insulation of relay coil.

Relay Sockets



Features


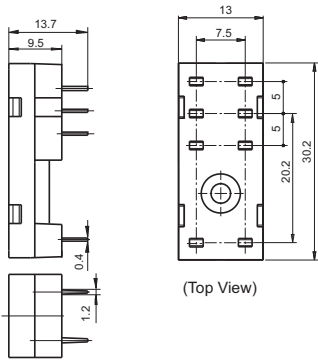
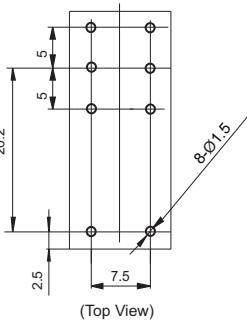

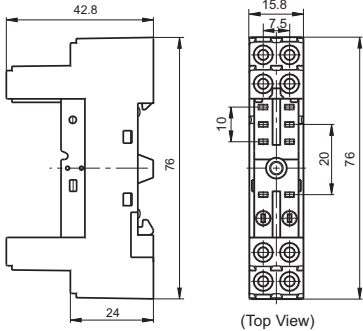
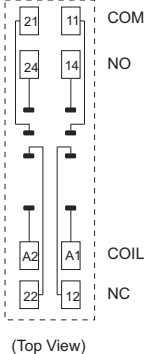
- The dielectric strength can reach 5000VAC(I/O) and the insulation resistance is 1000MΩ
- Three mounting types are available: PCB, screw mounting and DIN rail mounting
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length
14FF-2Z-A1	250VAC	10A	-40 °C to 70°C	5000VAC	—	—
14FF-2Z-C2	250VAC	10A	-40 °C to 70°C	5000VAC	0.6N · m	7mm
14FF-2Z-C3	250VAC	10A	-40 °C to 70°C	5000VAC	0.6N · m	7mm
14FF-2Z-C4	250VAC	10A	-40 °C to 70°C	5000VAC	—	9mm


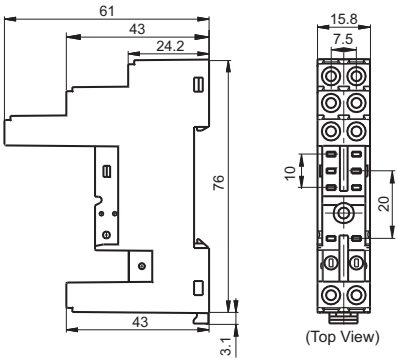
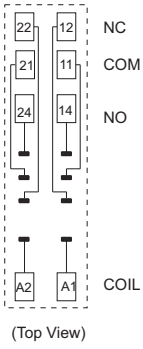

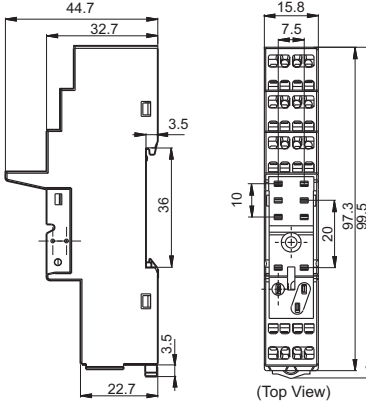
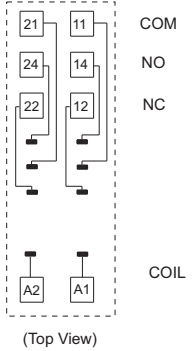
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
<p>14FF-2Z-A1</p>  <p>PCB terminal, PCB or Screw mounting Applicable for HF115F/ XXX-1XX3XXX HF115F/ XXX-1XX4XXX When it is HF115F/XXX-1XX3XXX, two pole of socket load must connect in parallel.</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>metallic retainer 14FF-H1</p>
<p>14FF-2Z-C2</p>  <p>Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for HF115F/ XXX-1XX3XXX HF115F/ XXX-1XX4XXX When it is HF115F/XXX-1XX3XXX, "21"- "11", "24"- "14", "22"- "12" of socket must connect in parallel.</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>plastic retainer 14FF-H4</p> <p>marker 14FF-M1</p> <p>plug-in module HFAA to HFHU*</p>

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
<div>14FF-2Z-C3</div> <div></div> <div>Screw Terminal, DIN rail or Screw mounting, With finger protection device Applicable for HF115F/XXX-1XX3XXX HF115F/XXX-1XX4XXX When it is HF115F/XXX-1XX3XXX, "21"-11", "24"-14", "22"-12" of socket must connect in parallel.</div>	<div></div> <div>(Top View)</div>	<div></div> <div>(Top View)</div>	<div>plastic retainer 14FF-H4</div> <div>marker 14FF-M1</div> <div>plug-in module HFAA to HFHU*</div>
<div>14FF-2Z-C4</div> <div></div> <div>Spring-loaded terminal DIN rail mounting With finger protection device Applicable for HF115F/XXX-1XX3XXX HF115F/XXX-1XX4XXX When it is HF115F/XXX-1XX3XXX, "21"-11", "24"-14", "22"-12" of socket must connect in parallel.</div>	<div></div> <div>(Top View)</div>	<div></div> <div>(Top View)</div>	<div>plastic retainer 14FF-H4</div> <div>marker 14FF-M1</div> <div>plug-in module HFAA to HFHU*</div>

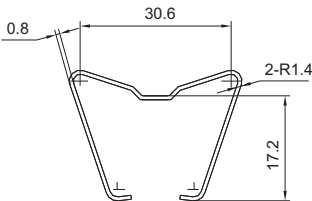
Notes: * Please refer to the product datasheet if plug-in module is required.

DIMENSION OF RELATED COMPONENT (AVAILABLE)

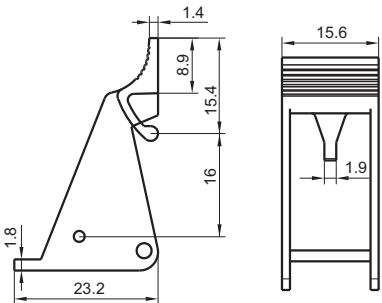
Unit: mm

Retainer

14FF-H1 (Metallic retainer)

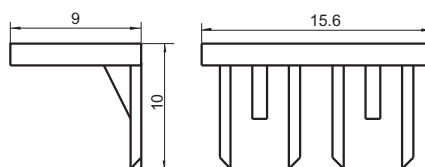


14FF-H4 (Plastic retainer)



Marker

14FF-M1



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. Socket which can be mounted with markers is furnished with a marker; as for other related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. The above is only an example of typical socket and related component type which is suitable to HF115F-A relay. If you have any special requirements, please contact us.
4. Main outline dimension(L, W, H) ≥ 50 mm, tolerance should be ± 1 mm; outline dimension > 20 mm and < 50 mm, tolerance should be ± 0.5 mm; outline dimension ≤ 20 mm, tolerance should be ± 0.3 mm.
5. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF115F-H

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:116934



File No.:CQC08002028130



Features

- High sensitive: 0.25W
- Low height: 15.7 mm
- 5kV dielectric strength (between coil and contacts)
- Creepage distance: 10mm
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- Sockets available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.7 x 15.7) mm

CONTACT DATA

Contact arrangement	1A, 1B, 1C
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	See ordering info.
Contact rating (Sensitive coil)	10A 250VAC
Max. switching voltage	440VAC / 300VDC
Max. switching current	10A
Max. switching power	2500VA
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	1H3 type: 1 x 10 ⁵ OPS (10A 250VAC, Resistive load, at 85°C, 5s on 5s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		8ms max.
Temperature rise (at nomi. volt.)		55K max.
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *		10Hz to 150Hz 10g/5g
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 13.5g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.

2) * Index is not that of relay length direction.

3) UL insulation system: Class F, Class B.

COIL

Coil power	Approx. 250mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ¹⁾	Coil Resistance Ω
5	3.75	0.5	7.5	100 x (1±10%)
6	4.50	0.6	9.0	144 x (1±10%)
12	9.00	1.2	18	576 x (1±10%)
18	13.50	1.8	27	1296 x (1±10%)
24	18.00	2.4	36	2304 x (1±10%)
48 ²⁾	36.00	4.8	72	9216 x (1±15%)
60 ²⁾	45.00	6.0	90	12857 x (1±15%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

SAFETY APPROVAL RATINGS

VDE

Contact Material	Specifications	Ratings
AgSnO ₂	HF115F-H....1(H;Z)(S)(1;2;3)A(G)(F)	10A 250VAC at 85°C
AgCdO	HF115F-H....1(H;Z)(S)(1;2;3)(G)(F)	10A 250VAC at 85°C 6A 400VAC at 85°C

UL/CUL

Contact Material	Specifications	Ratings
AgCdO	HF115F-H....1(H;Z)(S)(1;2;3)(G)(F)	10A 250VAC

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF115F-H / 012 -1H S 3 A F (XXX)
Coil voltage	5, 6, 12, 18, 24, 48, 60VDC
Contact arrangement	1H:1 Form A 1D:1 Form B 1Z:1 Form C
Construction ^{1) 2)}	S: Plastic sealed Nil: Flux proofed
Version	1: 3.5mm 1 pole 2: 5.0mm 1 pole 3: 5.0mm 1 pole
Contact material ³⁾	A: AgSnO ₂ B: AgNi Nil: AgCdO G: AgCdO+Au plated AG: AgSnO ₂ +Au plated BG: AgNi+Au plated
Insulation standard	F: Class F Nil: Class B
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.

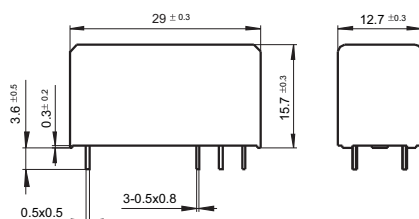
4) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

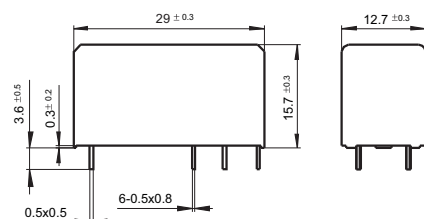
Unit: mm

Outline Dimensions

3.5mm Pinning (HF115F-H/ □□□ -□□ -1-□)



5mm Pinning (HF115F-H/ □□□ -□□ -2/3-□)

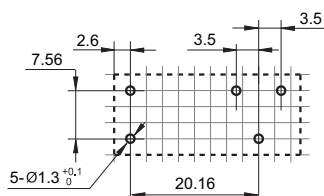


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

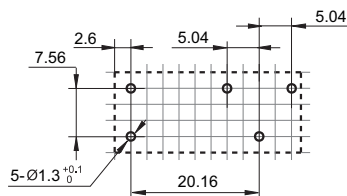
Unit: mm

PCB Layout (Bottom view)

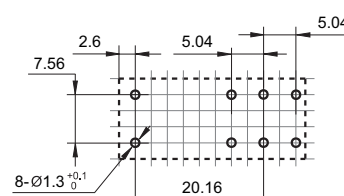
3.5mm Pinning, 1 Pole



5mm Pinning, 1 Pole

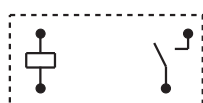


5mm Pinning, 1 Pole

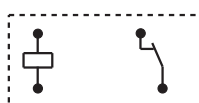


Wiring Diagram (Bottom view)

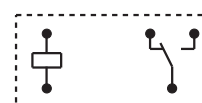
3.5/5mm Pinning, 1 Pole, 10A, HF115F-H/ □□□ -□□ -□ -1/2 -□



1 Form A

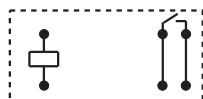


1 Form B

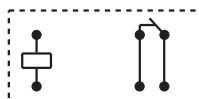


1 Form C

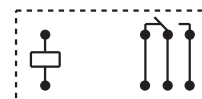
5mm Pinning, 1 Pole, 10A, HF115F-H/ □□□ -□□ -□ -3 -□



1 Form A



1 Form B

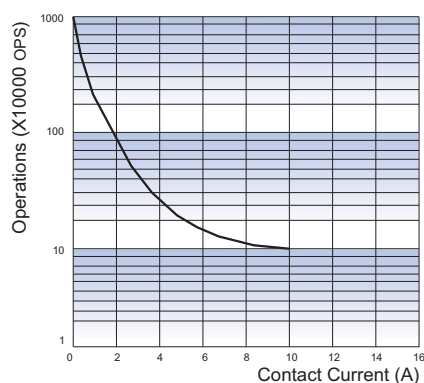


1 Form C

- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.52mm.

CHARACTERISTIC CURVES

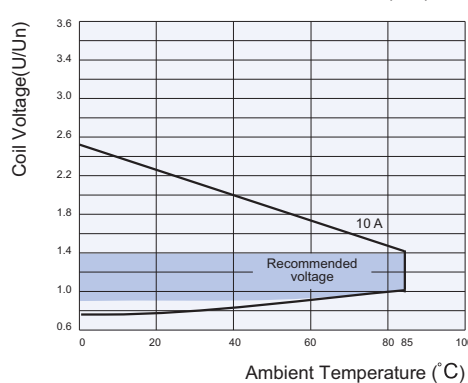
ENDURANCE CURVE



Notes:

- 1) Curve : 1H3 type
- 2) Test conditions:
NO, 250VAC, Resistive load,
Flux proofed, at 85°C, 5s on 5s off.

COIL OPERATING RANGE (DC) *



- Notes:** * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life.
 An energising voltage over the above range may damage the insulation of relay coil.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF115F-I

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:116934



File No.:CQC08002028130



Features

- Max high inrush:120A 20ms
- Low height: 15.7 mm
- 5kV dielectric strength (between coil and contacts)
- Creepage distance: 10mm
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- Sockets available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.7 x 15.7) mm

CONTACT DATA

Contact arrangement	1A, 1C
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating	16A 250VAC
Inrush rating (120VAC)	NO: TV-5 80A 120A / 20ms
Max. switching voltage	440VAC / 300VDC
Max. switching current	16A
Max. switching power	4000VA
Mechanical endurance	1 x 10 ⁷ ops
Electrical endurance	1H3A type: 7.5 x 10 ⁴ ops (16A 250VAC, General use, Room temp., 1s on 9s off) 1H3A type: 2.5 x 10 ⁴ ops (TV-5 120VAC, Room temp., 1s on 59s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		8ms max.
Temperature rise (at nomi. volt.)		55K max.
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *		10Hz to 150Hz 20g/5g
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 13.5g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.
2) * Index is not that of relay length direction.

COIL

Coil power	Approx. 400mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ¹⁾	Coil Resistance Ω
5	3.50	0.5	7.5	62 x (1±10%)
6	4.20	0.6	9.0	90 x (1±10%)
9	6.30	0.9	13.5	202 x (1±10%)
12	8.40	1.2	18	360 x (1±10%)
18	12.6	1.8	27	810 x (1±10%)
24	16.8	2.4	36	1440 x (1±10%)
48 ²⁾	33.6	4.8	72	5760 x (1±15%)
60 ²⁾	42.0	6.0	90	7500 x (1±15%)
110 ²⁾	77.0	11.0	165	25200 x (1±15%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

SAFETY APPROVAL RATINGS

UL/CUL	HF115F-I....1Z(S)3A	NO: 16A 250VAC at 85°C
	HF115F-I....1H(S)3A	16A 250VAC TV-5, 120VAC
VDE	HF115F-I....1H(S)3A	16A 250VAC at 85°C
	HF115F-I....1Z(S)3A	NO: 16A 250VAC at 85°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

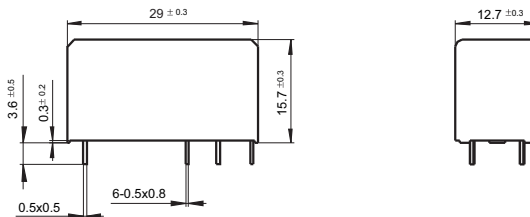
HF115F-I /		012	-1H	S	3	A	(XXX)
Type							
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60, 110VDC						
Contact arrangement	1H: 1 Form A		1Z: 1 Form C				
Construction ¹⁾²⁾	S: Plastic sealed		Nil: Flux proofed				
Version	3: 5.0mm						
Contact material	A: AgSnO ₂						
Special code ³⁾	XXX: Customer special requirement			Nil: Standard			

- Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
- 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 3) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

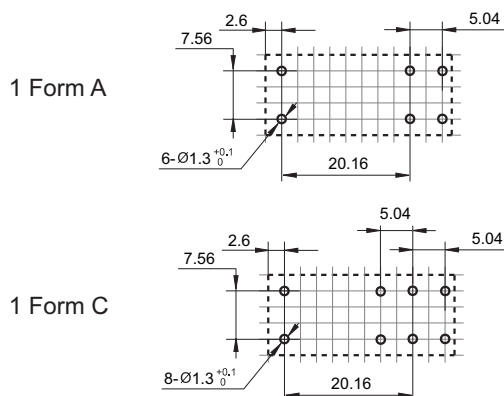
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

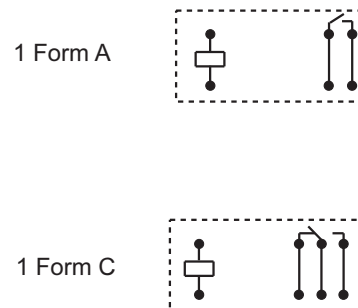
Outline Dimensions



PCB Layout (Bottom view)



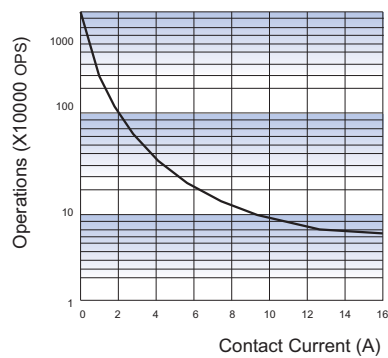
Wiring Diagram (Bottom view)



- Remark:** 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.
- 2) The tolerance without indicating for PCB layout is always ± 0.1 mm.
- 3) The width of the gridding is 2.52mm.

CHARACTERISTIC CURVES

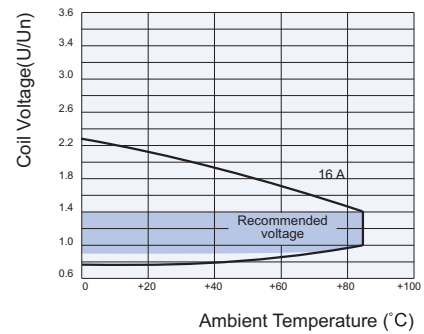
ENDURANCE CURVE



Test conditions:

NO, 250VAC, Resistance Load,
Flux proofed, Room temp., 1s on 9s off

COIL OPERATING RANGE (DC) *



Notes: * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life.
An energising voltage over the above range may damage the insulation of relay coil.

Disclaimer

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HF115FK

MINIATURE HIGH POWER RELAY

cULus

File No.:E134517



File No.:116934



File No.:CQC13002103948



Features

- Low height: 15.7 mm
- 16A switching capability
- 5kV dielectric strength (between coil and contacts)
- Creepage distance: 10mm
- Meeting reinforce insulation
- Flux proofed type
- Product in accordance to IEC 60335-1 available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.7 x 15.7) mm

CONTACT DATA

Contact arrangement	1A, 1C	2A, 2C
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	AgSnO ₂	
Contact rating (Res. load)	12A/16A 250VAC	8A 250VAC
Max. switching voltage	400VAC	
Max. switching current	12A / 16A	10A
Max. switching power	3000VA / 4000VA	2000VA
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	H3T type: 1 x 10 ⁵ OPS (NO: 16A 277VAC, Resistive Load at 40°C, 1s on 9s off) Z3T type: 5 x 10 ⁴ OPS (NO: 16A 250VAC, Resistive Load, at 85°C, 1s on 9s off) 2Z4T type: 5 x 10 ⁴ OPS (NO: 8A 250VAC, Resistive Load, at 85°C, 1s on 9s off)	

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2500VAC 1min
Surge voltage (between coil & contacts)	10kV (1.2 x 50μs)	
Operate time (at nomi. volt.)	10ms max.	
Release time (at nomi. volt.)	5ms max.	
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *	10Hz to 150Hz 10g/5g	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	PCB	
Unit weight	Approx. 13g	
Construction	Flux proofed	

Notes: 1) The data shown above are initial values.
2) * Index is not in relay length direction.

COIL

Coil power	Approx. 400mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.50	0.5	7.5	62 x (1±10%)
6	4.20	0.6	9.0	90 x (1±10%)
9	6.30	0.9	13.5	202 x (1±10%)
12	8.40	1.2	18	360 x (1±10%)
18	12.60	1.8	27	810 x (1±10%)
24	16.80	2.4	36	1440 x (1±10%)
48	33.60	4.8	72	5760 x (1±15%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	2Z4T: 8A 250VAC at 85°C 2Z4T: 10A 250VAC at 85°C Z1T: 12A 250VAC at 85°C Z2T: 12A 250VAC at 85°C Z3T: 16A 250VAC at 85°C
VDE	2Z4T: 8A 250VAC at 85°C 2Z4T: 10A 250VAC at 85°C Z1T: 12A 250VAC at 85°C Z2T: 12A 250VAC at 85°C Z3T: 16A 250VAC at 85°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.10

ORDERING INFORMATION

Type	HF115FK /	12	-H	3	T	(XXX)
Coil voltage	5, 6, 9, 12, 18, 24, 48 VDC					
Contact arrangement	H: 1 Form A Z: 1 Form C 2H: 2 Form A 2Z: 2 Form C					
Version	1: 3.5mm 1 pole 12A 2: 5.0mm 1 pole 12A 3: 5.0mm 1 pole 16A 4: 5.0mm 2 pole 8A					
Contact material ¹⁾	T: AgSnO ₂					
Special code ³⁾	XXX: Customer special requirement Nil: Standard					

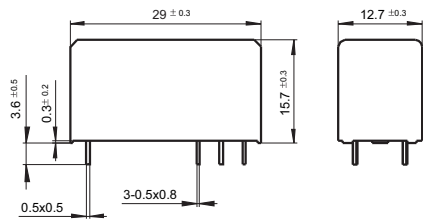
Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).
 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
 3) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

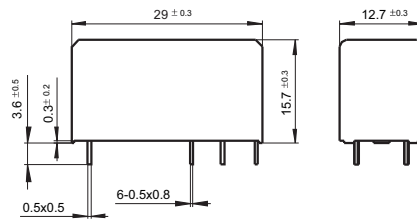
Unit: mm

Outline Dimensions

3.5mm Pinning (HF115FK/ □□□ -1-□)



5mm Pinning (HF115FK/ □□□ -□ -2/3/4-□)



Wiring Diagram (Bottom view)

3.5/5mm Pinning, 1 Pole, 12A, HF115FK/ □□□ -1/2-□



1 Form A

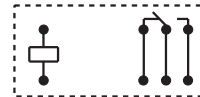


1 Form C

5mm Pinning, 1 Pole, 16A, HF115FK/ □□□ -3-□

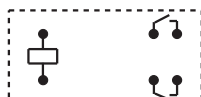


1 Form A



1 Form C

5mm Pinning, 2 Pole, 8A, HF115FK/ □□□ -2□ -4-□



2 Form A



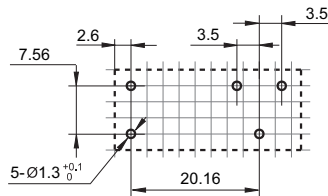
2 Form C

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

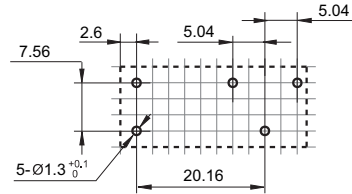
Unit: mm

PCB Layout (Bottom view)

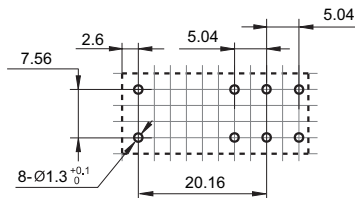
3.5mm 1Pole 12A



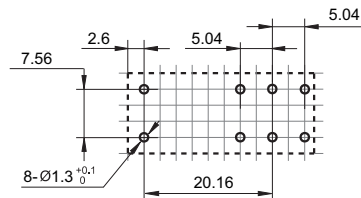
5mm 1Pole 12A



5mm 1Pole 16A



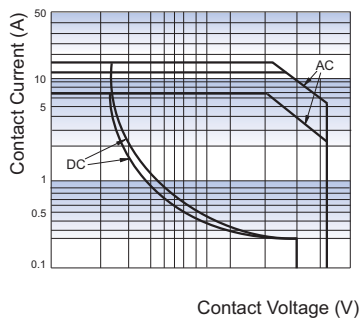
5mm 2Pole 8A



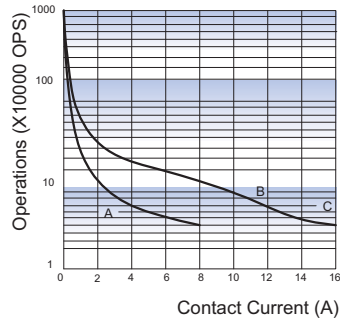
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
3) The width of the gridding is 2.52mm.

CHARACTERISTIC CURVES

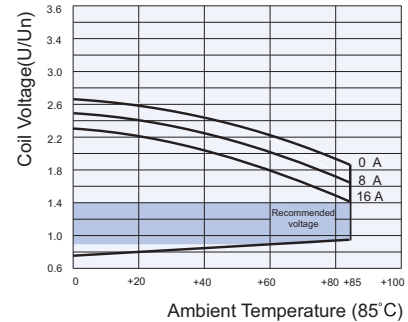
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL OPERATING RANGE (DC) *



Test conditions:

- Curve A: 2Z4T type
Curve B: Z2T type (or Z2T type)
Curve C: Z3T type
- Test conditions:
NO, resistive load, 250VAC, flux proofed,
at 85°C, 1s on 9s off

Notes: * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life.
An energising voltage over the above range may damage the insulation of relay coil.

Disclaimer

The specification is for reference only. See to 'Terminology and Guidelines' for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF115FK-T

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:116934



File No.:CQC13002103948



Features

- High temperature: 105°C
- Low height: 15.7 mm
- 16A switching capability
- 5kV dielectric strength (between coil and contacts)
- Creepage distance: 10mm
- Meeting reinforce insulation
- Product in accordance to IEC 60335-1 available
- Sockets available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.7 x 15.7) mm

CONTACT DATA

Contact arrangement	1A, 1C
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	16A 250VAC
Max. switching voltage	400VAC
Max. switching current	16A
Max. switching power	4000VA
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	H3T type: 3 x 10 ⁴ OPS (16A 250VAC, Resistive Load, at 105°C, 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 x 50μs)
Operate time (at nomi. volt.)		10ms max.
Release time (at nomi. volt.)		5ms max.
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *		10Hz to 150Hz 10g/5g
Humidity		5% to 85% RH
Ambient temperature		-40°C to 105°C
Termination		PCB
Unit weight		Approx. 13g
Construction		Flux proofed

Notes: 1) The data shown above are initial values.

2) * Index is not in relay length direction.

COIL

Coil power	Approx. 400mW
------------	---------------

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.50	0.5	7.5	62 x (1±10%)
6	4.20	0.6	9.0	90 x (1±10%)
9	6.30	0.9	13.5	202 x (1±10%)
12	8.40	1.2	18	360 x (1±10%)
18	12.60	1.8	27	810 x (1±10%)
24	16.80	2.4	36	1440 x (1±10%)
48	33.60	4.8	72	5760 x (1±15%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	16A 250VAC at 105°C
VDE	16A 250VAC at 105°C 10A 250VAC at 105°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

Type	HF115FK-T/	12	-H	3	T	(XXX)
Coil voltage	5, 6, 9, 12, 18, 24, 48VDC					
Contact arrangement	H: 1 Form A Z: 1 Form C					
Version	3: 5.0mm 1 pole 16A					
Contact material ¹⁾	T: AgSnO ₂					
Special code ³⁾	XXX: Customer special requirement		Nil: Standard			

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

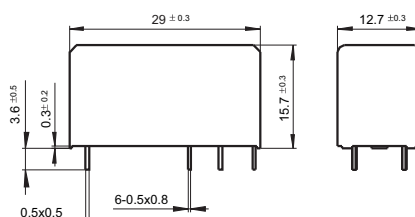
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

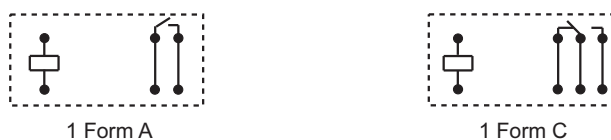
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

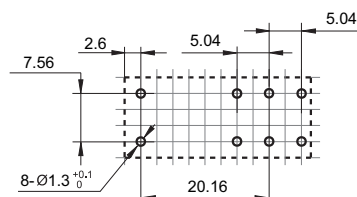
Outline Dimensions



Wiring Diagram (Bottom view)



PCB Layout (Bottom view)

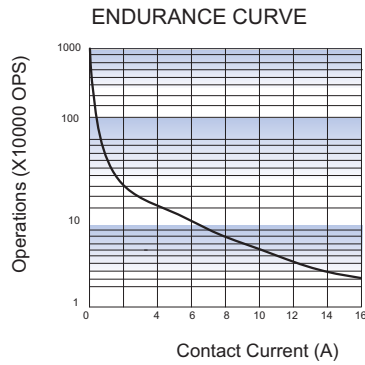


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.

2) The tolerance without indicating for PCB layout is always ± 0.1 mm.

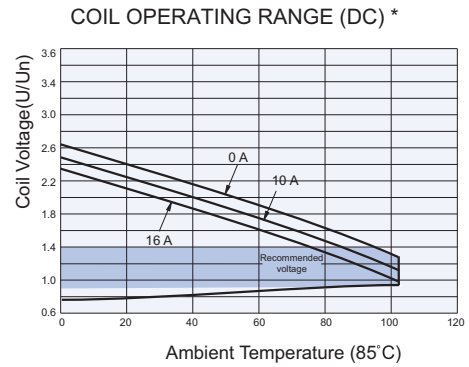
3) The width of the gridding is 2.52mm.

CHARACTERISTIC CURVES



Test conditions:

NO, resistive load, 250VAC, flux proofed,
at 105°C, 1s on 9s off



Notes: * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life.
An energising voltage over the abver range may damage the insulation of relay coil.

Disclaimer

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HF115F-L 1 pole

MINIATURE HIGH POWER LATCHING RELAY

cULUS

File No.:E134517



File No.:116934



File No.:CQC14002104529



Features

- Latching relay
- Low height: 15.7 mm
- 20A switching capability
- 5kV dielectric strength
(between coil and contacts)
- Creepage distance: 11mm-NO/10mm-CO version
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.7 x 15.7) mm

CONTACT DATA

Contact arrangement	1A, 1C
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	16A 250VAC
Typ. applicable load	Incandescent lamp:1500W 277VAC Standard ballast:8A 277VAC Electronic ballast: 5A 120VAC
Max. switching voltage	440VAC / 300VDC
Max. switching current	20A
Max. switching power	4000VA
Mechanical endurance	2 x 10 ⁶ OPS
Electrical endurance	5 x 10 ⁴ OPS (NO: 16A 250VAC, Resistive load, at 85°C, 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Set time (at nomi. volt.)		10ms max.
Reset time (at nomi. volt.)		10ms max.
Shock resistance *	Functional	98m/s²
	Destructive	980m/s²
Vibration resistance *		10Hz to 150Hz 10g/5g
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 13.5g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.
2) * Index is not in relay length direction.

COIL

Coil power	1 coil latching: Approx. 400mW 2 coils latching: Approx. 600mW
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COIL DATA

at 23°C

1 coil latching

Nominal Voltage VDC	Set Voltage VDC max.	Pulse Width (ms)		Reset Voltage VDC max.	Max. Voltage VDC	Coil Resistance Ω
		Typical	Min.			
5	3.5	≥50	30	3.5	6	62x (1±10%)
6	4.2	≥50	30	4.2	7.2	90x (1±10%)
9	6.3	≥50	30	6.3	10.8	202x (1±10%)
12	8.4	≥50	30	8.4	14.4	360x (1±10%)
24	16.8	≥50	30	16.8	28.8	1440x (1±10%)

2 coils latching

Nominal Voltage VDC	Set Voltage VDC max.	Pulse Width (ms)		Reset Voltage VDC max.	Max. Voltage VDC	Coil Resistance Ω
		Typical	Min.			
5	3.5	≥50	30	3.5	7.5	42x (1±10%)
6	4.2	≥50	30	4.2	9	55x (1±10%)
9	6.3	≥50	30	6.3	13.5	135x (1±10%)
12	8.4	≥50	30	8.4	18	240x (1±10%)
24	16.8	≥50	30	16.8	36	886x (1±10%)

SAFETY APPROVAL RATINGS

UL/CUL	16A/20A 250VAC at 85°C 1HP 240VAC TV-5 120VAC(1 Form A) Tungsten 360W 125VAC(1 Form A) Tungsten 1920W 8A 240VAC at 40°C Tungsten 960W 8A 120VAC at 40°C Standard ballast 16A 120VAC Standard ballast 8A 277VAC Standard ballast 5A 347VAC/480VAC Electronic ballast 5A 120VAC TV-8 240VAC
	16A 250VAC at 85°C AC-15 250VAC at 85°C
VDE	

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

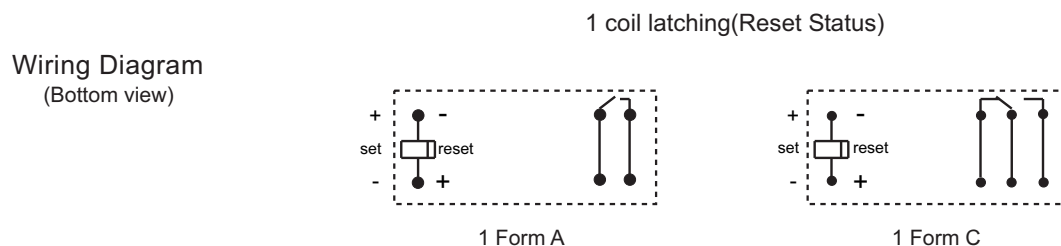
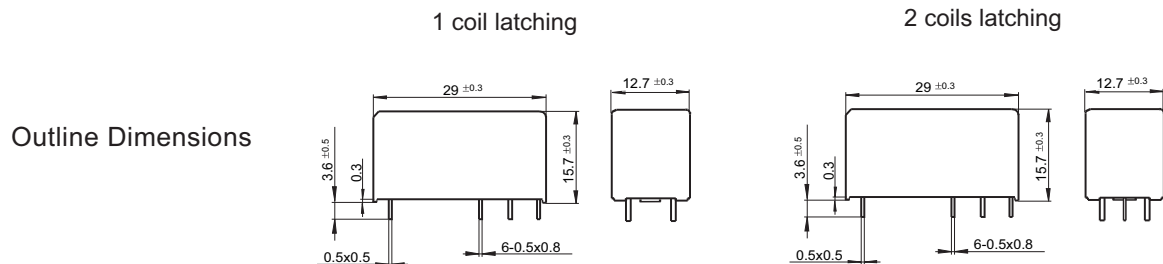
ORDERING INFORMATION

Type	HF115F-L / 12 -Z S 3 L1 T G F (XXX)
Coil voltage	5, 6, 9, 12, 24VDC
Contact arrangement	H: 1 Form A Z: 1 Form C
Construction ^{1) 2)}	S: Plastic sealed Nil: Flux proofed
Version	3: 5.0mm 1 pole 16A
Sort	L1: 1 coil latching L2: 2 coils latching
Contact material	T: AgSnO ₂
Contact plating ³⁾	G: Gold plated Nil: No gold plated
Insulation standard	F: Class F
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard

- Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc).
- 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.
- 4) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

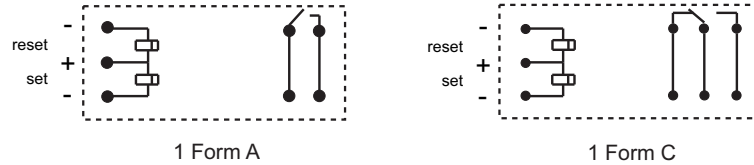
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

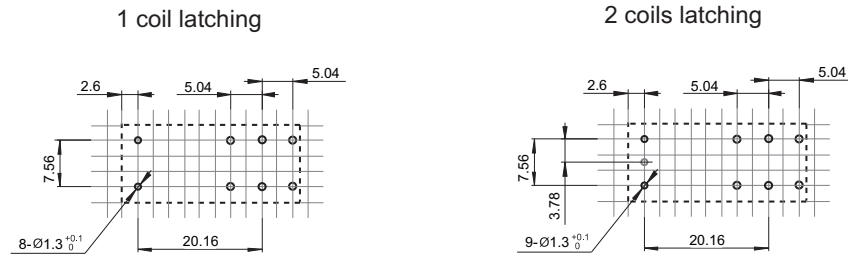


2 coils latching(Reset Status)

Wiring Diagram
(Bottom view)



PCB Layout
(Bottom view)



- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.52mm .

Notice

- Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
- In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
- Keep the product away from strong magnetic field during transportation, storage and application, to avoid change of set/reset voltage.

Disclaimer

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HF115F-L 2 pole

MINIATURE HIGH POWER LATCHING RELAY



File No.:E134517



File No.:116934



File No.:CQC14002104529



Features

- Latching relay
- Low height: 15.7 mm
- 10A switching capability
- 5kV dielectric strength (between coil and contacts)
- Creepage distance: 11mm-NO/10mm-CO version
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.7 x 15.7) mm

CONTACT DATA

Contact arrangement	2A, 2C
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating(Res. load)	8A 250VAC
Typ. applicable load	Lamp: Tungsten 3A 277VAC Standard ballast: 3A 277VAC
Max. switching voltage	440VAC / 300VDC
Max. switching current	10A
Max. switching power	2000VA
Mechanical endurance	2 x 10 ⁶ OPS
Electrical endurance	2H type: 5 x 10 ⁴ OPS (8A 250VAC, General use, at 85°C, 5s on 5s off) 2Z type: 1 x 10 ⁴ OPS (8A 250VAC, General use, at 85°C, 5s on 5s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2500VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Set time (at nomi. volt.)		10ms max.
Reset time (at nomi. volt.)		10ms max.
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *		10Hz to 150Hz 10g/5g
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 13.5g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.
2) * Index is not in relay length direction.

COIL

Coil power	1 coil latching: Approx. 400mW 2 coils latching: Approx. 600mW
------------	---

COIL DATA

at 23°C

1 coil latching

Nominal Voltage VDC	Set Voltage VDC max.	Pulse Width (ms)		Reset Voltage VDC max.	Max. Voltage VDC	Coil Resistance Ω
		Typical	Min.			
5	3.5	≥50	30	3.5	6	62x (1±10%)
6	4.2	≥50	30	4.2	7.2	90x (1±10%)
9	6.3	≥50	30	6.3	10.8	202x (1±10%)
12	8.4	≥50	30	8.4	14.4	360x (1±10%)
24	16.8	≥50	30	16.8	28.8	1440x (1±10%)

2 coils latching

Nominal Voltage VDC	Set Voltage VDC max.	Pulse Width (ms)		Reset Voltage VDC max.	Max. Voltage VDC	Coil Resistance Ω
		Typical	Min.			
5	3.5	≥50	30	3.5	7.5	42x (1±10%)
6	4.2	≥50	30	4.2	9	55x (1±10%)
9	6.3	≥50	30	6.3	13.5	135x (1±10%)
12	8.4	≥50	30	8.4	18	240x (1±10%)
24	16.8	≥50	30	16.8	36	886x (1±10%)

SAFETY APPROVAL RATINGS

UL/CUL	10A/8A 250/277VAC General use at 85°C 1/2 HP 240VAC at 40°C Standard ballast 3A 277VAC at 40°C Tungsten Lamp 3A 277VAC at 40°C
VDE	8A 250VAC at 85°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.10

ORDERING INFORMATION

Type	HF115F-L / 12 -2Z S 4 L1 T F (XXX)
Coil voltage	5, 6, 9, 12, 24VDC
Contact arrangement	2H: 2 Form A 2Z: 2 Form C
Construction ¹⁾²⁾	S: Plastic sealed Nil: Flux proofed
Version	4: 5.0mm 2 pole 8A
Sort	L1: 1 coil latching L2: 2 coils latching
Contact material	T: AgSnO ₂
Insulation standard	F: Class F
Special code ³⁾	XXX: Customer special requirement Nil: Standard

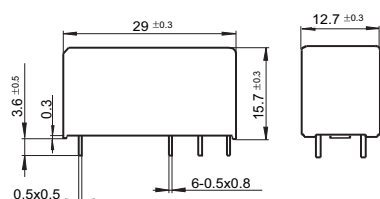
- Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
- 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (335) stands for product in accordance to IEC 60335-1 (GWT).

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

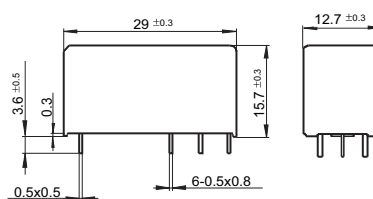
Unit: mm

Outline Dimensions

1 coil latching

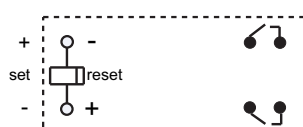


2 coils latching

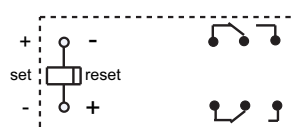


Wiring Diagram (Bottom view)

1 coil latching(Reset Status)



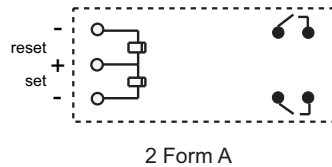
2 Form A



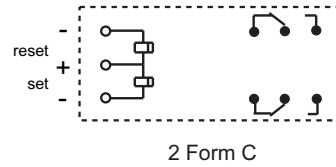
2 Form C

Wiring Diagram (Bottom view)

2 coils latching(Reset Status)



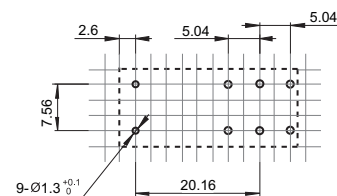
2 Form A



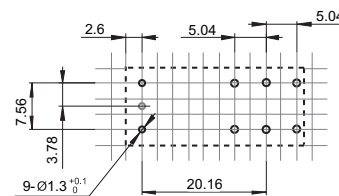
2 Form C

PCB Layout (Bottom view)

1 coil latching



2 coils latching



- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.52mm.

Notice

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Keep the product away from strong magnetic field during transportation, storage and application, to avoid change of set/reset voltage.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF115F-LS

MINIATURE HIGH POWER LATCHING RELAY



File No.:E134517



File No.:116934



File No.:CQC14002104529



Features

- Latching relay
- Special contact struction
- Incandescent lamp load: 3500W 277VAC
- 5kV dielectric strength (between coil and contacts)
- Creepage distance: 11mm
- Low height: 15.7 mm
- Meeting reinforce insulation
- Product in accordance to EN60669-1 available
- Product in accordance to IEC 60335-1 available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.7 x 15.7) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	W+AgSnO ₂
Contact rating	Resistive: 16A 250VAC
	Incandescent Lamp: 3500W 277VAC
	Inrush current: 165A / 20ms fluorescent: 800A/200μs
Max. switching voltage	440VAC
Max. switching current	16A
Max. switching power	4000VA
Mechanical endurance	2 x 10 ⁶ OPS
Electrical endurance	1.2 x 10 ⁴ OPS (3500W 277VAC, Tungsten lamp, at 40°C, 1s on 59s off)
	6 x 10 ³ OPS (16A 250VAC, Resistive load, at 85°C, 5s on 5s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1250VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Set time (at nomi. volt.)		10ms max.
Reset time (at nomi. volt.)		10ms max.
Temperature rise (at nomi. volt.)		55K max.
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *		10Hz to 150Hz 10g
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 13.5g
Construction		Plastic sealed, Flux proofed

Notes: 1) This contact resistance value is tested under the nominal voltage.

2) * Index is not that of relay length direction.

3) The data shown above are initial values.

4) UL insulation system: Class F.

COIL

Coil power	1 coil latching: Approx. 400mW
	2 coils latching: Approx. 600mW

COIL DATA

at 23°C

1 coil latching

Nominal Voltage VDC	Set Voltage VDC max.	Pulse Width (ms)		Reset Voltage VDC max.	Max. Voltage VDC	Coil Resistance Ω
		Typical	Min.			
5	3.5	≥50	30	3.5	6	62x (1±10%)
6	4.2	≥50	30	4.2	7.2	90x (1±10%)
9	6.3	≥50	30	6.3	10.8	202x (1±10%)
12	8.4	≥50	30	8.4	14.4	360x (1±10%)
24	16.8	≥50	30	16.8	28.8	1440x (1±10%)

2 coils latching

Nominal Voltage VDC	Set Voltage VDC max.	Pulse Width (ms)		Reset Voltage VDC max.	Max. Voltage VDC	Coil Resistance x (1±10%)Ω
		Typical	Min.			
5	3.5	≥50	30	3.5	7.5	42x (1±10%)
6	4.2	≥50	30	4.2	9	55x (1±10%)
9	6.3	≥50	30	6.3	13.5	135x (1±10%)
12	8.4	≥50	30	8.4	18	240x (1±10%)
24	16.8	≥50	30	16.8	36	886x (1±10%)

SAFETY APPROVAL RATINGS

UL/CUL	16A 250VAC General use at 85°C
	Standard ballast 5A 277VAC at 40°C
VDE	Electronic ballast 16A 120VAC at 40°C
	Electronic ballast 16A 277VAC at 40°C
VDE	3500W 277VAC Tungsten Lamp at 40°C
	16A 250VAC Resistive at 85°C
VDE	EN60669:
	16A 250VAC COSØ =0.6
VDE	16A 250VAC 140μF

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

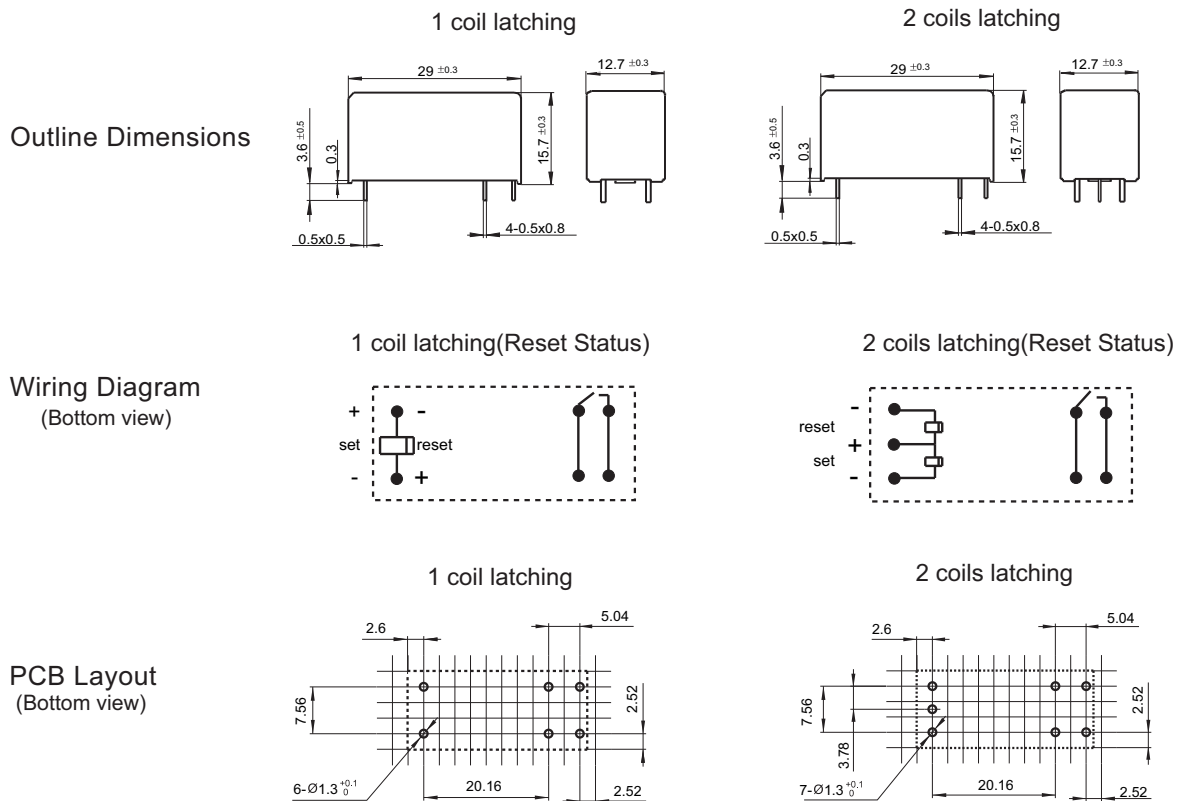
ORDERING INFORMATION

Type	HF115F-LS / 12 -H S L1 F (XXX)
Coil voltage	5, 6, 9, 12, 24VDC
Contact arrangement	H: 1 Form A
Construction ¹⁾²⁾	S: Plastic sealed Nil: Flux proofed
Sort	L1: 1 coil latching L2: 2 coils latching
Insulation Standard	F: Class F
Special code ³⁾	XXX: Customer special requirement Nil: Standard

- Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclear environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
- 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (335) stands for product in accordance to IEC 60335-1 (GWT).

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm



- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
- 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
- 3) The width of the gridding is 2.52mm.

Notice

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Keep the product away from strong magnetic field during transportation, storage and application, to avoid change of set/reset voltage.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF115FP

MINIATURE POWER RELAY



File No.: E133481



File No.: 116934



Features

- 1 pole 16A, 2 pole 8A, 1 CO & 2 CO contacts
- 5kV dielectric, Creepage distance 8 mm (coil to contacts)
- Meeting VDE 0700, 0631 reinforce insulation
- DC/AC coil type relay, Coil power 400mW / 0.75VA
- Manual test device
- Type with mechanical indicator / electrical indicator
- Sockets available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 13.0 x 25.5) mm

CONTACT DATA

Contact arrangement	1C	2C
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	AgNi	
Contact rating (Res. load)	16A 250VAC	8A 250VAC
Max. switching voltage	440VAC	
Max. switching current	16A	8A
Max. switching power	4000VA	2000VA
Mechanical endurance	DC type: 5 x 10 ⁶ OPS AC type: 1 x 10 ⁶ OPS	
Electrical endurance	1Z3B type: 3x 10 ⁴ OPS (NO: 16A 250VAC, Resistive load, at 70°C, 1s on 9s off) 2Z4B type: 5 x 10 ⁴ OPS (NO: 8A 250VAC, Resistive load, at 70°C, 1s on 9s off)	

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2500VAC 1min
Operate time (at nomi. volt.)	DC type: 15ms max.	
Release time (at nomi. volt.)	DC type: 8ms max.	
Temperature rise (at nomi. volt.)	DC type: 60K max. AC type: 85K max.	
Shock resistance*	Functiona	98m/s ²
	Destructive	980m/s ²
Vibration resistance*	NO	10Hz to 150Hz 10g
	NC	length direction: 10Hz to 150Hz 2g other direction: 10Hz to 150Hz 5g
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 70°C	
Termination	PCB	
Unit weight	Approx. 16g	
Mounting distance	5mm, packing of sockets	

Notes: 1) The data shown above are initial values.
2) * Index is not that of relay length direction.
3) UL insulation system: Class A

COIL

Coil power	DC type: Approx. 400mW; AC type: Approx. 0.75VA
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Notes: The data shown above don't include the power of electronic indicating circuit when the relay picks-up.

COIL DATA

at 23°C

DC type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC 1)	Coil Resistance Ω
12	8.4	1.2	18	360 x (1±10%)
24	16.8	2.4	36	1440 x (1±10%)
48 ²⁾	33.6	4.8	72	5760 x (1±15%)
110 ²⁾	77.0	11.0	165	25200 x (1±15%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.
2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

AC type(50Hz)

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Coil Current mA	Coil DC Resistance Ω
24	18.0	3.6	31.6	350 x (1±10%)
115	86.3	17.25	6.6	8100 x (1±15%)
230	172.5	34.5	3.2	32500 x (1±15%)

SAFETY APPROVAL RATINGS

UL/CUL	1 Form C	16A 250VAC at 70°C
	2 Form C	8A 250VAC at 70°C
VDE	1 Form C	16A 250VAC at 70°C
	2 Form C	8A 250VAC at 70°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

Type	HF115FP /	024	-1Z	3	B	(XXX)
Coil voltage	012 to 110: 12, 24, 48, 110 VDC A24 to A230: 24, 115, 230 VAC					
Contact arrangement	1Z: 1 Form C 2Z: 2 Form C					
Version	3: 5.0mm 1 pole 16A 4: 5.0mm 2 pole 8A					
Contact material	B: AgNi					
Special code ²⁾	XXX: Customer special requirement Nil: Standard					

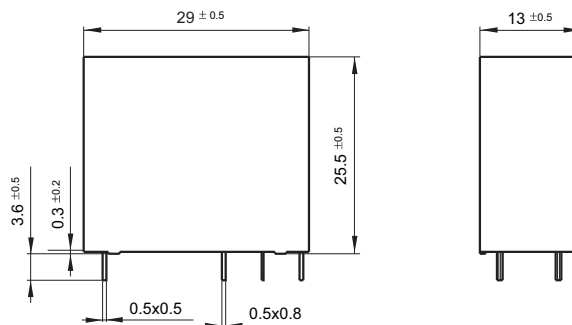
Notes: 1) Flux-proofed relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.

2) The customer special requirement express as special code after evaluating by Hongfa.

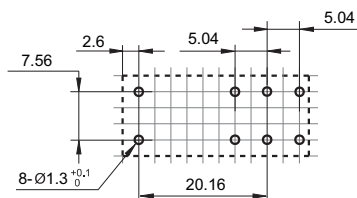
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions



PCB Layout (Bottom view)



DIN rail Socket



Solder Socket



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.

2) The tolerance without indicating for PCB layout is always ± 0.1 mm.

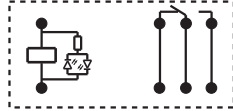
3) The width of the gridding is 2.52mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

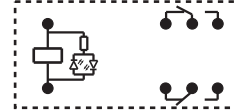
Unit: mm

Wiring Diagram (Bottom view)

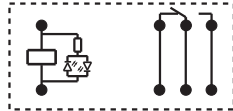
HF115FP/ □□□ -1Z3□



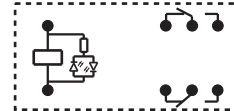
HF115FP/ □□□ -2Z4□



HF115FP/A □□□ -1Z3□



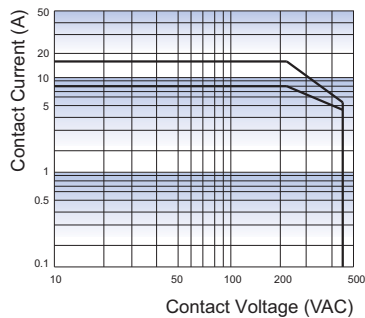
HF115FP/A □□□ -2Z4□



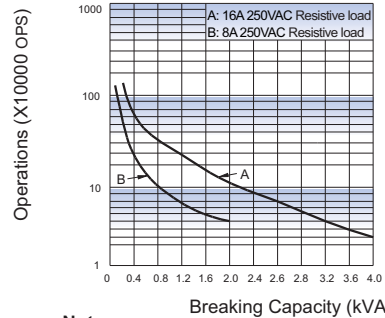
Remark: DC coil with a parallel diode is available but the coil terminal is different in positive or cathode.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



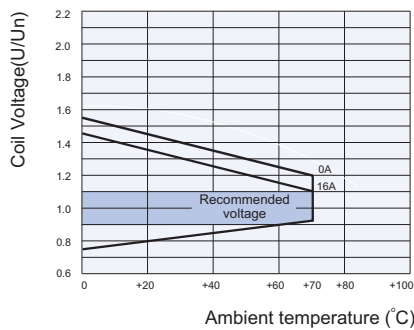
ENDURANCE CURVE



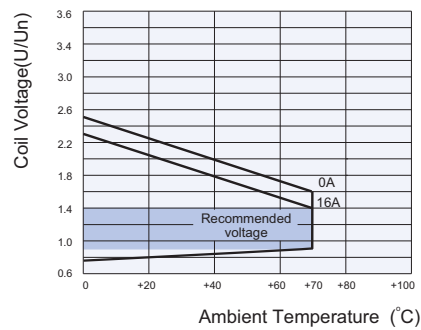
Notes:

- Curve A: 1Z3B type
Curve B: 2Z4B type
- Test conditions:
NO, Flux proofed, Room temp., 1s on 9s off

COIL OPERATING RANGE (AC) *



COIL OPERATING RANGE (DC) *



Notes: * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life. An energising voltage over the above range may damage the insulation of relay coil.

Disclaimer

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HF115FP

MINIATURE POWER RELAY



File No.: E133481



File No.: 116934



Features

- 1 pole 16A, 2 pole 8A , 1 CO & 2 CO contacts
- 5kV dielectric, Creepage distance 8 mm (coil to contacts)
- Meeting VDE 0700, 0631 reinforce insulation
- DC/AC coil type relay , Coil power 400mW / 0.75VA
- Manual test device
- Type with mechanical indicator / electrical indicator
- Sockets available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 13.0 x 25.5) mm

CONTACT DATA

Contact arrangement	1C	2C
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	AgNi	
Contact rating (Res. load)	16A 250VAC	8A 250VAC
Max. switching voltage	440VAC	
Max. switching current	16A	8A
Max. switching power	4000VA	2000VA
Mechanical endurance	DC type: 5 x 10 ⁶ OPS AC type: 1 x 10 ⁶ OPS	
Electrical endurance	1Z3B type: 3 x 10 ⁴ OPS (16A 250VAC, Resistive load, at 70°C, 1s on 9s off) 2Z4B type: 5 x 10 ⁴ OPS (8A 250VAC, Resistive load, at 70°C, 1s on 9s off)	

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2500VAC 1min
Operate time (at nomi. volt.)	DC type: 15ms max.	
Release time (at nomi. volt.)	DC type: 8ms max.	
Temperature rise (at nomi. volt.)	DC type: 60K max. AC type: 85K max.	
Shock resistance *	Functiona	98m/s ²
	Destructive	980m/s ²
Vibration resistance*	NO	10Hz to 150Hz 10g
	NC	length direction: 10Hz to 150Hz 2g other direction: 10Hz to 150Hz 5g
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 70°C	
Termination	PCB	
Unit weight	Approx. 16g	
Mounting distance	5mm, packing of sockets	

Notes: 1) The data shown above are initial values.
2) * Index is not that of relay length direction.
3) UL insulation system: Class A

COIL

Coil power	DC type: Approx. 400mW; AC type: Approx. 0.75VA
------------	--

Notes: The data shown above don't include the power of electronic indicating circuit when the relay picks-up.

COIL DATA

at 23°C

DC type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC 1)	Coil Resistance Ω
12	8.4	1.2	18	360 x (1±10%)
24	16.8	2.4	36	1440 x (1±10%)
48 ²⁾	33.6	4.8	72	5760 x (1±15%)
110 ²⁾	77.0	11.0	165	25200 x (1±15%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.
2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

AC type(50Hz)

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Coil Current mA	Coil DC Resistance Ω
24	18.0	3.6	31.6	350 x (1±10%)
115	86.3	17.25	6.6	8100 x (1±15%)
230	172.5	34.5	3.2	32500 x (1±15%)

SAFETY APPROVAL RATINGS

UL/CUL	1 Form C	16A 250VAC at 70°C
	2 Form C	8A 250VAC at 70°C
VDE	1 Form C	16A 250VAC at 70°C
	2 Form C	8A 250VAC at 70°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

	HF115FP /		024	-1Z	3	B	(XXX)
Type							
Coil voltage	012 to 110: 12, 24, 48, 110 VDC A24 to A230: 24, 115, 230 VAC						
Contact arrangement	1Z: 1 Form C		2Z: 2 Form C				
Version	3: 5.0mm 1 pole 16A		4: 5.0mm 2 pole 8A				
Contact material	B: AgNi						
Special code ²⁾	XXX: Customer special requirement		Nil: Standard				

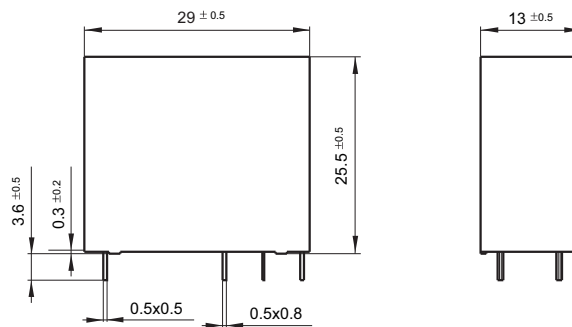
Notes: 1) Flux-proofed relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.

2) The customer special requirement express as special code after evaluating by Hongfa.

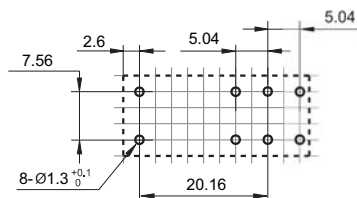
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions



PCB Layout (Bottom view)



DIN rail Socket



Solder Socket



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

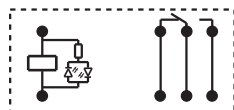
3) The width of the gridding is 2.52mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

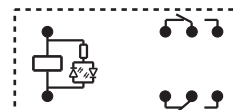
Unit: mm

Wiring Diagram (Bottom view)

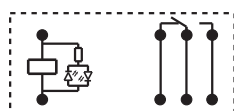
HF115FP/□□□-1Z3□



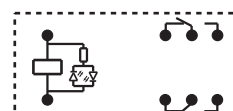
HF115FP/□□□-2Z4□



HF115FP/A□□□-1Z3□



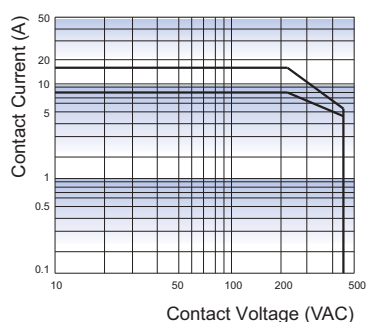
HF115FP/A□□□-2Z4□



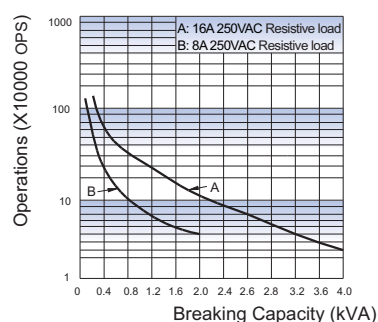
Remark: DC coil with a parallel diode is available but the coil terminal is different in positive or cathode.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



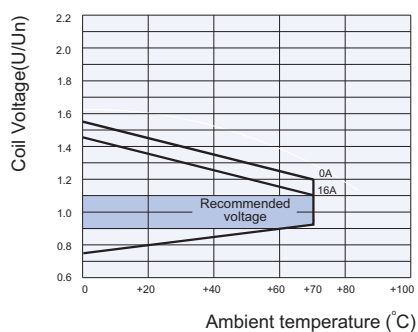
ENDURANCE CURVE



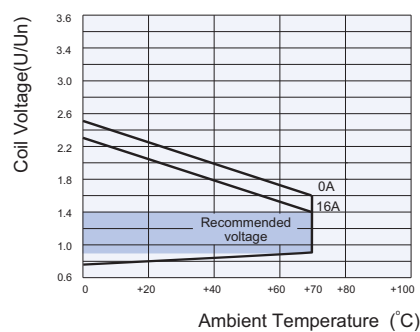
Notes:

- Curve A: 1Z3B type
Curve B: 2Z4B type
- Test conditions:
NO, Flux proofed, Room temp., 1s on 9s off

COIL OPERATING RANGE (AC) *

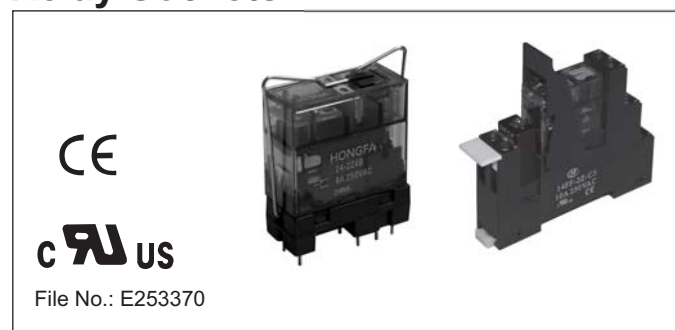


COIL OPERATING RANGE (DC) *



Notes: * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life. An energising voltage over the above range may damage the insulation of relay coil.

Relay Sockets



Features


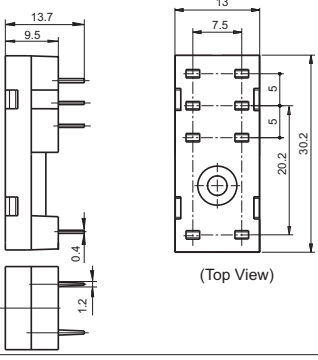
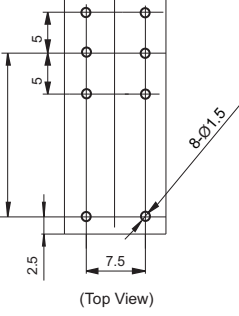

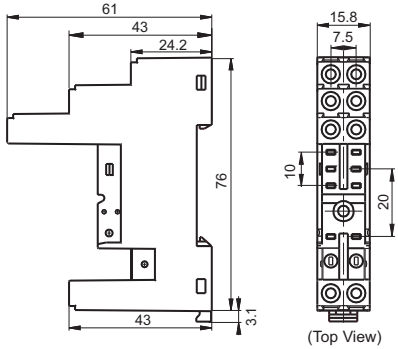
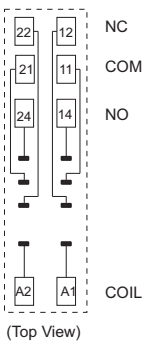
- The dielectric strength can reach 5000VAC(I/O) and the insulation resistance is 1000MΩ
- Three mounting types are available: PCB, screw mounting and DIN rail mounting
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length
14FF-2Z-A1	250VAC	10A	-40 °C to 70 °C	5000VAC	—	—
14FF-2Z-C3	250VAC	10A	-40 °C to 70 °C	5000VAC	0.6N · m	7mm
14FF-2Z-C4	250VAC	10A	-40 °C to 70 °C	5000VAC	—	9mm


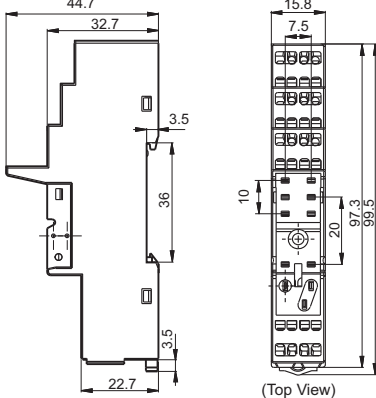
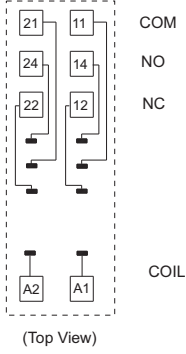
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
14FF-2Z-A1  PCB terminal, PCB or Screw mounting	 (Top View)	 (Top View)	metallic retainer 14FF-H3
14FF-2Z-C3  Screw terminal DIN rail or Screw mounting With finger protection device	 (Top View)	 (Top View)	plastic retainer 14FF-H6 marker 14FF-M1 plug-in module HFAA to HFHU*

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
14FF-2Z-C4  Spring-loaded terminal DIN rail mounting With finger protection device	 <p>(Top View)</p>	 <p>(Top View)</p>	plastic retainer 14FF-H6 marker 14FF-M1 plug-in module HFAA to HFHU*

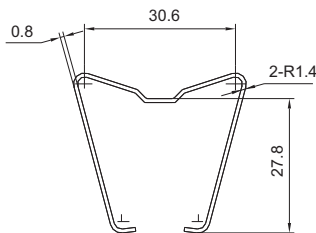
Notes: * Please refer to the product datasheet if plug-in module is required.

DIMENSION OF RELATED COMPOENT (AVAILABLE)

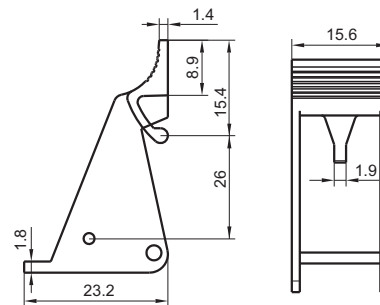
Unit: mm

Retainer

14FF-H3 (Metallic retainer)

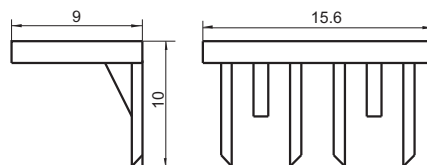


14FF-H6 (Plastic retainer)



Marker

14FF-M1



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. Socket which can be mounted with markers is furnished with a marker; as for other related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. The above is only an example of typical socket and related component type which is suitable to HF115FP relay. If you have any special requirements, please contact us.
4. Main outline dimension(L, W, H) $\geq 50\text{mm}$, tolerance should be $\pm 1\text{mm}$; outline dimension $> 20\text{mm}$ and $< 50\text{mm}$, tolerance should be $\pm 0.5\text{mm}$; outline dimension $\leq 20\text{mm}$, tolerance should be $\pm 0.3\text{mm}$.
5. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

Disclaimer

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HF115F-Q

MINIATURE HIGH POWER RELAY



File No.: E134517



File No.: 116934



File No.: CQC08002028130



Features

- Ambient temperature up to 125 °C
- 5kV dielectric strength (between coil and contacts)
- Low height: 15.7mm
- Creepage distance >8mm
- Meeting VDE 0700, 0631 reinforce insulation
- UL94, V-0 flammability class
- Product in accordance to IEC 60335-1 available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: Vertical: (41.0 x 12.7 x 15.7) mm
Horizontal: (45.0 x 12.7 x 15.7) mm

CONTACT DATA

Contact arrangement	1A, 1B
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂ , AgNi
Contact rating	20A 250VAC
Max. switching voltage	440VAC / 300VDC
Max. switching current	20A
Max. switching power	5000VA
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	1H type: 3 x 10 ⁴ OPS (20A 277VAC, Resistive load, Room temp., 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		8ms max.
Temperature rise (at nomi. volt.)		55K max.
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *		1A: 10Hz to150Hz 10g 1B: 10Hz to150Hz 5g
Humidity		5% to 85% RH
Ambient temperature		-40°C to 125°C
Termination		PCB & QC
Unit weight		Approx. 16g
Construction		Flux proofed

Notes: 1) The data shown above are initial values.
2) * Index is not that of relay length direction.

COIL

Coil power	Approx. 400mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ¹⁾	Coil Resistance Ω
5	3.50	0.5	7.5	62 x (1±10%)
6	4.20	0.6	9.0	90 x (1±10%)
9	6.30	0.9	13.5	202 x (1±10%)
12	8.40	1.2	18.0	360 x (1±10%)
18	12.6	1.8	27.0	810 x (1±10%)
24	16.8	2.4	36.0	1440 x (1±10%)
48 ²⁾	33.6	4.8	72.0	5760 x (1±15%)
60 ²⁾	42.0	6.0	90.0	7500 x (1±15%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

SAFETY APPROVAL RATINGS

VDE	AgNi	1 Form A	18A 250VAC at 105°C 16A 250VAC at 125°C 12A 400VAC at 105°C
		1 Form B	16A 250VAC at 125°C 12A 400VAC at 105°C
UL/CUL	AgNi	1 Form A 1 Form B	20A 277VAC

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

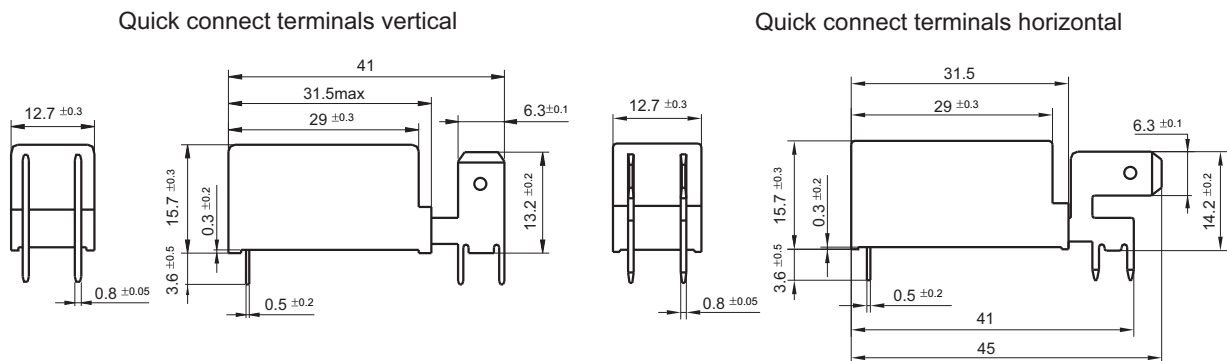
Type	HF115F-Q / 012 -1H 3 T (XXX)
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60VDC
Contact arrangement	1H: 1 Form A 1D: 1 Form B
Terminals	3: Quick connect terminals horizontal Nil: Quick connect terminals vertical
Contact material	T: AgSnO ₂ Nil: AgNi
Special code ³⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) Flux-proofed relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.
 2) Water cleaning or surface process is not suggested after the flux-proofed relays are assembled on PCB.
 3) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

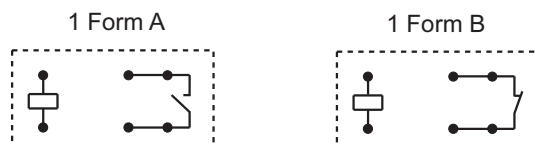
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

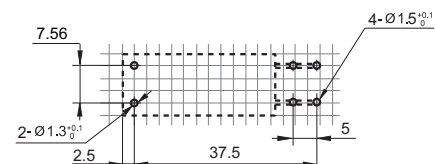
Outline Dimensions



Wiring Diagram (Bottom view)



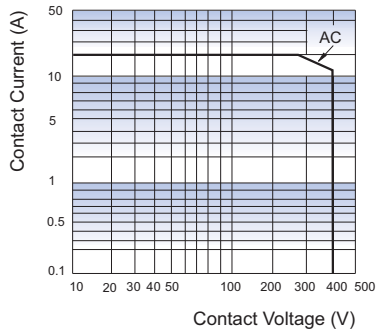
PCB Layout (Bottom view)



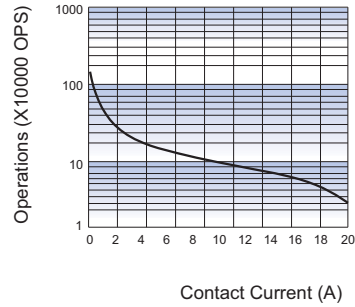
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.
 2) The tolerance without indicating for PCB layout is always ±0.1mm.
 3) The width of the gridding is 2.52mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



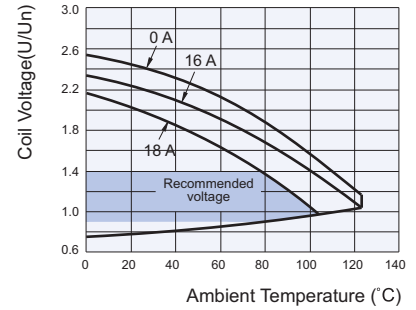
ENDURANCE CURVE



Notes:

- 1) Curve: 1H type
- 2) Test conditions:
NO, 250VAC, Resistive load, Flux proofed,
Room temp., 1s on 9s off.

COIL OPERATING RANGE (DC) *



- Notes:** * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life. An energising voltage over the abover range may damage the insulation of relay coil.

Disclaimer

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HF115F-S

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:116934



File No.:CQC08002028130



Features

- Special contact struction
- Incandescent lamp load: 3000W 230VAC
- 5kV dielectric strength (between coil and contacts)
- Creepage distance: 11mm
- Low height: 15.7 mm
- Meeting reinforce insulation
- Product in accordance to IEC 60335-1 available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.7 x 15.7) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	W+AgSnO ₂
Contact rating	Resistive:16A 250VAC Incandescent Lamp: 3000W 230VAC Inrush current: 165A / 20ms flourescent: 800A/200μs
Max. switching voltage	440VAC
Max. switching current	16A
Max. switching power	4000VA
Mechanical endurance	5 x 10 ⁶ OPS
Electrical endurance	1.2 x 10 ⁴ OPS (3000W 230VAC, Incand escentlamp load, Room temp., 1s on 59s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1250VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. volt.)		10ms max.
Release time (at nomi. volt.)		5ms max.
Temperature rise (at nomi. volt.)		55K max.
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *		10Hz to 150Hz 10g
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 13.5g
Construction		Plastic sealed, Flux proofed

Notes:1) This contact resistance value is tested under the nominal voltage.
2) * Index is not that of relay length direction.
3) The data shown above are initial values.
4) UL insulation system: Class F, Class B.

COIL

Coil power	Approx. 400mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ¹⁾	Coil Resistance Ω
5	3.50	0.5	7.5	62 x (1±10%)
6	4.20	0.6	9.0	90 x (1±10%)
9	6.30	0.9	13.5	202 x (1±10%)
12	8.40	1.2	18	360 x (1±10%)
18	12.6	1.8	27	810 x (1±10%)
24	16.8	2.4	36	1440 x (1±10%)
48 ²⁾	33.6	4.8	72	5760 x (1±15%)
60 ²⁾	42.0	6.0	90	7500 x (1±15%)
110 ²⁾	77.0	11.0	165	25200 x (1±15%)

Notes:1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.
2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

SAFETY APPROVAL RATINGS

VDE	16A 250VAC at 85°C
UL/CUL	16A 250VAC at 85°C Incandescent lamp 3000W 230VAC TV-8 120VAC Incandescent lamp 1200W 120VAC at 50°C Incandescent lamp 1200W 277VAC at 50°C Standard ballast 2.2A 277VAC at 50°C Electronic ballast 16A 277/120VAC 85°C Electronic ballast 12A 277/120VAC 85°C Electronic ballast 8A 277/347VAC 85°C Electronic ballast 15A 120VAC 85°C Electronic ballast 8A 277/347VAC 85°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.
3) Zero crossing control cooperative.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

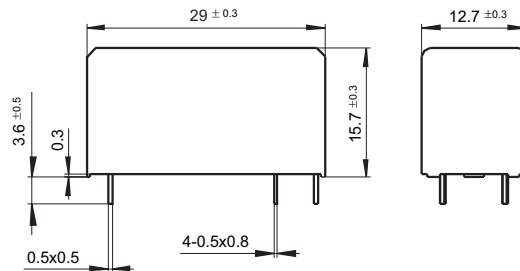
Type	HF115F-S /	12	-H	S	F	(XXX)
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60, 110VDC					
Contact arrangement	H: 1 Form A					
Construction ^{1) 2)}	S: Plastic sealed		Nil: Flux proofed			
Insulation Standard	F: Class F		Nil: Class B			
Special code ³⁾	XXX: Customer special requirement		Nil: Standard			

- Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
- 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 3) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

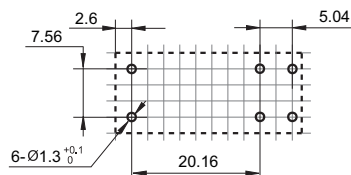
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions



PCB Layout (Bottom view)



Wiring Diagram (Bottom view)



- Remark:** 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.
- 2) The tolerance without indicating for PCB layout is always ± 0.1 mm.
- 3) The width of the gridding is 2.52mm.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF115F-T/TH

MINIATURE HIGH POWER RELAY



File No.: E134517



File No.:116934



File No.:CQC08002028130



Features

- High Temperature: 105°C
- Low height 15.7 mm
- 5kV dielectric strength (between coil and contacts)
- Creepage distance: 10mm
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- UL insulation system: Class F
- Sockets available
- Plastic sealed and flux proofed types available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.7 x 15.7) mm

CONTACT DATA

Contact arrangement	1A, 1C
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	See ordering info.
Contact rating (Res. load)	HF115F-TH: 10A 250VAC HF115F-T: 16A 250VAC
Max. switching voltage	440VAC / 300VDC
Max. switching current	HF115F-TH:10A HF115F-T:16A
Max. switching power	HF115F-TH: 2500VA HF115F-T: 4000VA
Mechanical endurance	1 x 10 ⁷ ops
Electrical endurance	HF115F-T 1H3B type: 5 x 10 ⁴ ops (16A 250VAC, Resistive load, at 105°C, 5s on 5s off) HF115F-TH 1H3B type: 5 x 10 ⁴ ops (10A 250VAC, Resistive load, at 105°C, 5s on 5s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		8ms max.
Temperature rise (at nomi. volt.)		55K max.
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *		10Hz to 150Hz 10g/5g
Humidity		5% to 85% RH
Ambient temperature		-40°C to 105°C
Termination		PCB
Unit weight		Approx. 13.5g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.
2) * Index is not that of relay length direction.

COIL

Coil power	HF115F-TH: Approx. 250mW; HF115F-T: Approx. 400mW
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COIL DATA

at 23°C

Standard type (HF115F-T)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ¹⁾	Coil Resistance Ω
5	3.50	0.5	6.5	62 x (1±10%)
6	4.20	0.6	7.8	90 x (1±10%)
9	6.30	0.9	11.7	202 x (1±10%)
12	8.40	1.2	15.6	360 x (1±10%)
18	12.6	1.8	23.4	810 x (1±10%)
24	16.8	2.4	31.2	1440 x (1±10%)
48 ²⁾	33.6	4.8	62.4	5760 x (1±15%)
60 ²⁾	42.0	6.0	78	7500 x (1±15%)

Sensitive type (HF115F-TH)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ¹⁾	Coil Resistance Ω
5	3.75	0.5	6.5	100 x (1±10%)
6	4.50	0.6	7.8	144 x (1±10%)
9	6.75	0.9	11.7	324 x (1±10%)
12	9.00	1.2	15.6	576 x (1±10%)
18	13.50	1.8	23.4	1296 x (1±10%)
24	18.00	2.4	31.2	2304 x (1±10%)
48 ²⁾	36.00	4.8	62.4	9216 x (1±15%)
60 ²⁾	45.00	6.0	78	12857 x (1±15%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.
2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

SAFETY APPROVAL RATINGS

VDE	HF115F-T-1H(S)3A	18.4A 250VAC at 105°C
	HF115F-TH -1H(S)3	10A 250VAC at 105°C 6A 400VAC at 105°C
	HF115F-T-1H(S)3B	16A 250VAC at 105°C
	HF115F-TH -1H(S)3B	10A 250VAC at 105°C
	HF115F-T-1Z(S)3B	NO: 16A 250VAC at 105°C NC: 5A 250VAC at 105°C
UL/CUL	HF115F-TH -1H(S)3B	10A 277VAC
	HF115F-TH -1H(S)3A	10A 277VAC
	HF115F-T-1H(S)3B	16A 277VAC
	HF115F-T-1H(S)3A	16A 250VAC

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

HF115F-T/TH		012	-1H	S	3	A	(XXX)
Type	HF115F-T: Standard HF115F-TH: High Sensitive						
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60VDC						
Contact arrangement	1H: 1 Form A 1Z: 1 Form C						
Construction ¹⁾²⁾	S: Plastic sealed Nil: Flux proofed						
Version	3: 5.0mm						
Contact material	A: AgSnO ₂ B: AgNi Nil: AgCdO						
Special code ³⁾	XXX: Customer special requirement Nil: Standard						

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

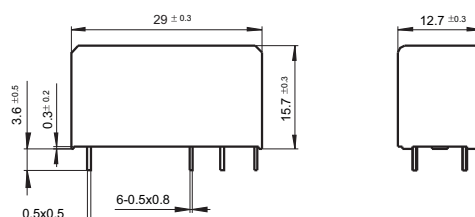
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

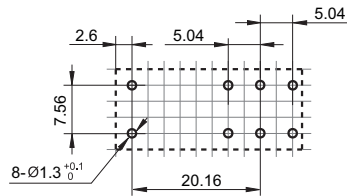
Outline Dimensions



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

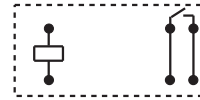
Unit: mm

PCB Layout
(Bottom view)



Wiring Diagram
(Bottom view)

1 Form A



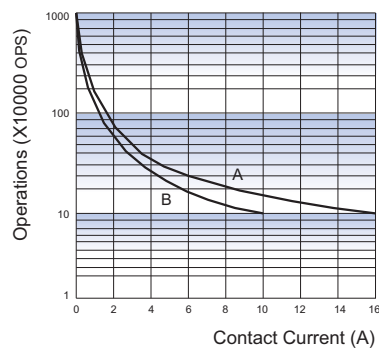
1 Form C



- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
3) The width of the gridding is 2.52mm.

CHARACTERISTIC CURVES

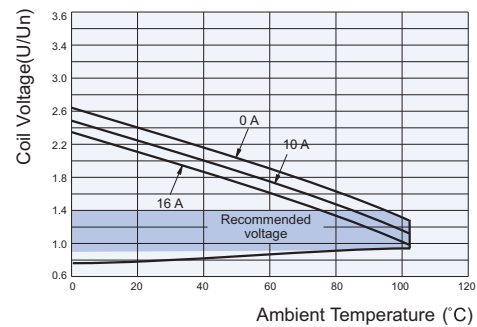
ENDURANCE CURVE



Notes:

- Curve A: HF115F-T 1H3B type
Curve B: HF115F-TH 1H3B type
- Test conditions:
NO, Resistive load, 250VAC, Flux proofed,
Room temp., 1s on 9s off

COIL OPERATING RANGE (DC) *



- Notes:** * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life.
An energising voltage over the above range may damage the insulation of relay coil.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF116F-1

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:R50154722



File No.:CQC09002031231(DC type)



Features

- 30A switching capability
- 4kV dielectric strength (between coil and contacts)
- 3mm contact gap available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (50.5 x 32.9 x 36.0) mm

CONTACT DATA

Contact arrangement	1A	2A
Contact resistance	100mΩ max.(at 1A 24VDC)	
Contact material	AgSnO ₂ , AgCdO	
Contact rating (Res. load)	30A 240VAC 30A 277VAC	25A 240VAC 25A 277VAC
Max. switching voltage	277VAC	
Max. switching current	30A	25A
Max. switching power	8310VA	6925VA
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1H,1HT type: 1 x 10 ⁵ OPS (30A 240VAC, Resistive load, Room temp., 1s on 9s off) 2H,2HT type: 1 x 10 ⁵ OPS (25A 240VAC, Resistive load, Room temp., 1s on 9s off)	

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Operate time (at nomi. volt.)	30ms max.(DC type)	
Release time (at nomi. volt.)	30ms max.(DC type)	
Shock resistance	Functional	Standard:98m/s ² Pulse width 11ms W type:98m/s ² Pulse width 6ms
	Destructive	980m/s ² Pulse width 6ms
Vibration resistance	Standard:10H to 55Hz 1.5mm DA W type:10H to 55Hz 1.0mm DA	
Ambient temperature	-55°C to 70°C	
Humidity	5% to 85% RH	
Termination	PCB, QC, Screw	
Unit weight	Approx. 120g	
Construction	Dust protected	

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B.

COIL

Coil power	DC type: Approx. 1.9W; AC type: Approx. 2.7VA
------------	--

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
3	2.25	0.3	3.3	4.7 x (1±10%)
6	4.50	0.6	6.6	18.8 x (1±10%)
12	9.00	1.2	13.2	75 x (1±10%)
24	18.0	2.4	26.4	300 x (1±10%)
48	36.0	4.8	52.8	1200 x (1±10%)
100	75.0	10.0	110	5200 x (1±10%)
110	82.5	11.0	121	6300 x (1±10%)
200	150	20.0	220	21000 x (1±10%)

Nominal Voltage VAC	Pick-up Voltage VAC	Drop-out Voltage VAC	Max. Voltage VAC*	Coil Resistance Ω
6	4.80	0.90	6.6	18.8 x (1±10%)
12	9.60	1.80	13.2	75 x (1±10%)
24	19.2	3.60	26.4	300 x (1±10%)
48	38.4	7.20	52.8	1200 x (1±10%)
120	96.0	18.0	132	5200 x (1±10%)
220/240	176	33.0	242	20800 x (1±10%)

Notes: * Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	AgSnO ₂	30A 277VAC 1.5HP 120VAC 3HP 240VAC 10A 120VAC Tungsten
	AgCdO	30A 277VAC 1.5HP 120VAC 3HP 240VAC 10A 120VAC Tungsten TV-10 120VAC
TÜV		27A 240VAC COSφ=0.8 25A 240VAC COSφ=0.4 25A 240VAC COSφ=1

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

HF116F-1 / 012 D A -1H T F W C (XXX)			
Type			
Coil voltage	DC: 3VDC to 200VDC AC: 6VAC to 220VAC		
Coil voltage form	D: DC	A: AC	
Mounting	A: Mount	P: PCB	F: Flanged
Contact arrangement	1H:1 Form A 2H: 2 Form A		
Contact material	T: AgSnO ₂	Nil: AgCdO	
Insulation standard	F: Class F	Nil: Class B	
Contact Gap	W: 3.0mm	Nil: Standard	
Capacitor	C: With Capacitor(Only for AC)		Nil: Without Capacitor
Special code ³⁾	XXX: Customer special requirement		Nil: Standard

Notes: 1) Water cleaning or surface process is not suggested after the dust-protected relays are assembled on PCB.

2) Dust-protected relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.

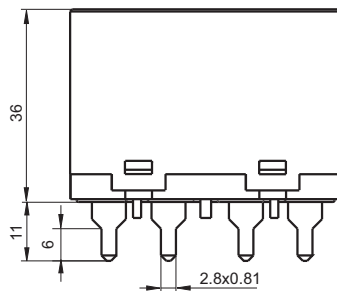
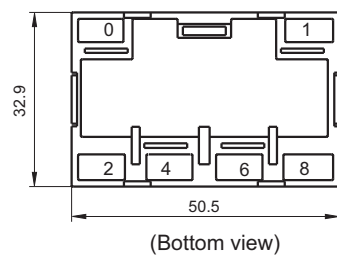
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

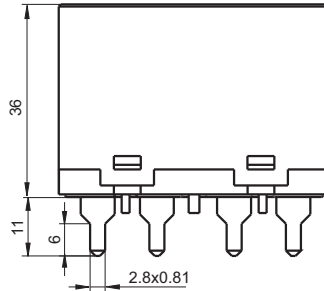
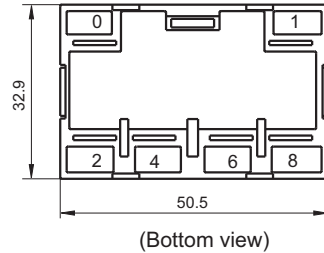
Unit: mm

Outline Dimensions

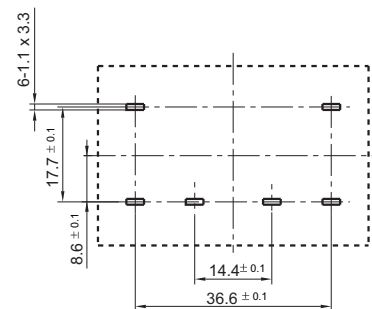
HF116F-1/□□□-□-P-1H-□



HF116F-1/□□□-□-P-2H-□

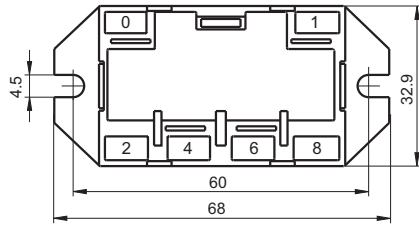


PCB Layout
(Bottom view)

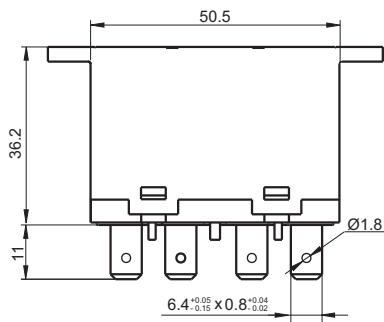


Outline Dimensions

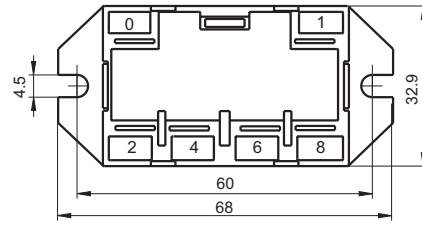
HF116F-1/□□□□-□-F-1H-□



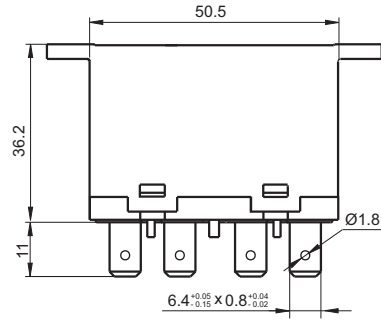
(Bottom view)



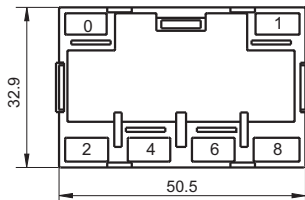
HF116F-1/□□□□-□-F-2H-□



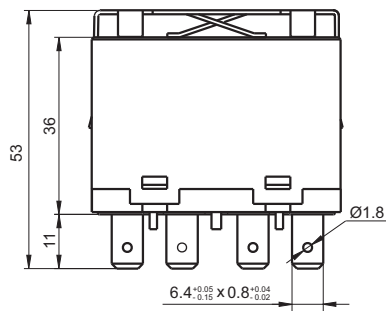
(Bottom view)



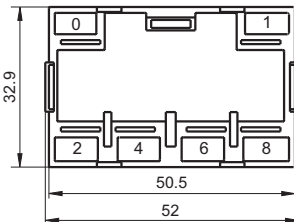
HF116F-1/□□□□-□-A-1H-□



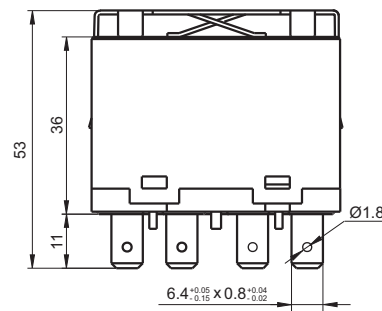
(Bottom view)



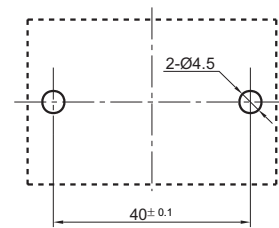
HF116F-1/□□□□-□-A-2H-□



(Bottom view)



Mounting Holes

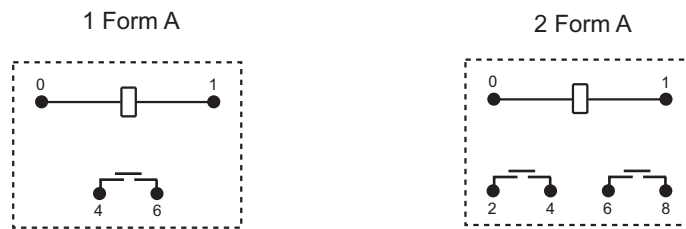


- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

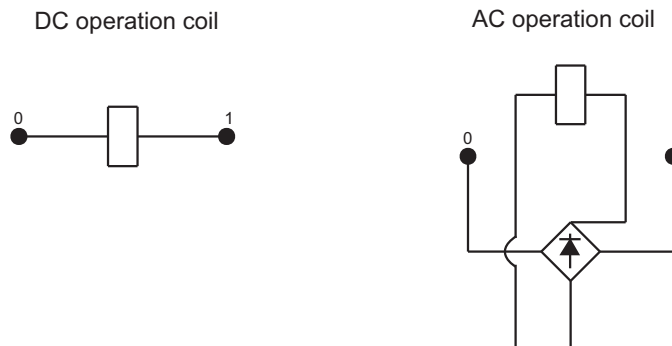
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Wiring Diagram
(Bottom view)

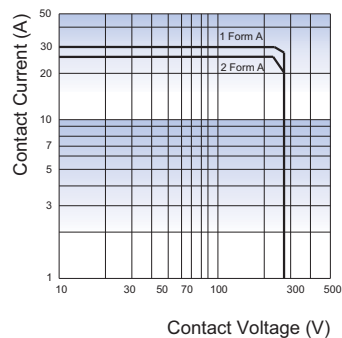


Coil Inner Circuit

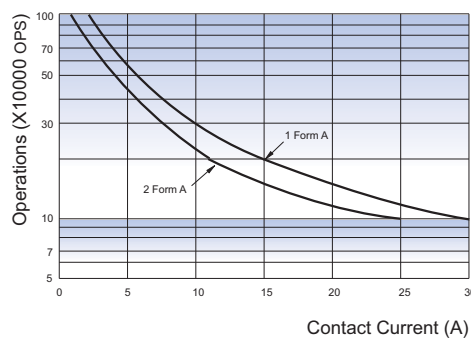


CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



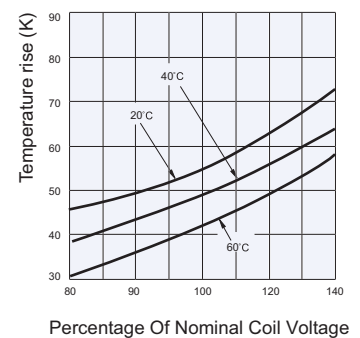
ENDURANCE CURVE



Test conditions:

250VAC, Resistive load, Room temp.,
1s on 9s off

COIL TEMPERATURE RISE



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF116F-2

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:R50154722



File No.:CQC09002031231(DC type)



Features

- 30A switching capability
- 4kV dielectric strength (between coil and contacts)
- 3mm contact gap available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (51.5 x 34.9 x 36.0) mm

CONTACT DATA

Contact arrangement	1A	2A
Contact resistance	100mΩ max.(at 1A 24VDC)	
Contact material	AgSnO ₂ , AgCdO	
Contact rating (Res. load)	30A 240VAC 30A 277VAC	25A 240VAC 25A 277VAC
Max. switching voltage	277VAC	
Max. switching current	30A	25A
Max. switching power	8310VA	6925VA
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1H,1HT type: 1 x 10 ⁵ OPS (30A 240VAC, Resistive load, Room temp., 1s on 9s off) 2H,2HT type: 1 x 10 ⁵ OPS (25A 240VAC, Resistive load, Room temp., 1s on 9s off)	

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts 4000VAC 1min
	Between open contacts 2000VAC 1min
Operate time (at nomi. vot.)	30ms max.(DC type)
Release time (at nomi. vot.)	30ms max.(DC type)
Shock resistance	Functional Standard:98m/s ² Pulse width 11ms W type:98m/s ² Pulse width 6ms
	Destructive 980m/s ² Pulse width 6ms
Vibration resistance	Standard:10H to 55Hz 1.5mm DA W type:10H to 55Hz 1.0mm DA
Ambient temperature	-55°C to 70°C
Humidity	5% to 85% RH
Termination	PCB, QC, Screw
Unit weight	Approx.120g
Construction	Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) For the plastic sealed type, please open two vent holes after installing relay (or cleansing PCB board) in order to increase the relay reliability.
4) UL insulation system: Class F, Class B.

COIL

Coil power	DC type: Approx. 1.9W; AC type: Approx. 2.7VA
------------	--

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
3	2.25	0.3	3.3	4.7 x (1±10%)
6	4.50	0.6	6.6	18.8 x (1±10%)
12	9.00	1.2	13.2	75 x (1±10%)
24	18.0	2.4	26.4	300 x (1±10%)
48	36.0	4.8	52.8	1200 x (1±10%)
100	75.0	10.0	110	5200 x (1±10%)
110	82.5	11.0	121	6300 x (1±10%)
200	150	20.0	220	21000 x (1±10%)

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Max. Voltage VAC*	Coil Resistance Ω
6	4.80	0.90	6.6	18.8 x (1±10%)
12	9.60	1.80	13.2	75 x (1±10%)
24	19.2	3.60	26.4	300 x (1±10%)
48	38.4	7.20	52.8	1200 x (1±10%)
120	96.0	18.0	132	5200 x (1±10%)
220/240	176	33.0	242	20800 x (1±10%)

Notes: * Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	AgSnO ₂	30A 277VAC 1.5HP 120VAC 3HP 240VAC 10A 120VAC Tungsten
	AgCdO	30A 277VAC 1.5HP 120VAC 3HP 240VAC 10A 120VAC Tungsten TV-10 120VAC
TÜV		27A 240VAC COSØ=0.8
		25A 240VAC COSØ=0.4
		25A 240VAC COSØ=1

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

Type	HF116F-2 / 012 D L -1H S T F W (XXX)						
Coil voltage	DC: 3VDC to 200VDC AC: 6VAC to 220VAC						
Coil input	D: DC		A: AC				
Mounting	P: PCB		L: Screw				
Contact arrangement	1H: 1 Form A		2H: 2 Form A				
Construction ¹⁾²⁾	S: Plastic sealed		Nil: Flux proofed				
Contact material ³⁾	T: AgSnO ₂		Nil: AgCdO				
Insulation standard	F: Class F		Nil: Class B				
Contact Gap	W: 3.0mm		Nil: Standard				
Special code ⁴⁾	XXX: Customer special requirement			Nil: Standard			

- Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc).
- 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 3) For the applications of motor load, capacitive load and high inrush current, AgSnO₂ contact material is recommended. For the applications of resistive load or low inductive load, AgCdO contact material is recommended.
- 4) The customer special requirement express as special code after evaluating by Hongfa.

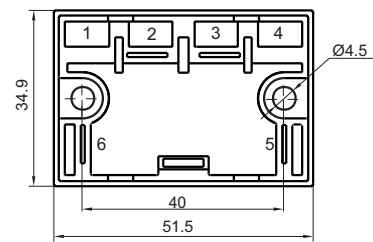
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

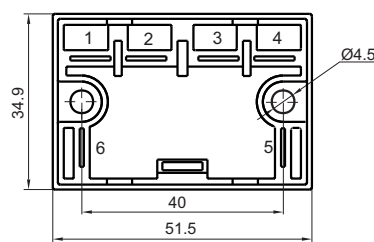
Mounting Holes

HF116F-2/□□□□ -□ -L-1H-□

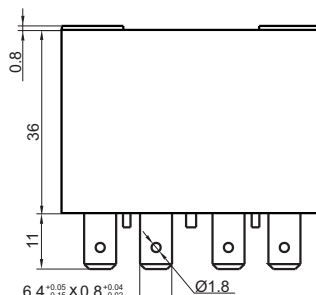
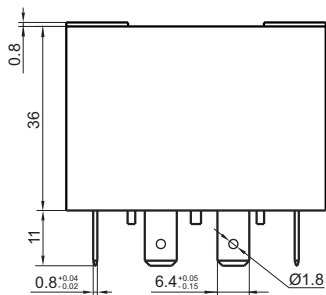
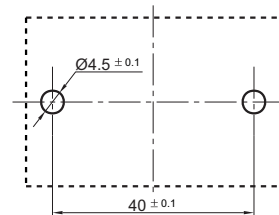


(Bottom view)

HF116F-2/□□□□ -□ -L-2H-□



(Bottom view)

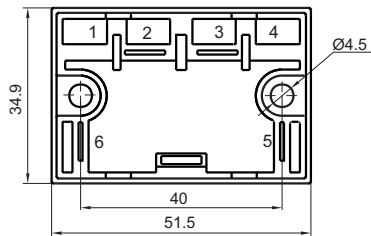


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

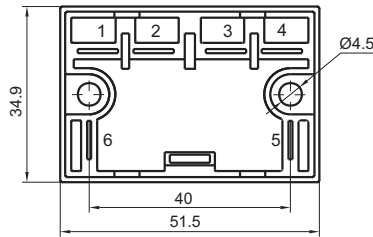
Outline Dimensions

HF116F-2/□□□□-□-P-1H-□

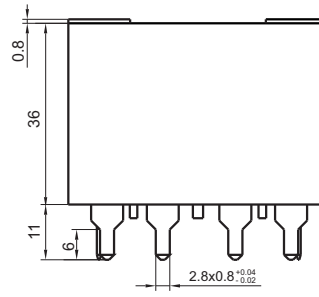
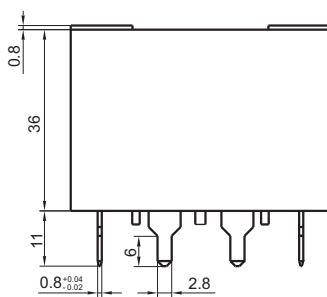


(Bottom view)

HF116F-2/□□□□-□-P-2H-□

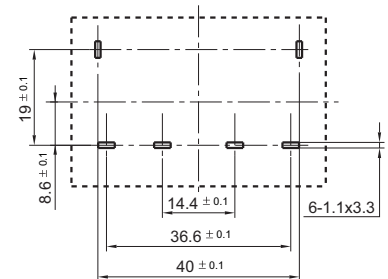


(Bottom view)



PCB Layout

(Bottom view)

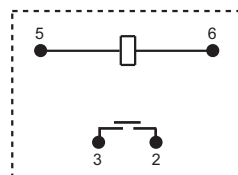


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

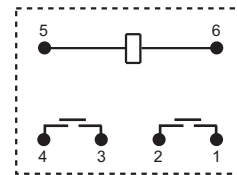
Wiring Diagram

(Bottom view)

1 Form A



2 Form A

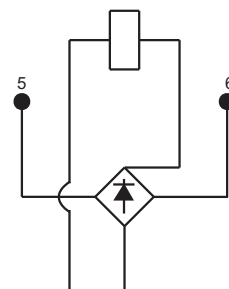


Coil Inner Circuit

DC operation coil

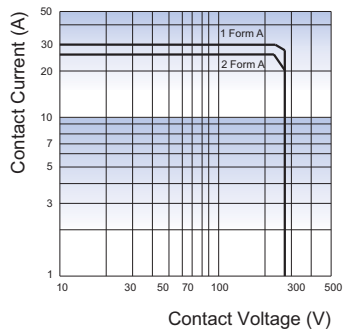


AC operation coil

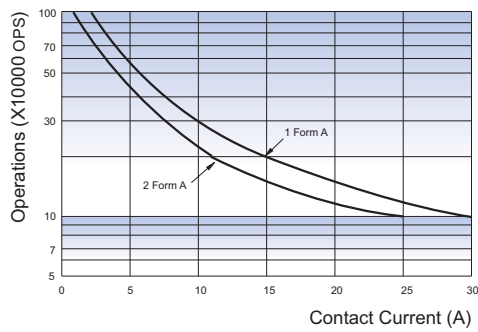


CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER

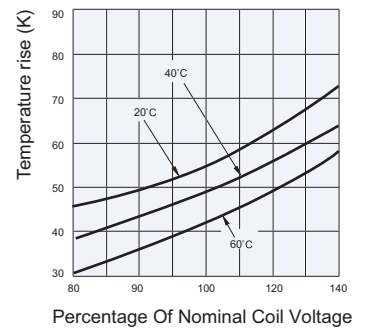


ENDURANCE CURVE



Test conditions:
250VAC, Resistive load, Flux proofed,
Room temp., 1s on 9s off

COIL TEMPERATURE RISE



Disclaimer

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HF116F-3

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:R50154722



File No.:CQC09002031231(DC type)



Features

- 30A switching capability
- 4kV dielectric strength (between coil and contacts)
- 3mm contact gap available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (50.5 x 32.9 x 51.0) mm

CONTACT DATA

Contact arrangement	1A	2A
Contact resistance	100mΩ max.(at 1A 24VDC)	
Contact material	AgSnO ₂ , AgCdO	
Contact rating (Res. load)	30A 240VAC 30A 277VAC	25A 240VAC 25A 277VAC
Max. switching voltage	277VAC	
Max. switching current	30A	25A
Max. switching power	8310VA	6925VA
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1H, 1HT type: 1 x 10 ⁵ OPS (30A 240VAC, Resistive load, Room temp., 1s on 9s off)	
	2H, 2HT type: 1 x 10 ⁵ OPS (25A 240VAC, Resistive load, Room temp., 1s on 9s off)	

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Operate time (at nomi. volt.)	30ms max.(DC type)	
Release time (at nomi. volt.)	30ms max.(DC type)	
Shock resistance	Functional	Standard:98m/s ² Pulse width 11ms W type:98m/s ² Pulse width 6ms
	Destructive	980m/s ² Pulse width 6ms
Vibration resistance	Standard:10H to 55Hz 1.5mm DA W type:10H to 55Hz 1.0mm DA	
Ambient temperature	-55°C to 70°C	
Humidity	5% to 85% RH	
Termination	PCB, QC, Screw	
Unit weight	Approx.120g	
Construction	Dust protected	

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B.

COIL

Coil power	DC type: Approx. 1.9W; AC type: Approx. 2.7VA
------------	--

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
3	2.25	0.3	3.3	4.7 x (1±10%)
6	4.50	0.6	6.6	18.8 x (1±10%)
12	9.00	1.2	13.2	75 x (1±10%)
24	18.0	2.4	26.4	300 x (1±10%)
48	36.0	4.8	52.8	1200 x (1±10%)
100	75.0	10.0	110	5200 x (1±10%)
110	82.5	11.0	121	6300 x (1±10%)
200	150	20.0	220	21000 x (1±10%)

Nominal Voltage VAC	Pick-up Voltage VAC max.	Drop-out Voltage VAC min.	Max. Voltage VAC*	Coil Resistance Ω
6	4.80	0.90	6.6	18.8 x (1±10%)
12	9.60	1.80	13.2	75 x (1±10%)
24	19.2	3.60	26.4	300 x (1±10%)
48	38.4	7.20	52.8	1200 x (1±10%)
120	96.0	18.0	132	5200 x (1±10%)
220/240	176	33.0	242	20800 x (1±10%)

Notes: * Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	AgSnO ₂	30A 277VAC 1.5HP 120VAC, 3HP 240VAC 10A 120VAC Tungsten 30A 277VAC
	AgCdO	1.5HP 120VAC, 3HP 240VAC 10A 120VAC Tungsten TV-10 120VAC
TÜV		27A 240VAC COSØ =0.8
		25A 240VAC COSØ =0.4
		25A 240VAC COSØ =1

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

HF116F-3 / 012 D F -1H T F W C (XXX)		
Type		
Coil voltage	DC: 3VDC to 200VDC AC: 6VAC to 240VAC	
Coil voltage form	D: DC	A: AC
Mouting	A: Mount	F: Flanged
Contact arrangement	1H: 1 Form A	2H: 2 Form A
Contact material	T: AgSnO ₂	Nil: AgCdO
Insulation standard	F: Class F	Nil: Class B
Contact Gap	W: 3.0mm	Nil: Standard
Capacitor	C: With Capacitor(Only for AC) Nil: Without Capacitor	
Special code ³⁾	XXX: Customer special requirement	Nil: Standard

Notes: 1) Water cleaning or surface process is not suggested after the dust-protected relays are assembled on PCB.

2) dust-protected relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.

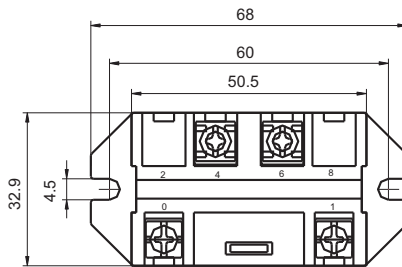
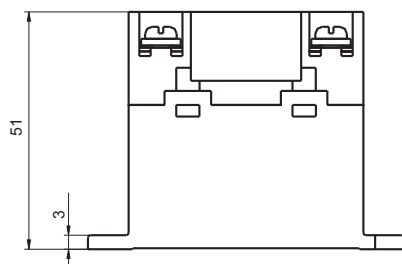
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

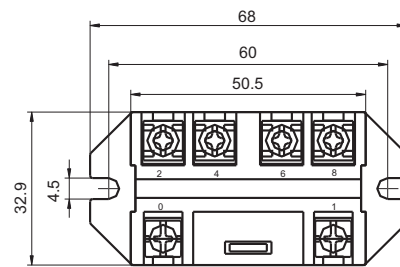
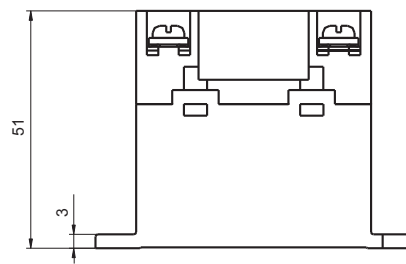
Outline Dimensions

HF116F-3/□□□□-F-1H



(Bottom view)

HF116F-3/□□□□-F-2H

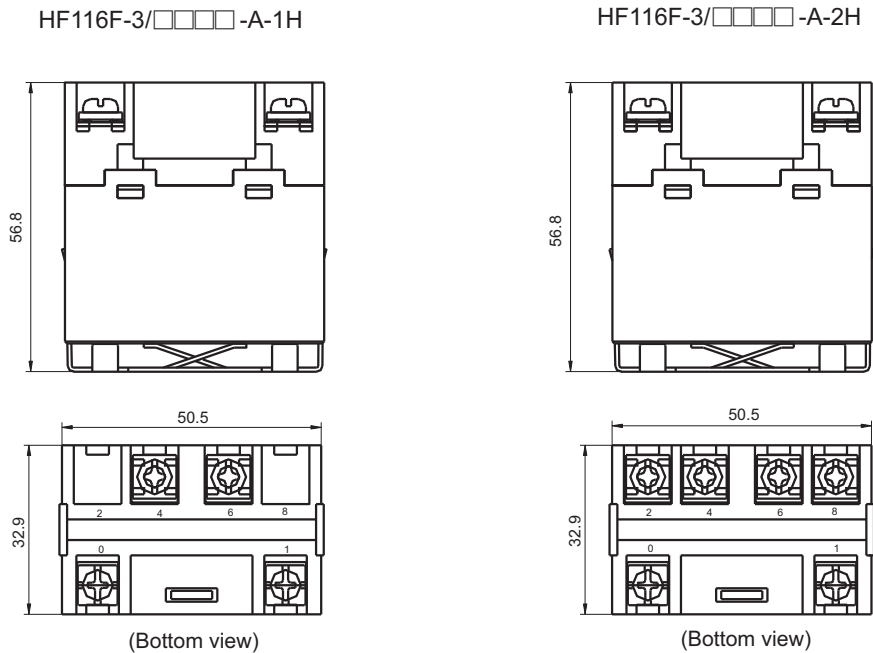


(Bottom view)

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

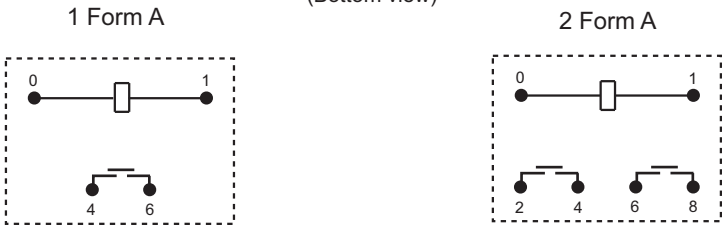
Unit: mm

Outline Dimensions

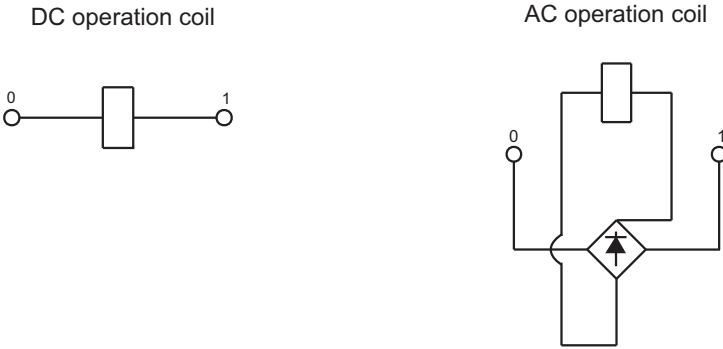


Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Wiring Diagram (Bottom view)

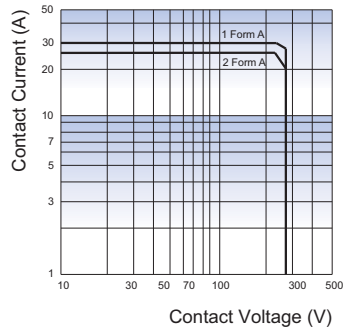


Coil Inner Circuit

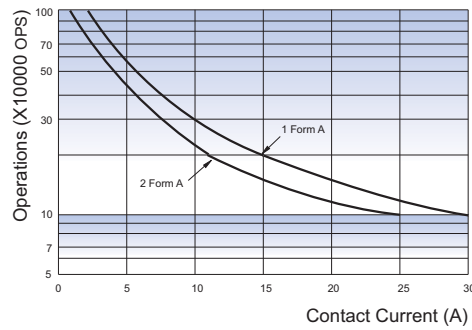


CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



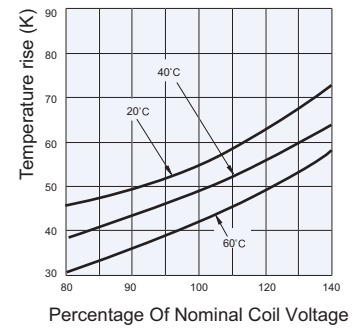
ENDURANCE CURVE



Test conditions:

250VAC, Resistive load,
Room temp., 1s on 9s off

COIL TEMPERATURE RISE



Disclaimer

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HF116F-80

HIGH POWER RELAY



File No.:E134517



File No.:R50154722



Features

- 80A switching capability
- Applicable to solar photovoltaic inverter
- Applicable to UPS
- 3mm contact gap
(compliant to European Photovoltaic Standard VDE0126, compliant to IEC 62109-2-2011)
- 4kV dielectric strength(between coil and contacts)
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (50.5 x 32.9 x 36) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	10mΩ max.(at 10A 13.5VDC)
Contact material	AgSnO ₂ , AgNi
Contact rating (Res. load)	80A 250VAC
Max. switching voltage	277VAC
Max. switching current	90A
Max. load current	100A 15min at room temp.
Max. switching power	24930VA
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	6 x 10 ³ OPS
	(80A 250VAC, at 85°C, 1s on 9s off)
	6 x 10 ³ OPS
	(80A 60VDC, at 85°C, 1s on 9s off)

COIL

Coil power	Approx. 3.2W
Holding voltage	60%~120%U _N (at 23°C) 70%~95%U _N (at 85°C)

Notes: 1)The coil holding voltage is the voltage applied to coil 200ms after the rated voltage.
2)To avoid overheating and burning, the coil can not be consistently applied to with voltage larger than maximum holding voltage.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between open contacts	2000VAC 1min
	Between coil & contacts	4000VAC 1min
Surge Voltage		6kV (1.2/50μs)
Operate time (at nomi. volt.)		30ms max.
Release time (at nomi. volt.)		30ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance*		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination ²⁾		PCB
Unit weight		Approx. 120g
Construction		Dust protected

Notes: 1) The data shown above are initial values;
2) It does not allow using quick-connect terminations.
3)*Index is not in relay width direction.

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.3	3.3	2.8 x (1±10%)
6	4.50	0.6	6.6	11.3 x (1±10%)
9	6.75	0.9	9.9	25 x (1±10%)
12	9.00	1.2	13.2	45 x (1±10%)
24	18.0	2.4	26.4	180 x (1±10%)
48	36.0	4.8	52.8	720 x (1±10%)

Notes: *Maximun voltage refers to the maximun voltage which relay coil could endure in a short period of time.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

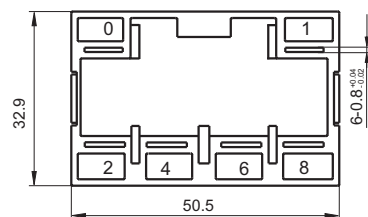
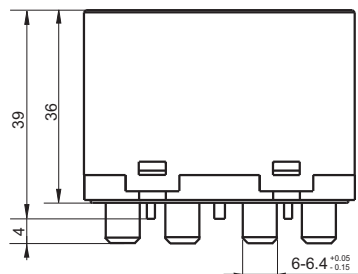
	HF116F-80/		12	-1H	T	F	(XXX)
Type							
Coil voltage	3, 6, 9, 12, 24, 48VDC						
Contact arrangement	1H:1 Form A						
Contact material	T: AgSnO ₂		Nil: AgNi				
Insulation standard	F: Class F						
Special code ¹⁾	XXX: Customer special requirement		Nil: Standard				

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

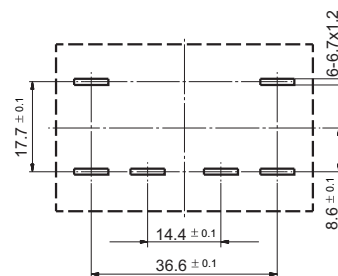
Outline Dimensions



(Bottom view)

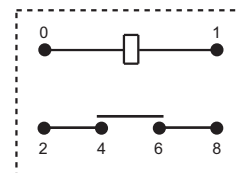
PCB Layout

(Bottom view)



Wiring Diagram

(Bottom view)



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

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HF116F-G

SOLAR RELAY

CRUS

File No.:E134517



File No.:R50154722



Features

- 50A switching capability
- Applicable to inverter used for photovoltaic power generation systems
- 4kV dielectric strength(between coil and contacts)
- 3mm contact gap
(compliant to European Photovoltaic Standard VDE0126, compliant to IEC 62109-2-2011)
- 1A and 2A configuration available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: G1:(50.5 x 32.9 x 36.0) mm
G2:(51.5 x 34.9 x 36.0) mm
G3:(51.5 x 34.9 x 36.0) mm

CONTACT DATA

Contact arrangement	1A, 2A
Contact resistance	10mΩ max.(at 10A 13.5VDC)
Contact material	AgSnO ₂ , AgNi
Contact rating (Res. load)	50A 277VAC
Max. switching voltage	277VAC
Max. switching current	55A
Max. switching power	15235VA
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	3 x 10 ⁴ OPS (50A 277VAC, at room temp, 1s on 9s off)

COIL

Coil power	Approx. 3.2W
Holding voltage	60%~120%U _N (at 23°C) 70%~95%U _N (at 85°C)

Notes: 1)The coil holding voltage is the voltage applied to coil 200ms after the rated voltage.
2)To avoid overheating and burning, the coil can not be consistently applied to with voltage larger than maximum holding voltage.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between open contacts	2000VAC 1min
	Between coil & contacts	4000VAC 1min
	Between contact sets	2000VAC 1min
Surge Voltage		6kV (1.2/50μs)
Operate time (at nomi. volt.)		30ms max.
Release time (at nomi. volt.)		30ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance*	Functional	10Hz to 55Hz 1.5mm DA
	Destructive	10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination ²⁾		PCB
Unit weight		Approx. 120g
Construction		G1: Dust protected; G2, G3: Flux proofed

Notes: 1) The data shown above are initial values.
2) It does not allow using quick-connect terminations.
3)*Index is not in relay width direction.

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.25	0.3	3.3	2.8 x (1±10%)
6	4.50	0.6	6.6	11.3 x (1±10%)
9	6.75	0.9	9.9	25 x (1±10%)
12	9.00	1.2	13.2	45 x (1±10%)
24	18.0	2.4	26.4	180 x (1±10%)
48	36.0	4.8	52.8	720 x (1±10%)

Notes: *Maximun voltage refers to the maximun voltage which relay coil could endure in a short period of time.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.10

ORDERING INFORMATION

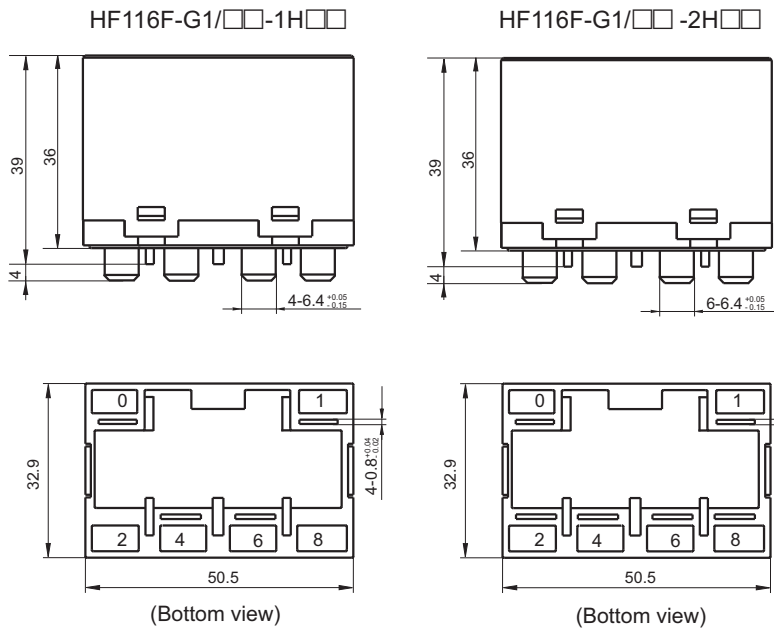
HF116F-G1/		12	-1H	T	F	(XXX)
Type	G1: Type 1 G2: Type 2 G3: Type 3					
Coil voltage	3, 6, 9, 12, 24, 48VDC					
Contact arrangement	1H: 1 Form A 2H: 2 Form A					
Contact material	T: AgSnO ₂ Nil: AgNi					
Insulation standard	F: Class F					
Special code ¹⁾	XXX: Customer special requirement Nil: Standard					

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

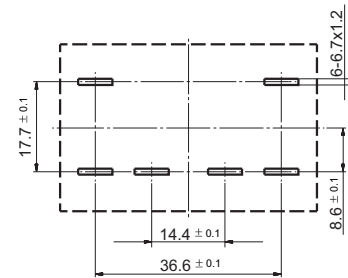
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions



PCB Layout
(Bottom view)

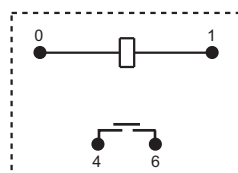


Unit: mm

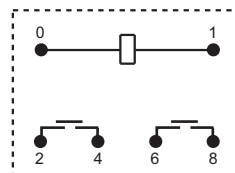
Wiring Diagram (Bottom View)

G1 Type

1 Form A

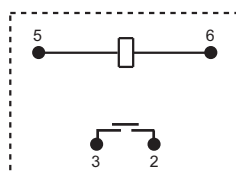


2 Form A

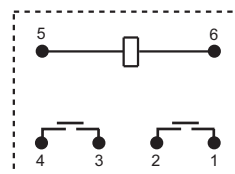


G2, G3 Type

1 Form A



2 Form A



Disclaimer

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HF118F

MINIATURE HIGH POWER RELAY



File No.: E134517



File No.: 40010480



File No.: CQC09002035071



Features

- 10A switching capability
- 5kV dielectric strength (between coil and contacts)
- Low height: 12.5 mm
- Creepage distance >8mm
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- UL insulation system: Class F
- Sockets available
- Plastic sealed and flux proofed types available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (28.5 x 10.1 x 12.5) mm

CONTACT DATA

Contact arrangement	1A, 1B, 1C
Contact material	See ordering info.
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact rating (Res. load)	10A 250VAC/30VDC
Max. switching voltage	440VAC / 125VDC
Max. switching current	10A
Max. switching power	2500VA / 300W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	1H type: 1 x 10 ⁵ OPS (AgNi, 8A 250VAC, Resistive load, at 85°C, 5s on 5s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. vot.)		10ms max.
Release time (at nomi. vot.)		5ms max.
Temperature rise (at nomi. Volt.)		55K max.
Shock resistance *	Functional	NC: 49m/s ² NO: 98m/s ²
	Destructive	980m/s ²
Vibration resistance *	NC (no coil voltage)	10Hz to 55Hz 0.8mm DA
	NO	10Hz to 55Hz 1.65mm DA
Ambient temperature		-40°C to 85°C
Humidity		5% to 85% RH
Termination		PCB
Unit weight		Approx. 8g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.

2) * Index is not in relay length direction.

COIL

Coil power	Approx. 220mW to 290mW
------------	------------------------

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ¹⁾	Coil Resistance Ω
5	3.50	0.5	7.5	113 x (1±10%)
6	4.20	0.6	9.0	164 x (1±10%)
9	6.30	0.9	13.5	360 x (1±10%)
12	8.40	1.2	18.0	620 x (1±10%)
18	12.60	1.8	27.0	1295 x (1±10%)
24	16.80	2.4	36.0	2350 x (1±15%)
48 ²⁾	33.60	4.8	72.0	8000 x (1±15%)
60 ²⁾	42.00	6.0	90.0	12500 x (1±15%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.10

SAFETY APPROVAL RATINGS

UL/CUL (AgNi, AgSnO ₂)	version 1,3,5,6	10A 250VAC
		10A 30VDC
VDE (AgNi, AgNi+Au)	1H (;S) (1;3;5) (-;G)	B300
		R300
VDE (AgSnO ₂ , AgSnO ₂ +Au)	1H (-;S) (1;3;5), T.(-;G)	1/2HP 240VAC (NO only)
		AgSnO ₂ : 1/3HP 120VAC (NO only)
VDE (AgNi, AgNi+Au)	1D (;S) (1;3;6) (-;G)	8A 250VAC at 85°C
	1Z (-;S) (1;3) (-;G)	8A 250VAC at 85°C
VDE (AgSnO ₂ , AgSnO ₂ +Au)	1D (-;S) (1;3;6), T.(-;G)	8A 250VAC at 85°C
	1Z (-;S) (1;3), T.(-;G)	8A 250VAC at 85°C
VDE (AgSnO ₂ , AgSnO ₂ +Au)	1H (-;S) (1;3;5), T.(-;G)	AC-15 (Make: 30A 250VAC COS Ø=0.7 at 85°C Break: 3A 250VAC COS Ø=0.4 at 85°C)
	1Z (-;S) (1;3), T.(-;G)	NO: AC-15 (Make: 30A 250VAC COS Ø=0.7 at 85°C Break: 3A 250VAC COS Ø=0.4 at 85°C)

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type		HF118F / 012 -1H S 1 G (XXX)
Coil voltage		5, 6, 9, 12, 18, 24, 48, 60VDC
Contact arrangement		1H: 1 Form A 1D: 1 Form B 1Z: 1 Form C
Construction ¹⁾²⁾		S: Plastic sealed Nil: Flux proofed
Version (See Wiring Diagram below)		1: 3.2mm 1 pole 8A 3: 3.2mm 1 pole 10A, double pinning 5: 5mm 8A, only 1 Form A 6: 5mm 8A, only 1 Form B
Contact material ³⁾		T: AgSnO ₂ G: AgNi+Au plated TG: AgSnO ₂ +Au plated Nil: AgNi
Special code ⁴⁾		XXX: Customer special requirement Nil: Standard

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.

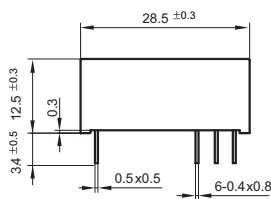
4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (335) stands for product in accordance to IEC 60335-1 (GWT); e.g.(253) stands for Reflow soldering version.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

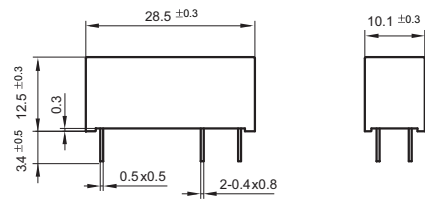
Unit: mm

Outline Dimensions

3.2mm pinning



5mm pinning



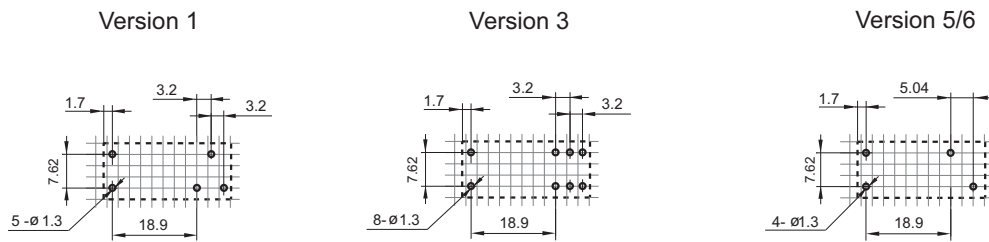
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Wiring Diagram (Bottom view)



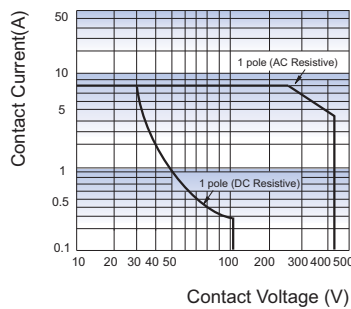
PCB Layout (Bottom view)



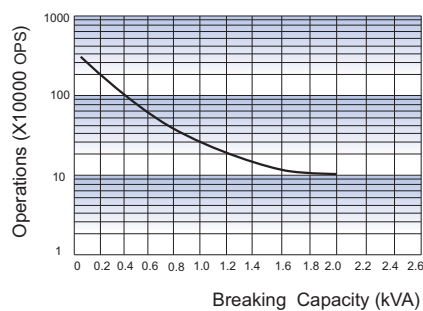
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.54mm .

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



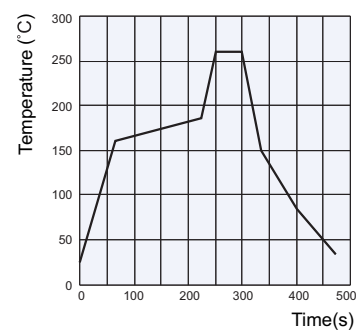
ENDURANCE CURVE



Notes:

- 1) Curve: 1Z1 type
- 2) Test conditions:
 NO, Resistive load, 250VAC
 Flux proofed, Room temp., 1s on 9s off.

REFLOW WELDING TEMPERATURE
(Reflow soldering version)



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF118F

MINIATURE HIGH POWER RELAY



File No.: E134517



File No.: 40010480



File No.: CQC09002035071



Features

- 10A switching capability
- 5kV dielectric strength (between coil and contacts)
- Low height: 12.5 mm
- Creepage distance >8mm
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- UL insulation system: Class F
- Sockets available
- Plastic sealed and flux proofed types available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (28.5 x 10.1 x 12.5) mm

CONTACT DATA

Contact arrangement	1A, 1B, 1C
Contact material	See ordering info.
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact rating (Res. load)	10A 250VAC/30VDC
Max. switching voltage	440VAC / 125VDC
Max. switching current	10A
Max. switching power	2500VA / 300W
Mechanical endurance	1 x 10 ⁷ ops
Electrical endurance	1H type: 1 x 10 ⁵ ops (8A 250VAC, Resistive load, AgNi, at 85°C, 5s on 5s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. vot.)		10ms max.
Release time (at nomi. vot.)		5ms max.
Temperature rise (at nomi. Volt.)		55K max.
Shock resistance *	Functional	NC: 49m/s ² NO: 98m/s ²
	Destructive	980m/s ²
Vibration resistance *	NC (no coil voltage)	10Hz to 55Hz 0.8mm DA
	NO	10Hz to 55Hz 1.65mm DA
Ambient temperature		-40°C to 85°C
Humidity		5% to 85% RH
Termination		PCB
Unit weight		Approx. 8g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.

2) * Index is not in relay length direction.

COIL

Coil power	Approx. 220mW to 290mW
------------	------------------------

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ¹⁾	Coil Resistance Ω
5	3.50	0.5	7.5	113 x (1±10%)
6	4.20	0.6	9.0	164 x (1±10%)
9	6.30	0.9	13.5	360 x (1±10%)
12	8.40	1.2	18.0	620 x (1±10%)
18	12.60	1.8	27.0	1295 x (1±10%)
24	16.80	2.4	36.0	2350 x (1±15%)
48 ²⁾	33.60	4.8	72.0	8000 x (1±15%)
60 ²⁾	42.00	6.0	90.0	12500 x (1±15%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.10

SAFETY APPROVAL RATINGS

UL/CUL (AgNi, AgSnO ₂)	version 1,3,5,6	10A 250VAC at 85°C
		10A 30VDC at 85°C
VDE (AgNi, AgNi+Au)	1H (;S) (1;3;5) (-;G)	B300 at 85°C
		R300 at 85°C
		1/2HP 240VAC at 85°C
		AgSnO ₂ : 1/3HP 120VAC at 85°C
		8A 250VAC at 85°C
VDE (AgNi, AgNi+Au)	1D (;S) (1;3;6) (-;G)	8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
VDE (AgSnO ₂ , AgSnO ₂ +Au)	1Z (-;S) (1;3) (-;G)	8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
VDE (AgSnO ₂ , AgSnO ₂ +Au)	1H (-;S) (1;3;5), T.(-;G)	8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
VDE (AgSnO ₂ , AgSnO ₂ +Au)	1D (-;S) (1;3;6), T.(-;G)	8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
VDE (AgSnO ₂ , AgSnO ₂ +Au)	1Z (-;S) (1;3), T.(-;G)	8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
VDE (AgSnO ₂ , AgSnO ₂ +Au)	1H (-;S) (1;3;5), T.(-;G)	8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
VDE (AgSnO ₂ , AgSnO ₂ +Au)	1D (-;S) (1;3;6), T.(-;G)	8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
VDE (AgSnO ₂ , AgSnO ₂ +Au)	1Z (-;S) (1;3), T.(-;G)	8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C
		8A 250VAC at 85°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF118F / 012 -1H S 1 G (XXX)
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60VDC
Contact arrangement	1H: 1 Form A 1D: 1 Form B 1Z: 1 Form C
Construction ¹⁾²⁾	S: Plastic sealed Nil: Flux proofed
Version (See Wiring Diagram below)	1: 3.2mm 1 pole 8A 3: 3.2mm 1 pole 10A, double pinning 5: 5mm 8A, only 1 Form A 6: 5mm 8A, only 1 Form B
Contact material ³⁾	T: AgSnO ₂ G: AgNi+Au plated TG: AgSnO ₂ +Au plated Nil: AgNi
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.

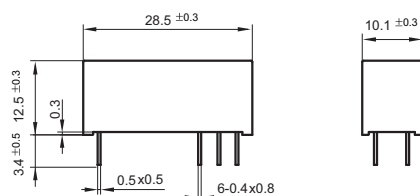
4) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT). e.g.(253) stands for Reflow soldering version.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

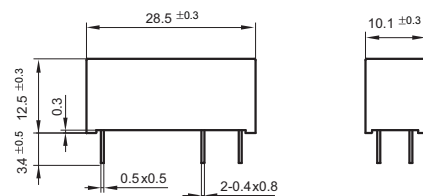
Unit: mm

Outline Dimensions

3.2mm pinning



5mm pinning



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

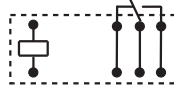
Unit: mm

Wiring Diagram (Bottom view)

Version 1



Version 3



Version 5

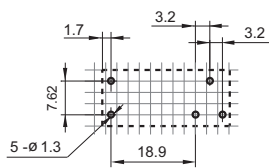


Version 6

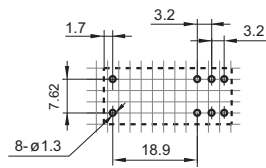


PCB Layout (Bottom view)

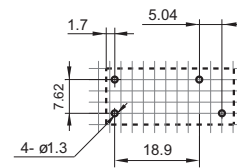
Version 1



Version 3



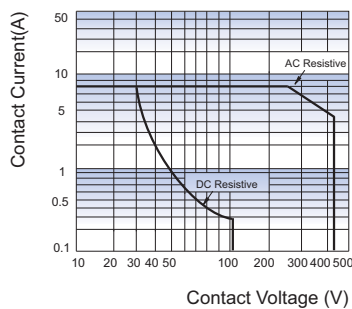
Version 5/6



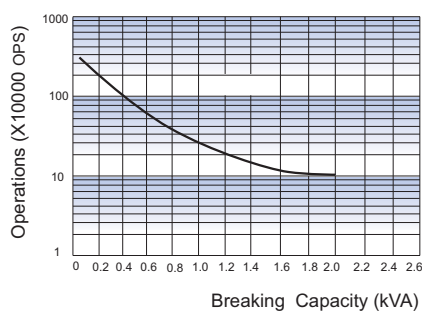
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



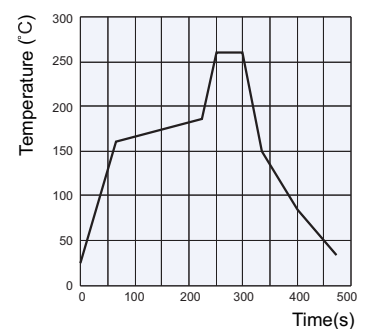
ENDURANCE CURVE



Notes:

- Curve: 1Z1 type
- Test conditions:
 NO, Resistive load, 250VAC
 Flux proofed, Room temp., 1s on 9s off.

REFLOW WELDING TEMPERATURE
(Reflow soldering version)



Relay Sockets




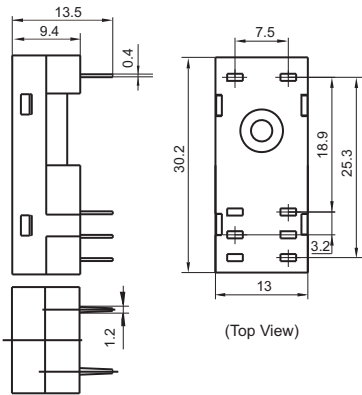
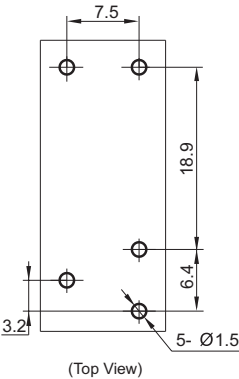

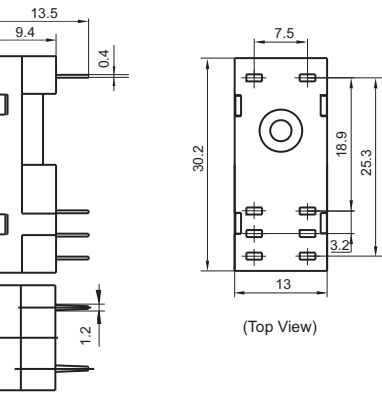
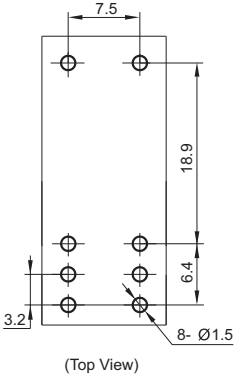
Features

- The dielectric strength can reach 5000VAC and the insulation resistance is 1000MΩ
- Two mounting types are available: PCB and screw mounting.
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.
118F-1Z-A1-1	250VAC	10A	-40 °C to 70°C	5000VAC
118F-2Z-A1	250VAC	10A	-40 °C to 70°C	5000VAC

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT Unit: mm

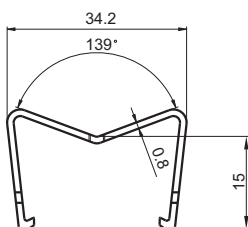
Socket	Outline Dimensions	Wiring Diagram	Components Available
<div>118F-1Z-A1-1</div>  <p>PCB terminal, PCB or Screw mounting Applicable for HF118F/XXX-1XX1XX</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	metallic retainer 118F-H1
<div>118F-2Z-A1</div>  <p>PCB terminal, PCB or Screw mounting Applicable for HF118F/XXX-1XX3XX</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	metallic retainer 118F-H1

DIMENSION OF RELATED COMPONENT (AVAILABLE)

Unit: mm

Retainer

118F-H1 (Metallic retainer)



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. As for related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. The above is only an example of typical socket and related component type which is suitable to HF118F 1 poles relay. If you have any special requirements, please contact us.
4. Main outline dimension(L, W, H) $\geq 50\text{mm}$, tolerance should be $\pm 1\text{mm}$; outline dimension $> 20\text{mm}$ and $< 50\text{mm}$, tolerance should be $\pm 0.5\text{mm}$; outline dimension $\leq 20\text{mm}$, tolerance should be $\pm 0.3\text{mm}$.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice.. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF140FF

MINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:R50149131



File No.:CQC10002046173



Features

- 10A switching capability
- 5kV dielectric strength (between coil and contacts)
- 2.0mm contact gap available
- Sockets available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 13.0 x 26.3) mm

CONTACT DATA

Contact arrangement	2A, 2C
Contact resistance	50mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂ , AgNi, AgCdO
Contact rating (Res. load)	10A 250VAC 8A 30VDC
Max. switching voltage	250VAC / 30VDC
Max. switching current	10A
Max. switching power	2500VA / 240W
Mechanical endurance	Standard: 1 x 10 ⁷ OPS W type(1.5mm): 5 x 10 ⁵ OPS W type(2.0mm): 3 x 10 ⁵ OPS
Electrical endurance	1 x 10 ⁵ OPS (NO or NC, 10A 250VAC, Resistive load, Room temp., 1s on 9s off) 1 x 10 ⁵ OPS (NO or NC, 8A 30VDC, Resistive load, Room temp., 1s on 9s off)

Notes: For plastic sealed type, the venting-hole should be excised in electrical endurance test.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between contacts sets	3000VAC 1min
	Between open contacts	Standard:1000VAC 1min W type(1.5mm):2000VAC 1min W type(2.0mm):2500VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2/50 μs)
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		5ms max.
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mmDA
Termination		PCB
Unit weight		Approx. 18g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.

2) Please find coil temperature curve in the characteristic curves below.

3) UL insulation system: Class F, Class B.

COIL

Coil power	Standard: Approx. 530mW
	W type(1.5mm): Approx. 800mW
	W type(2.0mm): Approx. 1.4W

COIL DATA

at 23°C

Standard type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
3	2.40	0.3	3.9	17 x (1±10%)
5	4.00	0.5	6.5	47 x (1±10%)
6	4.80	0.6	7.8	68 x (1±10%)
9	7.20	0.9	11.7	160 x (1±10%)
12	9.60	1.2	15.6	275 x (1±10%)
18	14.40	1.8	23.4	620 x (1±10%)
24	19.20	2.4	31.2	1100 x (1±10%)
48	38.40	4.8	62.4	4170 x (1±10%)
60	48.00	6.0	78.0	7000 x (1±10%)



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA

at 23°C

W Type (1.5mm)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Allowable Voltage VDC*	Coil Resistance Ω
3	2.25	0.3	3.3	11.3 x (1±10%)
5	3.75	0.5	5.5	31 x (1±10%)
6	4.50	0.6	6.6	45 x (1±10%)
9	6.75	0.9	9.9	101 x (1±10%)
12	9.00	1.2	13.2	180 x (1±10%)
18	13.5	1.8	19.8	405 x (1±10%)
24	18.0	2.4	26.4	720 x (1±10%)
48	36.0	4.8	52.8	2880 x (1±10%)
60	45.0	6.0	66.0	4500 x (1±10%)

W Type (2.0mm)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Allowable Voltage VDC*	Coil Resistance Ω
5	3.75	0.5	5.5	18 x (1±10%)
6	4.50	0.6	6.6	26 x (1±10%)
9	6.75	0.9	9.9	58 x (1±10%)
12	9.00	1.2	13.2	102 x (1±10%)
24	18.0	2.4	26.4	410 x (1±10%)
48	36.0	4.8	52.8	1650 x (1±10%)

Notes: 1) When require pick-up voltage < 75% of nominal voltage, special order allowed.

2) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

3) Under ambient temperature, applying more than 80% of rating voltage to coil, relay will take action accordingly. But in order to meet the stated product performance, please apply rated voltage to coil.

4) For the CO version whose contact gap is 1.5 mm, the operation voltage ≤85% of rated voltage.

SAFETY APPROVAL RATINGS

UL/CUL	Standard	AgCdO		TV-3 125VAC 10A 250VAC 10A 30VDC 1/4HP 240VAC 1/8HP 120VAC
		AgNi		10A 250VAC 10A 30VDC 12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C
		AgSnO ₂	2 Form A	10A 250VAC 10A 30VDC 12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C 3/4HP 250VAC at 40°C
			2 Form C	10A 250VAC 10A 30VDC 12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C 3/4HP 250VAC at 40°C
	W type	AgCdO	2 Form A	TV-3 125VAC 10A 250VAC
		AgSnO ₂	2 Form A	12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C 3/4HP 250VAC at 40°C
TÜV		AgCdO	2 Form A 2 Form C	10A 250VAC 10A 30VDC
		AgNi	2 Form A	12A 250VAC
			2 Form C	10A 250VAC
		AgSnO ₂	2 Form A	12A 250VAC

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF140FF/	012	-2H	S	W	T	G	F	(XXX)
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48, 60VDC								
Contact arrangement	2H: 2 Form A 2Z: 2 Form C								
Construction ¹⁾²⁾	S: Plastic sealed(No smoky-gray cover) Nil: Flux proofed								
Contact Gap	W: Large contact gap(Only for 2 Form A) ³⁾ Nil: Standard								
Contact material	T: AgSnO ₂ 3: AgNi Nil: AgCdO								
Contact plating	G: Gold plated Nil: No gold plated								
Insulation standard	F: Class F Nil: Class B								
Special code ⁵⁾	XXX: Customer special requirement Nil: Standard								

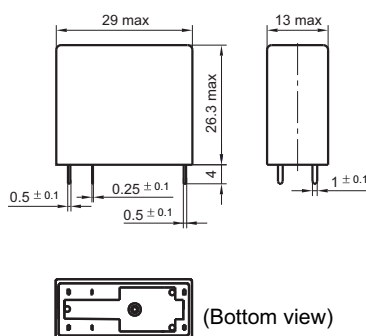
- Notes:**1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).
We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc).
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) There are two specifications to W type: 1.5mm contact gap and 2.0mm contact gap. The default W type is 1.5mm. So please add the special code "(456)" when releasing order, if 2.0mm contact gap is required.
4) The standard type is made of black cover. If smoke cover is required, please add a special suffix (611) when ordering. Please take note that smoke cover is only available for flux proofed type.
5) The customer special requirement express as special code after evaluating by Hongfa. e.g.(456) means contact gap can reach 2.0mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

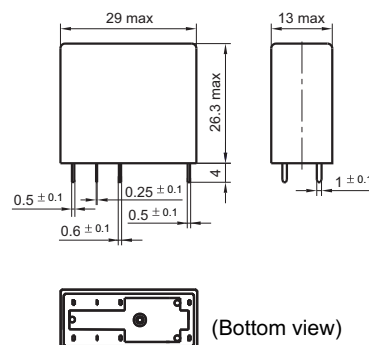
Unit: mm

Outline Dimensions

2 Form A



2 Form C



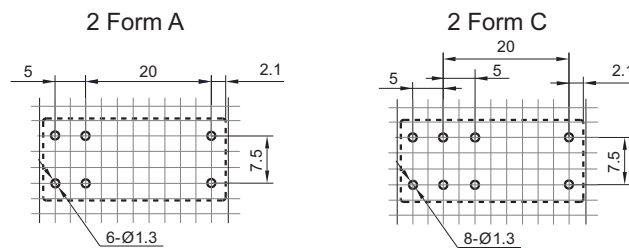
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Wiring Diagram (Bottom view)



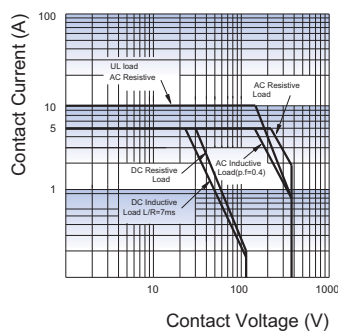
PCB Layout (Bottom view)



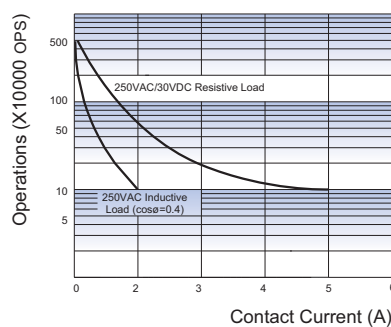
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.5mm .

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



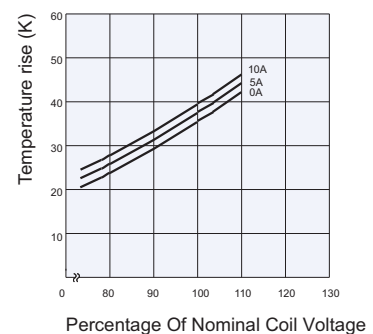
ENDURANCE CURVE



Test conditions:

No, Resistive load, Flux proofed,
 Room temp., 1s on 9s off.

COIL TEMPERATURE RISE



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF140FF

MINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:R50149131



File No.:CQC09002030294



Features

- 10A switching capability
- 5kV dielectric strength (between coil and contacts)
- 2.0mm contact gap available
- Sockets available
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 13.0 x 26.3) mm

CONTACT DATA

Contact arrangement	2A, 2C
Contact resistance	50mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂ , AgNi, AgCdO
Contact rating (Res. load)	10A 250VAC 8A 30VDC
Max. switching voltage	250VAC / 30VDC
Max. switching current	10A
Max. switching power	2500VA / 240W
Mechanical endurance	Standard: 1 x 10 ⁷ OPS W type(1.5mm): 5 x 10 ⁵ OPS W type(2.0mm): 3 x 10 ⁵ OPS
Electrical endurance	1 x 10 ⁵ OPS (NO or NC, 10A 250VAC, Resistive load, Room temp., 1s on 9s off) 1 x 10 ⁵ OPS (NO or NC, 8A 30VDC, Resistive load, Room temp., 1s on 9s off)

Notes: For plastic sealed type, the venting-hole should be excised in electrical endurance test.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between contacts sets	3000VAC 1min
	Between open contacts	Standard:1000VAC 1min W type(1.5mm):2000VAC 1min W type(2.0mm):2500VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2/50 μs)
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		5ms max.
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mmDA
Termination		PCB
Unit weight		Approx. 18g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.

2) Please find coil temperature curve in the characteristic curves below.

3) UL insulation system: Class F, Class B.

COIL

Coil power	Standard: Approx. 530mW W type(1.5mm): Approx. 800mW W type(2.0mm): Approx. 1.4W
------------	--

COIL DATA

at 23°C

Standard type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
3	2.40	0.3	3.9	17 x (1±10%)
5	4.00	0.5	6.5	47 x (1±10%)
6	4.80	0.6	7.8	68 x (1±10%)
9	7.20	0.9	11.7	160 x (1±10%)
12	9.60	1.2	15.6	275 x (1±10%)
18	14.40	1.8	23.4	620 x (1±10%)
24	19.20	2.4	31.2	1100 x (1±10%)
48	38.40	4.8	62.4	4170 x (1±10%)
60	48.00	6.0	78.0	7000 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA

at 23°C

W Type (1.5mm)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
3	2.25	0.3	3.3	11.3 x (1±10%)
5	3.75	0.5	5.5	31 x (1±10%)
6	4.50	0.6	6.6	45 x (1±10%)
9	6.75	0.9	9.9	101 x (1±10%)
12	9.00	1.2	13.2	180 x (1±10%)
18	13.5	1.8	19.8	405 x (1±10%)
24	18.0	2.4	26.4	720 x (1±10%)
48	36.0	4.8	52.8	2880 x (1±10%)
60	45.0	6.0	66.0	4500 x (1±10%)

W Type (2.0mm)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	3.75	0.5	5.5	18 x (1±10%)
6	4.50	0.6	6.6	26 x (1±10%)
9	6.75	0.9	9.9	58 x (1±10%)
12	9.00	1.2	13.2	102 x (1±10%)
24	18.0	2.4	26.4	410 x (1±10%)
48	36.0	4.8	52.8	1650 x (1±10%)

Notes: 1) When require pick-up voltage < 75% of nominal voltage, special order allowed.

2) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

3) Under ambient temperature, applying more than 80% of rating voltage to coil, relay will take action accordingly. But in order to meet the stated product performance, please apply rated voltage to coil.

4) For the CO version whose contact gap is 1.5 mm, the operation voltage \leq 85% of rated voltage.

SAFETY APPROVAL RATINGS

UL/CUL	Standard	AgCdO		TV-3 125VAC 10A 250VAC 10A 30VDC 1/4HP 240VAC 1/8HP 120VAC
		AgNi		10A 250VAC 10A 30VDC 12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C
		AgSnO ₂	2 Form A	10A 250VAC 10A 30VDC 12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C 3/4HP 250VAC at 40°C
			2 Form C	10A 250VAC 10A 30VDC 12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C 3/4HP 250VAC at 40°C
	W type	AgCdO	2 Form A	TV-3 125VAC 10A 250VAC
		AgSnO ₂	2 Form A	12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C 3/4HP 250VAC at 40°C
TÜV		AgCdO	2 Form A 2 Form C	10A 250VAC 10A 30VDC
		AgNi	2 Form A	12A 250VAC
			2 Form C	10A 250VAC
		AgSnO ₂	2 Form A	12A 250VAC

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF140FF/	012	-2H	S	W	T	G	F	(XXX)
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48, 60VDC								
Contact arrangement	2H: 2 Form A 2Z: 2 Form C								
Construction ^{1) 2)}	S: Plastic sealed(No smoky-gray cover) Nil: Flux proofed								
Contact Gap	W: Large contact gap(Only for 2 Form A) ³⁾ Nil: Standard								
Contact material	T: AgSnO ₂ 3: AgNi Nil: AgCdO								
Contact plating	G: Gold plated Nil: No gold plated								
Insulation standard	F: Class F Nil: Class B								
Special code ⁵⁾	XXX: Customer special requirement Nil: Standard								

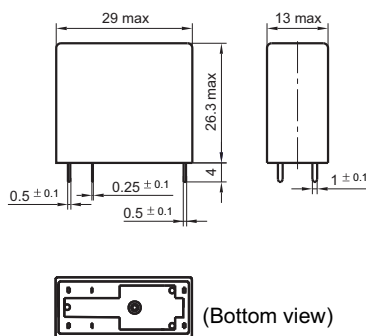
- Notes:**1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc).
- 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 3) There are two specifications to W type: 1.5mm contact gap and 2.0mm contact gap. The default W type is 1.5mm. So please add the special code "(456)" when releasing order, if 2.0mm contact gap is required.
- 4) The standard type is made of black cover. If smoke cover is required, please add a special suffix (611) when ordering. Please take note that smoky-gray cover is only available for flux proofed types.
- 5) The customer special requirement express as special code after evaluating by Hongfa. e.g.(456) means contact gap can reach 2.0mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

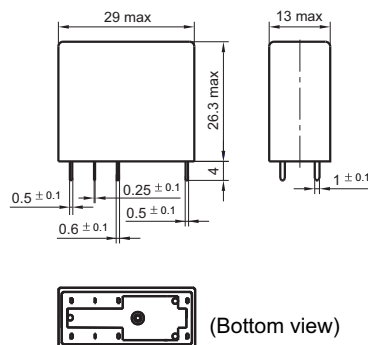
Unit: mm

Outline Dimensions

2 Form A



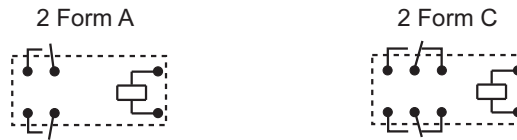
2 Form C



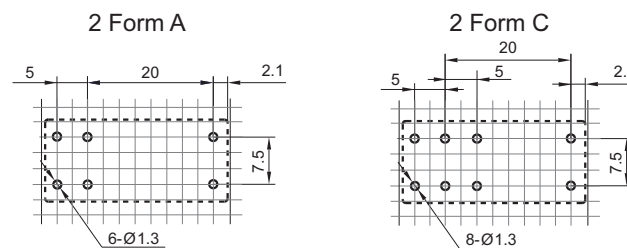
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Wiring Diagram (Bottom view)



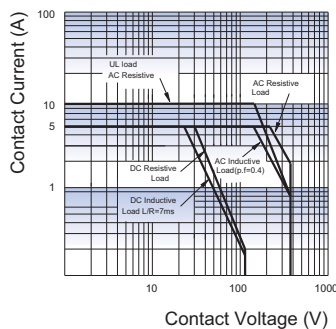
PCB Layout (Bottom view)



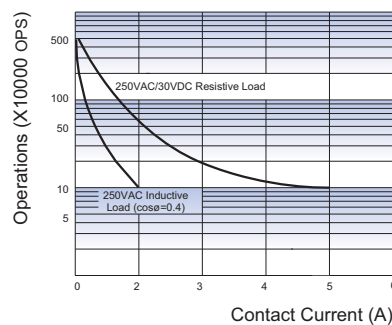
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.5mm .

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



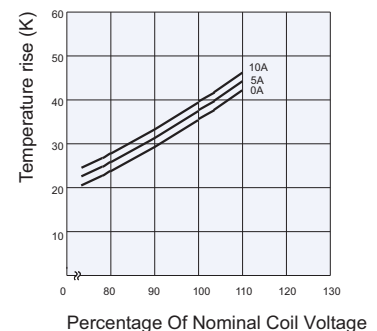
ENDURANCE CURVE



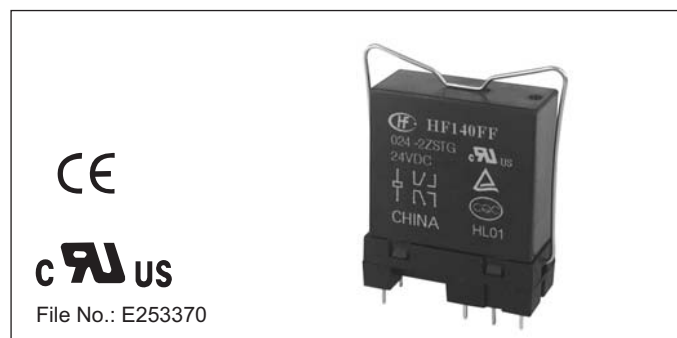
Test conditions:

NO, Resistive load, Flux proofed,
 Room temp., 1s on 9s off.

COIL TEMPERATURE RISE



Relay Sockets



Features


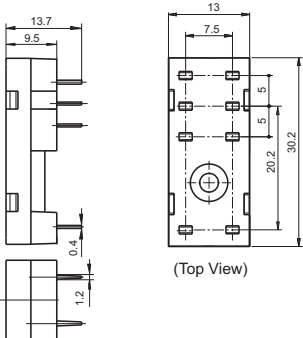
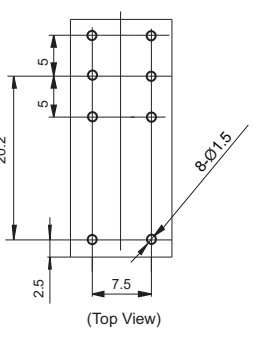

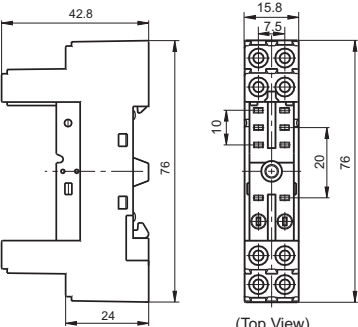
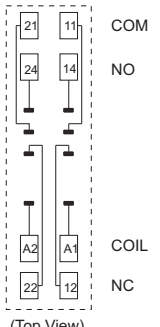

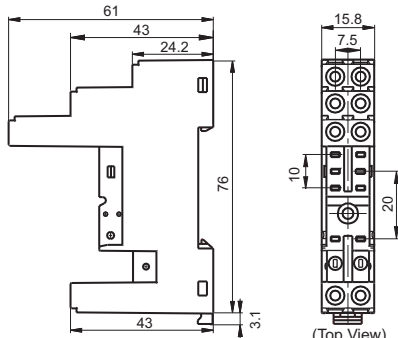
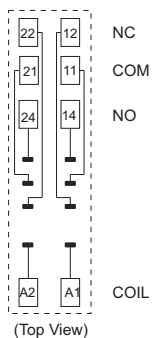
- The dielectric strength can reach 5000VAC(I/O) and the insulation resistance is 1000MΩ
- Three mounting types are available: PCB, screw mounting and DIN rail mounting
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length
14FF-2Z-A1	250VAC	10A	-40 °C to 70 °C	5000VAC	—	—
14FF-2Z-C2	250VAC	10A	-40 °C to 70 °C	5000VAC	0.6N · m	7mm
14FF-2Z-C3	250VAC	10A	-40 °C to 70 °C	5000VAC	0.6N · m	7mm
14FF-2Z-C4	250VAC	10A	-40 °C to 70 °C	5000VAC	—	9mm


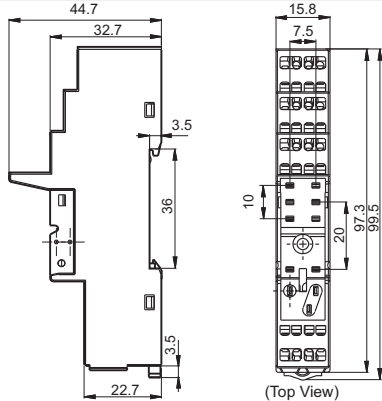
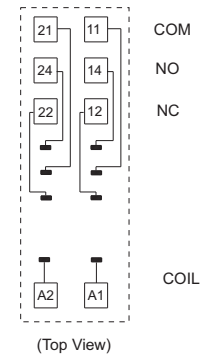
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
14FF-2Z-A1  PCB terminal, PCB or Screw mounting	 (Top View)	 (Top View)	metallic retainer 14FF-H3
14FF-2Z-C2  Screw terminal DIN rail or Screw mounting With finger protection device	 (Top View)	 (Top View)	plastic retainer 14FF-H6 marker 14FF-M1 plug-in module HFAA to HFHU*
14FF-2Z-C3  Screw terminal DIN rail or Screw mounting With finger protection device	 (Top View)	 (Top View)	plastic retainer 14FF-H6 marker 14FF-M1 plug-in module HFAA to HFHU*

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components available
14FF-2Z-C4  Spring-loaded terminal DIN rail mounting With finger protection device			plastic retainer 14FF-H6 marker 14FF-M1 plug-in module HFAA to HFHU*

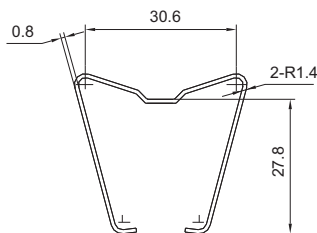
Notes: * Please refer to the product datasheet if plug-in module is required.

DIMENSION OF RELATED COMPONENT (AVAILABLE)

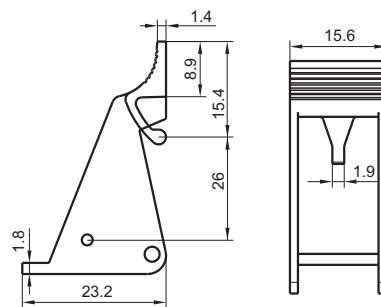
Unit: mm

Retainer

14FF-H3(Metallic retainer)

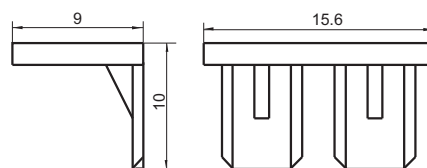


14FF-H6(Plastic retainer)



Marker

14FF-M1



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. Socket which can be mounted with markers is furnished with a marker; as for other related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. The above is only an example of typical socket and related component type which is suitable to HF140FF relay. If you have any special requirements, please contact us.
4. Main outline dimension(L, W, H) ≥ 50 mm, tolerance should be ± 1 mm; outline dimension > 20 mm and < 50 mm, tolerance should be ± 0.5 mm; outline dimension ≤ 20 mm, tolerance should be ± 0.3 mm.
5. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF141FF

MINIATURE HIGH POWER RELAY



File No.:E133481



File No.:CQC09002034351



Features

- 10A switching capability
- 5kV dielectric strength (between coil and contacts)
- Sockets available
- 1 Form A, 1 Form B and 1 Form C configurations
- Plastic sealed and flux proofed types available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.6 x 20.6) mm

CONTACT DATA

Contact arrangement	1A, 1B, 1C	
Contact resistance	50mΩ max.(at 1A 6VDC)	
Contact material	AgSnO ₂ , AgCdO	
Contact rating (Res.load)	Standard	High Capacity
	8A 250VAC /30VDC 10A 125VAC	10A 30VDC 10A 250VAC
Max. switching power	2000VA / 240W	2500VA / 300W
Max. switching current	10A	
Max. switching voltage	250VAC / 30VDC	
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	Standard type: 1 x 10 ⁵ OPS (NO or NC, 8A 250VAC/30VDC, Resistive load, Room temp., 1s on 9s off),	
	High capacity type: 1 x 10 ⁵ OPS (NO or NC, 10A 250VAC/30VDC, Resistive load, Room temp., 1s on 9s off),	

Notes: For plastic sealed type, the venting-hole should be excised in electrical endurance test.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		5ms max.
Vibration resistance		10Hz to 55Hz 1.5mm DA
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		PCB
Unit weight		Approx. 13g
Construction		Plastic sealed, Flux proofed

- Notes:** 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class A

COIL

Coil power	Standard: Approx. 720mW;
	Sensitive: Approx. 550mW

COIL DATA

at 23°C

Standard type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	4.0	0.5	6.5	36 x (1±10%)
6	4.8	0.6	7.8	50 x (1±10%)
9	7.2	0.9	11.7	115 x (1±10%)
12	9.6	1.2	15.6	200 x (1±10%)
18	14.4	1.8	23.4	460 x (1±10%)
24	19.2	2.4	31.2	820 x (1±10%)
48	38.4	4.8	62.4	3300 x (1±10%)

Sensitive type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	4.0	0.5	6.5	47 x (1±10%)
6	4.8	0.6	7.8	68 x (1±10%)
9	7.2	0.9	11.7	155 x (1±10%)
12	9.6	1.2	15.6	270 x (1±10%)
18	14.4	1.8	23.4	620 x (1±10%)
24	19.2	2.4	31.2	1100 x (1±10%)
48	38.4	4.8	62.4	4400 x (1±10%)

- Notes:** 1) When requiring pick-up voltage < 80% of nominal voltage, special order allowed.
2) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.
3) Under ambient temperature, applying more than 80% of rating voltage to coil, relay will take action accordingly. But in order to meet the stated product performance, please apply rated voltage to coil.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

SAFETY APPROVAL RATINGS

UL/CUL	High Capacity	10A 30VDC/250VAC
	Standard	8A 30VDC/250VAC 10A 125VAC

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

	HF141FF /			012	-H	S	P	G	(XXX)
Type									
Coil voltage		5, 6, 9, 12, 18, 24, 48VDC							
Contact arrangement		H:1 Form A	D:1 Form B	Z:1 Form C					
Construction ¹⁾		S: Plastic sealed		Nil: Flux proofed					
Coil power		P: Standard		Nil: Sensitive					
Contact capacity		G: High capacity (AgSnO2)			Nil: Standard type (AgCdO)				
Special code ³⁾		XXX: Customer special requirement			Nil: Standard				

Notes: 1) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended.

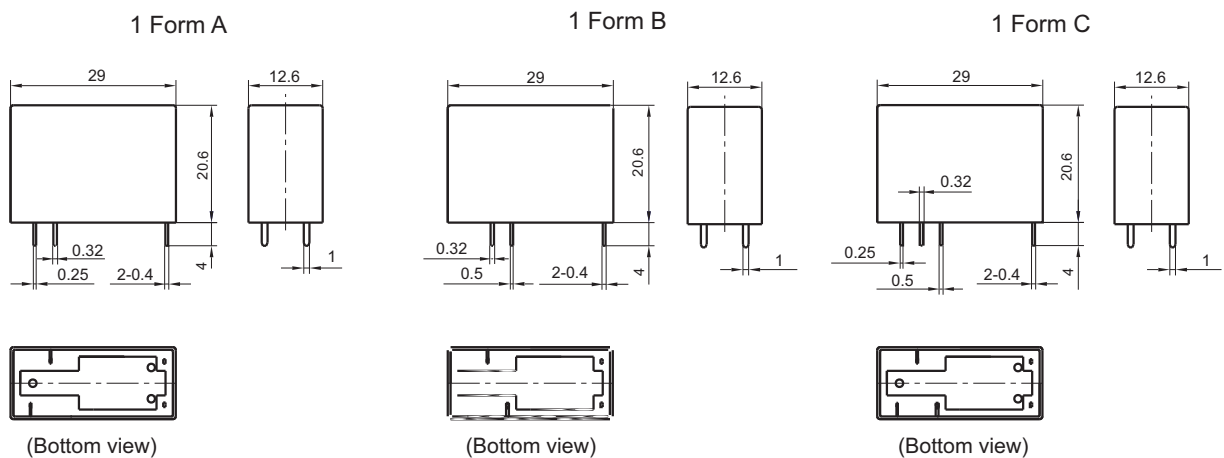
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions



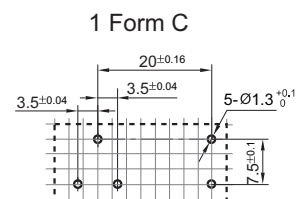
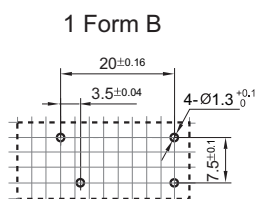
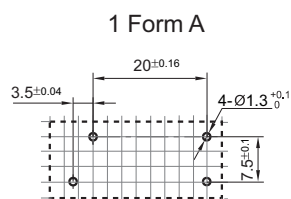
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

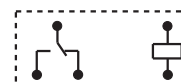
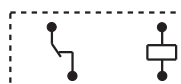
Unit: mm

PCB Layout (Bottom view)



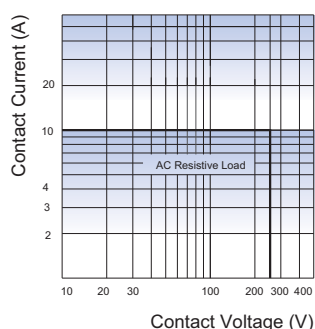
Remark: The width of the gridding is 2.5mm.

Wiring Diagram (Bottom view)

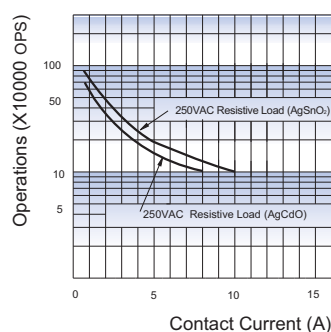


CHARACTERISTIC CURVES

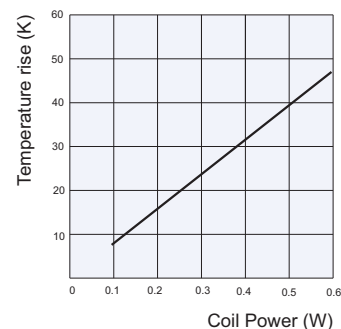
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



Test conditions:

No contact, Resistive load,
Flux proofed, Room temp., 1s on 9s off.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF141FF

MINIATURE HIGH POWER RELAY

c **AL** US

File No.:E133481



File No.:CQC09002034351



Features

- 10A switching capability
- 5kV dielectric strength (between coil and contacts)
- Sockets available
- 1 Form A, 1 Form B and 1 Form C configurations
- Plastic sealed and flux proofed types available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.6 x 20.6) mm

CONTACT DATA

Contact arrangement	1A, 1B, 1C	
Contact resistance	50mΩ max.(at 1A 6VDC)	
Contact material	AgSnO ₂ , AgCdO	
Contact rating (Res.load)	Standard	High Capacity
	8A 250VAC /30VDC 10A 125VAC	10A 30VDC 10A 250VAC
Max. switching power	2000VA / 240W	2500VA / 300W
Max. switching current	10A	
Max. switching voltage	250VAC / 30VDC	
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	Standard type: 1 x 10 ⁵ OPS (NO or NC, 8A 250VAC/30VDC, Resistive load, Room temp., 1s on 9s off),	
	High capacity type: 1 x 10 ⁵ OPS (NO or NC, 10A 250VAC/30VDC, Resistive load, Room temp., 1s on 9s off),	

Notes: For plastic sealed type, the venting-hole should be excised in electrical endurance test.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		5ms max.
Vibration resistance		10Hz to 55Hz 1.5mm DA
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		PCB
Unit weight		Approx. 13g
Construction		Plastic sealed, Flux proofed

- Notes:** 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class A

COIL

Coil power	Standard: Approx. 720mW;
	Sensitive: Approx. 550mW

COIL DATA

at 23°C

Standard type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	4.0	0.5	6.5	36 x (1±10%)
6	4.8	0.6	7.8	50 x (1±10%)
9	7.2	0.9	11.7	115 x (1±10%)
12	9.6	1.2	15.6	200 x (1±10%)
18	14.4	1.8	23.4	460 x (1±10%)
24	19.2	2.4	31.2	820 x (1±10%)
48	38.4	4.8	62.4	3300 x (1±10%)

Sensitive type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	4.0	0.5	6.5	47 x (1±10%)
6	4.8	0.6	7.8	68 x (1±10%)
9	7.2	0.9	11.7	155 x (1±10%)
12	9.6	1.2	15.6	270 x (1±10%)
18	14.4	1.8	23.4	620 x (1±10%)
24	19.2	2.4	31.2	1100 x (1±10%)
48	38.4	4.8	62.4	4400 x (1±10%)

Notes: 1) When requiring pick-up voltage < 80% of nominal voltage, special order allowed.

2) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

3) Under ambient temperature, applying more than 80% of rating voltage to coil, relay will take action accordingly. But in order to meet the stated product performance, please apply rated voltage to coil.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.10

SAFETY APPROVAL RATINGS

UL/CUL	High Capacity	10A 30VDC/250VAC
	Standard	8A 30VDC/250VAC 10A 125VAC

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

	HF141FF /		012	-H	S	P	G	(XXX)
Type								
Coil voltage	5, 6, 9, 12, 18, 24, 48VDC							
Contact arrangement	H:1 Form A	D:1 Form B	Z:1 Form C					
Construction ¹⁾	S: Plastic sealed	Nil: Flux proofed						
Coil power	P: Standard	Nil: Sensitive						
Contact capacity	G: High capacity (AgSnO2)		Nil: Standard type (AgCdO)					
Special code ³⁾	XXX: Customer special requirement		Nil: Standard					

Notes: 1) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended.

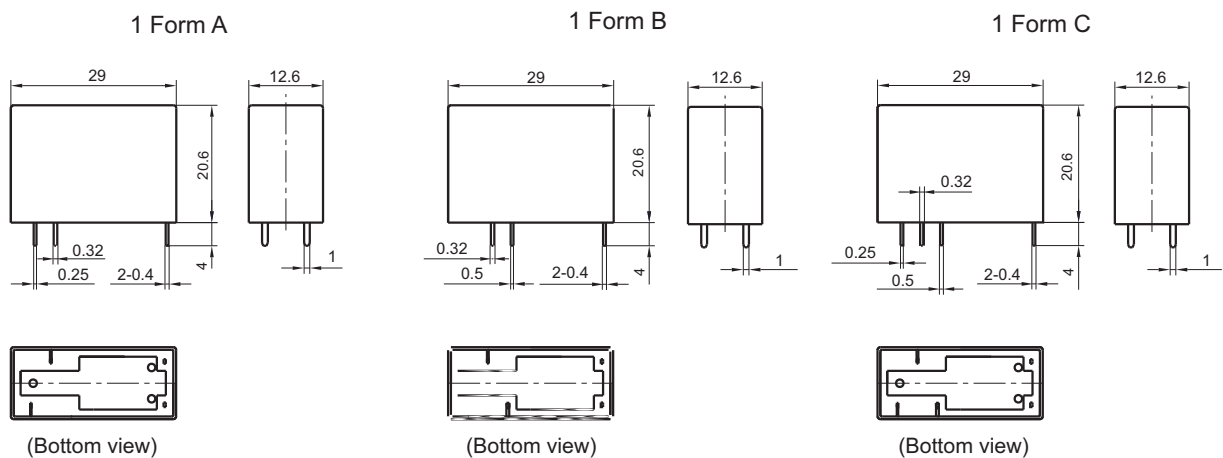
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions



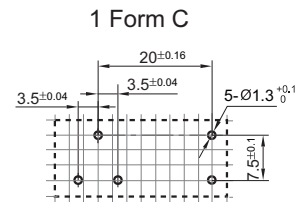
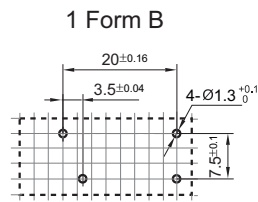
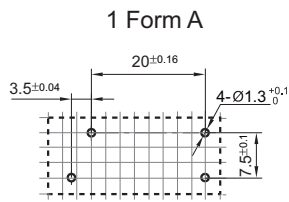
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

PCB Layout (Bottom view)



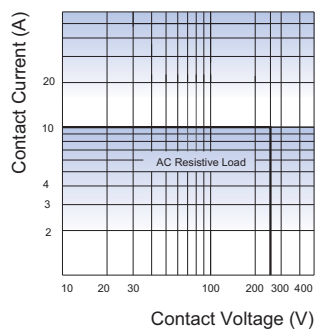
Remark: The width of the gridding is 2.5mm.

Wiring Diagram (Bottom view)

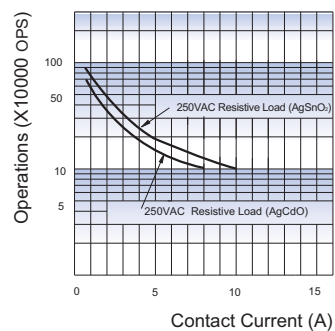


CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER

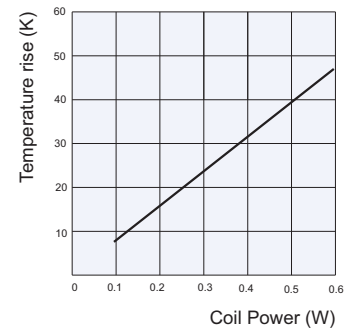


ENDURANCE CURVE



Test conditions:
NO, Flux proofed,
Room temp., 1s on 9s off.

COIL TEMPERATURE RISE



Relay Sockets

CE

cULus

File No.: E253370



Features


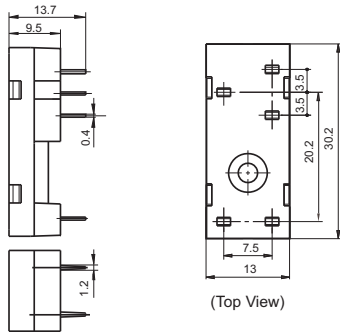
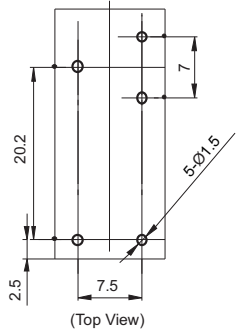

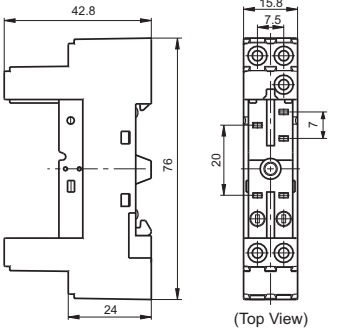
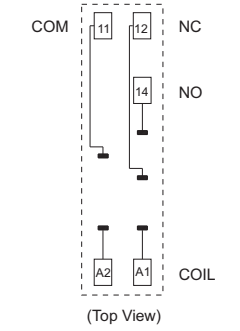

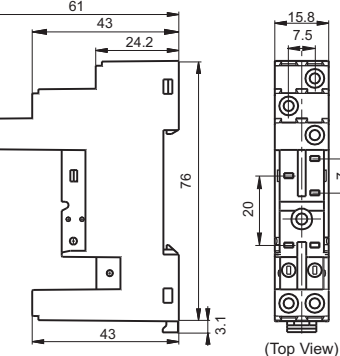
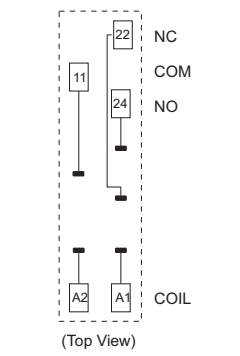
- The dielectric strength can reach 5000VAC(I/O) and the insulation resistance is 1000MΩ
- Three mounting types are available: PCB, screw mounting and DIN rail mounting
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length
14FF-1Z-A1	250VAC	10A	-40 °C to 70 °C	5000VAC	—	—
14FF-1Z-C2	250VAC	10A	-40 °C to 70 °C	5000VAC	0.6N · m	7mm
14FF-1Z-C3	250VAC	10A	-40 °C to 70 °C	5000VAC	0.6N · m	7mm

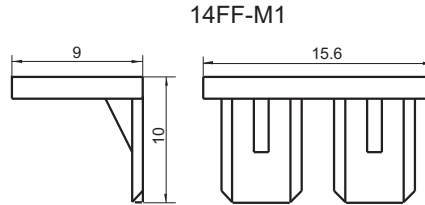
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
14FF-1Z-A1  PCB terminal, PCB or Screw mounting	 (Top View)	 (Top View)	
14FF-1Z-C2  Screw terminal, PCB or Screw mounting With finger protection device	 (Top View)	 (Top View)	plastic retainer 14FF-H5 marker 14FF-M1 plug-in module HFAA to HFHU*
14FF-1Z-C3  Screw terminal, DIN rail or Screw mounting With finger protection device	 (Top View)	 (Top View)	plastic retainer 14FF-H5 marker 14FF-M1 plug-in module HFAA to HFHU*

Notes: * Please refer to the product datasheet if plug-in module is required.

Marker



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. Socket which can be mounted with markers is furnished with a marker; as for other related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. The above is only an example of typical socket and related component type which is suitable to HF141FF relay. If you have any special requirements, please contact us.
4. Main outline dimension(L, W, H) ≥ 50 mm, tolerance should be ± 1 mm; outline dimension > 20 mm and < 50 mm, tolerance should be ± 0.5 mm; outline dimension ≤ 20 mm, tolerance should be ± 0.3 mm.
5. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF152F

SUBMINIATURE HIGH POWER RELAY



File No.: E134517



File No.: 40017837



File No.: CQC09002034520



Features

- 20A switching capability
- TV-8 125VAC
- Surge voltage up to 6kV (between coil and contacts)
- Thermal class F: standard type (at 85°C)
- Ambient temperature meets 105°C
- Product in accordance to IEC 60335-1 available
- 1 Form C and 1 Form A configurations available
- Plastic sealed and dust protected types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (21.0 x 16.0 x 20.6) mm

CONTACT DATA

Contact arrangement	1A	1C
Contact resistance	100mΩ max.(at 1A 24VDC)	
Contact material	AgSnO ₂ , AgNi	
Contact rating (Res. load)	20A 125VAC 17A 277VAC 7A 400VAC	16A 250VAC 7A 400VAC (NO)
Max. switching voltage	400VAC	400VAC (NO)
Max. switching current	20A	16A
Max. switching power	4700VA	4000VA
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1 x 10 ⁵ OPS (16A 250VAC, Resistive load, at 85°C, 1s on 9s off)	
	5 x 10 ⁴ OPS (NO, 16A 250VAC, Resistive load, Room temp., 1s on 9s off)	
	5 x 10 ⁴ OPS (NC, 10A 250VAC, Resistive load, Room temp., 1s on 9s off)	

Notes: For plastic sealed type, the venting-hole should be opened in electrical endurance test.

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
3	2.25	0.3	3.9	25 x (1±10%)
5	3.75	0.5	6.5	70 x (1±10%)
6	4.50	0.6	7.8	100 x (1±10%)
9	6.75	0.9	11.7	225 x (1±10%)
12	9.00	1.2	15.6	400 x (1±10%)
18	13.5	1.8	23.4	900 x (1±10%)
24	18.0	2.4	31.2	1600 x (1±10%)
48	36.0	4.8	62.4	6400 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

CHARACTERISTICS

Insulation resistance	100MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage(between coil & contacts)	6kV (1.2 / 50μs)	
Operate time (at nomi. volt.)	10ms max.	
Release time (at nomi. volt.)	5ms max.	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Ambient temperature	HF152F: -40°C to 85°C HF152F-T: -40°C to 105°C	
Termination	PCB	
Unit weight	Approx. 14g	
Construction	Plastic sealed, Dust protected	

- Notes:** 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F

COIL

Coil power	Approx. 360mW
------------	---------------

SAFETY APPROVAL RATINGS

UL/CUL	AgNi	20A 125VAC NO/NC: 17A/15A 277VAC	
	AgSnO ₂	20A 125VAC TV-8 125VAC NO: 16A 250VAC at 105°C NO: 1HP 250VAC	
VDE	AgSnO ₂	1 Form A	16A 250VAC 7A 400VAC
		1 Form C	NO: 16A 250VAC NC: 7A 250VAC

- Notes:** 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

HF152F / 012 -1Z P S T G Q (XXX)	
Type	HF152F: 85°C, HF152F-T: 105°C
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48VDC
Contact arrangement	1H: 1 Form A 1Z: 1 Form C
Pin version	P: Double pins Nil: Single pin
Construction ¹⁾	S: Plastic sealed Nil: Dust protected
Contact material	T: AgSnO ₂ Nil: AgNi
Contact plating	G: Gold plated Nil: No gold plated
Contact capacity	Q: High capacity type 16A 250VAC, at 105°C (Only for HF152F-T) Nil: Standard type
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard

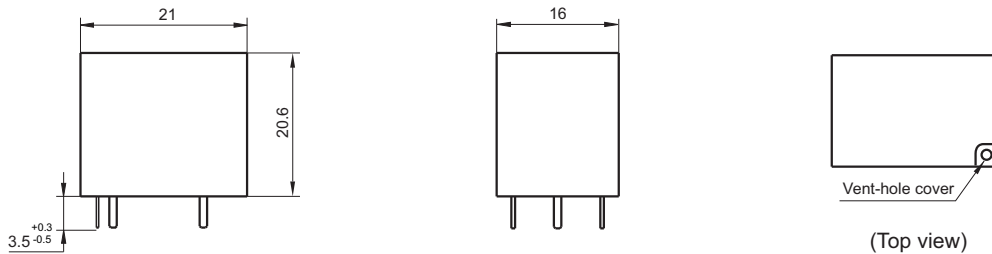
Notes: 1) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications.
 If the ambience allows, dust protected type is preferentially recommended.
 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
 3) If plastic sealed type is selected for cleaning purpose, the vent-hole cover should be excised after cleaning.
 4) The customer special requirement express as special code after evaluating by Hongfa.
 5) HF152F-T is only available for AgSnO₂ contact.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Single pin version

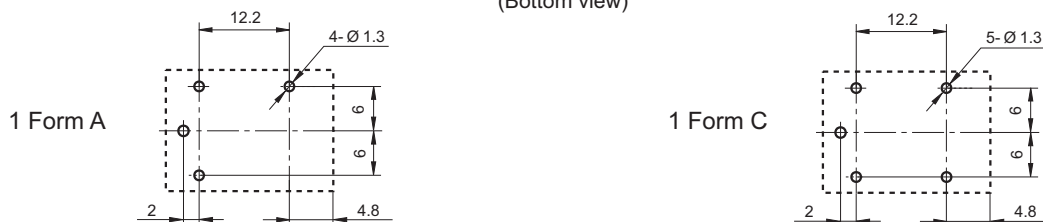
Outline Dimensions



Wiring Diagram (Bottom view)



PCB Layout (Bottom view)

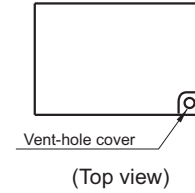
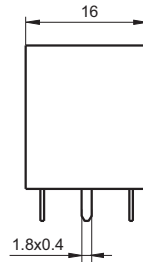
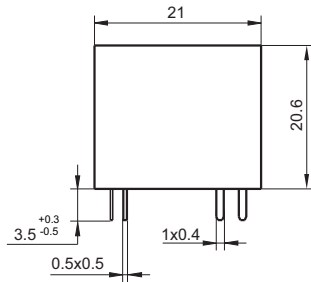


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

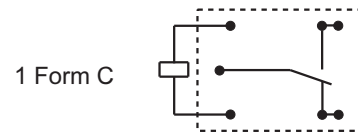
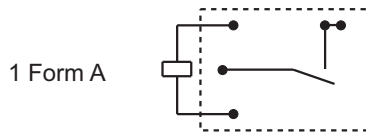
Unit: mm

Double pin version

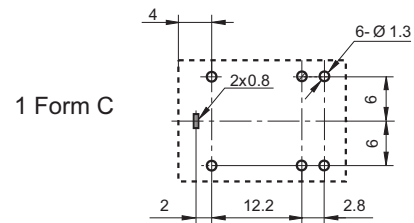
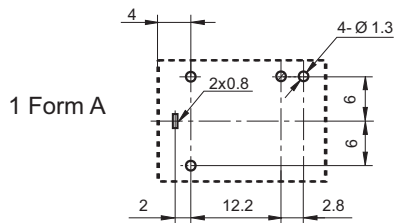
Outline Dimensions



Wiring Diagram (Bottom view)



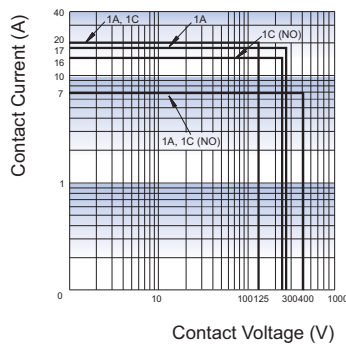
PCB Layout (Bottom view)



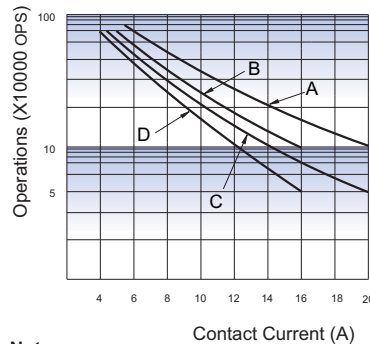
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

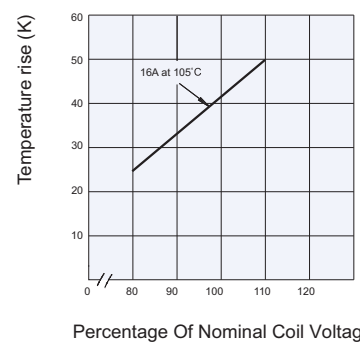
MAX. SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



Notes:

- Curve A: 1H type, Curve B: 1H type, Curve C: 1Z type, Curve D: 1Z type
- Test conditions:
Curve A: 20A 125VAC, Resistive load, Room temp., 1s on 9s off
Curve B: 16A 250VAC, Resistive load, at 85°C, 1s on 9s off
Curve C: NO, 20A 125VAC, Resistive load, Room temp., 1s on 9s off
Curve D: NO, 16A 250VAC, Resistive load, at 85°C, 1s on 9s off

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF152FD

SUBMINIATURE HIGH POWER RELAY



File No.: E134517



File No.: 40031203



File No.: CQC12002083404



Features

- 20A switching capability
- Ambient temperature meets 105°C
- High temperature load: 17A 277VAC at 105°C (Long endurance type)
- 1 Form C and 1 Form A configurations available
- Double pins and Single pin terminal available, effectively reduce terminal temperature rise
- Product in accordance to EN 60335-1 available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)

CONTACT DATA

Contact arrangement	1A	1C
Contact resistance	100mΩ max. (at 1A 24VDC)	
Contact material	AgSnO ₂ , AgNi	
Contact rating (Res. load)	20A 125VAC 17A 277VAC(Q type) 7A 400VAC	NO:17A 277VAC(Q type) NC:10A 277VAC
Max. switching voltage	400VAC	400VAC (NO)
Max. switching current	20A	17A
Max. switching power	4700VA	4700VA
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1H type: 5 x 10 ⁴ OPS (16A 277VAC, Resistive load, AgNi, at 85°C, 1s on 9s off) 1HT type: 1 x 10 ⁵ OPS (12A 277VAC, Resistive load, AgSO ₂ , at 105°C, 1s on 9s off)	

Notes: For plastic sealed type, the venting-hole should be opened in electrical endurance test.

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)	10ms max.	
Release time (at nomi. volt.)	5ms max.	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 105°C	
Termination	PCB	
Unit weight	Approx. 14g	
Construction	Plastic sealed, Flux proofed	

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B.

COIL

Coil power	Approx. 360mW
------------	---------------

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
3	2.25	0.3	3.9	25 x (1±10%)
5	3.75	0.5	6.5	70 x (1±10%)
6	4.50	0.6	7.8	100 x (1±10%)
9	6.75	0.9	11.7	225 x (1±10%)
12	9.00	1.2	15.6	400 x (1±10%)
18	13.5	1.8	23.4	900 x (1±10%)
24	18.0	2.4	31.2	1600 x (1±10%)
48	36.0	4.8	62.4	6400 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/ CUL	NO, Standard Type	AgNi AgSnO ₂	20A 125VAC Resistive at 40°C
		AgNi	17A 125VAC Resistive at 85°C 16A 277VAC Resistive at 85°C 10A 277VAC Resistive at 105°C
		AgSnO ₂	12A 277VAC General Use at 105°C 1/2HP 125VAC at 40°C 1HP 250VAC at 40°C TV-8 125VAC at 40°C
	NO, Q Type	AgNi	17A 277VAC Resistive at 105°C 10A 277VAC Resistive at 105°C
	NC	AgNi AgSnO ₂	20A 125VAC Resistive at 40°C 10A 277VAC Resistive at 85°C
		AgNi	7A 277VAC Resistive at 105°C
VDE	1 Form A, Standard Type	AgNi	16A 250VAC Resistive at 85°C 7A 400VAC Resistive at 105°C
		AgSnO ₂	8A 250VAC COSφ=0.4 at 85°C 10(4)A 250VAC Resistive at 105°C (EN60730-1)
	1 Form A, Q Type	AgNi	17A 250VAC at 23°C 2h/ at 105°C 2h 10A 250VAC at 23°C 2h/ at 105°C 2h
	1 Form C	AgNi	NO/NC:10A/7A 250VAC at 105°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

HF152FD / 12 -1Z P S T G F Q (XXX)	
Type	
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48VDC
Contact arrangement	1H: 1 Form A 1Z: 1 Form C
Pin version	P: Double pins Nil: Single pin
Construction ¹⁾	S: Plastic sealed Nil: Flux proofed
Contact material	T: AgSnO ₂ Nil: AgNi
Contact plating	G: Gold plated Nil: No gold plated
Insulation standard	F: Class F Nil: Class B
Contact endurance	Q: Long endurance type (Only for AgNi type) Nil: Standard type
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard

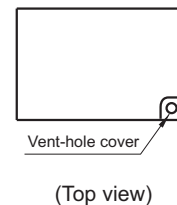
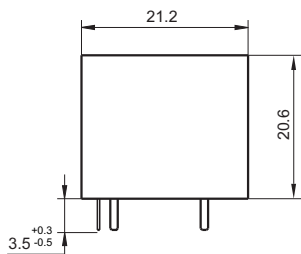
Notes: 1) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended.
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) If plastic sealed type is selected for cleaning purpose, the vent-hole cover should be excised after cleaning.
4) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

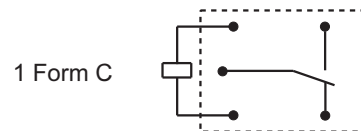
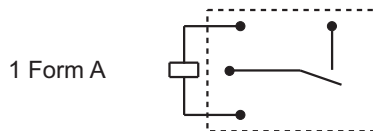
Unit: mm

Single pin version

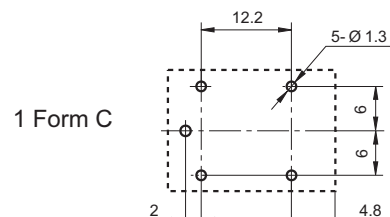
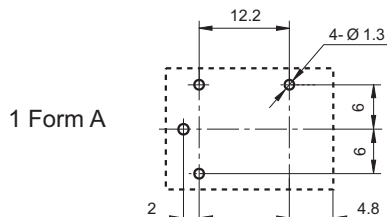
Outline Dimensions



Wiring Diagram (Bottom view)



PCB Layout (Bottom view)

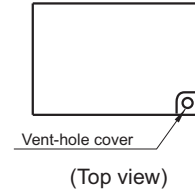
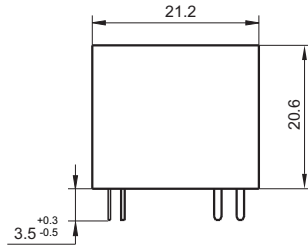


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

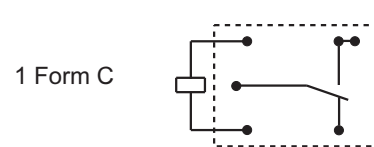
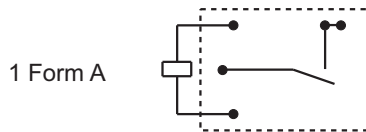
Unit: mm

Double pin version

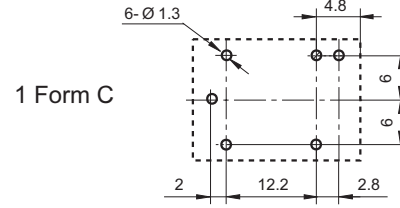
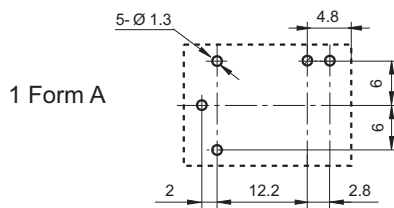
Outline Dimensions



Wiring Diagram (Bottom view)

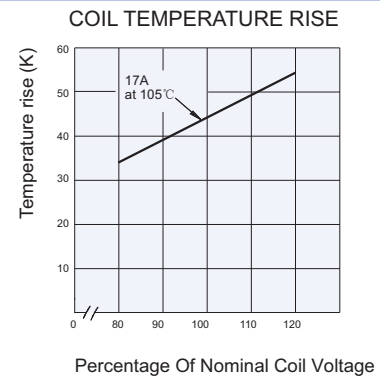
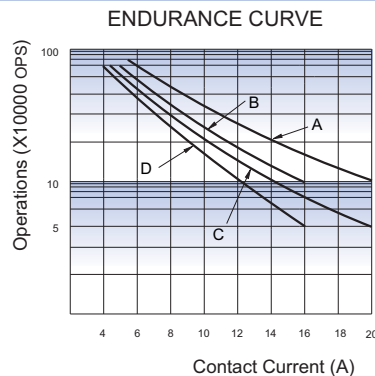
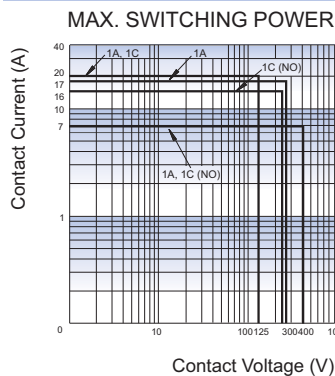


PCB Layout (Bottom view)



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES



Notes:

- Curve A: 1H type, Curve B: 1H type, Curve C: 1Z type, Curve D: 1Z type
- Test conditions:
Curve A: 20A 125VAC, Resistive load, Room temp., 1s on 9s off
Curve B: 16A 250VAC, Resistive load, at 85°C, 1s on 9s off
Curve C: NO, 20A 125VAC, Resistive load, Room temp., 1s on 9s off
Curve D: NO, 16A 250VAC, Resistive load, at 85°C, 1s on 9s off

Disclaimer

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HF158F

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:40032833



File No.:CQC15002129497



Features

- 20A switching capability
- Low height: 15.7 mm
- 5kV dielectric strength (between coil and contacts)
- Creepage distance: 10mm, meet reinforce insulation
- UL insulation system: Class F
- Product in accordance to IEC 60335-1 available
- Sockets available
- Plastic sealed and flux proofed types available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.7 x 15.7) mm

CONTACT DATA

Contact arrangement	1A, 1C
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgNi, AgSnO ₂
Contact rating	16A 250VAC
Max. switching voltage	440VAC
Max. switching current	20A
Max. switching power	5000VA
Mechanical endurance	2 x 10 ⁷ OPS
Electrical endurance	H33 type: 1 x 10 ⁵ OPS (16A 277VAC, Resistive load, Room temp., 1s on 9s off) H3T type: 1 x 10 ⁵ OPS (16A 277VAC, Resistive load, Room temp., 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		8ms max.
Temperature rise (at nomi. volt.)		60K max.
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *		10Hz to 150Hz 10g/5g
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 11.5g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.
2) * Index is not that of relay length direction.

COIL

Coil power	Approx. 400mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ¹⁾	Coil Resistance Ω
5	3.50	0.5	9.0	62 x (1±10%)
6	4.20	0.6	10.8	90 x (1±10%)
9	6.30	0.9	16.2	202 x (1±10%)
12	8.40	1.2	21.6	360 x (1±10%)
18	12.6	1.8	32.4	810 x (1±10%)
24	16.8	2.4	43.2	1440 x (1±10%)
48 ²⁾	33.6	4.8	86.4	5760 x (1±15%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.
2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

SAFETY APPROVAL RATINGS

UL/CUL	AgNi	16A 277VAC 16A 24VDC 10A 400VAC at 85°C 10A 250VAC at 105°C 20A 250VAC at 85°C
	AgSnO ₂	1HP 240VAC B300/R300 at 85°C TV-5 120VAC 16A 277VAC 16A 24VDC 10A 400VAC at 85°C 10A 250VAC at 105°C 20A 250VAC at 85°C
VDE	AgNi	13A 250VAC at 70°C 16A 250VAC at 85°C NO: 10A 250VAC at 25°C / at 105°C (Only for (217) type)
	AgSnO ₂	16A 250VAC at 85°C 8A 250VAC cosφ=0.4 at 85°C
UL/CUL (HF158F-T)		16A 277VAC at 105°C
VDE (HF158F-T)		NO: 20A 250VAC at Room temp. / 105°C NO: 16A 250VAC at Room temp. / 105°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

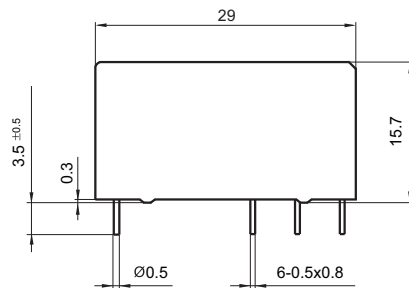
	HF158F /		12	-Z	S	3	3	(XXX)
Type	HF158F: Standard HF158F-T: High temperature							
Coil voltage	5, 6, 9,12, 18, 24, 48VDC							
Contact arrangement	H: 1 Form A		Z: 1 Form C					
Construction ^{1) 2)}	S: Plastic sealed		Nil: Flux proofed					
Version	3: 5.0mm							
Contact material	3: AgNi		T: AgSnO ₂					
Special code ³⁾	XXX: Customer special requirement				Nil: Standard			

- Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc).
- 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (217) stands for product with the electrical endurance of 3×10^5 OPS at 10A load.

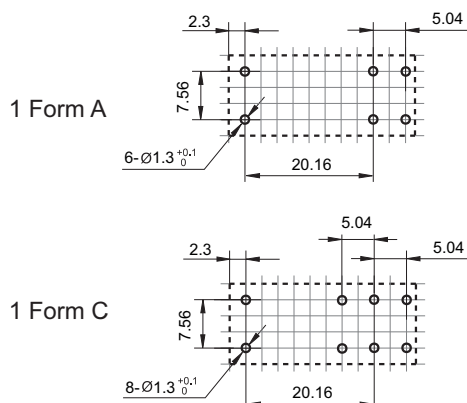
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

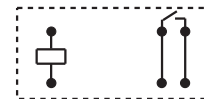


PCB Layout (Bottom view)

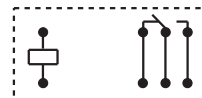


Wiring Diagram (Bottom view)

1 Form A



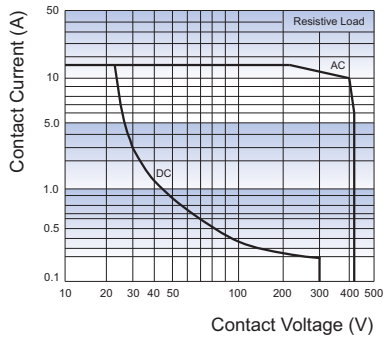
1 Form C



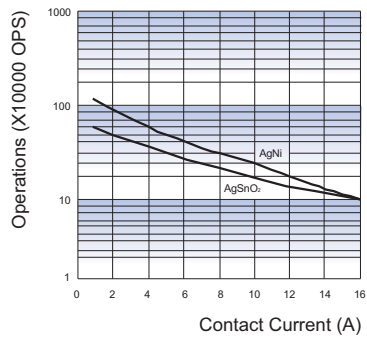
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.
- 2) The tolerance without indicating for PCB layout is always ± 0.1 mm.
- 3) The width of the gridding is 2.52mm.

CHARACTERISTIC CURVES

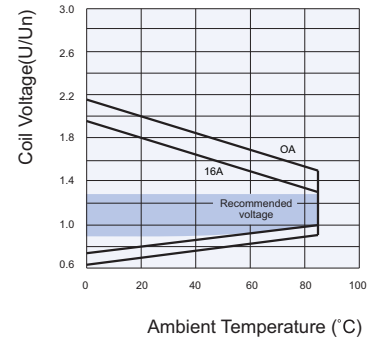
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL OPERATING RANGE (DC) *



Test conditions:

NO, 250VAC, Resistive load,
Flux proofed, Room temp., 1s on 9s off.

Notes: * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life.

An energising voltage over the above range may damage the insulation of relay coil.

Disclaimer

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HF158F-V 1 pole

MINIATURE HIGH POWER RELAY



File No.: 40032833



File No.:E134517



File No.:CQC15002129497



Features

- 10A 300VDC high-voltage switching capability
- 5kV dielectric strength(between coil and contacts)
- Creepage distance:10mm
- Meet Reinforce insulation
- Product in accordance to IEC60335-1 available
- Class F insulation system
- Environmental friendly product(RoHS compliant)
- Outline dimensions: (29.0 x 12.7 x 20.0) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating	10A 300VDC 12A 277VAC
Max. switching voltage	420VDC / 300VAC
Max. switching current	16A
Max. switching power	3000W / 3324VA
Mechanical endurance	2 x 10 ⁶ ops
Electrical endurance	1 x 10 ⁴ ops (10A 300VDC, Resistive load, at 85 °C, 1s on 9s off) 1 x 10 ⁴ ops (12A 277VAC, Resistive load, at 85 °C, 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1500VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. volt.)		10ms max.
Release time (at nomi. volt.)		5ms max.
Shock resistance *	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance *		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 15g
Construction		Flux proofed

Notes: 1) The data shown above are initial values.

2) * Index is not that of relay length direction.

COIL

Coil power	Approx. 400mW
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COIL DATA

at 23°C

Coil Code	Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Coil Resistance Ω
5	5	≤3.75	≥0.5	62 x (1±10%)
6	6	≤4.50	≥0.6	90 x (1±10%)
9	9	≤6.75	≥0.9	200 x (1±10%)
12	12	≤9.00	≥1.2	360 x (1±10%)
18	18	≤13.50	≥1.8	810 x (1±10%)
24	24	≤18.00	≥2.4	1440 x (1±10%)

SAFETY APPROVAL RATINGS

UL/CUL/VDE	4A 420VDC at 85°C
	10A 300VDC at 85°C
	16A 180VDC at 85°C
	12A 277VAC at 85°C
	13A 180VAC at 85°C
	14.5A 160VAC at 85°C

Notes: 1) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.10

ORDERING INFORMATION

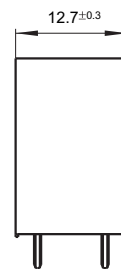
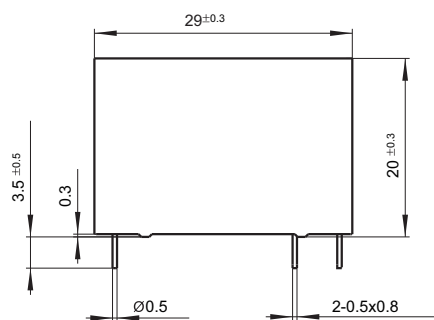
Type	HF158F-V /	12	-H	2	T	(XXX)
Coil voltage	5, 6, 9, 12, 18, 24VDC					
Contact arrangement	H: 1 Form A					
Version	2: 5.0mm 1 pole					
Contact material	T: AgSnO ₂					
Special code ³⁾	XXX: Customer special requirement		Nil: Standard			

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.);
 2) Storage, transportation and installation can not have a strong magnetic field around;
 3) The customer special requirement express as special code after evaluating by Hongfa;
 4) Product contains magnet, so there will be mutual exclusion or attraction between products. During the installation, please consider the installation mounting distance.

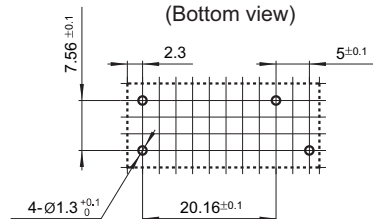
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions



PCB Layout (Bottom view)



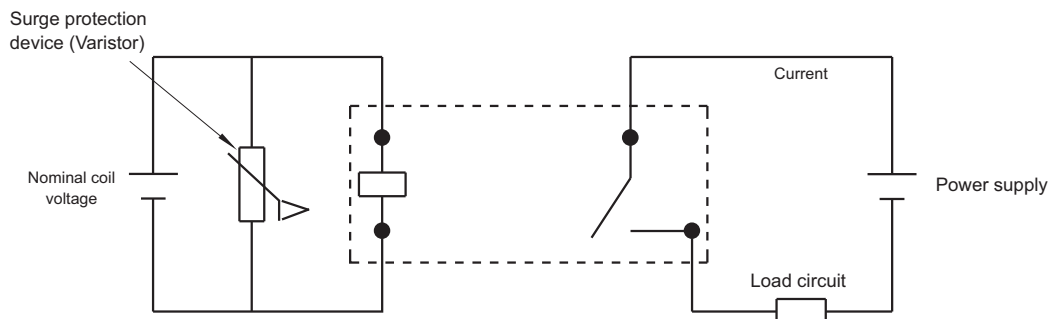
Wiring Diagram (Bottom view)



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.
 2) The tolerance without indicating for PCB layout is always ± 0.1 mm.

CIRCUIT

Load circuit and input circuit (Bottom view)



Notes:

- 1) The output contact terminals and the input coil terminal are no polarity to distinguish.
- 2) Please use varistor as surge protection device. If varistor will not be used, the electrical life need to be derated.
- 3) Varistor surge protection device should be connect parallel to coils. Suitable voltage of varistor is 3 times the coil voltage.
- 4) Avoid using relay under the strong magnetic field, which will decrease the blast function and magnetic, thus cause the arc can not be interrupted and relay damaged.
- 5) To avoid using relays under strong magnetic field because it will change the parameters of relay such as pull-in and drop-out voltage.
- 6) There is magnetic element inside, the magnetism would make the relays stick to each other, in order to avoid the sticking that may lead to deformation or parameter change inside the relay, gap is needed between the relay units.
- 7) There is magnetic element inside, the magnetism would make the relays repel each other. When more than one relay need in board layout, there should be gap between each units, in order to avoid the repel and soldering issue.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF160F

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.: 40024142



File No.: CQC12002072207



Features

- 4.5kV dielectric strength (between coil and contacts)
- Heavy load up to 6250VA
- Ideal for motor switching
- PCB & QC layouts
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (30.4 x 15.9 x 25.4) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂ , AgCdO
Contact rating	Resistive: 20A 250VAC Motor: 2HP 240VAC
Max. switching voltage	Resistive: 250VAC
Max. switching current	25A
Max. switching power	6250VA
Mechanical endurance	2 x 10 ⁶ OPS
Electrical endurance	H, HT type: 1 x 10 ⁵ OPS (20A 250VAC, Resistive load, at 60°C, 1.5s on 1.5s off)

COIL

Coil power	Approx. 900mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	3.5	0.5	6.0	27.8 x (1±10%)
12	8.4	1.2	14.4	160 x (1±10%)
24	16.8	2.4	28.8	640 x (1±10%)
48	33.6	4.8	57.6	2560 x (1±10%)

Notes: * Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4500VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		20ms max.
Release time (at nomi. volt.)		10ms max.
Temperature rise (at nomi. volt.)		60K max.
Shock resistance	Functional	196m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Ambient temperature		-40°C to 85°C
Humidity		5% to 85% RH
Termination		PCB & QC
Unit weight		Approx. 26g
Construction		Flux proofed

Notes: The data shown above are initial values.

SAFETY APPROVAL RATINGS

UL/CUL	25A 277VAC
	20A 250VAC
	1HP 120VAC
	2HP 240VAC
VDE	25A 250VAC at 55°C
	20A 250VAC at 85°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

Type	HF160F /	12	-H	5	T	(XXX)
Coil voltage	5, 12, 24, 48VDC					
Contact arrangement	H: 1 Form A					
Termination	5: PCB & QC					
Contact material	T: AgSnO ₂ Nil: AgCdO					
Special code ³⁾	XXX: Customer special requirement Nil: Standard					

Notes: 1) Water cleaning or surface process is not suggested after the flux-proofed relays are assembled on PCB.

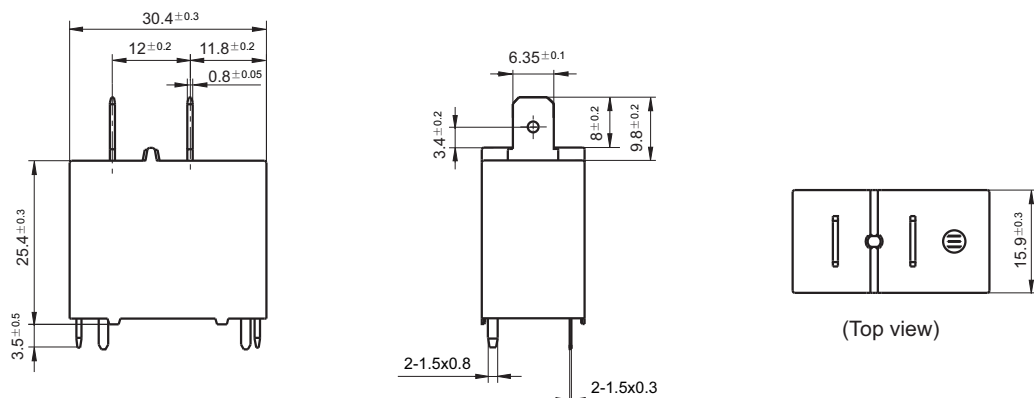
2) Flux-proofed relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.

3) The customer special requirement express as special code after evaluating by Hongfa.

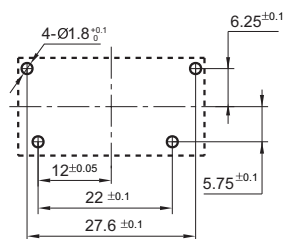
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

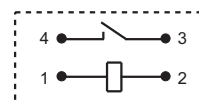
Outline Dimensions



PCB Layout (Bottom view)



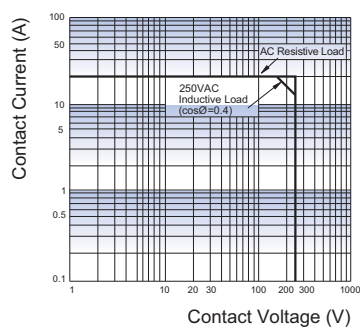
Wiring Diagram



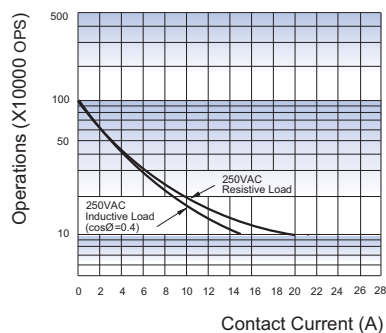
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



ENDURANCE CURVE



Test conditions:

Room temp., 1s on 9s off.

Disclaimer

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HF161F

MINIATURE HIGH POWER RELAY



File No.: E134517



File No.: 40031410



File No.:10002050943



Features

- 4.5kV dielectric strength
(between coil and contacts)
- Heavy load up to 6250VA
- Ideal for motor switching
- PCB layouts available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (30.4 x 15.9 x 23.3) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂ , AgCdO
Contact rating	Resistive: 20A 250VAC Motor: 2HP 250VAC
Max. switching voltage	250VAC
Max. switching current	Resistive: 25A
Max. switching power	6250VA
Mechanical endurance	2 x 10 ⁶ OPS
Electrical endurance	HT type: 1 x 10 ⁵ OPS (20A 250VAC, Resistive load, Room temp., 1.5s on 1.5s off)

COIL

Coil power	Approx. 900mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	3.5	0.5	6.0	27.8 x (1±10%)
12	8.4	1.2	14.4	160 x (1±10%)
24	16.8	2.4	28.8	640 x (1±10%)
48	33.6	4.8	57.6	2560 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4500VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. volt.)		20ms max.
Release time (at nomi. volt.)		10ms max.
Temperature rise (at nomi. volt.)		60K max.
Shock resistance	Functional	196m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Ambient temperature		-40°C to 85°C
Humidity		5% to 85% RH
Termination		PCB
Unit weight		Approx. 21g
Construction		Flux proofed

Notes: The data shown above are initial values.

SAFETY APPROVAL RATINGS

UL/CUL	25A 250VAC at 85°C
	20A 250VAC at 85°C
	2HP 250VAC at 85°C
VDE	25A 250VAC at 85°C
	20A 250VAC at 85°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

	HF161F /	12	-H	T	(XXX)
Type					
Coil voltage	5, 12, 24, 48VDC				
Contact arrangement	H: 1 Form A				
Contact material	T: AgSnO ₂		Nil: AgCdO		
Special code ³⁾	XXX: Customer special requirement		Nil: Standard		

Notes: 1) Water cleaning or surface process is not suggested after the flux-proofed relays are assembled on PCB.

2) Flux-proofed relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.

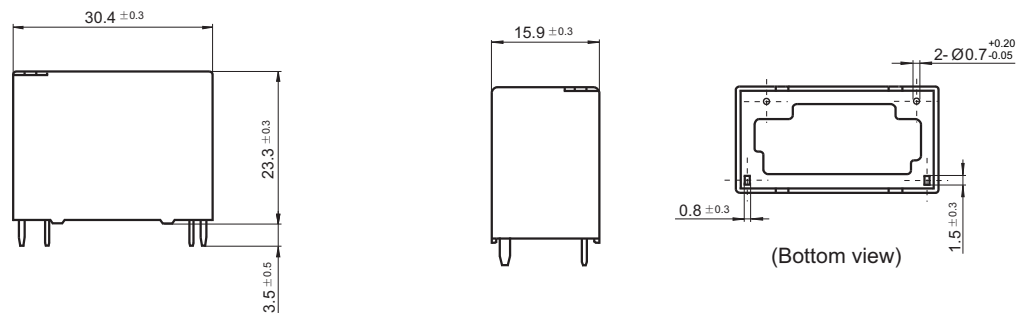
3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (414) stands for product with coil terminal of 1.4X0.4.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

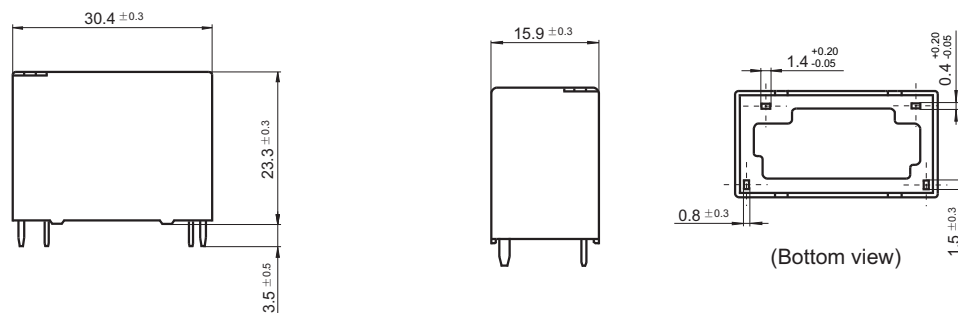
Unit: mm

Outline Dimensions

Standard type

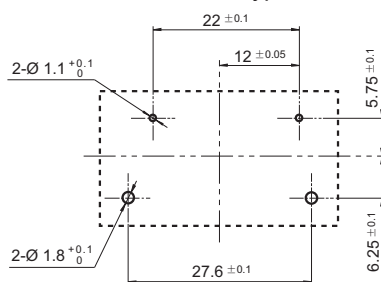


(414) special code version

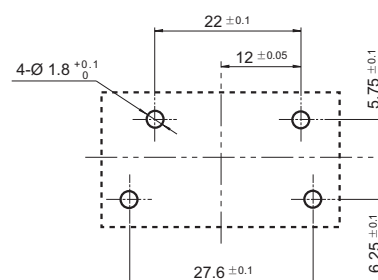


PCB Layout (Bottom view)

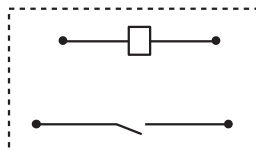
Standard type



(414) special code version



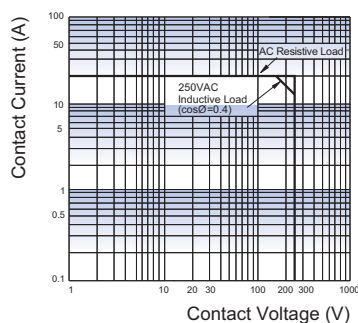
Wiring Diagram



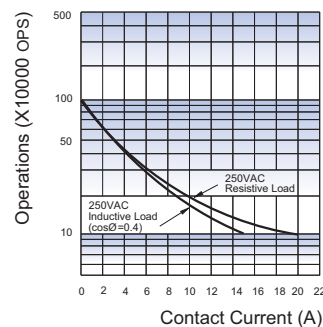
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



ENDURANCE CURVE



Test conditions:

Room temp., 1s on 9s off.

Disclaimer

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HF161F-W

SOLAR RELAY



File No.:E134517



File No.:40031410



File No.:10002050943



Features

- 31A switching capacity
- Applicable to inverter used for photovoltaic power generation systems
- Ideal for UPS
- 1.5mm contact gap (compliant to European Photovoltaic Standard VDE0126)
- 1.8mm contact gap (compliant to IEC 62109-2-2011)
- The clearance distance between contact and coil is bigger than 6.4mm, the creepage distance is bigger than 8mm. (special code 477: 7.5mm)
- Low coil holding voltage contributes to saving energy of equipment.
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (30.4 x 15.9 x 23.3) mm

CONTACT DATA

Contact gap	1.5mm	1.8mm
Contact arrangement	1A	
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	AgSnO ₂	
Contact rating	Resistive: 26A 250VAC Inductive: 31A 250VAC (cosφ=0.8) 0.1s:10s	Resistive: 26A 250VAC Inductive: 33A 250VAC (cosφ=0.8) 0.1s:10s
Max. switching voltage	277VAC	
Max. switching current	31A	33A
Max. switching power	7750VA	8250VA
Mechanical endurance	1 x 10 ⁶ OPS	1 x 10 ⁵ OPS
Electrical endurance	HT type: 3 x 10 ⁴ OPS (26A 250VAC, Resistive load, at 75°C, 1.5s on 1.5s off)	

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	4500VAC 1min
	Between open contacts	2500VAC 1min
Surge voltage (between coil & contacts)	10kV (1.2/50μs)	
Operate time (at nomi. volt.)	20ms max.	
Release time (at nomi. volt.)	10ms max.	
Temperature rise (at nomi. volt.)	95K max. (Contact load current 31A, rated voltage excitation, at 60°C)	
	70K max. (Contact load current 31A, 80% of rated voltage excitation, at 85°C)	
Shock resistance	Functional	196m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Ambient temperature	-40°C to 85°C (Apply holding voltage to coil, which is 45% to 80% that of rated voltage)	
Humidity	5% to 85% RH	
Termination	PCB	
Unit weight	Approx. 21g	
Construction	Flux proofed	

Notes: The data shown above are initial values.

COIL

Coil power	Approx. 1.4W
Holding voltage	35% to 120%Un (at 23°C) 45% to 80%Un (at 85°C)

Notes: 1)The coil holding voltage is the voltage of coil after being applied rated voltage for 100ms
2)The relay coil does not allow applied more than maximum of holding voltage values for a long time (Eg: 120% Un at 23°C; 80% Un at 85°C) , prevent overheating burned.

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
9	6.3	0.9	10.8	58 x (1±10%)
12	8.4	1.2	14.4	103 x (1±10%)
18	12.6	1.8	21.6	230 x (1±10%)
24	16.8	2.4	28.8	410 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	AgSnO ₂	26A 277VAC at 75°C 22A 277VAC at 85°C
		26A 277VAC at 75°C 22A 277VAC at 85°C
VDE	AgSnO ₂	31A 250VAC cosφ=0.8 0.1s:10s 33A 250VAC cosφ=0.8 0.1s:10s (477)

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

Type	HF161F-W / 12 -H T (XXX)
Coil voltage	9, 12, 18, 24VDC
Contact arrangement	H: 1 Form A
Contact material	T: AgSnO ₂
Special code ³⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) Water cleaning or surface process is not suggested after the flux-proofed relays are assembled on PCB.

2) Flux-proofed relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.

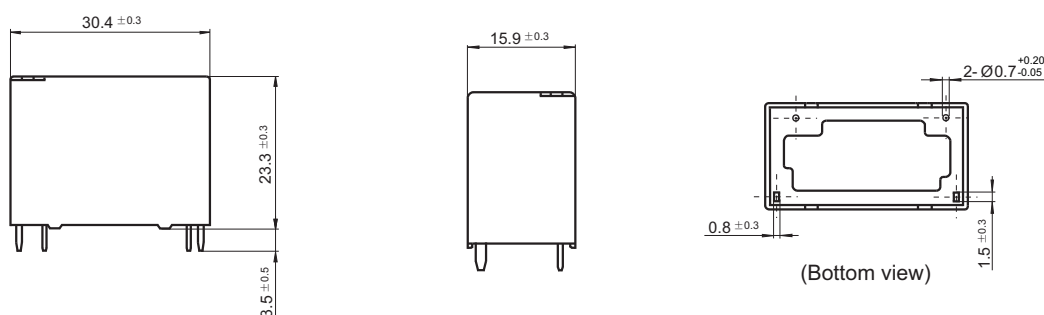
3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (414) stands for product with coil terminal of 1.4X0.4; e.g. (477) stands for Contact gap: 1.8mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

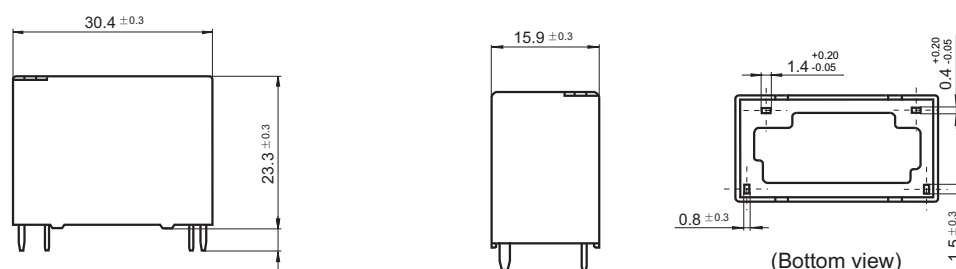
Unit: mm

Outline Dimensions

Standard type

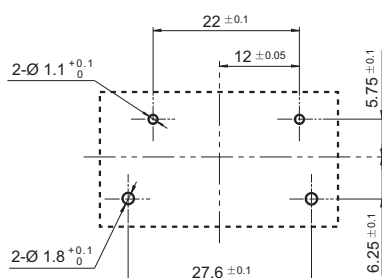


(414) special code version

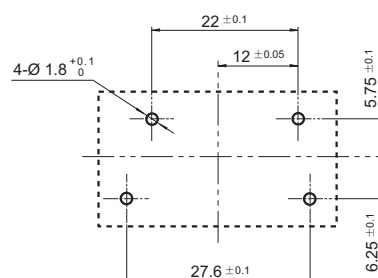


PCB Layout (Bottom view)

Standard type



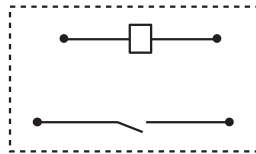
(414) special code version



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

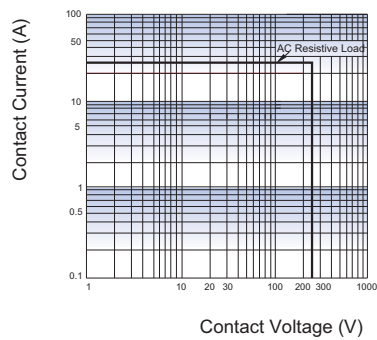
Wiring Diagram



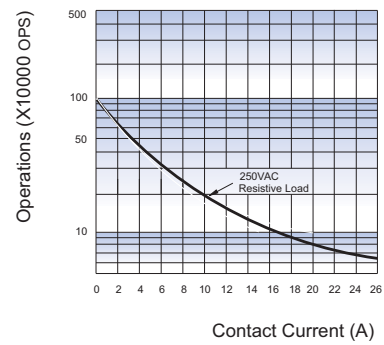
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



ENDURANCE CURVE



Test conditions:
at 75°C , 1.5s on 1.5s off.

Disclaimer

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HF162F/HF162F-E

SUBMINIATURE INTERMEDIATE POWER RELAY

cus

File No.:E133481



File No.:40032669



File No.:CQC10002050942



Features

- High inrush current: TV-8 125VAC (118A inrush current)
- 3A/100A 250VAC capacitive load
- Low height, only 9.3mm (excluding buttons)
- High sensitivity: 250mW,
Ideal for device power reduction
- Silent type available
- Typical applications: Flat-panel TVs, Audio visual equipment and other slim profile devices
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (26.3 x 26.1 x 10.0) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	Silver alloy
Contact rating	10A 125VAC 8A 277VAC 5A 277VAC TV-8 125VAC 3A/100A 250VAC (Capacitive) (Standard type)
Max. switching voltage	277VAC
Max. switching current	10A
Max. switching power	2216VA
Mechanical endurance	1 x 10 ⁶ OPS 5 x 10 ⁴ OPS
Electrical endurance	(10A 125VAC, Resistive load, Room temp., 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2 / 50μs)
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		5ms max.
Ambient temperature		-40°C to 70°C
Humidity		5% to 85% RH
Shock resistance	Functional	196m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Termination		PCB
Unit weight		Approx.12g
Construction		Flux proofed

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class A

COIL

Coil power Approx. 250mW

COIL DATA

at 23°C

Standard type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
3	2.25	0.3	3.9	36 x (1±10%)
5	3.75	0.5	6.5	100 x (1±10%)
6	4.5	0.6	7.8	145 x (1±10%)
9	6.75	0.9	11.7	325 x (1±10%)
12	9.0	1.2	15.6	575 x (1±10%)
18	13.5	1.8	23.4	1300 x (1±10%)
24	18.0	2.4	31.2	2300 x (1±10%)

Silent type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
3	2.4	0.3	3.9	36 x (1±10%)
5	4.0	0.5	6.5	100 x (1±10%)
6	4.8	0.6	7.8	145 x (1±10%)
9	7.2	0.9	11.7	325 x (1±10%)
12	9.6	1.2	15.6	575 x (1±10%)
18	14.4	1.8	23.4	1300 x (1±10%)
24	19.2	2.4	31.2	2300 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	10A 125VAC 8A 277VAC 5A 277VAC TV-8 125VAC
VDE	8A 250VAC 5A 250VAC 3A/100A 250VAC(Standard type)

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

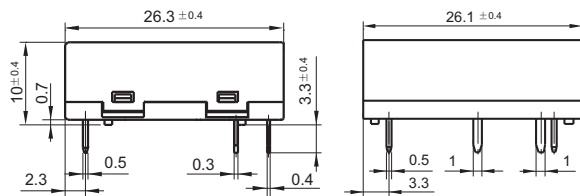
	HF162F /	12	-H	(XXX)
Type	HF162F: Standard type HF162F-E: Silent type			
Coil voltage	3, 5, 6, 9, 12, 18, 24VDC			
Contact arrangement	H: 1 Form A			
Special code¹⁾	XXX: Customer special requirement		Nil: Standard	

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

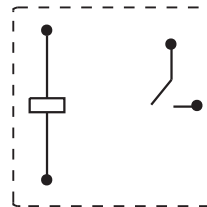
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

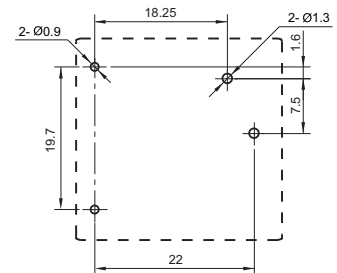
Outline Dimensions



Wiring Diagram
(Bottom view)



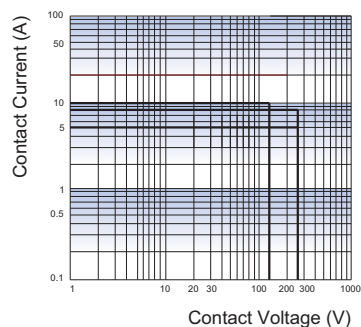
PCB Layout
(Bottom view)



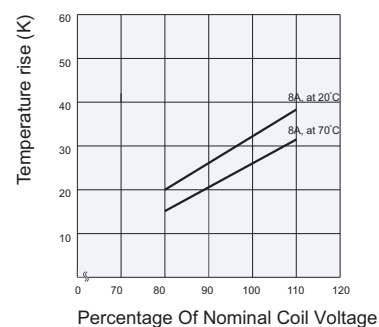
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.
2) The tolerance without indicating for PCB layout is always ± 0.1 mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



COIL TEMPERATURE RISE



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF163F-L SUBMINIATURE INTERMEDIATE POWER LATCHING RELAY



File No.: E134517



File No.: 40039460



Features

- Latching relay
- High sensitive
- Breakdown voltage (between contact and coil): 5,000 V
- High switching capacity: 8A 250VAC
- Surge breakdown voltage (between contact and coil): 12,000 V
- Reflow soldering available
- 1 Form A configuration
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (24.0 x 10.0 x 18.8) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	100mΩ max. (at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	8A 250VAC 5A 30VDC
Max. switching voltage	250VAC / 30VDC
Max. switching current	10A
Max. switching power	2500VA/150W
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	5 x 10 ⁴ OPS(8A 250VAC, Resistive load, at 85°C, 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Set time		15ms max.
Reset time		15ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 2.0mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 8g
Construction		Flux proofed

Notes: The data shown above are initial values.

COIL

Coil power	1 coil latching	Approx. 200mW
	2 coils latching	Approx. 400mW

COIL DATA

at 23°C

1 coil latching (200mW)

Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	Coil Resistance x (1±10%) Ω
3	2.4	2.4	45
5	4.0	4.0	125
6	4.8	4.8	180
9	7.2	7.2	405
12	9.6	9.6	720
24	19.2	19.2	2880

2 coils latching (400mW)

Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	Coil Resistance x (1±10%) Ω
3	2.4	2.4	22.5
5	4.0	4.0	62.5
6	4.8	4.8	90
9	7.2	7.2	202.5
12	9.6	9.6	360
24	19.2	19.2	1440

SAFETY APPROVAL RATINGS

UL/CUL	8A 250VAC at 85°C 5A 30VDC at 85°C 10A 250VAC at 40°C TV-3 125VAC at 40°C 800W 277VAC Tungsten at 40°C 4A 277VAC Standard Ballast at 40°C
VDE	8A 250VAC at 85°C 5A 30VDC at 85°C

- Notes:** 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

	HF163F-L/	12	-H	L2	T	(XXX)
Type						
Coil voltage	3, 5, 6, 9, 12, 24VDC					
Contact form	H: 1 Form A					
Sort	L1: 1 coil latching L2: 2 coils latching					
Contact material	T: AgSnO ₂					

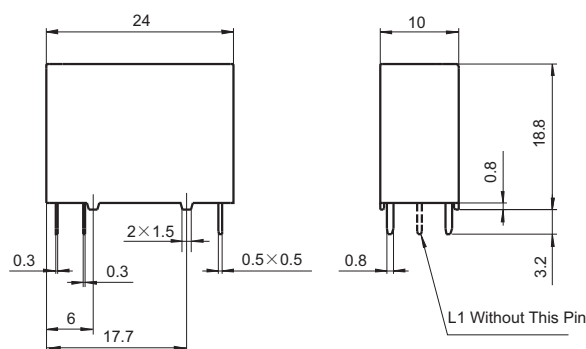
Special code⁴⁾ **XXX:** Customer special requirement **Nil:** Standard

- Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).
 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
 3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.
 4) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT); e.g.(470) stands for product which is suitable for reflow soldering.

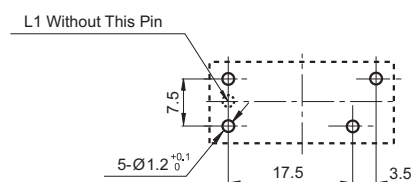
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions



PCB Layout
(Bottom view)



- Remark:** 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.54mm.

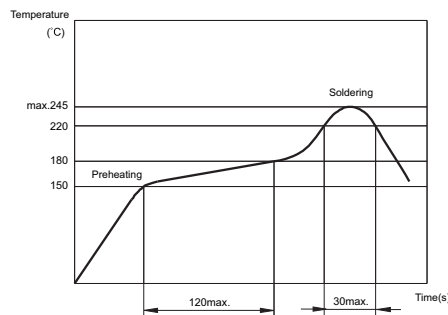
Wiring Diagram (Bottom view)

Reset Status



RECOMMENDED SOLDERING CONDITIONS

Temperature/Time profile of Reflow Soldering see below:



- Notes:** 1) Temperature profile shows Printed Circuit Board surface temperature on the relay terminal portion.
2) Please check the actual soldering condition to use other method except above mentioned temperature profiles.

Notice

- Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
- In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
- Keep the product away from strong magnetic field during transportation, storage and application, to avoid change of set/reset voltage.

Disclaimer

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File No:E134517



File No:40037289



Features

- 35A switching capitable.
- Applicable to inverter used for photovoltaic power generation systems.
- Ideal for UPS.
- 1.8mm contact gap(compliant to European Photovoltaic Standard VDE0126).
- Product in accordance to IEC 60335 available.
- Low coil holding voltage contributes to saving energy of equipment.
- UL insulation system: class F.
- Environmental friendly product (RoHS compliant).
- Outline Dimensions: (32.2 x 27.4 x 19.4) mm.

CONTACT DATA

Contact arrangement	1A
Voltage drop	Typ.: 15mV(at 10A) Max.: 100mV(at 10A)
Contact material	AgSnO ₂
Contact rating (Res. load)	Resistive: 35A 250VAC Inductive: 35A 277VAC (cosφ=0.8) 1s:9s
Max. switching voltage	277VAC
Max. switching current ¹⁾	35A
Max. switching power	9695VA
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	3 x 10 ⁴ OPS (35A 250VAC, Resistive load, at 85°C, 1s on 9s off)

Notes: 1)The relay connections and wiring have to be designed with an adequate cross sections to ensure the current flow and heat dissipation.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2500VAC 1min
Surge voltage (between coil & contacts)		6kV (1.2/50μs)
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		10ms max.
Temperature rise (at nomi. volt.)		70K max.(Contact load current 35A, 50% of rated voltage excitation, at 85° C)
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Ambient temperature		-40°C to 85°C (Apply holding voltage to coil)
Humidity		5% to 85% RH
Termination		PCB
Unit weight		Approx.36g
Construction		Flux proofed

Notes: The data shown above are initial values.

COIL

Coil power	Approx.2.25W
Holding voltage	40% to 110%U _N (at 23°C) 50% to 70%U _N (at 85°C)

Notes: 1)The coil holding voltage is the voltage applied to coil 100ms after the rated voltage.
2)To avoid overheating and burning, the coil can not be consistently applied to with voltage larger than maximum holding voltage.

COIL DATA

at 23°C

Nominal Voltage VDC ¹⁾	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	Coil Resistance Ω
5	3.75	0.35	5.5	11.1 x (1±10%)
12	9	0.84	13.2	64 x (1±10%)
24	18	1.68	26.4	256 x (1±10%)
48	36	3.36	52.8	1024 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

SAFETY APPROVAL RATINGS

UL/CUL	35A 277VAC/250VAC general use 3 x 10 ⁴ OPS at 85°C
VDE	35A 250VAC 3 x 10 ⁴ OPS at 85°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

	HF165F /	12	-H	T	(XXX)
Type					
Coil voltage	5, 12, 24, 48VDC				
Contact arrangement	H:1 Form A				
Contact material	T: AgSnO ₂				
Special code ³⁾	XXX: Customer special requirement		Nil: Standard		

Notes: 1) Water cleaning or surface process is not suggested after the flux-proofed relays are assembled on PCB.

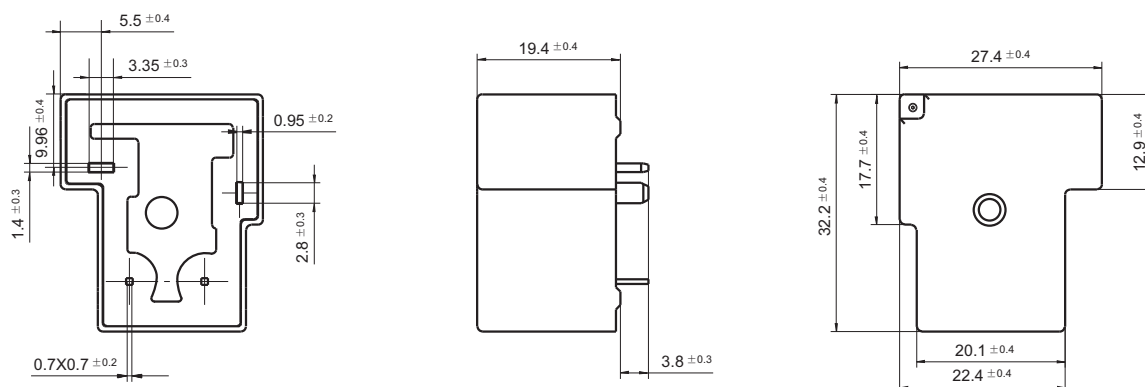
2) Flux-proofed relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

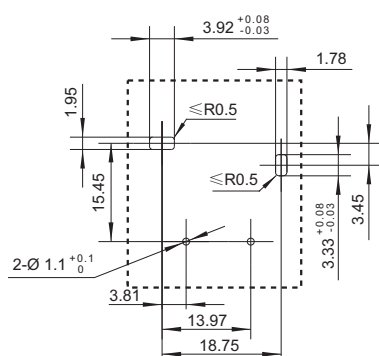
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

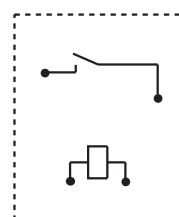
Outline Dimensions



PCB Layout (Bottom view)



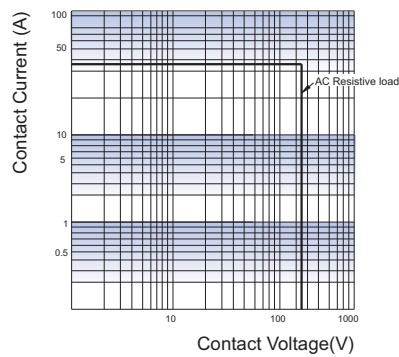
Wiring Diagram



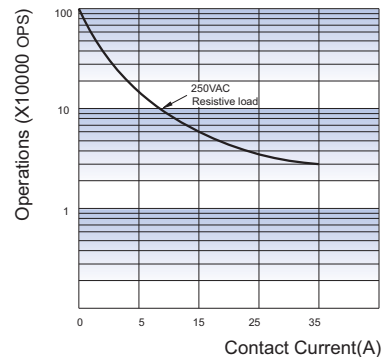
- Notes: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.
2) The tolerance without indicating for PCB layout is always ± 0.1 mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



ENDURANCE CURVE



Test conditions:
Resistive load, 250VAC,
Flux proofed, at 85°C, 1s on 9s off

Disclaimer
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HF165FD

MINIATURE HIGH POWER RELAY



File No.: E134517



File No.: 40043143



File No.: CQC15002130956



Features

- 30A switching capability
- Breakdown voltage (between contact and coil): 4kV
- Creepage distance: 5.5mm
- Plastic sealed and flux proofed types available
- Product in accordance to IEC 60335-1 available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (32.2 x 27.5x 20.4) mm

CONTACT DATA

Contact arrangement	1A	1B	1C
Contact resistance	100mΩ max. (at 1A 6VDC)		
Contact material	AgSnO ₂		
Contact rating (Res. load)	30A 277VAC	15A 277VAC	20A 277VAC 10A 277VAC
Max. switching voltage	277VAC		
Max. switching current	30A	30A	30A 15A
Max. switching power	8310VA	8310VA	8310VA 4155VA
Mechanical endurance	1 x 10 ⁷ OPS		
Electrical endurance ¹⁾	1 x 10 ⁵ OPS (NO: 30A 277VAC, Resistive load, Room temp., 1s on 9s off)		

Notes: 1) For plastic sealed type, the venting-hole should be opened in electrical endurance test.

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between open contacts	1500VAC 1min
	Between coil & contacts	2500VAC 1min(Standard) 4000VAC 1min(V Type)
Surge voltage	6kV (1.2/50μs)	
Operate time (at nomi. volt.)	15ms max.	
Release time (at nomi. volt.)	10ms max.	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Ambient temperature	-40℃ to 85℃	
Termination	PCB	
Unit weight	Approx. 25g	
Construction	Plastic sealed Flux proofed	

Notes: 1) The data shown above are initial values.

COIL

Coil power	Approx. 900mW
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COIL DATA

at 23℃

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ¹⁾	Coil Resistance Ω
5	3.75	0.5	6.5	27 x (1±10%)
6	4.50	0.6	7.8	40 x (1±10%)
9	6.75	0.9	11.7	97 x (1±10%)
12	9.00	1.2	15.6	155 x (1±10%)
15	11.25	1.5	19.5	256 x (1±10%)
18	13.50	1.8	23.4	380 x (1±10%)
24	18.00	2.4	31.2	660 x (1±10%)
48 ²⁾	36.00	4.8	62.4	2560 x (1±10%)
70 ²⁾	52.50	7.0	91.0	5500 x (1±10%)
110 ²⁾	82.50	11.0	143.0	13450 x (1±10%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

SAFETY APPROVAL RATINGS

UL/CUL	NO	30A 277VAC at 85℃ 20A 277VAC at 105℃ 2HP 240VAC/1HP 120VAC at 40℃ 96LRA 30FLA 277VAC at 40℃ TV-8 125VAC at 40℃
	NC	30A 277VAC at 40℃ 20A 277VAC at 85℃ 15A 277VAC at 40℃
VDE	NO	30A 250VAC at 60℃ 20A 250VAC at 85℃
	NC	15A 250VAC at 85℃
	CO	20A/10A 250VAC at 85℃

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

2017 Rev. 1.01

ORDERING INFORMATION

	HF165FD	/12	-H	Y1	S	T	F	V	(XXX)
Type									
Coil voltage	5, 6, 9, 12, 15, 18, 24, 48, 70, 110								
Contact arrangement	H: 1 Form A D: 1 Form B Z: 1 Form C								
Termination	Y1: Without Pin NO.6			Y2: With Pin NO.6					
Construction ¹⁾	S: Plastic sealed			Nil: Flux proofed					
Contact material	T: AgSnO ₂								
Insulation standard	F: Class F								
Dielectric strength standard	Nil: Standard product(2500VAC Between coil & contacts)								
	V : High Dielectric strength(Only for Y1 Termination) (4000VAC Between coil & contacts)								
Special code ²⁾	XXX: Customer special requirement			Nil: Standard					

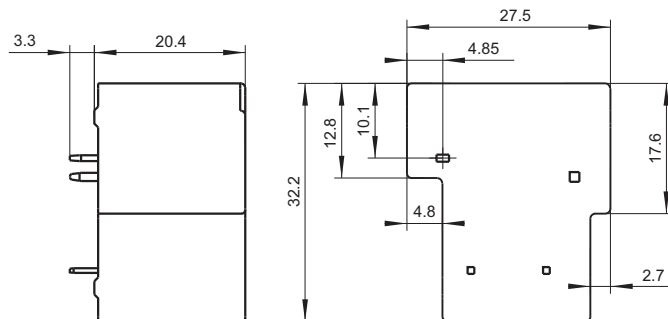
Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).
We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
2) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

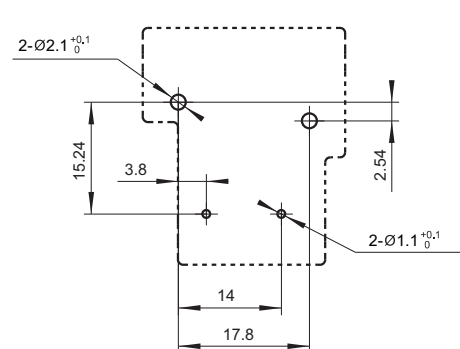
Outline Dimensions

HF165FD/□□-HY1□□□□

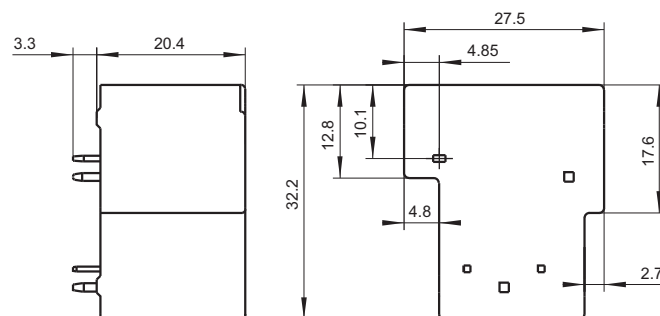


PCB Layout (Bottom view)

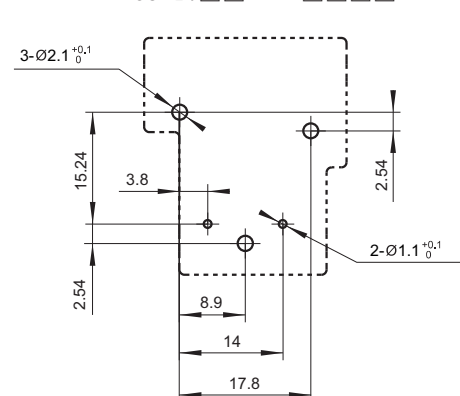
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HF165FD/□□-HY2□□□□



HF165FD/□□-HY2□□□□

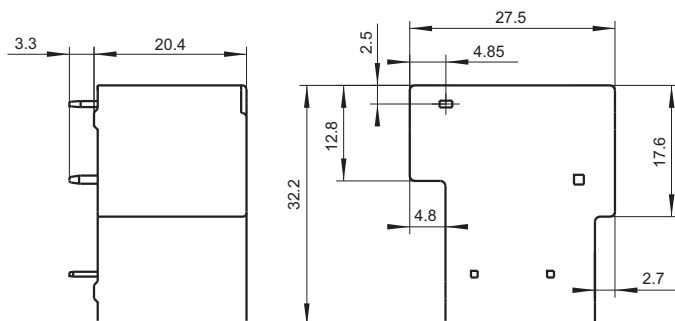


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

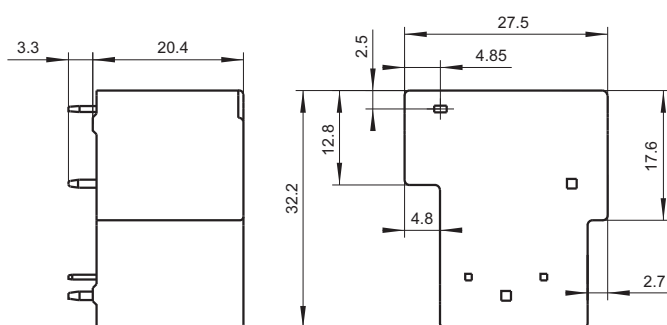
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Outline Dimensions

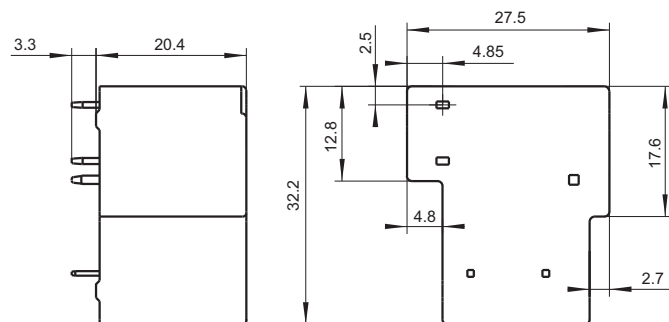
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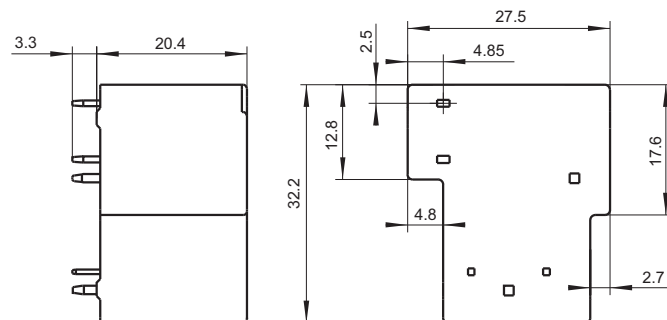
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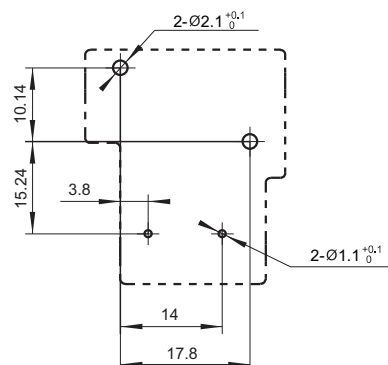


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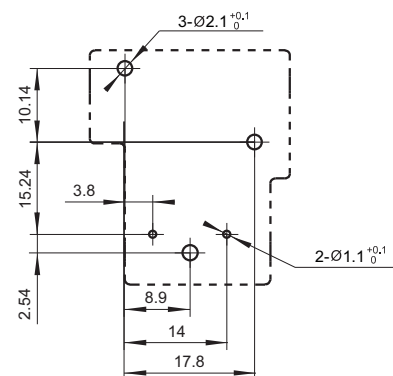


PCB Layout (Bottom view)

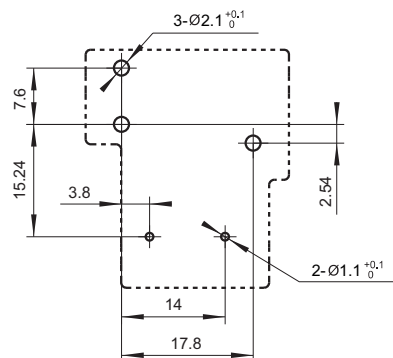
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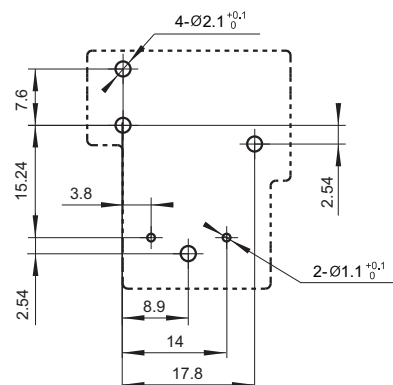
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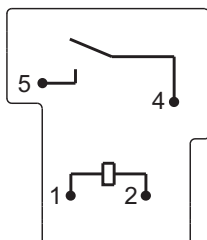


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

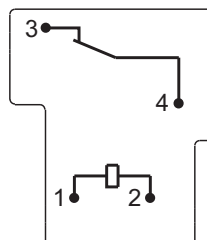
Unit: mm

Wiring Diagram (Bottom view)

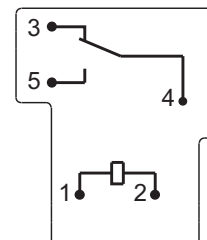
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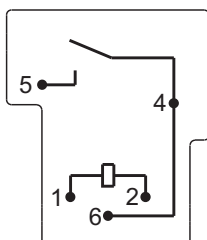
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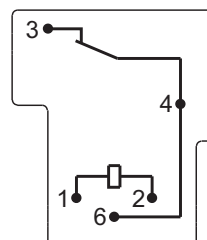
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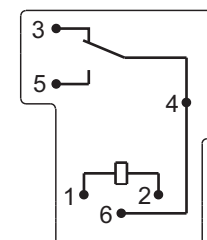
HF165FD/□□-HY2□□□□



HF165FD/□□-DY2□□□□



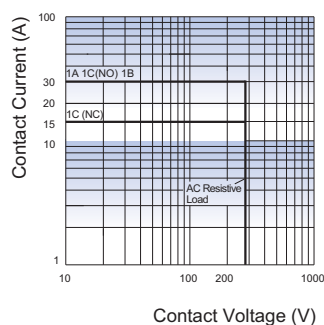
HF165FD/□□-ZY2□□□□



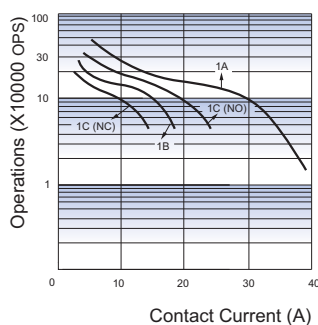
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.5mm.

CHARACTERISTIC CURVES

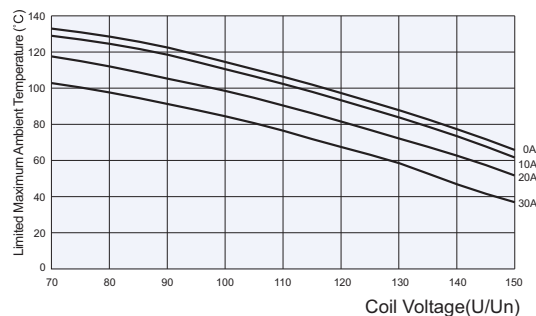
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL OPERATING RANGE (AC)



Test conditions:

Flux proofed, Room temp.,
1s on 9s off.

Disclaimer

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HF165FD-G

MINIATURE HIGH POWER RELAY



File No.: E134517



File No.: 40043143



File No.: CQC15002130956



Features

- 40A switching capability
- Breakdown voltage (between contact and coil): 4kV
- Creepage distance: 5.5mm
- Plastic sealed and flux proofed types available
- Product in accordance to IEC 60335-1 available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (32.2 x 27.5x 20.4) mm

CONTACT DATA

Contact arrangement	1A
Contact resistance	100mΩ max. (at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	40A 277VAC
Max. switching voltage	277VAC
Max. switching current	40A
Max. continuous current ¹⁾	30A
Max. switching power	11080VA
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance ²⁾	1 x 10 ⁴ OPS (NO: 40A 277VAC, Resistive load, Room temp., 1s on 9s off, Flux proofed)

Notes: 1) Long time current-carrying under 40A condition is prohibited.
2) For plastic sealed type, the venting-hole should be opened in electrical endurance test.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between open contacts	1500VAC 1min
	Between coil & contacts	2500VAC 1min(Standard) 4000VAC 1min(V Type)
Surge voltage		6kV (1.2/50μs)
Operate time (at nomi. volt.)		15ms max.
Release time (at nomi. volt.)		10ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40℃ to 85℃
Termination		PCB
Unit weight		Approx. 25g
Construction ²⁾		Plastic sealed Flux proofed

Notes: 1) The data shown above are initial values.

COIL

Coil power	Approx. 900mW
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COIL DATA at 23℃

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ¹⁾	Coil Resistance Ω
5	3.75	0.5	6.5	27 x (1±10%)
6	4.50	0.6	7.8	40 x (1±10%)
9	6.75	0.9	11.7	97 x (1±10%)
12	9.00	1.2	15.6	155 x (1±10%)
15	11.25	1.5	19.5	256 x (1±10%)
18	13.50	1.8	23.4	380 x (1±10%)
24	18.00	2.4	31.2	660 x (1±10%)
48 ²⁾	36.00	4.8	62.4	2560 x (1±10%)
70 ²⁾	52.50	7.0	91.0	5500 x (1±10%)
110 ²⁾	82.50	11.0	143.0	13450 x (1±10%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

SAFETY APPROVAL RATINGS

UL/CUL	NO	40A 277VAC 40℃ 30A 277VAC 85℃ 2HP 240VAC/1HP 120VAC 40℃ 96LRA, 30FLA 40℃ TV-8 125VAC 40℃
		40A 250VAC
VDE	NO	

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

Type		HF165FD-G /12 -H Y1 S T F V (XXX)						
Coil voltage		5, 6, 9, 12, 15, 18, 24, 48, 70, 110						
Contact arrangement		H: 1 Form A						
Termination		Y1: Without Pin NO.6		Y2: With Pin NO.6				
Construction ¹⁾		S: Plastic sealed		Nil: Flux proofed				
Contact material		T: AgSnO ₂						
Insulation standard		F: Class F						
Dielectric strength standard		Nil: Standard product(2500VAC Between coil & contacts) V: High Dielectric strength(Only for Y1 Termination) (4000VAC Between coil & contacts)						
Special code ²⁾		XXX: Customer special requirement			Nil: Standard			

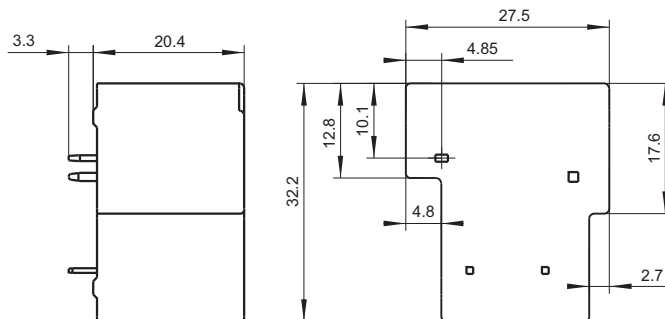
Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).
2) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

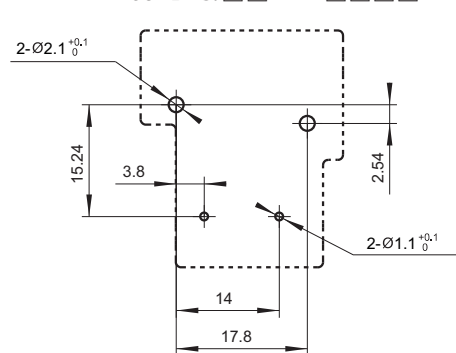
Outline Dimensions

HF165FD-G/□□-HY1□□□□

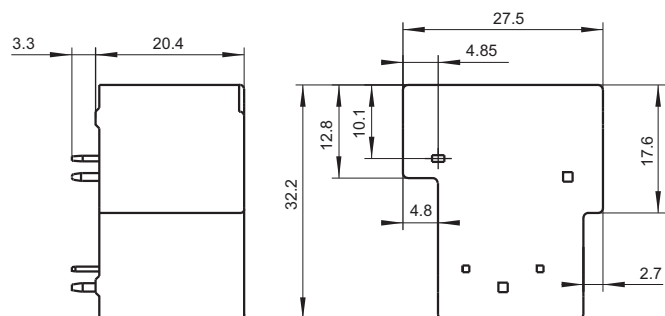


PCB Layout (Bottom view)

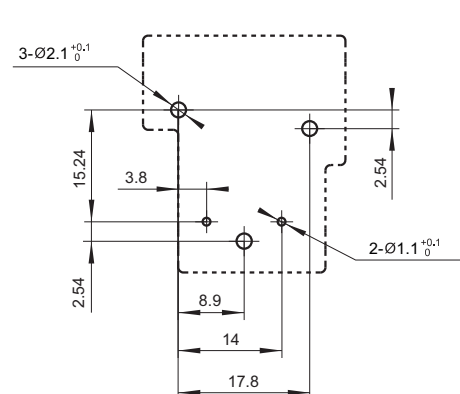
HF165FD-G/□□-HY1□□□□



HF165FD-G/□□-HY2□□□□



HF165FD-G/□□-HY2□□□□

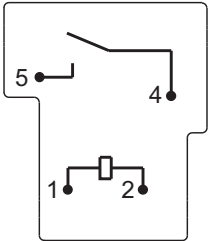


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

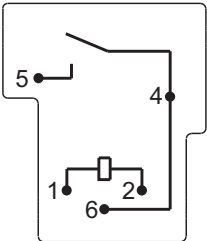
Unit: mm

Wiring Diagram (Bottom view)

HF165FD-G/□□-HY1□□□□



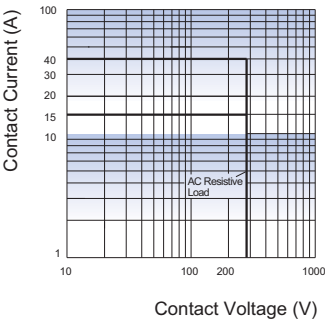
HF165FD-G/□□-HY2□□□□



- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
3) The width of the gridding is 2.5mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



Disclaimer

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HF166F

MINIATURE HIGH POWER LATCHING RELAY



File No.:E133481



File No.:R50280244



Features

- Latching relay
- 4mm contact gap available
- 25A switching capability
- 5kV dielectric strength(between coil and contacts)
- Creepage distance between coil and contacts:10mm
- Product in accordance to IEC 60335-1 available
- UL insulation system: Class F
- 1A + 1B configuration for power switching
- Flux proofed type available
- Outline Dimensions: (50.0 x 27.0 x 20.0) mm

CONTACT DATA

Contact arrangement	1A+1B
contact gap	4mm min.
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	25A 277VAC
Max. switching voltage	277VAC
Max. switching current	25A
Max. switching power	6925VA
Mechanical endurance	6 x 10 ⁵ OPS
Electrical endurance	3 x 10 ⁴ OPS (NO or NC, 25A 277VAC, Resistive load, at 85°C, 1s on 9s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	2000VAC 1min
Surge voltage (between coil & contacts)		10kV (1.2/50μs)
Set time (at nomi. volt.)		25ms max.
Reset time (at nomi. volt.)		25ms max.
Shock resistance	Functional	100m/s ²
	Destructive	1000m/s ²
Vibration resistance		10Hz to 55Hz 2mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 45g
Construction		Flux proofed

Notes: 1) The data shown above are initial values.

COIL

Coil power	1 coil latching: 1.2W 2 coils latching: 2.4W
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COIL DATA

at 23°C

1 coil latching

Nominal Voltage VDC	Set Voltage VDC max.	Pulse width (ms) min.	Reset Voltage VDC max.	Coil Resistance Ω
5	4	150	4	20.8x (1±10%)
6	4.8	150	4.8	30x (1±10%)
12	9.6	150	9.6	120x (1±10%)
24	19.2	150	19.2	480x (1±10%)
48	38.4	150	38.4	1920x (1±10%)

2 coils latching

Nominal Voltage VDC	Set Voltage VDC max.	Pulse width (ms) min.	Reset Voltage VDC max.	Coil Resistance Ω
5	4	150	4	10.4x (1±10%)
6	4.8	150	4.8	15x (1±10%)
12	9.6	150	9.6	60x (1±10%)
24	19.2	150	19.2	240x (1±10%)
48	38.4	150	38.4	960x (1±10%)

SAFETY APPROVAL RATINGS

UL/CUL	25A 277VAC/250VAC/125VAC at 85°C 25A 60VDC at 85°C 0.5A 240VDC at 85°C
TÜV	25A 400VDC, at 85°C, ON:5S, OFF:5S, Contacts break without load 70A 72VDC, at 85°C, ON:0.3S, OFF:9S, Contacts break without load 25A 277VAC/250VAC/125VAC at 85°C 25A 60VDC at 85°C 0.5A 240VDC at 85°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

	HF166F /		12	-1HD	L2	T	(XXX)
Type							
Coil voltage	5, 6, 12, 24, 48VDC						
Contact arrangement	1HD: 1A + 1B						
Sort	L1: 1 coil latching			L2: 2 coils latching			
Contact material	T: AgSnO ₂						
Special code ³⁾	XXX: Customer special requirement				Nil: Standard		

Notes: 1) Flux-proofed relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.

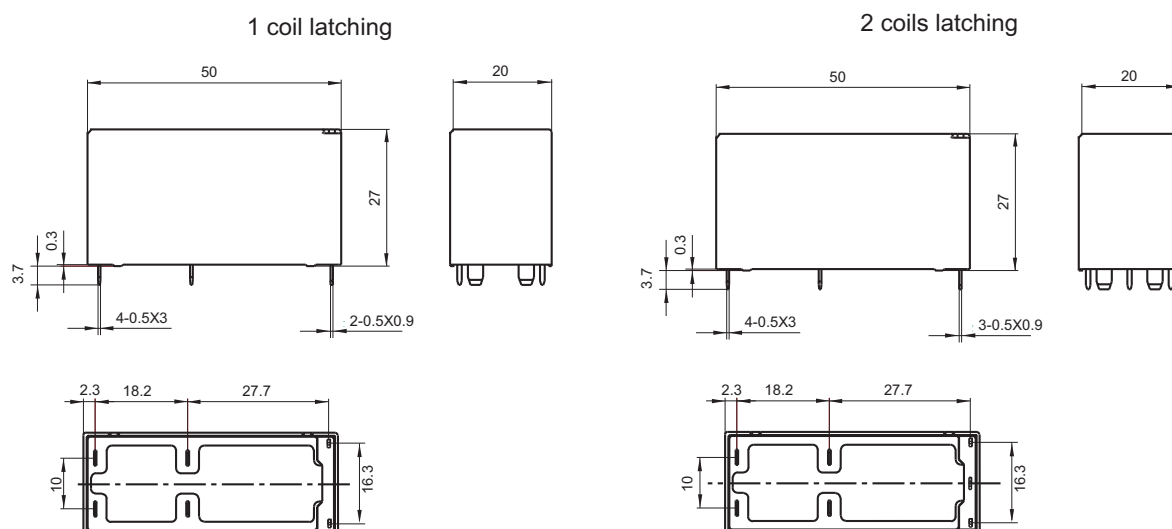
2) Water cleaning or surface process is not suggested after the flux-proofed relays are assembled on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

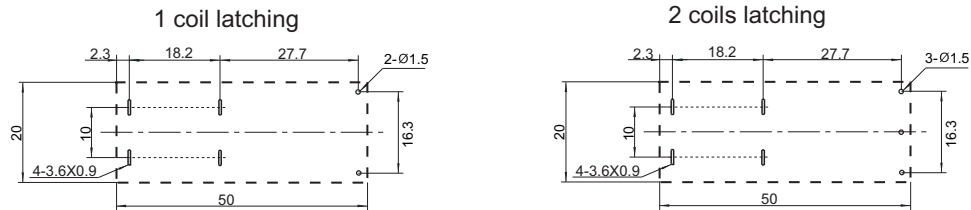
Outline Dimensions



Wiring Diagram(Bottom view)



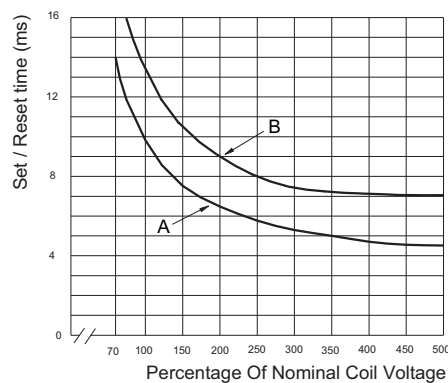
PCB Layout (Bottom view)



- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.52mm.

CHARACTERISTIC CURVES

SET \ RESET TIME AND VOLTAGE CURVE



Notes:
 Curve B: max value
 Curve A: typical value

Notice

- Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
- In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be more than 150 ms. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
- Keep the product away from strong magnetic field during transportation, storage and application, to avoid change of set/reset voltage.

Disclaimer

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HF2100

MINIATURE HIGH POWER RELAY

c  US

File No.:E134517



File No.:R50153835



File No.:CQC10002049166



Features

- 30A switching capability
- PCB coil terminals, ideal for heavy duty load
- 2.5kV dielectric strength (between coil and contacts)
- Plastic sealed and Dust protected types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (32 x 27.5 x 28.0) mm

CONTACT DATA

Contact arrangement	1A	1B	1C (NO)	1C (NC)
Contact resistance	50mΩ max.(at 1A 24VDC)			
Contact material	AgSnO ₂ , AgCdO			
Contact rating (Res. load)	30A 240VAC 20A 30VDC	15A 240VAC 10A 30VDC	20A 240VAC 20A 30VDC	10A 240VAC 10A 30VDC
Max. switching power	7200VA 600W	3600VA 300W	4800VA 600W	2400VA 300W
Max. switching voltage	277VAC / 30VDC			
Max. switching current	40A	15A	20A	10A
Mechanical endurance	1 x 10 ⁷ OPS			
Electrical endurance	1A type(Non-plastic sealed): 1 x 10 ⁵ OPS (30A 240VAC, Resistive load, AgCdO, Room temp., 1s on 9s off)			

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	1500VAC 1min
Operate time (at nomi. volt.)	15ms max.	
Release time (at nomi. volt.)	10ms max.	
Ambient temperature	-55°C to 85°C	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Termination	PCB & QC	
Unit weight	Approx. 35g	
Construction	Plastic sealed, Dust protected	

- Notes:** 1) For plastic sealed type, the venting-hole should be opened in test.
 2) The data shown above are initial values.
 3) Please find coil temperature curve in the characteristic curves below.
 4) UL insulation system: Class F, Class B.

COIL

Coil power	Approx. 900mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	3.75	0.5	6.5	27 x (1±10%)
6	4.50	0.6	7.8	40 x (1±10%)
9	6.75	0.9	11.7	97 x (1±10%)
12	9.00	1.2	15.6	155 x (1±10%)
15	11.25	1.5	19.5	256 x (1±10%)
18	13.50	1.8	23.4	380 x (1±10%)
24	18.00	2.4	31.2	660 x (1±10%)
48	36.00	4.8	62.4	2560 x (1±10%)
70	52.50	7.0	91.0	5500 x (1±10%)
110	82.50	11.0	143.0	13450 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

SAFETY APPROVAL RATINGS

UL/CUL

Contact material	Load type	Volts	1 Form A	1 Form B	1 Form C (NO)	1 Form C (NC)
AgCdO	General purpose	125/240VAC	30A	15A	30A	15A
		277VAC	30A	30A	30A	30A
	Resistive	125/240VAC	30A	15A	--	--
		30VDC	20A	10A	20A	10A
		277VAC	20A	--	--	--
		240VAC	15A	--	--	--
		250VAC	40A		40A	
	Ballast	125/240/277VAC	6A	3A	6A	3A
	Pilot duty	125VAC	800VA	290VA	800VA	290VA
		125VAC	690VA	--	690VA	--
		125VAC	800VA	--	800VA	--
		240VAC	1152VA	768VA	1152VA	768VA
		277VAC	764VA	--	764VA	--
	Motor load	125VAC	1HP	1/4HP	1HP	1/4HP
		240VAC	2HP	1HP	2HP	1HP
		125VAC	1HP	--	1HP	--
		125/277VAC	3/4HP	--	3/4HP	--
	Definite purpose (LRA-loaded rotor) (FLA-full load)	120VAC	82.8LRA, 13.8FLA	--	82.8LRA, 13.8FLA	--
		125VAC	96LRA, 30FLA	33LRA, 10FLA	60LRA, 20FLA	33LRA, 10FLA
		125VAC	60LRA, 20FLA	30LRA, 12FLA	60LRA, 20FLA	30LRA, 12FLA
		125VAC	82.8LRA, 27FLA	--	82.8LRA, 27FLA	--
		240VAC	80LRA, 30FLA	33LRA, 10FLA	60LRA, 20FLA	33LRA, 10FLA
		240VAC	41.4LRA, 6.9FLA	--	41.4LRA, 6.9FLA	--
		277VAC	60LRA, 20FLA	--	60LRA, 20FLA	--
	Tungsten	125VAC	15A	--	15A	--
		240VAC	5A	--	5A	3A
		120VAC	--	3A	--	--
		240VAC	--	3A	--	--
AgSnO ₂	General purpose	125/240VAC	30A	--	--	--
	Resistive	250VAC	40A	--	--	--
	General purpose	240VAC	--	15A	--	--

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF2100	-1A	-12D	E	T	F	(XXX)
Contact arrangement	1A: 1 Form A 1B: 1 Form B 1C: 1 Form C						
Coil voltage	5, 6, 9, 12, 15, 18, 24, 48, 70, 110VDC						
Construction ¹⁾	E: Plastic sealed		Nil: Dust protected				
Contact material	T: AgSnO ₂		Nil: AgCdO				
Insulation standard	F: Class F		Nil: Class B				
Special code ³⁾	XXX: Customer special requirement			Nil: Standard			

Notes: 1) We recommend dust protected types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclear environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

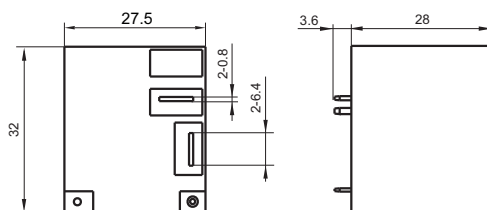
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

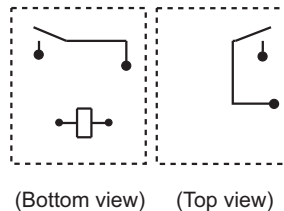
Unit: mm

1 Form A

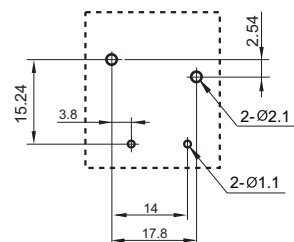
Outline Dimensions



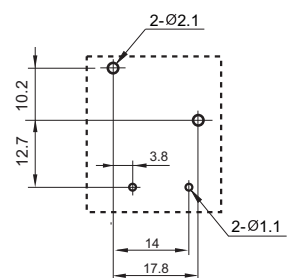
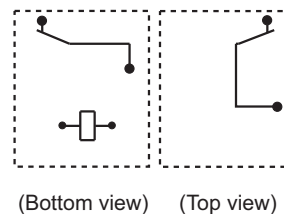
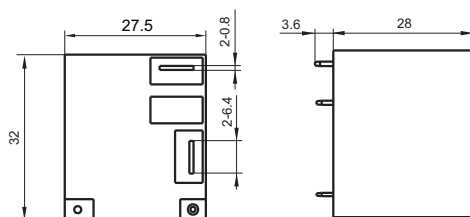
Wiring Diagram



PCB Layout
(Bottom view)



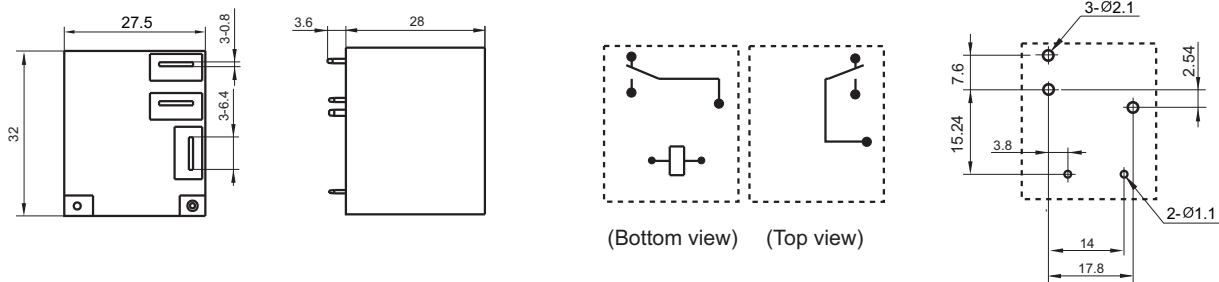
1 Form B



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

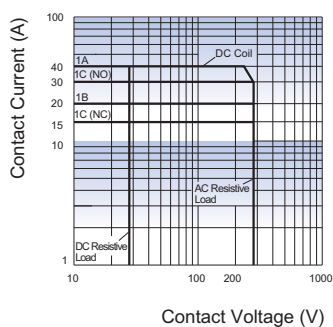
1 Form C



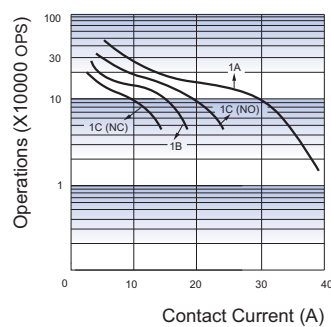
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.
 2) The tolerance without indicating for PCB layout is always ± 0.1 mm.

CHARACTERISTIC CURVES

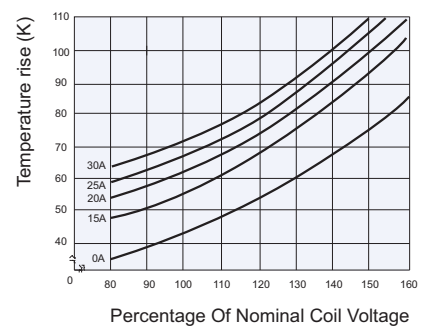
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



Test conditions:

Resistive load, AgCdO, Dust protected,
 Room temp., 1s on 9s off.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF2110/HF2120

MINIATURE HIGH POWER RELAY

US

File No.:E134517



File No.:CQC10002049166



Features

- 30A switching capability
- PCB coil terminals, ideal for heavy duty load
- 2.5kV dielectric strength (between coil and contacts)
- Unenclosed type available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (HF2110)(28.4 x 23.5 x 15.3) mm

CONTACT DATA

Contact arrangement	1A	1B	1C(NO)	1C(NC)
Contact resistance	50mΩ max.(at 1A 24VDC)			
Contact material	AgSnO ₂ , AgCdO			
Contact rating (Res. load)	30A 240VAC 20A 30VDC	15A 240VAC 10A 30VDC	20A 240VAC 20A 30VDC	10A 240VAC 10A 30VDC
Max. switching power	7200VA 600W	3600VA 300W	4800VA 600W	2400VA 300W
Max. switching voltage	277VAC / 30VDC			
Max. switching current	40A	15A	20A	10A
Mechanical endurance	1 x 10 ⁷ OPS			
Electrical endurance	1A type: 1 x 10 ⁵ OPS (30A 240VAC, Resistive load, AgCdO, Room temp., 1s on 9s off)			

COIL

Coil power	Approx. 900mW
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COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	3.75	0.5	6.5	27 x (1±10%)
6	4.50	0.6	7.8	40 x (1±10%)
9	6.75	0.9	11.7	97 x (1±10%)
12	9.00	1.2	15.6	155 x (1±10%)
15	11.25	1.5	19.5	256 x (1±10%)
18	13.50	1.8	23.4	380 x (1±10%)
24	18.00	2.4	31.2	660 x (1±10%)
48	36.00	4.8	62.4	2560 x (1±10%)
70	52.50	7.0	91.0	5500 x (1±10%)
110	82.50	11.0	143.0	13450 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	HF2110/HF2120: 2500VAC 1min HF2111/HF2121: 2000VAC 1min
	Between open contacts	1500VAC 1min
Operate time (at nomi. volt.)	15ms max.	
Release time (at nomi. volt.)	10ms max.	
Ambient temperature	-55°C to 85°C	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1mm DA	
Humidity	5% to 85% RH	
Termination	HF2110/2111: PCB HF2120/2121: PCB & QC	
Unit weight	Approx. 25g	
Construction	Unenclosed	

- Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

SAFETY APPROVAL RATINGS

UL/CUL

Load type	Volts	1 Form A	1 Form B	1 Form C (NO)	1 Form C (NC)
General purpose	125/240VAC	30A	15A	30A	15A
	277VAC	30A	30A	30A	30A
Resistive	125/240VAC	30A	15A	--	--
	30VDC	20A	10A	20A	10A
	277VAC	20A	--	--	--
	240VAC	15A	--	--	--
	250VAC	40A	--	40A	--
Ballast	125/240/277VAC	6A	3A	6A	3A
Pilot duty	125VAC	800VA	290VA	800VA	290VA
	125VAC	690VA	--	690VA	--
	125VAC	800VA	--	800VA	--
	240VAC	1152VA	768VA	1152VA	768VA
	277VAC	764VA	--	764VA	--
Motor load	125VAC	1HP	1/4HP	1HP	1/4HP
	240VAC	2HP	1HP	2HP	1HP
	125VAC	1HP	--	1HP	--
	125/277VAC	3/4HP	--	3/4HP	--
Definite purpose (LRA-loaded rotor) (FLA-full load)	120VAC	82.8LRA, 13.8FLA	--	82.8LRA, 13.8FLA	--
	125VAC	96LRA, 30FLA	33LRA, 10FLA	60LRA, 20FLA	33LRA, 10FLA
	125VAC	60LRA, 20FLA	30LRA, 12FLA	60LRA, 20FLA	30LRA, 12FLA
	125VAC	82.8LRA, 27FLA	--	82.8LRA, 27FLA	--
	240VAC	80LRA, 30FLA	33LRA, 10FLA	60LRA, 20FLA	33LRA, 10FLA
	240VAC	41.4LRA, 6.9FLA	--	41.4LRA, 6.9FLA	--
	277VAC	60LRA, 20FLA	--	60LRA, 20FLA	--
Tungsten	125VAC	15A	--	15A	--
	240VAC	5A	--	5A	3A
	120VAC	--	3A	--	--
	240VAC	--	3A	--	--

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF2110 HF2120	-1A	-12D	T	F	(XXX)
Contact arrangement	1A: 1 Form A 1B: 1 Form B 1C: 1 Form C					
Coil voltage	5, 6, 9, 12, 15, 18, 24, 48, 70, 110VDC					
Contact material	T: AgSnO ₂ Nil: AgCdO					
Insulation standard	F: Class F Nil: Class B					
Special code ⁵⁾	XXX: Customer special requirement Nil: Standard					

Notes: 1) To avoid using relays under strong magnetic field which will change the parameters of relays such as pick-up voltage and drop-out voltage.

2) Relays may be damaged because of falling or when shocking conditions exceed the requirement.

3) About preferable condition of operation, storage and transportation, please refer to "Explanation to terminology and guidelines of relay".

4) For unenclosed type, because there is no cover protection, the products may be contaminated by particles during transportation assembly or usage, which may cause relay failure, so the products should be effectively protected at customer side, Hongfa suggest to use HF2150/HF2160 type, if no other special requirement.

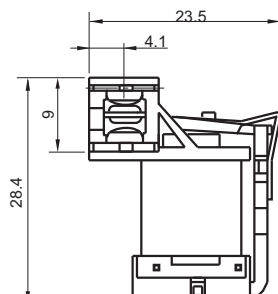
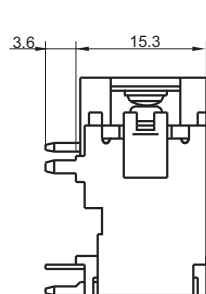
5) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

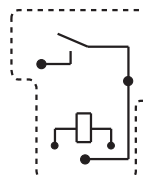
Unit: mm

1 Form A

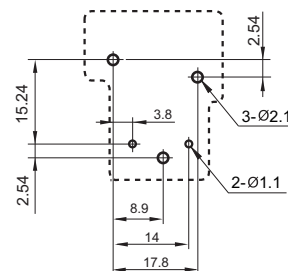
HF2111 Outline Dimensions



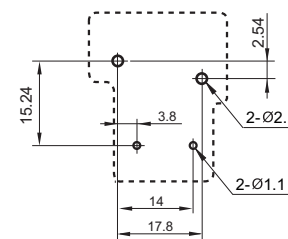
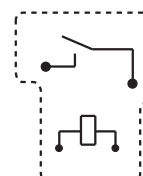
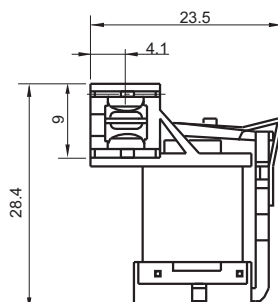
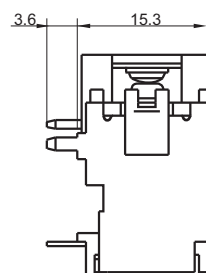
Wiring Diagram (Bottom view)



PCB Layout (Bottom view)

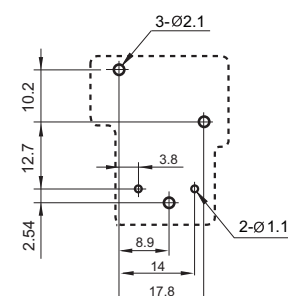
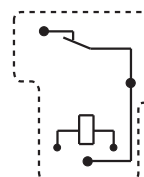
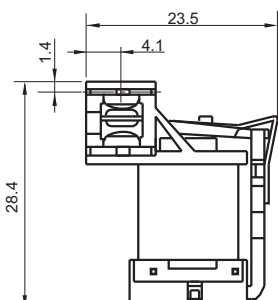
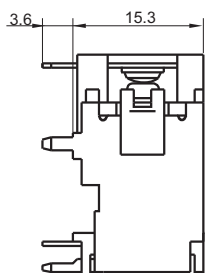


HF2110

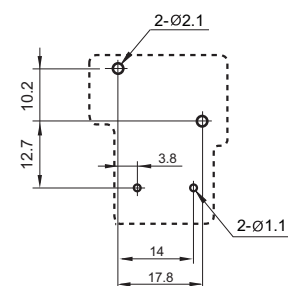
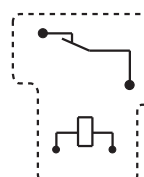
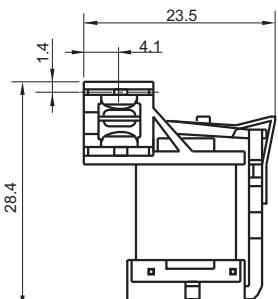
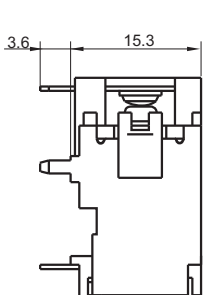


1 Form B

HF2111



HF2110



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

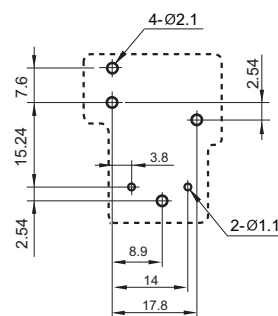
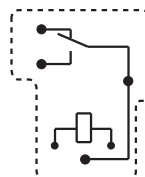
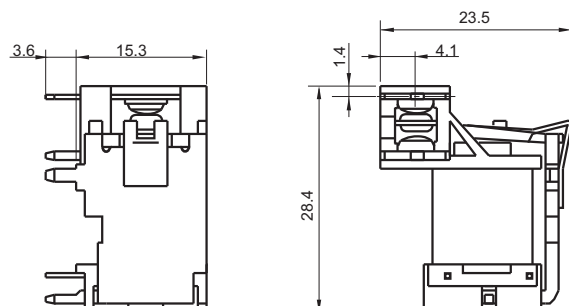
1 Form C

Outline Dimensions

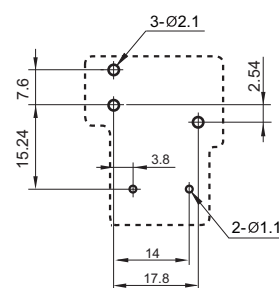
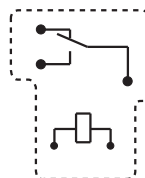
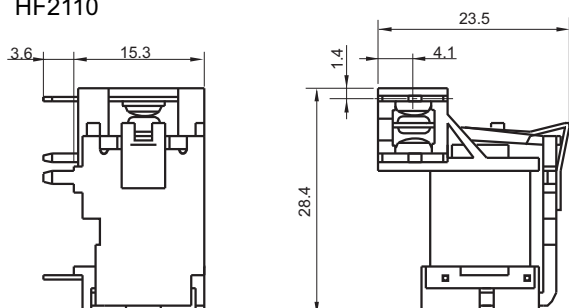
Wiring Diagram
(Bottom view)

PCB Layout
(Bottom view)

HF2111

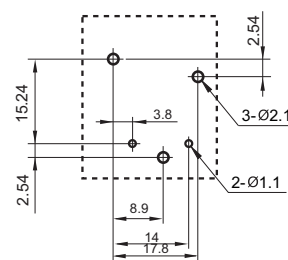
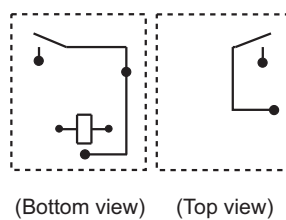
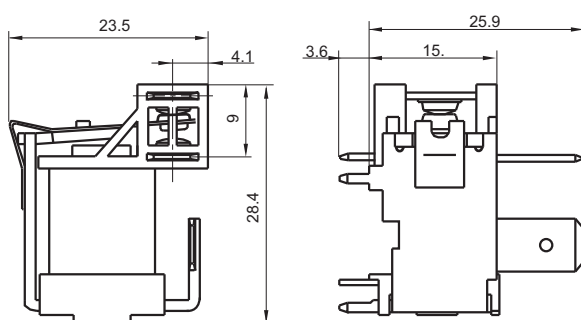


HF2110

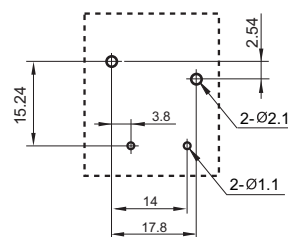
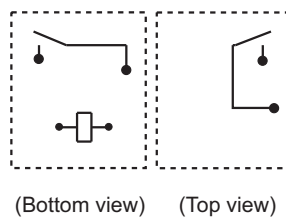
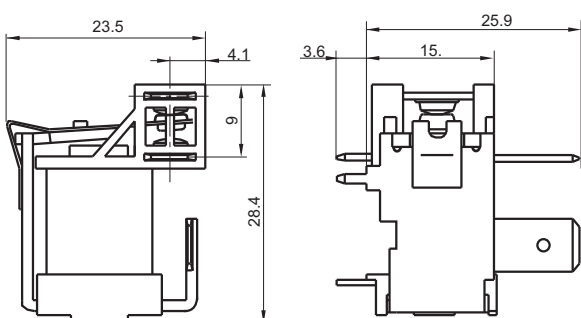


1 Form A

HF2121



HF2120



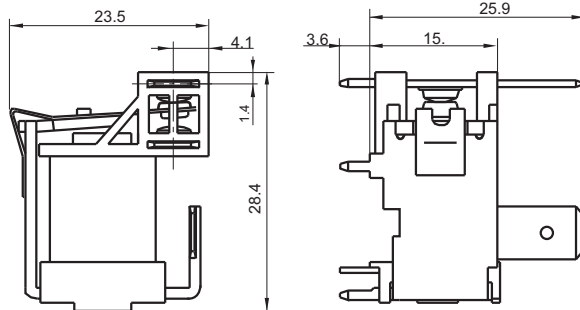
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

1 Form B

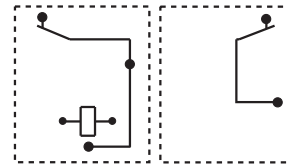
Outline Dimensions

HF2121



Wiring Diagram

(Bottom view)

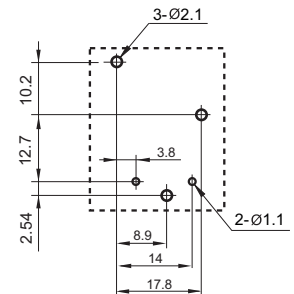


(Bottom view)

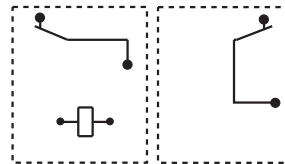
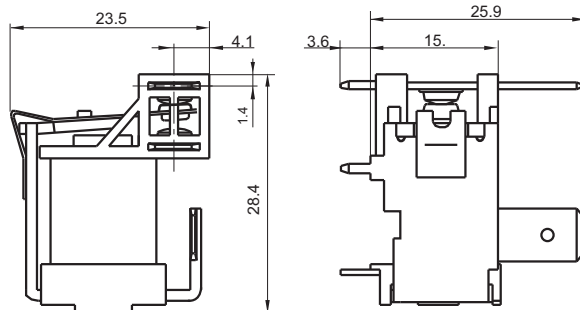
(Top view)

PCB Layout

(Bottom view)

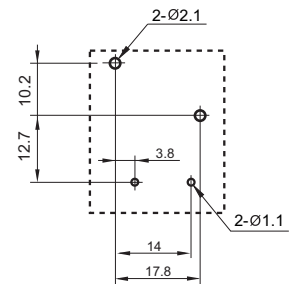


HF2120



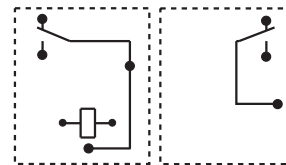
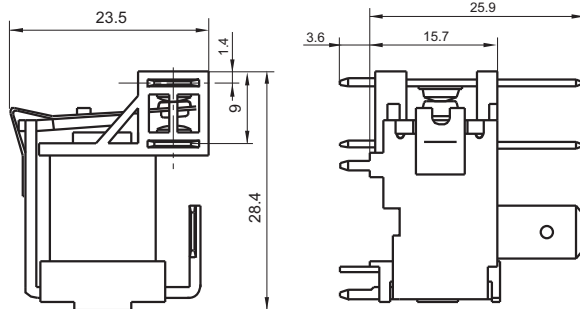
(Bottom view)

(Top view)



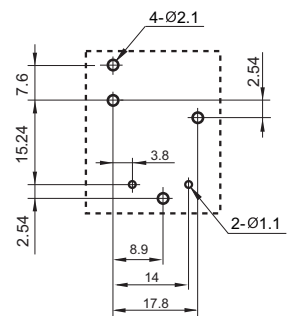
1 Form C

HF2121

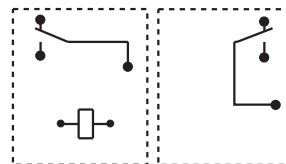
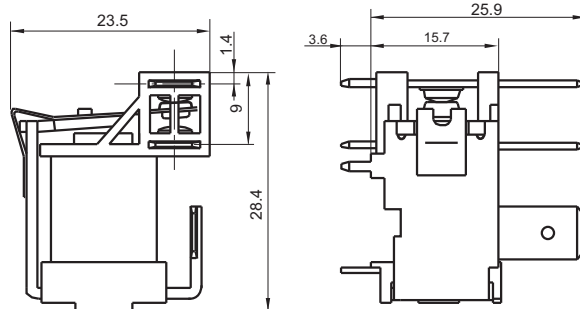


(Bottom view)

(Top view)

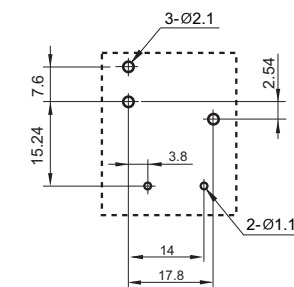


HF2120



(Bottom view)

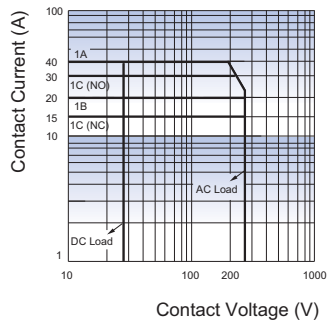
(Top view)



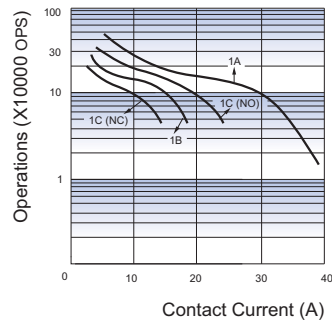
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



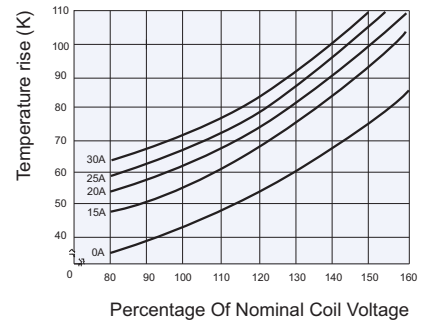
ENDURANCE CURVE



Test conditions:

Resistive load, AgCdO, Room temp.,
1s on 9s off.

COIL TEMPERATURE RISE



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF2150/HF2151

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.: R50153835



File No.:CQC10002049166



Features

- 30A switching capability
- PCB coil terminals, ideal for heavyduty load
- Heavy load up to 7200VA
- Plastic sealed and Dust protected type available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (31.8 x 27.0 x 19.1) mm

CONTACT DATA

Contact arrangement	1A	1B	1C(NO)	1C(NC)
Contact resistance	50mΩ max.(at 1A 24VDC)			
Contact material	AgSnO ₂ , AgCdO			
Contact rating (Res. load)	30A 240VAC 20A 30VDC	15A 240VAC 10A 30VDC	20A 240VAC 20A 30VDC	10A 240VAC 10A 30VDC
Max. switching power	7200VA 600W	3600VA 300W	4800VA 600W	2400VA 300W
Max. switching voltage	277VAC / 30VDC			
Max. switching current	40A	15A	20A	10A
Mechanical endurance	1 x 10 ⁷ OPS			
Electrical endurance	1A type(Non-plastic sealed): 1 x 10 ⁵ OPS (30A 240VAC, Resistive load, AgCdO, Room temp., 1s on 9s off)			

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	HF2150: 2500VAC 1min HF2151: 2000VAC 1min
	Between open contacts	1500VAC 1min
Operate time (at nomi. volt.)	15ms max.	
Release time (at nomi. volt.)	10ms max.	
Ambient temperature	-55°C to 85°C	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Termination	PCB	
Unit weight	Approx. 30g	
Construction	Plastic sealed, Dust protected	

Notes: 1) For plastic sealed type, the venting-hole should be opened in test.

2) The data shown above are initial values.

3) Please find coil temperature curve in the characteristic curves below.

4) UL insulation system: Class F, Class B.

COIL

Coil power	Approx. 900mW
------------	---------------

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	3.75	0.5	6.5	27 x (1±10%)
6	4.50	0.6	7.8	40 x (1±10%)
9	6.75	0.9	11.7	97 x (1±10%)
12	9.00	1.2	15.6	155 x (1±10%)
15	11.25	1.5	19.5	256 x (1±10%)
18	13.50	1.8	23.4	380 x (1±10%)
24	18.00	2.4	31.2	660 x (1±10%)
48	36.00	4.8	62.4	2560 x (1±10%)
70	52.50	7.0	91.0	5500 x (1±10%)
110	82.50	11.0	143.0	13450 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

SAFETY APPROVAL RATINGS

UL/CUL

Contact material	Load type	Volts	1 Form A	1 Form B	1 Form C (NO)	1 Form C (NC)
AgCdO	General purpose	125/240VAC	30A	15A	30A	15A
		277VAC	30A	30A	30A	30A
	Resistive	125/240VAC	30A	15A	--	--
		30VDC	20A	10A	20A	10A
		277VAC	20A	--	--	--
		240VAC	15A	--	--	--
		250VAC	40A		40A	
	Ballast	125/240/277VAC	6A	3A	6A	3A
	Pilot duty	125VAC	800VA	290VA	800VA	290VA
		125VAC	690VA	--	690VA	--
		125VAC	800VA	--	800VA	--
		240VAC	1152VA	768VA	1152VA	768VA
		277VAC	764VA	--	764VA	--
	Motor load	125VAC	1HP	1/4HP	1HP	1/4HP
		240VAC	2HP	1HP	2HP	1HP
		125VAC	1HP	--	1HP	--
		125/277VAC	3/4HP	--	3/4HP	--
	Definite purpose (LRA-loaded rotor) (FLA-full load)	120VAC	82.8LRA, 13.8FLA	--	82.8LRA, 13.8FLA	--
		125VAC	96LRA, 30FLA	33LRA, 10FLA	60LRA, 20FLA	33LRA, 10FLA
		125VAC	60LRA, 20FLA	30LRA, 12FLA	60LRA, 20FLA	30LRA, 12FLA
		125VAC	82.8LRA, 27FLA	--	82.8LRA, 27FLA	--
		240VAC	80LRA, 30FLA	33LRA, 10FLA	60LRA, 20FLA	33LRA, 10FLA
		240VAC	41.4LRA, 6.9FLA	--	41.4LRA, 6.9FLA	--
		277VAC	60LRA, 20FLA	--	60LRA, 20FLA	--
	Tungsten	125VAC	15A	--	15A	--
		240VAC	5A	--	5A	3A
		120VAC	--	3A	--	--
		240VAC	--	3A	--	--
AgSnO ₂	General purpose	125/240VAC	30A	--	--	--
	Resistive	250VAC	40A	--	--	--
	General purpose	240VAC	--	15A	--	--

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF2150 HF2151	-1A	-12D	E	T	F	(XXX)
Contact arrangement	1A: 1 Form A 1B: 1 Form B 1C: 1 Form C						
Coil voltage	5, 6, 9, 12, 15, 18, 24, 48, 70, 110VDC						
Construction ¹⁾	E: Plastic sealed Nil: Dust protected						
Contact material	T: AgSnO ₂ Nil: AgCdO						
Insulation standard	F: Class F Nil: Class B						
Special code ³⁾	XXX: Customer special requirement Nil: Standard						

Notes: 1) We recommend dust protected types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

1 Form A

Outline Dimensions

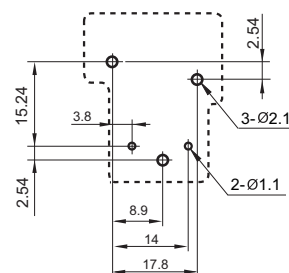
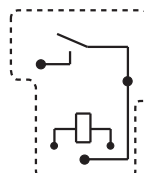
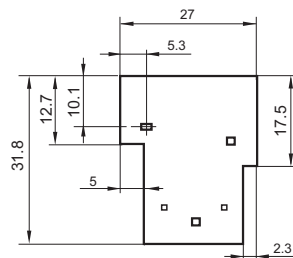
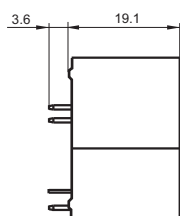
Wiring Diagram

PCB Layout

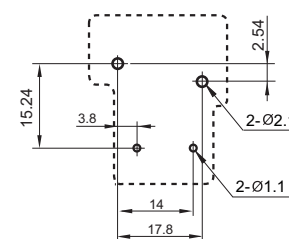
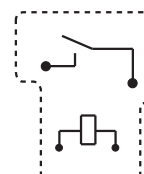
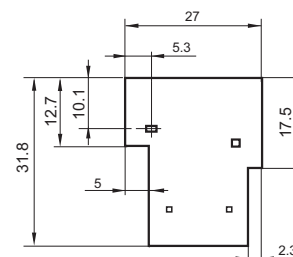
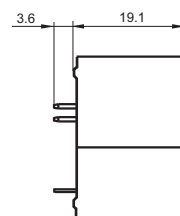
(Bottom view)

(Bottom view)

HF2151

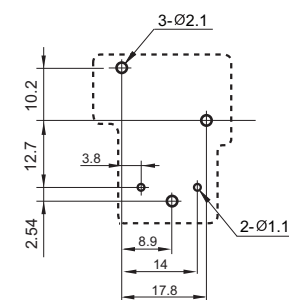
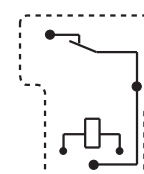
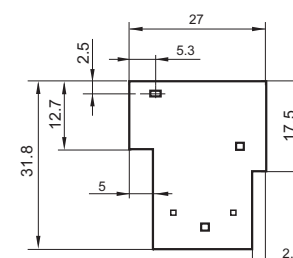
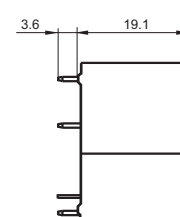


HF2150

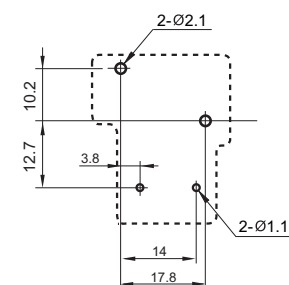
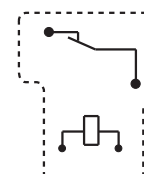
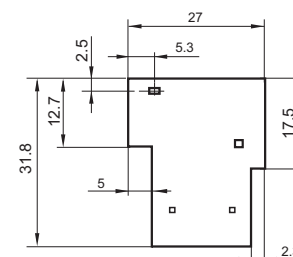
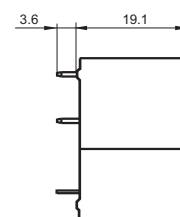


1 Form B

HF2151



HF2150



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

1 Form C

Outline Dimensions

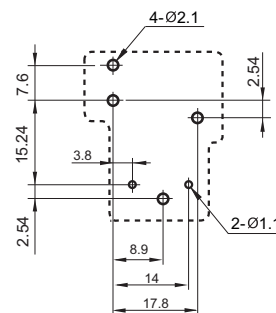
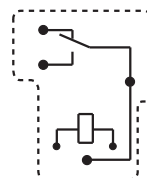
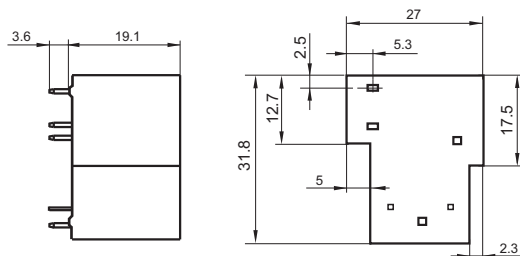
Wiring Diagram

(Bottom view)

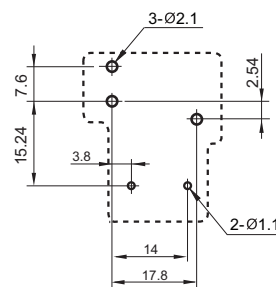
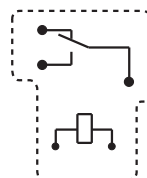
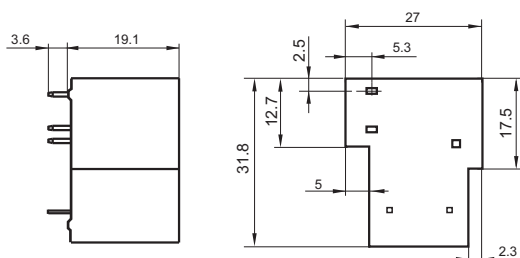
PCB Layout

(Bottom view)

HF2151



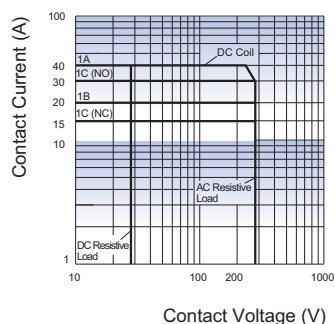
HF2150



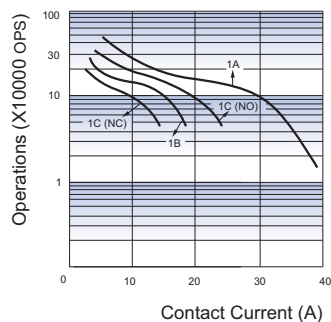
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

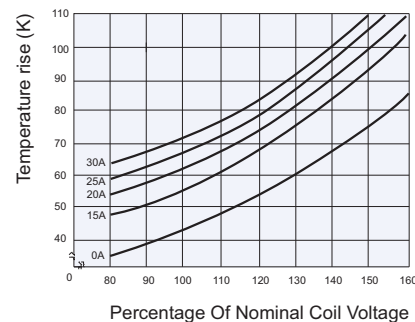
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



Test conditions:

Resistive load, AgCdO, Dust protected,
Room temp., 1s on 9s off.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF2160

MINIATURE HIGH POWER RELAY

c  US

File No.:E134517



File No.: R50153835



File No.:CQC10002049166



Features

- 30A switching capability
- PCB coil terminals, ideal for heavy duty load
- 2.5kV dielectric strength (between coil and contacts)
- Plastic sealed and Dust protected types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (32 x 27.5 x 19.8) mm

CONTACT DATA

Contact arrangement	1A	1B	1C (NO)	1C (NC)
Contact resistance	50mΩ max.(at 1A 24VDC)			
Contact material	AgSnO ₂ , AgCdO			
Contact rating (Res. load)	30A 240VAC 20A 30VDC	15A 240VAC 10A 30VDC	20A 240VAC 20A 30VDC	10A 240VAC 10A 30VDC
Max. switching power	7200VA 600W	3600VA 300W	4800VA 600W	2400VA 300W
Max. switching voltage	277VAC / 30VDC			
Max. switching current	40A	15A	20A	10A
Mechanical endurance	1 x 10 ⁷ OPS			
Electrical endurance	1A type(Non-plastic sealed): 1 x 10 ⁵ OPS (30A 240VAC, Resistive load, AgCdO, Room temp., 1s on 9s off)			

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	2500VAC 1min
	Between open contacts	1500VAC 1min
Operate time (at nomi. volt.)	15ms max.	
Release time (at nomi. volt.)	10ms max.	
Ambient temperature	-55°C to 85°C	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Termination	PCB & QC	
Unit weight	Approx. 30g	
Construction	Plastic sealed, Dust protected	

- Notes:** 1) For plastic sealed type, the venting-hole should be opened in test.
 2) The data shown above are initial values.
 3) Please find coil temperature curve in the characteristic curves below.
 4) UL insulation system: Class F, Class B.

COIL

Coil power	Approx. 900mW
------------	---------------

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	3.75	0.5	6.5	27 x (1±10%)
6	4.50	0.6	7.8	40 x (1±10%)
9	6.75	0.9	11.7	97 x (1±10%)
12	9.00	1.2	15.6	155 x (1±10%)
15	11.25	1.5	19.5	256 x (1±10%)
18	13.50	1.8	23.4	380 x (1±10%)
24	18.00	2.4	31.2	660 x (1±10%)
48	36.00	4.8	62.4	2560 x (1±10%)
70	52.50	7.0	91.0	5500 x (1±10%)
110	82.50	11.0	143.0	13450 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

SAFETY APPROVAL RATINGS

UL/CUL

Contact material	Load type	Volts	1 Form A	1 Form B	1 Form C (NO)	1 Form C (NC)
AgCdO	General purpose	125/240VAC	30A	15A	30A	15A
		277VAC	30A	30A	30A	30A
	Resistive	125/240VAC	30A	15A	--	--
		30VDC	20A	10A	20A	10A
		277VAC	20A	--	--	--
		240VAC	15A	--	--	--
		250VAC	40A		40A	
	Ballast	125/240/277VAC	6A	3A	6A	3A
	Pilot duty	125VAC	800VA	290VA	800VA	290VA
		125VAC	690VA	--	690VA	--
		125VAC	800VA	--	800VA	--
		240VAC	1152VA	768VA	1152VA	768VA
		277VAC	764VA	--	764VA	--
	Motor load	125VAC	1HP	1/4HP	1HP	1/4HP
		240VAC	2HP	1HP	2HP	1HP
		125VAC	1HP	--	1HP	--
		125/277VAC	3/4HP	--	3/4HP	--
	Definite purpose (LRA-loaded rotor) (FLA-full load)	120VAC	82.8LRA, 13.8FLA	--	82.8LRA, 13.8FLA	--
		125VAC	96LRA, 30FLA	33LRA, 10FLA	60LRA, 20FLA	33LRA, 10FLA
		125VAC	60LRA, 20FLA	30LRA, 12FLA	60LRA, 20FLA	30LRA, 12FLA
		125VAC	82.8LRA, 27FLA	--	82.8LRA, 27FLA	--
		240VAC	80LRA, 30FLA	33LRA, 10FLA	60LRA, 20FLA	33LRA, 10FLA
		240VAC	41.4LRA, 6.9FLA	--	41.4LRA, 6.9FLA	--
		277VAC	60LRA, 20FLA	--	60LRA, 20FLA	--
	Tungsten	125VAC	15A	--	15A	--
		240VAC	5A	--	5A	3A
		120VAC	--	3A	--	--
		240VAC	--	3A	--	--
AgSnO ₂	General purpose	125/240VAC	30A	--	--	--
	Resistive	250VAC	40A	--	--	--
	General purpose	240VAC	--	15A	--	--

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HF2160	-1A	-12D	E	T	F	(XXX)
Contact arrangement	1A: 1 Form A 1B: 1 Form B 1C: 1 Form C						
Coil voltage	5, 6, 9, 12, 15, 18, 24, 48, 70, 110VDC						
Construction ¹⁾²⁾	E: Plastic sealed Nil: Dust protected						
Contact material	T: AgSnO ₂ Nil: AgCdO						
Insulation standard	F: Class F Nil: Class B						
Special code ³⁾	XXX: Customer special requirement Nil: Standard						

Notes: 1) We recommend dust protected types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

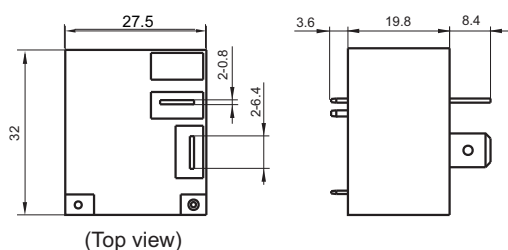
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

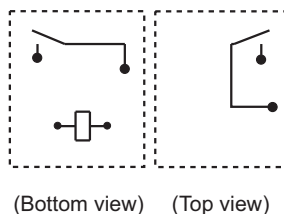
Unit: mm

1 Form A

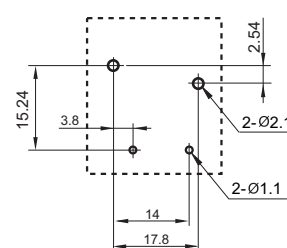
Outline Dimensions



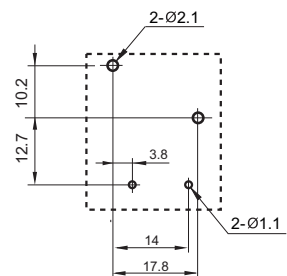
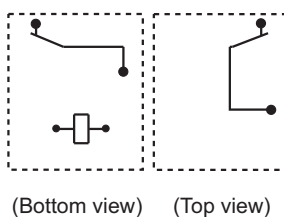
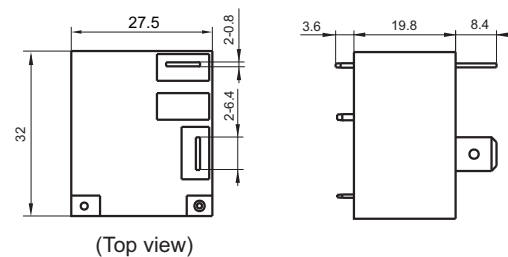
Wiring Diagram



PCB Layout
(Bottom view)



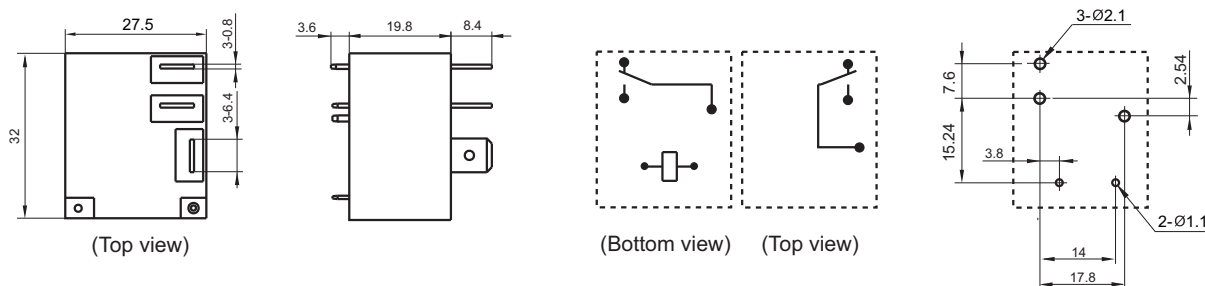
1 Form B



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

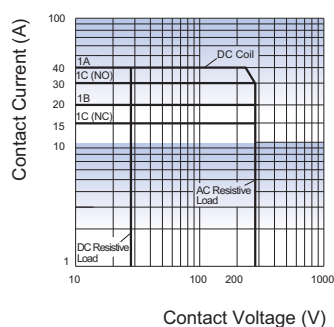
1 Form C



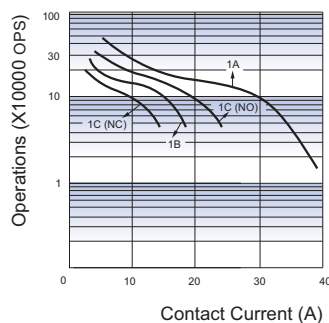
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 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

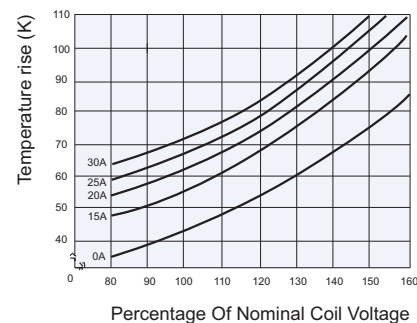
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



Test conditions:

Resistive load, AgCdO, Dust protected,
Room temp., 1s on 9s off.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HF3605

WINDOW CONTROLLER



Typical Applications

Automotive Window Control

Features

- Use MCU control circuit to ensure stable performance
- With Manual & automatic down function
- With overload protection
- Connect with DJ7081-2.3-20 easy to mount

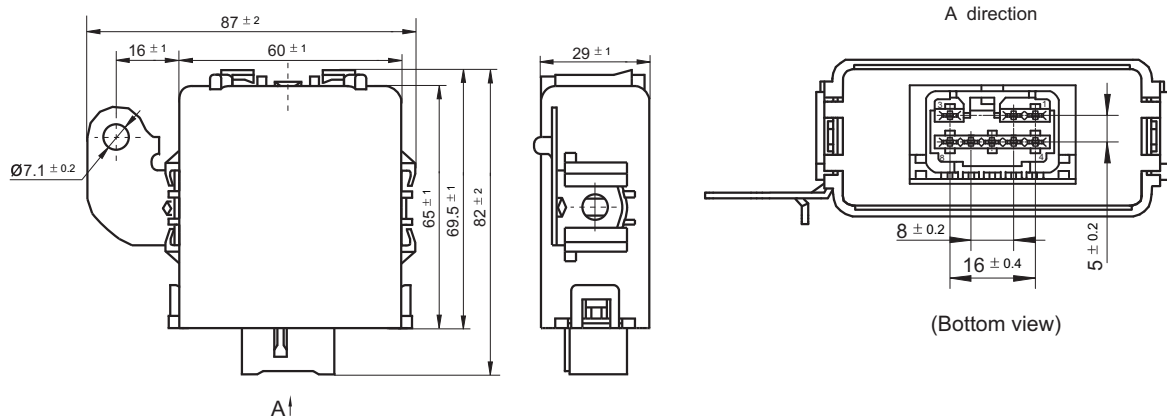
CHARACTERISTICS

Nominal voltage	12VDC
Operating voltage range	9VDC to 16VDC
Contact rating	10A 12VDC (Simulated motor load)
Electrical endurance	5×10 ⁴ OPS (Simulated motor load 10A with Un-reversed and Reversed operation, and operating on 10.2s on 9.8s off respectively)
Ambient temperature	-40°C to 85°C
Weight	Approx. 70g

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

Outline Dimensions



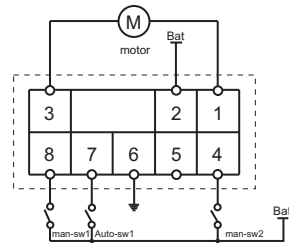
HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2015 Rev. 1.00

Outline Dimensions

Wiring
Diagram



- 1) As left shown HF3605, 1 and 3 - motor, 2 - Battery+, 6 - GND, 4 and 8 - Manual switch inputs, 7 - Auto-switch input.
- 2) Output 1 is positive and 3 is negative when 4 active.
- 3) Output 3 is positive and 1 is negative when 7 or 8 active.

Disclaimer

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We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF3606

WIPER CONTROLLER



Typical Applications

Automotive wiper control

Features

- Wiper operation (HS, LS, intermit) controls
- Motor stall protection
- Solid base design, stable structure
- Surface mounting technology, advanced craftwork

TYPE

Type	Nominal voltage	Operating voltage range	Nominal motor load	Dimensions
HF3606/ 12-G	12VDC	9VDC to 16VDC	50W	(30 × 30 × 40)mm
HF3606/ 12-L	12VDC	9VDC to 16VDC	50W	(30 × 30 × 40)mm

CHARACTERISTICS

Wiping time	3.5s + 2.5s	Vibration	sine	10Hz ~ 200Hz 49m/s ²
Intermittent time	4s ± 0.6s (at 0 Ω)	resistance	random	10Hz ~ 1000Hz 19.6m/s ²
	12s ± 1s (at 10k Ω)			
Electrical endurance	1×10 ⁵ OPS (Nominal motor load)	Shock resistance 196m/s ²		
Ambient temperature	-40°C to 85°C	Weight Approx. 36g		
		Mechanical data	Cover retention: 160N min.	
			Terminal retention: 28N min. (2.8mm)	
			100N min. (6.3mm)	

ORDERING INFORMATION

Type	HF3606 /	12	-G	-B	(XXX)
Nominal voltage	12: 12VDC				
Trigger level	G: High level start-up L: Low level start-up				
Packing style	B: With bracket Nil: Without bracket				
Special code ¹⁾	XXX: Customer special requirement Nil: Standard				

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

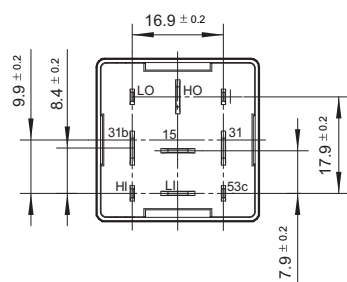
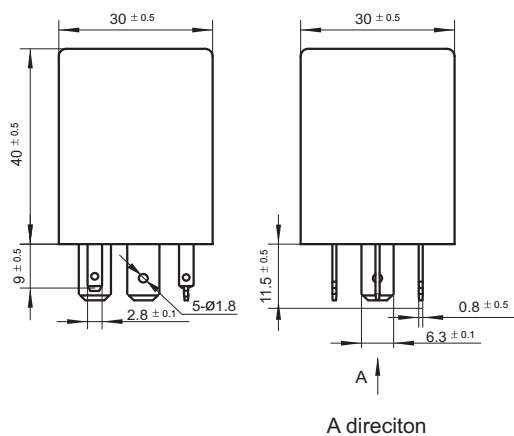
2015 Rev. 1.00

OUTLINE DIMENSIONS, TERMINAL FUNCTION AND WIRING DIAGRAM

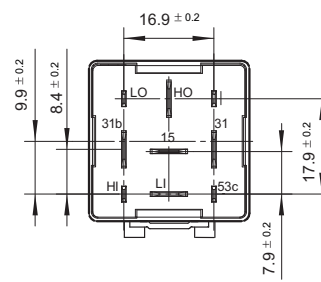
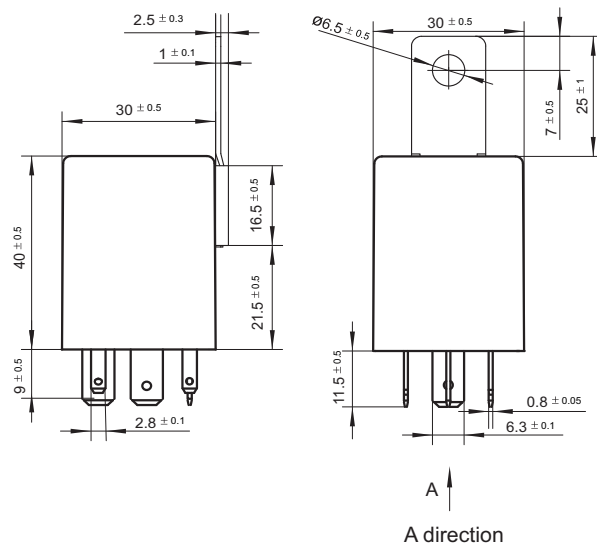
Unit: mm

Outline Dimensions

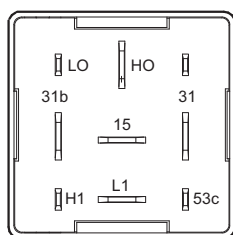
HF3606/12-□(XXX)



HF3606/12-□-B(XXX)

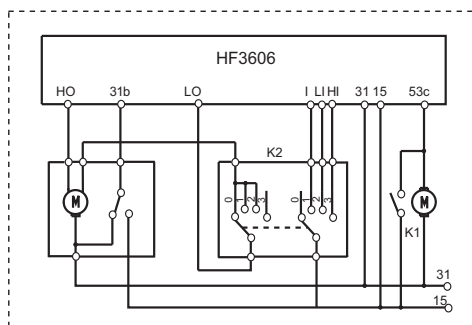


Terminal function



- HI: Wiper HS control signal
- LI: Wiper LS control signal
- 53c: Washing control signal
- 31b: Wiper parking signal
- 15: Power supply positive
- 31: Power supply negative
- HO: Wiper motor HS control
- LO: Wiper motor LS control
- I: Wiper intermittent control signal

WIRING DIAGRAM



- 1) As shown on left circuit, the terminal 15 is connected with positive electrode of power supply, terminal 31 is connected with negative electrode of power supply, the terminal I, LO, LI and HI are connected with combined switch, the terminal 31b is connected with wiper motor switch, the terminal 53c is connected with washing bump switch.
- 2) Intermit wiping, when combined switch K2 is at position 1, the terminal I will receive 12V voltage, the internal relay will start function, the terminal LO and 15 will be connected, the wiper motor will start to work, when terminal 31b receive feedback signal from 0V, the internal relay will release and the terminal LO and 15 will be open, the wiper motor will stop. The above process will repeat after $4.0s \pm 0.4s$.
- 3) Low speed wiping, when combined switch K2 is at position 2, the terminal LI will receive 12V voltage, the internal relay will start function, the terminal LO and 15 will be connected, the wiper motor will start to work at low speed.
- 4) High speed wiping, when combined switch K2 is at position 3, the terminal HI will receive 12V voltage, the internal relay will start function, the terminal HO and 15 will be connected, the wiper motor will start to work at high speed.
- 5) Washing wiping, when K1 is closed, the terminal 53c will receive 12V voltage, the internal relay will start to function, the terminal LO and 15 will be connected, the wiper motor will start to work, when K1 is opened and delayed for $3.5s + 2.5s$, the internal relay will release and the wiper motor will stop and will remain at stop position.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF3701

SAFETY RELAY MODULE

CE

File No.: N8130453286010



Typical application: Emergency stop button, Safety door

Features

- Redundant design of circuit, safety function can still work against some single component fault
- With self-check function. The switching status of interior relay will be checked automatically during each start-stop cycle
- Automatic or manual reset of contacts without time delay
- Meet the requirements of EN 60947-5-1 and EN 60204-1, with safety grade up to PLe of ISO13849-1
- Pluggable connectors
- LED indicator: Working status of interior relay and power supply
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (113.5 x 99.0 x 22.5) mm

FUNCTIONS

1. Detecting under dual-channel input:
 - 1) short-circuit between contacts
 - 2) short-circuit of input circuit
 - 3) short-circuit between input circuit
2. Under dual-channel input, the next operation can be performed only when the switches of both channels are off one times.
3. Automatic reset: module works once the input circuit on.
4. Manual reset: input circuit on can not start the module till the reset button on.

CHARACTERISTICS

Nominal voltage	24VAC / VDC	Operate time (at nomi. volt.)	45ms max.(dual-channel)
Voltage tolerance	-15% to 10%	Release time (at nomi. volt.)	20ms max.(dual-channel)
Frequency range	50Hz to 60Hz	Mounting	DIN rail (35mm)
Ambient temperature	-20°C to 55°C	Conductor cross section	0.2mm ² to 2.5mm ² (24AWG to 14AWG)
Power consumption (at nomi. volt.)	2 pole: 3.5VA / 1.7W max. 4 pole: 5.1VA / 2.4W max.	Wire strip length	7mm
Contact rating (Res. load)	6A 250VAC / 30VDC	Terminal torque	0.4N · m
Min. applicable load	10mA 17VDC	IP grade	cover IP40, terminal IP20
Rated impulse withstand voltage	4kV	Electrical endurance	1 x 10 ⁵ OPS (6A 250VAC 5s on 5s off)
Rated insulation voltage	250VAC	Mechanical endurance	1 x 10 ⁷ OPS (Switching frequency:7200 OPS./hour)
Vibration resistance	10Hz to 55Hz 1.5mm DA	Unit weight	Approx.160g
Pollution level	level 2	External contact fuse protection	RT14-6(I _k =1kA, EN 60947-5-1)

Notes: 1) This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

ORDERING INFORMATION

Type	HF3701/	24	-2H	(XXX)
Coil voltage	24 VAC/VDC			
Contact arrangement	2H: 2 Form A 1H1D: 1 Form A + 1 Form B 4H: 4 Form A 3H1D: 3 Form A + 1 Form B			
Special code ¹⁾	XXX: Customer special requirement Nil: Standard			

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

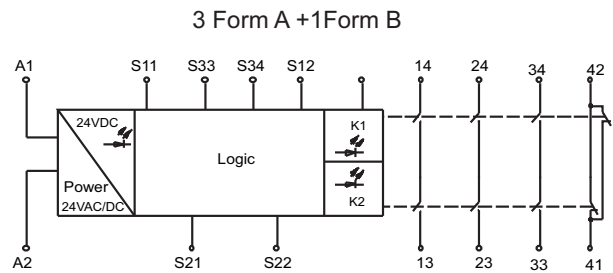
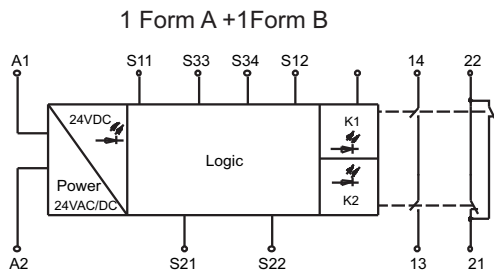
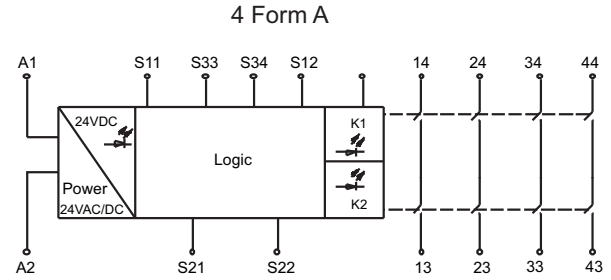
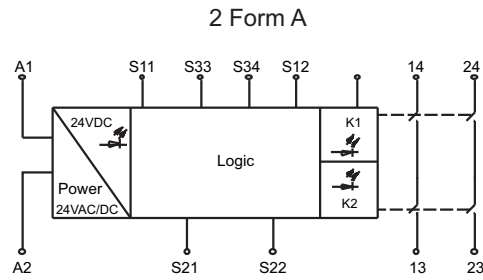


HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

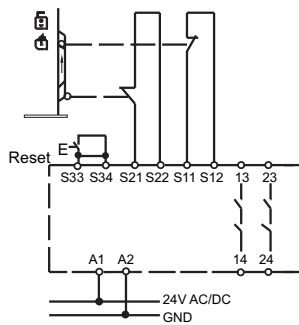
2016 Rev. 1.00

Structure Diagram



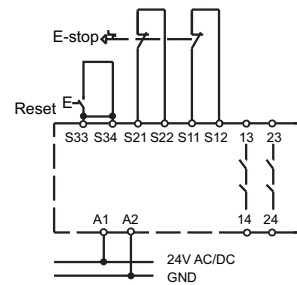
Typical Wiring Diagram (e.g. 2 Form A)

Typical application 1



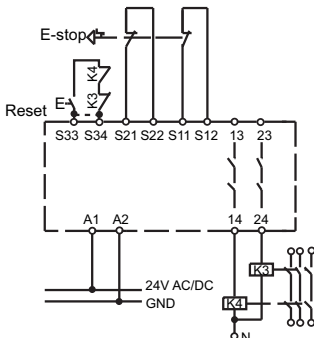
Safety door Monitor, dual-channel signal input, manual reset, highest safety grade PL_e/ISO 13849-1

Typical application 2



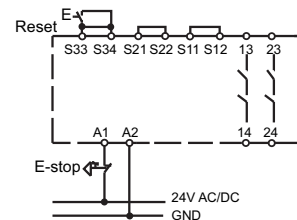
Emergency stop button monitor, dual-channel signal input, manual reset, highest safety grade PL_e/ISO 13849-1

Typical application 3



Emergency stop button monitor, dual-channel signal input, with feedback manual reset, highest safety grade PL_e/ISO 13849-1

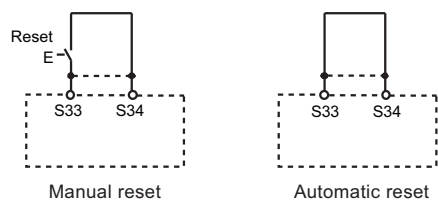
Typical application 4



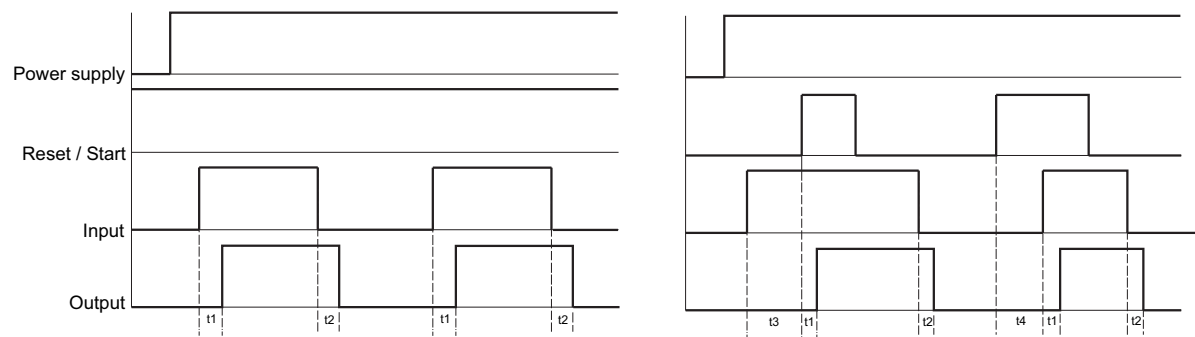
Single-channel signal input, manual reset, highest safety grade PL_d/ISO 13849-1

Notes: 1) The above safety grade is determined based on our company's wiring diagram, there may be some difference in real application.
2) The safety grade is determined by the whole safety control system. Please check carefully before application.

Reset Circuit



Sequence Diagram(e.g. 2 Form A)



Power supply: A1-A2

Reset / Start: S33-S34

Input: S11-S12, S21-S22

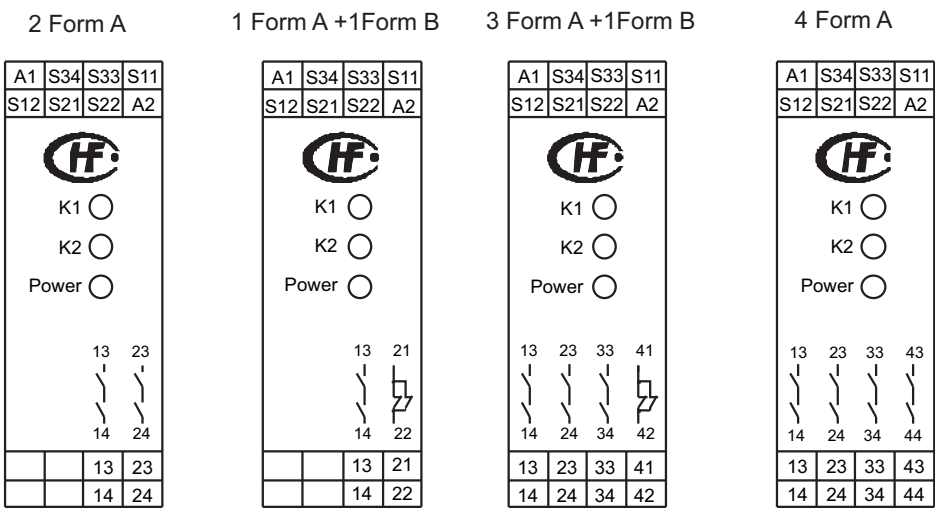
Output:13-14, 23-24

t1: relay switches delay time

t2: relay releases delay time

t3 / t4: Latency time

Terminal

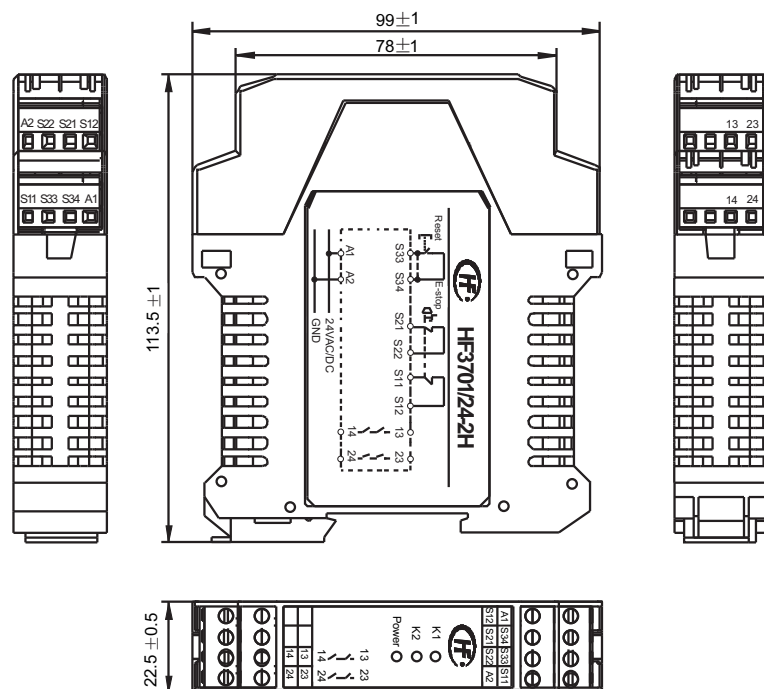


Notes: 1) The markings above are same as that of typical wiring diagram(details as per real products).

OUTLINE DIMENSIONS

Unit: mm

Outline Dimensions(e.g. HF3701/24-2H)



Disclaimer

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HF5603

RELAY CONTROL BOX



The box can enlarge the output drive ability of electrical controller in order to drive each implementation components And the box will realize the connection and isolation of control logistic. Meanwhile, it will also control the relative annex of the motor.

Features

- Can switch multi-circuit 27Vd.c. and DC load
- Inner diode with transient suppression
- Can connect and apart with connector quickly
- High anti-mildew and anti-salt fog capability, Can work reliably in such hazardous environment
- With highly established reliability

MAIN TECHNICAL DATA

Ambient temperature

-55°C to 70°C, work 10min at 85°C, the storing temperature is -20°C to 40°C.

Humidity

≥95% (at 20°C ± 5°C)

Operate voltage

The coil rated operate voltage is 27Vd.c.±10%, contacts rated operate voltage is 27Vd.c.±10%, others as per the requirement of GJB181-86 B type power feature.

Connection resistance

The grounding resistance and inner connection resistance will be not over 2.5m ohm.

Insulation resistance

Normally, (normal temp.& cold) no less than 20MΩ, After rated working, no less than 2 MΩ, After damp heat test, no less than 1MΩ.

Dielectric strength

Cold-state AC 500V valid value, leakage current is no less than 1mA.

Mean Time between Failures

≥1200h.

Life

The life of relay box is 300h/ 4 years and the storing time is 3 years.

Weight

The total weight of relay box(include socket) is no less than 3kg.

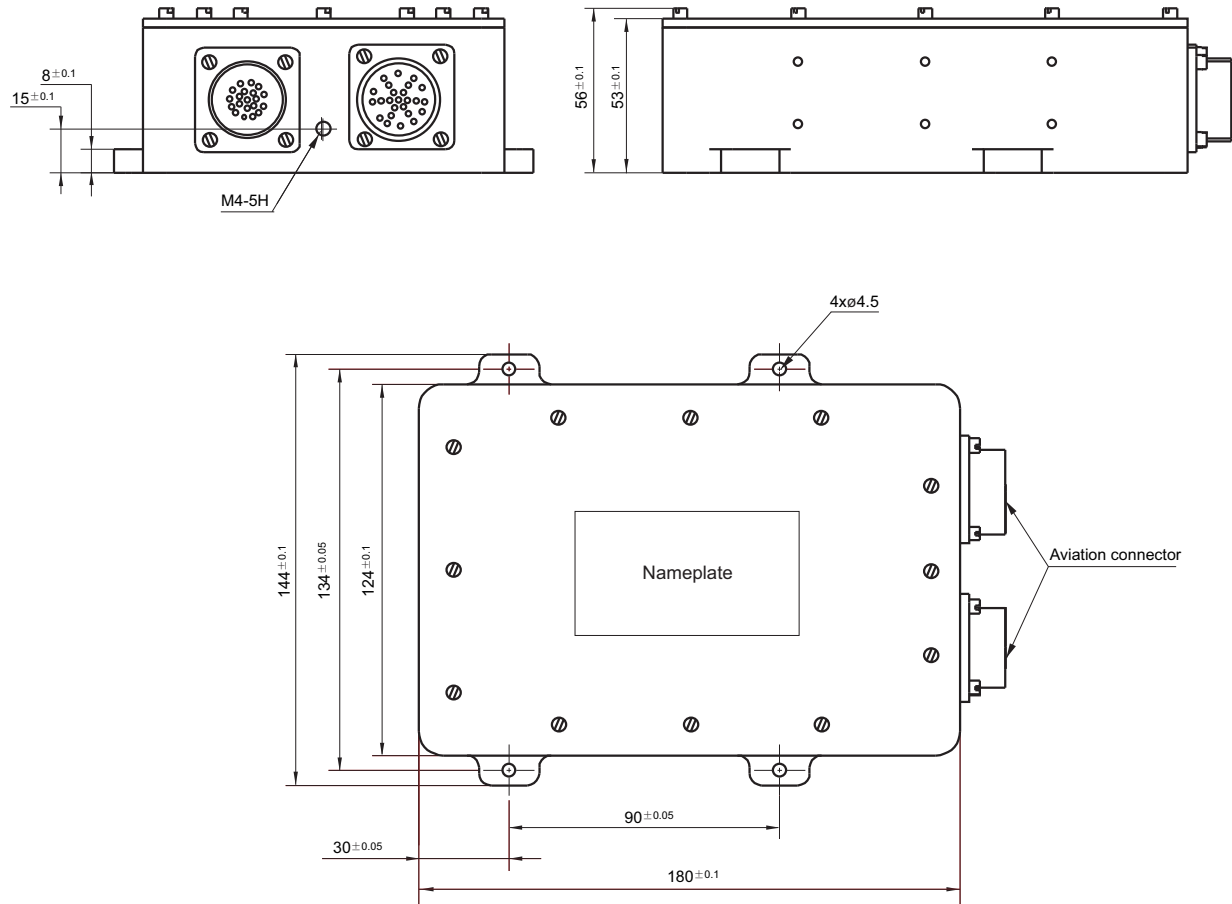
Products ability

Conformity standard : GJB1032, GJB360A and GJB150

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

Outline dimension



ORDERING INFORMATION

We can develop and design the products as per your detailed requirements.

Disclaimer

This datasheet is for the customers' reference. All the specifications are subject to change without notice.

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HF5604

ELECTRICAL CONTROL RELAY BOX



The box can enlarge the output drive ability of electrical controller in order to drive each implementation components And the box will realize the connection and isolation of control logistic. Meanwhile, it will also control the relative annex of the motor.

Features

- Can switch multi-circuit 27Vd.c. and DC load
- Inner diode with transient suppression
- Can connect and apart with connector quickly
- High anti-mildew and anti-salt fog capability, Can work reliably in such hazardous environment
- With highly established reliability

MAIN TECHNICAL DATA

Ambient temperature

0°C to 55°C, work 2h at 70°C, the storing temperature is -20°C to 40°C.

Humidity

≥95% (With vapor Condensation).

Operate voltage

The coil rated operate voltage is 27Vd.c.±10%, contacts rated operate voltage is 27Vd.c.±10%, others as per the requirement of GJB181-86 B type power feature.

Connection resistance

The grounding resistance and inner connection resistance will be not over 2.5m ohm.

Insulation resistance

Normally, (normal temp. & cold) no less than 20 MΩ, After rated working, no less than 2 MΩ, After damp heat test, no less than 1MΩ.

Dielectric strength

Cold-state AC 500V valid value, leakage current is no less than 1mA.

Mean Time between Failures

≥5000h.

Life

The life of relay box is 10000h/ 10 years and the storing time is 3 years.

Weight

The total weight of relay box(include socket) is no less than 2.5KG.

Products ability

Conformity standard : GJB1032, GJB360A and GJB150

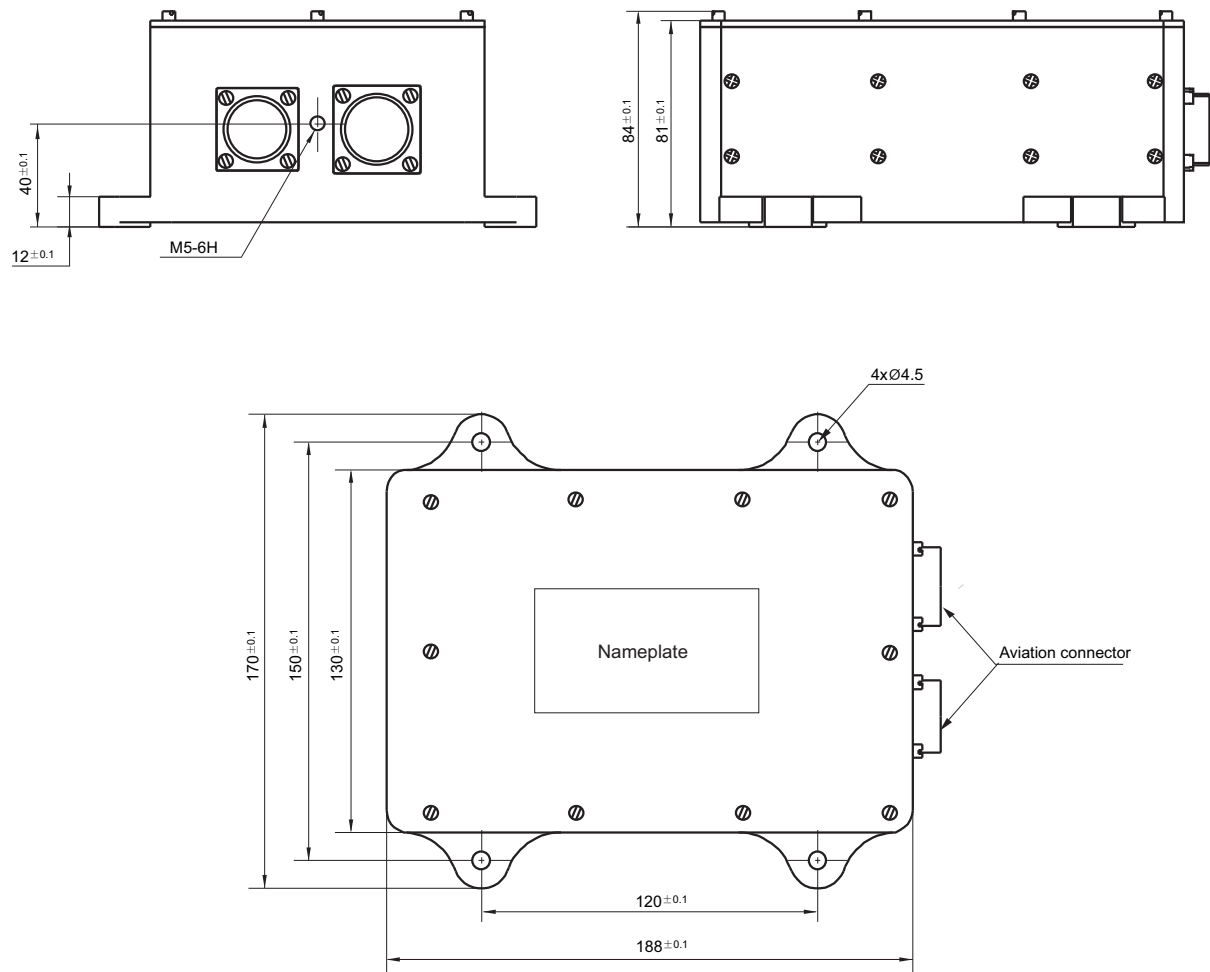


HONGFA HERMETICALLY SEALED RELAY

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

Outline dimension



ORDERING INFORMATION

We can develop and design the products as per your detailed requirements.

Disclaimer

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HF7520

SUBMINIATURE POWER RELAY



File No.: E133481



File No.: R50351269



File No.: CQC09002034524



Features

- Low height, flat construction
- High rating: 16A
- High sensitive: 200mW
- PCB & QC layouts available
- Plastic sealed and flux proofed types (with vent-hole cover) available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: PCB: (22.0 x 16.0 x 10.5) mm
QC: (22.5 x 25.2 x 10.8) mm

CONTACT DATA

Arrangement	1C	1A
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	See ordering info.	
Contact rating (Res. load)	NO: 10A 125/250VAC	Standard type: TV-5 10A 30VDC 10A 125/250VAC
		High capacity type: TV-5 10A 30VDC 16A 125/250VAC 8A 250VAC(cosφ=0.4)
	NC: 6A 125/250VAC	TV-5 10A 30VDC 16A 125/250VAC 8A 250VAC(cosφ=0.4)
		TV-5 10A 30VDC 16A 125/250VAC 8A 250VAC(cosφ=0.4)
Max.switching voltage	250VAC	250VAC/30VDC
Max.switching current	NO:10A NC: 6A	16A
Max.switching power	NO: 2500VA NC: 1500VA	4000VA/300W
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	HP type: 5 x 10 ⁴ OPS (16A 125VAC, Resistive load, Room temp., 1s on 9s off)	
	H type: 5 x 10 ⁴ OPS (10A 250VAC, Resistive load, Room temp., 1s on 9s off)	
	Z type: 5 x 10 ⁴ OPS (NO, 10A 250VAC, Resistive load, Room temp., 1s on 9s off)	
	Z type: 5 x 10 ⁴ OPS (NC, 6A 250VAC, Resistive load, Room temp., 1s on 9s off)	

Notes: For plastic sealed type, the venting-hole should be opened in electrical endurance test.

COIL

Coil power	1 Form A: Approx. 200mW; 1 Form C: Approx. 400mW
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CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	2500VAC 1 min
	Between open contacts	1000VAC 1 min
Operate time (at nomi.volt)		15ms max.
Release time (at nomi.volt)		5ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 105°C
Termination		1C: PCB
		1A: PCB & QC
Unit weight		PCB: Approx.10g QC: Approx.12g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.

2) Please find coil temperature curve in the characteristic curves below.

SAFETY APPROVAL RATINGS

UL/CUL	1 Form A	TV-5 125VAC 16A 125VAC at 85°C 10A 250VAC at 85°C 10A 30VDC at 85°C 0.3A 110VDC at 85°C 13A 125VAC at 105°C 10A 250VAC at 105°C
		NO: 10A 250VAC NC: 6A 250VAC
		16A 250VAC 10A 30VDC 8A 250VAC (COSφ=0.4)
TÜV	1 Form A	

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA

at 23°C

1 Form C type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	4.0	0.5	6.5	62.5 x (1±10%)
6	4.8	0.6	7.8	90 x (1±10%)
9	7.2	0.9	11.7	202.5 x (1±10%)
12	9.6	1.2	15.6	360 x (1±10%)
18	14.4	1.8	23.4	810 x (1±10%)
24	19.2	2.4	31.2	1440 x (1±10%)
48	38.4	4.8	62.4	5760 x (1±10%)

1 Form A type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC*	Coil Resistance Ω
5	4.0	0.5	6.5	125 x (1±10%)
6	4.8	0.6	7.8	180 x (1±10%)
9	7.2	0.9	11.7	405 x (1±10%)
12	9.6	1.2	15.6	720 x (1±10%)
18	14.4	1.8	23.4	1620 x (1±10%)
24	19.2	2.4	31.2	2880 x (1±10%)
48	38.4	4.8	62.4	11520 x (1±10%)

Notes: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

ORDERING INFORMATION

Type	HF7520 / 012 -H S T P Q (XXX)
Coil voltage	5, 6, 9, 12, 18, 24, 48VDC
Contact arrangement	H: 1 Form A Z: 1 Form C
Construction ¹⁾	S: Plastic sealed Nil: Flux proofed
Contact material	T: AgSnO ₂ Nil: AgCdO (Only for 1 Form A) AgNi (Only for 1 Form C)
Contact capacity	P: High Capacity type (Only for 1 Form A) Nil: Standard type
Terminal type	Q: QC (Only for 1 Form A and high capacity type) Nil: PCB
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) When the ambient temperature reaches 105°C degree or more, please select flux proofed and high capacity type. Besides, please indicate the exact ambient temperature when ordering.

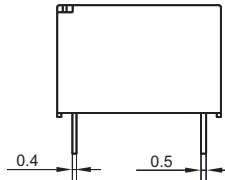
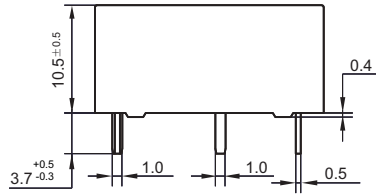
4) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS , WIRING DIAGRAM AND PC BOARD LAYOUT

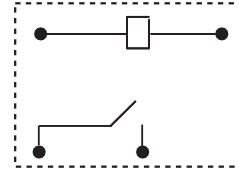
Unit: mm

1 Form A (PCB)

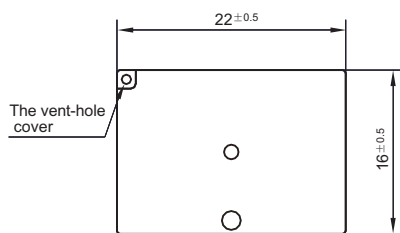
Outline Dimensions



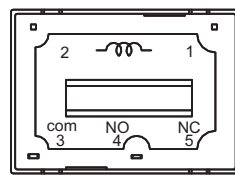
Wiring Diagram (Bottom View)



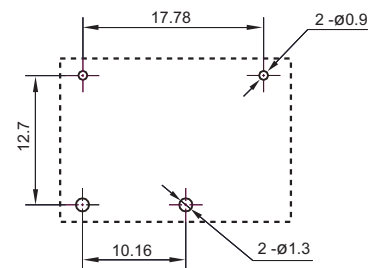
PCB Layout (Bottom view)



(Top view)

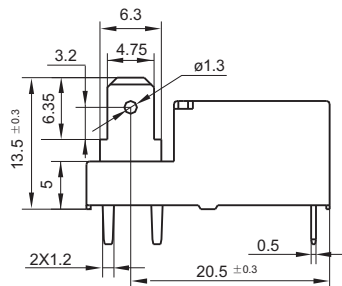
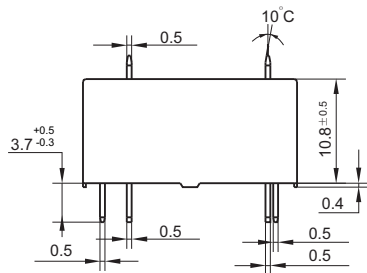


(Bottom View)

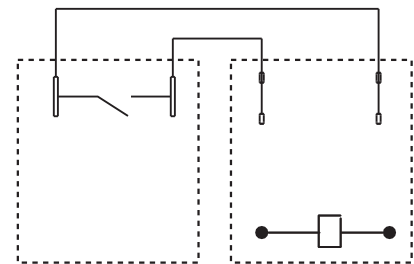


1 Form A (QC)

Outline Dimensions



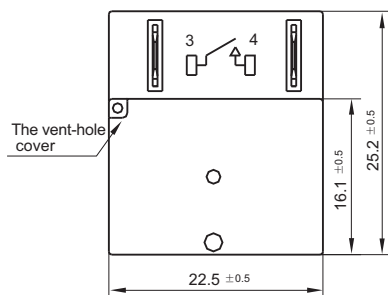
Wiring Diagram



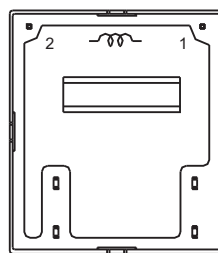
(Top View)

(Bottom View)

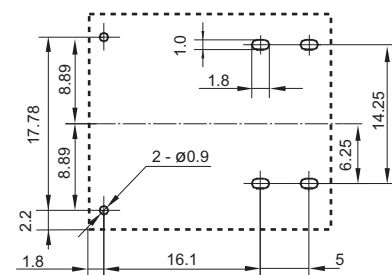
PCB Layout (Bottom view)



(Top view)



(Bottom View)

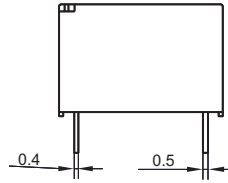
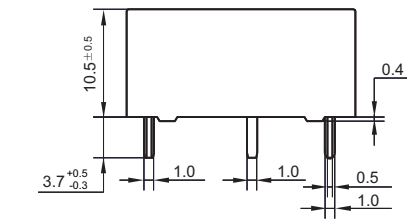


OUTLINE DIMENSIONS , WIRING DIAGRAM AND PC BOARD LAYOUT

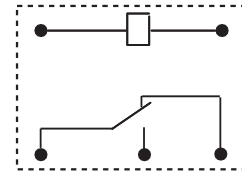
Unit: mm

1 Form C (PCB)

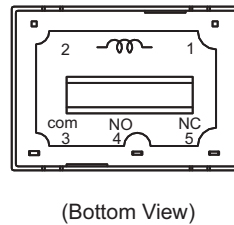
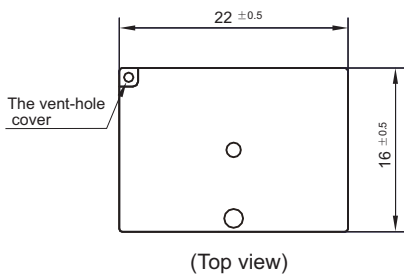
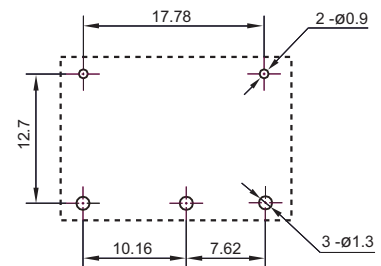
Outline Dimensions



Wiring Diagram (Bottom View)



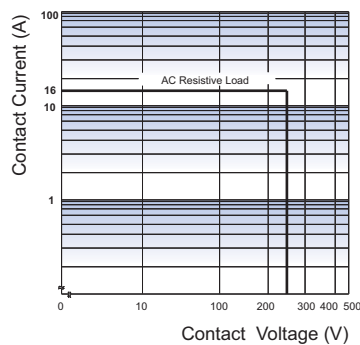
PCB Layout (Bottom view)



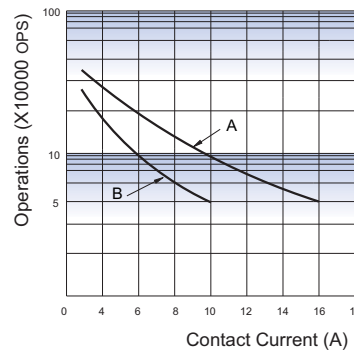
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



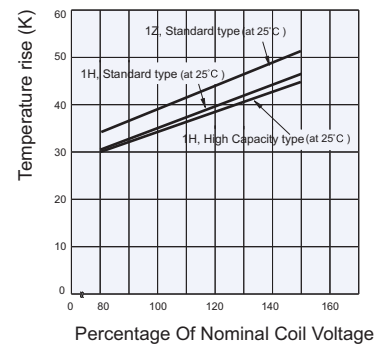
ENDURANCE CURVE



Notes:

- (1) Curve A: HP type
Curve B: H type
- (2) Test conditions:
Curve A: 16A 125VAC, Resistive load,
Room temp., 1s on 9s off
Curve B: 10A 250VAC, Resistive load,
Room temp., 1s on 9s off

COIL TEMPERATURE RISE



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF8565

MOTOR START POTENTIAL RELAY



File No.:SA13318



Features

- 50A switching capability
- 1 Form B configuration available
- 250" quick connect termination
- UL insulation system: Class F
- Various of mounting positions
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (51.2 x 46.6 x 36.5) mm

CONTACT DATA

Contact arrangement	1B
Contact resistance	100mΩ max.(at 1A 24VDC)
Contact material	Silver alloy
Contact rating (Res. load)	16A(make and break) 400VAC COS Ø=0.85 35A(break only) 400VAC COS Ø=0.85 50A(break only) 400VAC COS Ø=0.85
Mechanical endurance	7.5 x 10 ⁵ OPS
Electrical endurance	SPST-NC: 5 x 10 ⁵ OPS (16A on and off 400VAC cosØ=0.7-0.8 at 25°C 1s on 9s off) SPST-NC: 2 x 10 ⁵ OPS (35A only off 400VAC cosØ=0.7-0.8 at 25°C 1s on 9s off) SPST-NC: 1 x 10 ⁵ OPS (50A only off 400VAC cosØ=0.7-0.8 at 25°C 1s on 9s off)

CHARACTERISTICS

Weight	Approx. 110g
Termination	QC
Construction	Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Approx. 5VA
Coil voltage	See table below
Coil resistance	See table below
Insulation system	Class B

OPERATING CHARACTERISTICS at 50Hz

Coil number		2		3		4		5		6		7		8		9	
Vmax at 40°C (V)		299		338		378		356		452		151		530		228	
Resistance (1±10%) Ω at 25°C		5600		7500		10700		10000		13800		1500		19500		3900	
	H.P.U.	P.U.	D.O.	P.U.	D.O.	P.U.	D.O.	P.U.	D.O.	P.U.	D.O.	P.U.	D.O.	P.U.	D.O.	P.U.	D.O.
A	120-130											111-124	20-45			111-124	35-77
B	130-140											120-134	20-45			120-134	35-77
C	150-160	140-153	40-90									130-144	20-45			130-144	35-77
D	160-170	150-163	40-90	150-163	40-90							140-153	20-45			140-153	35-77
E	170-180	162-175	40-90	162-175	40-90											149-163	35-77
F	180-190	171-184	40-90	171-184	40-90			180-195	40-105							157-172	35-77
G	190-200	180-193	40-90	180-195	40-105	180-195	40-105	189-205	40-105							168-182	35-77
H	200-220	186-215	40-90	190-215	40-105	195-224	50-110	186-214	60-133							178-192	35-77
I	220-240	205-234	40-105	208-239	50-110	204-233	50-110	204-233	60-133							183-213	35-77
L	240-260	224-252	40-105	224-252	50-110	223-259	50-110	223-252	60-133	223-252	60-130					203-231	35-77
M	260-280	243-271	40-105	239-270	50-110	242-272	50-110	242-272	60-133	239-268	60-135			239-268	75-170		
N	280-300			260-289	50-110	262-290	60-121	262-290	60-133	258-287	60-135			258-287	75-170		
O	300-320					280-310	60-121	280-310	60-133	277-305	60-135			277-305	75-170		
P	320-340					300-328	60-121	300-328	60-154	295-324	60-135			295-324	75-170		
Q	340-360					318-347	60-121			314-342	60-135			314-342	75-180		
R	350-370													323-352	75-180		
S	360-380													332-361	75-180		

Notes: H.P.U.means Approximate pick-up value at 90°C , P.U. means pick-up value at 25°C, D.O.means drop out value at 25°C.



HONGFA RELAY

ISO9001, ISO/TS16949 , ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

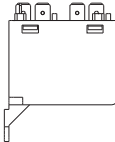
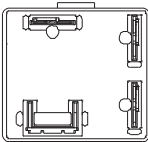
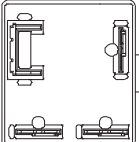
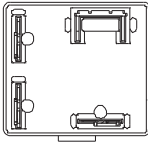
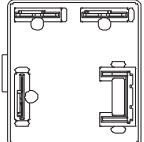
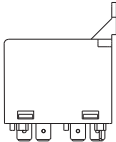
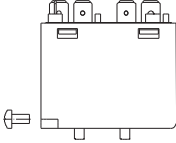
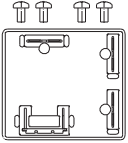
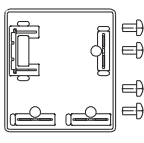
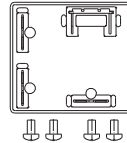
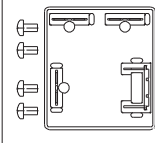
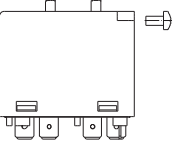
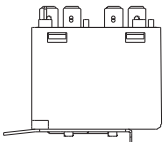
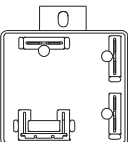
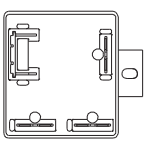
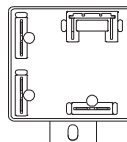
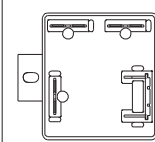
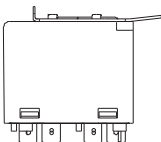
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OPERATING CHARACTERISTICS at 60Hz

Coil number		2		3		4		5		6		7		8		9	
Vmax at 40°C (V)		332		375		420		395		502		168		588		253	
Resistance (1±10%) Ω at 25°C		5600		7500		10700		10000		13800		1500		19500		3900	
	H.P.U.	P.U.	D.O.	P.U.	D.O.	P.U.	D.O.	P.U.	D.O.	P.U.	D.O.	P.U.	D.O.	P.U.	D.O.	P.U.	D.O.
AA	120-130											111-124	20-45			111-124	35-77
AB	130-140											120-134	20-45			120-134	35-77
AC	150-160											130-144	20-45			130-144	35-77
AD	160-170	150-163	40-90									140-153	20-45			140-153	35-77
AE	170-180	162-175	40-90									149-163	20-45			149-163	35-77
AF	180-190	171-184	40-90					180-195	40-105							157-172	35-77
AG	190-200	180-193	40-90	180-195	40-105			189-205	40-105							168-182	35-77
AH	200-220	186-215	40-90	190-215	40-105	195-224	60-121	186-214	60-130							178-192	35-77
AI	220-240	205-234	40-90	208-239	50-110	204-233	60-121	204-233	60-130							183-213	35-77
AL	240-260	224-252	40-105	224-252	50-110	223-259	60-121	223-252	60-130							203-231	35-77
AM	260-280	243-271	40-105	239-270	50-110	242-272	60-121	242-272	60-140	239-268	60-135					221-250	35-77
AN	280-300			260-289	50-110	262-290	60-121	262-290	60-140	258-287	60-135			258-287	75-170		
AO	300-320					280-310	60-121	280-310	60-140	277-305	60-135			277-305	75-170		
AP	320-340					300-328	60-121	300-328	60-140	295-324	60-135			295-324	75-170		
AQ	340-360					318-347	60-121			314-342	60-135			314-342	75-180		
AR	350-370													323-352	75-180		
AS	360-380													332-361	75-180		

Notes: H.P.U.means Approximate pick-up value at 90°C , P.U. means pick-up value at 25°C, D.O.means drop out value at 25°C.

OPERATING POSITION

	1	2	3	4	5	6
PLASTIC TAB MOUNT						
PANEL MOUNT						
METAL TAB MOUNT						

TERMINAL CONFIGURATION

	3 dual QC (#1, 2, 5)
PLASTIC TAB MOUNT	D
PANEL MOUNT	P
METAL TAB MOUNT	Z

ORDERING INFORMATION

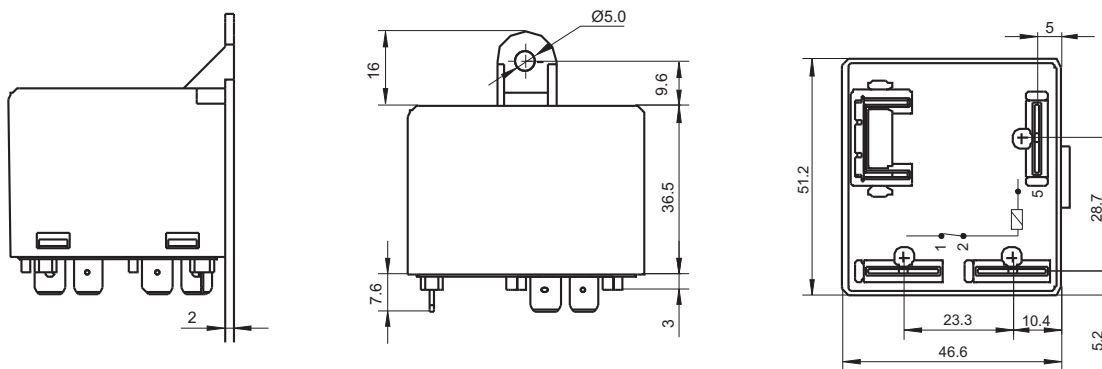
	HF8565 /	D	6	A	1	(XXX)
Type						
Terminal configuration	D、P、Z (See table for terminal configuration)					
Coil number	2、3、4、5、6、7、8、9					
Operation characteristics	AA to AS (See table for operating characteristics)					
Operation position	1、2、3、4、5、6					
Special code ¹⁾	XXX: Customer special requirement		Nil: Standard			

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

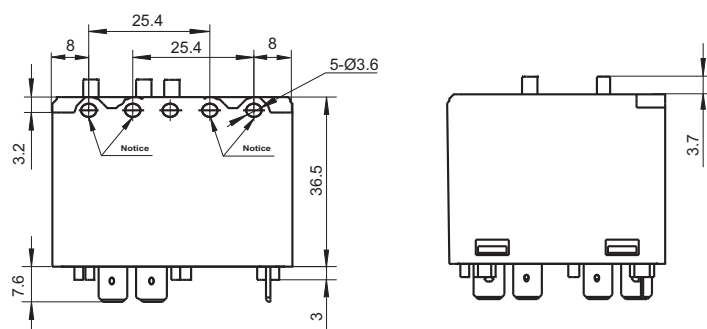
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

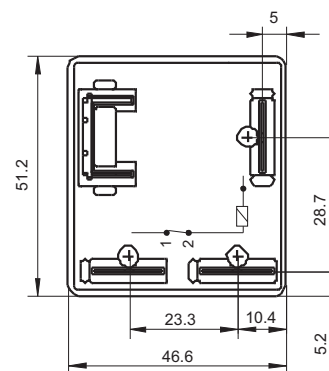
Plastic Tab Mount



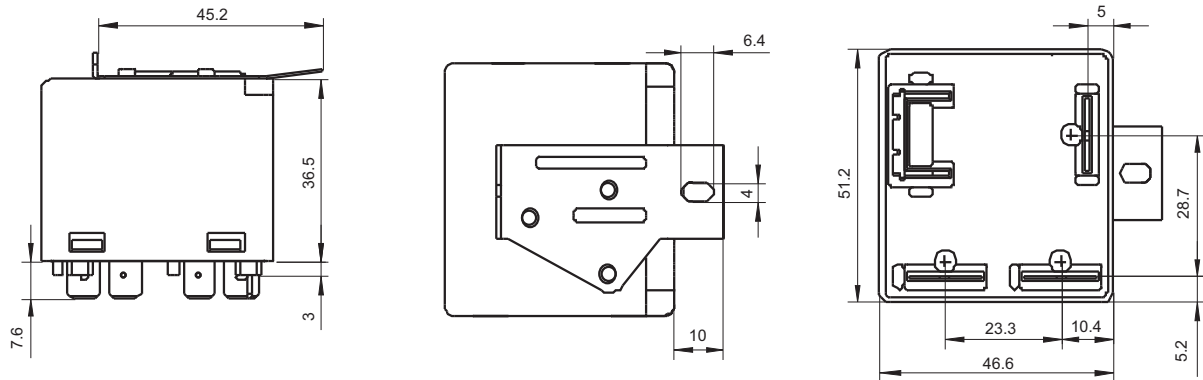
Panel Mount



Notice: When engaging the plastic mould recess, use two flat head, self tapping screw, size 4.2mm, 9.5mm long.

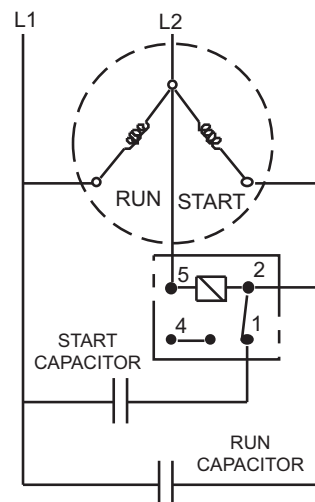


Metal Tab Mount



Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Wiring Diagram



Disclaimer

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HF9110

TO-5 HERMETICALLY SEALED RELAY WITH ESTABLISHED RELIABILITY



Features

- Failure rate can be Level M
- Approved by GJB65B
- High ambient applicability
- All metal welded construction
- Fusing soldering and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	735 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		490 m/s ²		

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2 C		
Contact resistance	Initial max.	125 mΩ	100 mΩ	100 mΩ
	After life max.	250 mΩ	200 mΩ	200 mΩ

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
II	0.2 A 28 Vd.c. 320 mH	Inductive	1 x 10 ⁵ OPS
	0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ OPS
III	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	0.1 A 115 Va.c.	Resistive	1 x 10 ⁵ OPS
	0.2 A 28 Vd.c. 320 mH	Inductive	1 x 10 ⁵ OPS
	0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ OPS
	50 μA 50 mVd.c.	Low level	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact group	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between coil & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		125 Vr.m.s.	125 Vr.m.s.	125 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		2 ms		
Release time max.		1.5 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		2.55 g		

COIL DATA

Coil Version

Normal coil power	Approx.0.5W
-------------------	-------------

Vd.c.

Order Number	Coil voltage		at 25 °C				-65°C to 125°C		
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.
005	5	5.8	50	2.7	1.4	0.22	3.5	2.3	0.15
006	6	8	98	3.5	2.0	0.28	4.5	3.2	0.18
009	9	12	220	5.3	3.0	0.54	6.8	4.9	0.35
012	12	16	390	7.0	4.0	0.63	9.0	6.5	0.40
018	18	24	880	10.5	6.0	0.91	13.5	10.0	0.58
027	27	32	1560	14.2	8.0	1.00	18.0	13.0	0.89

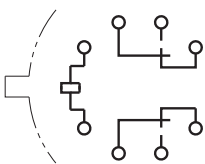
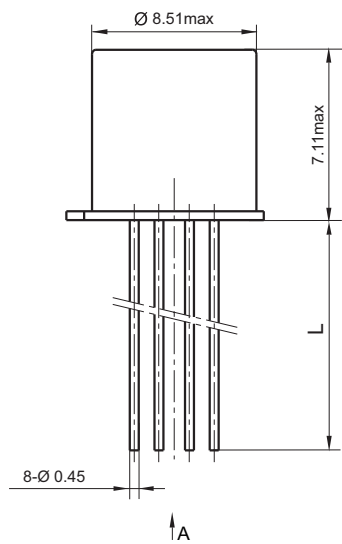
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9110	-012	M	-01	- I
Order Number	005、006、009、012、018、027				
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ M: Failure rate level M (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)				
Terminals Style	01, 02, 03 (See " Terminal styles " below)				
Ambient Grade	I : level I II : level II III: level III				

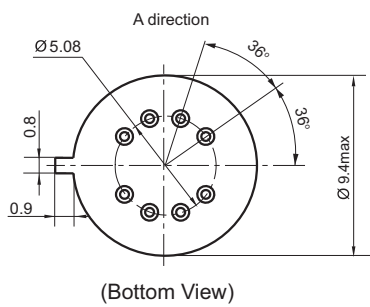
Notes: 1) For the failure rate of L or M ,the letter "III" of ambient grade level will not appear on relay cover.

Outline Dimension



Wiring Diagram
(Bottom View)

L	Terminal Styles Code
5.0 ±0.5	01
12.5min	02
38min	03



HF9111

TO-5 TYPE HIGH TEMPERATURE HERMETICALLY SEALED RELAY



Features

- Ambient temperature can be 180°C
- High ambient applicability
- Hermetically welded and marked by laser

Conform to GJB1042A-2002 (Equivalent to MIL-R-5757)

AMBIENT ADAPTABILITY

Ambient temperature	-65 °C to 180 °C
Humidity	98 %, 40 °C
Low air pressure	4.39 kPa
Sine vibration	Frequency 10 Hz to 3000 Hz
	Acceleration 294 m/s ²
Shock resistance	735 m/s ²
Random vibration	40 (m/s ²)/Hz
Steady-state acceleration	490 m/s ²

CONTACT DATA

Arrangement	2 C	
Contact resistance	Initial max.	125 mΩ
	After life max.	250 mΩ

Contact ratings

Contact load	Type	Electrical life min.
0.5 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
50 μA 50 mVd.c.	Low level	1 x 10 ⁵ OPS

SPECIFICATION

Insulation resistance min.		10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.
	Between contact & coil	500 Vr.m.s.
	Between contact & cover	500 Vr.m.s.
	Between contact group	500 Vr.m.s.
	Between coil & cover	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		125 Vr.m.s.
Leakage rate max.		1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		2 ms
Release time max.		2 ms
Mounting style		See the mounting dimension
Terminals		See the terminal styles
Work position		Random
Weight max.		2.55 g



HONGFA HERMETICALLY SEALED RELAY

COIL DATA

Norminal coil power

Approx.0.5W

Coil Version

Vd.c.

Order Number	Coil voltage		at 25 °C				-65°C to 125°C		
	Nominal voltage	Value max.	Coil resistance (1±10%)Ω	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.
012	12	16	390	7.0	4.0	0.63	10.8	6.5	0.40
027	27	32	1560	14.2	8.0	1.37	24.3	13.0	0.89

Notes: We can offer many kinds of coil voltage under the requirement of users.

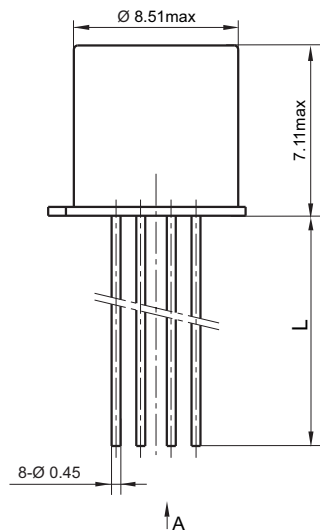
ORDERING INFORMATION

		HF9111	-027	-01
Type				
Order Number	012、027			
Terminals Style	01、02、03 (See " Terminal styles " below)			

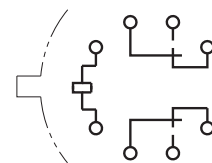
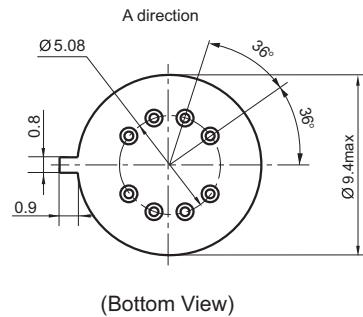
OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

Outline Dimension



L	Terminal Styles Code
5.0 ±0.5	01
12.5min	02
38min	03



Disclaimer

This datasheet is for the customers' reference. All the specifications are subject to change without notice.

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HF9112

TO-5 SENSITIVE DPDT HERMETICALLY SEALED RELAY



Features

- Coil power consumption:0.25W
- Sensitive type
- High ambient applicability
- All metal welded construction
- Fusing soldering and marked by laser
- Internal diode for coil transient suppression protection

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	735 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		490 m/s ²		

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2 C		
Contact resistance	Initial max.	125 mΩ	100 mΩ	100 mΩ
	After life max.	250 mΩ	200 mΩ	200 mΩ

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	0.5 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
II	0.5 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	0.2 A 28 Vd.c. 320 mH	Inductive	1 x 10 ⁵ OPS
	0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ OPS
III	0.5 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	0.2 A 28 Vd.c. 320 mH	Inductive	1 x 10 ⁵ OPS
	0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ OPS
	50 μA 50 mVd.c.	Low level	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact group	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between coil & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		125 Vr.m.s.	125 Vr.m.s.	125 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		2 ms		
Release time max / Coil transient suppression type		1.5 ms / 4 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		2.55 g		

COIL DATA

Normal coil power	Approx.0.25W
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Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C	
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Drop-out voltage min.
007	7	8.4	230	4.8	2.4	0.34	5.5	0.22

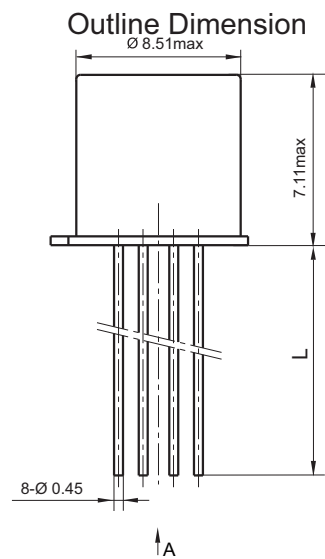
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

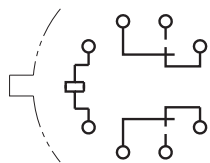
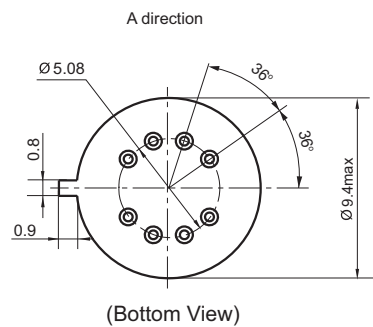
Type	HF9112	-007	D	-01	- I
Order Number	007				
Transient suppression protection	D: Coil With diode transient suppression protection Nil: Without diode				
Terminals Style	01、02、03 (See " Terminal styles " below)				
Ambient Grade	I、II、III				

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

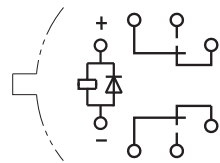


L	Terminal Styles Code
5.0 ±0.5	01
12.5min	02
38min	03



Wiring Diagram
(Bottom View)

(Without diode transient
suppression protection)



Wiring Diagram
(Bottom View)

(With diode transient
suppression protection)

Disclaimer

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HF9113

TO-5 DPDT HERMETICALLY SEALED RELAY WITH COIL TRANSIENT SUPPRESSION



Features

- Internal diode for coil transient suppression protection
- Failure rate can be Level M
- High ambient applicability
- All metal welded construction
- Fusing soldering and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	735 m/s ²
Random vibration		—	20 (m/s ²)/Hz	40 (m/s ²)/Hz
Steady-state acceleration		490 m/s ²		

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2 C		
Contact resistance	Initial max.	125 mΩ	100 mΩ	100 mΩ
	After life max.	250 mΩ	200 mΩ	200 mΩ

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
II	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	0.2 A 28 Vd.c. 320 mH	Inductive	1 x 10 ⁵ OPS
	0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ OPS
III	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	0.1 A 115 Va.c.	Resistive	1 x 10 ⁵ OPS
	0.2 A 28 Vd.c. 320 mH	Inductive	1 x 10 ⁵ OPS
	0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ OPS
	50 μA 50 mVd.c.	Low level	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact group	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between coil & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		125 Vr.m.s.	125 Vr.m.s.	125 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		2 ms		
Release time max.		4 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		2.55 g		

COIL DATA

Normal coil power	Approx.0.5W
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Coil Version

Vd.c.

Order Number	Coil voltage		at 25 °C				-65°C to 125°C		
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.
005	5	5.8	50	2.7	1.4	0.22	3.5	2.3	0.15
006	6	8	98	3.5	2.0	0.28	4.5	3.2	0.18
009	9	12	220	5.3	3.0	0.54	6.8	4.9	0.35
012	12	16	390	7.0	4.0	0.63	9.0	6.5	0.40
018	18	24	880	10.5	6.0	0.91	13.5	10.0	0.58
027	27	32	1560	14.2	8.0	1.00	18.0	13.0	0.89

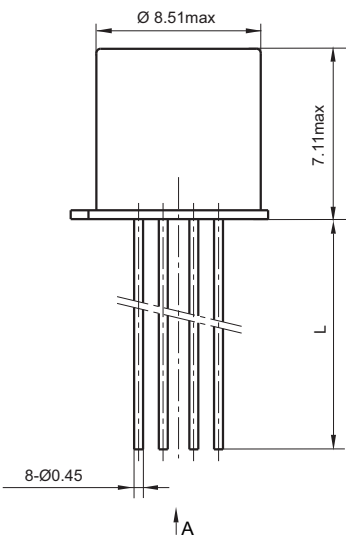
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

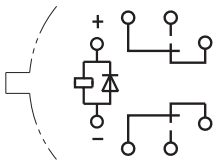
HF9113		-012	M	-01	- I
Type					
Order Number		005、006、009、012、018、027			
Failure Rate		L: Failure rate level L (level III products available) ¹⁾ M: Failure rate level M (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)			
Terminals Style		01 、 02 、 03 (See " Terminal styles " below)			
Ambient Grade		I : level I II : level II III: level III			

Notes: 1) For the failure rate of L or M ,the letter "III" of ambient grade level will not appear on relay cover.

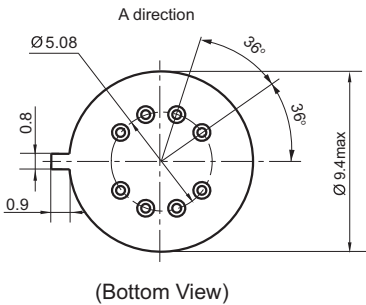
Outline Dimension



L	Terminal Styles Code
5.0 ± 0.5	01
12.5min	02
38min	03



Wiring Diagram
(Bottom View)



(Bottom View)

HF9114

TO-5 DPDT HERMETICALLY SEALED RELAY



Features

- Grid type output
- Failure rate can be Level M
- High ambient applicability
- All metal welded construction,
- Fusing soldering and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	735 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		490 m/s ²		

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2 C		
Contact resistance	Initial max.	125 mΩ	100 mΩ	100 mΩ
	After life max.	250 mΩ	200 mΩ	200 mΩ

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ ops
	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ ops
II	0.2 A 28 Vd.c. 320 mH	Inductive	1 x 10 ⁵ ops
	0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ ops
III	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ ops
	0.1 A 115 Va.c.	Resistive	1 x 10 ⁵ ops
	0.2 A 28 Vd.c. 320 mH	Inductive	1 x 10 ⁵ ops
	0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ ops
	50 μA 50 mVd.c.	Low level	1 x 10 ⁵ ops

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact group	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between coil & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		125 Vr.m.s.	125 Vr.m.s.	125 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		2 ms		
Release time max.		1.5 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		2.55 g		

COIL DATA

Normal coil power	Approx.0.5W
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Coil Version

Vd.c.

Order Number	Coil voltage		at 25 °C				-65°C to 125°C		
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.
005	5	5.8	50	2.7	1.4	0.22	3.5	2.3	0.15
006	6	8	98	3.5	2.0	0.28	4.5	3.2	0.18
009	9	12	220	5.3	3.0	0.54	6.8	4.9	0.35
012	12	16	390	7.0	4.0	0.63	9.0	6.5	0.40
018	18	24	880	10.5	6.0	0.91	13.5	10.0	0.58
027	27	32	1560	14.2	8.0	1.00	18.0	13.0	0.89

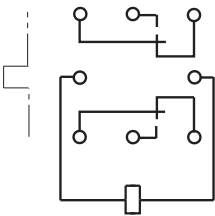
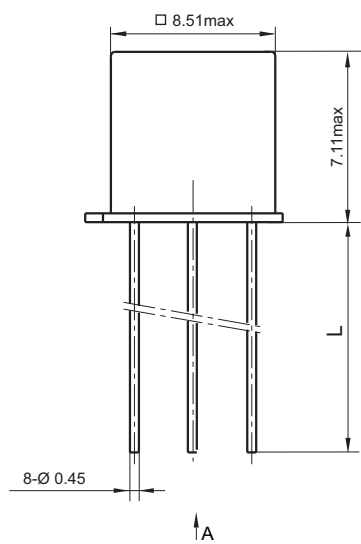
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9114	-012	M	-01	- I
Order Number	005、006、009、012、018、027				
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ M: Failure rate level M (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)				
Terminals Style	01、02、03 (See " Terminal styles " below)				
Ambient Grade	I : level I II : level II III: level III				

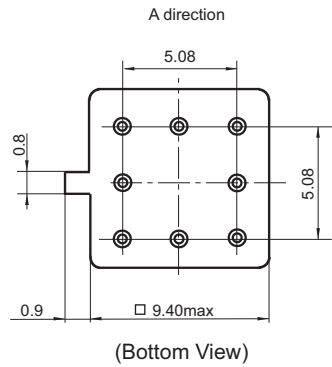
Notes: 1) For the failure rate of L or M ,the letter "III" of ambient grade level will not appear on relay cover.

Outline Dimension



Wiring Diagram
(Bottom View)

L	Terminal Styles Code
5.0 ±0.5	01
12.5min	02
38min	03



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HF9116

TO-5 2 FORM C HERMETICALLY SEALED ELECTRO MAGNETIC RELAY WITH COIL TRANSIENT SUPPRESSION



Features

- Grid type output
- With coil transient suppression
- Failure rate level can be level M
- High ambient applicability
- All metal welded construction
- Fusing soldering and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	735 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		490 m/s ²		

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2 C		
Contact resistance	Initial max.	125 mΩ	100 mΩ	100 mΩ
	After life max.	250 mΩ	200 mΩ	200 mΩ

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
II	0.2 A 28 Vd.c. 320 mH	Inductive	1 x 10 ⁵ OPS
	0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ OPS
III	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	0.1 A 115 Va.c.	Resistive	1 x 10 ⁵ OPS
	0.2 A 28 Vd.c. 320 mH	Inductive	1 x 10 ⁵ OPS
	0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ OPS
	50 μA 50 mVd.c.	Low level	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact group	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between coil & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		125 Vr.m.s.	125 Vr.m.s.	125 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		2 ms		
Release time max.		4 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		2.55 g		

COIL DATA

Normal coil power	Approx.0.5W
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Coil Version

Vd.c.

Order Number	Coil voltage		at 25 °C				-65°C to 125°C		
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.
005	5	5.8	50	2.7	1.4	0.22	3.5	2.3	0.15
006	6	8	98	3.5	2.0	0.28	4.5	3.2	0.18
009	9	12	220	5.3	3.0	0.54	6.8	4.9	0.35
012	12	16	390	7.0	4.0	0.63	9.0	6.5	0.40
018	18	24	880	10.5	6.0	0.91	13.5	10.0	0.58
027	27	32	1560	14.2	8.0	1.0	18.0	13.0	0.89

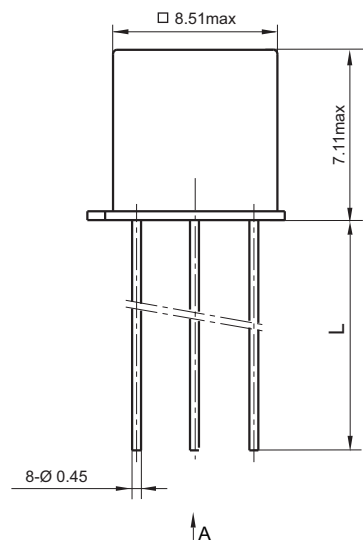
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

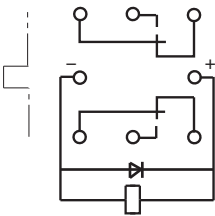
Type	HF9116	-012	M	-01	- I
Order Number		005、006、009、012、018、027			
Failure Rate		L: Failure rate level L (level III products available) ¹⁾ M: Failure rate level M (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)			
Terminals Style		01、02、03 (See " Terminal styles " below)			
Ambient Grade		I : level I II : level II III: level III			

Notes: 1) For the failure rate of L or M ,the letter "III" of ambient grade level will not appear on relay cover.

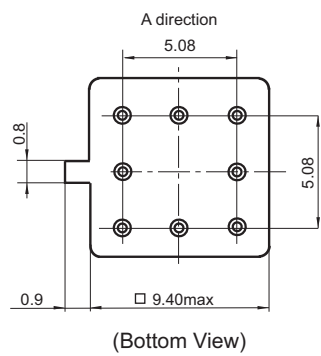
Outline Dimension



L	Terminal Styles Code
5.0 ±0.5	01
12.5min	02
38min	03



Wiring Diagram
(Bottom View)



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HF9117

TO-5 2 FORM C HERMETICALLY SEALED ELECTROMAGNETIC RELAY WITH COIL TRANSIENT SUPPRESSION AND REVERSE POLARITY PROTECTION



Features

- Grid type output
- With coil transient suppression
- Failure rate level can be level M
- High ambient applicability
- All metal welded construction
- Fusing soldering and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	735 m/s ²
Random vibration		—	20 (m/s ²)/Hz	40 (m/s ²)/Hz
Steady-state acceleration		490 m/s ²		

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2 C		
Contact resistance	Initial max.	125 mΩ	100 mΩ	100 mΩ
	After life max.	250 mΩ	200 mΩ	200 mΩ

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
II	0.2 A 28 Vd.c. 320 mH	Inductive	1 x 10 ⁵ OPS
	0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ OPS
III	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	0.1 A 115 Va.c.	Resistive	1 x 10 ⁵ OPS
	0.2 A 28 Vd.c. 320 mH	Inductive	1 x 10 ⁵ OPS
	0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ OPS
	50 μA 50 mVd.c.	Low level	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact group	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between coil & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		125 Vr.m.s.	125 Vr.m.s.	125 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		2 ms		
Release time max.		4 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		2.55 g		

COIL DATA

Normal coil power	Approx.0.64W
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Coil Version

Vd.c.

Order Number	Coil voltage		at 25 °C				-65°C to 125°C		
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.
005	5	5.8	39	3.2	2.3	0.6	4.0	2.8	0.6
006	6	8	78	4.0	2.8	0.7	5.0	3.4	0.7
009	9	12	220	6.3	4.2	0.9	7.8	5.3	0.8
012	12	16	390	8.0	5.2	1.1	10.0	6.5	0.9
018	18	24	880	11.5	7.3	1.4	14.5	10.0	1.1
027	27	32	1560	15.2	9.5	1.8	19.0	13.0	1.4

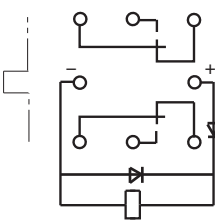
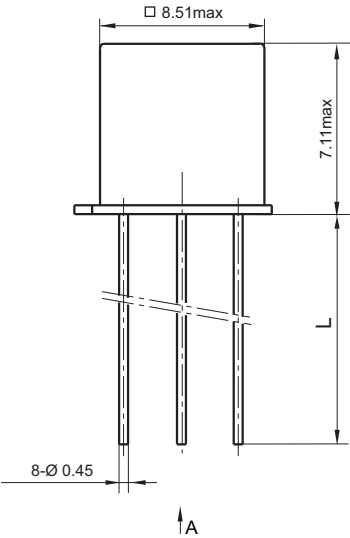
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9117	-012	M	-01	- I
Order Number	005、006、009、012、018、027				
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ M: Failure rate level M (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)				
Terminals Style	01、02、03 (See " Terminal styles " below)				
Ambient Grade	I : level I II : level II III: level III				

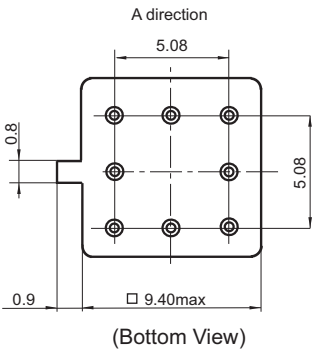
Notes: 1) For the failure rate of L or M ,the letter "III" of ambient grade level will not appear on relay cover.

Outline Dimension



Wiring Diagram
(Bottom View)

L	Terminal Styles Code
5.0 ±0.5	01
12.5min	02
38min	03



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HF9210

1/5 CRYSTAL CAN 2 FORM C HERMETICALLY SEALED RELAY



Features

- Load can be 2A 28Vd.c.
- Failure rate can be M level
- High ambient applicability
- High pure nitrogen protection
- All metal welded construction
- Fusing soldering and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity				98 %, 40 °C
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	980 m/s ²
Random vibration		—	20 (m/s ²)/Hz	40 (m/s ²)/Hz
Steady-state acceleration		147 m/s ²	735 m/s ²	980 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement				2C
Contact resistance	Initial max.			50 mΩ
	After life max.			150 mΩ

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ ops
II	2 A 28 Vd.c.	Resistive	5 x 10 ⁴ ops
	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ ops
	0.125 A 115 Va.c.	Resistive	1 x 10 ⁵ ops
	0.3 A 28 Vd.c. 200 mH	Inductive	1 x 10 ⁵ ops
	2 A 28 Vd.c.	Resistive	5 x 10 ⁴ ops
III	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ ops
	0.125 A 115 Va.c.	Resistive	1 x 10 ⁵ ops
	0.3 A 28 Vd.c. 200 mH	Inductive	1 x 10 ⁵ ops
	0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ ops
	50 μA 50m Vd.c.	Low level	1 x 10 ⁵ ops
	50 μA 50m Vd.c.	Low level	1 x 10 ⁵ ops



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	500 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
	Between contact & cover	500 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
	Between contact group	500 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
	Between coil & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		300 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		6 ms	4 ms	4 ms
Release time max.		4 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		4.8 g		

COIL DATA

Normal coil power	Approx.0.69W
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Coil Version

Order Number	Coil voltage		at 25 °C					-65°C to 125°C		
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.		Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.		Drop-out voltage min.
				I	II, III			I	II, III	
005	5	7	44	3.3	2.4	1.45	0.26	3.7	3.3	0.16
006	6	8	56	3.9	2.7	1.60	0.30	4.5	3.8	0.18
009	9	12	140	5.9	4.4	2.60	0.50	6.8	6.0	0.30
012	12	16	210	7.8	5.4	3.20	0.60	9.0	7.4	0.36
018	18	24	650	11.7	9.5	5.60	1.00	13.5	12.8	0.60
027	27	35	1350	17.6	13.5	8.10	1.50	20.2	18.0	0.90

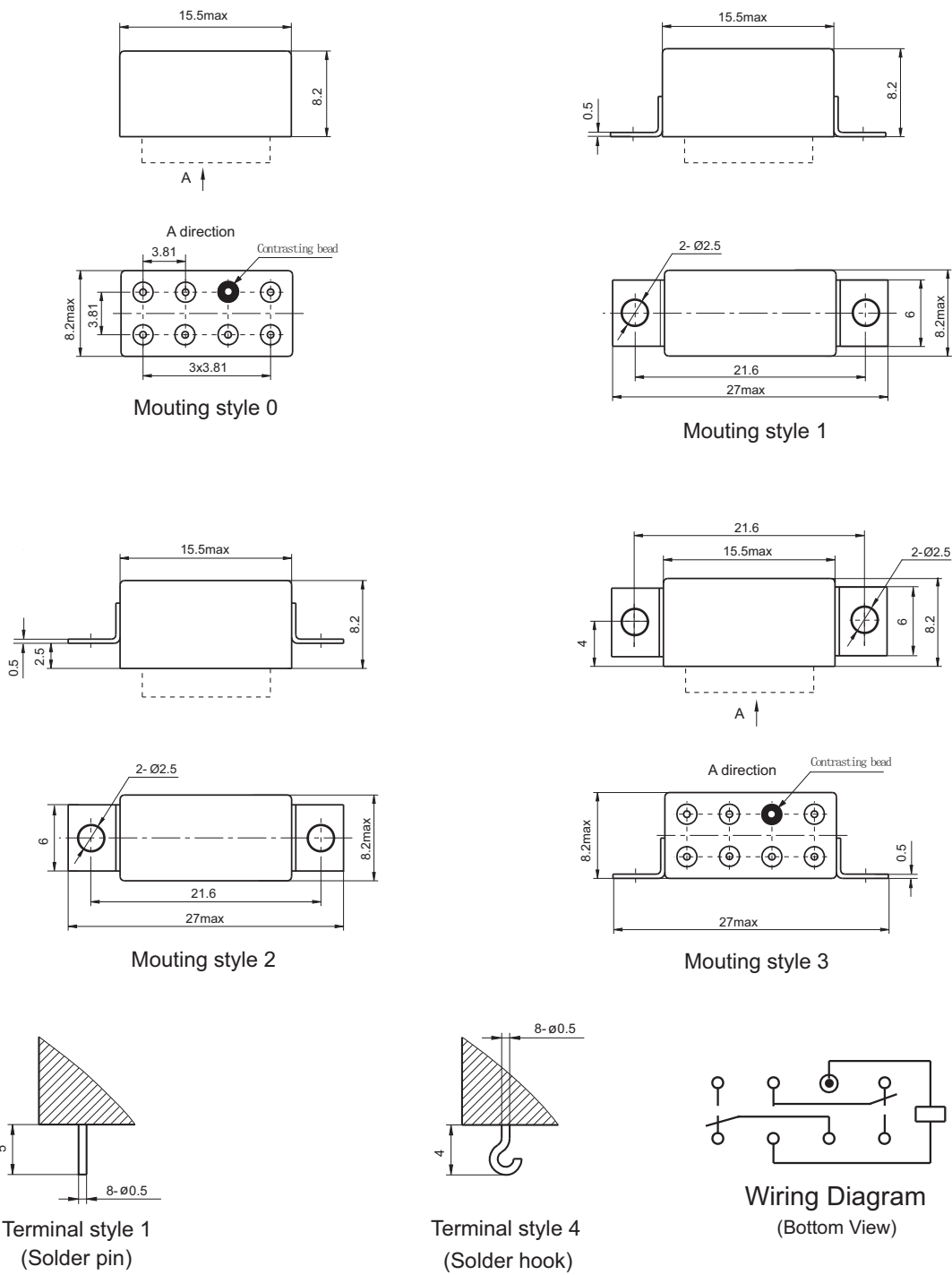
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9210	-012	M	-0	1	- I
Order Number	005、006、009、012、018、027、036					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ M: Failure rate level M (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 1, 2, 3 (See the mounting dimension)					
Terminals Style	1, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L or M ,the letter "III" of ambient grade level will not appear on relay cover.

Outline Dimension



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HF9211

1/5 CRYSTAL CAN 2 FORM C HERMETICALLY SEALED ELECTROMAGNETIC RELAY WITH COIL TRANSIENT SUPPRESSION



Features

- With coil transient suppression
- Load can be 2A 28Vd.c.
- Failure rate level can be level M
- High ambient applicability
- Diode inside
- All metal welded construction
- Fusing soldering and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	980 m/s ²
Random vibration		—	20 (m/s ²)/Hz	40 (m/s ²)/Hz
Steady-state acceleration		147 m/s ²	735 m/s ²	980 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2C		
Contact resistance	Initial max.	50 mΩ		
	After life max.	150 mΩ		

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	2 A 28 Vd.c.	Resistive	5 x 10 ⁴ OPS
II	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	0.125 A 115 Va.c.	Resistive	1 x 10 ⁵ OPS
	0.3 A 28 Vd.c. 200 mH	Inductive	1 x 10 ⁵ OPS
	2 A 28 Vd.c.	Resistive	5 x 10 ⁴ OPS
III	1 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	0.125 A 115 Va.c.	Resistive	1 x 10 ⁵ OPS
	0.3 A 28 Vd.c. 200 mH	Inductive	1 x 10 ⁵ OPS
	0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ OPS
	50 μA 50m Vd.c.	Low level	1 x 10 ⁵ OPS
	2 A 28 Vd.c.	Resistive	5 x 10 ⁴ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	500 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
	Between contact & cover	500 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
	Between contact group	500 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
	Between coil & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		300 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		6 ms	4 ms	4 ms
Release time max.		6 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		4.8 g		

COIL DATA

Normal coil power	Approx.0.69W
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Coil Version

Order Number	Coil voltage		at 25 °C					-65°C to 125°C		
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.		Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.		Drop-out voltage min.
				I	II, III			I	II, III	
005	5	7	44	3.3	2.4	1.45	0.26	3.7	3.3	0.16
006	6	8	56	3.9	2.7	1.60	0.30	4.5	3.8	0.18
009	9	12	140	5.9	4.4	2.60	0.50	6.8	6.0	0.30
012	12	16	210	7.8	5.4	3.20	0.60	9.0	7.4	0.36
018	18	24	650	11.7	9.5	5.60	1.00	13.5	12.8	0.60
027	27	35	1350	17.6	13.5	8.10	1.50	20.2	18.0	0.90

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

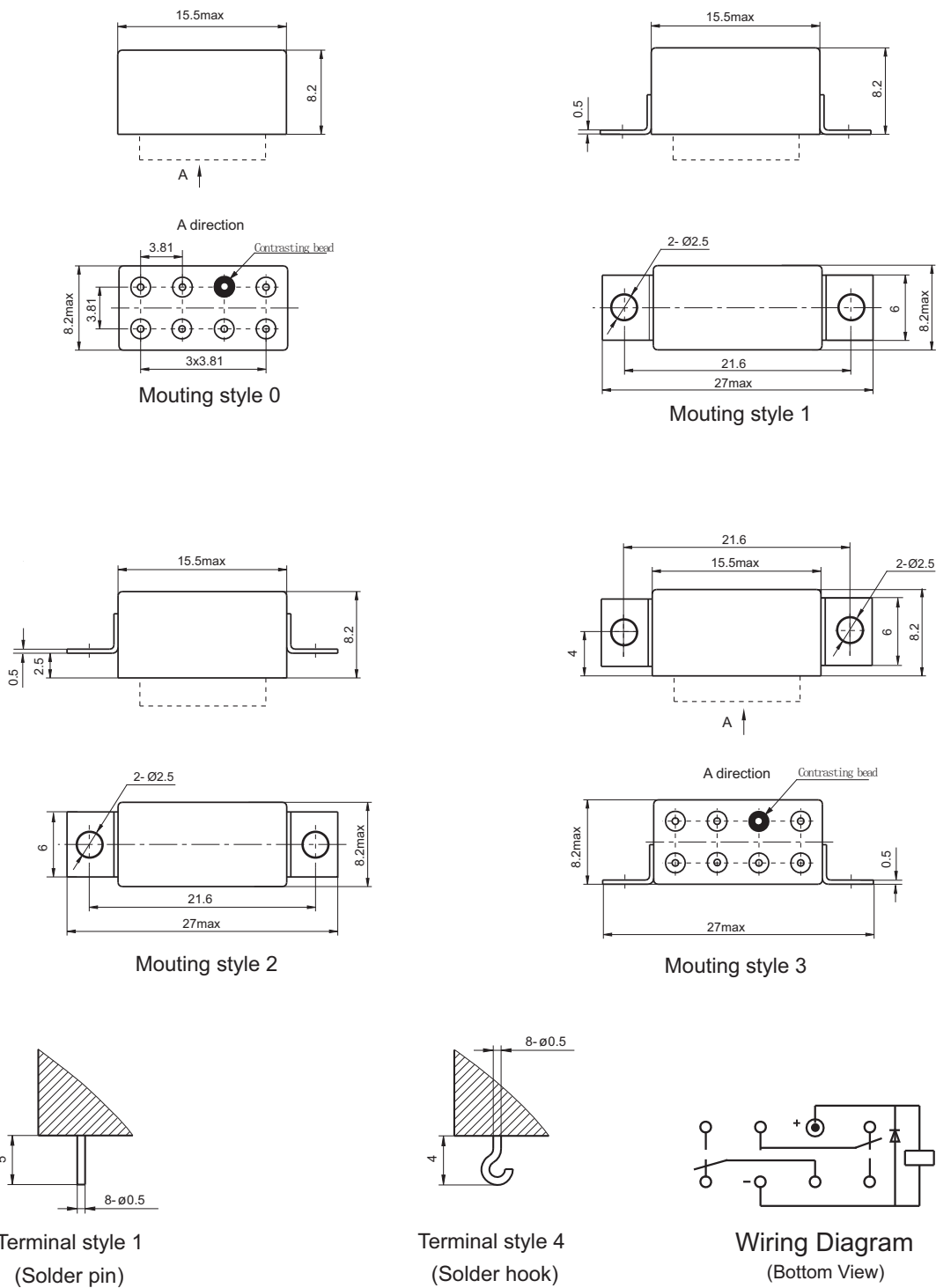
Type	HF9211	-012	M	-0	1	- I
Order Number	005、006、009、012、018、027					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ M: Failure rate level M (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 1, 2, 3 (See the mounting dimension)					
Terminals Style	1, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L or M ,the letter "III" of ambient grade level will not appear on relay cover.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

Outline Dimension



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HF9215

1/6 CRYSTAL CAN 2 FORM C HERMETICALLY SEALED ELECTROMAGNETIC RELAY



Features

- Load can be 1A 28Vd.c
- Failure rate level can be level M
- High ambient applicability
- All metal welded construction
- Fusing soldering and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity				98 %, 40 °C
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000Hz	10 Hz to 2000 Hz
	Acceleration	147 m/s ²	196 m/s ²	196 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	980 m/s ²
Random vibration		—	20 (m/s ²)/Hz	20 (m/s ²)/Hz
Steady-state acceleration		147 m/s ²	490 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement				2C
Contact voltage drop	Initial max.			100 mΩ
	After life max.			150 mΩ

Contact ratings

Contact load	Type	Electrical life min.
1 A 28 Vd.c.	Resistive	1 x 10 ⁵ ops
0.2 A 28 Vd.c. 200 mH	Inductive	1 x 10 ⁵ ops
0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ ops
50 μA 50m Vd.c.	Low level	1 x 10 ⁵ ops



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 100 Vd.c.)	1000 MΩ (@ 100 Vd.c.)	10000 MΩ (@ 100 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	350 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	350 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & cover	350 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact group	350 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between coil & cover	350 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		200 Vr.m.s.	300 Vr.m.s.	300 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		6 ms	4 ms	4 ms
Release time max.		6 ms	4 ms	4 ms
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		4 g		

COIL DATA

Normal coil power	Approx.0.48W
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Coil Version

Order Number	Coil voltage		at 25 °C					-65°C to 125°C			
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.		Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.		Hold voltage max.	Drop-out voltage min.
				I	II , III			I	II , III		
006	6	8	90	3.8	3.0	1.5	0.3	4.8	4	2.0	0.2
012	12	16	310	8.0	6.0	3.0	0.6	9.6	8.0	4.0	0.4
027	27	32	1500	18.0	13.5	10.0	1.5	21.6	18	14.0	1.0

Notes: We can offer many kinds of coil voltage under the requirement of users.

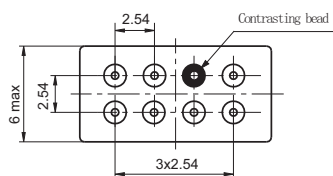
ORDERING INFORMATION

Type	HF9215	-012	M	-0	1	- I
Order Number	006、012、027					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ M: Failure rate level M (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,III products available)					
Mounting Style	0, 2, 3 (See the mounting dimension)					
Terminals Style	1 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

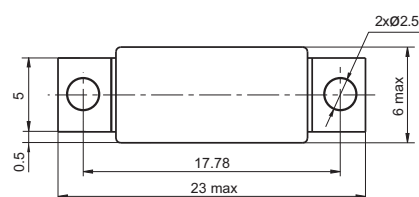
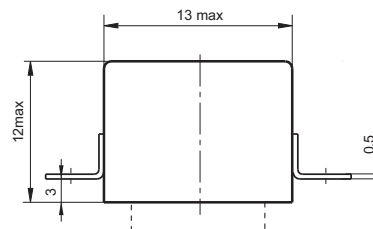
Notes: 1) For the failure rate of L or M ,the letter "III" of ambient grade level will not appear on relay cover.

↑A

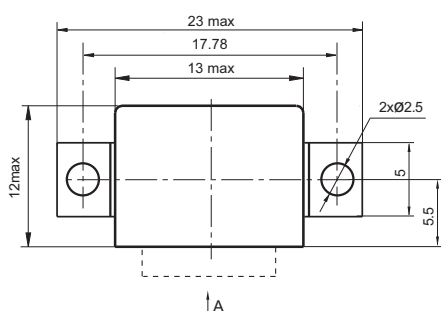
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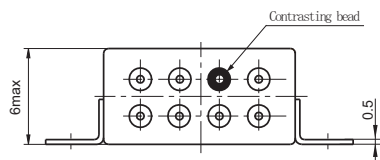
Mouting style 0



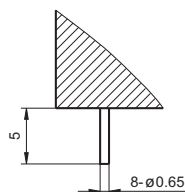
Mouting style 2



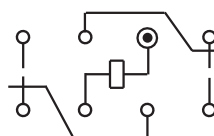
A direction



Mouting style 3



Mounting style 1
(Solder pin)



Wiring Diagram (Bottom View)

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HF9216

1/6 CRYSTAL CAN 1 GROUP N.O. CONTACT HERMETICALLY SEALED ELECTROMAGNETIC RELAY



Features

- Load can be 2A 28Vd.c.
- High ambient applicability
- Fusing soldering and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz ~ 1000 Hz	10 Hz ~ 2000 Hz	10 Hz ~ 2000 Hz
	Acceleration	147 m/s ²	196 m/s ²	196 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	735 m/s ²
Random vibration		—	20 (m/s ²)/Hz	20 (m/s ²)/Hz
Steady-state acceleration		147 m/s ²	490 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		1 A		
Contact resistance	Initial max.	100 mΩ		
	After life max.	150 mΩ		

Contact ratings

Contact load	Type	Electrical life min.
2 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
0.2A 28 Vd.c.200mH	Inductive	1 x 10 ⁵ OPS
50 μ A 50 mVd.c.	Low level	1 x 10 ⁵ OPS
0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	1000 MΩ (@ 500 Vd.c.)	1000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	350 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	350 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & cover	350 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact group	350 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between coil & cover	350 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	250 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		4 ms		
Release time max.		4 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		4g		

COIL DATA

Normal coil power	Approx.0.48W
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Coil Version

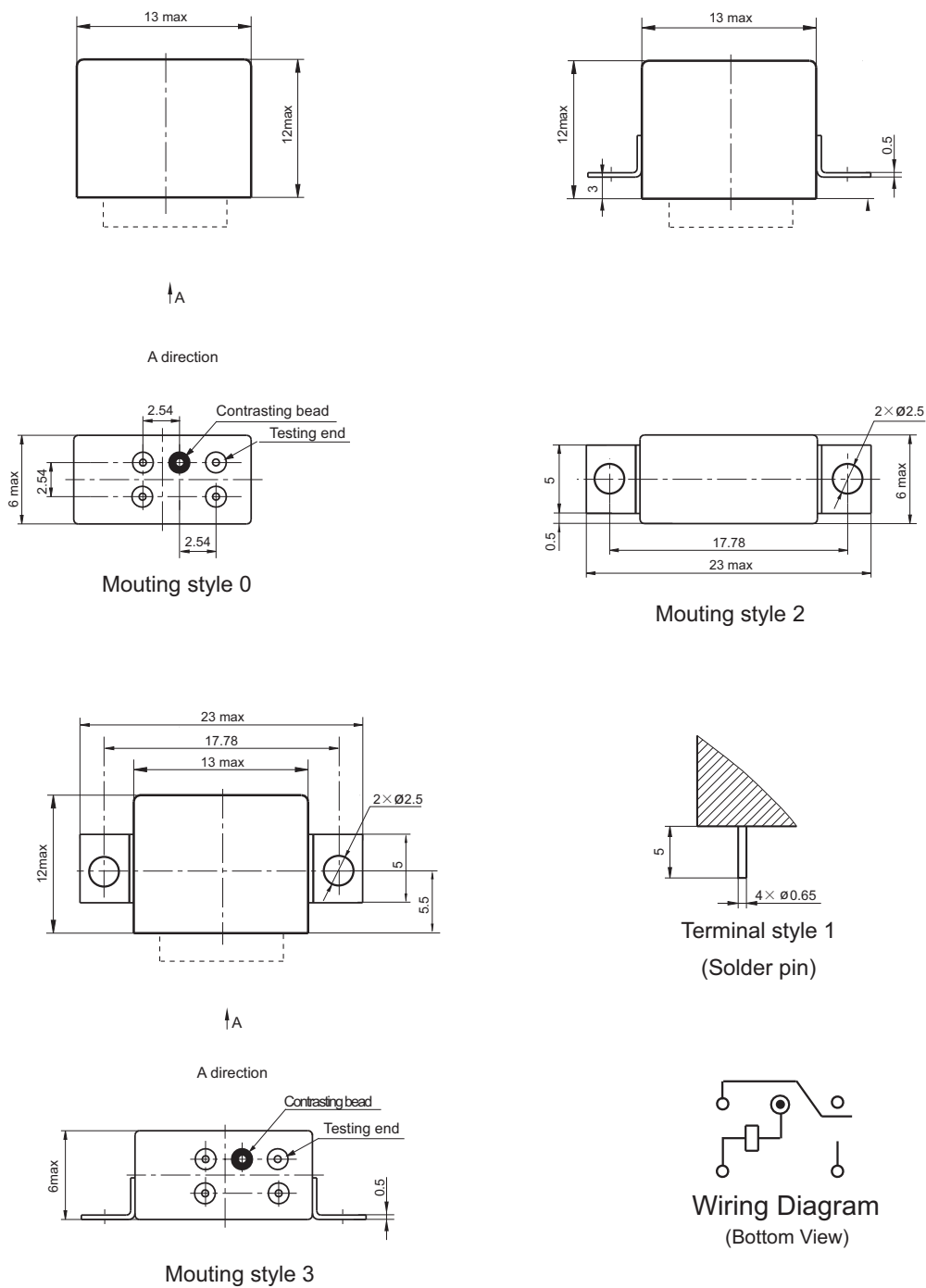
Order Number	Coil voltage		at 25 °C					-65°C to 125°C			
			Coil resistance (1±10%) Ω	Pick-up voltage max.		Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.		Hold voltage max.	Drop-out voltage min.
	Nominal voltage	Value max.		I	II, III			I	II, III		
024	24	29	1200	15.6	12	7	1.2	21	20	10	0.7

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9216	-024	-0	1	- I
Order Number	024				
Mounting Style	0, 2, 3 (See the mounting dimension)				
Terminals Style	1 (See " Terminal styles " below)				
Ambient Grade	I 、 II 、 III				

Outline Dimension



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HF9217

1/6 CRYSTAL CAN 1 GROUP N.O. CONTACT HERMETICALLY SEALED ELECTROMAGNETIC RELAY



Features

- Load can be 5A 28Vd.c.
- High ambient applicability
- Fusing soldering and marked by laser

Conform to GJB1042-2002 (Equivalent to MIL-PRF-5757)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz ~ 1000 Hz	10 Hz ~ 2000 Hz	10 Hz ~ 2000 Hz
	Acceleration	147 m/s ²	196 m/s ²	196 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	735 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	20 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	490 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		1 A		
Contact resistance	Initial max.	100 mΩ		
	After life max.	150 mΩ		

Contact ratings

Contact load	Type	Electrical life min.
5 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
0.75A 28 Vd.c.200mH	Inductive	1 x 10 ⁵ OPS
50 μ A 50 mVd.c.	Low level	1 x 10 ⁵ OPS
0.16 A 28 Vd.c.	Lamp load	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	1000 MΩ (@ 500 Vd.c.)	1000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	350 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	350 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & cover	350 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact group	350 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between coil & cover	350 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	250 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		4 ms		
Release time max.		4 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		4g		

COIL DATA

Normal coil power	Approx.0.48W
-------------------	--------------

Coil Version

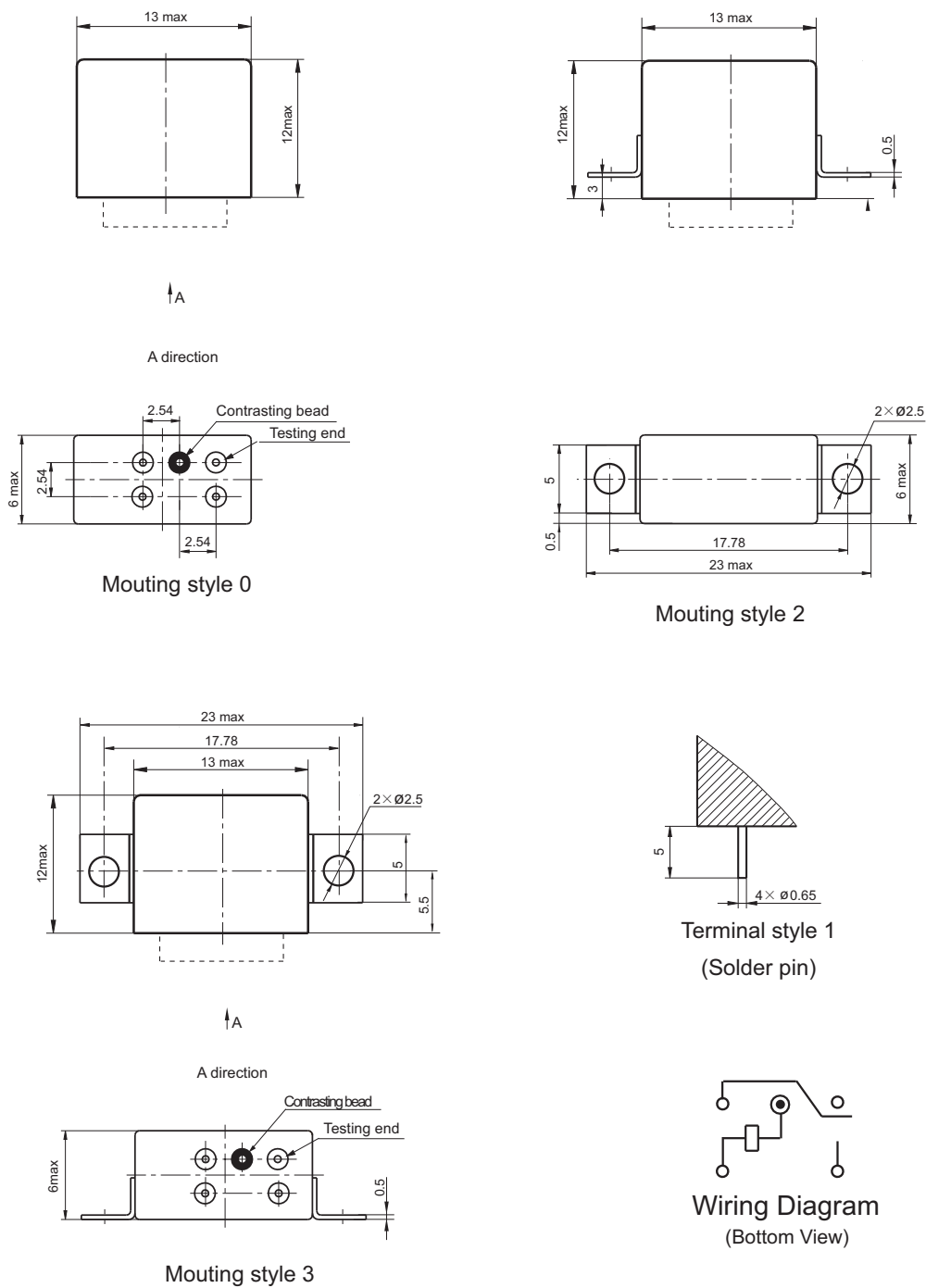
Order Number	Coil voltage		at 25 °C					-65°C to 125°C			
			Coil resistance (1±10%) Ω	Pick-up voltage max.		Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.		Hold voltage max.	Drop-out voltage min.
	Nominal voltage	Value max.		I	II, III			I	II, III		
024	24	29	1200	15.6	12	7	1.2	21	20	10	0.7

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9217	-024	-0	1	- I
Order Number	024				
Mounting Style	0, 2, 3 (See the mounting dimension)				
Terminals Style	1 (See " Terminal styles " below)				
Ambient Grade	I 、 II 、 III				

Outline Dimension



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HF9310

HALF-SIZE CRYSTAL CAN HERMETICALLY SEALED ELECTROMAGNETIC RELAY WITH ESTABLISHED RELIABILITY



Features

- Failure rate can be level M
- Qualified by China military standard
- High ambient applicability
- Hermetically welded and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	980 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		490 m/s ²		

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2 C		
Contact resistance	Initial max.	50 mΩ		
	After life max.	100 mΩ		

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	2 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
II	2 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	0.1 A 115 Va.c.	Resistive	1 x 10 ⁵ OPS
	0.5 A 28 Vd.c. 200 mH	Inductive	1 x 10 ⁵ OPS
	2 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
III	0.3 A 115 Va.c.	Resistive	1 x 10 ⁵ OPS
	0.75 A 28 Vd.c. 200 mH	Inductive	1 x 10 ⁵ OPS
	0.16 A 28 Vd.c.	Lamp load	1 x 10 ⁵ OPS
	50 μA 50 mVd.c.	Low level	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	750 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between contact & cover	750 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between contact group	750 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between coil & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		350 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		6 ms	4 ms	4 ms
Release time max.				4 ms
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		13 g		

COIL DATA

Normal coil power	Approx.0.9W
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Coil Version

Order Number	Coil voltage		at 25 °C					-65°C to 125°C			
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.		Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.		Hold voltage max.	Drop-out voltage min.
				I	II, III			I	II, III		
005	5	6.0	27	3.0	2.7	1.65	0.29	4.0	3.8	2.4	0.21
006	6	7.5	40	3.6	3.2	2.00	0.35	4.8	4.5	2.9	0.25
009	9	10.8	90	5.4	4.8	3.00	0.52	7.2	6.75	4.4	0.38
012	12	15.0	160	7.2	6.4	4.00	0.70	9.6	9.0	5.8	0.50
024	24	30.0	600	14.4	12.8	7.00	1.20	19.2	17.0	10.2	0.90
027	27	32.0	700	16.2	13.5	8.00	1.20	21.6	18.0	14.0	1.00

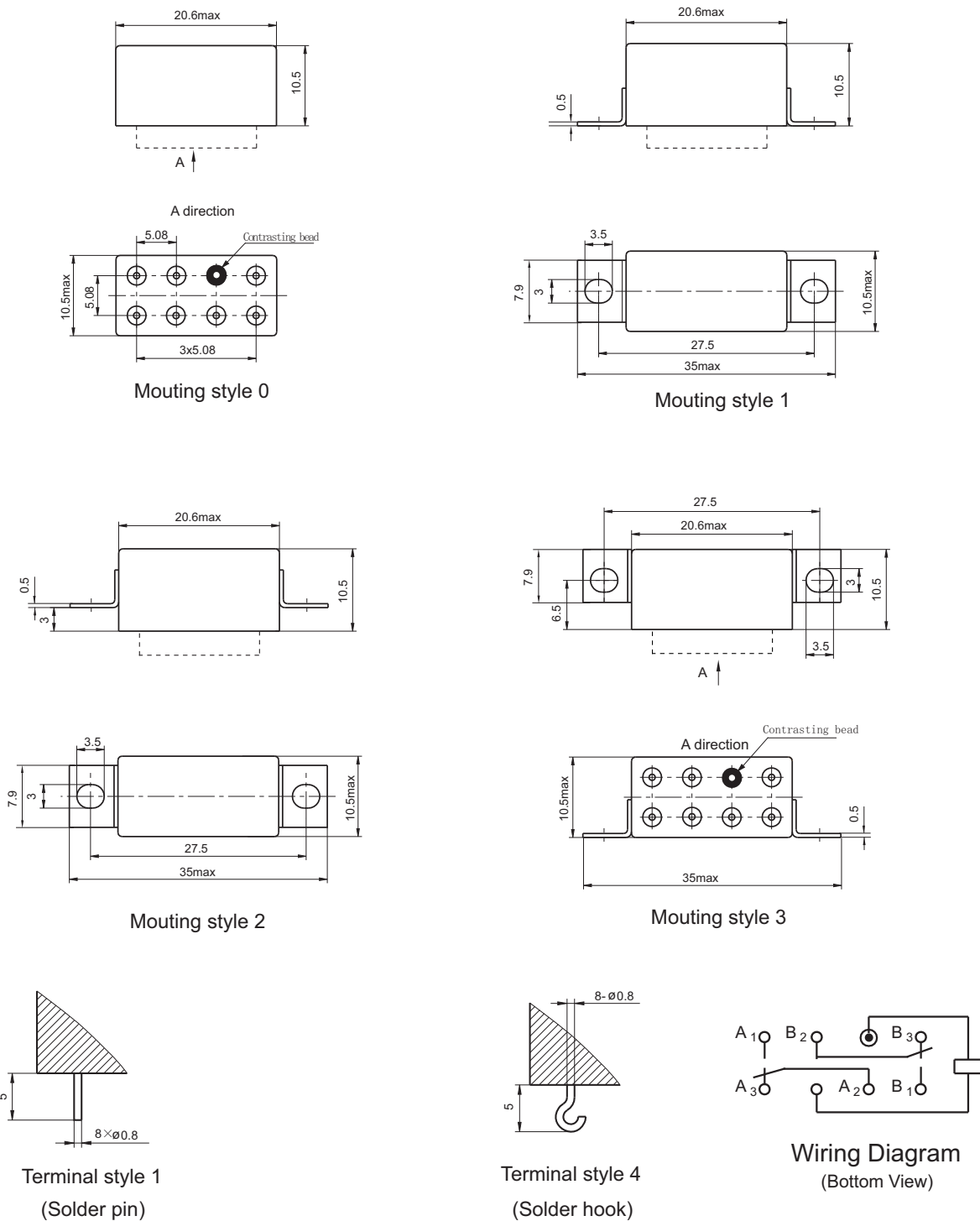
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9310	-012	M	-0	1	- I
Order Number	005、006、009、012、018、027					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ M: Failure rate level M (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 1, 2, 3 (See the mounting dimension)					
Terminals Style	1, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L or M ,the letter "III" of ambient grade level will not appear on relay cover.

Outline Dimension



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HF9311

HALF-SIZE CRYSTAL CAN HIGH DIELECTRIC STRENGTH HERMETICALLY SEALED RELAY



Features

- Dielectric strength can be 1200 Vr.m.s
- Load can be 5A 28Vd.c.
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	980 m/s ²
Random vibration		—	20 (m/s ²)/Hz	40 (m/s ²)/Hz
Steady-state acceleration		490 m/s ²		

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2 C		
Contact resistance	Initial max.	50 mΩ		
	After life max.	100 mΩ		

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	5 A 28 Vd.c.	Resistive	2 x 10 ⁴ OPS
II	5 A 28 Vd.c.	Resistive	5 x 10 ⁴ OPS
	2 A 115Vd.c.	Resistive	1 x 10 ⁵ OPS
III	5 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	50 μA 50 mVd.c.	Low level	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	1200 Vr.m.s.	1200 Vr.m.s.	1200 Vr.m.s.
	Between contact & cover	1200 Vr.m.s.	1200 Vr.m.s.	1200 Vr.m.s.
	Between contact group	1200 Vr.m.s.	1200 Vr.m.s.	1200 Vr.m.s.
	Between coil & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		300 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		6 ms		
Release time max.		4 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		13 g		

COIL DATA

Normal coil power	Approx. 1.2W
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Coil Version

Vd.c.

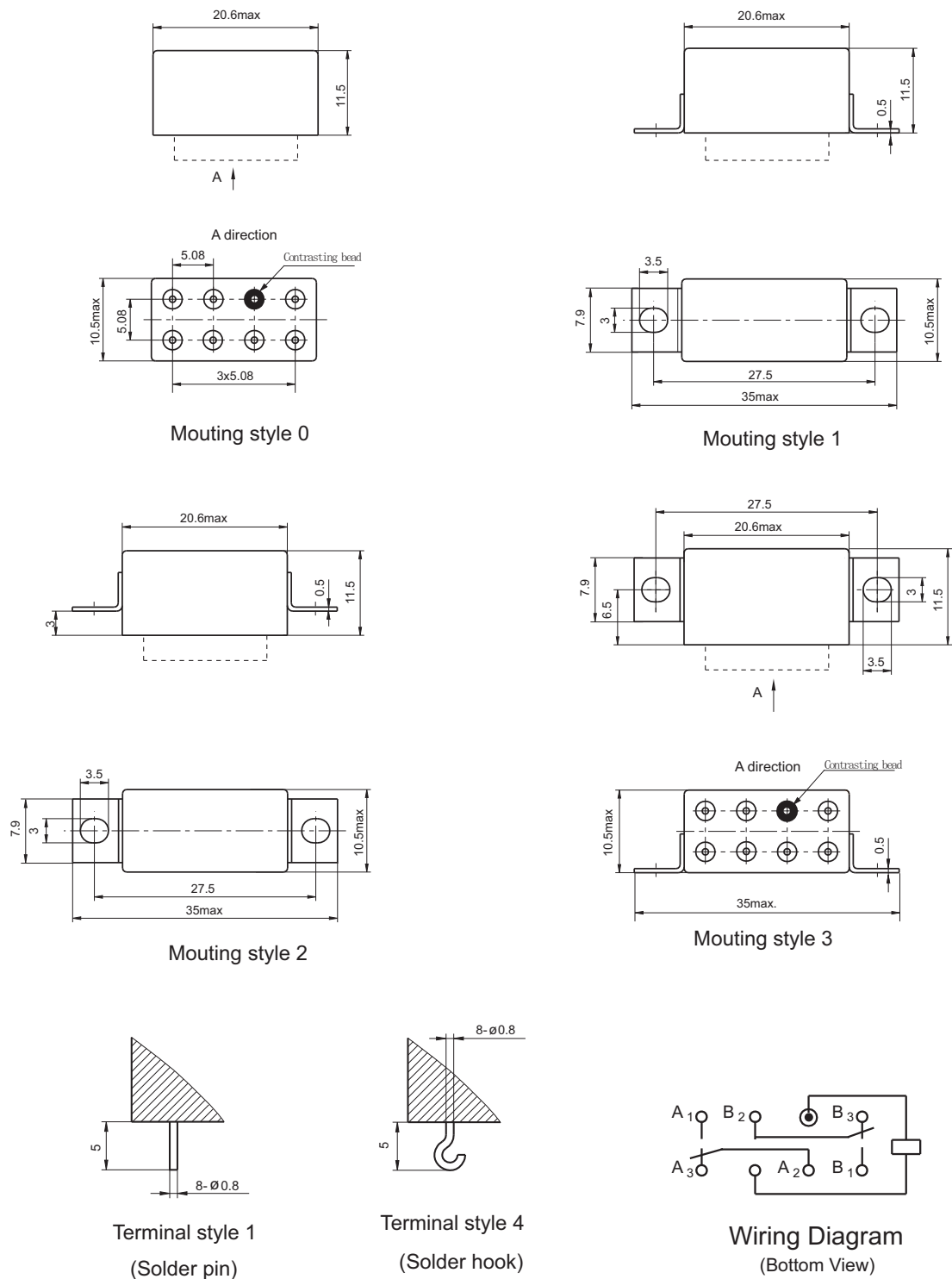
Order Number	Coil voltage		at 25 °C				-65°C to 125°C		
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.
005	5	6.0	21	3.0	1.65	0.29	4.2	2.4	0.21
006	6	7.5	30	3.6	2.00	0.35	5.1	2.9	0.25
009	9	11.8	68	5.4	3.00	0.52	7.7	4.3	0.38
012	12	15.0	125	7.3	4.00	0.70	10.5	5.8	0.50
024	24	28.8	480	14.8	7.50	1.20	20.8	11.6	0.90
027	27	32.0	600	16.0	8.50	1.50	22.5	14.0	1.00

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9311	-012	-0	1	- I
Order Number	005、006、009、012、018、027				
Mounting Style	0, 1, 2, 3 (See the mounting dimension)				
Terminals Style	1, 4 (See " Terminal styles " below)				
Ambient Grade	I 、 II 、 III				

Outline Dimension



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HF9312

HALF-SIZE CRYSTAL CAN HERMETICALLY SEALED ELECTROMAGNETIC RELAY WITH ESTABLISHED RELIABILITY



Features

- Load can be 5A 28Vd.c
- Failure rate can be Level M
- High pure nitrogen protection
- High ambient applicability
- All metal welded construction,

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	980 m/s ²
Random vibration		—	20 (m/s ²)/Hz	40 (m/s ²)/Hz
Steady-state acceleration		490 m/s ²		

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2 C		
Contact resistance	Initial max.	50 mΩ		
	After life max.	100 mΩ		

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	5 A 28 Vd.c.	Resistive	2 x 10 ⁴ OPS
	5 A 28 Vd.c.	Resistive	5 x 10 ⁴ OPS
II	2 A 115 Va.c.	Resistive	1 x 10 ⁵ OPS
	5 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
III	50 μA 50 mVd.c.	Low level	1 x 10 ⁵ OPS
	50 μA 50 mVd.c.	Low level	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	750 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between contact & cover	750 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between contact group	750 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between coil & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		300 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		6 ms		
Release time max.		4 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		13 g		

COIL DATA

Normal coil power	Approx. 1.2W
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Coil Version

Vd.c.

Order Number	Coil voltage		at 25 °C				-65°C to 125°C		
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.
005	5	6.0	21	3.0	1.65	0.29	4.2	2.4	0.21
006	6	7.5	30	3.6	2.00	0.35	5.1	2.9	0.25
009	9	11.8	68	5.4	3.00	0.52	7.7	4.3	0.38
012	12	15.0	125	7.3	4.00	0.70	10.5	5.8	0.50
024	24	28.8	480	14.8	7.50	1.20	20.8	11.6	0.90
027	27	32.0	600	16.0	8.50	1.50	22.5	14.0	1.00

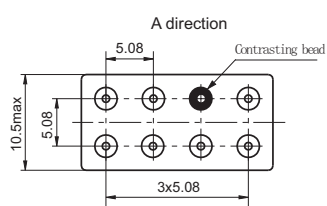
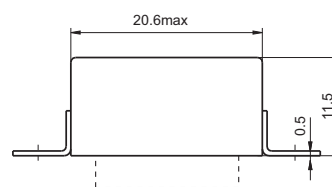
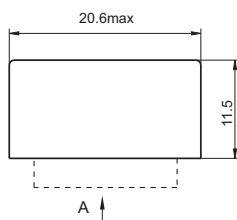
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

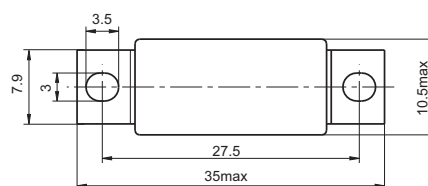
Type	HF9312	-012	M	-0	1	- I
Order Number	005、006、009、012、018、027					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ M: Failure rate level M (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 1, 2, 3 (See the mounting dimension)					
Terminals Style	1, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: ¹⁾ For the failure rate of L or M ,the letter "III" of ambient grade level will not appear on relay cover.

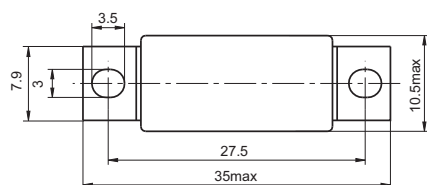
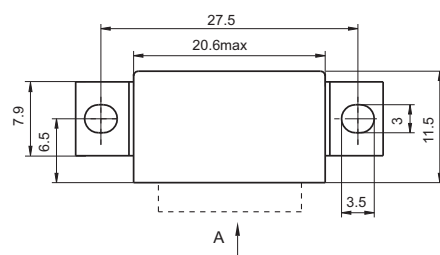
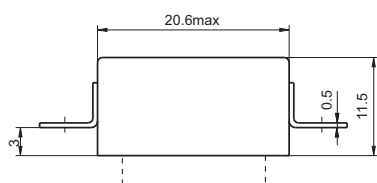
Outline Dimension



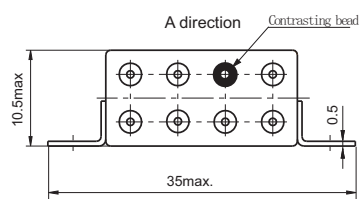
Mouting style 0



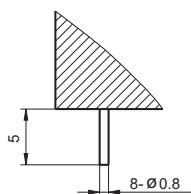
Mouting style 1



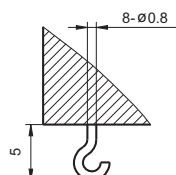
Mouting style 2



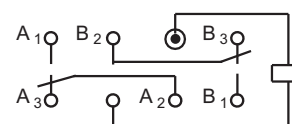
Mouting style 3



Terminal style 1
(Solder pin)



Terminal style 4
(Solder hook)



Wiring Diagram
(Bottom View)

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HF9313

HALF-SIZE CRYSTAL CAN HIGH TEMPERATURE HERMETICALLY SEALED ELECTROMAGNETIC RELAY



Features

- Ambient temperature can be 180°C
- High ambient applicability
- Hermetically welded and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient temperature		-65 °C ~ 180 °C
Humidity		98 %, 40 °C
Low air pressure		4.39 kPa
Sine vibration	Frequency	10 Hz ~ 3000 Hz
	Acceleration	294 m/s ²
Shock resistance		980 m/s ²
Random vibration		40 (m/s ²)/Hz
Steady-state acceleration		490 m/s ²

CONTACT DATA

Arrangement		2 C
Contact resistance	Initial max.	50 mΩ
	After life max.	250 mΩ

Contact ratings

Contact load	Type	Electrical life min.
2 A 28 Vd.c.	Resistive	5 x 10 ⁴ OPS
1 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
50 μA 50 mVd.c.	Low level	1 x 10 ⁵ OPS

SPECIFICATION

Insulation resistance min.		10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.
	Between contact & coil	1000 Vr.m.s.
	Between contact & cover	1000 Vr.m.s.
	Between contact group	1000 Vr.m.s.
	Between coil & cover	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		350 Vr.m.s.
Leakage rate max.		1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		4 ms
Release time max.		4 ms
Mounting style		See the mounting dimension
Terminals		See the terminal styles
Work position		Random
Weight max.		13 g

COIL DATA

Normal coil power	Approx.0.9W
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Coil Version

Vd.c.

Order Number	Coil voltage		at 25 °C				-65°C to 125°C		
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.
005	5	6.0	27	2.7	1.65	0.29	4.3	2.4	0.21
006	6	7.5	40	3.2	2.00	0.35	5.1	2.9	0.25
012	12	15.0	160	6.4	4.00	0.70	10.2	5.8	0.50
027	27	32.0	700	13.5	8.00	1.20	23.0	14.0	1.00

Notes: We can offer many kinds of coil voltage under the requirement of users.



HONGFA HERMETICALLY SEALED RELAY

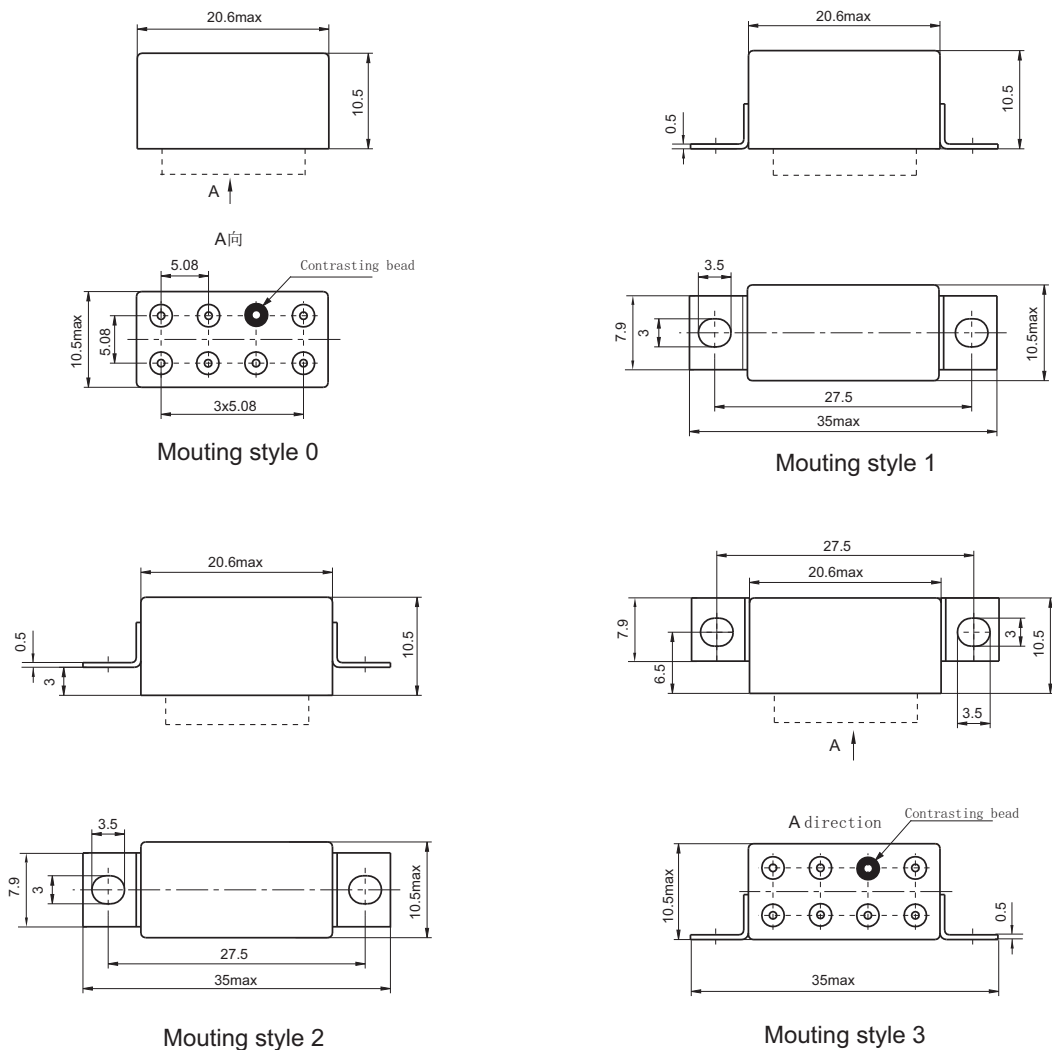
ORDERING INFORMATION

	HF9313	-012	-0	1
Type				
Order Number	005、006、012、027			
Mounting Style	0、1、2、3 (See the mounting dimension)			
Terminals Style	1、4 (See " Terminal styles " below)			

OUTLINE DIMENSIONS AND WIRING DIAGRAM

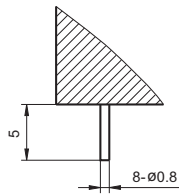
Unit:mm

Outline Dimension

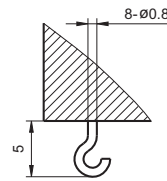


OUTLINE DIMENSIONS AND WIRING DIAGRAM

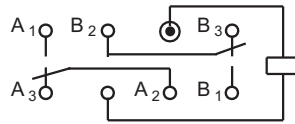
Unit:mm



Terminal style 1
(Solder pin)



Terminal style 4
(Solder hook)



Wiring Diagram
(Bottom View)

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HF9314

HALF-SIZE CRYSTAL CAN HERMETICALLY SEALED RELAY WITH 10A LOAD



Features

- Load can be 10A 28Vd.c.
- High ambient applicability
- 1 Form C
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	980 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		490 m/s ²		

CONTACT DATA

Ambient grade		I	II	III
Arrangement		1 C		
Contact resistance	Initial max.	50 mΩ		
	After life max.	250 mΩ		

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	10 A 28 Vd.c.	Resistive	3 x 10 ⁴ OPS
II	10 A 28 Vd.c.	Resistive	3 x 10 ⁴ OPS
III	10 A 28 Vd.c.	Resistive	5 x 10 ⁴ OPS
	5 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	3 A 28 Vd.c., 320mH	Inductive	3 x 10 ⁴ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	750 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between contact & cover	750 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between coil & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		300 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		6 ms		
Release time max.		4 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		13 g		

COIL DATA

Normal coil power	Approx.1.2W
-------------------	-------------

Coil Version

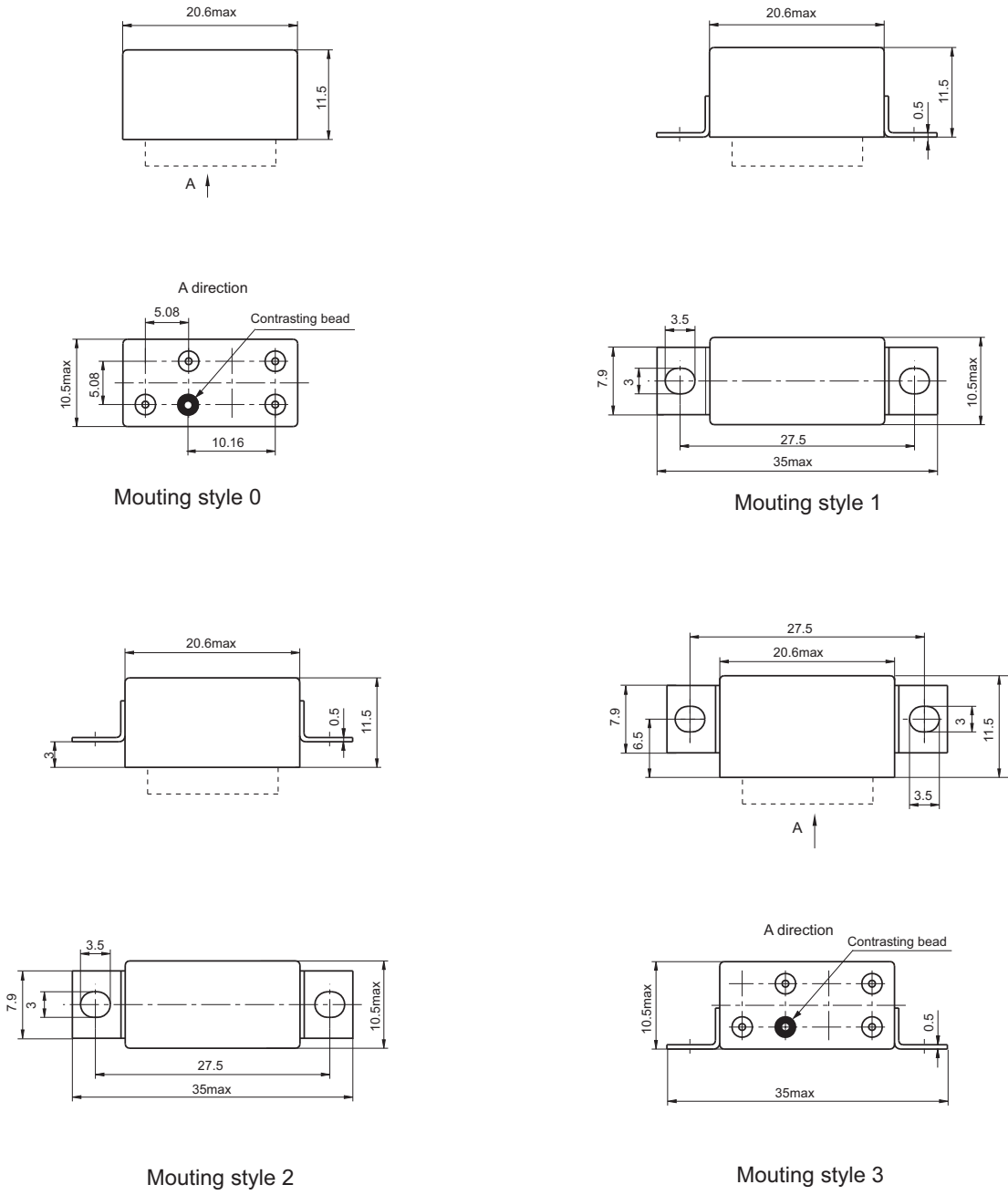
Order Number	Coil voltage		at 25 °C				-65°C to 125°C		
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.
005	5	6.0	21	3.0	1.65	0.29	4.2	2.4	0.21
006	6	7.5	30	3.6	2.00	0.35	5.1	2.9	0.25
009	9	11.8	68	5.4	3.00	0.52	7.7	4.3	0.38
012	12	15.0	125	7.3	4.00	0.70	10.5	5.8	0.50
024	24	28.8	480	14.8	7.50	1.20	20.8	11.6	0.90
027	27	32.0	600	16.0	8.00	1.50	22.5	14.0	1.00

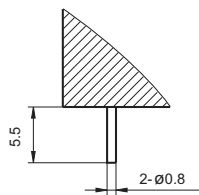
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

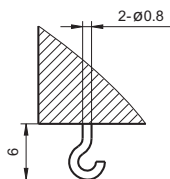
Type	HF9314	-012	-0	1	- I
Order Number	005、006、009、012、024、027				
Mounting Style	0, 1, 2, 3 (See the mounting dimension)				
Terminals Style	1、4 (See " Terminal styles " below)				
Ambient Grade	I 、 II 、 III				

Outline Dimension

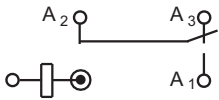




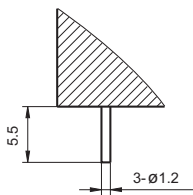
Coil Terminal Style 1
(Solder pin)



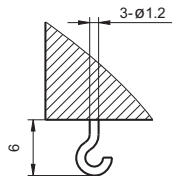
Coil Terminal Style 4
(Solder hook)



Wiring Diagram
(Bottom View)



Contact Terminal Style 1
(Solder pin)



Contact Terminal Style 4
(Solder hook)

Disclaimer

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HF9316

HALF-SIZE CRYSTAL CAN SENSITIVE HERMETICALLY SEALED ELECTROMAGNETIC RELAY



Features

- Sensitive type
- Coil power can be 0.5W
- Failure rate level can be level M
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 2500 Hz
	Acceleration	147 m/s ²	196 m/s ²	196 m/s ²
Shock resistance		490 m/s ²	490 m/s ²	490 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		490 m/s ²		

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2 C		
Contact resistance	Initial max.	50 mΩ		
	After life max.	100 mΩ		

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	2 A 28 Vd.c.	Resistive	5 x 10 ⁴ ops
	2 A 28 Vd.c.	Resistive	5 x 10 ⁴ ops
II	0.1 A 115 Va.c.	Resistive	1 x 10 ⁵ ops
	0.5 A 28 Vd.c. 200 mH	Inductive	1 x 10 ⁵ ops
III	2 A 28 Vd.c.	Resistive	1 x 10 ⁵ ops
	0.1 A 115 Va.c.	Resistive	1 x 10 ⁵ ops
	0.5 A 28 Vd.c. 200 mH	Inductive	1 x 10 ⁵ ops
	0.1 A 28 Vd.c.	Lamp load	1 x 10 ⁵ ops
	50 μA 50 mVd.c.	Low level	1 x 10 ⁵ ops



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	750 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between contact & cover	750 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between contact group	750 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between coil & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		350 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		6 ms		
Release time max.		5 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		13 g		

COIL DATA

Normal coil power	Approx.0.5W
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Coil Version

Order Number	Coil voltage		at 25 °C					-65°C to 125°C			
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.		Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.		Hold voltage max.	Drop-out voltage min.
				I	II, III			I	II, III		
005	5	7	47	3.0	2.7	1.32	0.18	4.0	3.8	1.9	0.10
006	6	9	75	3.6	3.2	1.65	0.21	4.8	4.5	2.4	0.12
012	12	20	310	7.2	6.4	3.35	0.42	9.6	9.0	4.8	0.24
027	27	35	1030	16.2	13.5	6.90	0.95	21.6	18.0	10.0	0.54

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

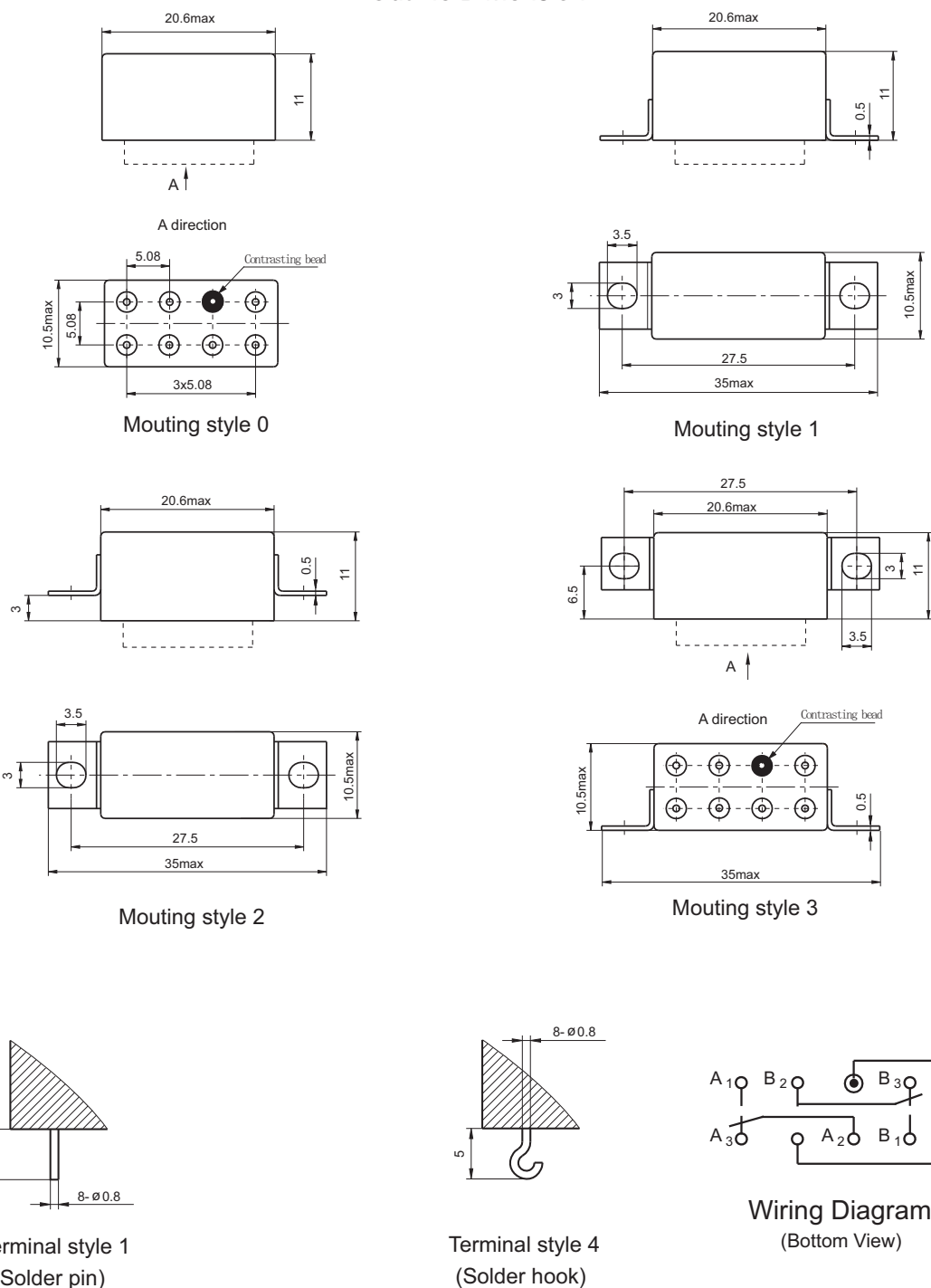
Type	HF9316	-012	M	-0	1	- I
Order Number	005、006、012、027、036					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ M: Failure rate level M (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0、1、2、3 (See the mounting dimension)					
Terminals Style	1、4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1)For the failure rate of L or M ,the letter "III" of ambient grade level will not appear on relay cover.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

Outline Dimension



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HF9317

HALF-SIZE CRYSTAL CAN HERMETICALLY SEALED RELAY WITH 2 FORM C 10A LOAD



Features

- Load can be 10A 28Vd.c.
- High ambient applicability
- 2 Form C
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	980 m/s ²
Random vibration		—	20 (m/s ²)/Hz	40 (m/s ²)/Hz
Steady-state acceleration		490 m/s ²		

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2 C		
Contact resistance	Initial max.	50 mΩ		
	After life max.	250 mΩ		

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	10 A 28 Vd.c.	Resistive	2 x 10 ⁴ OPS
II	10 A 28 Vd.c.	Resistive	2 x 10 ⁴ OPS
III	10 A 28 Vd.c.	Resistive	3 x 10 ⁴ OPS
	5 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	3 A 28 Vd.c., 320mH	Inductive	3 x 10 ⁴ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade	I	II	III
Insulation resistance min.	1000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	750 Vr.m.s.	1000 Vr.m.s.
	Between contact & cover	750 Vr.m.s.	1000 Vr.m.s.
	Between contact group	750 Vr.m.s.	1000 Vr.m.s.
	Between coil & cover	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)	300 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
Leakage rate max.	1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.	6 ms		
Release time max.	4 ms		
Mounting style	See the mounting dimension		
Terminals	See the terminal styles		
Work position	Random		
Weight max.	13 g		

COIL DATA

Normal coil power	Approx. 1.2W
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Coil Version

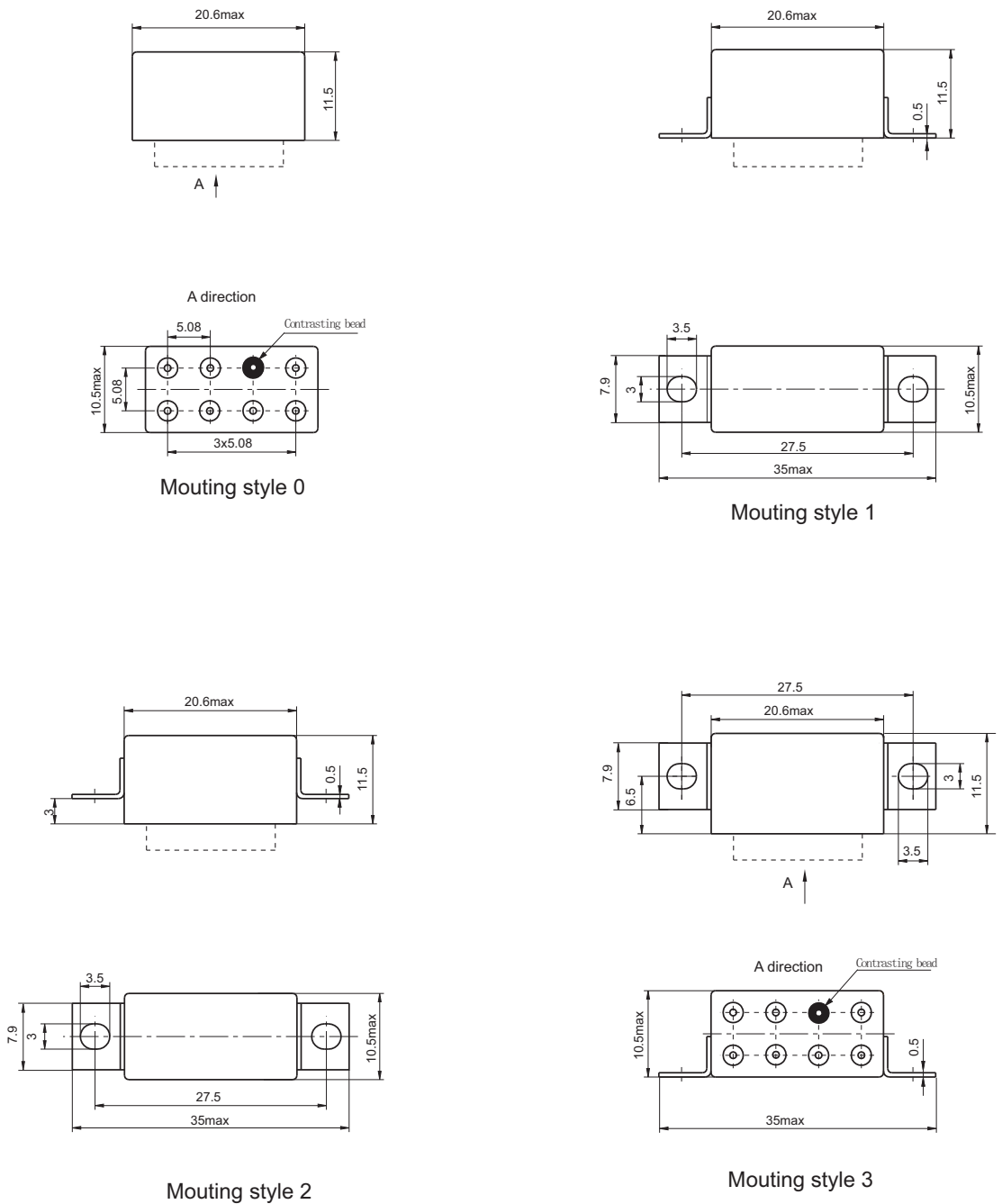
Order Number	Coil voltage		at 25 °C				-65°C to 125°C		
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.
005	5	6.0	21	3.25	1.65	0.29	4.6	2.4	0.21
006	6	7.5	30	3.90	2.00	0.35	5.5	2.9	0.25
009	9	11.8	68	5.85	3.00	0.52	8.3	4.3	0.38
012	12	15.0	125	7.80	4.00	0.70	11.0	5.8	0.50
024	24	28.8	480	15.60	7.50	1.20	22.0	11.6	0.90
027	27	32.0	600	17.60	8.00	1.50	24.8	14.0	1.00

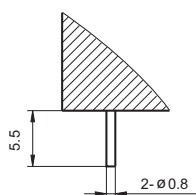
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

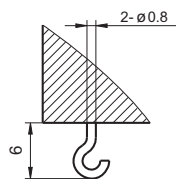
Type	HF9317	-012	-0	1	- I
Order Number	005、006、009、012、018、027				
Mounting Style	0, 1, 2, 3 (See the mounting dimension)				
Terminals Style	1, 4 (See " Terminal styles " below)				
Ambient Grade	I 、 II 、 III				

Outline Dimension

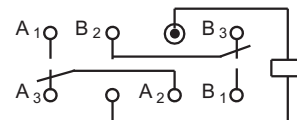




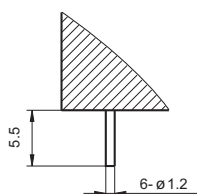
Coil Terminal Style 1
(Solder pin)



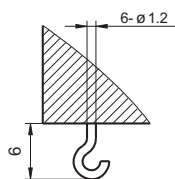
Coil Terminal Style 4
(Solder hook)



Wiring Diagram
(Bottom View)



Contact Terminal Style 1
(Solder pin)



Contact Terminal Style 4
(Solder hook)

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HF9319

1/2 CRYSTAL CAN 4 FORM C HERMETICALLY SEALED ELECTRO MAGNETIC RELAY



Features

- 4 form C
- Load can be 2A 28Vd.c.
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity				98 %, 40 °C
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 500 Hz	10 Hz to 1000 Hz	10 Hz to 2000 Hz
	Acceleration	98 m/s ²	147 m/s ²	196 m/s ²
Shock resistance		490 m/s ²	490 m/s ²	735 m/s ²
Random vibration		—	10 (m/s ²) ² /Hz	20 (m/s ²) ² /Hz
Steady-state acceleration		490 m/s ²	490 m/s ²	735 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement				4 C
Contact resistance	Initial max.			50 mΩ
	After life max.			150 mΩ

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	2 A 28 Vd.c.	Resistive	2 x 10 ⁴ ops
II	2 A 28 Vd.c.	Resistive	5 x 10 ⁴ ops
III	2 A 28 Vd.c.	Resistive	1 x 10 ⁵ ops
	0.3 A 115 Va.c., 50Hz~400Hz	Resistive	1 x 10 ⁵ ops
	0.75 A 28 Vd.c. 200 mH	Inductive	1 x 10 ⁵ ops
	50 μA 50 mVd.c.	Low level	1 x 10 ⁵ ops



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		50 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	1000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	350 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
	Between contact & coil	350 Vr.m.s.	350 Vr.m.s.	500 Vr.m.s.
	Between contact & cover	350 Vr.m.s.	350 Vr.m.s.	500 Vr.m.s.
	Between contact group	350 Vr.m.s.	350 Vr.m.s.	500 Vr.m.s.
	Between coil & cover	350 Vr.m.s.	350 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		300 Vr.m.s.	300 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		5 ms		
Release time max.		5 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		13 g		

COIL DATA

Normal coil power	Approx. 1.2W
-------------------	--------------

Coil Version

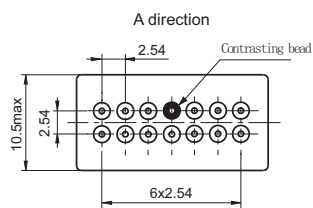
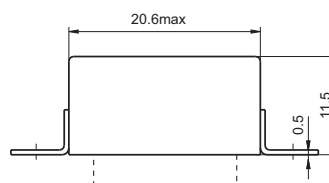
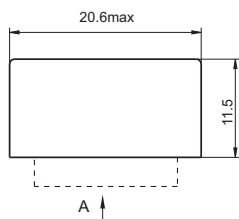
Order Number	Coil voltage		at 25 °C				-65°C to 125°C		
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.
005	5	6.0	21	3.00	1.65	0.29	4.2	2.4	0.21
006	6	7.5	30	3.60	2.00	0.35	5.1	2.9	0.25
009	9	11.8	68	5.40	3.00	0.52	7.7	4.3	0.38
012	12	15.0	125	7.30	4.00	0.70	10.5	5.8	0.50
024	24	28.8	480	14.80	7.50	1.20	20.8	11.6	0.90
027	27	32.0	600	16.00	8.50	1.50	22.5	14.0	1.00

Notes: We can offer many kinds of coil voltage under the requirement of users.

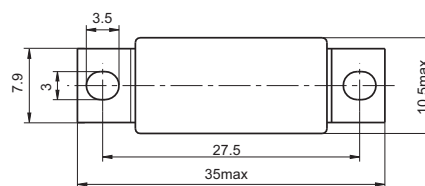
ORDERING INFORMATION

Type	HF9319	-012	-0	1	- I
Order Number	005、006、009、012、018、027				
Mounting Style	0, 1, 2, 3 (See the mounting dimension)				
Terminals Style	1 (See " Terminal styles " below)				
Ambient Grade	I 、 II 、 III				

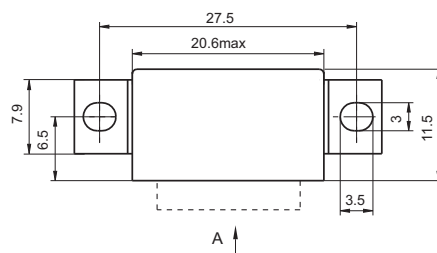
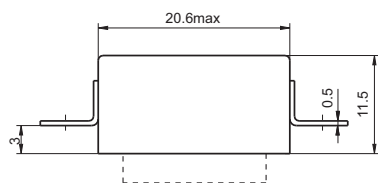
Outline Dimension



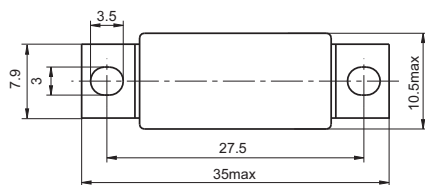
Mouting style 0



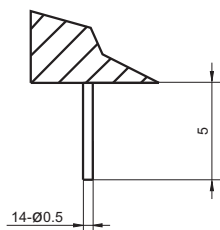
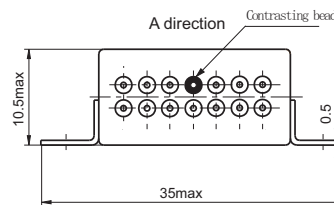
Mouting style 1



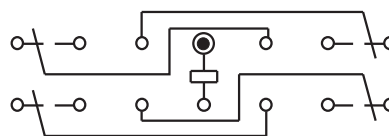
Mouting style 3



Mouting style 2



Terminal style 1
(Solder pin)



Wiring Diagram
(Bottom View)

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HF9320

HALF-SIZE CRYSTAL CAN 2 FORM C HERMETICALLY SEALED ELECTROMAGNETIC RELAY WITH COIL TRANSIENT SUPPRESSION



Features

- With coil transient suppression
- Failure rate level can be level M
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	980 m/s ²
Random vibration		—	20 (m/s ²)/Hz	40 (m/s ²)/Hz
Steady-state acceleration		490 m/s ²		

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2 C		
Contact resistance	Initial max.	50 mΩ		
	After life max.	100 mΩ		

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	2 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
II	2 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
	0.1 A 115 Va.c.	Resistive	1 x 10 ⁵ OPS
	0.5 A 28 Vd.c. 200 mH	Inductive	1 x 10 ⁵ OPS
	2 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS
III	0.3 A 115 Va.c.	Resistive	1 x 10 ⁵ OPS
	0.75 A 28 Vd.c. 200 mH	Inductive	1 x 10 ⁵ OPS
	0.16 A 28 Vd.c.	Lamp load	1 x 10 ⁵ OPS
	50 μA 50 mVd.c.	Low level	1 x 10 ⁵ OPS
	2 A 28 Vd.c.	Resistive	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	750 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between contact & cover	750 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between contact group	750 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between coil & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		350 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		6 ms	4 ms	4 ms
Release time max.				7 ms
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		13 g		

COIL DATA

Normal coil power	Approx.0.9W
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Coil Version

Order Number	Coil voltage		at 25 °C					-65°C to 125°C			
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.		Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.		Hold voltage max.	Drop-out voltage min.
				I	II, III			I	II, III		
005	5	6.0	27	3.0	2.7	1.65	0.29	4.0	3.8	2.4	0.21
006	6	7.5	40	3.6	3.2	2.00	0.35	4.8	4.5	2.9	0.25
009	9	10.8	90	5.4	4.8	3.00	0.52	7.2	6.75	4.4	0.38
012	12	15.0	160	7.2	6.4	4.00	0.70	9.6	9.0	5.8	0.50
024	24	30.0	600	14.4	12.8	7.00	1.20	19.2	17.0	10.2	0.90
027	27	32.0	700	16.2	13.5	8.00	1.20	21.6	18.0	14.0	1.00

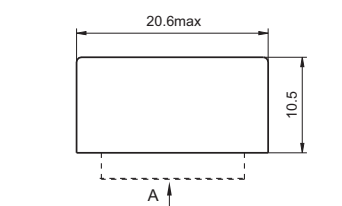
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

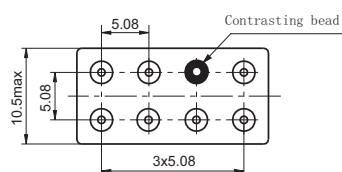
Type	HF9320	-012	M	-0	1	- I
Order Number	005、006、009、012、018、027					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ M: Failure rate level M (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 1, 2, 3 (See the mounting dimension)					
Terminals Style	1, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II IIII: level III					

Notes: 1) For the failure rate of L or M ,the letter "III" of ambient grade level will not appear on relay cover.

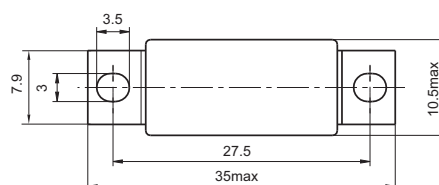
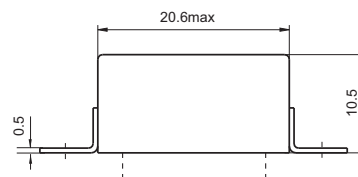
Outline Dimension



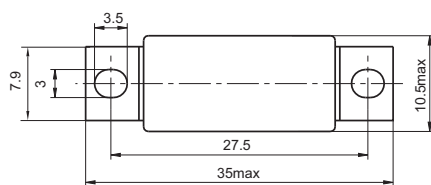
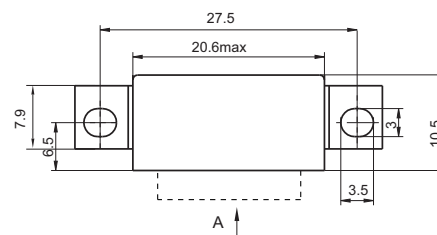
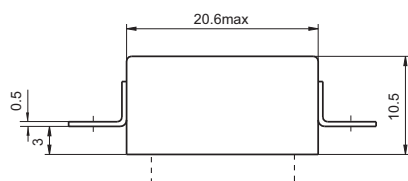
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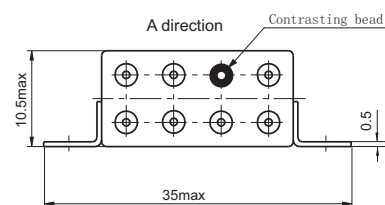
Mouting style 0



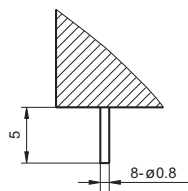
Mouting style 1



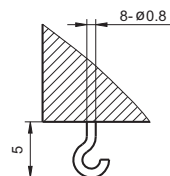
Mouting style 2



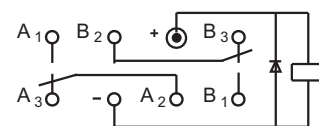
Mouting style 3



Terminal style 1
(Solder pin)



Terminal style 4
(Solder hook)



Wiring Diagram
(Bottom View)

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HF9323

HALF-SIZE CRYSTAL CAN HERMETICALLY SEALED RELAY WITH 10A LOAD



Features

- Load can be 15A 28Vd.c.
- High ambient applicability
- 1 Form C
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB65B-99 (Equivalent to MIL-PRF-39016)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98 %, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	735 m/s ²	980 m/s ²
Random vibration		—	20 (m/s ²)/Hz	40 (m/s ²)/Hz
Steady-state acceleration		490 m/s ²		

CONTACT DATA

Ambient grade		I	II	III
Arrangement		1 C		
Contact resistance	Initial max.	50 mΩ		
	After life max.	250 mΩ		

Contact ratings

Ambient grade	Contact load	Type	Electrical life min.
I	15 A 28 Vd.c.	Resistive	1 x 10 ⁴ OPS
II	15 A 28 Vd.c.	Resistive	1 x 10 ⁴ OPS
III	15 A 28 Vd.c.	Resistive	1 x 10 ⁴ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.		1000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)	10000 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between open contacts	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between contact & coil	750 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between contact & cover	750 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between coil & cover	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		300 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		6 ms		
Release time max.		4 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		13 g		

COIL DATA

Normal coil power	Approx.1.2W
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Coil Version

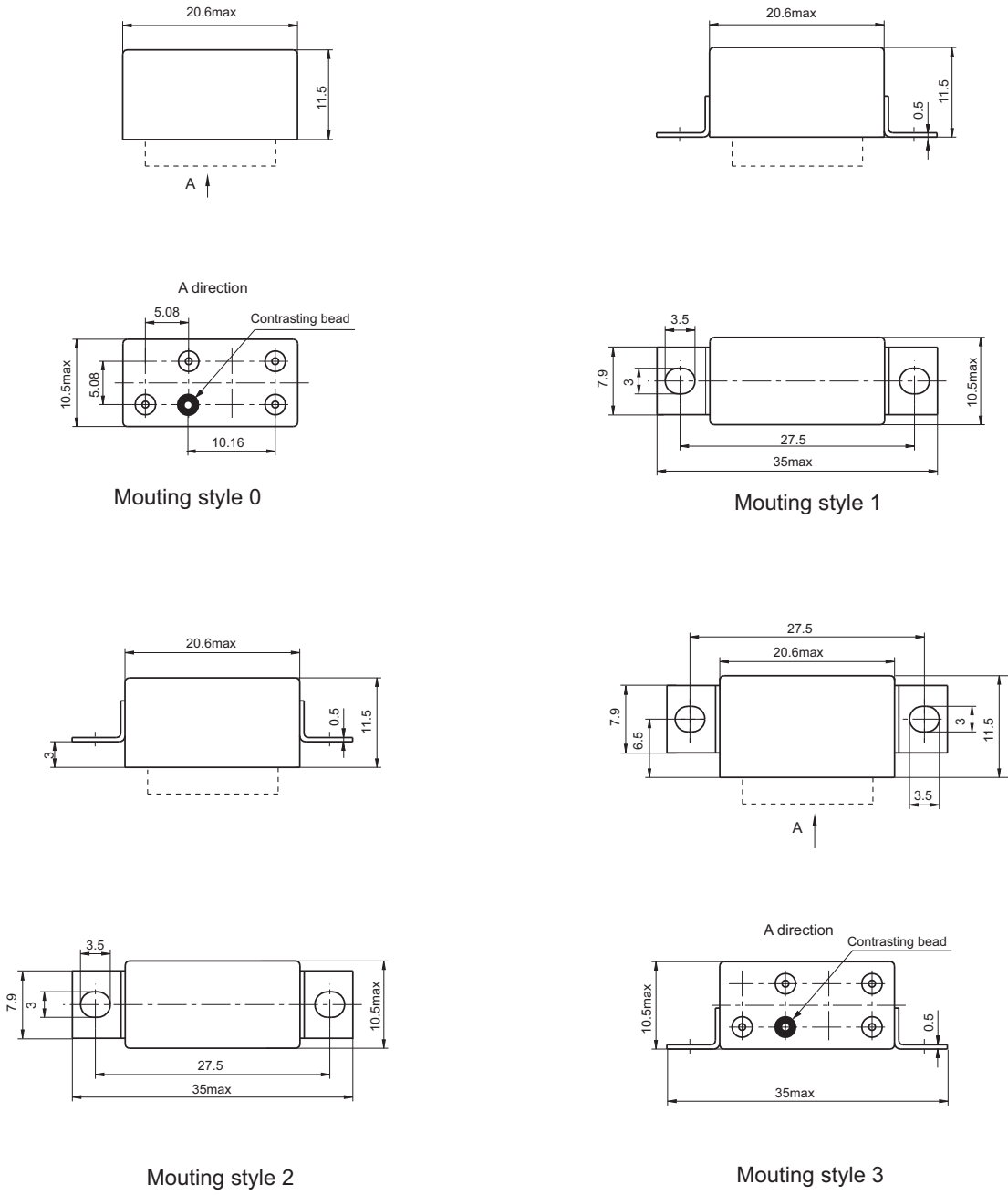
Order Number	Coil voltage		at 25 °C				-65°C to 125°C		
	Nominal voltage	Value max.	Coil resistance (1±10%) Ω	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.
005	5	6.0	21	3.0	1.65	0.29	4.2	2.4	0.21
006	6	7.5	30	3.6	2.00	0.35	5.1	2.9	0.25
009	9	11.8	68	5.4	3.00	0.52	7.7	4.3	0.38
012	12	15.0	125	7.3	4.00	0.70	10.5	5.8	0.50
024	24	28.8	480	14.8	7.50	1.20	20.8	11.6	0.90
027	27	32.0	600	16.0	8.00	1.50	22.5	14.0	1.00

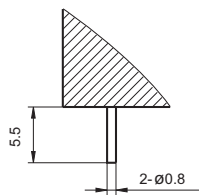
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

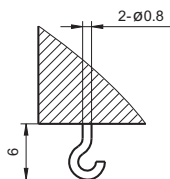
Type	HF9323	-012	-0	1	- I
Order Number	005、006、009、012、024、027				
Mounting Style	0, 1, 2, 3 (See the mounting dimension)				
Terminals Style	1、4 (See " Terminal styles " below)				
Ambient Grade	I 、 II 、 III				

Outline Dimension

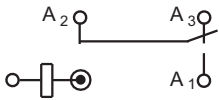




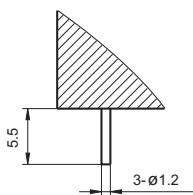
Coil Terminal Style 1
(Solder pin)



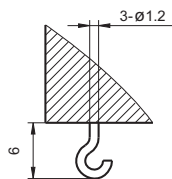
Coil Terminal Style 4
(Solder hook)



Wiring Diagram
(Bottom View)



Contact Terminal Style 1
(Solder pin)



Contact Terminal Style 4
(Solder hook)

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HF9510

1/5 CUBIC INCH 1 FORM C HERMETICALLY SEALED ELECTROMAGNETIC RELAY WITH COIL TRANSIENT SUPPRESSION



Features

- Force balanced type
- With coil transient suppression
- 10A contacts switching capability
- Failure rate can be level L
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²)/Hz	40 (m/s ²)/Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		1 C		
Contact resistance	Initial max.	0.01Ω		
or voltage drop	After life max.	0.125V		

Contact and life ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	
Resistive	10A	10A	5 x 10 ⁴ OPS
Inductive	6A	—	1 x 10 ⁴ OPS
Inductive	—	8A	2 x 10 ⁴ OPS
Motor	4A	—	5 x 10 ⁴ OPS
Lamp load	2A	—	5 x 10 ⁴ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
resistance min.	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover(initial)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between coil & cover(after life testing)	750 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
	Between other insulation parts(initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts(after life testing)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min.(Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	250 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		7 ms		
Release time max.		7 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		20 g		

COIL DATA

Norminal coil power	Approx.2W
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Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
006	6	7.3	18	3.3	1.6	0.40	4.5	2.3	0.25	5.0	5.70
012	12	14.5	85	6.5	3.3	0.75	9.0	4.5	0.50	9.9	11.25
028	28	29.0	440	15.5	5.5	2.30	20.0	7.0	1.50	21.0	25.0

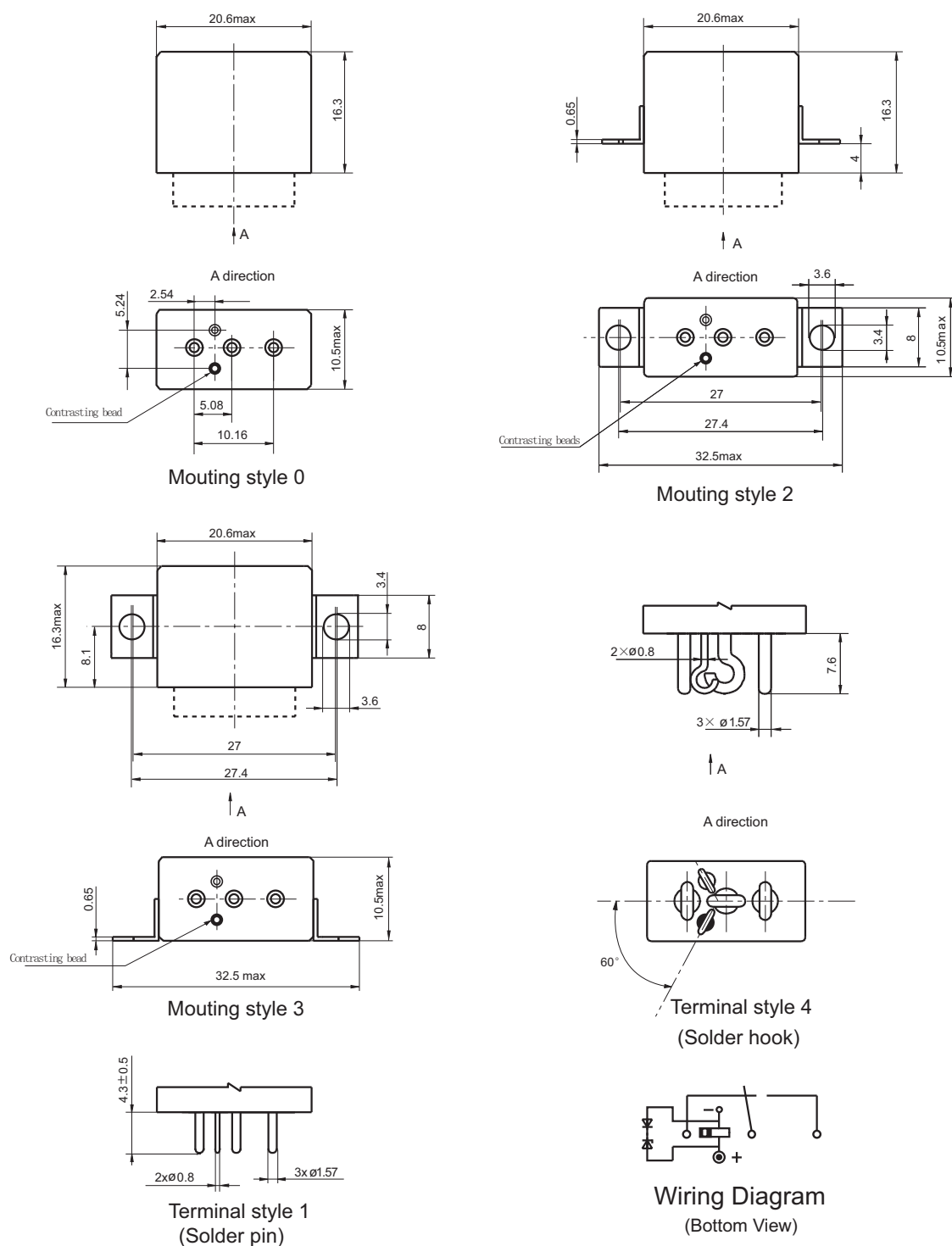
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9510	-012	L	-0	1	- II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 2, 3 (See the mounting dimension)					
Terminals Style	1, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

Outline Dimension



Disclaimer

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HF9511

1/5 CUBIC INCH 2 FORM C HERMETICALLY SEALED ELECTROMAGNETIC RELAY WITH COIL TRANSIENT SUPPRESSION



Features

- Force balanced type
- With coil transient suppression
- 5A contacts switching capability
- Failure rate can be level L
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2 C		
Contact resistance or voltage drop	Initial max.	0.05Ω		
	After life max.	0.125V		

Contact and life ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	
Resistive	5A	5A	1 x 10 ⁵ OPS
Inductive	3A	5A	2 x 10 ⁴ OPS
Motor	2A	—	1 x 10 ⁵ OPS
Lamp load	1A	—	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	II
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover (initial)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between coil & cover (after life testing)	750 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	250 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		6 ms		
Release time max.		6 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		20.4 g		

COIL DATA

Normal coil power	Approx.2W
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Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
006	6	7.3	18	3.3	1.6	0.50	4.5	2.3	0.25	5.0	5.70
012	12	14.5	85	6.5	3.3	0.75	9.0	4.5	0.50	9.9	11.25
028	28	29.0	450	15.5	5.5	2.30	20.0	7.0	1.50	21.0	25.0

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

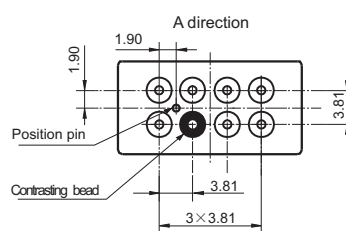
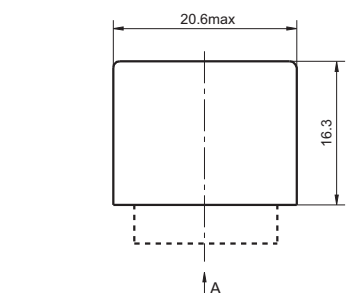
Type	HF9511	-012	L	-0	1	-II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 2, 3 (See the mounting dimension)					
Terminals Style	1, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

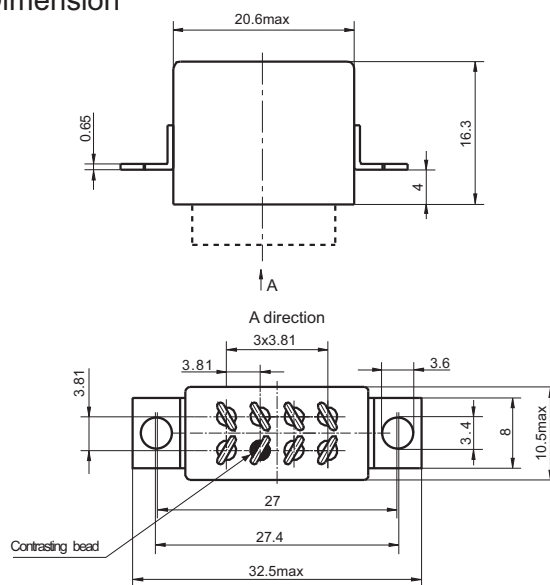
OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

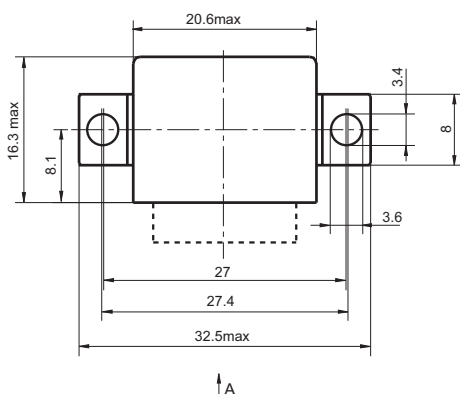
Outline Dimension



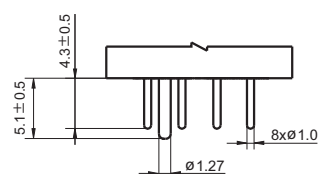
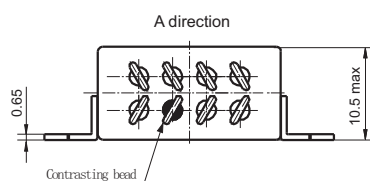
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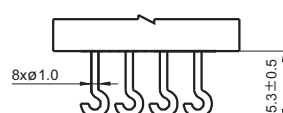
Mouting style 2



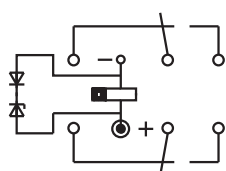
Mouting style 3



Terminal style 1
(Solder pin)



Terminal style 4
(Solder hook)



Wiring Diagram
(Bottom View)

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HF9512

2/5 CUBIC INCH 3 FORM C HERMETICALLY SEALED RELAY WITH COIL TRANSIENT SUPPRESSION



Features

- Force balanced type
- With coil transient suppression
- 10A contacts switching capability
- Failure rate can be level L
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III	
				Mounting Style 3	Mounting Style 0、2
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C	
Humidity		98%, 40 °C			
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa	
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz	
	Acceleration	147 m/s ²	196 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²	

CONTACT DATA

Ambient grade		I	II	III
Arrangement		3 C		
Contact resistance	Initial max.	0.01Ω		
or voltage drop	After life max.	0.125V		

Contact and life ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115/200Va.c. 400Hz Three phase	
Resistive	10A	10A	5 x 10 ⁴ OPS
Inductive	6A	—	1 x 10 ⁴ OPS
Inductive	—	8A	2 x 10 ⁴ OPS
Motor	4A	—	5 x 10 ⁴ OPS
Lamp load	2A	—	5 x 10 ⁴ OPS

SPECIFICATION

Ambient grade		I	II	III
Insulation	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
resistance min.	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min.	Between coil & cover(initial)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
(Normal condition)	Between coil & cover(after life testing)	750 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
	Between other insulation parts(initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts(after life testing)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min.(Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	250 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.				7 ms
Release time max.				7 ms
Mounting style				See the mounting dimension
Terminals				See the terminal styles
Work position				Random
Weight max.				28.2 g

COIL DATA

Normal coil power	Approx.2.4W
-------------------	-------------

Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
006	6	7.3	15	3.3	1.6	0.40	4.5	2.3	0.25	5.5	5.70
012	12	14.5	70	6.6	3.3	0.75	9.0	4.5	0.50	9.9	11.25
028	28	29.0	360	15.5	5.5	2.30	20.0	7.0	1.50	21.0	25.0

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

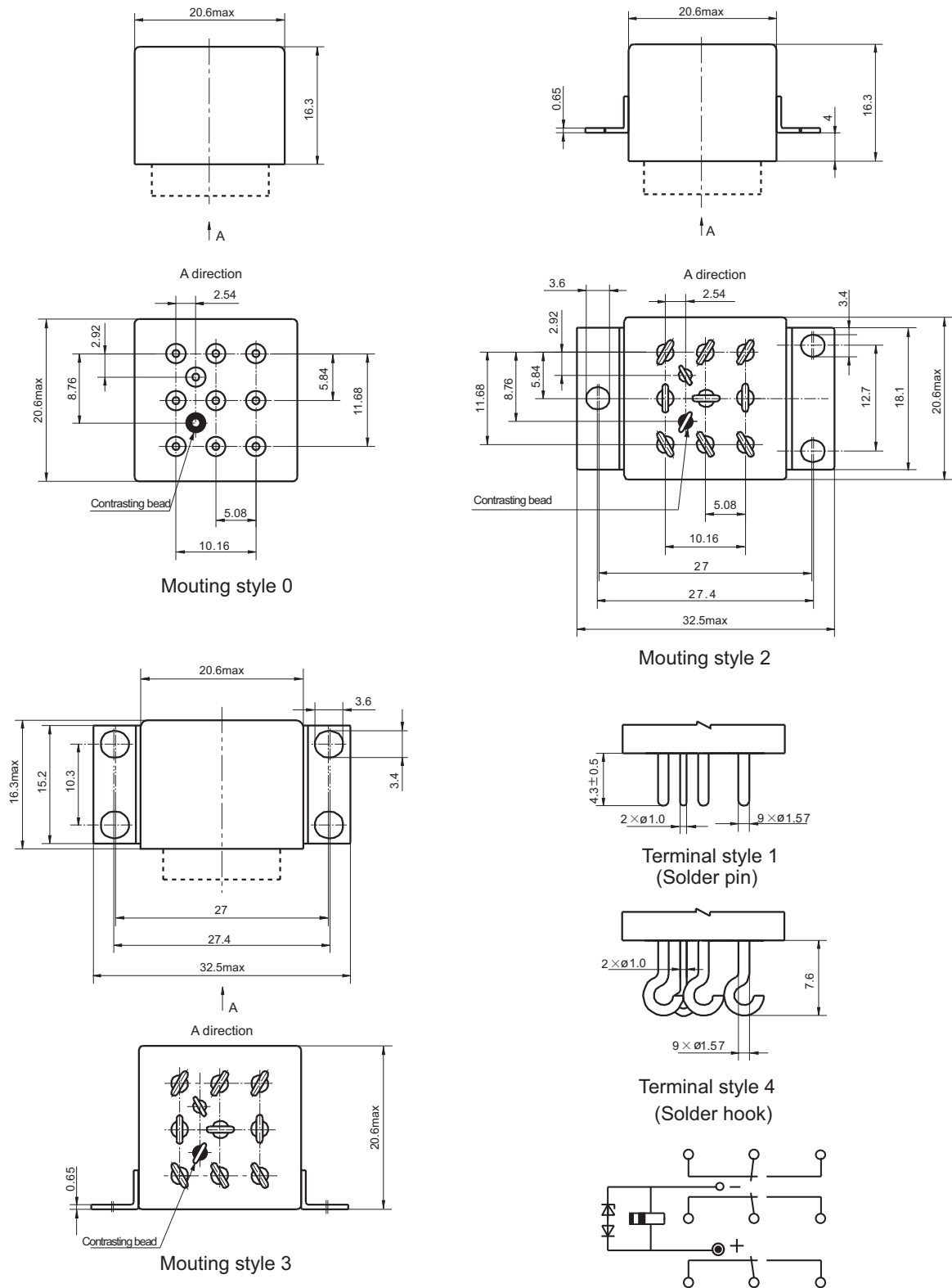
Type	HF9512	-012	L	-0	1	- II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 2, 3 (See the mounting dimension)					
Terminals Style	1, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

Outline Dimension



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HF9513

2/5 CUBIC INCH 4 FORM C HERMETICALLY SEALED RELAY WITH COIL TRANSIENT SUPPRESSION



Features

- Force balanced type
- With coil transient suppression
- 5A contacts switching capability
- Failure rate can be level L
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III	
				Mounting Style 3	Mounting Style 0、2
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C	
Humidity		98%, 40 °C			
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa	
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz	
	Acceleration	147 m/s ²	196 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²	

CONTACT DATA

Ambient grade		I	II	III
Arrangement		4 C		
Contact resistance	Initial max.	0.05Ω		
or voltage drop	After life max.	0.125V		

Contact and life ratings

Type	Contact load			Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	115/200Va.c. 400Hz Three phase	
Resistive	5A	5A	5A	1 x 10 ⁵ OPS
Inductive	3A	5A	5A	2 x 10 ⁴ OPS
Motor	2A	—	—	1 x 10 ⁵ OPS
Lamp load	1A	—	—	1 x 10 ⁵ OPS

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover(initial)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between coil & cover(after life testing)	750 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
	Between other insulation parts(initial)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between other insulation parts(after life testing)	750 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
Dielectric strength min.(Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	250 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		7 ms		
Release time max.		7 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		28.2 g		

COIL DATA

Normal coil power	Approx.2.4W
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Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
006	6	7.3	15	3.3	1.6	0.40	4.5	2.3	0.25	5.5	5.70
012	12	14.5	70	6.6	3.3	0.75	9.0	4.5	0.50	9.9	11.25
028	28	29.0	360	15.5	5.5	2.30	20.0	7.0	1.50	21.0	25.0

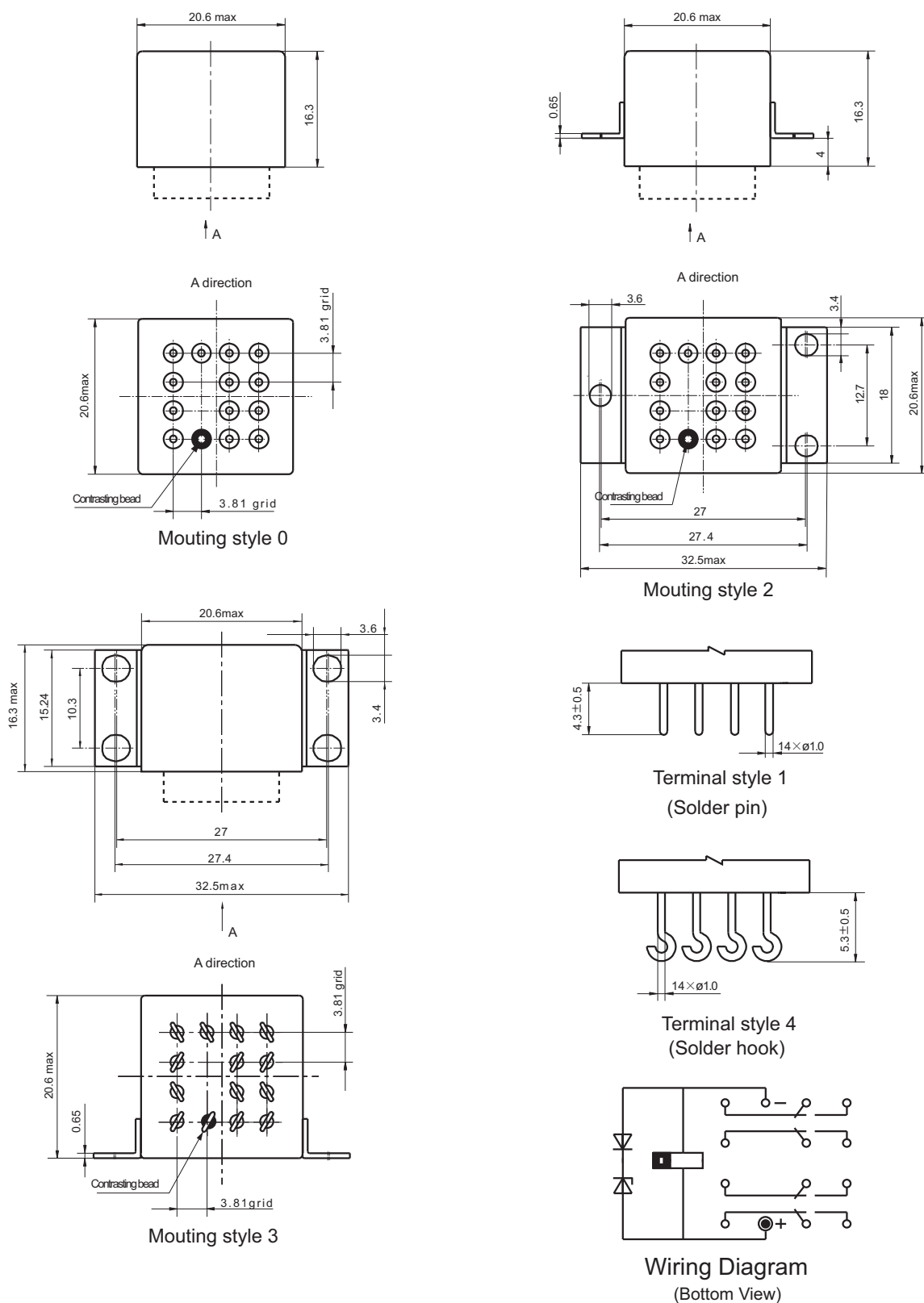
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9513	-012	L	-0	1	- II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 2, 3 (See the mounting dimension)					
Terminals Style	1, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

Outline Dimension



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HF9514

1/2 CUBIC INCH 1 FORM C HERMETICALLY SEALED RELAY



Features

- Force balanced
- 25A contacts switching capability
- Failure rate can be level L
- High ambient applicability
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²)/Hz	40 (m/s ²)/Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		1 C		
Contact resistance or voltage drop	Initial max.	0.2V		0.15V
	After life max.	0.25V		0.175V

Contact and life ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	
Resistive	25A	25A	5 x 10 ⁴ ops
Inductive	12A	—	1 x 10 ⁴ ops
Inductive	—	15A	2 x 10 ⁴ ops
Motor	10A	—	5 x 10 ⁴ ops
Lamp load	5A	—	5 x 10 ⁴ ops

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between other insulation parts (initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts (after life testing)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		350 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		10 ms		
Release time max.		10 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		41 g		

COIL DATA

Normal coil power	Approx.2.5W
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Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (1±10%)(Ω)	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
028	28	29	320	15.5	5.5	2.3	20.0	7.0	1.5	21.0	25.0

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

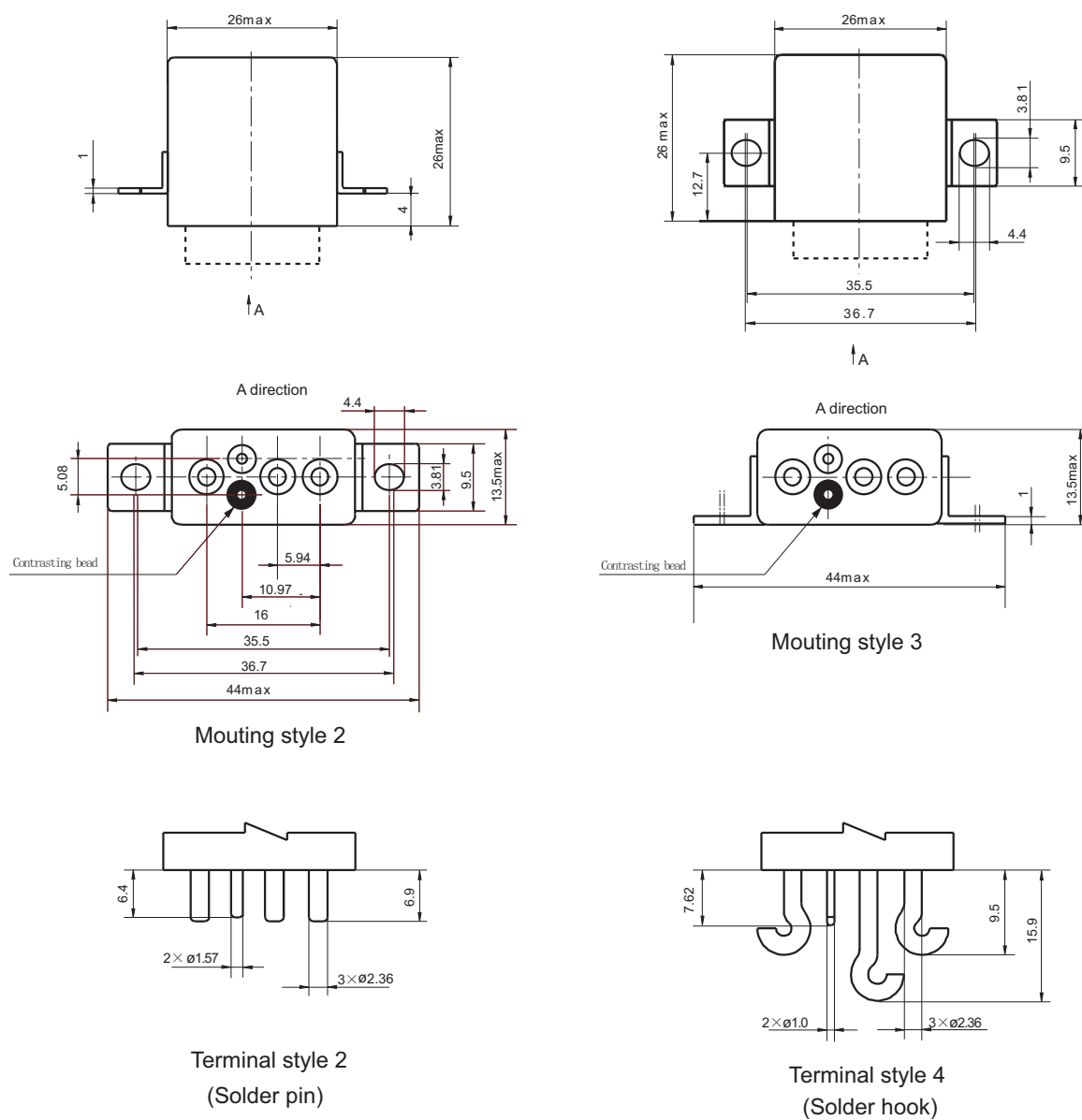
Type	HF9514	-028	L	-2	2	- II
Order Number	028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	2, 3 (See the mounting dimension)					
Terminals Style	2, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

Outline Dimension



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HF9515

1/2 CUBIC INCH 2 FORM C HERMETICALLY SEALED ELECTROMAGNETIC RELAY



Features

- Fore balanced
- 10A contacts switching capability
- Failure rate can be level L
- High ambient applicability
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		1 C		
Contact resistance or voltage drop	Initial max.	0.015Ω		0.01Ω
	After life max.	0.25V		0.125V

Contact and life ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	
Resistive	10A	10A	1 x 10 ⁶ OPS
Inductive	8A	8A	2 x 10 ⁴ OPS
Motor	4A	—	1 x 10 ⁶ OPS
Lamp load	2A	—	1 x 10 ⁶ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between other insulation parts (initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts (after life testing)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		350 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		10 ms		
Release time max.		10 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		46 g		

COIL DATA

Normal coil power	Approx.2.8W
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Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
006	6	7.3	18	3.2	1.6	0.4	4.5	2.3	0.25	5	5.7
012	12	14.5	72	6.5	3.3	0.75	9.0	4.5	0.5	9.9	11.25
028	28	29	280	15.5	5.5	2.3	20.0	7	1.5	21.0	25.0

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

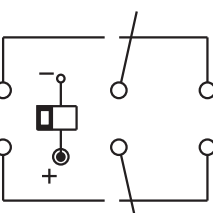
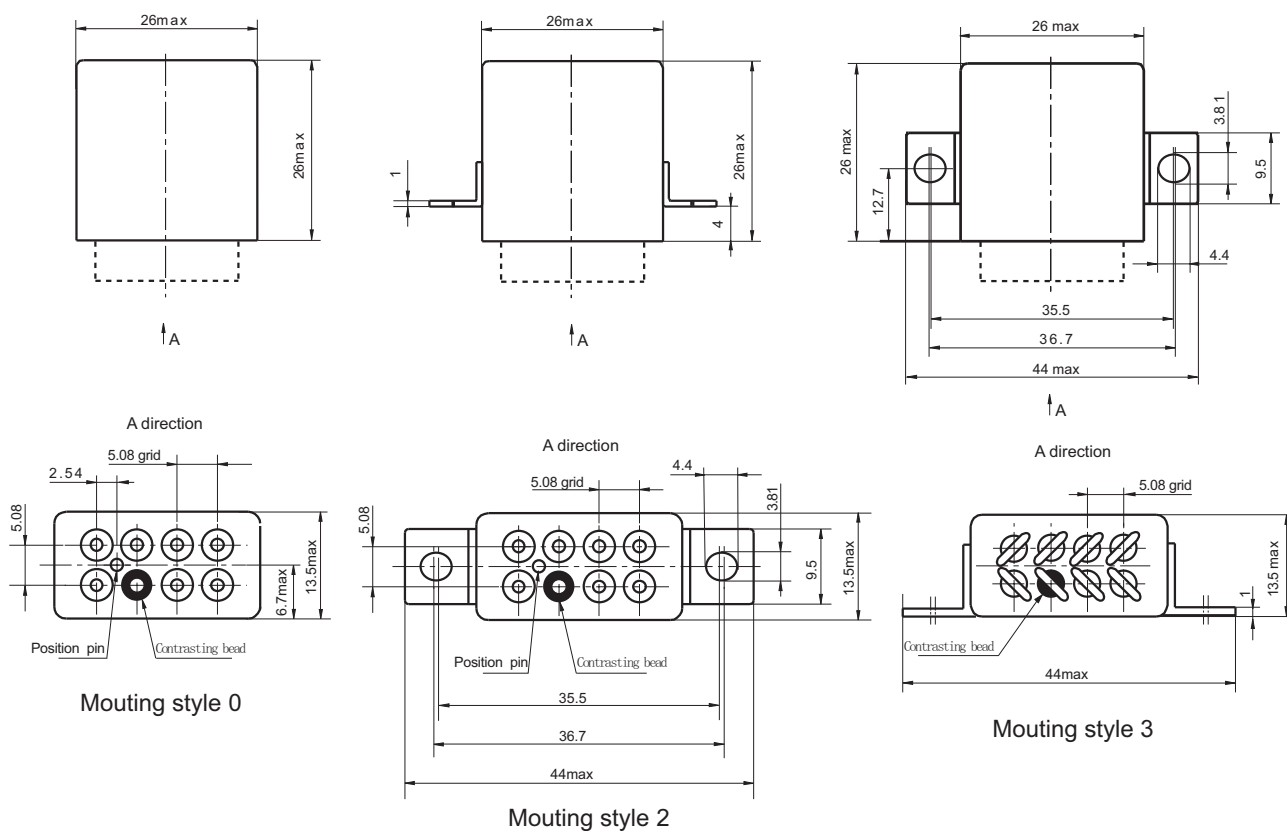
Type	HF9515	-028	L	-0	2	- II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 2, 3 (See the mounting dimension)					
Terminals Style	2, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

Outline Dimension



Wiring Diagram
(Bottom View)

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HF9516

1 CUBIC INCH 3 FORM C HERMETICALLY SEALED RELAY WITH COIL TRANSIENT SUPPRESSION



Features

- Force balanced type
- With coil transient suppression
- 25A contacts switching capability
- Failure rate can be level L
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		3 C		
Contact resistance or voltage drop	Initial max.	0.01 Ω		0.006 Ω
	After life max.	0.012 Ω		0.007 Ω

Contact and life ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115/200Va.c. 400Hz Three phase	
Resistive	25A	25A	5 x 10 ⁴ ops
Inductive	12A	—	1 x 10 ⁴ ops
Inductive	—	15A	2 x 10 ⁴ ops
Motor	10A	—	5 x 10 ⁴ ops
Lamp load	5A	—	5 x 10 ⁴ ops



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between other insulation parts (initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts (after life testing)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		15 ms		
Release time max.		15 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		85 g		

COIL DATA

Normal coil power	Approx.3W
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Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
028	28	29	260	15.5	5.5	2.3	20.0	7.0	1.5	21.0	25.0

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9516	-028	L	-2	2	- II
Order Number	028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	2, 3 (See the mounting dimension)					
Terminals Style	2, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

Unit:mm

[illegible]

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HF9517

1 CUBIC INCH 4 FORM C HERMETICALLY SEALED RELAY



Features

- Force balanced type
- With coil transient suppression
- 10A contacts switching capability
- Failure rate can be level L
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade	I	II	III
Ambient temperature	-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity	98%, 40 °C		
Low air pressure	58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz
	Acceleration	147 m/s ²	196 m/s ²
Shock resistance	490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration	—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration	147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade	I	II	III
Arrangement	4 C		
Contact resistance or voltage drop	Initial max.	0.015Ω	0.01Ω
	After life max.	0.15V	0.125V

Contact and life ratings

Type	Contact load			Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	115/200Va.c. 400Hz Three phase	
Resistive	10 A	10 A	10 A	1 x 10 ⁵ OPS
Inductive	8 A	8 A	8 A	2 x 10 ⁴ OPS
Motor	4 A	—	—	1 x 10 ⁵ OPS
Lamp load	2 A	—	—	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between other insulation parts (initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts (after life testing)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		15 ms		
Release time max.		15 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		80 g		

COIL DATA

Norminal coil power	Approx.2.7W
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Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
006	6	7.3	18	3.2	1.6	0.4	4.5	2.3	0.25	5.0	5.7
012	12	14.5	70	6.5	3.3	0.75	9.0	4.5	0.5	9.9	11.25
028	28	29.0	290	15.5	5.5	2.3	20.0	7.0	1.5	21.0	25.0

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

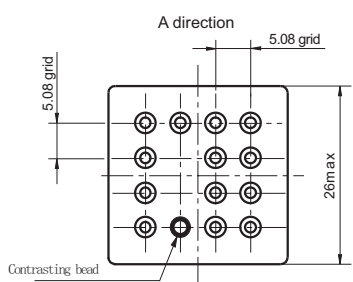
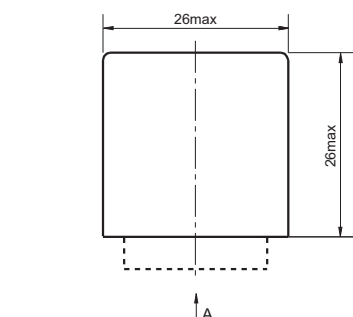
Type	HF9517	-028	L	-0	2	- II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 2, 3 (See the mounting dimension)					
Terminals Style	2, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

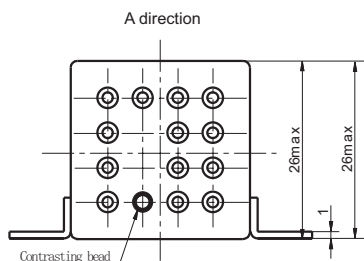
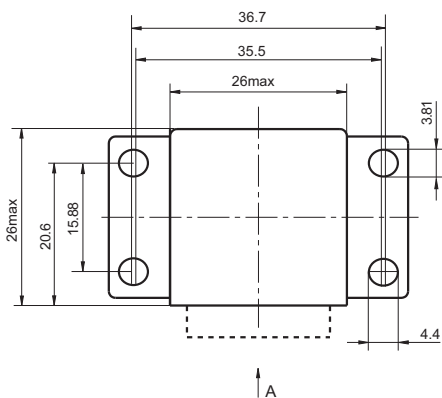
OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

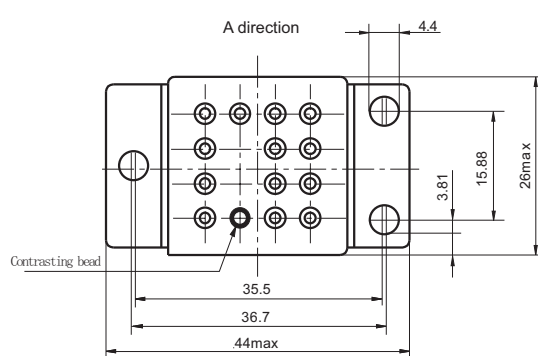
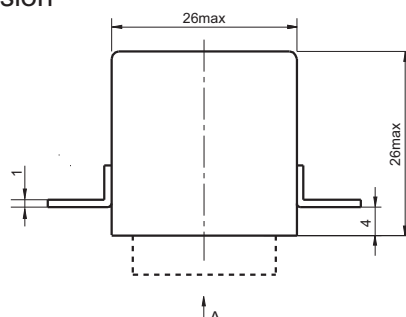
Outline Dimension



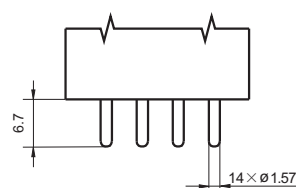
Mouting style 0



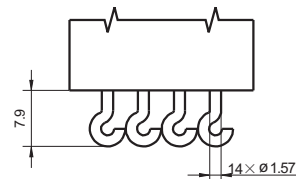
Mouting style 3



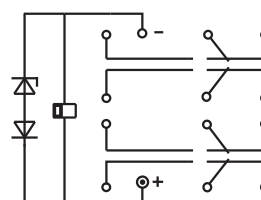
Mouting style 2



Terminal style 2
(Solder pin)



Terminal style 4
(Solder hook)



Wiring Diagram
(Bottom View)

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HF9518

1/5 CUBIC INCH 1 FORM C HERMETICALLY SEALED ELECTROMAGNETIC RELAY



Features

- Force balanced
- 10A contacts switching capability
- Failure rate level can be level L
- High ambient applicability
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		1 C		
Contact resistance or voltage drop	Initial max.	0.01Ω		
	After life max.	0.125V		

Contact and life ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	
Resistive	10A	10A	5 x 10 ⁴ ops
Inductive	6A	—	1 x 10 ⁴ ops
Inductive	—	8A	2 x 10 ⁴ ops
Motor	4A	—	5 x 10 ⁴ ops
Lamp load	2A	—	5 x 10 ⁴ ops



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
resistance min.	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover(initial)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between coil & cover(after life testing)	750 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
	Between other insulation parts(initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts(after life testing)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min.(Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	250 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		7 ms		
Release time max.		7 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		20 g		

COIL DATA

Normal coil power	Approx.2W
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Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
006	6	7.3	18	3.3	1.6	0.40	4.5	2.3	0.25	5.0	5.70
012	12	14.5	85	6.5	3.3	0.75	9.0	4.5	0.50	9.9	11.25
028	28	29.0	440	15.5	5.5	2.30	20.0	7.0	1.50	21.0	25.0

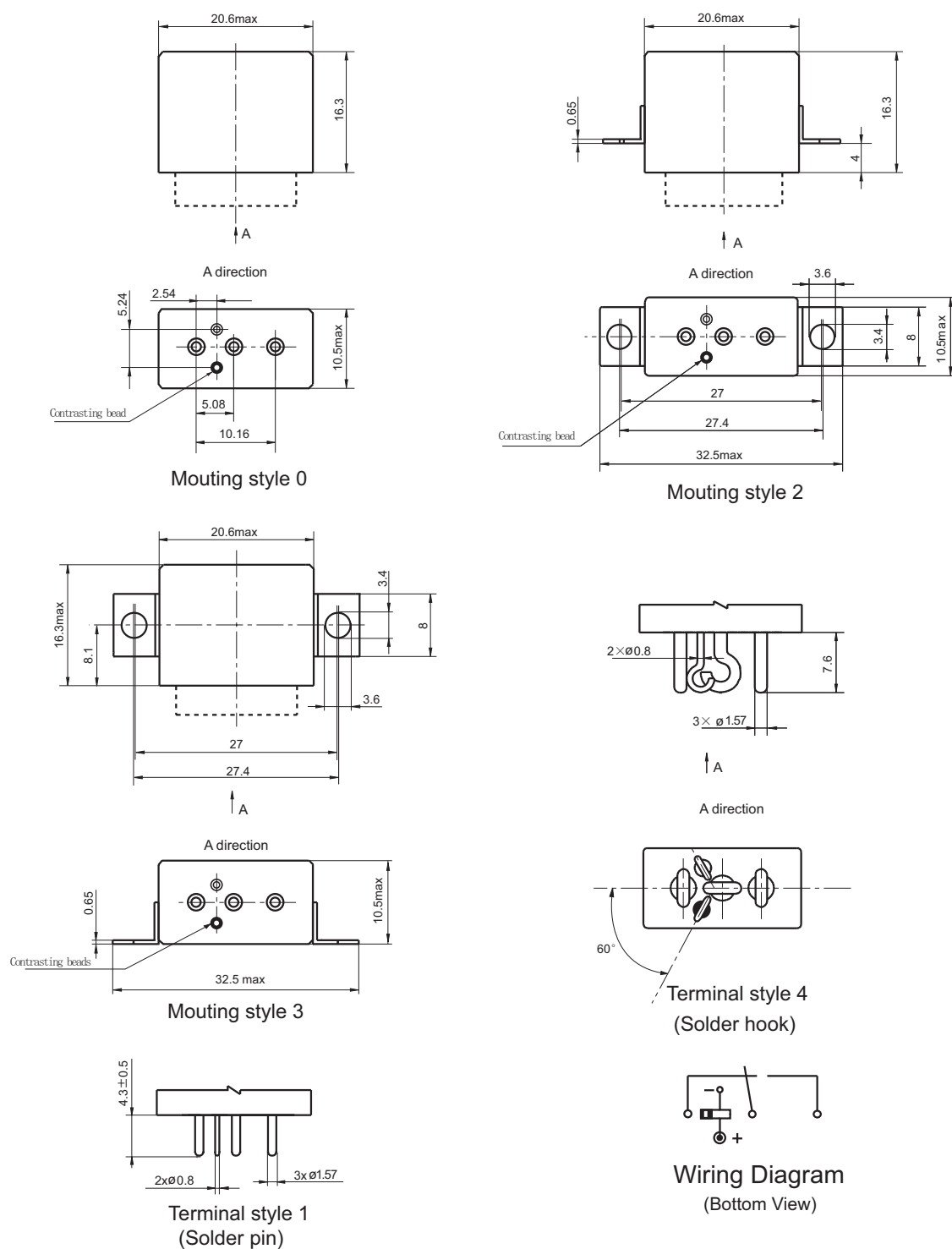
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9518	-012	L	-0	1	- II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 2, 3 (See the mounting dimension)					
Terminals Style	1, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

Outline Dimension



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HF9519

1/5 CUBIC INCH 2 FORM C HERMETICALLY SEALED ELECTROMAGNETIC RELAY



Features

- Force balanced
- 5A contacts switching capability
- Failure rate level can be level L
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²)/Hz	40 (m/s ²)/Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2 C		
Contact resistance or voltage drop	Initial max.	0.05Ω		
	After life max.	0.125V		

Contact and life ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	
Resistive	5A	5A	1 x 10 ⁵ ops
Inductive	3A	5A	2 x 10 ⁴ ops
Motor	2A	—	1 x 10 ⁵ ops
Lamp load	1A	—	1 x 10 ⁵ ops



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	II
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover (initial)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between coil & cover (after life testing)	750 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	250 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		6 ms		
Release time max.		6 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		20.4 g		

COIL DATA

Normal coil power	Approx.2W
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Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
006	6	7.3	18	3.3	1.6	0.50	4.5	2.3	0.25	5.0	5.70
012	12	14.5	85	6.5	3.3	0.75	9.0	4.5	0.50	9.9	11.25
028	28	29.0	450	15.5	5.5	2.30	20.0	7.0	1.50	21.0	25.0

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

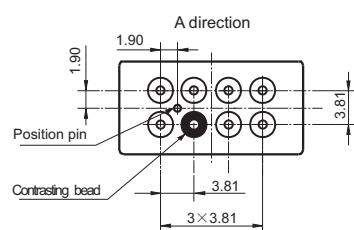
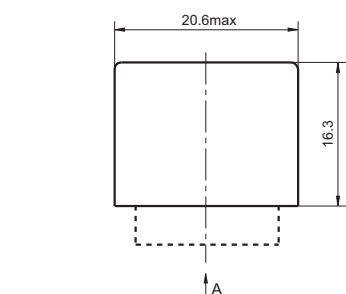
Type	HF9519	-012	L	-0	1	-II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 2, 3 (See the mounting dimension)					
Terminals Style	1, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

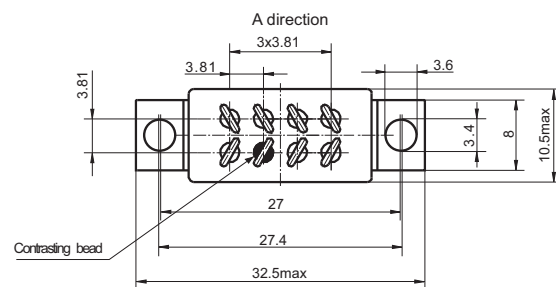
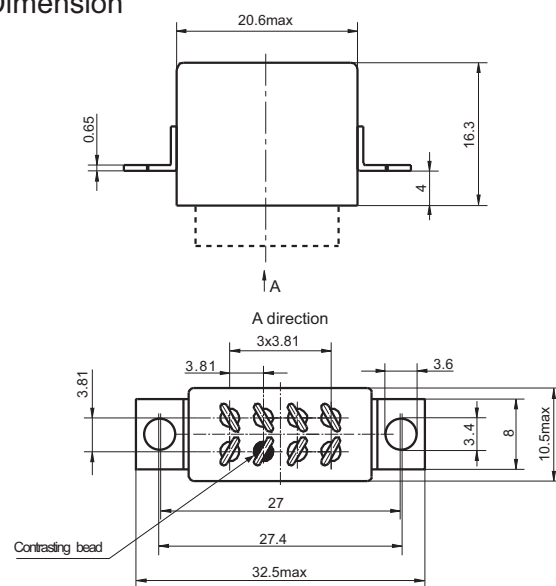
OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

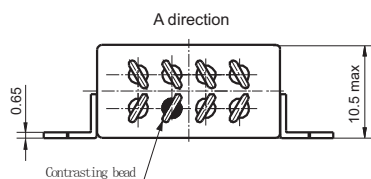
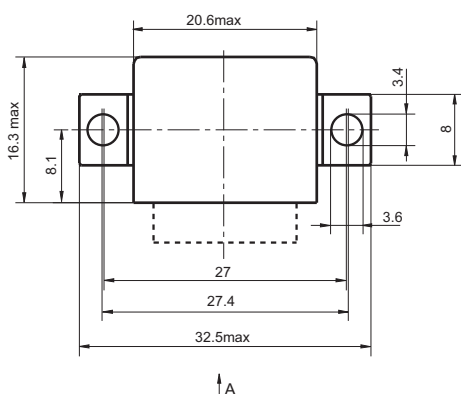
Outline Dimension



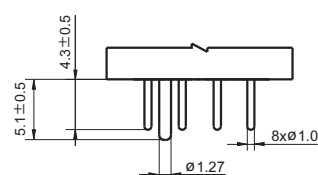
Mouting style 0



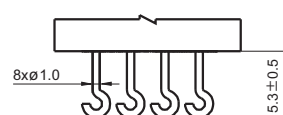
Mouting style 2



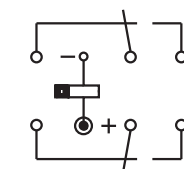
Mouting style 3



Terminal style 1
(Solder pin)



Terminal style 4
(Solder hook)



Wiring Diagram
(Bottom View)

Disclaimer

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HF9520

2/5 CUBIC INCH 3 FORM C HERMETICALLY SEALED ELECTROMAGNETIC RELAY



Features

- Force balanced
- 10A contacts switching capability
- Failure rate level can be level L
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III	
				Mounting Style 3	Mounting Style 0、2
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C	
Humidity		98%, 40 °C			
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa	
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz	
	Acceleration	147 m/s ²	196 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²	

CONTACT DATA

Ambient grade		I	II	III
Arrangement		3 C		
Contact resistance	Initial max.	0.01Ω		
or voltage drop	After life max.	0.125V		

Contact and life ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115/200Va.c. 400Hz Three phase	
Resistive	10A	10A	5 x 10 ⁴ OPS
Inductive	6A	—	1 x 10 ⁴ OPS
Inductive	—	8A	2 x 10 ⁴ OPS
Motor	4A	—	5 x 10 ⁴ OPS
Lamp load	2A	—	5 x 10 ⁴ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover(initial)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between coil & cover(after life testing)	750 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
	Between other insulation parts(initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts(after life testing)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min.(Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	250 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		7 ms		
Release time max.		7 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		28.2 g		

COIL DATA

Normal coil power	Approx.2.4W
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Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
006	6	7.3	15	3.3	1.6	0.40	4.5	2.3	0.25	5.5	5.70
012	12	14.5	70	6.6	3.3	0.75	9.0	4.5	0.50	9.9	11.25
028	28	29.0	360	15.5	5.5	2.30	20.0	7.0	1.50	21.0	25.0

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

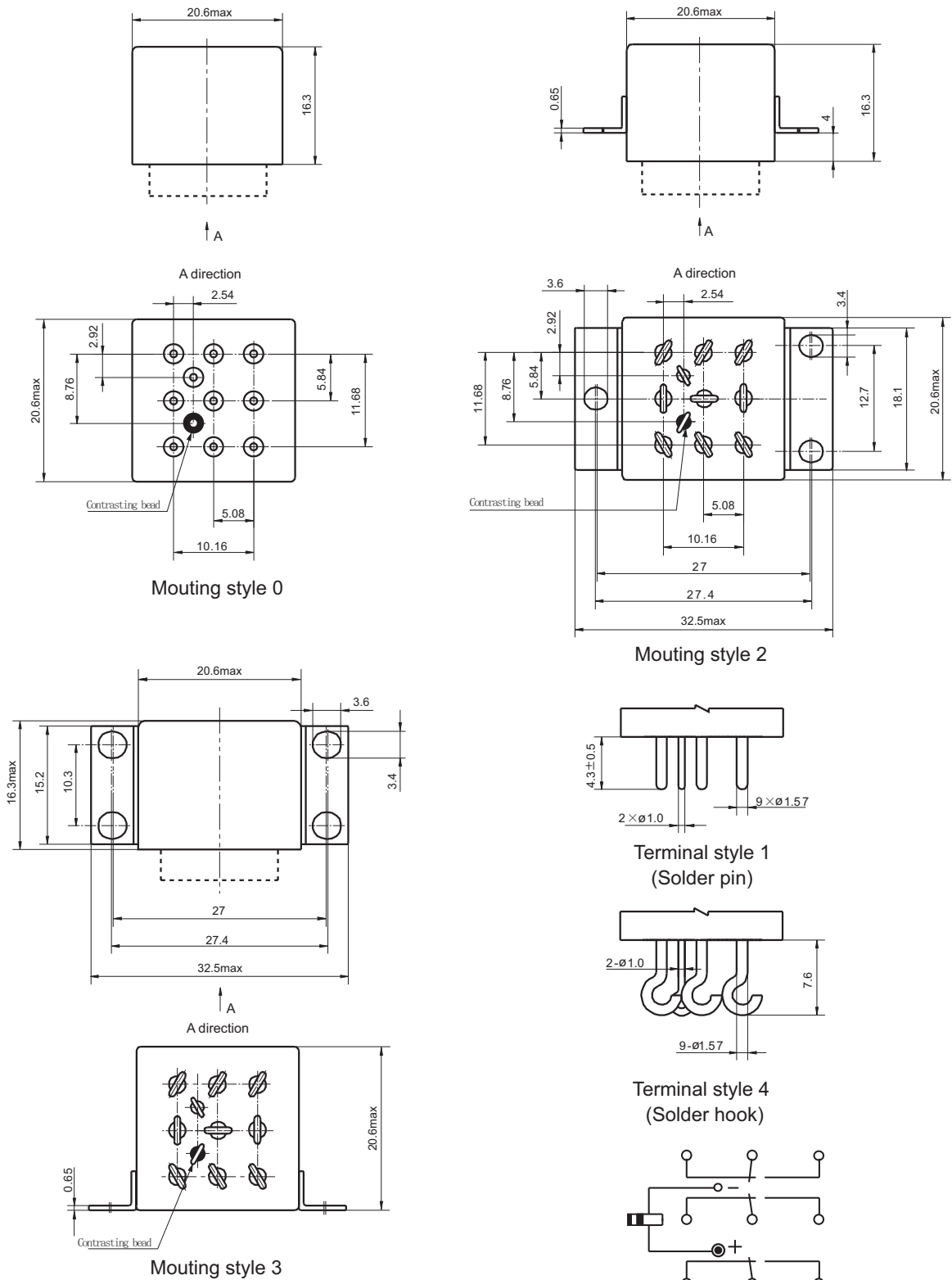
Type	HF9520	-012	L	-0	1	-II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 2, 3 (See the mounting dimension)					
Terminals Style	1, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

Outline Dimension



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HF9521

2/5 CUBIC INCH 4 FORM C HERMETICALLY SEALED ELECTROMAGNETIC RELAY



Features

- Force balanced
- 5A contacts switching capability
- Failure rate level can be level L
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III	
				Mounting Style 3	Mounting Style 0、2
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C	
Humidity		98%, 40 °C			
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa	
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz	
	Acceleration	147 m/s ²	196 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²	

CONTACT DATA

Ambient grade		I	II	III
Arrangement		4 C		
Contact resistance or voltage drop	Initial max.	0.05Ω		
	After life max.	0.125V		

Contact and life ratings

Type	Contact load			Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	115/200Va.c. 400Hz Three phase	
Resistive	5A	5A	5A	1 x 10 ⁵ OPS
Inductive	3A	5A	5A	2 x 10 ⁴ OPS
Motor	2A	—	—	1 x 10 ⁵ OPS
Lamp load	1A	—	—	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
resistance min.	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover(initial)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between coil & cover(after life testing)	750 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
	Between other insulation parts(initial)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between other insulation parts(after life testing)	750 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
Dielectric strength min.(Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	250 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		7 ms		
Release time max.		7 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		28.2 g		

COIL DATA

Norminal coil power	Approx.2.4W
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Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
006	6	7.3	15	3.3	1.6	0.40	4.5	2.3	0.25	5.5	5.70
012	12	14.5	70	6.6	3.3	0.75	9.0	4.5	0.50	9.9	11.25
028	28	29.0	360	15.5	5.5	2.30	20.0	7.0	1.50	21.0	25.0

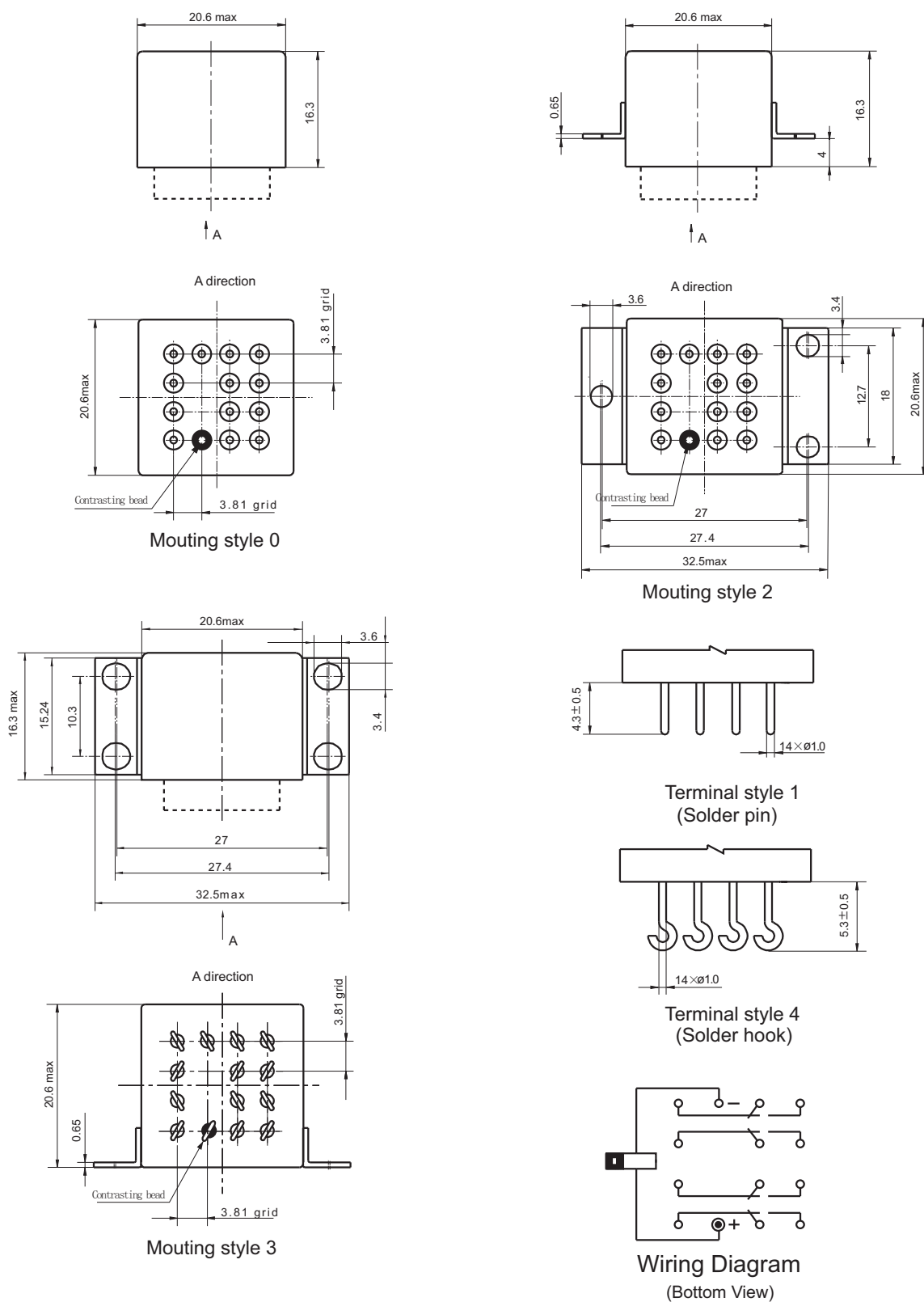
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9521	-012	L	-0	1	- II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 2, 3 (See the mounting dimension)					
Terminals Style	1, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

Outline Dimension



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HF9522

1/2 CUBIC INCH 2 FORM C HERMETICALLY SEALED ELECTROMAGNETIC RELAY WITH COIL TRANSIENT SUPPRESSION



Features

- Force balanced
- With coil transient suppression
- 10A contacts switching capability
- Failure rate level can be level L
- High ambient applicability
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2 C		
Contact resistance or voltage drop	Initial max.	0.015Ω		0.01Ω
	After life max.	0.25V		0.125V

Contact and life ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	
Resistive	10A	10A	1 x 10 ⁵ OPS
Inductive	8A	8A	2 x 10 ⁴ OPS
Motor	4A	—	1 x 10 ⁵ OPS
Lamp load	2A	—	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between other insulation parts (initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts (after life testing)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		350 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		10 ms		
Release time max.		10 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		46 g		

COIL DATA

Normal coil power	Approx.2.8W
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Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
006	6	7.3	18	3.2	1.6	0.4	4.5	2.3	0.25	5	5.7
012	12	14.5	72	6.5	3.3	0.75	9.0	4.5	0.5	9.9	11.25
028	28	29	280	15.5	5.5	2.3	20.0	7	1.5	21.0	25.0

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

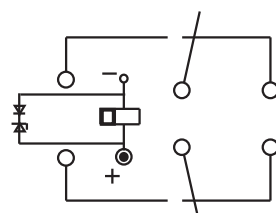
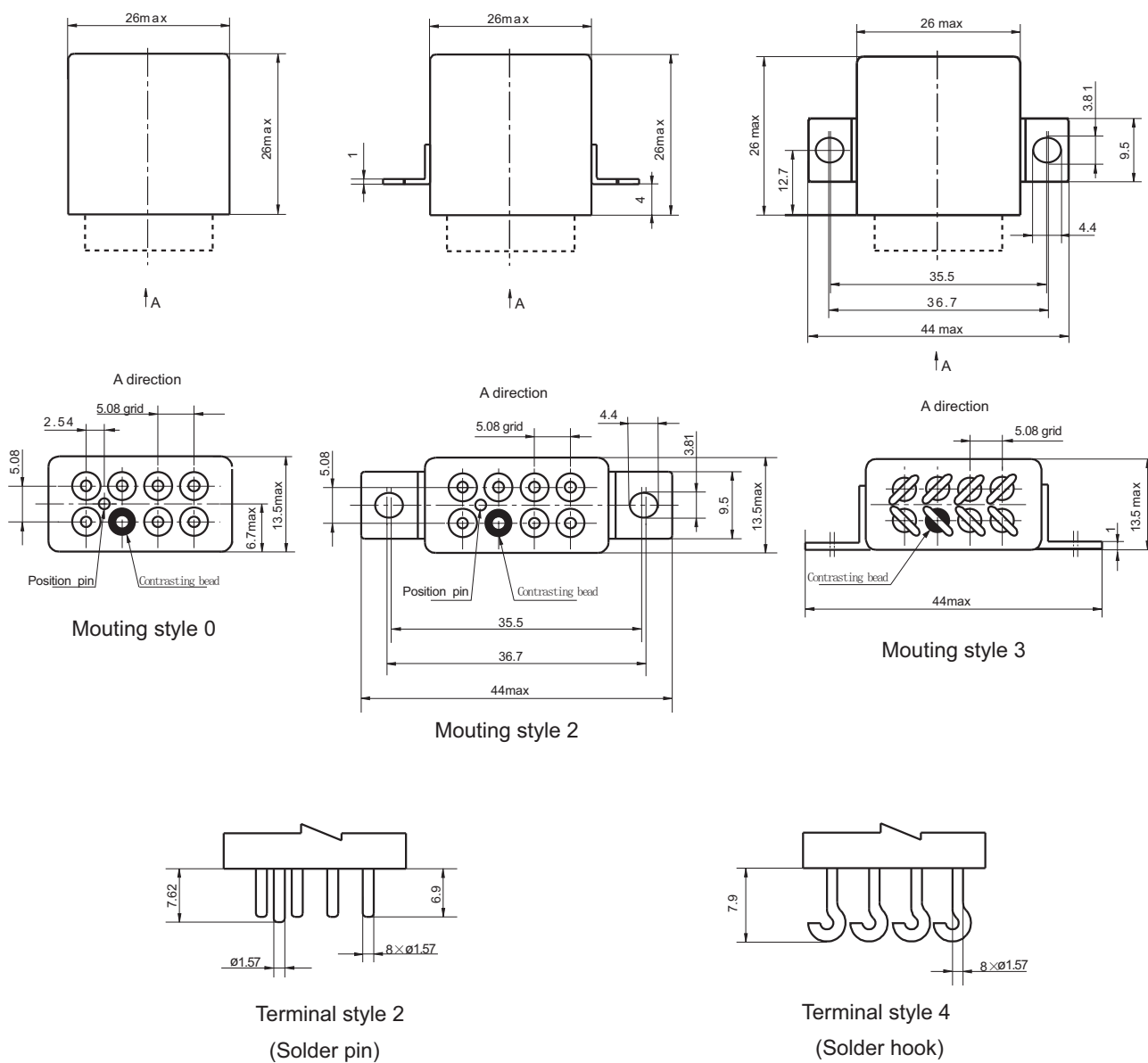
Type	HF9522	-028	L	-0	2	- II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 2, 3 (See the mounting dimension)					
Terminals Style	2, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

Outline Dimension



Wiring Diagram
(Bottom View)

Disclaimer

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HF9525

1 CUBIC 3 FORM C HERMETICALLY SEALED RELAY



Features

- Force balanced
- 25A contacts switching capability
- Failure rate can be level L
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		3 C		
Contact resistance or voltage drop	Initial max.	0.01 Ω		0.006 Ω
	After life max.	0.012 Ω		0.007 Ω

Contact ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115/200Va.c. 400Hz Three phase	
Resistive	25A	25A	5 x 10 ⁴ OPS
Inductive	12A	—	1 x 10 ⁴ OPS
Inductive	—	15A	2 x 10 ⁴ OPS
Motor	10A	—	5 x 10 ⁴ OPS
Lamp load	5A	—	5 x 10 ⁴ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between other insulation parts (initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts (after life testing)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		15 ms		
Release time max.		15 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		85 g		

COIL DATA

Normal coil power	Approx.3 W
-------------------	------------

Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
028	28	29	260	15.5	5.5	2.3	20.0	7.0	1.5	21.0	25.0

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9525	-028	L	-2	2	- II
Order Number	028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	2, 3 (See the mounting dimension)					
Terminals Style	2, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

Unit:mm

HF9526

1 CUBIC INCH 4 FORM C HERMETICALLY SEALED ELECTROMAGNETIC RELAY



Features

- Force balanced
- 10A contacts switching capability
- Failure rate level can be level L
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		4 C		
Contact resistance or voltage drop	Initial max.	0.015Ω		0.01Ω
	After life max.	0.15V		0.125V

Contact and life ratings

Type	Contact load			Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	115/200Va.c. 400Hz Three phase	
Resistive	10 A	10 A	10 A	1 x 10 ⁵ ops
Inductive	8 A	8 A	8 A	2 x 10 ⁴ ops
Motor	4 A	—	—	1 x 10 ⁵ ops
Lamp load	2 A	—	—	1 x 10 ⁵ ops



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between other insulation parts (initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts (after life testing)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		15 ms		
Release time max.		15 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		80 g		

COIL DATA

Normal coil power	Approx.2.7W
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Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
006	6	7.3	18	1.6	0.4	3.2	4.5	2.3	0.25	5.0	5.7
012	12	14.5	70	3.3	0.75	6.5	9.0	4.5	0.5	9.9	11.25
028	28	29.0	290	5.5	2.3	15.5	20.0	7	1.5	21.0	25.0

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

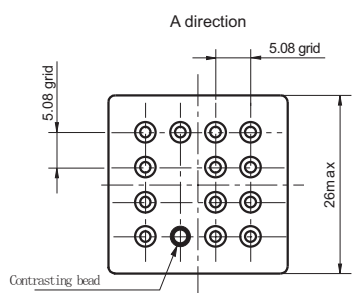
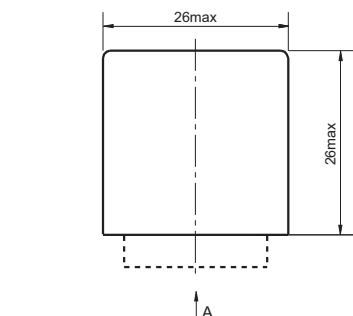
Type	HF9526	-028	L	-0	2	- II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 2, 3 (See the mounting dimension)					
Terminals Style	2, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

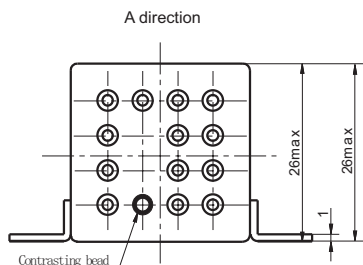
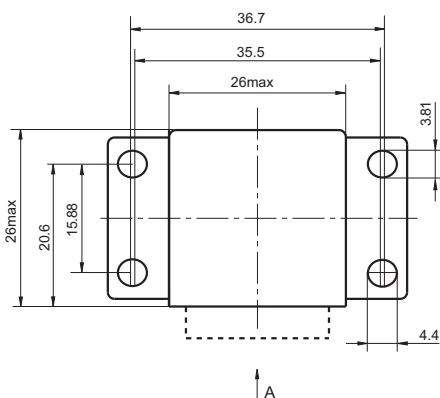
OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

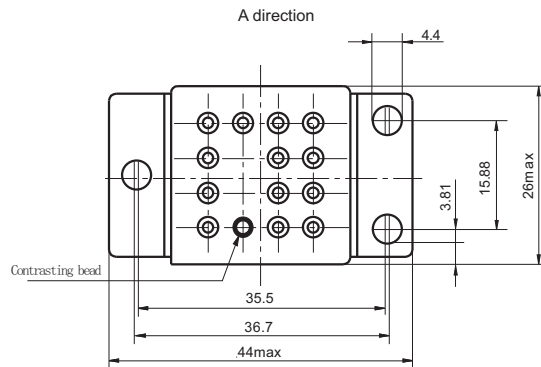
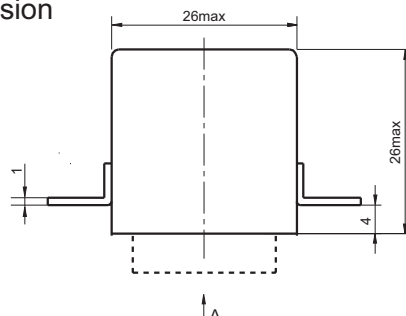
Outline Dimension



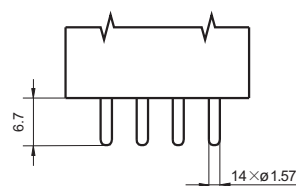
Mouting style 0



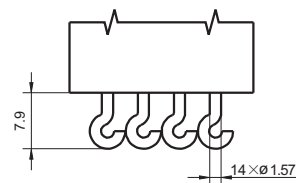
Mouting style 3



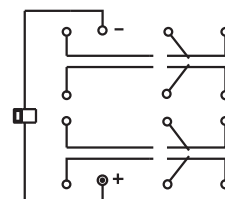
Mouting style 2



Terminal style 2
(Solder pin)



Terminal style 4
(Solder hook)



Wiring Diagram
(Bottom View)

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HF9527

1/2 CUBIC INCH 1 FORM C HERMETICALLY SEALED RELAY



Features

- Force balanced
- 20A contacts switching capability
- Failure rate can be level L
- High ambient applicability
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²)/Hz	40 (m/s ²)/Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		1 C		
Contact resistance or voltage drop	Initial max.	0.2 Ω		0.15 Ω
	After life max.	0.25V		0.175V

Contact and life ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	
Resistive	20A	20A	8 x 10 ⁴ ops
Inductive	10A	—	2 x 10 ⁴ ops
Inductive	—	12A	4 x 10 ⁴ ops
Motor	8A	8A	8 x 10 ⁴ ops
Lamp load	4A	—	8 x 10 ⁴ ops

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between other insulation parts (initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts (after life testing)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		350 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		10 ms		
Release time max.		10 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		43 g		

COIL DATA

Norminal coil power	Approx.3.2W
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Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (1±10%)(Ω)	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
028	28	29	245	13.2	4.5	1.5	18.0	6.0	1.2	19.0	22.5

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

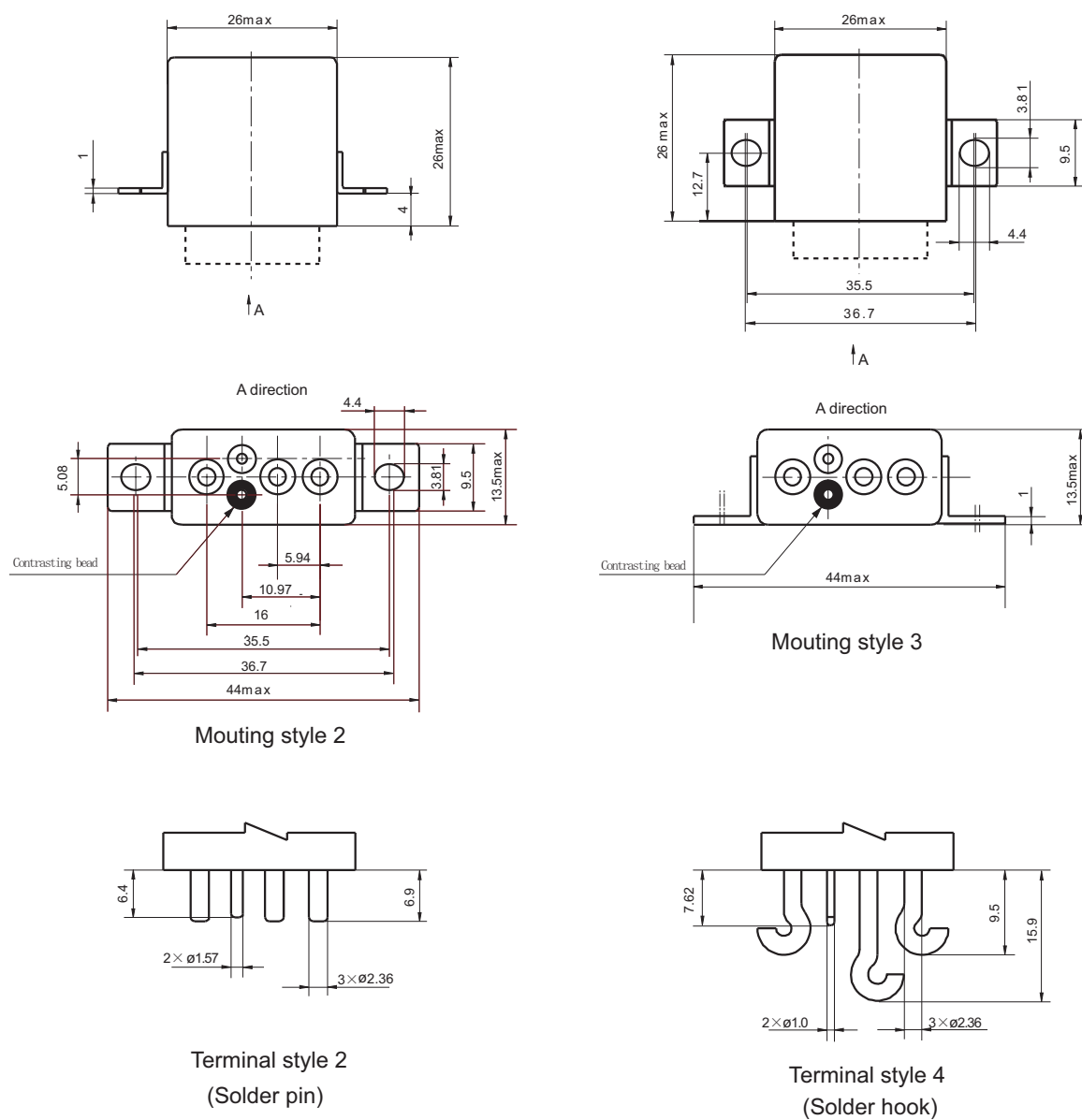
Type	HF9527	-028	L	-2	2	- II
Order Number	028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	2, 3 (See the mounting dimension)					
Terminals Style	2, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

Outline Dimension



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HF9532

1/2 CUBIC INCH 2 FORM C HERMETICALLY SEALED ELECTROMAGNETIC RELAY



Features

- Fore balanced
- 15A contacts switching capability
- Failure rate can be level L
- High ambient applicability
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		1 C		
Contact resistance or voltage drop	Initial max.	0.15Ω		0.01Ω
	After life max.	0.25V		0.125V

Contact and life ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	
Resistive	15A	15A	1 x 10 ⁶ OPS
Inductive	10A	8A	2 x 10 ⁴ OPS
Motor	6A	—	1 x 10 ⁶ OPS
Lamp load	3A	—	1 x 10 ⁶ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between other insulation parts (initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts (after life testing)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		350 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		10 ms		
Release time max.		10 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		46 g		

COIL DATA

Normal coil power	Approx.2.8W
-------------------	-------------

Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
006	6	7.3	18	3.2	1.6	0.4	4.5	2.3	0.25	5	5.7
012	12	14.5	72	6.5	3.3	0.75	9.0	4.5	0.5	9.9	11.25
028	28	29	280	15.5	5.5	2.3	20.0	7	1.5	21.0	25.0

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

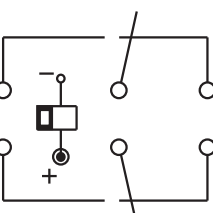
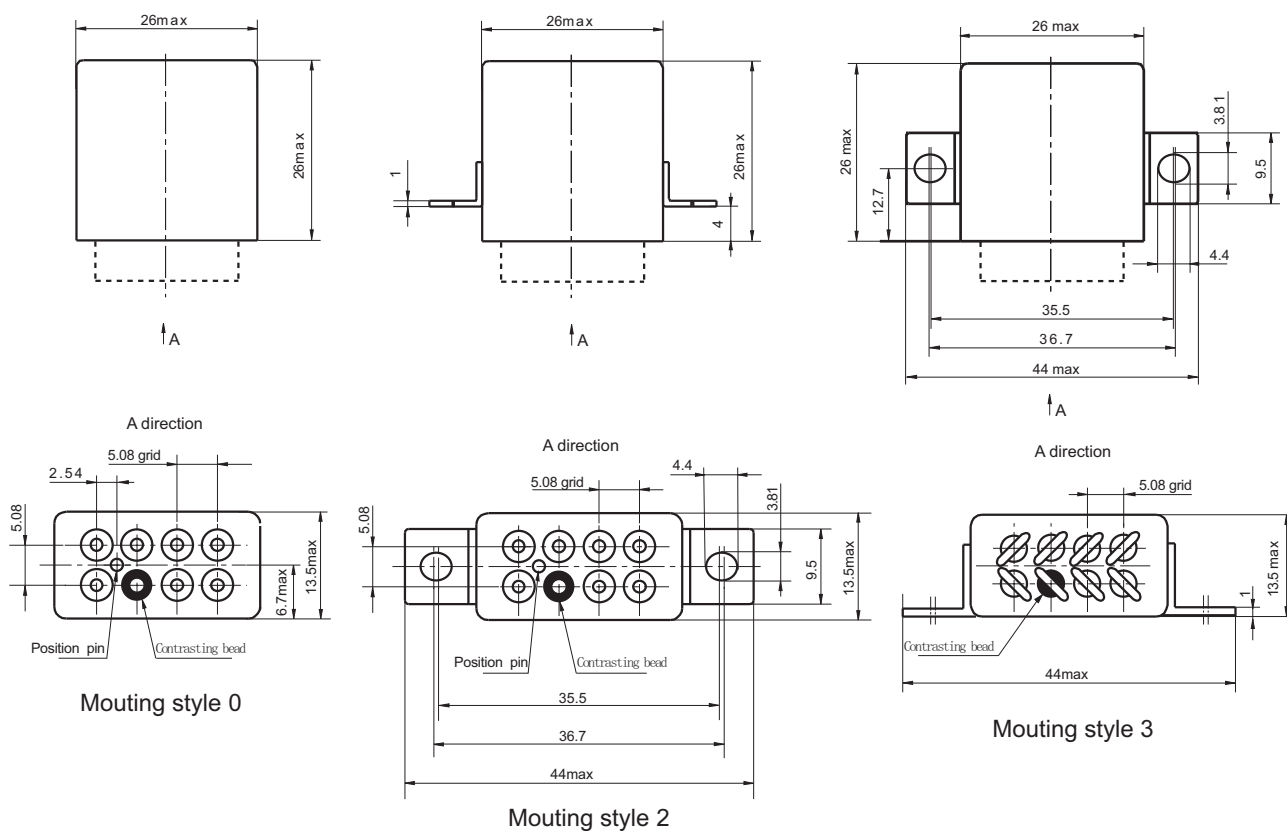
Type	HF9532	-028	L	-0	2	- II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 2, 3 (See the mounting dimension)					
Terminals Style	2, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

Outline Dimension



Wiring Diagram
(Bottom View)

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HF9533

1/5 CUBIC INCH 1 FORM C HERMETICALLY SEALED ELECTROMAGNETIC RELAY WITH COIL TRANSIENT SUPPRESSION



Features

- Force balanced type
- With coil transient suppression
- 15A contacts switching capability
- Failure rate can be level L
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²)/Hz	40 (m/s ²)/Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		1 C		
Contact resistance	Initial max.	0.01Ω		
or voltage drop	After life max.	0.125V		

Contact and life ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	
Resistive	15A	15A	1 x 10 ⁴ OPS
Inductive	6A	—	1 x 10 ⁴ OPS
Inductive	—	8A	2 x 10 ⁴ OPS
Motor	4A	—	5 x 10 ⁴ OPS
Lamp load	2A	—	5 x 10 ⁴ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
resistance min.	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover(initial)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between coil & cover(after life testing)	750 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
	Between other insulation parts(initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts(after life testing)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min.(Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	250 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		7 ms		
Release time max.		7 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		20 g		

COIL DATA

Norminal coil power	Approx.2W
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Coil Version

Order Number	Coil voltage		at 25 °C				-65°C to 125°C			Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	Pick-up voltage max.	Hold voltage max.	Drop-out voltage min.	High temp. test	Continuous electric test
006	6	7.3	18	3.3	1.6	0.40	4.5	2.3	0.25	5.0	5.70
012	12	14.5	85	6.5	3.3	0.75	9.0	4.5	0.50	9.9	11.25
028	28	29.0	440	15.5	5.5	2.30	20.0	7.0	1.50	21.0	25.0

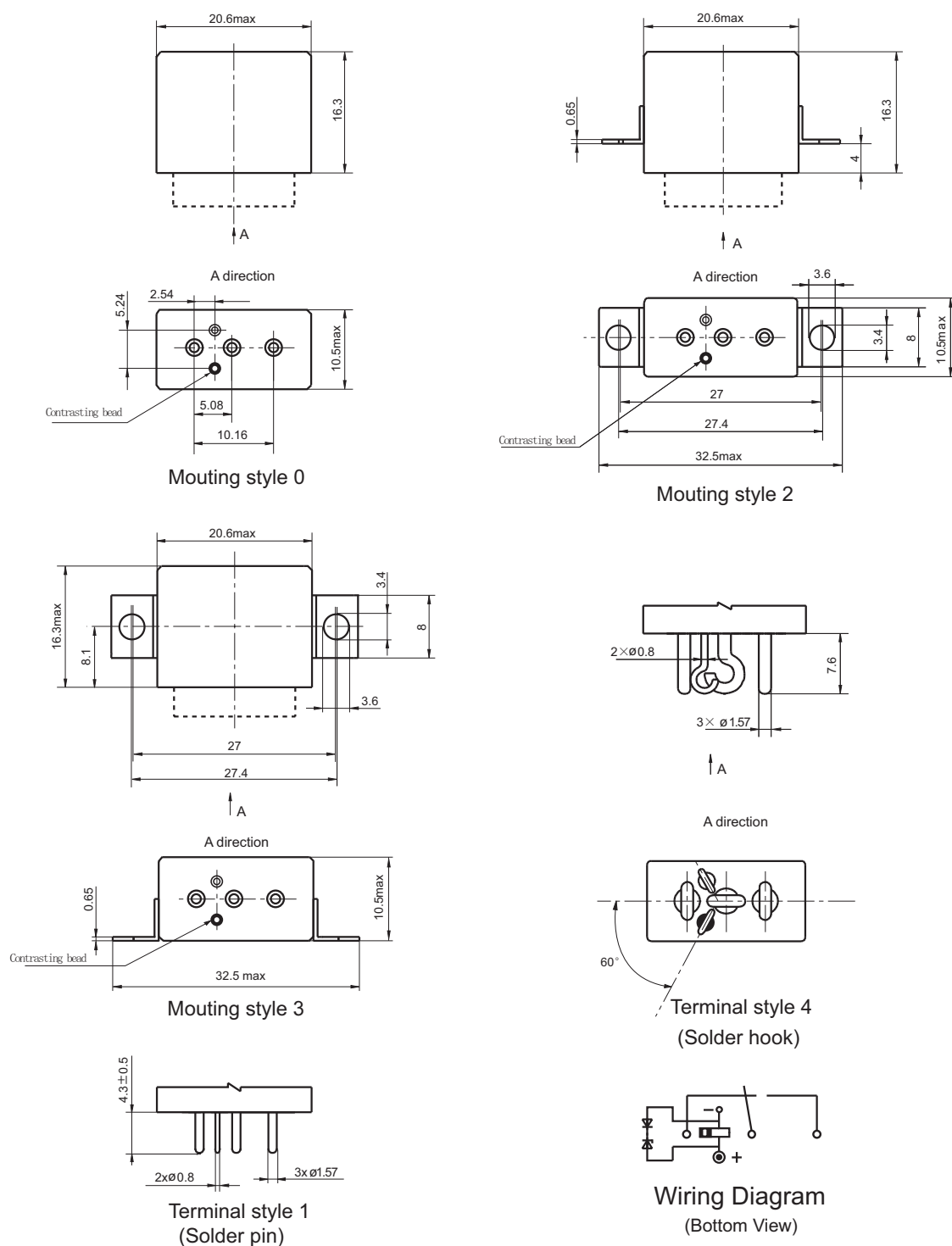
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9533	-012	L	-0	1	- II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 2, 3 (See the mounting dimension)					
Terminals Style	1, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

Outline Dimension



Disclaimer

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HF9610

1/5 CUBIC INCH 1 FORM C HERMETICALLY SEALED LATCHING RELAY



Features

- Latching relay
- 10A contacts switching capability
- Failure rate can be L level
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		1 C		
Contact resistance	Initial max.	0.05Ω		
or voltage drop	After life max.	0.125V		

Contact ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	
Resistive	10A	10A	5 x 10 ⁴ OPS
Inductive	6A	—	1 x 10 ⁴ OPS
Inductive	—	8A	2 x 10 ⁴ OPS
Motor	4A	—	5 x 10 ⁴ OPS
Lamp load	2A	—	5 x 10 ⁴ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover(initial)	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between coil & cover(after life testing)	350 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
	Between other insulation parts(initial)	750 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
	Between other insulation parts(after life testing)	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min.(Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	250 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		7 ms		
Coil Impulse Width min.		25 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		20 g		

COIL DATA

Norminal coil power	Approx. 1.2W
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Coil Version

Vd.c.

Order Number	Coil voltage		at 25 °C		-65°C to 125°C	Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Pick-up voltage max.	High temp. test	Continuous electric test
006	6	7.3	30	3.2	4.5	5.0	5.7
012	12	14.5	130	6.5	9.0	9.9	11.25
028	28	29	730	15.5	20.0	21.0	25.0

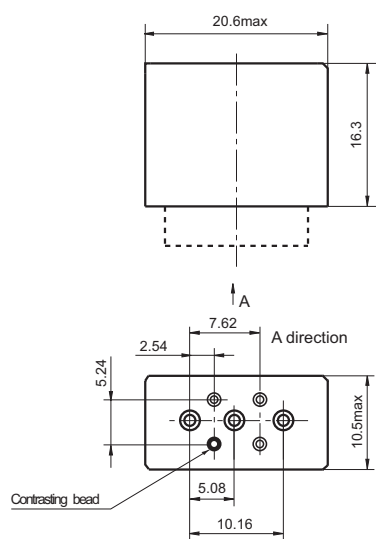
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

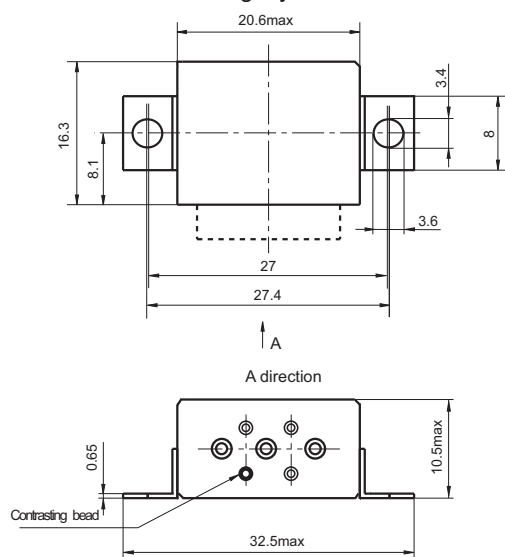
Type	HF9610	-012	L	-0	1	- II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0、2、3 (See the mounting dimension)					
Terminals Style	1, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

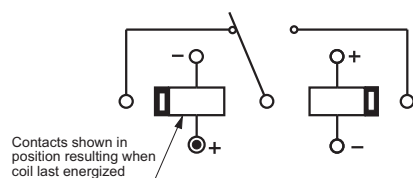
Outline Dimension



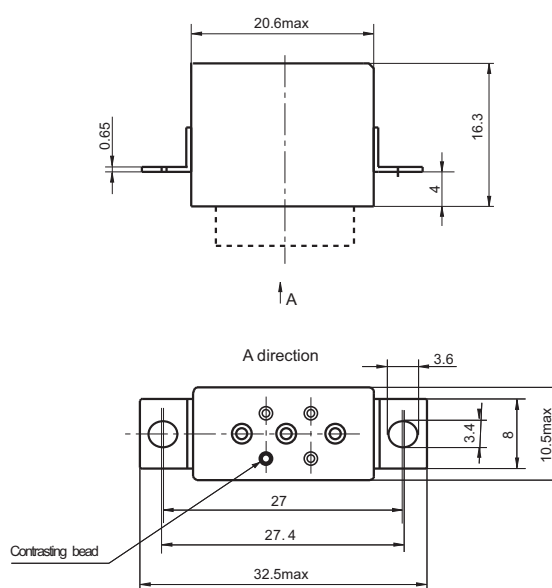
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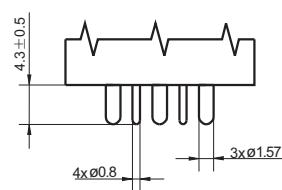
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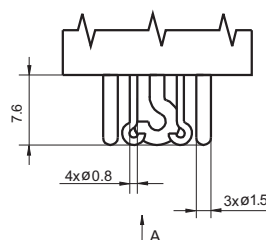
Wiring Diagram
(Bottom View)



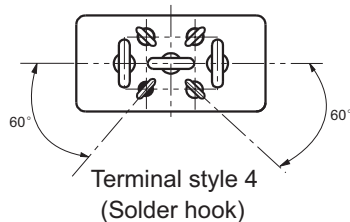
Mouting style 2



Terminal style 1
(Solder pin)



A direction



Terminal style 4
(Solder hook)

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HF9611

1/5 CUBIC INCH 2 FORM C HERMETICALLY SEALED LATCHING RELAY



Features

- Latching relay
- 5A contacts switching capability
- Failure rate can be L level
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		2 C		
Contact resistance or voltage drop	Initial max.	0.05Ω		
	After life max.	0.125V		

Contact ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	
Resistive	5A	5A	1 x 10 ⁵ OPS
Inductive	3A	5A	2 x 10 ⁴ OPS
Motor	2A	—	1 x 10 ⁵ OPS
Lamp load	1A	—	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover(initial)	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
	Between coil & cover(after life testing)	350 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
	Between other insulation parts(initial)	750 Vr.m.s.	750 Vr.m.s.	750 Vr.m.s.
	Between other insulation parts(after life testing)	500 Vr.m.s.	500 Vr.m.s.	500 Vr.m.s.
Dielectric strength min.(Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	250 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		6 ms		
Release time max.		20 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		20 g		

COIL DATA

Normal coil power	Approx.1.2W
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Coil Version

Vd.c.

Order Number	Coil voltage		at 25 °C		-65°C to 125°C	Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Pick-up voltage max.	High temp. test	Continuous electric test
006	6	7.3	38	3.2	4.5	5.0	5.7
012	12	14.5	160	6.5	9.0	9.9	11.25
028	28	29.0	650	15.5	20.0	21.0	25.0

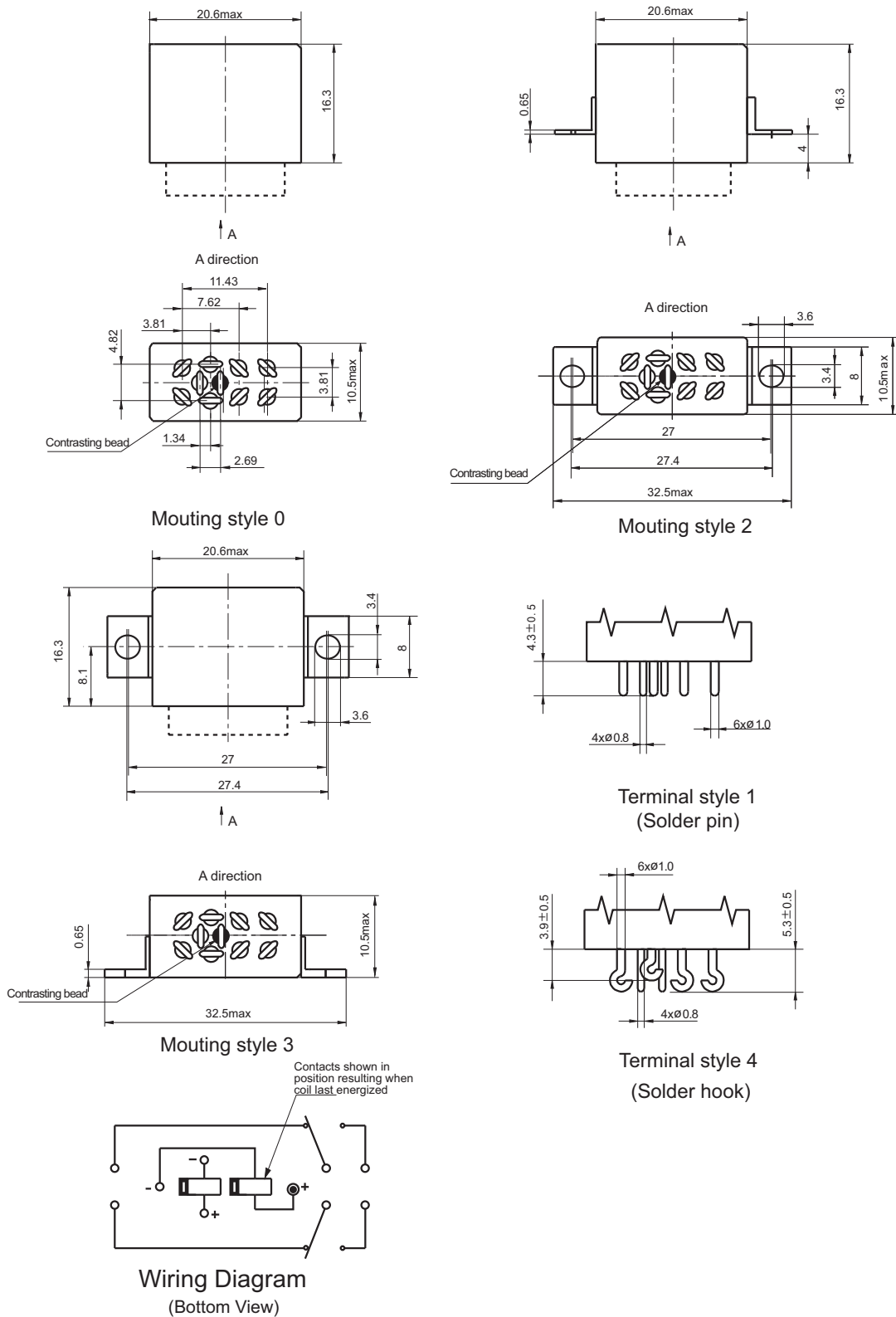
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9611	-012	L	-0	1	- II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	0, 2, 3 (See the mounting dimension)					
Terminals Style	1, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

Outline Dimension



Disclaimer

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HF9614

1/2 CUBIC INCH 1 FORM C HERMETICALLY SEALED RELAY



Features

- Force balanced latching relay
- 25A contacts switching capability
- Failure rate can be L level
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		1 C		
Contact resistance or voltage drop	Initial max.	0.2V		0.15V
	After life max.	0.25V		0.175V

Contact and life ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115Va.c. 400Hz Single phase	
Resistive	25A	25A	5 x 10 ⁴ OPS
Inductive	12A	—	1 x 10 ⁴ OPS
Inductive	—	15A	2 x 10 ⁴ OPS
Motor	10A	—	5 x 10 ⁴ OPS
Lamp load	5A	—	5 x 10 ⁴ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover, coil & coil (initial)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between other insulation parts (initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts (after life)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min. (Low air pressure condition)	Between coil & cover, coil & coil	250 Vr.m.s.	250 Vr.m.s.	250 Vr.m.s.
	Between other insulation parts	350 Vr.m.s.	350 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa·cm ³ /s	1 x 10 ⁻¹ Pa·cm ³ /s	1 x 10 ⁻³ Pa·cm ³ /s
Operate time max.		10 ms		
Coil pulse width min.		40 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		47 g		

COIL DATA

Normal coil power	Approx. 1.3W
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(1 ± 10%)

Coil Version

Vd.c.

Order Number	Coil voltage		at 25 °C		-65°C to 125°C	Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω)(1 ± 10%)	Pick-up voltage max.	Pick-up voltage max.	High temp. test	Continuous electric test
028	28	29.0	600	15.5	20.0	21.0	25.0

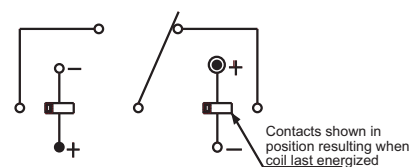
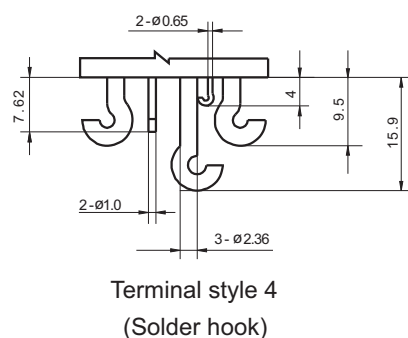
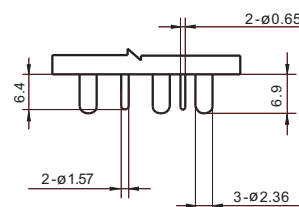
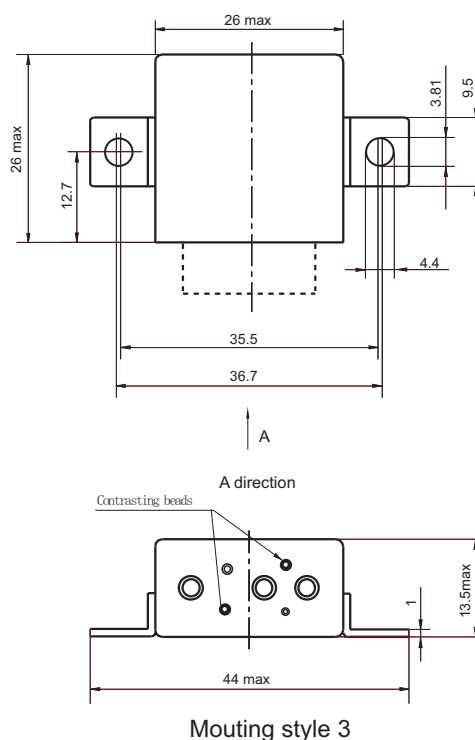
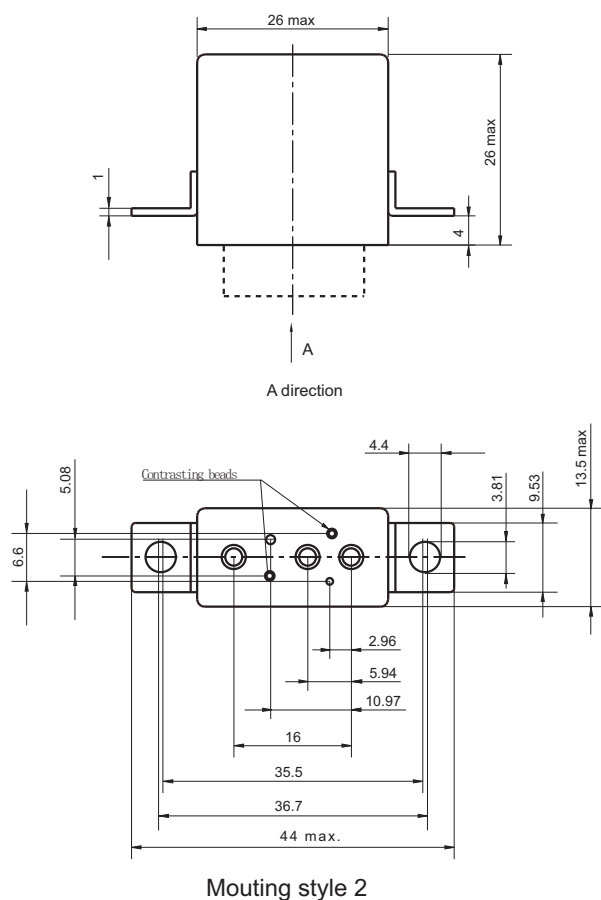
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

Type	HF9614	-012	L	-0	1	- II
Order Number	028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	2, 3 (See the mounting dimension)					
Terminals Style	2, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

Outline Dimension



Wiring Diagram
(Bottom View)

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HF9616

1 CUBIC INCH 3 FORM C HERMETICALLY SEALED LATCHING RELAY



Features

- Force balanced latching relay
- 25A contacts switching capability
- Failure rate can be L level
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		3 C		
Contact resistance or voltage drop	Initial max.	0.01Ω		
	After life max.	0.125V		

Contact and life ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115/200Va.c. 400Hz Three phase	
Resistive	25 A	25 A	5 x 10 ⁴ OPS
Inductive	12 A	—	1 x 10 ⁴ OPS
Inductive	—	15 A	2 x 10 ⁴ OPS
Motor	10 A	—	5 x 10 ⁴ OPS
Lamp load	5 A	—	5 x 10 ⁴ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover (initial)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between other insulation parts (initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts (after life testing)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	250 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.		15 ms		
Coil impulse width min.		45 ms		
Mounting style		See the mounting dimension		
Terminals		See the terminal styles		
Work position		Random		
Weight max.		85 g		

COIL DATA

Normal coil power	Approx.2W
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Coil Version

Vd.c.

Order Number	Coil voltage		at 25 °C		-65°C to 125°C	Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Pick-up voltage max.	High temp. test	Continuous electric test
006	6	7.3	25	3.5	4.5	5	5.7
012	12	14.5	100	6.5	9.0	9.9	11.25
028	28	29.0	405	15.5	20.0	21.0	25.0

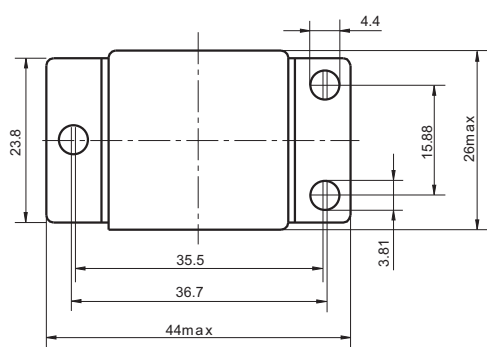
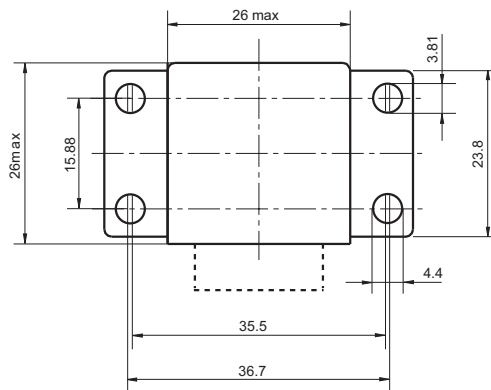
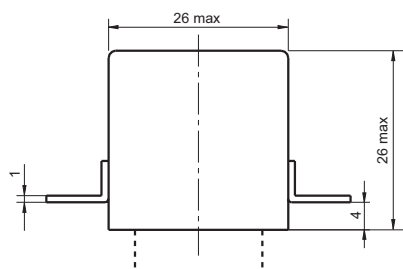
Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

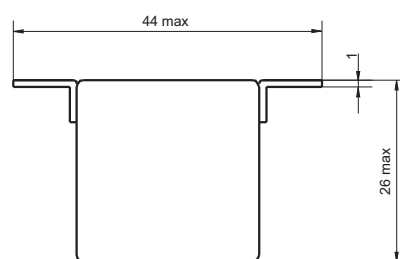
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Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,IIIproducts available)					
Mounting Style	2, 3 (See the mounting dimension)					
Terminals Style	2, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

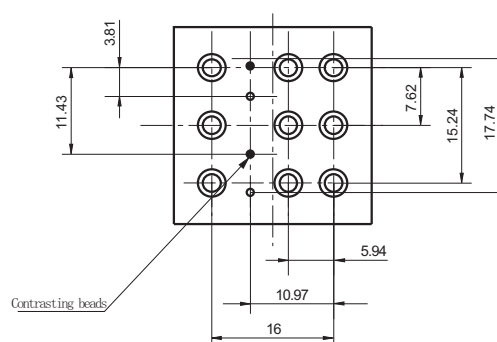
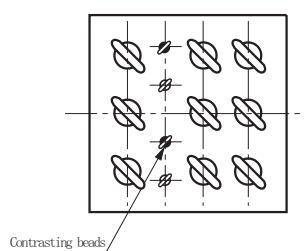
Outline Dimension

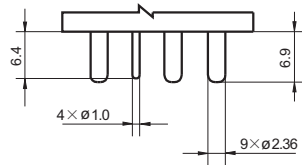


Mouting style 2

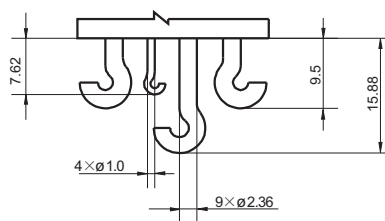


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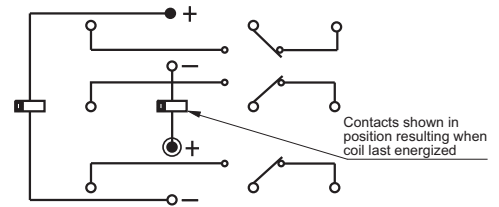




Terminal style 2
(Solder pin)



Terminal style 4
(Solder hook)



Wiring Diagram
(Bottom View)

Disclaimer

This datasheet is for the customers' reference. All the specifications are subject to change without notice.

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HF9617

1 CUBIC INCH 4 FORM C HERMETICALLY SEALED LATCHING RELAY



Features

- Force balanced latching relay
- 10A contacts switching capability
- Failure rate can be L level
- High ambient applicability
- All metal welded construction
- Hermetically welded and marked by laser

Conform to GJB2888-97 (Equivalent to MIL-PRF-83536)

AMBIENT ADAPTABILITY

Ambient grade		I	II	III
Ambient temperature		-55 °C to 85 °C	-55 °C to 85 °C	-65 °C to 125 °C
Humidity		98%, 40 °C		
Low air pressure		58.53 kPa	4.39 kPa	4.39 kPa
Sine vibration	Frequency	10 Hz to 1000 Hz	10 Hz to 2000 Hz	10 Hz to 3000 Hz
	Acceleration	147 m/s ²	196 m/s ²	294 m/s ²
Shock resistance		490 m/s ²	980 m/s ²	1960 m/s ²
Random vibration		—	20 (m/s ²) ² /Hz	40 (m/s ²) ² /Hz
Steady-state acceleration		147 m/s ²	294 m/s ²	490 m/s ²

CONTACT DATA

Ambient grade		I	II	III
Arrangement		4 C		
Contact resistance or voltage drop	Initial max.	0.01Ω		
	After life max.	0.125V		

Contact and life ratings

Type	Contact load		Electrical life min.
	28Vd.c.	115/200Va.c. 400Hz Three phase	
Resistive	10 A	10 A	1 x 10 ⁶ OPS
Inductive	8 A	8 A	2 x 10 ⁴ OPS
Motor	4 A	—	1 x 10 ⁵ OPS
Lamp load	2 A	—	1 x 10 ⁵ OPS



HONGFA HERMETICALLY SEALED RELAY

SPECIFICATION

Ambient grade		I	II	III
Insulation resistance min.	Initial	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)	100 MΩ (@ 500 Vd.c.)
	After life or after testing	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)	50 MΩ (@ 500 Vd.c.)
Dielectric strength min. (Normal condition)	Between coil & cover (initial)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
	Between other insulation parts (initial)	1250 Vr.m.s.	1250 Vr.m.s.	1250 Vr.m.s.
	Between other insulation parts (after life testing)	1000 Vr.m.s.	1000 Vr.m.s.	1000 Vr.m.s.
Dielectric strength min. (Low air pressure condition)		250 Vr.m.s.	250 Vr.m.s.	350 Vr.m.s.
Leakage rate max.		1 Pa•cm ³ /s	1 x 10 ⁻¹ Pa•cm ³ /s	1 x 10 ⁻³ Pa•cm ³ /s
Operate time max.				15 ms
Coil impulse width min.				45 ms
Mounting style				See the mounting dimension
Terminals				See the terminal styles
Work position				Random
Weight max.				85 g

COIL DATA

Normal coil power	Approx.2W
-------------------	-----------

Coil Version

Order Number	Coil voltage		at 25 °C		-65°C to 125°C	Pick-up voltage max.	
	Nominal voltage	Value max.	Coil resistance (Ω) min.	Pick-up voltage max.	Pick-up voltage max.	High temp. test	Continuous electric test
006	6	7.3	25	3.5	4.5	5	5.7
012	12	14.5	100	6.5	9.0	9.9	11.25
028	28	29.0	405	15.5	20.0	21.0	25.0

Notes: We can offer many kinds of coil voltage under the requirement of users.

ORDERING INFORMATION

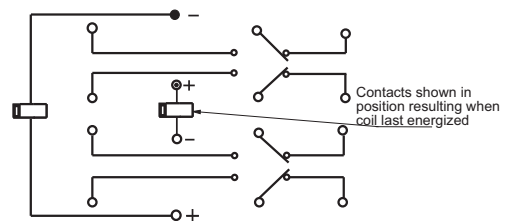
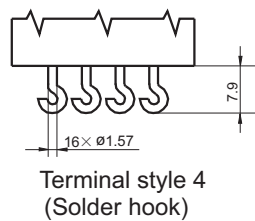
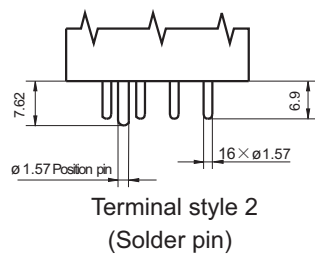
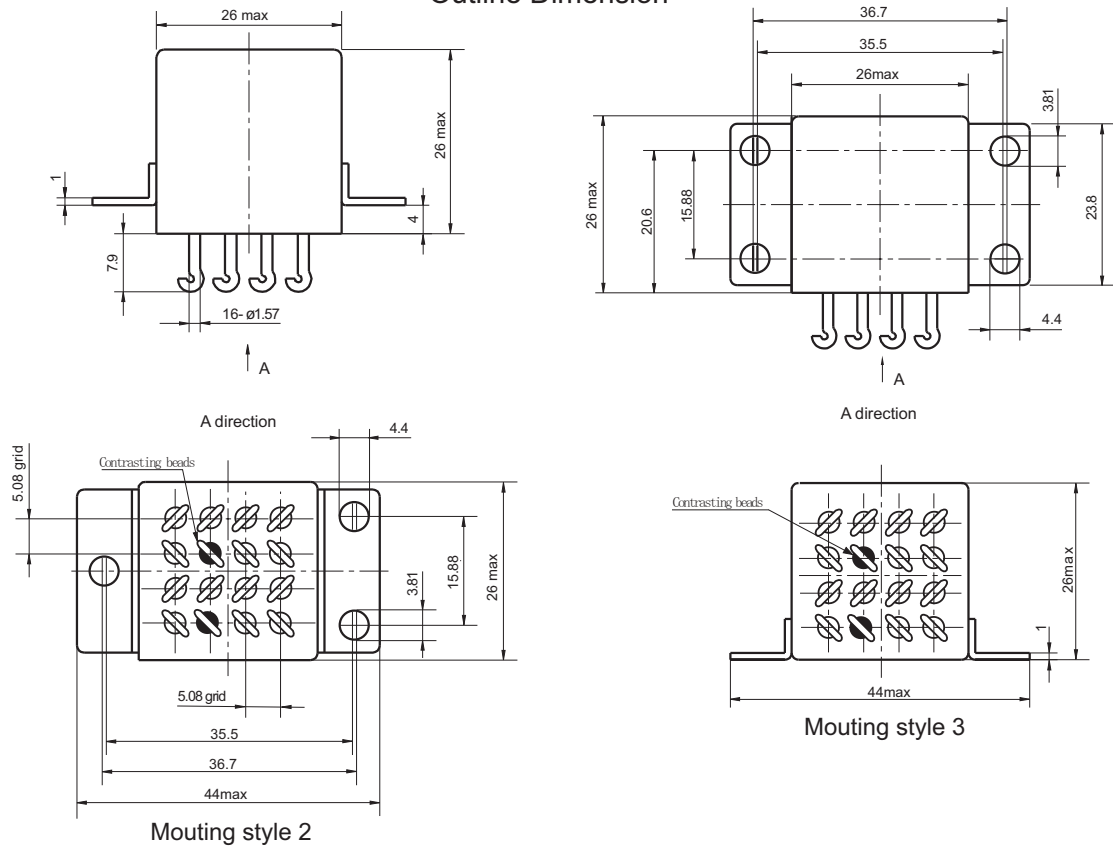
Type	HF9617	-028	L	-2	2	- II
Order Number	006、012、028					
Failure Rate	L: Failure rate level L (level III products available) ¹⁾ Nil: Without failure rate requirement(level I ,II ,III products available)					
Mounting Style	2, 3 (See the mounting dimension)					
Terminals Style	2, 4 (See " Terminal styles " below)					
Ambient Grade	I : level I II : level II III: level III					

Notes: 1) For the failure rate of L ,the letter "III" of ambient grade level will not appear on relay cover.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit:mm

Outline Dimension



Wiring Diagram
(Bottom View)

Disclaimer

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File No.:E134517



File No.:B120753286005

**Features**

- Multi contact arrangements: 2 Form C (2Z type), 1NO+1NC (HD1 type), 1NO+1NC (HD2 type)
- Forcibly guided contacts according to EN50205
- 8A switching capability
- High insulation capability (1.2 / 50μs):10kV surge voltage between coil & contacts and 6kV between contact sets
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29 x12.6 x25.5) mm

CONTACT DATA

Contact arrangement	2 Form C (2Z type) 1NO+1NC (HD1 type) 1NO+1NC (HD2 type)
Forcibly guided contacts Type (according to EN50205)	HD1, HD2 type: Type A 2Z type: Type B
Contact resistance	100mΩ max. (at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	6A 250VAC / 30VDC
Max. switching voltage	400VAC / 30VDC
Max. switching current	8A
Max. switching power	1500VA / 180W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance ¹⁾	1 x 10 ⁵ OPS (1NO: 6A 250VAC/30VDC, Resistive load, at 70°C, 1s on 9s off) 5 x 10 ⁴ OPS (1NC: 6A 250VAC/30VDC, Resistive load, at 70°C, 1s on 9s off)

Notes: 1) Only 1 NO or NC is loaded in the test.**COIL DATA**

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC Max.	Drop-out Voltage VDC Min.	Max. Voltage VDC ¹⁾	Coil resistance Ω
5	3.80	0.5	7.5	35.7 x (1±10%)
6	4.50	0.6	9.0	51 x (1±10%)
9	6.80	0.9	13.5	116 x (1±10%)
12	9.00	1.2	18	206 x (1±10%)
15	11.3	1.5	22.5	321 x (1±10%)
18	13.5	1.8	27	483 x (1±10%)
21	15.8	2.1	31.5	630 x (1±10%)
24	18.0	2.4	36	823 x (1±10%)
36	27.0	3.6	54	1851 x (1±10%)
40	30.0	4.0	60	2286 x (1±10%)
48 ²⁾	36.0	4.8	72	3291 x (1±15%)
60 ²⁾	45.0	6.0	90	5142 x (1±15%)
80 ²⁾	64.0	8.0	120	9143 x (1±15%)
110 ²⁾	82.5	11.0	165	17285 x (1±15%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	1500VAC 1 min
	Between contact sets	3000VAC 1 min
Surge voltage	Between coil & contacts	10kV (1.2 / 50μs)
	Between open contacts	2.5kV (1.2 / 50μs)
	Between contact sets	6.0kV (1.2 / 50μs)
Operate time (at rated voltage)		15ms max.
Release time (at rated voltage)		10ms max.
Temperature rise (at rated voltage)		≤60K (Coil driving voltage: 1.1 times Un, Contact current -carrying: rated current, at 75 °C)
Vibration resistance		NO:10Hz to 55Hz 1.6mm DA 55Hz to 200Hz, 98m/s ² NC:10Hz to 55Hz 0.4mm DA
Shock resistance	Functional	NO:98m/s ² NC: 49m/s ²
	Destructive	980m/s ²
Creepage distance	Between coil & contacts	8mm
	Between contacts	5.5mm
Clearance distance	Between coil & contacts	8mm
	Between contacts	5.5mm
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 20g
Construction		Plastic sealed

Notes: 1) The data shown above are initial values.

2) UL insulation system: Class F, Class B.

COIL

Coil power	Approx. 700mW
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SAFETY APPROVAL RATINGS

UL/CUL	6A 250VAC / 277VAC / 30VDC at 70°C NO: Pilot duty A300, at 70°C NC: Pilot duty B300, at 70°C
TÜV	NO: 8A 250VAC at 85°C NC: 6A 250VAC at 85°C NO: 3A 240VAC(AC-15) at 55°C NC: 1.5A 240VAC(AC-15) at 55°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.20

ORDERING INFORMATION

Type	HFA2 /	12	-2Z	S	T	F	G	(XXX)
Coil voltage	5, 6, 9, 12, 15, 18, 21, 24, 36, 40, 48, 60, 80, 110VDC							
Contact arrangement	2Z: 2 Form C HD1: 1NO+1NC (Type 1) HD2: 1NO+1NC (Type 2)							
Construction ¹⁾	S: Plastic sealed							
Contact material	T: AgSnO ₂							
Insulation class	F: Class F				Nil: Class B			
Contact plating	G: Gold plated ²⁾				Nil: No gold plated			
Special code ³⁾	XXX: Customer special requirement				Nil: Standard			

Notes: 1) If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts.

2) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC. if customers have special requirement of load, please contact us for suggestion about suitable parts.

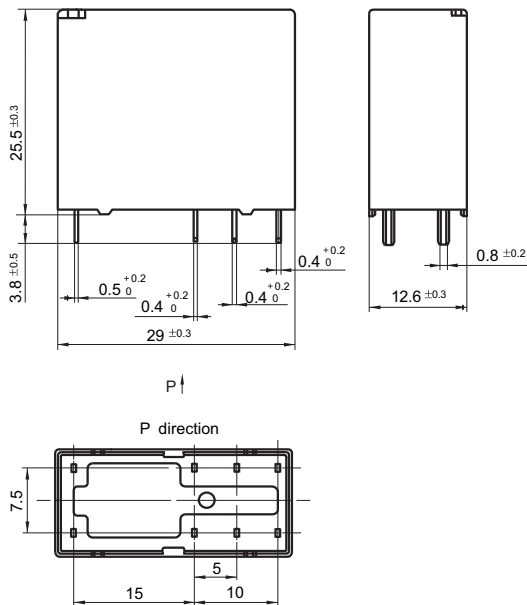
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

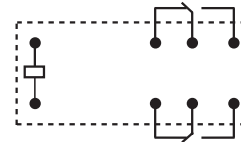
Unit: mm

HFA2/□□-2Z□T□(□□□)

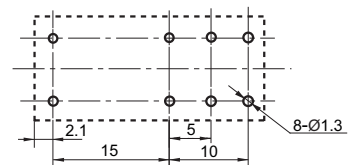
Outline Dimensions



Wiring Diagram



PCB Layout
(Bottom view)

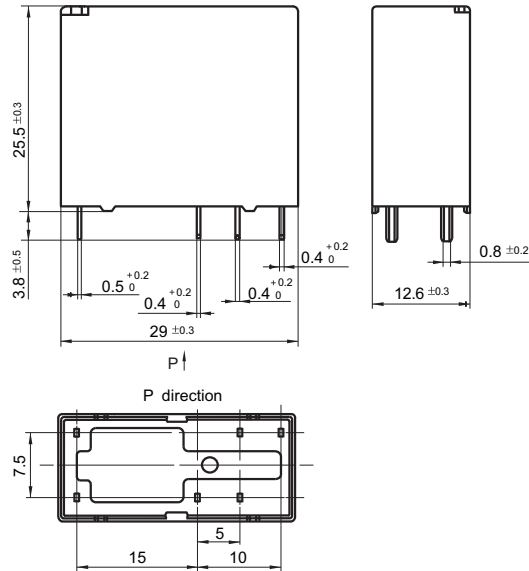


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

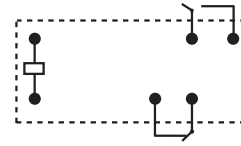
Unit: mm

HFA2/□□-HD1□T□(□□□)

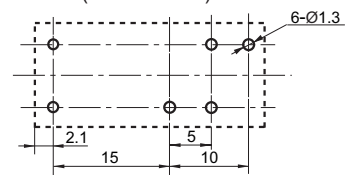
Outline Dimensions



Wiring Diagram

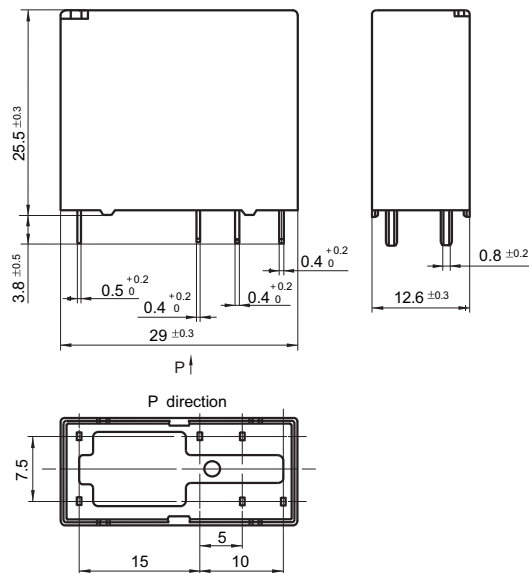


**PCB Layout
(Bottom view)**

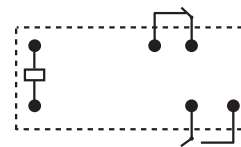


HFA2/□□-HD2□T□(□□□)

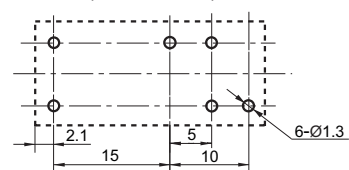
Outline Dimensions



Wiring Diagram

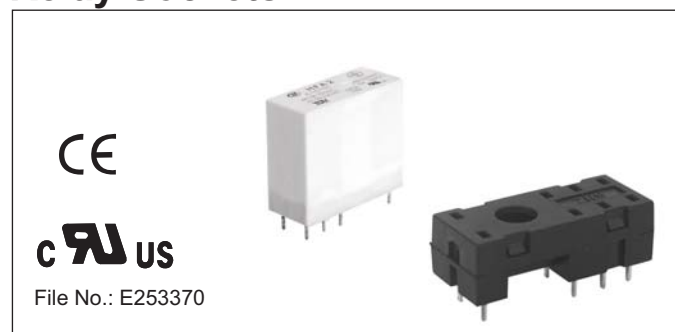


**PCB Layout
(Bottom view)**



- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

Relay Sockets



Features


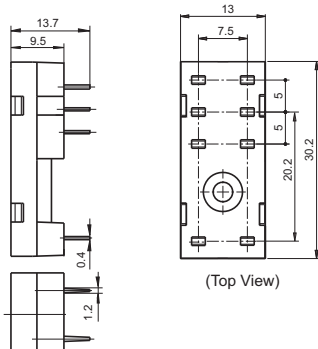
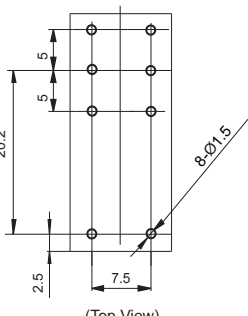

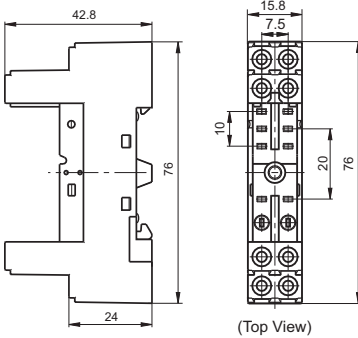
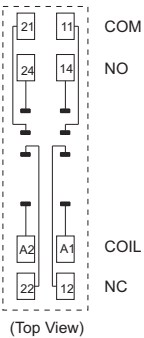

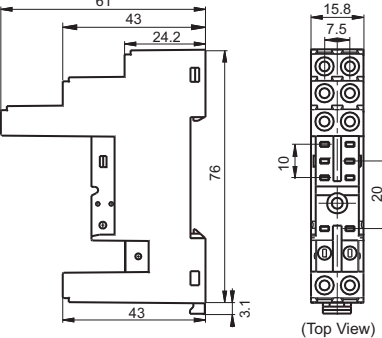
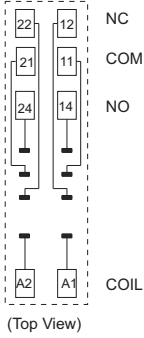
- The dielectric strength can reach 5000VAC(I/O) and the insulation resistance is 1000MΩ
- Three mounting types are available: PCB, screw mounting and DIN rail mounting
- With finger protection device
- Many kinds of plug-in modules are available with the function of energizing indication and wiring protection
- Environmental friendly product (RoHS compliant)

CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Ambient Temperature	Dielectric Strength min.	Screw Torque	Wire Strip Length
14FF-2Z-A1	250VAC	10A	-40 °C to 70 °C	5000VAC	—	—
14FF-2Z-C2	250VAC	10A	-40 °C to 70 °C	5000VAC	0.6N · m	7mm
14FF-2Z-C3	250VAC	10A	-40 °C to 70 °C	5000VAC	0.6N · m	7mm
14FF-2Z-C4	250VAC	10A	-40 °C to 70 °C	5000VAC	—	9mm


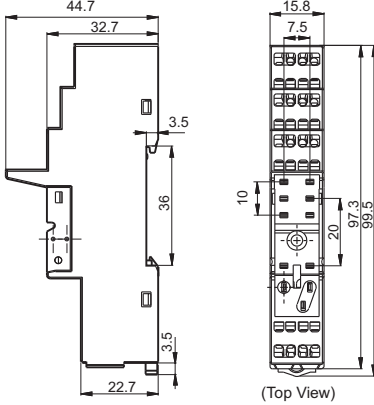
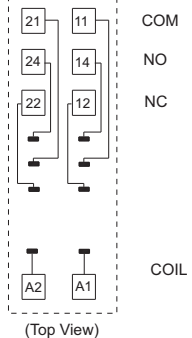
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
<p>14FF-2Z-A1</p>  <p>PCB terminal, PCB or Screw mounting</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>metallic retainer 14FF-H3</p>
<p>14FF-2Z-C2</p>  <p>Screw terminal DIN rail or Screw mounting With finger protection device</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>plastic retainer 14FF-H6 marker 14FF-M1 jumper 14FF-J1 plug-in module HFAA to HFHU*</p>
<p>14FF-2Z-C3</p>  <p>Screw terminal DIN rail or Screw mounting With finger protection device</p>	 <p>(Top View)</p>	 <p>(Top View)</p>	<p>plastic retainer 14FF-H6 marker 14FF-M1 jumper 14FF-J1 plug-in module HFAA to HFHU*</p>

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Components Available
14FF-2Z-C4 <div><p>Spring-loaded terminal DIN rail mounting With finger protection device</p></div>	 <p>(Top View)</p>	 <p>(Top View)</p>	plastic retainer 14FF-H6 marker 14FF-M1 plug-in module HFAA to HFHU*

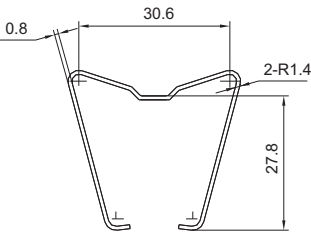
Notes: * Please refer to the product datasheet if plug-in module is required.

DIMENSION OF RELATED COMPOENT (AVAILABLE)

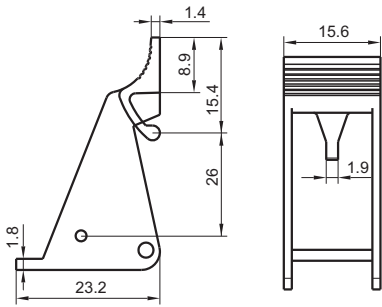
Unit: mm

Retainer

14FF-H3 (Metallic retainer)

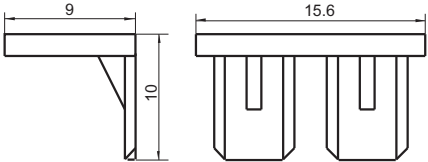


14FF-H6 (Plastic retainer)



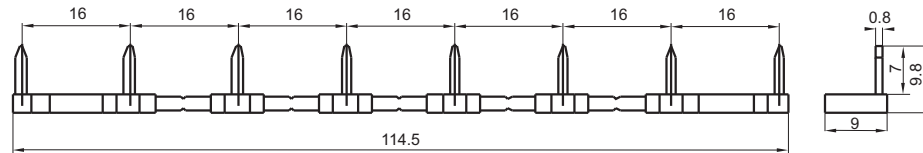
Marker

14FF-M1



Jumper

14FF-J1



Things to be noticed when selecting sockets:

1. Please choose suitable relay socket according to the actual mounting environment, relay contact poles and terminal layout. If there is any query on selection, please contact Hongfa for the technical service.
2. Socket which can be mounted with markers is furnished with a marker; as for other related components, they should be selected separately. Please do give clear indication of the types of relay sockets and related components you choose while placing order.
3. The above is only an example of typical socket and related component type which is suitable to HF115FP relay. If you have any special requirements, please contact us.
4. Main outline dimension(L, W, H) ≥ 50 mm, tolerance should be ± 1 mm; outline dimension > 20 mm and < 50 mm, tolerance should be ± 0.5 mm; outline dimension ≤ 20 mm, tolerance should be ± 0.3 mm.
5. DIN rail mounting: recommend to use standard rail $35 \times 7.5 \times 1$, $35 \times 15 \times 1$.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HFA4

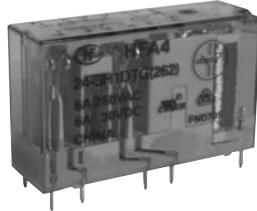
SAFETY RELAY (RELAY WITH FORCIBLY GUIDED CONTACTS)



File No.:E134517



File No.:40034342



Features

- Multi contact arrangements: 2NO+2NC, 3NO+1NC
- Forcibly guided contacts according to EN50205
- 6A switching capability
- Low input power: 360mW
- High insulation capability: 10kV surge voltage between input and output
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (40.0 x 13.0 x 24.0) mm

CONTACT DATA

Contact arrangement	2NO+2NC (2H2D type) 3NO+1NC (3H1D type)
Forcibly guided contacts Type (according to EN50205)	Type A
Contact resistance	100mΩ max. (at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	6A 250VAC / 30VDC
Max. switching voltage	400VAC / 30VDC
Max. switching current	6A
Max. switching power	1500VA/180W
Electrical endurance	1 x 10 ⁵ OPS
Mechanical endurance	1 x 10 ⁵ OPS (1NO: 6A 30VDC, Resistive load, at 85°C, 1s on 9s off) 5 x 10 ⁴ OPS (1NO: 6A 250VAC, Resistive load, at 85°C, 1s on 9s off)

COIL

Coil power	Approx. 360mW
------------	---------------

COIL DATA at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC ¹⁾	Coil resistance Ω
6	4.5	0.6	7.8	100 x (1±10%)
9	6.8	0.9	11.7	225 x (1±10%)
12	9.0	1.2	15.6	400 x (1±10%)
18	13.5	1.8	23.4	900 x (1±10%)
24	18.0	2.4	31.2	1600 x (1±10%)
36	27.0	3.6	46.8	3600 x (1±10%)
48 ²⁾	36.0	4.8	62.4	6400 x (1±10%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	1500VAC 1 min
	Between contact sets	2500VAC 1 min (7-8/9-10) 4000VAC 1 min (Other)
Surge voltage	Between coil & contacts	10kV (1.2 / 50μs)
	Between contact sets	5kV (1.2 / 50μs)
Operate time (at rated voltage)		20ms max.
Release time (at rated voltage)		20ms max.
Temperature rise (at rated voltage)		≤60K (Coil driving voltage: 1.1 times Un, Contact current -carrying: rated current, at 85 °C)
Vibration resistance		NO/NC:10Hz to 55Hz 1.5mm DA NO:55Hz to 200Hz, 98m/s ² NC:55Hz to 200Hz, 49m/s ²
Shock resistance	Functional	100m/s ²
	Destructive	980m/s ²
Creepage distance	Between coil & contacts	8mm
	Between contacts	5.5mm
Clearance distance	Between coil & contacts	8mm
	Between contacts	5.5mm
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 20g
Construction		Flux proofed

Notes: 1) The data shown above are initial values.

2) UL insulation system: Class F, Class B.

SAFETY APPROVAL RATINGS

UL/CUL	6A 277VAC / 250VAC / 125VAC at 85°C 6A 30VDC at 85°C Pilot duty: 2A 240VAC at room temp.
VDE	6A 250VAC at 85°C 6A 30VDC at 85°C AC-15: 1.5A 240VAC at room temp. AC-15: 2A 240VAC at room temp.

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

2017 Rev. 1.20

ORDERING INFORMATION

Type	HFA4 / 24 -2H2D T G F (XXX)
Coil voltage	6, 9, 12, 18, 24, 36, 48VDC
Contact arrangement	2H2D: 2NO+2NC 3H1D: 3NO+1NC
Contact material	T: AgSnO ₂
Contact plating	G: Gold plated
Insulation class	F: Class F Nil: Class B
Special code ³⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) This product is a soldering flux type products,when the product into the PCB plate welding.does not allow for cleaning.

2) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC. If customers have special requirement of load, please contact us for suggestion about suitable parts.

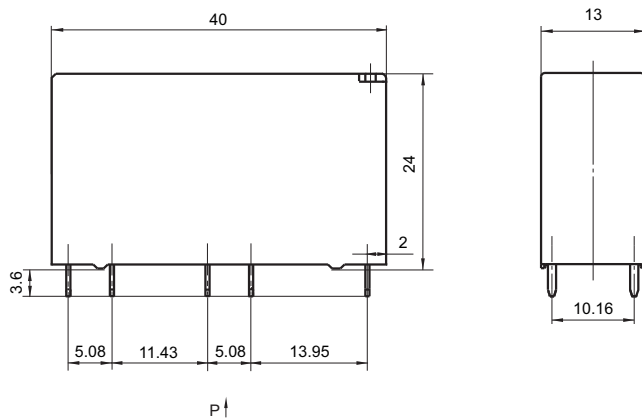
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

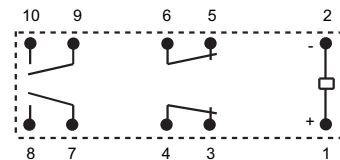
Unit: mm

HFA4/□□-2H2DT□(□□□)

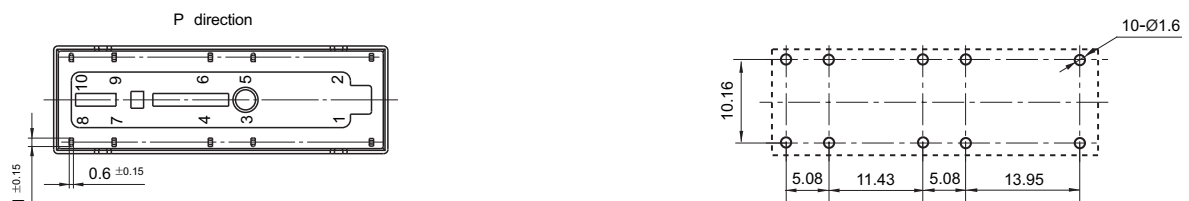
Outline Dimensions



Wiring Diagram
(Bottom view)



PCB Layout
(Bottom view)

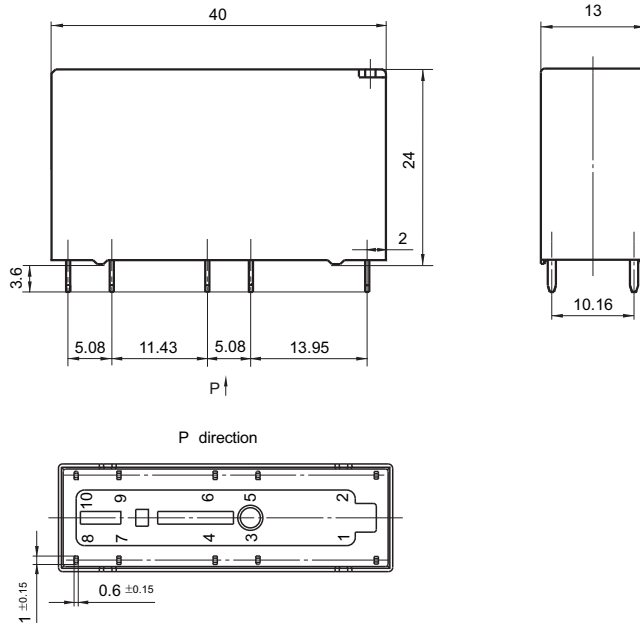


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

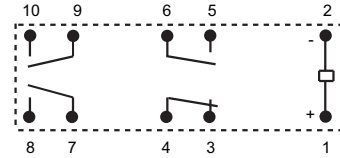
Unit: mm

HFA4/□□-3H1DT□(□□□)

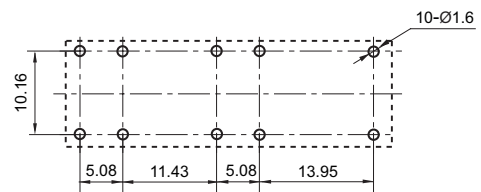
Outline Dimensions



Wiring Diagram
(Bottom view)



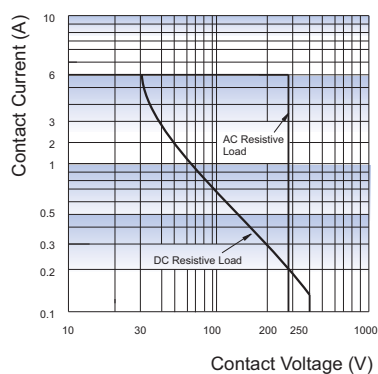
PCB Layout
(Bottom view)



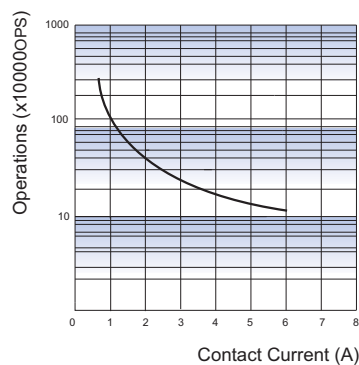
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



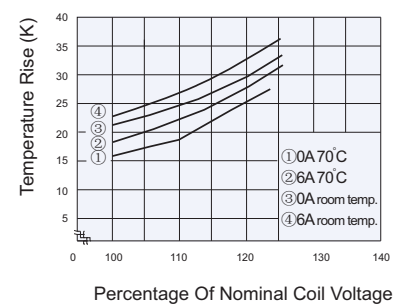
ENDURANCE CURVE



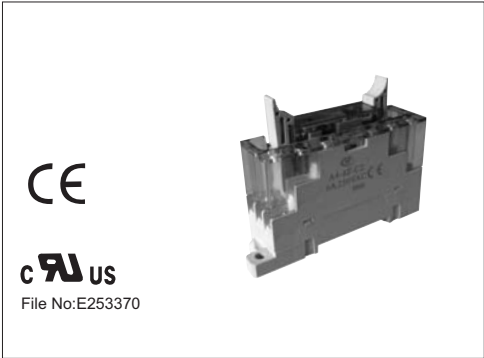
Test conditions:

1NO, Resistive load, 250VAC,
Room temp., 1s on 9s off.

COIL TEMPERATURE RISE



Relay Sockets



Features

- The dielectric strength (between coil and contacts) can reach 2500VAC and the insulation resistance is 1000MΩ
- DIN rail or Screw mounting
- With diode to protect the coil and to eliminate the converse current
- With finger protection device
- Built-in retainer and extractor

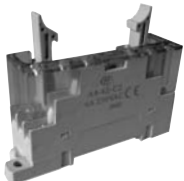
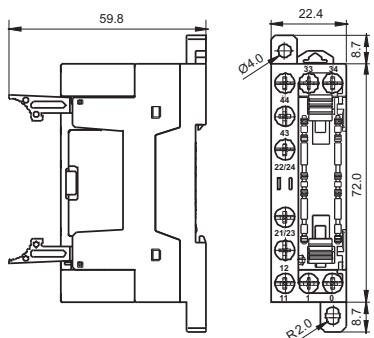
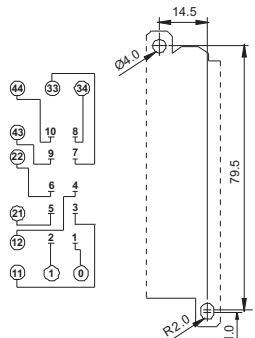
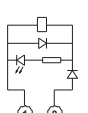
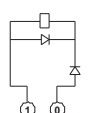
CHARACTERISTICS

Type	Nominal Voltage	Nominal Current	Applicable coil voltage of relay	Ambient Temperature	Torque*	Max.wire cross section mm ²	Wire Strip Length	Notes
A4-4Z-C2-D24	250VAC	6A	(6 to 24)VDC	-25 °C to 55°C	1.0N · m	2 x1.5	7mm	With LED
A4-4Z-C2-D60	250VAC	6A	(36 to 60)VDC	-25 °C to 55°C	1.0N · m	2 x1.5	7mm	With LED
A4-4Z-C2-D110	250VAC	6A	(85 to 110)VDC	-25 °C to 55°C	1.0N · m	2 x1.5	7mm	With LED
A4-4Z-C2	250VAC	6A	(6 to 110)VDC	-25 °C to 55°C	1.0N · m	2 x1.5	7mm	Without LED

Notes: * Refers to wire-assembled torque.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND CIRCUIT DIAGRAM

Unit: mm

Socket	Outline Dimensions	Wiring Diagram / PCB Layout	Circuit Diagram
 Screw Terminal, DIN rail mounting, With finger protection device	 (Top View)	 (Top View)	 With LED  Without LED

- Notes: 1. Main outline dimension(L, W, H) ≥50mm, tolerance should be ±1mm; outline dimension >20mm and <50mm, tolerance should be ±0.5mm; outline dimension ≤20mm, tolerance should be ±0.3mm.
2. DIN rail mounting: recommend to use standard rail 35×7.5×1, 35×15×1.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HFA6

SAFETY RELAY (RELAY WITH FORCIBLY GUIDED CONTACTS)

C  US

File No.:E134517

TÜV

File No.:B120553286004



Features

- Multi contact arrangements: 5NO+1NC, 4NO+2NC, 3NO+3NC
- Forcibly guided contacts according to EN50205
- 6A switching capability
- Low input power: 500mW
- High insulation capability: 10kV surge voltage between input and output
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (50.0 x 13.0 x 24.0) mm

CONTACT DATA

Contact arrangement	5NO+1NC (5H1D type) 4NO+2NC (4H2D type) 3NO+3NC (3H3D type)
Forcibly guided contacts Type (according to EN50205)	Type A
Contact resistance	100mΩ (at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	6A 250VAC / 30VDC
Max. switching voltage	400VAC / 30VDC
Max. switching current	6A
Max. switching power	1500VA / 180W
Mechanical endurance	1 x 10 ⁷ ops
Electrical endurance	1 x 10 ⁵ ops (1NO: 6A 30VDC, Resistive load, at 85°C, 1s on 9s off) 1 x 10 ⁵ ops (1NO: 6A 250VAC, Resistive load, at 85°C, 1s on 9s off)

COIL

Coil power	Approx. 500mW
------------	---------------

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC 1)	Coil resistance Ω
6	4.5	0.6	6.6	72 x (1±10%)
9	6.8	0.9	9.9	162 x (1±10%)
12	9.0	1.2	13.2	288 x (1±10%)
18	13.5	1.8	21.78	648 x (1±10%)
24	18.0	2.4	26.4	1152 x (1±10%)
36	27.0	3.6	39.6	2592 x (1±10%)
48 ²⁾	36.0	4.8	52.8	4608 x (1±10%)

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.
2) For products with rated voltage ≥ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	1500VAC 1 min
	Between contact sets	2500VAC 1 min (11-12/13-14) 4000VAC 1 min (Other)
Surge voltage	Between coil & contacts	10kV (1.2 / 50μs)
	Between contact sets	5kV (1.2 / 50μs)
Operate time (at rated voltage)		20ms max.
Release time (at rated voltage)		20ms max.
Temperature rise (at rated voltage)		≤70K (Coil driving voltage: 1.1 times Un, Contact current -carrying: rated current, at 85 °C)
Vibration resistance		NO/NC:10Hz to 55Hz 1.5mm DA NO:55Hz to 200Hz, 98m/s ² NC:55Hz to 200Hz, 49m/s ²
Shock resistance	Functional	100m/s ²
	Destructive	980m/s ²
Creepage distance	Between coil & contacts	8mm
	Between contacts	5.5mm
Clearance distance	Between coil & contacts	8mm
	Between contacts	5.5mm
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 23g
Construction		Flux proofed

Notes: 1) The data shown above are initial values.
2) UL insulation system: Class F, Class B.

SAFETY APPROVAL RATINGS

UL/CUL	6A 277VAC / 250VAC / 125VAC at 85°C 6A 30VDC at 85°C Pilot duty: 1.5A 240VAC 3A 120VAC
TÜV	6A 277VAC / 30VDC 1.5A / 2A 240VAC(AC-15)

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HFA6 / 24 -5H1D T G F (XXX)
Coil voltage	6, 9, 12, 18, 24, 36, 48VDC
Contact arrangement	5H1D: 5NO+1NC 4H2D: 4NO+2NC 3H3D: 3NO+3NC
Contact material	T: AgSnO ₂
Contact plating	G: Gold plated
Insulation class	F: Class F Nil: Class B
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) Flux-proofed relays can not be used in the environment with pollutants like H₂S, SO₂, NO₂, dust, etc.

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC.

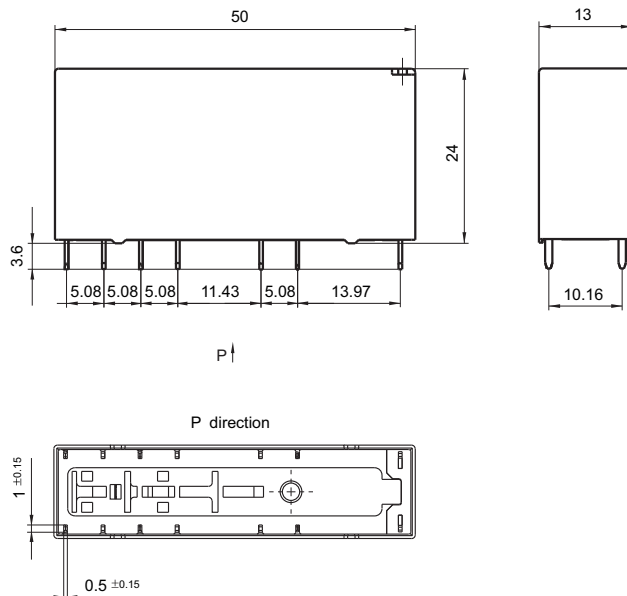
4) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

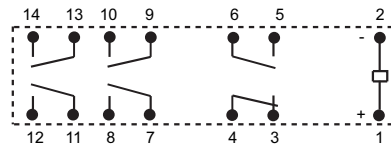
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HFA6/□□-5H1DT□(□□□)

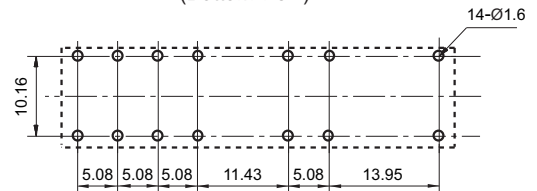
Outline Dimensions



Wiring Diagram
(Bottom view)



PCB Layout
(Bottom view)

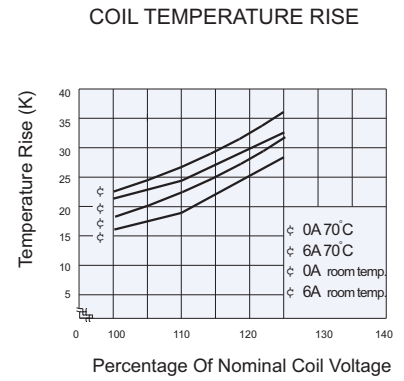
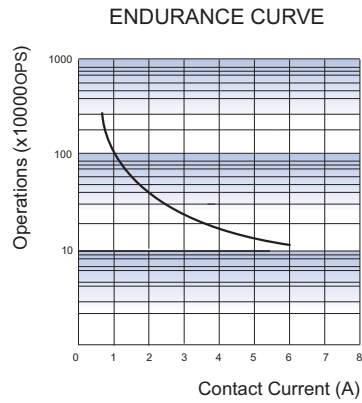
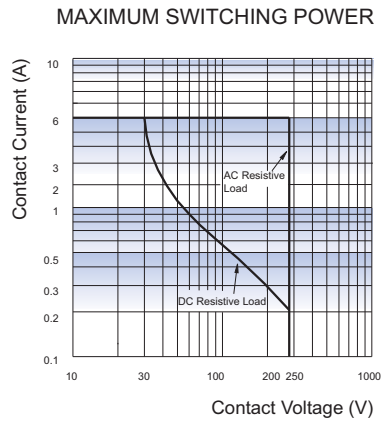


Unit: mm

(Bottom view)



CHARACTERISTIC CURVES



Test conditions:

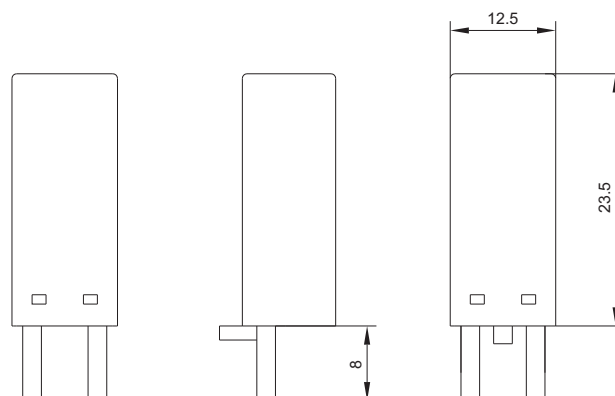
1NO, Resistive load, 250VAC,
Room temp., 1s on 9s off

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.



OUTLINE DIMENSIONS



SPECIFICATIONS FOR MODULES

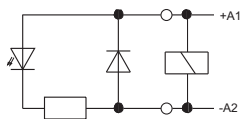
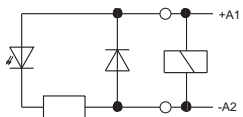
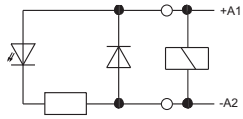
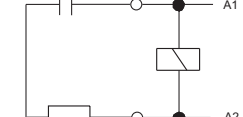
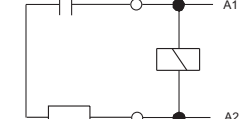
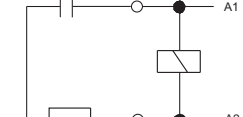
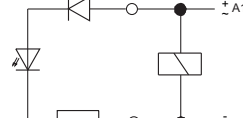
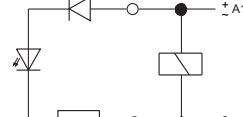
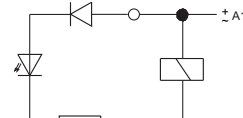
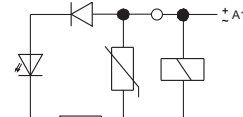
Ordering Code ¹⁾	Circuit Diagram	Voltage	Components	Functions
HFAA		6VDC to 220VDC	Diode	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current
HFAB		6VDC to 220VDC	Diode	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current
HFBC (R) HFBC (G)		6VDC to 24VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFBD (R) HFBD (G)		24VDC to 60VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFBE (R) HFBE (G)		110VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage

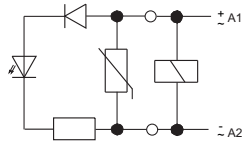
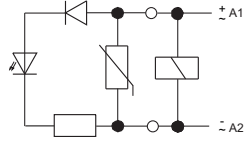
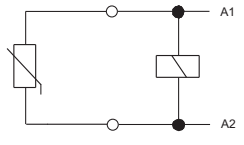
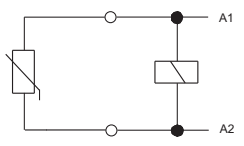
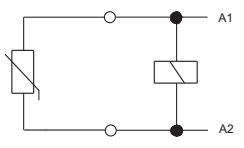
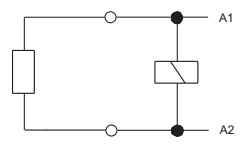


HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

Ordering Code ¹⁾	Circuit Diagram	Voltage	Components	Functions
HFCE (R) HFCE (G)		6VDC to 24VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFCG (R) HFCG (G)		24VDC to 60VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFCH (R) HFCH (G)		110VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFDE		6V to 24V AC / DC	Capacitor Resistor	<ul style="list-style-type: none"> ● With RC to protect the coil and to absorb instant starting surge current
HFDE		24V to 60V AC / DC	Capacitor Resistor	<ul style="list-style-type: none"> ● With RC to protect the coil and to absorb instant starting surge current
HFDE		110V to 230V AC / DC	Capacitor Resistor	<ul style="list-style-type: none"> ● With RC to protect the coil and to absorb instant starting surge current
HFEL (R) HFEL (G)		6V to 24V AC / DC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFEM (R) HFEM (G)		24V to 60V AC / DC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFEN (R) HFEN (G)		110VAC to 230VAC 110VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFFO (R) HFFO (G)		6V to 24V AC / DC	Diode LED Resistor Varistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage ● With varistor in parallel connection to absorb instant starting surge current

Ordering Code ¹⁾	Circuit Diagram	Voltage	Components	Functions
HFFP (R) HFFP (G)		24V to 60V AC / DC	Diode LED Resistor Varistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage ● With varistor in parallel connection to absorb instant starting surge current
HFFQ (R) HFFQ (G)		110VAC to 230VAC 110VDC	Diode LED Resistor Varistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage ● With varistor in parallel connection to absorb instant starting surge current
HFGR		24VAC	Varistor	<ul style="list-style-type: none"> ● With varistor in parallel connection to absorb instant starting surge current
HFGS		115VAC	Varistor	<ul style="list-style-type: none"> ● With varistor in parallel connection to absorb instant starting surge current
HFGT		230VAC	Varistor	<ul style="list-style-type: none"> ● With varistor in parallel connection to absorb instant starting surge current
HFHU		110VAC to 230VAC	Resistor	<ul style="list-style-type: none"> ● With resistor to protect the coil and to spread around current

Notes: 1) When there is LED in the module, please indicate (R) or (G) to show the color of the light, for example HFBC(R) or HFBC (G). (R) means red light while (G) means green light.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HFD2

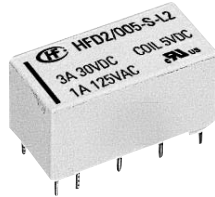
SUBMINIATURE DIP RELAY

CALUS

File No.:E133481



File No.:CQC13002095174(Single side stable)
CQC13002095175(Latching)



Features

- High sensitive: 150mW
- Matching standard 16 pin IC socket
- High switching capacity: 125VA / 90W
- Bifurcated contacts
- Epoxy sealed for automatic wave soldering and cleaning
- Single side stable and latching type available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (20.2 x 10.2 x 10.6) mm

CONTACT DATA

Contact arrangement	2C
Contact resistance	100mΩ max. (at 10mA 30mVDC)
Contact material	see ordering info.
Contact rating (Res. load)	1A 125VAC, 2A 30VDC 3A 30VDC
Max. switching voltage	250VAC / 220VDC
Max. switching current	3A
Max. switching power	125VA / 90W
Min. applicable load ¹⁾	10mV 10μA
Mechanical endurance	1 x 10 ⁸ OPS
Electrical endurance ²⁾	5 x 10 ⁴ OPS (2A 30VDC, Ag contact, Resistive load, at 70°C, 1s on 9s off)

Notes: 1) Min. applicable load is reference value. Please perform the confirmation test with the actual load before production since reference value may change according to switching frequencies, environmental conditions and expected contact resistance and reliability.

2) Electric endurance data are collected in one pair CO contact test.

COIL

		Sensitive	Standard
Coil power	Single side stable	Approx. 150mW	Approx. 200mW
	1 coil latching	Approx. 75mW	Approx. 100mW
	2 coils latching	Approx. 150mW	Approx. 200mW
Temperature rise	65K max.		

SAFETY APPROVAL RATINGS

UL/CUL	AgPd/ AgPd+Gold plated	0.5A 60VDC 2A 30VDC 1A 120VAC 2A 125VAC 3A 30VDC
	Ag+Gold plated/ Ag+Gold plated	2A 30VDC(at 70°C)

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	1 coil: 1500VAC 1min 2 coils: 1000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		4.5ms max.
Release time (at nomi. volt.)		3.5ms max.
Set time (latching)		4.5ms max.
Reset time (latching)		4.5ms max.
Ambient temperature		-40 °C to 85 °C
Humidity		5% to 85% RH
Vibration resistance		10Hz to 55Hz 1.5mm DA
Shock resistance	Functional	490m/s ²
	Destructive	980m/s ²
Termination		PCB (DIP)
Unit weight		Approx. 4.5g
Construction		Plastic sealed

Notes: 1) The data shown above are initial values.

2) UL insulation system: Class A

COIL DATA

at 23°C

Single side stable Standard type

Coil Code	Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Coil Resistance x(1±10%) Ω	Max. Voltage VDC
003-M	3	2.30	0.3	45	6
005-M	5	3.75	0.5	125	10
006-M	6	4.50	0.6	180	12
009-M	9	6.75	0.9	405	18
012-M	12	9.00	1.2	720	24
015-M	15	11.25	1.5	1125	30
024-M	24	18.0	2.4	2880	48
048-M	48	36.0	4.8	11520	96



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA

at 23°C

Single side stable Sensitive type

Coil Code	Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Coil Resistance $\times(1\pm10\%)$ Ω	Max. Voltage VDC
005-S	5	4.0	0.5	167	11.5
006-S	6	4.8	0.6	240	13.8
009-S	9	7.2	0.9	540	20.8
012-S	12	9.6	1.2	960	27.7
015-S	15	12.0	1.5	1500	34.6
024-S	24	19.2	2.4	3840	55.4

1 coil latching Standard type

Coil Code	Nominal Voltage VDC	Set / Reset Voltage VDC max.	Coil Resistance $\times(1\pm10\%)$ Ω	Max. Voltage VDC
003-M-L1	3	2.25	90	8.4
005-M-L1	5	3.75	250	14
006-M-L1	6	4.5	360	17
009-M-L1	9	6.75	810	25
012-M-L1	12	9.0	1440	34
015-M-L1	15	11.25	2220	42
024-M-L1	24	18.0	4000	56

2 coils latching Standard type

Coil Code	Nominal Voltage VDC	Set / Reset Voltage VDC max.	Coil Resistance $\times(1\pm10\%)$ Ω	Max. Voltage VDC
003-M-L2	3	2.25	45	6
005-M-L2	5	3.75	125	10
006-M-L2	6	4.5	180	12
009-M-L2	9	6.75	405	18
012-M-L2	12	9.0	720	24
015-M-L2	15	11.25	1125	30
024-M-L2	24	18.0	2040	48

1 coil latching Sensitive type

Coil Code	Nominal Voltage VDC	Set / Reset Voltage VDC max.	Coil Resistance $\times(1\pm10\%)$ Ω	Max. Voltage VDC
003-S-L1	3	2.4	60	6.9
005-S-L1	5	4.0	330	16
006-S-L1	6	4.8	480	19
009-S-L1	9	7.2	1080	29
012-S-L1	12	9.6	1920	39
015-S-L1	15	12.0	3000	43
024-S-L1	24	19.2	7680	78

2 coils latching Sensitive type

Coil Code	Nominal Voltage VDC	Set / Reset Voltage VDC max.	Coil Resistance $\times(1\pm10\%)$ Ω	Max. Voltage VDC
003-S-L2	3	2.4	60	6.9
005-S-L2	5	4.0	167	11.5
006-S-L2	6	4.8	240	13.8
009-S-L2	9	7.2	540	20.8
012-S-L2	12	9.6	960	27.7
015-S-L2	15	12.0	1500	34.6
024-S-L2	24	19.2	3840	55.4

Notes: 1) When user's requirements can't be found in the above table, special order allowed.

2) In case 5V of transistor drive circuit, it is recommended to use 4.5V type relay, and 3V to use 2.4V type relay.

TYPICAL CONTACT LIFE EXPECTANCY

Voltage	Power	Electrical endurance	
		Resistive Load	Inductive Load (For AC $\cos\phi=0.7$)
50mVDC	50 μ W	5 x 10 ⁷ OPS	5 x 10 ⁷ OPS
30VDC	20W	3 x 10 ⁶ OPS	1 x 10 ⁶ OPS
30VDC	30W	1 x 10 ⁶ OPS	3 x 10 ⁵ OPS
30VDC	60W	1 x 10 ⁵ OPS	1.5 x 10 ⁴ OPS
60VDC	20W	3 x 10 ⁶ OPS	--
60VDC	30W	5 x 10 ⁵ OPS	--
60VDC	60W	1 x 10 ⁵ OPS	--
30VAC	40VA	3 x 10 ⁶ OPS	1 x 10 ⁶ OPS
30VAC	80VA	1 x 10 ⁶ OPS	3 x 10 ⁵ OPS
30VAC	120VA	1 x 10 ⁵ OPS	1.5 x 10 ⁴ OPS
60VAC	40VA	3 x 10 ⁶ OPS	1 x 10 ⁶ OPS
60VAC	80VA	1 x 10 ⁶ OPS	3 x 10 ⁵ OPS
60VAC	120VA	1 x 10 ⁵ OPS	1.5 x 10 ⁴ OPS
125VAC	40VA	3 x 10 ⁶ OPS	1 x 10 ⁶ OPS
125VAC	80VA	1 x 10 ⁶ OPS	3 x 10 ⁵ OPS
125VAC	125VA	1 x 10 ⁵ OPS	1.5 x 10 ⁴ OPS

ORDERING INFORMATION

Type	HFD2 / 012 -S -L2 -A (XXX)			
Coil voltage	3, 5, 6, 9, 12, 15, 24, 48VDC ¹⁾			
Coil power	M: Standard S: Sensitive			
Sort	L1: 1 coil latching L2: 2 coils latching Nil: Single side stable			
Contact material	A: AgPd/AgPd+Gold plated D: Ag+Gold plated/Ag+Gold plated Nil: AgPd/Ag+Gold plated ²⁾			
Special code ³⁾	XXX: Customer special requirement Nil: Standard			

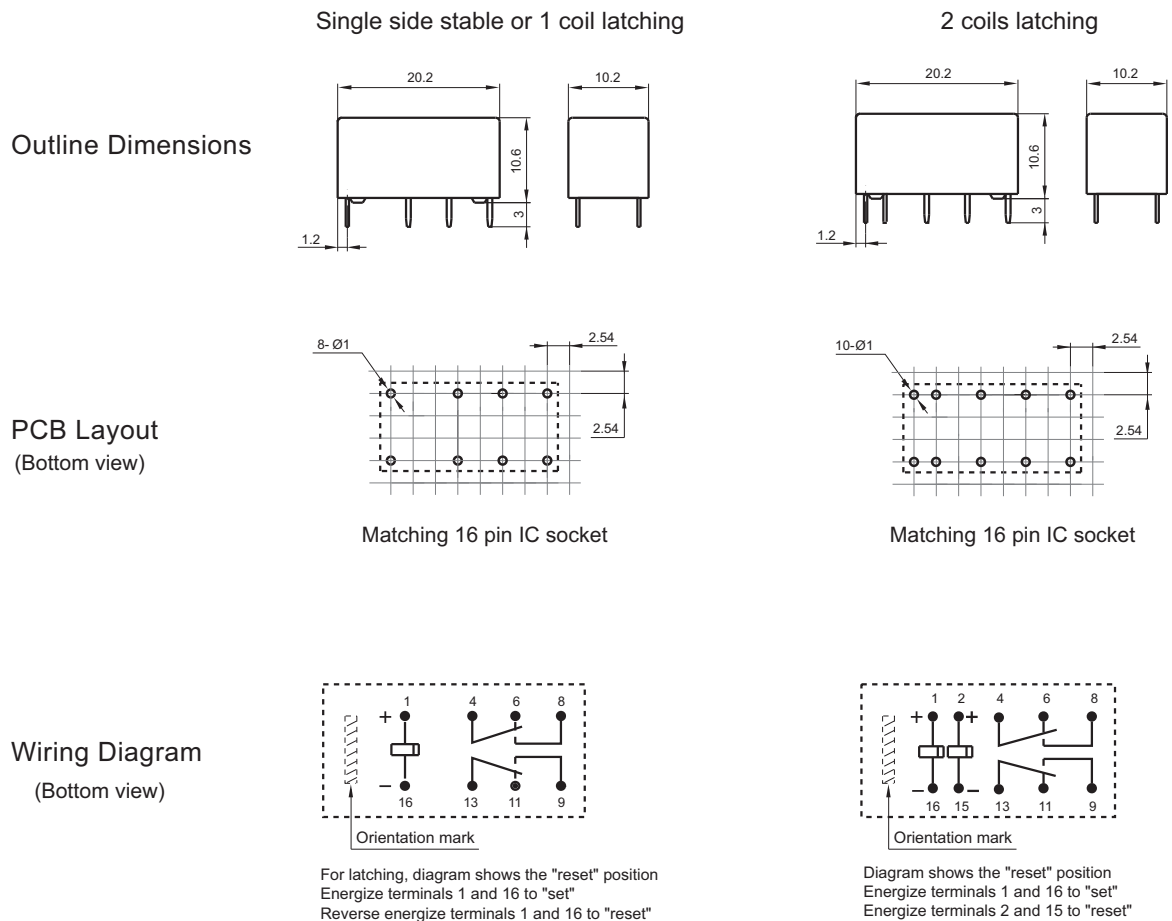
Notes: 1) 48VDC coil voltage is only for single side stable & standard type.

2) Not for new design.

3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm



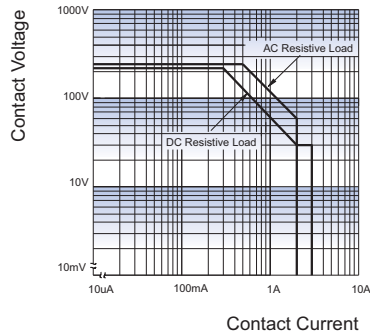
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

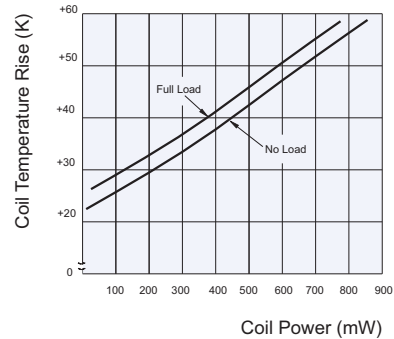
MAXIMUM SWITCHING POWER



Test conditions:

Resistive load, at 70°C, 1s on 9s off.

COIL TEMPERATURE RISE



Notice

- 1) This relay is highly sensitive polarized relay, if correct polarity is not applied to the coil terminals, the relay does not operate properly.
- 2) To avoid using relays under strong magnetic field which will change the parameters of relays such as pick-up voltage and drop-out voltage.
- 3) Relay is on the "reset" status when being released from stock, with the consideration of shock risen from transit and relay mounting, it should be changed to the "set" status when application(connecting to the power supply). Please reset the relay to "set" or "reset" status on request.
- 4) Energizing coil with rated voltage is basic for normal operation of a relay, please make sure the energized voltage to relay coil have reached the rated voltage. Regarding latching relay, in order to maintain the "set" or "reset" status, impulse width of the rated voltage applied to coil should be more than 5 times of "set" or "reset" time.
- 5) For 2 coil latching relay, do not energize voltage to "set" coil and "reset" coil simultaneously.
- 6) The relay may be damaged because of falling or when shocking conditions exceed the requirement.
- 7) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 8) Regarding the plastic sealed relay, we should leave it cooling naturally untill below 40°C after welding, then clean it and deal with coating, remarkably the temperature of solvents should also be controlled below 40°C. Please avoid cleaning the relay by ultrasonic, avoid using the solvents like gasoline, Freon, and so on, which would affect the configuration of relay or influence the environment.
- 9) About preferable condition of operation, storage and transportation, please refer to "Explanation to terminology and guidetines of relay".

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFD3

SUBMINIATURE SIGNAL RELAY



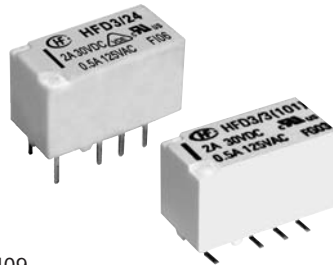
File No.:E133481



File No.:40018867



File No.:CQC1400207409



Features

- Surge withstand voltage up to 2500VAC, meets FCC Part 68 and Telecordia
- Meets EN60950 / EN41003
- SMT and DIP types available
- Bifurcated contacts
- Single side stable and latching type available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (15.0 x 7.5 x 9.0) mm

CONTACT DATA

Contact arrangement	2C
Contact resistance	100mΩ max.(at 10mA 30mVDC)
Contact material	AgPd + Au plated, AgNi + Au plated
Contact rating (Res. load)	2A 30VDC 3A 30VDC 0.5A 125VAC
Max. switching current	4A
Max. switching voltage	277VAC / 220VDC
Max. switching power	62.5VA / 60W
Min. applicable load ¹⁾	10mV 10μA
Mechanical endurance	1 x 10 ⁸ OPS
Electrical endurance ²⁾	1 x 10 ⁵ OPS (0.5A 125VAC, Resistive load, AgNi + Au plated, at 85°C, 1s on 9s off)

Notes: 1) Min. applicable load is reference value. Please perform the confirmation test with the actual load before production since reference value may change according to switching frequencies, environmental conditions and expected contact resistance and reliability.
2) Electric endurance data are collected in one pair CO contact test.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	2000VAC 1min ¹⁾
	Between open contacts	1000VAC 1min
	Between contact sets	1500VAC 1min
Surge withstand voltage		
Between open contacts (10/160μs)		1500VAC (FCC part 68)
Between coil & contacts (2/10μs)		2500VAC (Telecordia)
Operate time (Set time)		4ms max.
Release time (Reset time)		4ms max.
Ambient temperature		-40°C to 85°C
Humidity		5% to 85% RH
Vibration resistance		10Hz to 55Hz 3.3mm DA
Shock resistance	Functional	735m/s ²
	Destructive	980m/s ²
Termination		DIP, SMT
Unit weight		Approx. 2g
Moisture sensitivity levels (Only for SMT type, JEDEC-STD-020)		MSL-3
Construction		Plastic sealed

Notes: 1) The data shown above are initial values.
2) UL insulation system: Class A

SAFETY APPROVAL RATINGS

UL/CUL	AgNi + Au plated	2A 30VDC at 85°C
		3A 30VDC at 85°C
		0.5A 125VAC at 85°C
VDE	AgPd + Au plated	0.5A 125VAC at 70°C
		2A 30VDC at 85°C
		3A 30VDC at 70°C
	AgNi + Au plated	0.5A 125VAC at 85°C
		2A 30VDC at 85°C
		3A 30VDC at 70°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.

COIL

Coil power	Single side stable	Approx. 140mW
	1 coil latching	Approx. 100mW
	2 coils latching	Approx. 200mW
Temperature rise		50K max.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.11

COIL DATA

at 23°C

Single side stable

Coil Code	Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Coil Resistance Ω	Nominal Power mW approx.	Max. Voltage VDC
HFD3/1.5	1.5	1.13	0.15	16 x (1±10%)	140	2.2
HFD3/2.4	2.4	1.8	0.24	41 x (1±10%)	140	3.6
HFD3/3	3	2.25	0.3	64.3 x (1±10%)	140	4.5
HFD3/4.5	4.5	3.38	0.45	145 x (1±10%)	140	6.7
HFD3/5	5	3.75	0.5	178 x (1±10%)	140	7.5
HFD3/6	6	4.5	0.6	257 x (1±10%)	140	9
HFD3/9	9	6.75	0.9	579 x (1±10%)	140	13.5
HFD3/12	12	9	1.2	1028 x (1±10%)	140	18
HFD3/24	24	18	2.4	4114 x (1±10%)	140	36
HFD3/48	48	36	4.8	8533 x (1±10%)	270	57.6

1 coil latching

Coil Code	Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	Coil Resistance Ω	Nominal Power mW approx.	Max. Voltage VDC
HFD3/1.5-L1	1.5	1.13	1.13	22.5 x (1±10%)	100	2.7
HFD3/2.4-L1	2.4	1.8	1.8	58 x (1±10%)	100	4.3
HFD3/3-L1	3	2.25	2.25	90 x (1±10%)	100	5.4
HFD3/4.5-L1	4.5	3.38	3.38	203 x (1±10%)	100	8.1
HFD3/5-L1	5	3.75	3.75	250 x (1±10%)	100	9
HFD3/6-L1	6	4.5	4.5	360 x (1±10%)	100	10.8
HFD3/9-L1	9	6.75	6.75	810 x (1±10%)	100	16.2
HFD3/12-L1	12	9	9	1440 x (1±10%)	100	21.6
HFD3/24-L1	24	18	18	5760 x (1±10%)	100	43.2

2 coils latching

Coil Code	Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	Coil Resistance Ω	Nominal Power mW approx.	Max. Voltage VDC
HFD3/1.5-L2	1.5	1.13	1.13	11.2 x (1±10%)	200	2.2
HFD3/2.4-L2	2.4	1.8	1.8	29 x (1±10%)	200	3.6
HFD3/3-L2	3	2.25	2.25	45 x (1±10%)	200	4.5
HFD3/4.5-L2	4.5	3.38	3.38	101 x (1±10%)	200	6.7
HFD3/5-L2	5	3.75	3.75	125 x (1±10%)	200	7.5
HFD3/6-L2	6	4.5	4.5	180 x (1±10%)	200	9.0
HFD3/9-L2	9	6.75	6.75	405 x (1±10%)	200	13.5
HFD3/12-L2	12	9	9	720 x (1±10%)	200	18
HFD3/24-L2	24	18	18	2880 x (1±10%)	200	36

Notes: 1) When user's requirements can't be found in the above table, special order allowed.

2) In case 5V of transistor drive circuit, it is recommended to use 4.5V type relay, and 3V to use 2.4V type relay

ORDERING INFORMATION

	HFD3 /	24	-L2	4	S	R	(XXX)
Type							
Coil voltage	1.5, 2.4, 3, 4.5, 5, 6, 9, 12, 24, 48VDC ¹⁾						
Sort	L1: 1 coil latching Nil: Single side stable L2: 2 coils latching						
Contact material	4: AgPd+Gold plated Nil: AgNi+Gold plated						
Terminal type	S: Standard SMT S1: Short terminal SMT Nil: DIP						
Packing style	R: Tape and reel packing (Only for SMT type) ²⁾ Nil: Tube packing(Only for DIP type)						
Special code ³⁾	XXX: Customer special requirement Nil: Standard						

Notes: 1) 48VDC coil voltage is only for single side stable version.

2) R type (tape and reel) packing is moisture-proof which meets requirement of MSL-3. Please choose R type packing for SMT products. For R type, the letter "R" will only be printed on packing tag but not on relay cover. Tube packing is normally not available for SMT products unless specially requested by customer. But please note that tube packing is not moisture-proof so please bake the products before use according to description of Notice 11 herewith. In addition, tube packaging will be adopted when the ordering quantity of R type is equal to or less than 100 pieces unless otherwise specified.

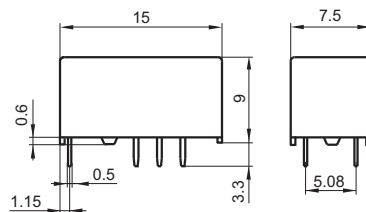
3) The customer special requirement express as special code after evaluating by Hongfa. e.g.(131): The Dielectric strength between coil & contacts is 3000VAC 1min for single side stable and 1 coil latching version.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

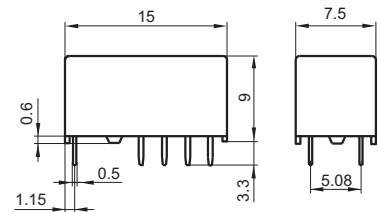
Unit: mm

Outline Dimensions
(DIP type)

Single side stable & 1 coil latching

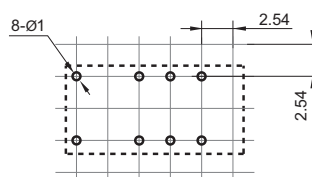


2 coils latching

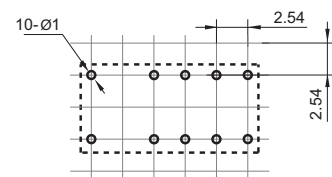


PCB Layout
(DIP type)
(Bottom view)

Single side stable & 1 coil latching

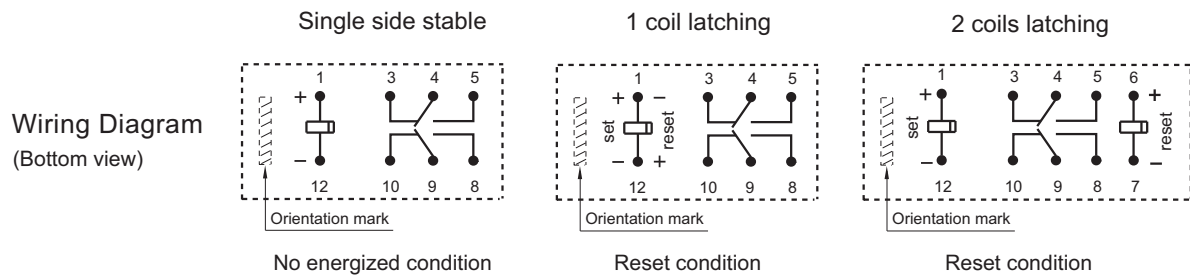
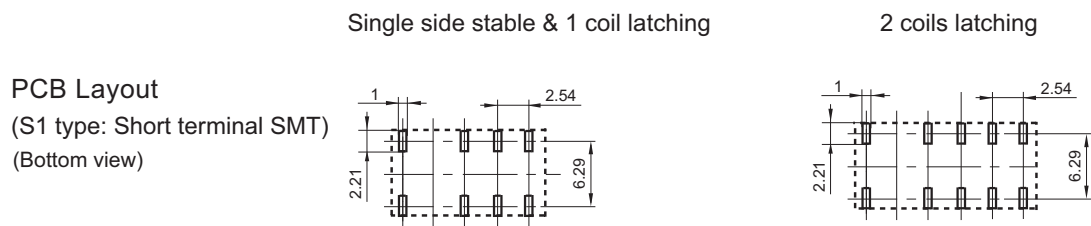
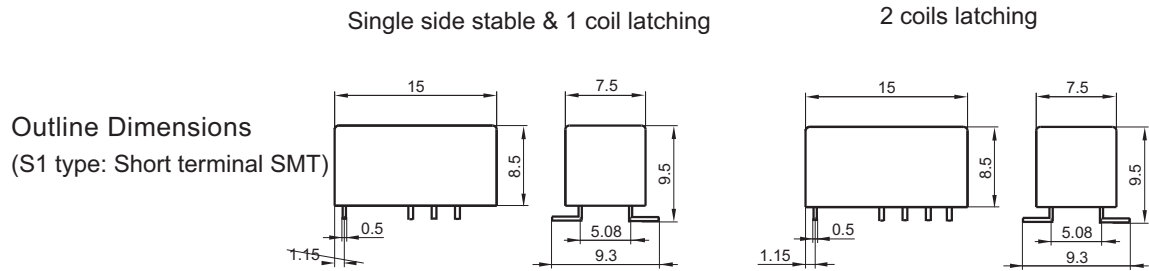
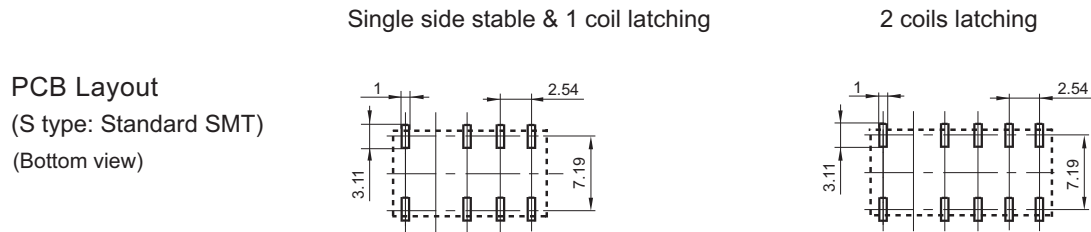
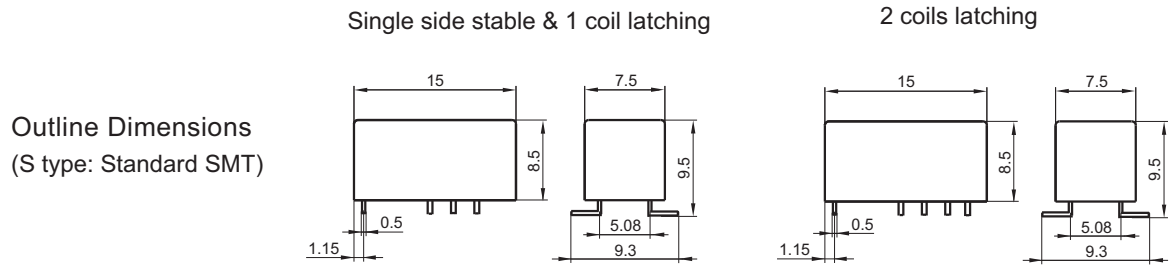


2 coils latching

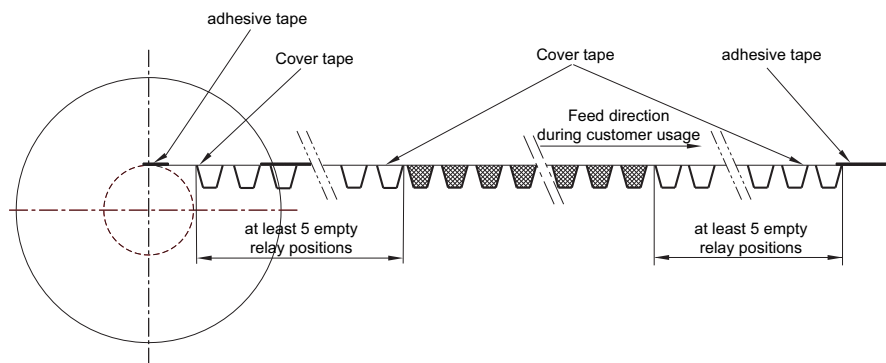
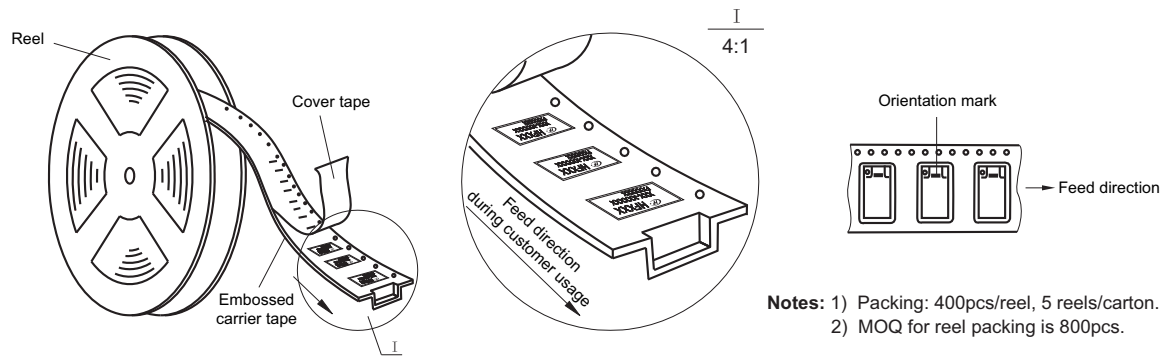


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

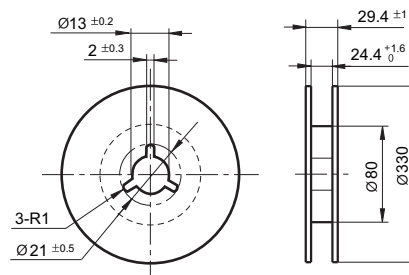
Unit: mm



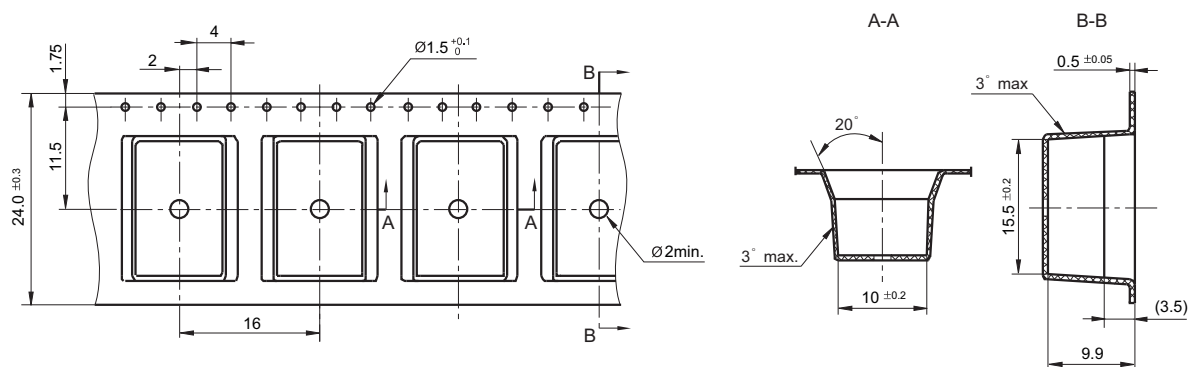
Direction of Relay Insertion



Reel Dimensions



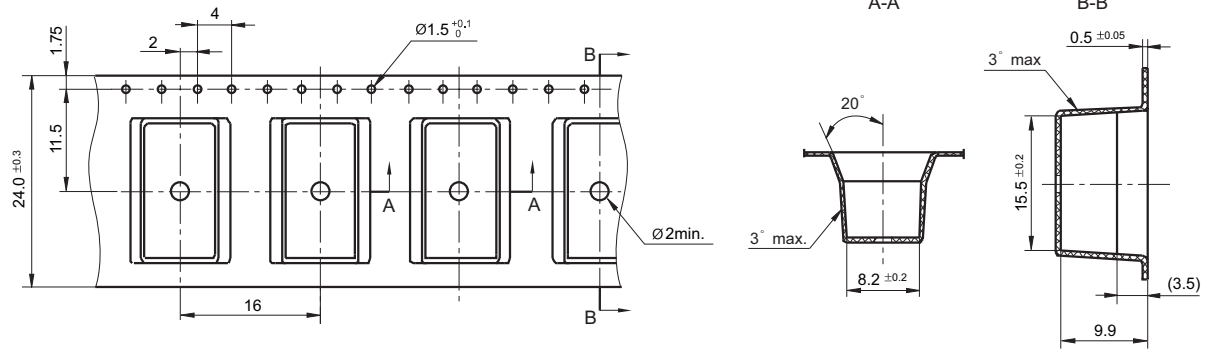
Tape Dimensions (S type: Standard SMT)



TAPE PACKING

Unit: mm

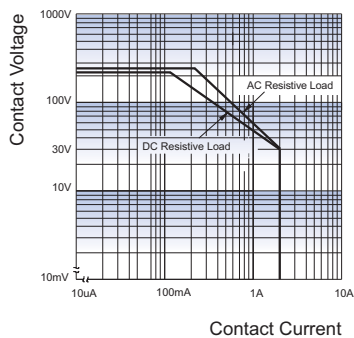
Tape Dimensions (S1 type: Short terminal SMT)



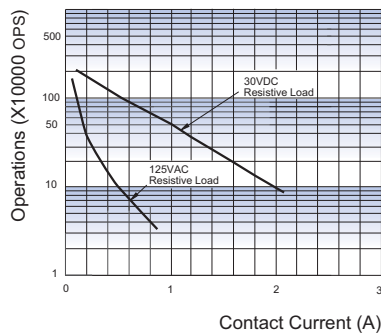
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.
 2) The tolerance without indicating for PCB layout is always ± 0.1 mm.
 3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



ENDURANCE CURVE

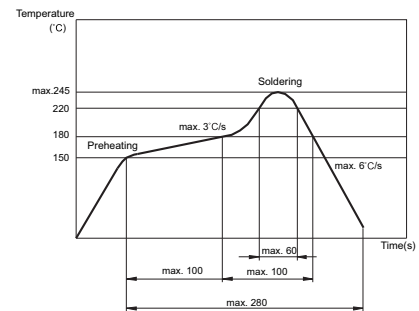


Test conditions:

Resistive load, at 85°C, 1s on 9s off.

REFLOW WELDING, TEMPERATURE ON PCB BOARD

RECOMMENDED WELDING TEMPERATURE



Notice

- 1) This relay is highly sensitive polarized relay, if correct polarity is not applied to the coil terminals, the relay does not operate properly.
- 2) To avoid using relays under strong magnetic field which will change the parameters of relays such as pick-up voltage and drop-out voltage.
- 3) Relay is on the "reset" status when being released from stock, with the consideration of shock risen from transit and relay mounting, it should be changed to the "set" status when application(connecting to the power supply). Please reset the relay to "set" or "reset" status on request.
- 4) Energizing coil with rated voltage is basic for normal operation of a relay, please make sure the energized voltage to relay coil have reached the rated voltage. Regarding latching relay, in order to maintain the "set" or "reset" status, impulse width of the rated voltage applied to coil should be more than 5 times of "set" or "reset" time.
- 5) For 2 coil latching relay, do not energize voltage to "set" coil and "reset" coil simultaneously.
- 6) The relay may be damaged because of falling or when shocking conditions exceed the requirement.
- 7) For SMT products, validation with real application should be done before your series production, if the reflow-soldering temperature curve is out of our recommendation. Generally, two-time reflow-soldering is not recommended for the relay. However, if two-time reflow-soldering is required, a 60-min. interval should be guaranteed and a validation should be done before production.
- 8) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 9) Regarding the plastic sealed relay, we should leave it cooling naturally until below 40°C after welding, then clean it and deal with coating, remarkably the temperature of solvents should also be controlled below 40°C. Please avoid cleaning the relay by ultrasonic, avoid using the solvents like gasoline, Freon, and so on, which would affect the configuration of relay or influence the environment.
- 10) About preferable condition of operation, storage and transportation, please refer to "Explanation to terminology and guidelines of relay".
- 11) Relays packaged in moisture barrier bags meet MSL-3 requirements. The relays should be stored at ambient conditions of $\leq 30^\circ\text{C}$ and $\leq 60\%$ RH after they are removed from their packaging, and should be used within 168 hours. If the relays cannot be used within 168 hours, please repack them or store them in a drying oven at $25^\circ\text{C} \pm 5^\circ\text{C}$, $\leq 10\%$ RH. Otherwise, relays may be subjected to a soldering test to check their performance, or they may be used after keeping them in an oven for 72 hours at with $50^\circ\text{C} \pm 5^\circ\text{C}$, $\leq 30\%$ RH.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFD3-V

SUBMINIATURE SIGNAL RELAY



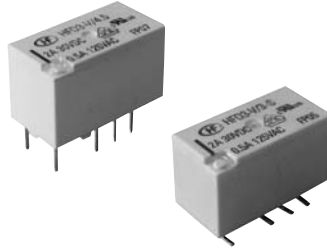
File No.: E133481



File No.: 40018867



File No.: CQC14002107409



Features

- 3kV dielectric strength (between coil and contacts)
- Surge withstand voltage up to 6000VAC, meets FCC Part 68 and Telecordia
- Min. creepage is 2.5mm (between coil and contact), Min. clearance is 2.0mm (between coil and contact)
- Meets EN60950 / EN41003
- SMT and DIP types available
- Bifurcated contacts
- Single side stable and latching types available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (15.0 x 7.5 x 9.4) mm

CONTACT DATA

Contact arrangement	2C
Contact resistance	100mΩ max. (at 10mA 30mVDC)
Contact material	AgPd + Au plated, AgNi + Au plated
Contact rating (Res. load)	2A 30VDC 0.5A 125VAC
Max. switching current	4A
Max. switching voltage	277VAC / 220VDC
Max. switching power	62.5VA / 60W
Min. applicable load	10mV 10μA ¹⁾
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance ²⁾	1 x 10 ⁵ OPS (0.5A 125VAC, Resistive load, AgNi + Au plated, at 85°C, 1s on 9s off)

Notes: 1) Min. applicable load is reference value. Please perform the confirmation test with the actual load before production since reference value may change according to switching frequencies, environmental conditions and expected contact resistance and reliability.
2) Electric endurance data are collected in one pair CO contact test.

SAFETY APPROVAL RATINGS

UL/CUL	AgNi + Au plated	2A 30VDC at 85°C 0.5A 125VAC at 85°C
	AgPd + Au plated	0.5A 125VAC at 70°C
VDE	AgNi + Au plated	2A 30VDC at 85°C 0.5A 125VAC at 85°C

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	3000VAC 1min
	Between open contacts	1500VAC 1min
	Between contact sets	1500VAC 1min
Surge withstand voltage		
Between open contacts(10/160μs)		2.5kV
Between coil & contacts(1.2/50μs)		6kV
Operate time (Set time)		6ms max.
Release time (Reset time)		6ms max.
Ambient temperature		-40°C to 85°C
Humidity		5% to 85% RH
Vibration resistance	Functional	10Hz to 55Hz 3.3mm DA
	Destructive	10Hz to 55Hz 5.0mm DA
Shock resistance	Functional	735m/s ²
	Destructive	980m/s ²
Termination		DIP, SMT
Unit weight		Approx. 2g
Moisture sensitivity levels (Only for SMT type, JEDEC-STD-020)		MSL-3
Construction		Plastic sealed

Notes: The data shown above are initial values.

COIL

Coil power	Single side stable	200mW
	1 coil latching	140mW
Temperature rise		50K max.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.20

COIL DATA

at 23°C

Single side stable

Coil Code	Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Coil Resistance Ω	Nominal Power mW	Max. Voltage VDC
HFD3-V/1.5	1.5	1.13	0.15	11.2 x (1±10%)	200	2.2
HFD3-V/2.4	2.4	1.8	0.24	28.8 x (1±10%)	200	3.6
HFD3-V/3	3	2.25	0.3	45 x (1±10%)	200	4.5
HFD3-V/4.5	4.5	3.38	0.45	101 x (1±10%)	200	6.7
HFD3-V/5	5	3.75	0.5	125 x (1±10%)	200	7.5
HFD3-V/6	6	4.5	0.6	180 x (1±10%)	200	9
HFD3-V/9	9	6.75	0.9	405 x (1±10%)	200	13.5
HFD3-V/12	12	9	1.2	720 x (1±10%)	200	18
HFD3-V/24	24	18	2.4	2880 x (1±10%)	200	36

1 coil latching

Coil Code	Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC max.	Coil Resistance Ω	Nominal Power mW	Max. Voltage VDC
HFD3-V/1.5-L1	1.5	1.13	1.13	16.1 x (1±10%)	140	2.7
HFD3-V/2.4-L1	2.4	1.8	1.8	41 x (1±10%)	140	4.3
HFD3-V/3-L1	3	2.25	2.25	64.3 x (1±10%)	140	5.4
HFD3-V/4.5-L1	4.5	3.38	3.38	145 x (1±10%)	140	8.1
HFD3-V/5-L1	5	3.75	3.75	178 x (1±10%)	140	9
HFD3-V/6-L1	6	4.5	4.5	257 x (1±10%)	140	10.8
HFD3-V/9-L1	9	6.75	6.75	579 x (1±10%)	140	16.2
HFD3-V/12-L1	12	9	9	1028 x (1±10%)	140	21.6
HFD3-V/24-L1	24	18	18	4114 x (1±10%)	140	43.2

Notes: 1) In case 5V of transistor drive circuit, it is recommended to use 4.5V type relay, and 3V to use 2.4V type relay.

ORDERING INFORMATION

HFD3-V /		24	-L1	4	S	R	(XXX)
Type							
Coil voltage	1.5, 2.4, 3, 4.5, 5, 6, 9, 12, 24VDC						
Sort	L1: 1 coil latching Nil: Single side stable						
Contact material	4: AgPd+Gold plated Nil: AgNi+Gold plated						
Terminal type	S: Standard SMT S1: Short terminal SMT Nil: DIP						
Packing style	R: Tape and reel packing (Only for SMT type) ¹⁾ Nil: Tube packing(Only for DIP type)						
Special code ³⁾	XXX: Customer special requirement Nil: Standard						

Notes: 1) R type (tape and reel) packing is moisture-proof which meets requirement of MSL-3. Please choose R type packing for SMT products. For R type, the letter "R" will only be printed on packing tag but not on relay cover. Tube packing is normally not available for SMT products unless specially requested by customer. But please note that tube packing is not moisture-proof so please bake the products before use according to description of Notice 11 herewith. In addition, tube packaging will be adopted when the ordering quantity of R type is equal to or less than 100 pieces unless otherwise specified.

2) The customer special requirement express as special code after evaluating by Hongfa. e.g.(131): The Dielectric strength between coil & contacts is 3000VAC 1min for single side stable and 1 coil latching version.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

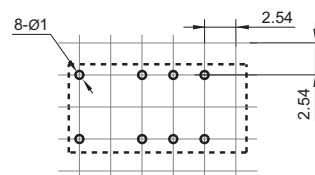
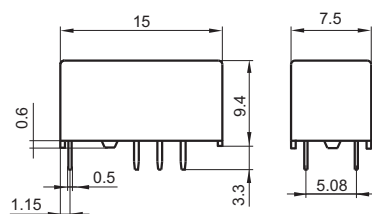
Unit: mm

Outline Dimensions

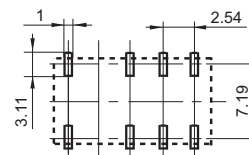
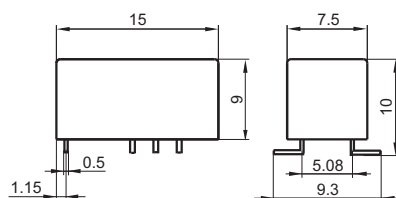
PCB Layout

(Bottom view)

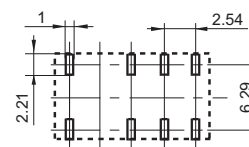
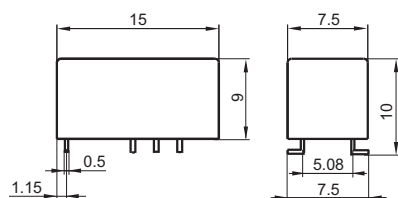
DIP type



S type:
Standard SMT

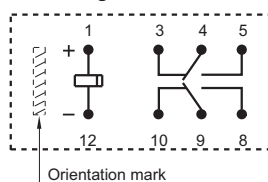


S1 type:
Short terminal SMT



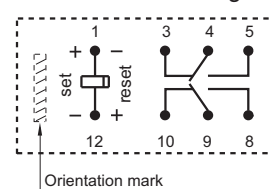
Wiring Diagram
(Bottom view)

Single side stable



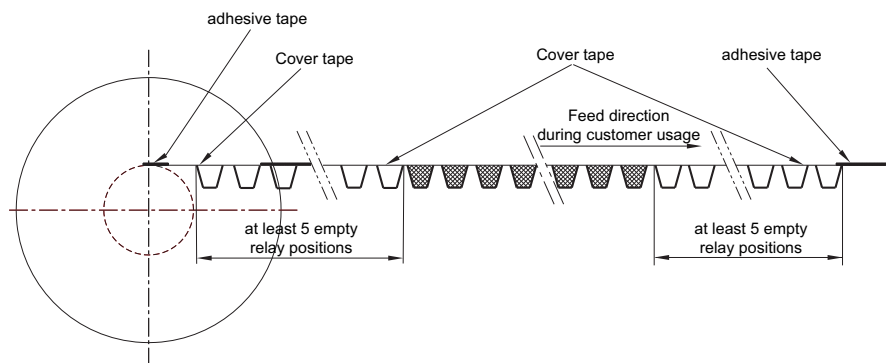
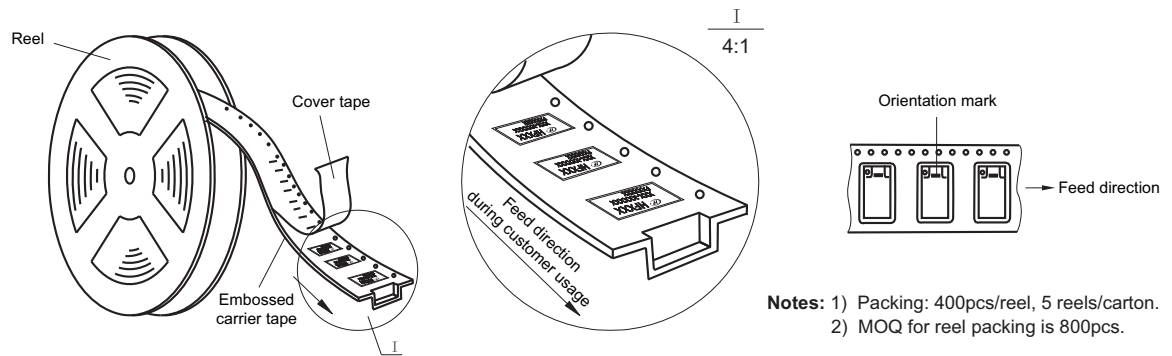
No energized condition

1 coil latching

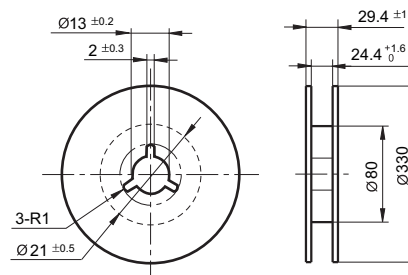


reset condition

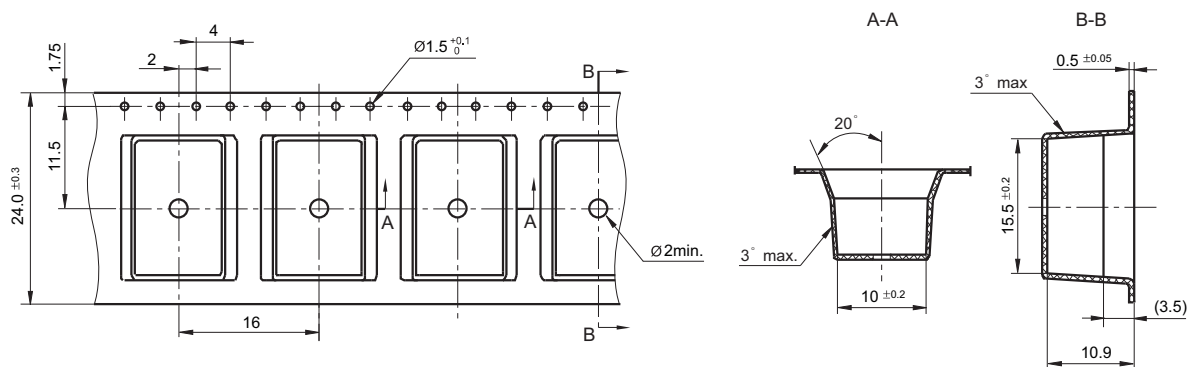
Direction of Relay Insertion



Reel Dimensions



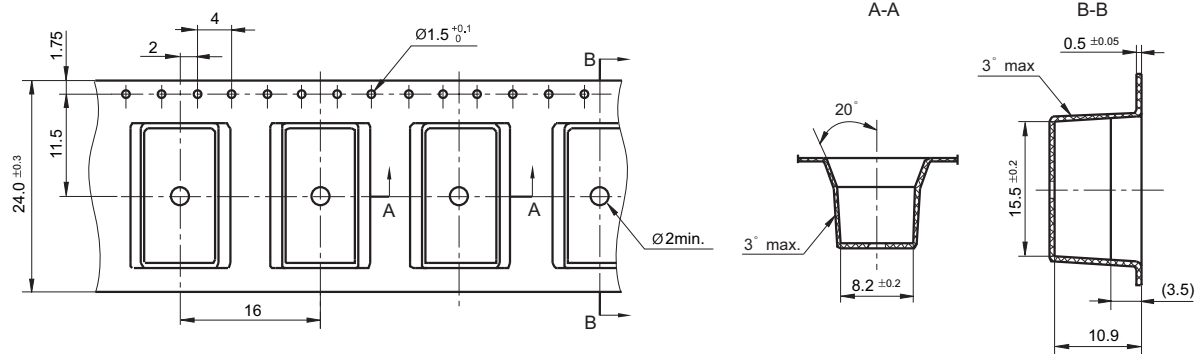
Tape Dimensions (S type: Standard SMT)



TAPE PACKING

Unit: mm

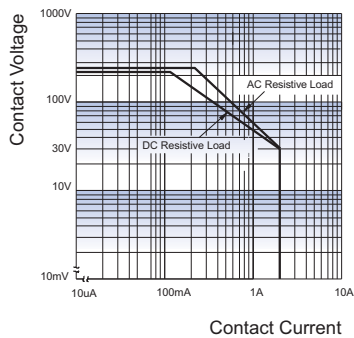
Tape Dimensions (S1 type: Short terminal SMT)



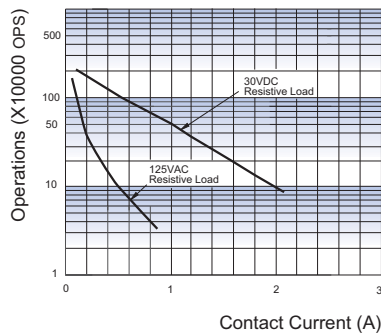
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.
 2) The tolerance without indicating for PCB layout is always ±0.1mm.
 3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



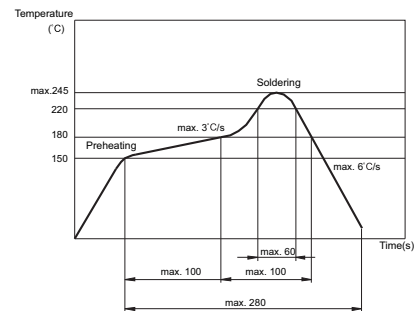
ENDURANCE CURVE



Test conditions:

Resistive load, at 85°C, 1s on 9s off.

REFLOW WELDING,TEMPERATURE ON PCB BOARD
RECOMMENDED WELDING TEMPERATURE



Notice

- 1) This relay is highly sensitive polarized relay, if correct polarity is not applied to the coil terminals, the relay does not operate properly.
- 2) To avoid using relays under strong magnetic field which will change the parameters of relays such as pick-up voltage and drop-out voltage.
- 3) Relay is on the "reset" status when being released from stock, with the consideration of shock risen from transit and relay mounting, it should be changed to the "set" status when application(connecting to the power supply). Please reset the relay to "set" or "reset" status on request.
- 4) Energizing coil with rated voltage is basic for normal operation of a relay, please make sure the energized voltage to relay coil have reached the rated voltage. Regarding latching relay, in order to maintain the "set" or "reset" status, impulse width of the rated voltage applied to coil should be more than 5 times of "set" or "reset" time.
- 5) The relay may be damaged because of falling or when shocking conditions exceed the requirement.
- 6) For SMT products, validation with real application should be done before your series production, if the reflow-soldering temperature curve is out of our recommendation. Generally, two-time reflow-soldering is not recommended for the relay. However, if two-time reflow-soldering is required, a 60-min. interval should be guaranteed and a validation should be done before production.
- 7) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 8) Regarding the plastic sealed relay, we should leave it cooling naturally until below 40°C after welding, then clean it and deal with coating, remarkably the temperature of solvents should also be controlled below 40°C. Please avoid cleaning the relay by ultrasonic, avoid using the solvents like gasoline, Freon, and so on, which would affect the configuration of relay or influence the environment.
- 9) About preferable condition of operation, storage and transportation, please refer to "Explanation to terminology and guidelines of relay".
- 10) Relays packaged in moisture barrier bags meet MSL-3 requirements. The relays should be stored at ambient conditions of ≤30°C and ≤60% RH after they are removed from their packaging, and should be used within 168 hours. If the relays cannot be used within 168 hours, please repack them or store them in a drying oven at 25°C ±5°C, ≤10% RH. Otherwise, relays may be subjected to a soldering test to check their performance, or they may be used after keeping them in an oven for 72 hours at with 50°C ±5°C, ≤30% RH.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFD4

SUBMINIATURE SIGNAL RELAY



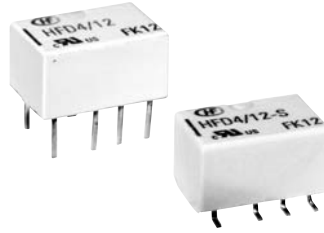
File No.:E133481



File No.:R50333270



File No.:CQC16002154335(Single side stable)
CQC16002154336(Latching)



Features

- Offers excellent board space savings
- Surge withstand voltage up to 2500V, meets FCC Part 68 and Telecordia
- Meets EN60950/EN41003
- SMT and DIP types available
- High contact capacity 2A 30VDC
- Low power consumption
- Single side stable and latching type available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (10.0 x 6.5 x 5.4) mm

CONTACT DATA

Contact arrangement	2C
Contact resistance	100mΩ max. (at 10mA 30mVDC)
Contact material	AgPd + Au plated, AgNi + Au plated
Contact rating (Res. load)	2A 30VDC 0.5A 125VAC
Max. switching current	2A
Max. switching voltage	250VAC / 220VDC
Max. switching power	62.5VA / 60W
Min. applicable load ¹⁾	10mV 10μA
Mechanical endurance	1 x 10 ⁵ OPS
Electrical endurance ²⁾	1 x 10 ⁵ OPS (AgNi + Au plated, 0.5A 125VAC, Resistive load, at 40°C, 1s on 9s off)

Notes: 1) Min. applicable load is reference value. Please perform the confirmation test with the actual load before production since reference value may change according to switching frequencies, environmental conditions and expected contact resistance and reliability.

2) Electric endurance data are collected in one pair CO contact test.

COIL

Coil power	Single side stable	See "COIL DATA"
	1 coil latching	See "COIL DATA"
Temperature rise	50K max.(At 1A load, 85°C environment)	

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	1600VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	1800VAC 1min
Surge withstand voltage		
Between open contacts (10/160μs)		1500VAC (FCC part 68)
Between coil & contacts (2/10μs)		2500VAC (Telecordia)
Operate time (Set time)		3ms max.
Release time (Reset time)		3ms max.
Ambient temperature		-40°C to 85°C
Humidity		5% to 85% RH
Vibration resistance		10Hz to 55Hz 3.3mm DA
Shock resistance	Functional	735m/s ²
	Destructive	980m/s ²
Termination		DIP, SMT
Unit weight		Approx. 0.8g
Moisture sensitivity levels (Only for SMT type, JEDEC-STD-020)		MSL 3
Construction		Plastic sealed

Notes: 1) The data shown above are initial values.

2) UL insulation system: Class A

SAFETY APPROVAL RATINGS

UL/CUL	AgPd + Au plated	0.5A 125VAC at 70°C
	AgNi + Au plated	1A 30VDC at 85°C 2A 30VDC at 40°C 0.5A 125VAC at 40°C
	AgPd + Au plated	0.5A 125VAC at 85°C
TUV	AgPd + Au plated	0.5A 125VAC at 85°C
	AgNi + Au plated	1A 30VDC at 85°C 0.5A 125VAC at 85°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA

at 23°C

Single side stable

Coil Code	Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Coil Resistance Ω	Nominal Power mW approx.	Max. Voltage VDC
HFD4/1.5	1.5	1.13	0.15	16 x (1±10%)	140	2.2
HFD4/2.4	2.4	1.8	0.24	41 x (1±10%)	140	3.6
HFD4/3	3	2.25	0.3	64.3 x (1±10%)	140	4.5
HFD4/4.5	4.5	3.38	0.45	145 x (1±10%)	140	6.7
HFD4/5	5	3.75	0.5	178 x (1±10%)	140	7.5
HFD4/6	6	4.5	0.6	257 x (1±10%)	140	9.0
HFD4/9	9	6.75	0.9	579 x (1±10%)	140	13.5
HFD4/12	12	9	1.2	1028 x (1±10%)	140	18.0
HFD4/24	24	18	2.4	2880 x (1±10%)	200	36.0

1 coil latching

Coil Code	Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	Coil Resistance Ω	Nominal Power mW approx.	Max. Voltage VDC
HFD4/1.5-L	1.5	1.13	1.13	22.5 x (1±10%)	100	3.0
HFD4/2.4-L	2.4	1.8	1.8	58 x (1±10%)	100	4.8
HFD4/3-L	3	2.25	2.25	90 x (1±10%)	100	6.0
HFD4/4.5-L	4.5	3.38	3.38	203 x (1±10%)	100	9.0
HFD4/5-L	5	3.75	3.75	250 x (1±10%)	100	10.0
HFD4/6-L	6	4.5	4.5	360 x (1±10%)	100	12.0
HFD4/9-L	9	6.75	6.75	810 x (1±10%)	100	18.0
HFD4/12-L	12	9	9	1440 x (1±10%)	100	24.0
HFD4/24-L	24	18	18	2880 x (1±10%)	200	36.0

Notes: 1) When user's requirements can't be found in the above table, special order allowed.

2) In case 5V of transistor drive circuit, it is recommended to use 4.5V type relay, and 3V to use 2.4V type relay.

ORDERING INFORMATION

	HFD4	/	24	-L	4	S	R	(XXX)
Type								
Coil voltage	1.5, 2.4, 3, 4.5, 5, 6, 9, 12, 24VDC							
Sort	L: 1 coil latching Nil: Single side stable							
Contact material	4: AgPd+Gold plated Nil: AgNi+Gold plated							
Terminal type	S: Standard SMT S1: Short terminal SMT Nil: DIP							
Packing style	R: Tape and reel packing (Only for SMT type) ¹⁾ Nil: Tube packing (Only for DIP type)							
Special code ²⁾	XXX: Customer special requirement Nil: Standard							

Notes: 1) R type (tape and reel) packing is moisture-proof which meets requirement of MSL-3. Please choose R type packing for SMT products. For R type, the letter "R" will only be printed on packing tag but not on relay cover. Tube packing is normally not available for SMT products unless specially requested by customer. But please note that tube packing is not moisture-proof so please bake the products before use according to description of Notice 10 herewith. In addition, tube packaging will be adopted when the ordering quantity of R type is equal to or less than 100 pieces unless otherwise specified.

2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

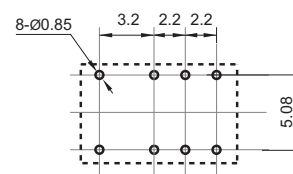
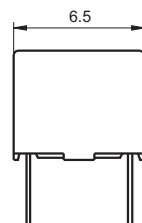
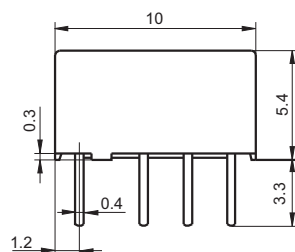
Unit: mm

Outline Dimensions

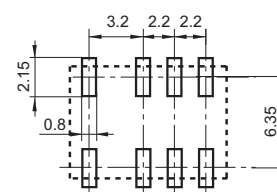
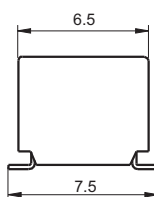
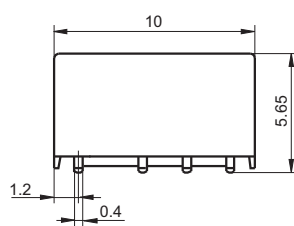
PCB Layout

(Bottom view)

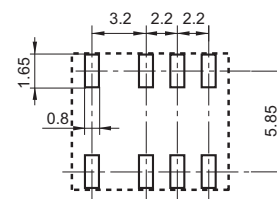
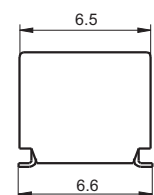
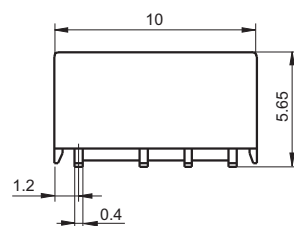
DIP type



Standard SMT type



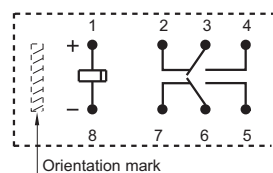
Short terminal SMT type



Wiring Diagram

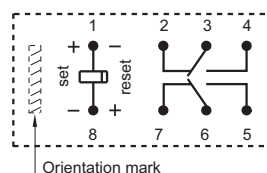
(Bottom view)

Single side stable



No energized condition

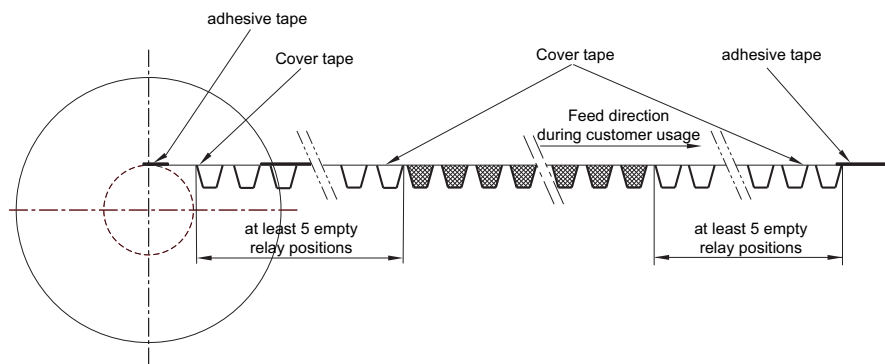
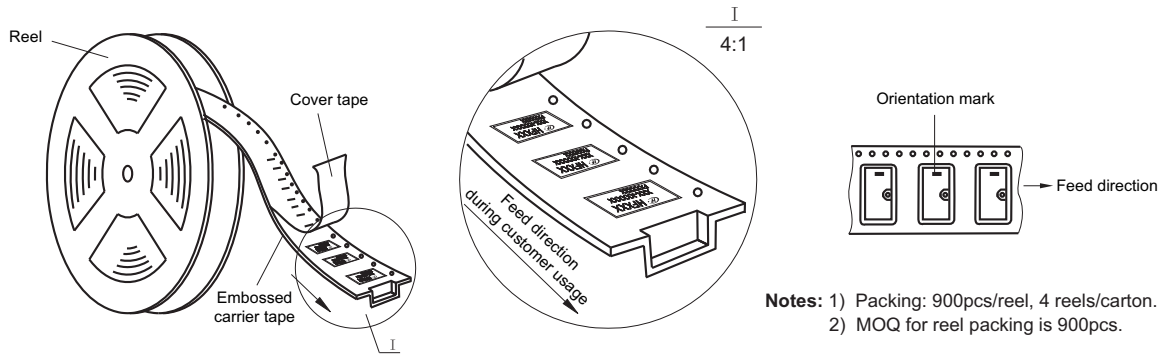
1 coil latching



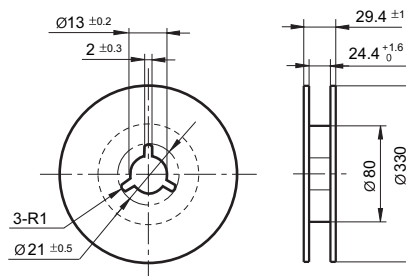
Reset condition

Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

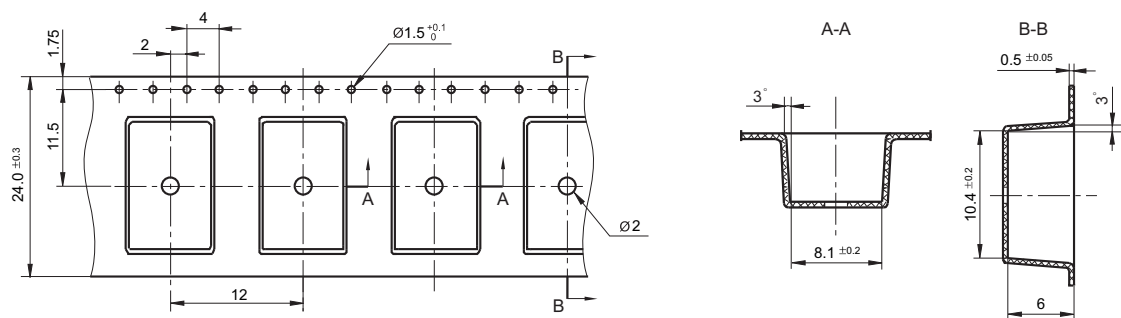
Direction of Relay Insertion



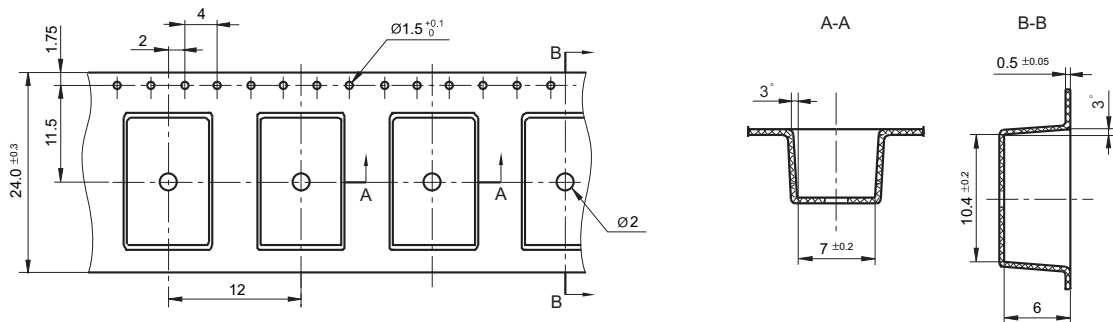
Reel Dimensions



Tape Dimensions (S type: Standard SMT)



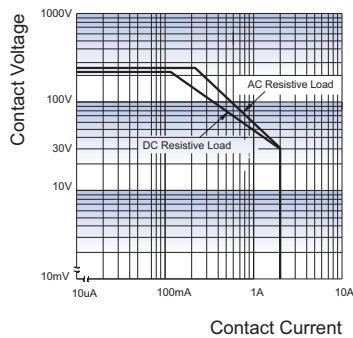
Tape Dimensions (S1 type: Short terminal SMT)



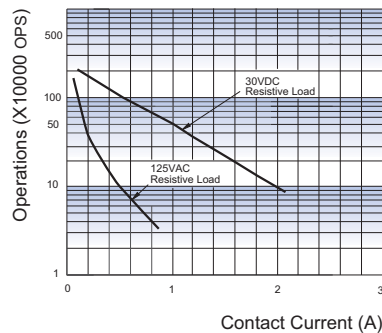
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



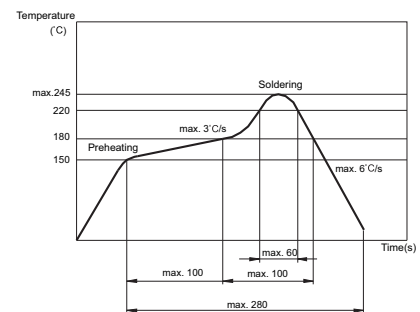
ENDURANCE CURVE



Test conditions:

Resistive load, at 40°C, 1s on 9s off.

REFLOW WELDING,TEMPERATURE ON PCB BOARD RECOMMENDED WELDING TEMPERATURE



Notice

- 1) This relay is highly sensitive polarized relay, if correct polarity is not applied to the coil terminals, the relay does not operate properly.
- 2) To avoid using relays under strong magnetic field which will change the parameters of relays such as pick-up voltage and drop-out voltage.
- 3) Relay is on the "reset" status when being released from stock, with the consideration of shock risen from transit and relay mounting, it should be changed to the "set" status when application(connecting to the power supply). Please reset the relay to "set" or "reset" status on request.
- 4) Energizing coil with rated voltage is basic for normal operation of a relay, please make sure the energized voltage to relay coil have reached the rated voltage. Regarding latching relay, in order to maintain the "set" or "reset" status, impulse width of the rated voltage applied to coil should be more than 5 times of "set" or "reset" time.
- 5) The relay may be damaged because of falling or when shocking conditions exceed the requirement.
- 6) For SMT products, validation with real application should be done before your series production, if the reflow-soldering temperature curve is out of our recommendation. Generally, two-time reflow-soldering is not recommended for the relay. However, if two-time reflow-soldering is required, a 60-min. interval should be guaranteed and a validation should be done before production.
- 7) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 8) Regarding the plastic sealed relay, we should leave it cooling naturally until below 40°C after welding, then clean it and deal with coating, remarkably the temperature of solvents should also be controlled below 40°C. Please avoid cleaning the relay by ultrasonic, avoid using the solvents like gasoline, Freon, and so on, which would affect the configuration of relay or influence the environment.
- 9) About preferable condition of operation, storage and transportation, please refer to "Explanation to terminology and guidelines of relay".
- 10) Relays packaged in moisture barrier bags meet MSL-3 requirements. The relays should be stored at ambient conditions of $\leq 30^\circ\text{C}$ and $\leq 60\%$ RH after they are removed from their packaging, and should be used within 168 hours. If the relays cannot be used within 168 hours, please repack them or store them in a drying oven at $25^\circ\text{C} \pm 5^\circ\text{C}$, $\leq 10\%$ RH. Otherwise, relays may be subjected to a soldering test to check their performance, or they may be used after keeping them in an oven for 72 hours at with $50^\circ\text{C} \pm 5^\circ\text{C}$, $\leq 30\%$ RH.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HFD23

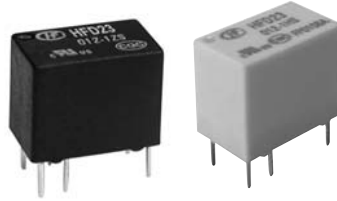
SUBMINIATURE SIGNAL RELAY

c **RU** US

File No.:E133481



File No.:CQC09002035070



Features

- Max.4A switching capability
- High sensitive: 150mW
- 1 Form C configuration
- Plastic sealed type available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (12.5 x 7.5 x 10.0) mm

CONTACT DATA

Contact arrangement	1A	1C
Contact resistance	100mΩ max. (at 10mA 30mVDC)	
Contact material	AgNi +Au plated	
Contact rating (Res. load)	1A 125VAC/2A 30VDC	0.5A 125VAC/1A 30VDC
Max. switching voltage	125VAC / 60VDC	
Max. switching current	4A	2A
Max. switching power	125VA / 60W	62.5VA / 30W
Min. applicable load 1)	1mA 5V	
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance 2)	9 x 10 ⁴ OPS (1H:1A 125VAC; 1Z:0.5A 125VAC, Resistive load., Room temp., 1s on 9s off)	

Notes: 1) Min. applicable load is reference value. Please perform the confirmation test with the actual load before production since reference value may change according to switching frequencies, environmental conditions and expected contact resistance and reliability.
2) Electric endurance data are collected in the NO or NC contact test.

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	1000VAC 1min
	Between open contacts	500VAC 1min
Operate time (at nomi. volt.)	5ms max.	
Release time (at nomi. volt.)	5ms max.	
Temperature rise (at nomi.volt.)	65K max.	
Vibration resistance	10Hz to 55Hz 3.3mm DA	
Shock resistance	Functional	196m/s ²
	Destructive	980m/s ²
Humidity	5% to 98% RH	
Ambient temperature	-40°C to 70°C	
Unit weight	Approx. 2.2g	
Termination	PCB (DIP)	
Construction	Plastic sealed	

Notes: 1) The data shown above are initial values.
2) UL insulation system: Class A

COIL

Coil power	Sensitive: Approx. 150mW; Standard: Approx. 200mW
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COIL DATA

at 23°C

Standard type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC	Coil Resistance Ω
1.5	1.20	0.15	2.25	11.3 x (1±10%)
2.4	1.92	0.24	3.6	28.8 x (1±10%)
3	2.40	0.30	4.5	45 x (1±10%)
3.5	3.60	0.45	5.75	101.3 x (1±10%)
5	4.00	0.50	7.5	125 x (1±10%)
6	4.80	0.60	9.0	180 x (1±10%)
9	7.20	0.90	13.5	405 x (1±10%)
12	9.60	1.20	18.0	720 x (1±10%)
24	19.20	2.40	36.0	2880 x (1±15%)

Sensitive type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC	Coil Resistance Ω
1.5	1.20	0.15	2.25	15 x (1±10%)
2.4	1.90	0.24	3.6	38.4 x (1±10%)
3	2.40	0.30	4.5	60 x (1±10%)
4.5	3.60	0.45	5.75	135 x (1±10%)
5	4.00	0.50	7.5	167 x (1±10%)
6	4.80	0.60	9.0	240 x (1±10%)
9	7.20	0.90	13.5	540 x (1±10%)
12	9.60	1.20	18.0	960 x (1±10%)
24	19.20	2.40	36.0	3840 x (1±15%)

Notes: 1) When user's requirements can't be found in the above table, special order allowed.
2) In case 5V of transistor drive circuit, it is recommended to use 4.5V type relay, and 3V to use 2.4V type relay.

SAFETY APPROVAL RATINGS

UL/CUL	1H type: 1A 30VDC 2A 30VDC 1A 125VAC	1Z type: 1A 30VDC 0.3A 60VDC 0.5A 125VAC
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Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

HFD23 /		012	-1Z	S	(XXX)
Type					
Coil voltage	1.5, 2.4, 3, 4.5, 5, 6, 9, 12, 24VDC				
Contact arrangement	1H: 1 Form A 1Z: 1 Form C				
Coil power	S: Sensitive type P: Standard type				
Special code ²⁾	XXX: Customer special requirement Nil: Standard				

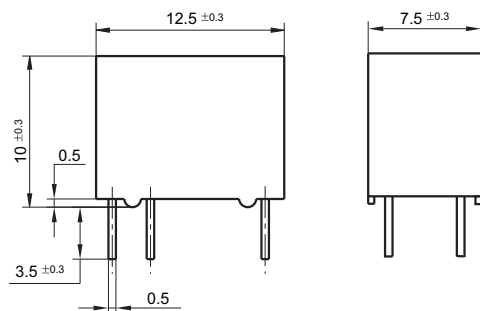
Notes: 1) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

2) The customer special requirement express as special code after evaluating by Hongfa.

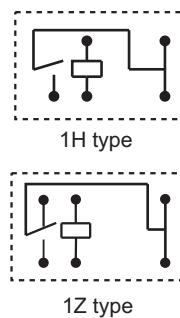
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

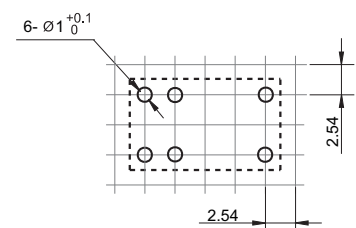
Outline Dimensions



Wiring Diagram
(Bottom view)



PCB Layout
(Bottom view)



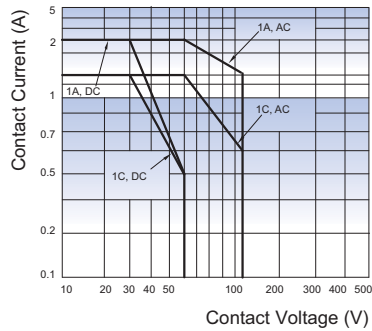
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

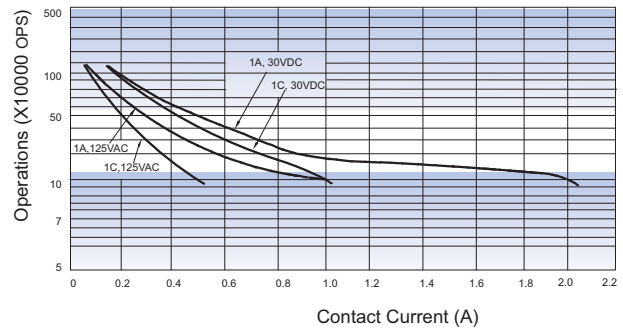
3) The width of the gridding is 2.54mm .

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



ENDURANCE CURVE



Test conditions:

Resistive load, Room temp., 1s on 9s off.

Notice

- 1) To avoid using relays under strong magnetic field which will change the parameters of relays such as pick-up voltage and drop-out voltage.
- 2) The relay may be damaged because of falling or when shocking conditions exceed the requirement.
- 3) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 4) Regarding the plastic sealed relay, we should leave it cooling naturally until below 40°C after welding, then clean it and deal with coating, remarkably the temperature of solvents should also be controlled below 40°C. Please avoid cleaning the relay by ultrasonic, avoid using the solvents like gasoline, Freon, and so on, which would affect the configuration of relay or influence the environment.
- 5) Energizing coil with rated voltage is basic for normal operation of a relay, please make sure the energized voltage to relay coil have reached the rated voltage. Regarding latching relay, in order to maintain the "set" or "reset" status, impulse width of the rated voltage applied to coil should be more than 5 times of "set" or "reset" time.
- 6) About preferable condition of operation, storage and transportation, please refer to "Explanation to terminology and guidelines of relay".

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HFD27

SUBMINIATURE DIP RELAY



File No.:E133481



File No.:R50316277



File No.:CQC09002033393



Features

- 2 Form C configuration
- High switching capacity: 125VA/60W
- Matching 16 pin IC socket
- Bifurcated contacts
- Epoxy sealed for automatic-wave soldering and cleaning
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (20.2 x 10.0 x 11.5) mm

CONTACT DATA

Contact arrangement	2C
Contact resistance	100mΩ max. (at 10mA 30mVDC)
Contact material	AgNi + Au plated
Contact rating (Res. load)	1A 125VAC, 2A 30VDC
Max. switching voltage	240VAC / 120VDC
Max. switching current	2A
Max. switching power	125VA / 60W
Min. applicable load ¹⁾	10mV 10μA
Mechanical endurance	1x10 ⁸ OPS
Electrical endurance ²⁾	1 x 10 ⁵ OPS (1A 125VAC, Resistive load, at 85°C, 1s on 9s off)

Notes: 1) Min. applicable load is reference value. Please perform the confirmation test with the actual load before production since reference value may change according to switching frequencies, environmental conditions and expected contact resistance and reliability.

2) Electric endurance data are collected in one pair CO contact test.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	1500VAC 1min
	Between open contacts	M, S type: 1000VAC 1min H type: 750VAC 1min
Operate time (at nomi. volt.)		7ms max.
Release time (at nomi. volt.)		4ms max.
Ambient temperature		-40°C to 85°C
Humidity		5% to 85% RH
Vibration resistance		10Hz to 55Hz 1.5mm DA
Shock resistance	Functional	196m/s²
	Destructive	980m/s²
Termination		PCB (DIP)
Unit weight		Approx. 5g
Construction		Plastic sealed

Notes: 1) The data shown above are initial values.

2) UL insulation system: Class A

COIL

Coil power	Standard: Approx. 280mW to 580mW
	Sensitive: Approx. 200mW
Temperature rise	High Sensitive: Approx. 150mW
	65K max.

COIL DATA

at 23°C

Standard type (280mW to 580mW)

Coil Code	Coil Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC	Coil Resistance Ω
003-M	3	2.25	0.3	4.5	30 x (1±10%)
005-M	5	3.75	0.5	8.0	90 x (1±10%)
006-M	6	4.50	0.6	10.0	130 x (1±10%)
009-M	9	6.80	0.9	14.5	280 x (1±10%)
012-M	12	9.00	1.2	18.5	450 x (1±10%)
015-M	15	11.3	1.5	22.0	625 x (1±10%)
024-M	24	18.0	2.4	35.5	1600 x (1±10%)
048-M	48	36.0	4.8	56.0	4000 x (1±10%)

Sensitive type (200mW)

Coil Code	Coil Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC	Coil Resistance Ω
003-S	3	2.25	0.3	6	45 x (1±10%)
005-S	5	3.75	0.5	10	125 x (1±10%)
006-S	6	4.50	0.6	12	180 x (1±10%)
009-S	9	6.80	0.9	18	405 x (1±10%)
012-S	12	9.00	1.2	24	720 x (1±10%)
015-S	15	11.3	1.5	30	1125 x (1±10%)
024-S	24	18.0	2.4	48	2880 x (1±10%)



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA

at 23°C

High sensitive type (150mW)

Coil Code	Coil Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Max. Voltage VDC	Coil Resistance Ω
003-H	3	2.4	0.3	7.0	60 x (1±10%)
005-H	5	4.0	0.5	11.5	167 x (1±10%)
006-H	6	4.8	0.6	13.8	240 x (1±10%)
009-H	9	7.2	0.9	20.8	540 x (1±10%)
012-H	12	9.6	1.2	27.7	960 x (1±10%)
015-H	15	12.0	1.5	34.6	1500 x (1±10%)
024-H	24	19.2	2.4	55.2	3840 x (1±10%)

Notes: 1) When user's requirements can't be found in the above table, special order allowed.

2) In case 5V of transistor drive circuit, it is recommended to use 4.5V type relay, and 3V to use 2.4V type relay.

SAFETY APPROVAL RATINGS

UL/CUL	2A 30VDC 1A 125VAC
TÜV	2A 30VDC 1A 125VAC

Notes: 1) All values unspecified are at 85°C.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HFD27 / 012 -S (XXX)
Coil voltage	3, 5, 6, 9, 12, 15, 24, 48VDC ¹⁾
Coil power	M: Standard (280mW to 580mW) S: Sensitive (200mW) H: High sensitive (150mW)
Special code ²⁾	XXX: Customer special requirement Nil: Standard

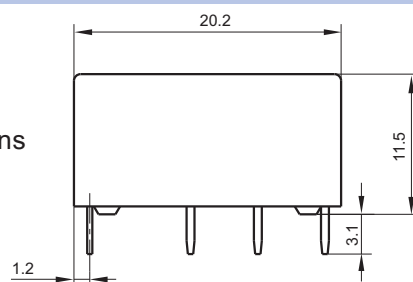
Notes: 1) 48VDC coil voltage is only for standard version.

2) The customer special requirement express as special code after evaluating by Hongfa.

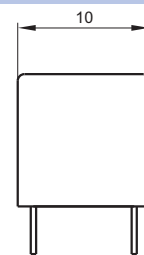
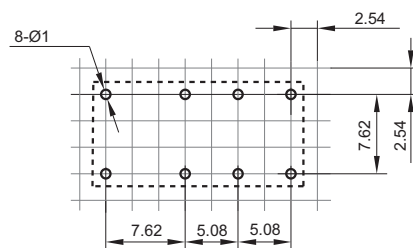
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

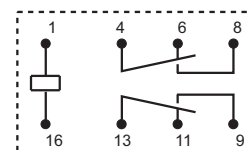
Outline Dimensions



PCB Layout
(Bottom view)



Wiring Diagram
(Bottom view)



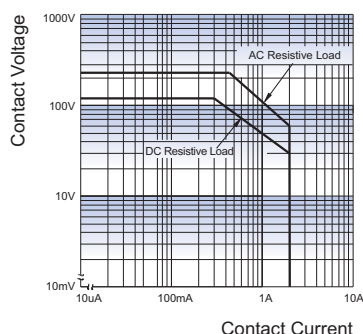
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

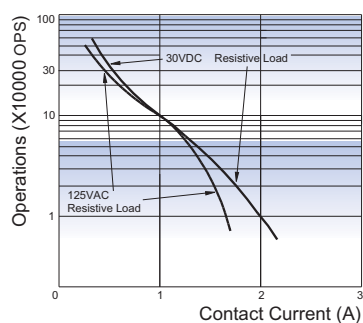
3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



ENDURANCE CURVE



Test conditions:

Resistive load, at 85°C, 1s on 9s off.

Notice

- 1) To avoid using relays under strong magnetic field which will change the parameters of relays such as pick-up voltage and drop-out voltage.
- 2) The relay may be damaged because of falling or when shocking conditions exceed the requirement.
- 3) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 4) Regarding the plastic sealed relay, we should leave it cooling naturally until below 40°C after welding, then clean it and deal with coating, remarkably the temperature of solvents should also be controlled below 40°C. Please avoid cleaning the relay by ultrasonic, avoid using the solvents like gasoline, Freon, and so on, which would affect the configuration of relay or influence the environment.
- 5) Energizing coil with rated voltage is basic for normal operation of a relay, please make sure the energized voltage to relay coil have reached the rated voltage. Regarding latching relay, in order to maintain the "set" or "reset" status, impulse width of the rated voltage applied to coil should be more than 5 times of "set" or "reset" time.
- 6) About preferable condition of operation, storage and transportation, please refer to "Explanation to terminology and guidelines of relay".

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

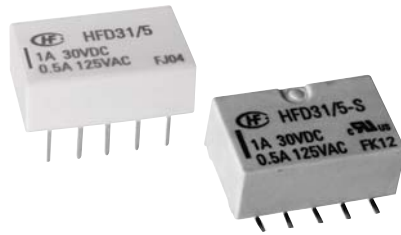
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HFD31

SUBMINIATURE SIGNAL RELAY



File No.:E133481



Features

- Offers excellent board space savings
- Surge withstand voltage up to 1500V, meets FCC Part 68
- High contact capacity 1A 30VDC
- Low power consumption
- Single side stable and latching type available
- Single or double coil winding type available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (14.0 x 9.0 x 5.0) mm

CONTACT DATA

Contact arrangement	2C
Contact resistance	100mΩ max. (at 10mA 30mVDC)
Contact material	AgPd + Au plated, AgNi + Au plated
Contact rating (Res. load)	1A 30VDC 0.5A 125VAC
Max. switching current	2A
Max. switching voltage	125VAC/110VDC
Max. switching power	62.5VA / 30W
Min. applicable load ¹⁾	10mV 10μA
Mechanical endurance	1 x 10 ⁸ ops
Electrical endurance ²⁾	1 x 10 ⁵ ops (0.5A 125VAC, Resistive load, AgNi + Au plated, at 70°C, 1s on 9s off)

Notes: 1) Min. applicable load is reference value. Please perform the confirmation test with the actual load before production since reference value may change according to switching frequencies, environmental conditions and expected contact resistance and reliability.

2) Electrical endurance test is conducted with load being connected to NO or NC contacts.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	1000VAC 1min
	Between open contacts	750VAC 1min
	Between contact sets	1000VAC 1min
Surge withstand voltage Between open contacts (10/160μs)		1500VAC (FCC part 68)
Operate time (Set time)		3ms max.
Release time (Reset time)		3ms max.
Ambient temperature		-40°C to 70°C
Humidity		5% to 85% RH
Vibration resistance		10Hz to 55Hz 3.0mm DA
Shock resistance	Functional	490m/s ²
	Destructive	980m/s ²
Termination		DIP, SMT
Unit weight		Approx. 1.8g
Moisture sensitivity levels (Only for SMT type, JEDEC-STD-020)		MSL-3
Construction		Plastic sealed

Notes: 1) The data shown above are initial values.

2) UL insulation system: Class A

COIL

Coil power	Single side stable	Approx. 140mW (24VDC: Approx. 200mW)
	1 coil latching	Approx. 100mW (24VDC: Approx. 150mW)
	2 coils latching	Approx. 200mW (24VDC: Approx. 300mW)

SAFETY APPROVAL RATINGS

UL/CUL	AgNi + Au plated	1A 30VDC 2A 30VDC 0.5A 125VAC
	AgPd + Au plated	0.5A 125VAC

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA

at 23°C

Single side stable

Coil Code	Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Coil Resistance Ω	Nominal Power mW approx.	Max. Voltage VDC
HFD31/1.5	1.5	1.13	0.15	16 x (1±10%)	140	2.25
HFD31/2.4	2.4	1.8	0.24	41.3 x (1±10%)	140	3.6
HFD31/3	3	2.25	0.3	64.3 x (1±10%)	140	4.5
HFD31/4.5	4.5	3.38	0.45	145 x (1±10%)	140	6.7
HFD31/5	5	3.75	0.5	178 x (1±10%)	140	7.5
HFD31/6	6	4.5	0.6	257 x (1±10%)	140	9
HFD31/9	9	6.75	0.9	579 x (1±10%)	140	13.5
HFD31/12	12	9	1.2	1028 x (1±10%)	140	18
HFD31/24	24	18	2.4	2880 x (1±10%)	200	36

1 coil latching

Coil Code	Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	Coil Resistance Ω	Nominal Power mW approx.	Max. Voltage VDC
HFD31/1.5-L1	1.5	1.13	1.13	22.5 x (1±10%)	100	2.25
HFD31/2.4-L1	2.4	1.8	1.8	58 x (1±10%)	100	3.6
HFD31/3-L1	3	2.25	2.25	90 x (1±10%)	100	4.5
HFD31/4.5-L1	4.5	3.38	3.38	203 x (1±10%)	100	6.7
HFD31/5-L1	5	3.75	3.75	250 x (1±10%)	100	7.5
HFD31/6-L1	6	4.5	4.5	360 x (1±10%)	100	9
HFD31/9-L1	9	6.75	6.75	810 x (1±10%)	100	13.5
HFD31/12-L1	12	9	9	1440 x (1±10%)	100	18
HFD31/24-L1	24	18	18	3840 x (1±10%)	150	36

2 coils latching

Coil Code	Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	Coil Resistance Ω	Nominal Power mW approx.	Max. Voltage VDC
HFD31/1.5-L2	1.5	1.13	1.13	11.3 x (1±10%)	200	2.25
HFD31/2.4-L2	2.4	1.8	1.8	29 x (1±10%)	200	3.6
HFD31/3-L2	3	2.25	2.25	45 x (1±10%)	200	4.5
HFD31/4.5-L2	4.5	3.38	3.38	101 x (1±10%)	200	6.7
HFD31/5-L2	5	3.75	3.75	125 x (1±10%)	200	7.5
HFD31/6-L2	6	4.5	4.5	180 x (1±10%)	200	9.0
HFD31/9-L2	9	6.75	6.75	405 x (1±10%)	200	13.5
HFD31/12-L2	12	9	9	720 x (1±10%)	200	18
HFD31/24-L2	24	18	18	1920 x (1±10%)	300	36

Notes: 1) When user's requirements can't be found in the above table, special order allowed.

2) In case 5V of transistor drive circuit, it is recommended to use 4.5V type relay, and 3V to use 2.4V type relay.

ORDERING INFORMATION

	HFD31 /	24	-L1	4	S	R	(XXX)
Type							
Coil voltage	1.5, 2.4, 3, 4.5, 5, 6, 9, 12, 24VDC						
Sort	L1: 1 coil latching L2: 2 coils latching Nil: Single side stable						
Contact material	4: AgPd+Gold plated Nil: AgNi+Gold plated						
Terminal type	S: Standard SMT Nil: DIP						
Packing style	R: Tape and reel packing (Only for SMT type) ¹⁾ Nil: Tube packing(Only for DIP type)						
Special code ²⁾	XXX: Customer special requirement Nil: Standard						

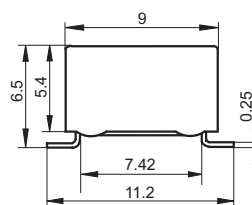
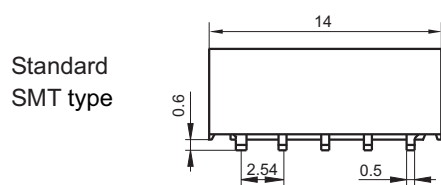
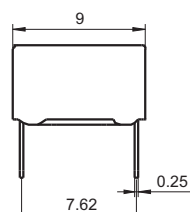
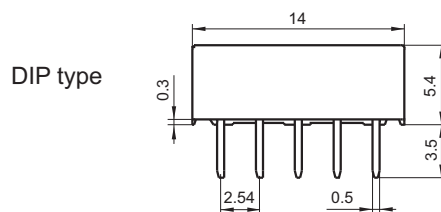
Notes: 1) R type (tape and reel) packing is moisture-proof which meets requirement of MSL-3. Please choose R type packing for SMT products. For R type, the letter "R" will only be printed on packing tag but not on relay cover. Tube packing is normally not available for SMT products unless specially requested by customer. But please note that tube packing is not moisture-proof so please bake the products before use according to description of Notice 11 herewith. In addition, tube packaging will be adopted when the ordering quantity of R type is equal to or less than 100 pieces unless otherwise specified.

2) The customer special requirement express as special code after evaluating by Hongfa.

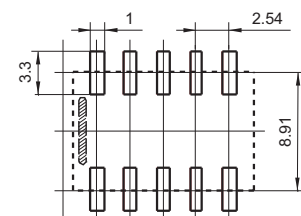
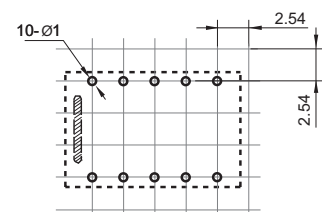
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions



PCB Layout
(Bottom view)



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

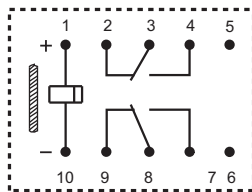
3) The width of the gridding is 2.54mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

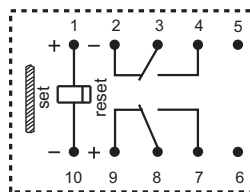
Wiring Diagram
(Bottom view)

Single side stable



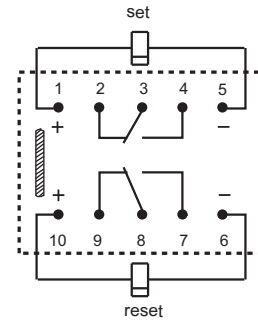
Deenergized condition

1 coil latching



Reset condition

2 coils latching

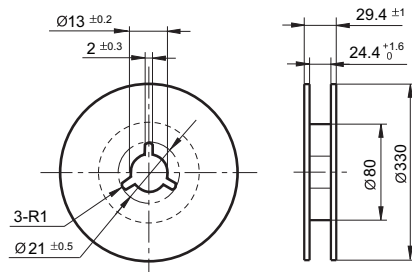


Reset condition

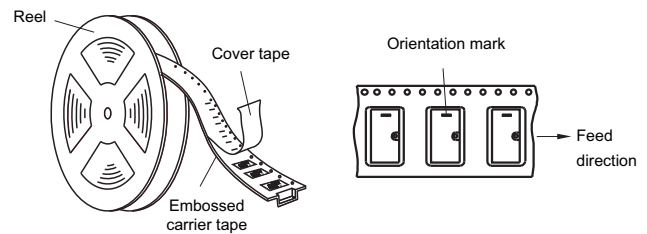
TAPE & REEL PACKING CONSTRUCTION AND DIMENSION

Unit: mm

Reel Dimensions

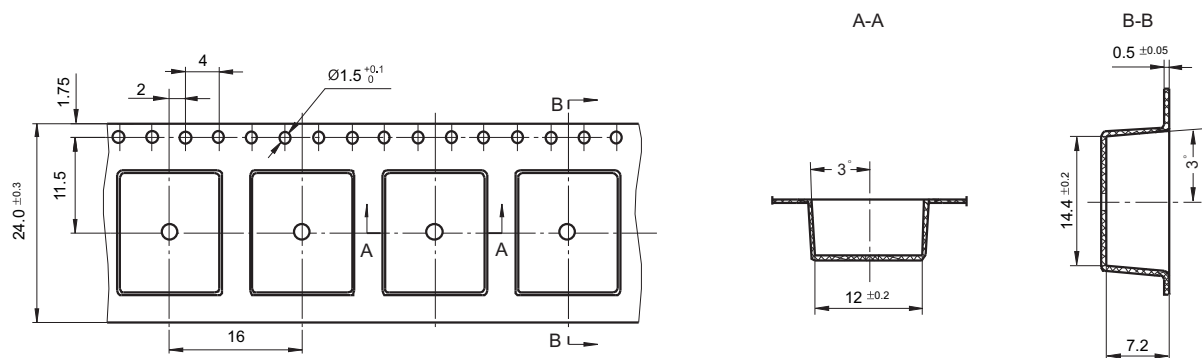


Direction of Relay Insertion



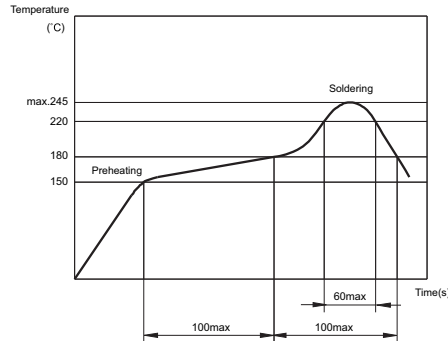
Notes: 1) Packing: 550pcs/reel, 4 reels/carton.
2) MOQ for reel packing is 550pcs.

Tape Dimensions



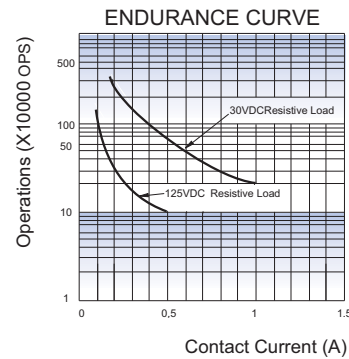
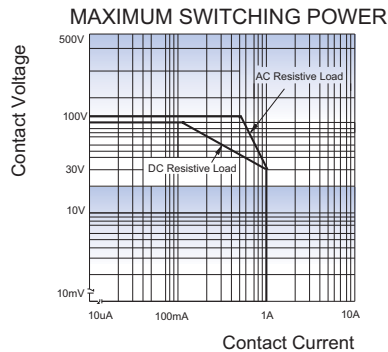
RECOMMENDED SOLDERING CONDITIONS

Temperature/Time profile of Reflow Soldering see below:



- Notes:** 1) Temperature profile shows Printed Circuit Board surface temperature on the relay terminal portion.
2) Please check the actual soldering condition to use other method except above mentioned temperature profiles.

CHARACTERISTIC CURVES



Test conditions:
Resistive load, at 40°C, 1s on 9s off.

Notice

- 1) This relay is highly sensitive polarized relay, if correct polarity is not applied to the coil terminals, the relay does not operate properly.
- 2) To avoid using relays under strong magnetic field which will change the parameters of relays such as pick-up voltage and drop-out voltage.
- 3) Relay is on the "reset" status when being released from stock, with the consideration of shock risen from transit and relay mounting, it should be changed to the "set" status when application(connecting to the power supply). Please reset the relay to "set" or "reset" status on request.
- 4) Energizing coil with rated voltage is basic for normal operation of a relay, please make sure the energized voltage to relay coil have reached the rated voltage. Regarding latching relay, in order to maintain the "set" or "reset" status, impulse width of the rated voltage applied to coil should be more than 5 times of "set" or "reset" time.
- 5) For 2 coil latching relay, do not energize voltage to "set" coil and "reset" coil simultaneously.
- 6) The relay may be damaged because of falling or when shocking conditions exceed the requirement.
- 7) For SMT products, validation with real application should be done before your series production, if the reflow-soldering temperature curve is out of our recommendation. Generally, two-time reflow-soldering is not recommended for the relay. However, if two-time reflow-soldering is required, a 60-min. interval should be guaranteed and a validation should be done before production.
- 8) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 9) Regarding the plastic sealed relay, we should leave it cooling naturally until below 40°C after welding, then clean it and deal with coating, remarkably the temperature of solvents should also be controlled below 40°C. Please avoid cleaning the relay by ultrasonic, avoid using the solvents like gasoline, Freon, and so on, which would affect the configuration of relay or influence the environment.
- 10) About preferable condition of operation, storage and transportation, please refer to "Explanation to terminology and guidetines of relay".
- 11) Relays packaged in moisture barrier bags meet MSL-3 requirements. The relays should be stored at ambient conditions of $\leq 30^{\circ}\text{C}$ and $\leq 60\%$ RH after they are removed from their packaging, and should be used within 168 hours. If the relays cannot be used within 168 hours, please repack them or store them in a drying oven at $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$, $\leq 10\%$ RH. Otherwise, relays may be subjected to a soldering test to check their performance, or they may be used after keeping them in an oven for 72 hours at with $50^{\circ}\text{C} \pm 5^{\circ}\text{C}$, $\leq 30\%$ RH.

Disclaimer

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HFD41/D41A

SUBMINIATURE SIGNAL RELAY



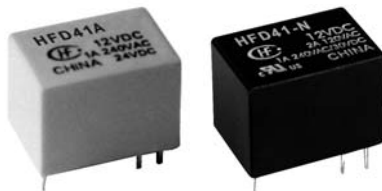
File No.: E133481



File No.: R50265409
(Only HFD41A)



File No.: CQC15002123047 (Only HFD41A)



Features

- 5A switching capability
- 1 Form C configuration
- Standard PCB layout
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (15.7 x 11.0 x 12.0) mm

CONTACT DATA

Contact arrangement	1C
Contact resistance	100mΩ max. (at 1A 6VDC)
Contact material	AgNi, AgCdO
Contact rating (Res. load)	1A 120VAC, 1A 240VAC / 30VDC 3A 120VAC 2A 120VAC, 5A 120VAC
Max. switching voltage	240VAC / 30VDC
Max. switching current	5A
Max. switching power	600VA / 30W
Mechanical endurance	1 x 10 ⁷ OPS
Electrical endurance	9.9 x 10 ⁴ OPS (1A 120VAC, 1A 30VDC, Resistive load, Room temp., 1s on 9s off)

CHARACTERISTICS

Insulation resistance		100MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	1000VAC 1min
	Between open contacts	500VAC 1min
Operate time (at nomi. volt.)		10ms max.
Release time (at nomi. volt.)		5ms max.
Shock resistance	Functional	98m/s²
	Destructive	980m/s²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-25°C to 70°C
Termination		PCB (DIP)
Unit weight		Approx. 5g
Construction		Plastic sealed, Flux proofed

Notes: 1) The data shown above are initial values.
2) Please find coil temperature curve in the characteristic curves below.
3) UL insulation system: Class F, Class B.

COIL

Coil power	B type: Approx. 450mW; N type: Approx. 360mW; H type: Approx. 200mW
------------	---

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC	Coil Resistance x (1±10%) Ω		
				H	N	B
3	2.3	0.3	3.9	45	25	20
5	3.8	0.5	6.5	120	70	56
6	4.5	0.6	7.8	180	100	80
9	6.8	0.9	11.7	400	220	180
12	9.0	1.2	15.6	700	400	320
24	18.0	2.4	31.2	2800	1600	1280

SAFETY APPROVAL RATINGS

UL/CUL	1A 120VAC, 1A 240VAC/30VDC 2A 120VAC, 3A 120VAC 5A 120VAC
TÜV	1A 120VAC/30VDC

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

ORDERING INFORMATION

Type	HFD41 HFD41A		/12VDC	-N	S	G	F	3	(XXX)
Coil voltage	3, 5, 6, 9, 12, 24 VDC								
Coil power	H: 200mW	N: 360mW	B: 450mW						
Construction ¹⁾²⁾	S: Plastic sealed		Nil: Flux proofed						
Contact plating	G: Gold plated ³⁾		Nil: No gold plated						
Insulation standard	F: Class F		Nil: Class B						
Contact capacity ³⁾	3: 3A (AgCdO, riveted contact) 5: 5A (AgCdO, riveted contact) Nil: 1A, 2A (AgNi, threaded contact)								
Special code ⁴⁾	XXX: Customer special requirement				Nil: Standard				

Notes: 1) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended.

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) For gold plated type, the min. switching current and min. switching voltage is 10mA 5VDC. For 3A, 5A load products, only gold-plated contact is available.

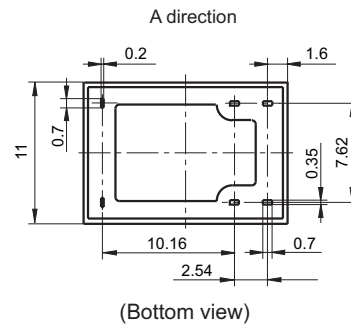
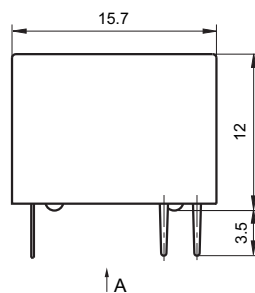
4) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

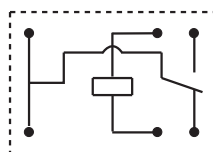
Unit: mm

Outline Dimensions

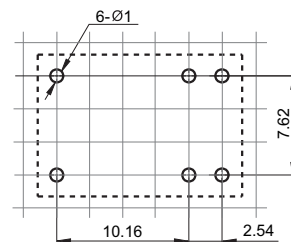
HFD41



Wiring Diagram
(Bottom view)

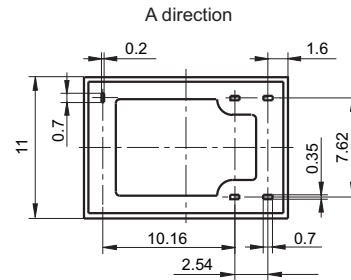
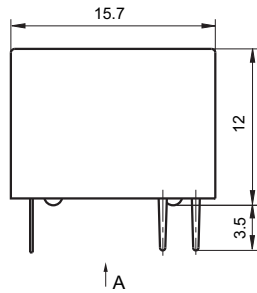


PCB Layout
(Bottom view)



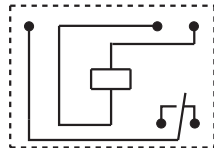
Outline Dimensions

HFD41A

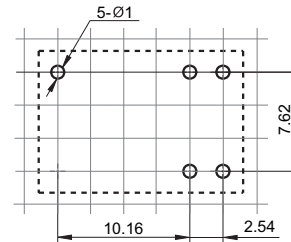


(Bottom view)

Wiring Diagram
(Bottom view)

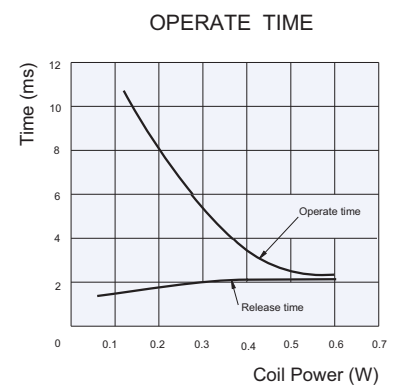
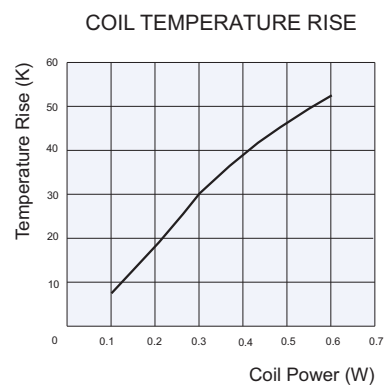
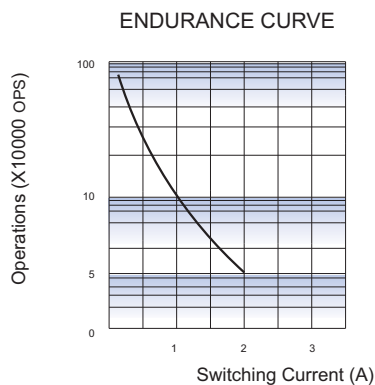


PCB Layout
(Bottom view)



- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES



Test conditions:

Resistive load, Room temp., 1s on 9s off.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HFD42

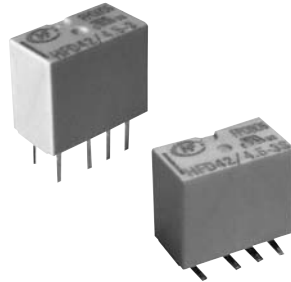
SUBMINIATURE SIGNAL RELAY



File No.:E133481



File No.:R50317623



Features

- Offers excellent board space savings
- Surge withstand voltage up to 2500V, meets FCC Part 68 and Telecordia
- Meets EN60950/EN41003
- SMT and DIP types available
- High contact capacity 2A 30VDC
- Low power consumption
- Single side stable and latching type available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (10.6 x 5.7 x 9) mm

CONTACT DATA

Contact arrangement	2C
Contact resistance	100mΩ max. (at 10mA 30mVDC)
Contact material	AgNi + Au plated、AgPd + Au plated
Contact rating (Res. load)	1A 30VDC 0.5A 125VAC 2A 30VDC 1A 125VAC
Max. switching current	4A
Max. switching voltage	250VAC / 220VDC
Max. switching power	125VA / 120W
Min. applicable load	10mV 10μA
Mechanical endurance	1 x 10 ⁸ ops
Electrical endurance	1 x 10 ⁵ ops(1A 30VDC, Resistive load, at 85°C, 1s on 9s off) 1 x 10 ⁵ ops(0.5A 125VAC, Resistive load, at 85°C, 1s on 9s off)

COIL

Coil power	Single side stable: 140mW、230mW
	1 coil latching: 100mW、120mW

SAFETY APPROVAL RATINGS

UL/CUL	1A 30VDC 85°C
	0.5A 125VAC 85°C
	2A 30VDC 85°C
	1A 125VAC 85°C
TÜV	0.5A 125VAC 85°C
	1A 30VDC 85°C
	2A 30VDC 85°C
	1A 125VAC 85°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	1500VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	1800VAC 1min
Surge withstand voltage		
Between open contacts (10/160μs)		1500VAC (FCC part 68)
Between coil & contacts (2/10μs)		2500VAC (Telecordia)
Operate time (Set time)		3ms max.
Release time (Reset time)		3ms max.
Ambient temperature		-40°C to 85°C
Humidity		5% to 85% RH
Vibration resistance	Functional	10Hz to 55Hz 3.3mm DA
	Destructive	10Hz to 55Hz 5.0mm DA
Shock resistance	Functional	735m/s ²
	Destructive	980m/s ²
Termination		DIP, SMT
Unit weight		Approx. 1.1g
Moisture sensitivity levels (Only for SMT type, JEDEC-STD-020)		MSL3
Construction		Plastic sealed

Notes: 1) The data shown above are initial values.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.10

COIL DATA

at 23°C

Single side stable

Coil Code	Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Coil Resistance Ω	Max. Voltage VDC
HFD42/1.5	1.5	1.13	0.15	16 x (1 \pm 10%)	2.2
HFD42/2.4	2.4	1.8	0.24	41 x (1 \pm 10%)	3.6
HFD42/3	3	2.25	0.3	64.3 x (1 \pm 10%)	4.5
HFD42/4.5	4.5	3.38	0.45	145 x (1 \pm 10%)	6.7
HFD42/5	5	3.75	0.5	178 x (1 \pm 10%)	7.5
HFD42/6	6	4.5	0.6	257 x (1 \pm 10%)	9.0
HFD42/9	9	6.75	0.9	579 x (1 \pm 10%)	13.5
HFD42/12	12	9	1.2	1028 x (1 \pm 10%)	18.0
HFD42/24	24	18	2.4	2504 x (1 \pm 10%)	36.0

Notes: 1) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

1 coil latching

Coil Code	Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	Coil Resistance Ω	Max. Voltage VDC
HFD42/1.5-L	1.5	1.13	1.13	22.5 x (1 \pm 10%)	3.0
HFD42/2.4-L	2.4	1.8	1.8	58 x (1 \pm 10%)	4.8
HFD42/3-L	3	2.25	2.25	90 x (1 \pm 10%)	6.0
HFD42/4.5-L	4.5	3.38	3.38	203 x (1 \pm 10%)	9.0
HFD42/5-L	5	3.75	3.75	250 x (1 \pm 10%)	10.0
HFD42/6-L	6	4.5	4.5	360 x (1 \pm 10%)	12.0
HFD42/9-L	9	6.75	6.75	810 x (1 \pm 10%)	18.0
HFD42/12-L	12	9	9	1440 x (1 \pm 10%)	24.0
HFD42/24-L	24	18	18	2880 x (1 \pm 10%)	36.0

Notes: 1) When user's requirements can't be found in the above table, special order allowed.

2) In case 5V of transistor drive circuit, it is recommended to use 4.5V type relay, and 3V to use 2.4V type relay.

ORDERING INFORMATION

Type	HFD42 /	24	-L1	4	S	R	(XXX)
Coil voltage	1.5, 2.4, 3, 4.5, 6, 9, 12, 24VDC						
Sort	L1: 1 coil latching Nil: Single side stable						
Contact material	3: AgNi+Gold plated 4: AgPd+Gold plated						
Terminal type	S: Standard SMT S1: Short terminal SMT Nil: DIP						
Packing style	R: Tape and reel packing (Only for SMT type) ¹⁾ Nil: Tube packing(Only for DIP type)						
Special code ²⁾	XXX: Customer special requirement Nil: Standard						

Notes: 1) R type (tape and reel) packing is moisture-proof which meets requirement of MSL-3. Please choose R type packing for SMT products. For R type, the letter "R" will only be printed on packing tag but not on relay cover. Tube packing is normally not available for SMT products unless specially requested by customer. But please note that tube packing is not moisture-proof so please bake the products before use according to description of Notice 10 herewith. In addition, tube packaging will be adopted when the ordering quantity of R type is equal to or less than 100 pieces unless otherwise specified.

2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

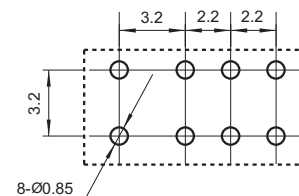
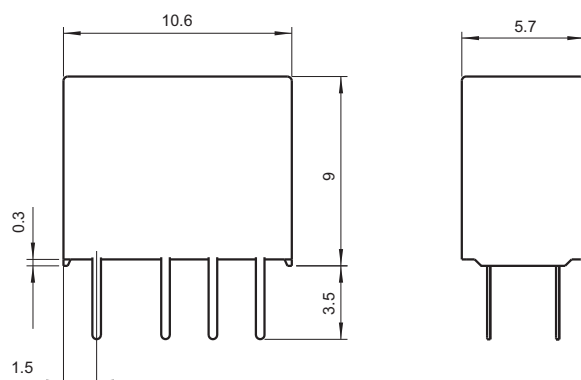
Unit: mm

Outline Dimensions

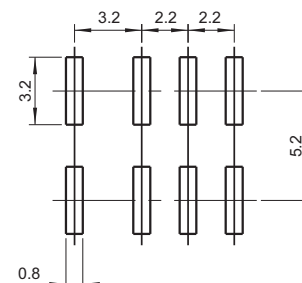
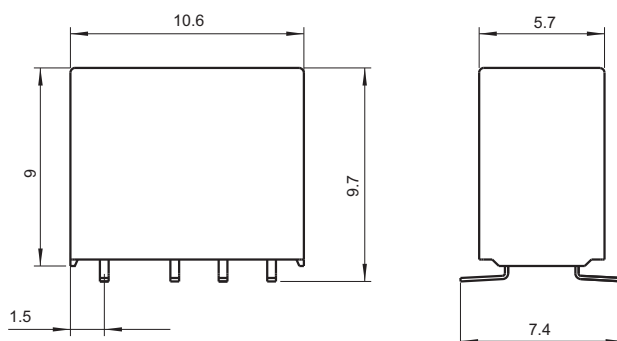
PCB Layout

(Bottom view)

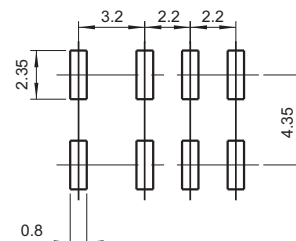
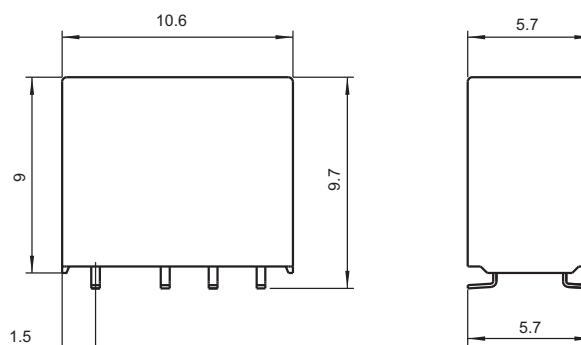
DIP type



Standard SMT type



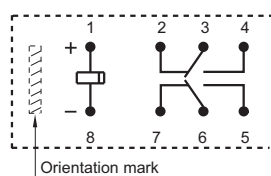
Short terminal SMT type



Wiring Diagram

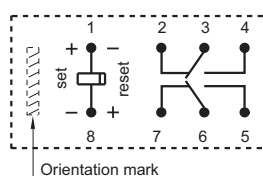
(Bottom view)

Single side stable



No energized condition

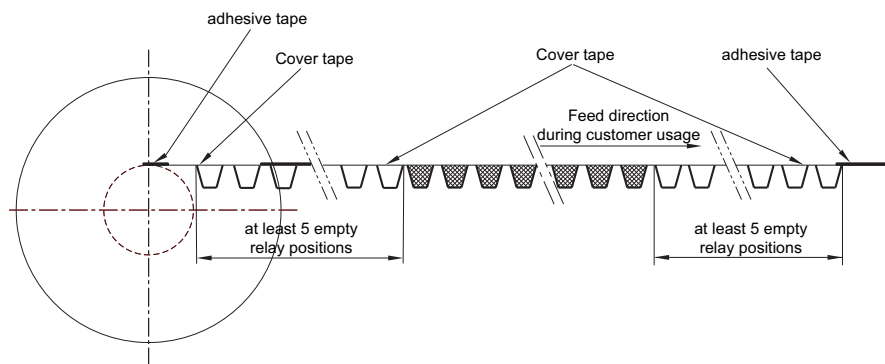
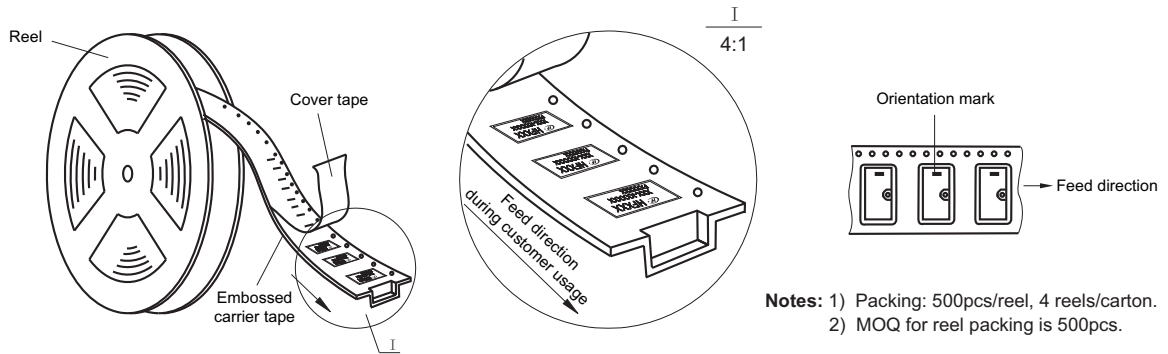
1 coil latching



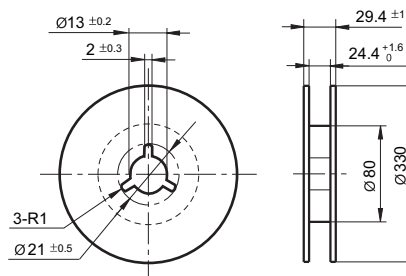
Reset condition

- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.5mm.

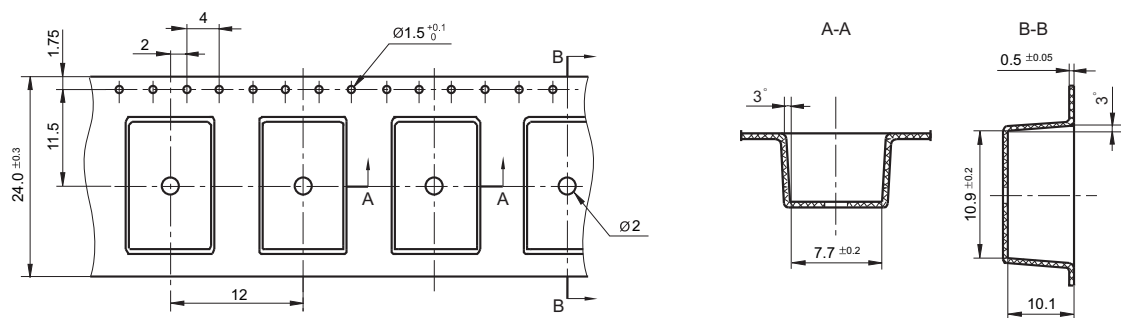
Direction of Relay Insertion



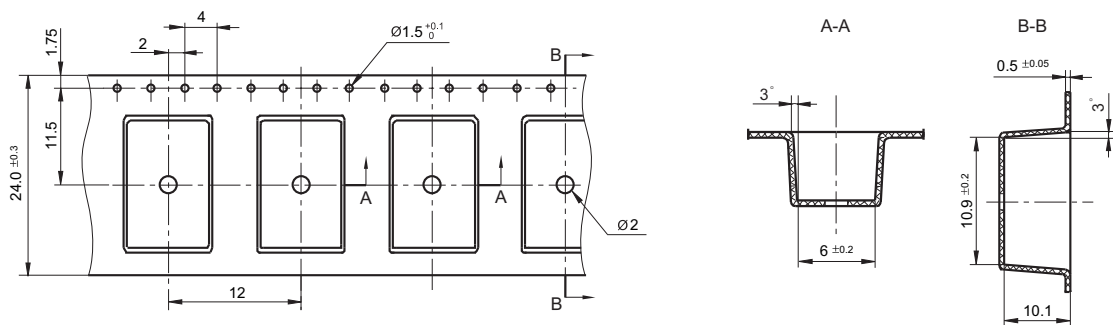
Reel Dimensions



Tape Dimensions (S type: Standard SMT)

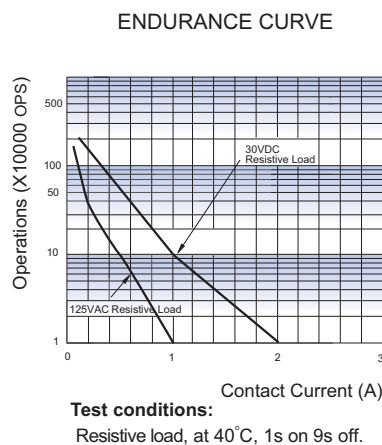
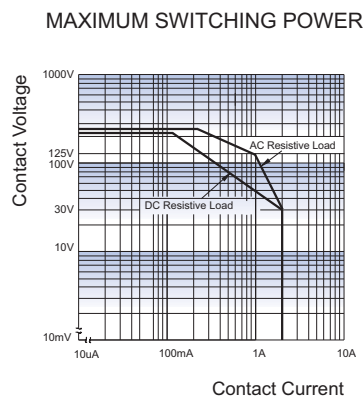


Tape Dimensions (S1 type: Short terminal SMT)

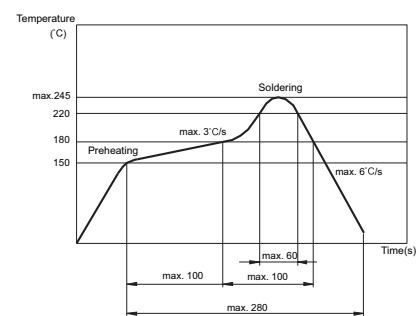


- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.
 2) The tolerance without indicating for PCB layout is always ±0.1mm.
 3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES



REFLOW WELDING, TEMPERATURE
ON PCB BOARD
RECOMMENDED WELDING TEMPERATURE



Notice

- 1) This relay is highly sensitive polarized relay, if correct polarity is not applied to the coil terminals, the relay does not operate properly.
- 2) To avoid using relays under strong magnetic field which will change the parameters of relays such as pick-up voltage and drop-out voltage.
- 3) Relay is on the "reset" status when being released from stock, with the consideration of shock risen from transit and relay mounting, it should be changed to the "set" status when application (connecting to the power supply). Please reset the relay to "set" or "reset" status on request.
- 4) Energizing coil with rated voltage is basic for normal operation of a relay, please make sure the energized voltage to relay coil have reached the rated voltage. Regarding latching relay, in order to maintain the "set" or "reset" status, impulse width of the rated voltage applied to coil should be more than 5 times of "set" or "reset" time.
- 5) The relay may be damaged because of falling or when shocking conditions exceed the requirement.
- 6) For SMT products, validation with real application should be done before your series production, if the reflow-soldering temperature curve is out of our recommendation. Generally, two-time reflow-soldering is not recommended for the relay. However, if two-time reflow-soldering is required, a 60-min. interval should be guaranteed and a validation should be done before production.
- 7) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 8) Regarding the plastic sealed relay, we should leave it cooling naturally until below 40°C after welding, then clean it and deal with coating, remarkably the temperature of solvents should also be controlled below 40°C. Please avoid cleaning the relay by ultrasonic, avoid using the solvents like gasoline, Freon, and so on, which would affect the configuration of relay or influence the environment.
- 9) About preferable condition of operation, storage and transportation, please refer to "Explanation to terminology and guidelines of relay".
- 10) Relays packaged in moisture barrier bags meet MSL-3 requirements. The relays should be stored at ambient conditions of ≤30°C and ≤60% RH after they are removed from their packaging, and should be used within 168 hours. If the relays cannot be used within 168 hours, please repack them or store them in a drying oven at 25°C ±5°C, ≤10% RH. Otherwise, relays may be subjected to a soldering test to check their performance, or they may be used after keeping them in an oven for 72 hours at with 50°C ±5°C, ≤30% RH.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HFE6

HIGH POWER LATCHING RELAY



Features

- Latching relay
- 200A switching capability
- Strong resistance ability to shock & vibration
- Heavy load up to 55.4kVA
- 4kV dielectric strength (between coil and contacts)
- Typical application: Power, Lamp
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (100.0 x 80.0 x 29.8) mm

CONTACT DATA

Contact arrangement	2A, 2B
Contact resistance	Typ.:0.25mΩ max.(at 200A) ⁽¹⁾
Contact material	AgSnO ₂
Contact rating (Res. load)	200A 277VAC/28VDC
Max. switching voltage	440VAC
Max. switching current	200A
Max. switching power	55400VA / 5600W
Mechanical endurance	1 x 10 ⁵ OPS
Electrical endurance	1 x 10 ⁴ OPS

Notes: (1) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continuous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		8mm
Operate time (at nomi. volt.)		30ms max.
Release time (at nomi. volt.)		30ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.0mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		QC
Unit weight		Approx. 500g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 12W; Double coils latching: Approx. 24W
------------	--

COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (±10%) Ω	
12	9.6	150	Single coil latching	12
24	19.2	150		48
48	38.4	150		190
12	9.6	150	Double coils latching	6+6
24	19.2	150		24+24
48	38.4	150		95+95

Notes: When requiring other nominal voltage, special order allowed.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2015 Rev. 1.00

ORDERING INFORMATION

Type	HFE6	-A /	12	-2D	T	2	-R	(XXX)
Version	A: Type A contact terminal B: Type B contact terminal							
Coil voltage	12, 24, 48VDC							
Contact form ¹⁾	2D: 2 Form B 2H: 2 Form A							
Contact material	T: AgSnO ₂							
Sort	1: Single coil latching 2: Double coils latching							
Polarity	R: Negative polarity Nil: Positive polarity							
Special code ²⁾	XXX: Customer special requirement Nil: Standard							

Notes: 1) 2H, 2SH means that relay is on the "reset" status when delivery; 2D, 2SD means that relay is on the "set" status when delivery. If no special requirement by customer, we will keep the relay on the "set" status when delivery.

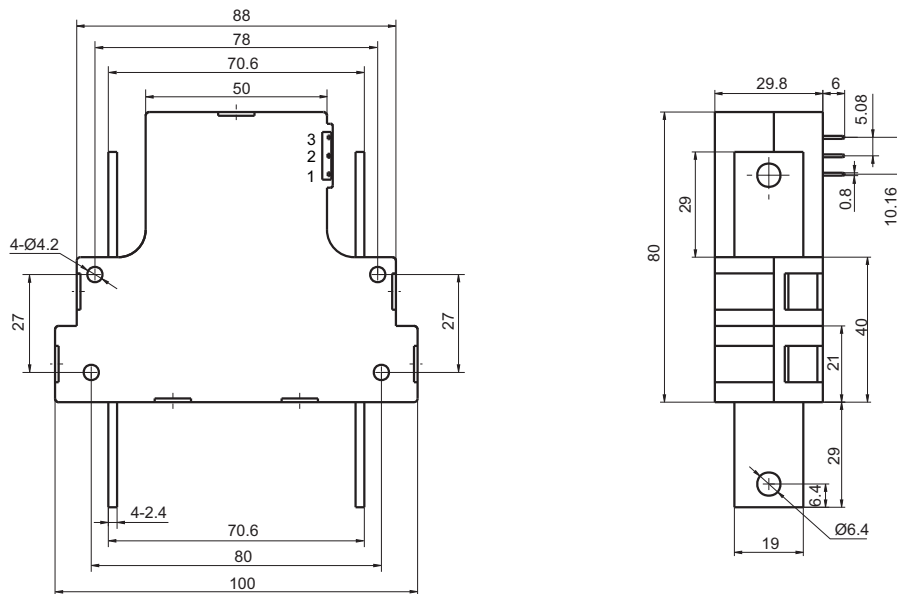
2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

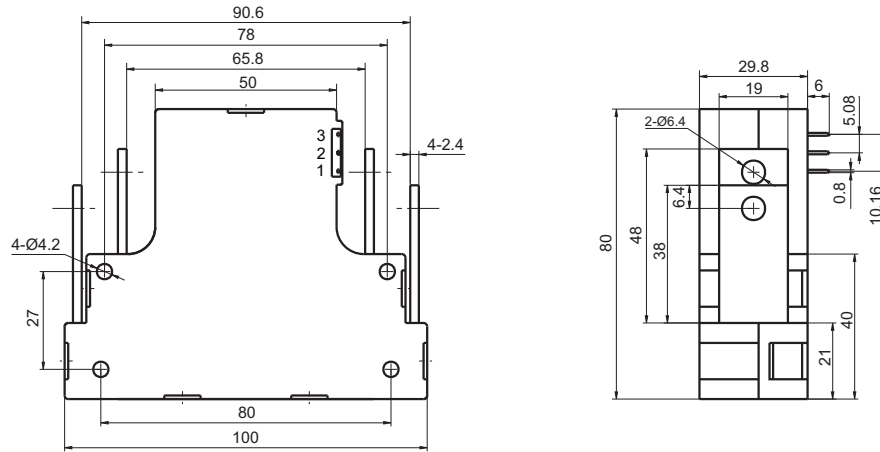
Outline Dimensions

Type A contact terminal



Outline Dimensions

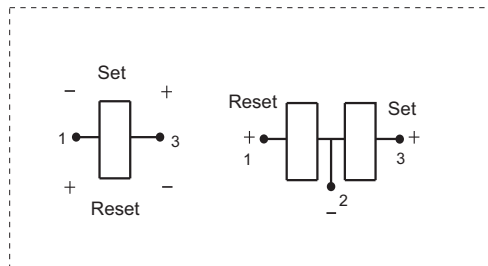
Type B contact terminal



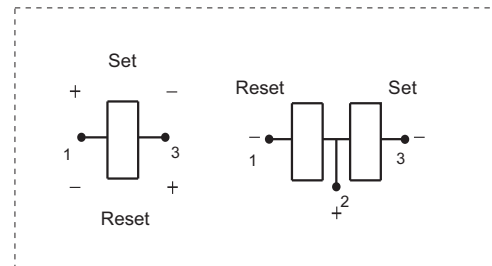
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Coil Wiring Diagram

Positive polarity



Negative polarity



Notice

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFE7

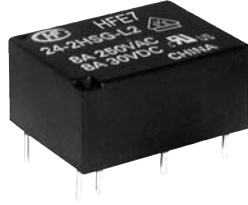
SUBMINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:40027342



Features

- High switching capacity
1A, 1B: 10A 250VAC/30VDC;
2A, 2B, 1A + 1B: 8A 250VAC/30VDC
- High sensitive
- 4kV dielectric strength (between coil & contacts)
- Single side stable and latching types available
- 1 Form A, 1 Form B, 2 Form A, 2 Form B and 1A + 1B contact arrangement
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (20.0 x 15.0 x 10.2) mm

CONTACT DATA

Contact arrangement	1A, 1B	2A, 2B, 1A + 1B
Contact resistance	AgNi +Au plated: 30mΩ max.(at 1A 6VDC) AgNi: 50mΩ max.(at 1A 6VDC) AgSnO ₂ +Au plated: 60mΩ max.(at 1A 6VDC) AgSnO ₂ : 80mΩ max.(at 1A 6VDC)	
Contact material	AgSnO ₂ , AgNi	
Contact rating (Res. load)	10A 250VAC/30VDC	8A 250VAC/30VDC
Max. switching Voltage	277VAC	277VAC
Max. switching current	10A	8A
Max. switching power	2500VA	2000VA
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1A, 1B type: 1 x 10 ⁵ OPS (10A 250VAC, Resistive load., at 70°C, 1.5s on 1.5s off) 1A + 1B, 2A, 2B type: 3 x 10 ⁴ OPS (8A 250VAC, Resistive load., at 70°C, 1.5s on 1.5s off)	

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric Strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)		10ms max.
Release (Reset) time (at nomi. volt.)		10ms max.
Max. operate frequency (under rated load)		20 cycles /min
Temperature rise (at nomi. volt.)		50 K max.
Vibration resistance		10Hz to 55Hz 1.5mm DA
Shock resistance		98m/s ²
Humidity		5% to 85% RH
Ambient temperature		-40 °C to 70 °C
Termination		PCB
Unit weight		Approx. 6g
Construction		Plastic sealed, Flux proofed

Notes: The data shown above are initial values.

COIL

Type		Coil power	
		Sensitive	High sensitive
Single side stable	1A,1A+1B	Approx. 420mW	Approx. 200mW
	2A		Approx. 280mW
Single coils latching		Approx. 300mW	Approx. 200mW
Double coils latching		Approx. 420mW	Approx. 280mW

COIL DATA

at 23°C

Single side stable

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Coil Resistance x (1±10%)Ω		
			200mW	280mW	420mW
3	2.1	0.3	45	32.1	21.4
5	3.5	0.5	125	89.3	59.5
6	4.2	0.6	180	129	85.7
9	6.3	0.9	405	289	192.9
12	8.4	1.2	720	514	342.9
24	16.8	2.4	2880	2056	1371.4

Single coil latching

Nominal Voltage VDC	Set /Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%)Ω	
			300mW	200mW
3	2.1	50	30	45
5	3.5	50	83.3	125
6	4.2	50	120	180
9	6.3	50	270	405
12	8.4	50	480	720
24	16.8	50	1920	2880



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA

at 23°C

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
			420mW	280mW
3	2.1	50	21.4+21.4	32.1+32.1
5	3.5	50	59.5+59.5	89.3+89.3
6	4.2	50	85.7+85.7	129+129
9	6.3	50	192.9+192.9	289+289
12	8.4	50	342.9+342.9	514+514
24	16.8	50	1371.4+1371.4	2056+2056

SAFETY APPROVAL RATINGS

UL/CUL	1 Form A	AgNi	10A 250VAC 8A 30VDC 1/4HP 125VAC 1/3HP 250VAC
		AgSnO ₂	10A 30VDC B300, R300 10A 250VAC 1/4 HP 125VAC 1/3 HP 250VAC
	2 Form A	AgSnO ₂ , AgNi	8A 250VAC/30VDC 1/4HP 125VAC 1/3HP 250VAC
		AgSnO ₂	600W 125VAC B300, R300
	1 Form A+1 Form B	AgSnO ₂ , AgNi	8A 250VAC/30VDC 1/4HP 125VAC 1/3HP 250VAC
		AgSnO ₂	B300, R300
VDE (No UL approval on Single side stable version)	1 Form A	AgNi	10A 250VAC (cosφ=1) 5A 250VAC (cosφ=0.4)
	2 Form A	AgNi	8A 250VAC (cosφ=1) 3.5A 250VAC (cosφ=0.4)
	1 Form A+1 Form B	AgNi	8A 250VAC (cosφ=1) 3.5A 250VAC (cosφ=0.4)

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HFE7 /	12	-1H	S	T	G	-L2	-R	(412)	(XXX)
Coil voltage	3, 5, 6, 9, 12, 24VDC									
Contact form	1 ¹⁾ 1H: 1 Form A 1D: 1 Form B 2 ²⁾ 2H: 2 Form A 2D: 2 Form B 1HD: 1A + 1B									
Construction	2 ²⁾ S: Plastic sealed Nil: Flux proofed									
Contact material	3 ³⁾ T: AgSnO ₂ Nil: AgNi									
Contact plating	G: Gold plated Nil: No gold plated									
Sort	L1: 1 coil latching L2: 2 coils latching Nil: Single side stable									
Polarity	R: Negative polarity Nil: Positive polarity									
Customer special code (Coil power)	4 ⁴⁾ (412): Sensitive Nil: High sensitive									
Special code	5 ⁵⁾ XXX: Customer special requirement Nil: Standard									

Notes: 1) 1H, 2H means that relay is on the "reset" status when delivery; 1D, 2D means that relay is on the "set" status when delivery. There are no UL approval on 1D, 2D version.

2) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended. Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

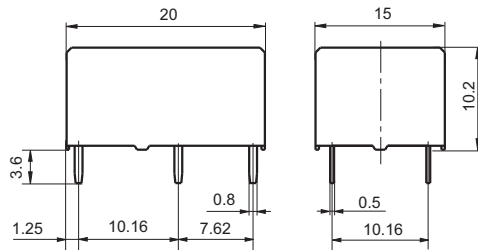
3) For the application with inrush current conditions, such as lamp load, motor load, capacitance load, coil load, etc., we suggest use the flux proof and no golden plated AgSnO₂ contact version.

4) We recommend to choose the sensitive version (same part number, but with special suffix (412)) if the higher coil activation is allowable; Please choose the sensitive version (same part number, but with special suffix (412)) if the relay to be used in the extreme environment or welded by wave soldering; Please check with HF's engineer before designing the relay to your application if there are some requirements' outside the specification we provided.

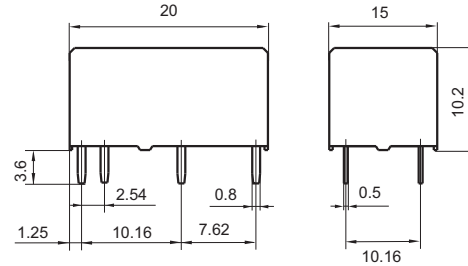
5) The customer special requirement express as special code after evaluating by Hongfa. e.g. (359) stands for Lamp load.

Outline Dimensions

Single side stable & 1 coil latching

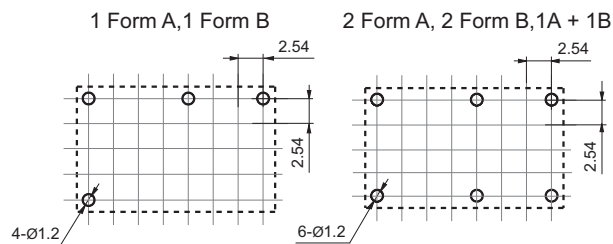


2 coils latching

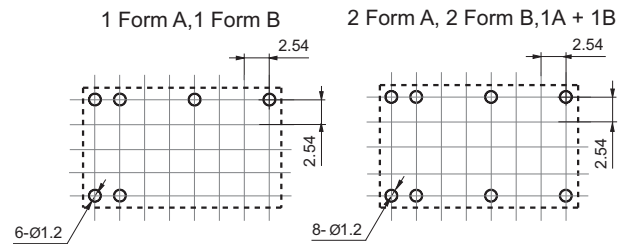


PCB Layout (Bottom view)

Single side stable & 1 coil latching



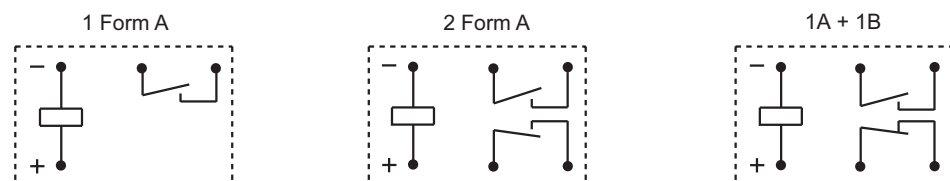
2 coils latching



- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.54mm.

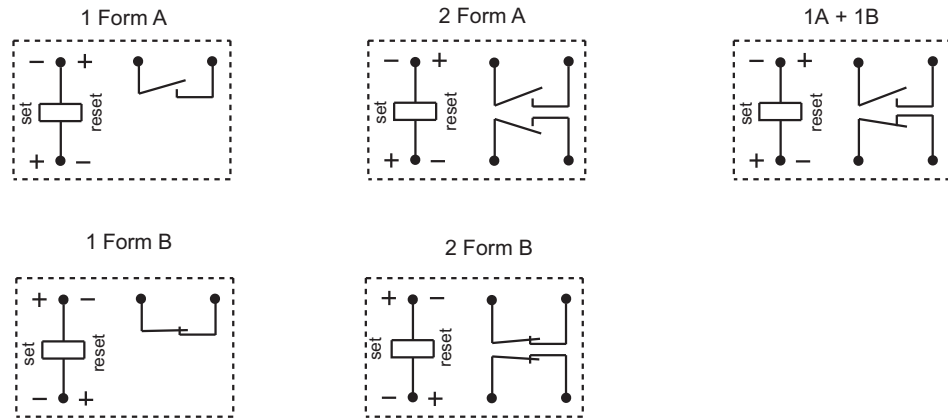
Wiring Diagram (Bottom view)

Single side stable (Standard polarity)

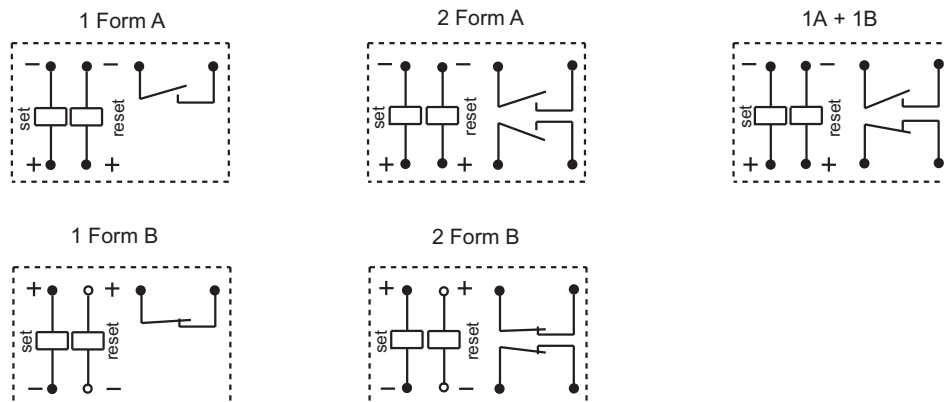


Wiring Diagram (Bottom view)

1 coil latching (Standard polarity)



2 coils latching (Standard polarity)



Remark: The coil polarity of Reverse polarity and Standard polarity is opposite.

Notice

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. As the relay component part's will shrink and deformed due to the high temperature impact, our products are forbidden to be used at the temperature outside our suggested working temperature range (-40℃ to 70℃) for long time ; If the wave soldering will be used, the operating parameters we will suggest are: Up limit of the pre-heating time: 120s; Up limit of the pre-heating temperature:120℃; Soldering temperature: 260℃±5℃; Soldering time (10±3) s; Besides our suggested parameters, please try to shorten the pre-heating time and the soldering time and try to lower the temperature for pre-heating and the soldering as you can; the manual soldering for such relay is more recommended.

Disclaimer

This datasheet is for the customers' reference. All the specifications are subject to change without notice.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFE9

MINIATURE HIGH POWER LATCHING RELAY



File No.:E133481



File No.:CQC07017019644



Features

- Latching relay
- 60A switching capability
- The relay can stand 1440A peak current for 10ms
- 4kV dielectric strength(between coil and contacts)
- Heavy load up to 15000VA
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (38.0 x 30.0 x 16.0) mm

CONTACT DATA

Contact arrangement	1A, 1B		
Contact resistance	1mΩ max.(at 1A 24VDC)		
Contact material	AgSnO ₂		
Contact rating (Res. load)	60A 250VAC	50A 250VAC	40A 250VAC
	5000OPS	10000OPS	100000OPS
Max. switching voltage	250VAC		
Max. switching current	60A		
Max. switching power	15000VA		
Mechanical endurance	1 x 10 ⁶ OPS Meter: 1 x 10 ⁵ OPS		
Electrical endurance	1 x 10 ⁵ OPS (40A 250VAC, Resistive load, Room temp., 1s on 9s off)		

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1500VAC 1min
Creepage distance	8mm	
Set time (at nomi. volt.)	20ms max.	
Reset time (at nomi. volt.)	20ms max.	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 70°C	
Termination	QC	
Unit weight	Approx. 33g	
Construction	Plastic sealed, Flux proofed	

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 1.0W Double coils latching: Approx. 2.0W
------------	---

COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse width (ms) min.	Coil Resistance x (1±10%) Ω	
5	3.5	50	Single coil latching	24
6	4.2	50		35
9	6.3	50		80
12	8.4	50		145
24	16.8	50		575
48	33.6	50		2270
5	3.5	50	Double coils latching	12+12
6	4.2	50		17.5+17.5
9	6.3	50		40+40
12	8.4	50		72+72
24	16.8	50		285+285
48	33.6	50		1135+1135

Notes: When requiring other nominal voltage, special order allowed.

SAFETY APPROVAL RATINGS

UL/CUL	40A 250VAC at 70°C
	50A 250VAC at 70°C
	60A 250VAC at 70°C

Notes: Only some typical ratings are listed above. If more details are required, please contact us.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

ORDERING INFORMATION

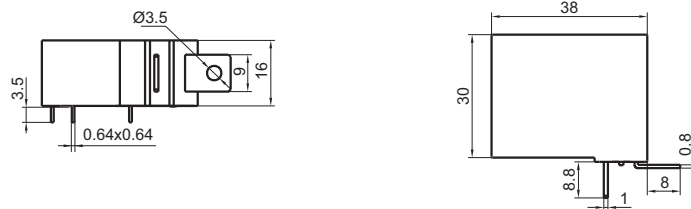
	HFE9	-3 /	12	-D	S	T	-R	(XXX)
Type								
Version	1: 1 type (Single coil latching) 2: 2 type (Single coil latching) 3: 3 type (Double coils latching)							
Coil voltage	5, 6, 9, 12, 24, 48VDC							
Contact form ¹⁾	D: 1 Form B(No UL,CQC approval) H: 1 Form A							
Construction ²⁾	S: Plastic sealed Nil: Flux proofed							
Contact material	T: AgSnO ₂							
Polarity	R: Negative polarity Nil: Positive polarity							
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard							

Notes: 1) Hmeans that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery. If no speical required by customer, we will keep the relay on the "set" status when delivery.
 2) If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts.
 3) We can make special design according to customer's requirement. Please see the typical design.
 4) The customer special requirement express as special code after evaluating by Hongfa.

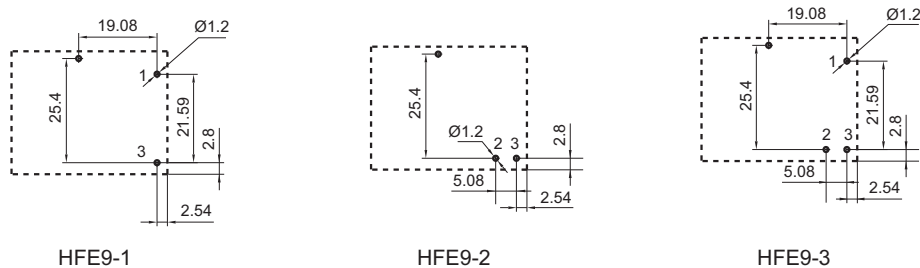
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

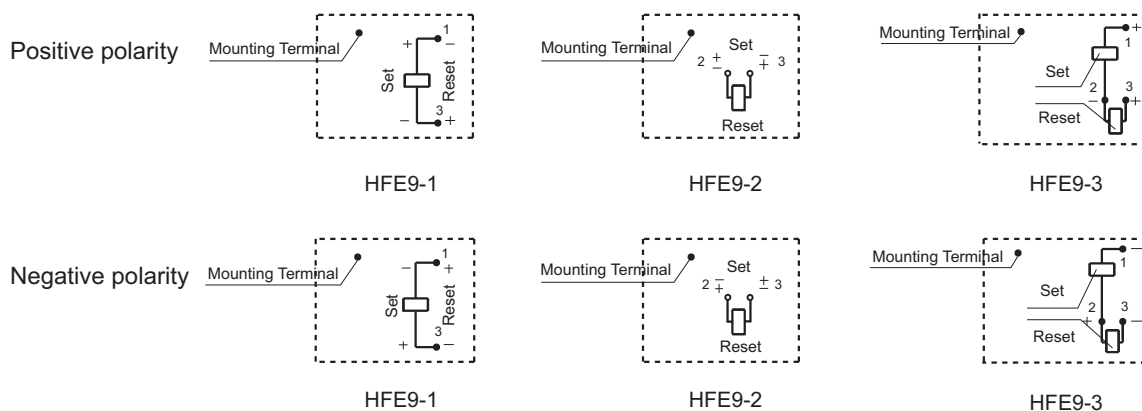


PCB Layout (Bottom view)

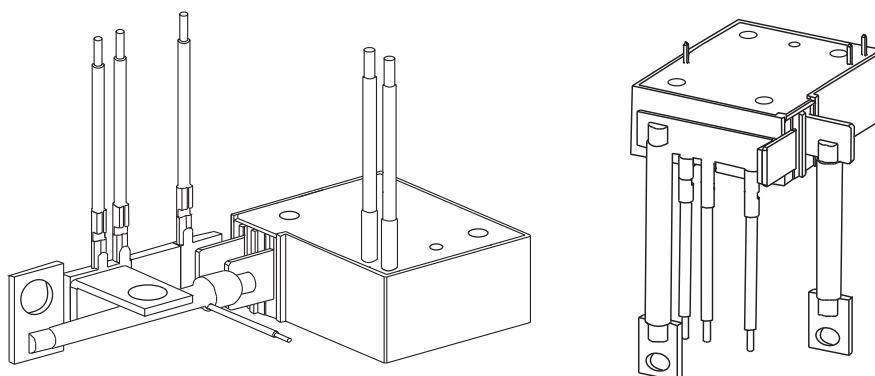


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

Wiring Diagram (Bottom view)



Typical Design



Remark: The drawing shown above are typical design, we can make special design according to customer's requirement. Please provide us with the drawing.

Notice:

1. When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C to 260°C, 2s to 5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s.
2. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
3. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
4. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully.
5. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

The specification is for reference only. Specifications subject to change without notice.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFE10

MINIATURE HIGH POWER LATCHING RELAY



File No.:E134517



Features

- 50A switching capability
- Lamp load up to 5000W
- Motor load up to 5HP
- Max. inrush current 500A/2ms
- Dielectric strength: more than 4kV (between coil and contacts)
- Manual switch function available
- Relays with 1.5mm contact gap are available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (39.0 x 15.0 x 30.2)mm

CONTACT DATA

Contact arrangement	1A, 1B, 1C
Contact resistance	20mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂
Contact rating	1A, 1B: 50A 277VAC, 1 x 10 ⁵ OPS (Resistive) 5000W 240VAC, 3 x 10 ⁴ OPS (Incandescent lamp) 16A 277VAC, 6000 OPS (Electronic ballast) 5HP 277VAC, 3 x 10 ⁴ OPS (Motor) 1C: 40A 277VAC, 3 x 10 ⁴ OPS (Resistive)
Max. switching voltage	440VAC
Max. switching current	50A
Max. switching power	1A: 12500VA / 1C: 10000VA
Max. continuous current	50A
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	See rated load

COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω
6	4.8	50	24
9	7.2	50	54
12	9.6	50	96
24	19.2	50	384
48	38.4	50	1536
6	4.8	50	12+12
9	7.2	50	27+27
12	9.6	50	48+48
24	19.2	50	192+192
48	38.4	50	768+768

COIL

Coil power	Single coil latching: Approx. 1.5W Double coils latching: Approx. 3.0W
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CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts: 4000VAC 1min Between open contacts: 1500VAC 1min
Creepage distance (input to output)	1A, 1B: 8mm 1C: 6mm
Set time (at nomi. volt.)	15ms max.
Reset time (at nomi. volt.)	15ms max.
Max. operate frequency	1A, 1B: 20cycles/min 1C: 10cycles/min
Shock resistance	Functional: 98m/s ² Destructive: 980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA
Humidity	5% to 85% RH
Ambient temperature	-40°C to 70°C
Termination	PCB
Unit weight	Approx. 32g
Construction	Plastic sealed, Flux proofed

Notes: The data shown above are initial values.

SAFETY APPROVAL RATINGS

UL/CUL (AgSnO ₂)	1 Form A	Resistive: 50A 277VAC Incandescent lamp: 5000W 240VAC
	1 Form C	40A 277VAC
VDE	1 Form A 1 Form B	Resistive: 50A 277VAC

Notes: 1) All values unspecified are at room temperature.

2) Only some typical ratings are listed above. If more details are required, please contact us.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.10

ORDERING INFORMATION

Type	HFE10 -1/ 12 -D 1 S T -L2 -R (W) (XXX)									
Version	1: No auxiliary convexity, no manual switch 2: No auxiliary convexity, with manual switch 3: With auxiliary convexity, no manual switch 4: With auxiliary convexity, with manual switch 5: No auxiliary convexity, with manual switch, the reverse action									
Coil voltage	6, 9, 12, 24, 48VDC									
Contact form	1) H: 1 Form A D: 1 Form B (No UL approval) Z: 1 Form C (No for HFE10-5) (No VDE approval)									
Termination	1: Extra long terminal 5: Wide terminal 2) 6: Bending extra long terminal 7: Double PCB terminal Nil: PCB terminal									
Construction	3) S: Plastic sealed (Only for HFE10-1 & HFE10-3) Nil: Flux proofed									
Contact material	T: AgSnO ₂									
Sort	L1: Single coil latching L2: Double coils latching									
Polarity	R: Negative polarity Nil: Positive polarity									
Customer special code	(W): Relays with 1.5mm contact gap (Only for H model. No approval.) Nil: Standard type									
Special code	4) XXX: Customer special requirement Nil: Standard									

Notes: 1) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery.

2) The 1 type, 5 type, 6 type and 7 type is only for HFE10-1/□□□H, HFE10-2/□□□H.

3) If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts.

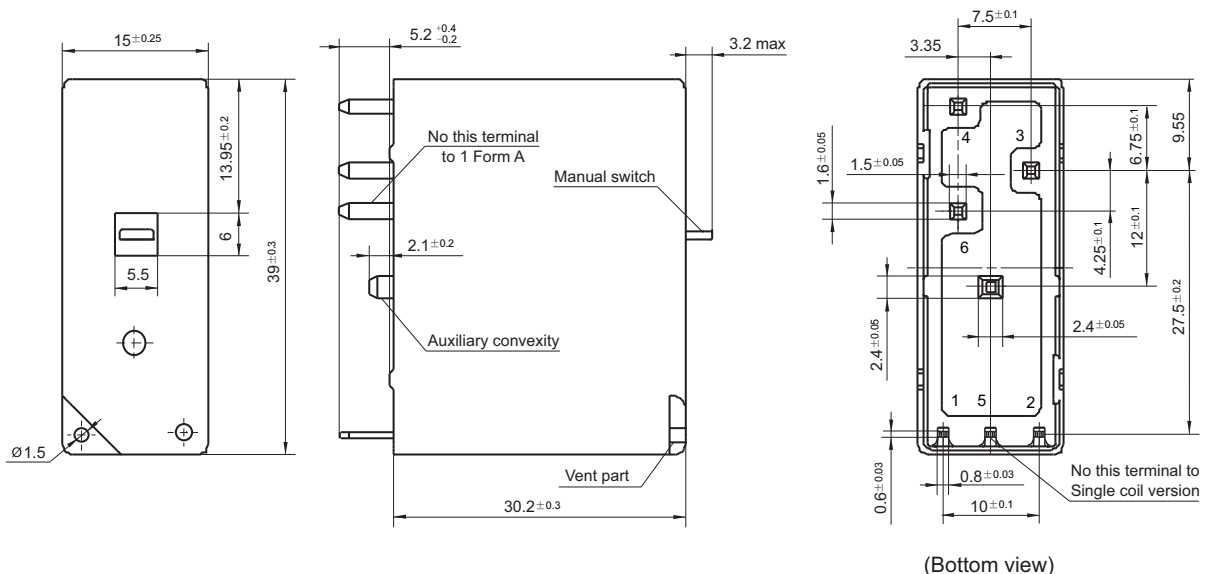
4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (399) stands for Special polarity (See Wiring Diagram).

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

Outline Dimensions

HFE10-1, HFE10-2, HFE10-3, HFE10-4



(Bottom view)

Unit: mm

HFE10-2/ H5

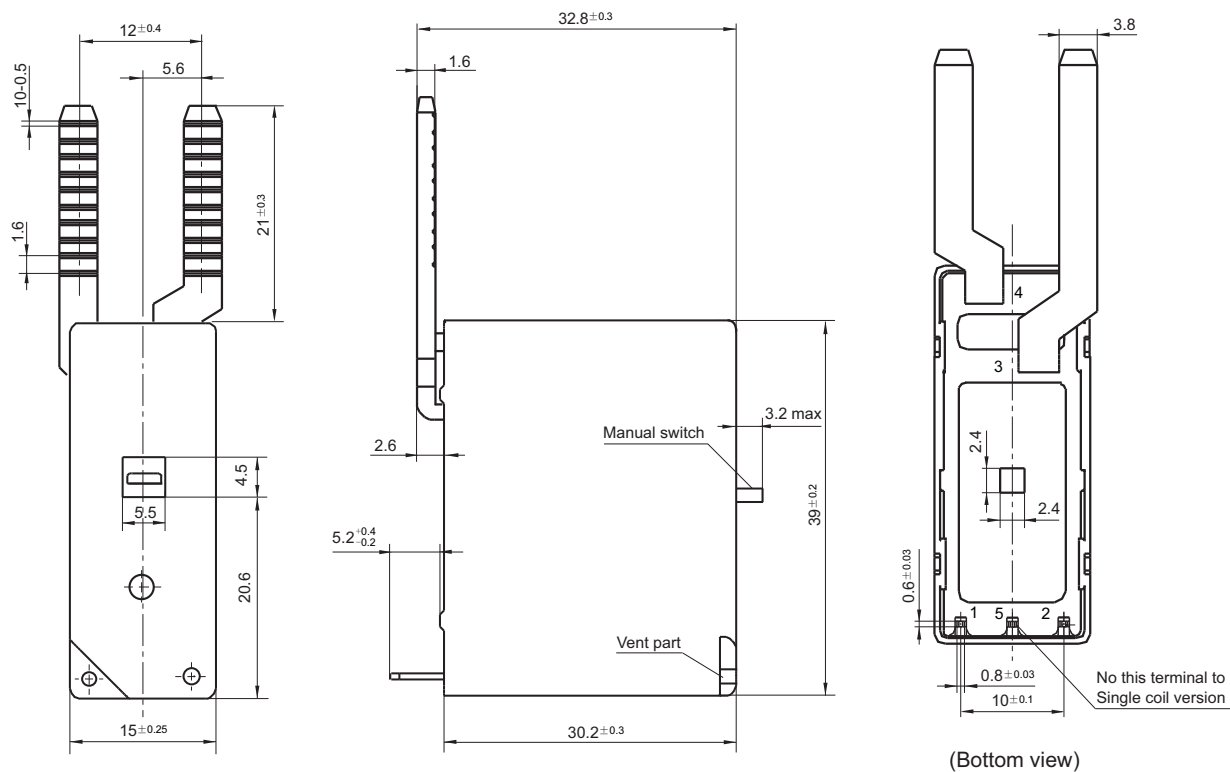
OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

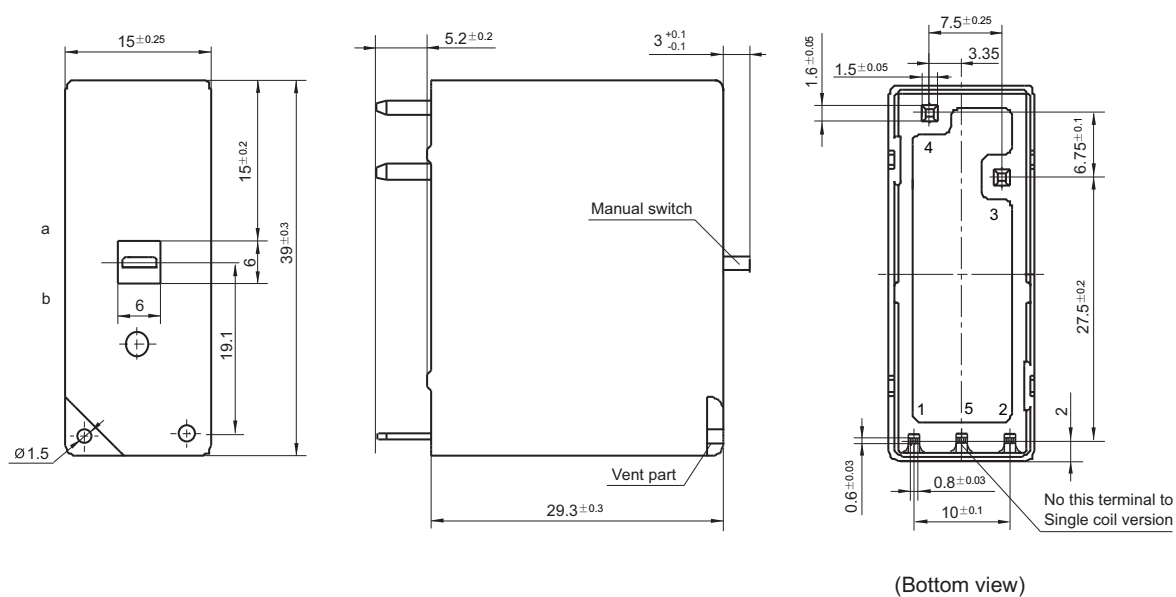
Outline Dimensions

HFE10-1/ □□□ H6

HFE10-2/ □□□ H6



HFE10-5/ □□□ H

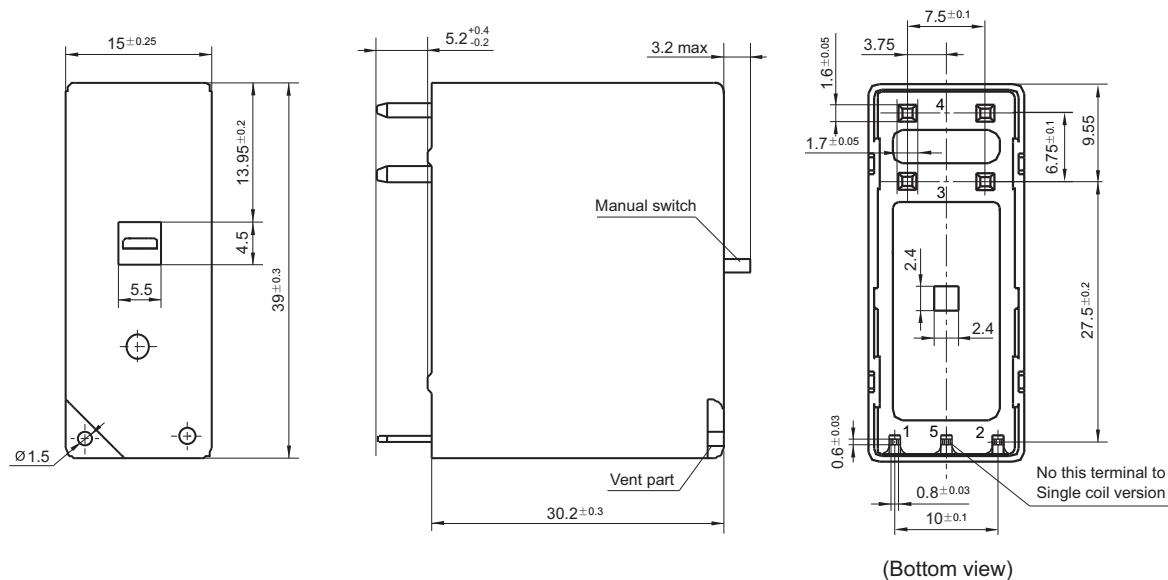


Remark: When the manual switch is pitched on point a, the contact is open; when the manual switch is pitched on point b, the contact is closed.

Outline Dimensions

HFE10-1/ □□□ H7

HFE10-2/ □□□ H7



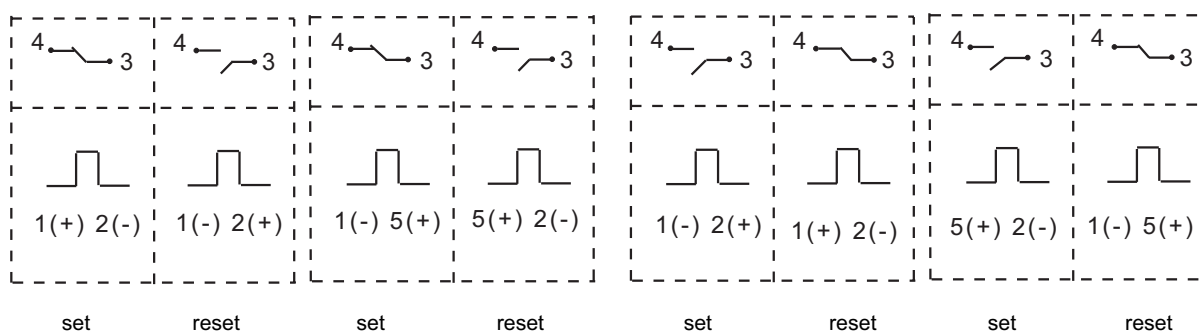
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Wiring Diagram

HFE10-1, HFE10-2, HFE10-3, HFE10-4

Positive polarity

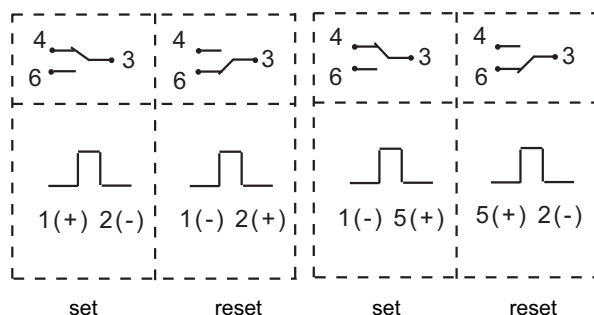
Single coil latching, 1 Form A Double coils latching, 1 Form A Single coil latching, 1 Form B Double coils latching, 1 Form B



OUTLINE DIMENSIONS AND WIRING DIAGRAM

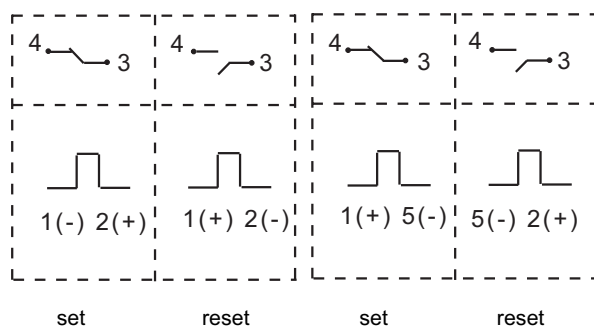
Unit: mm

Single coil latching, 1 Form C Double coils latching, 1 Form C

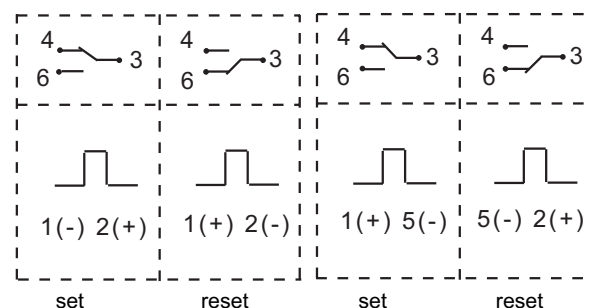


Negative polarity

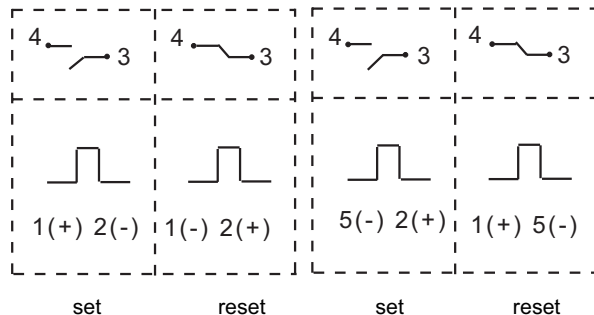
Single coil latching, 1 Form A Double coils latching, 1 Form A



Single coil latching, 1 Form C Double coils latching, 1 Form C



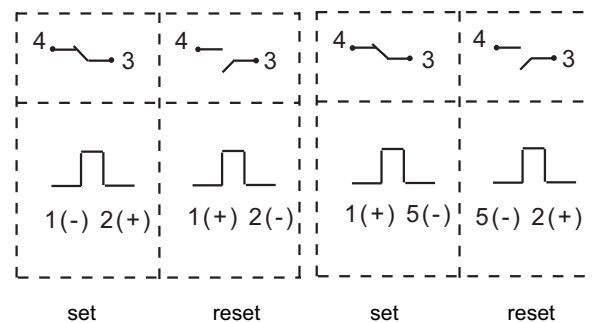
Single coil latching, 1 Form B Double coils latching, 1 FormB



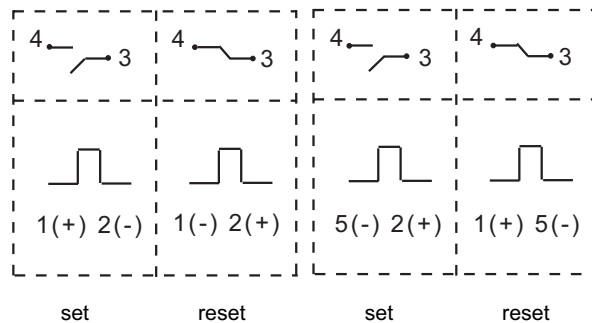
HFE10-5

Positive polarity

Single coil latching, 1 Form A Double coils latching, 1 Form A



Single coil latching, 1 Form B Double coils latching, 1 Form B



Wiring Diagram

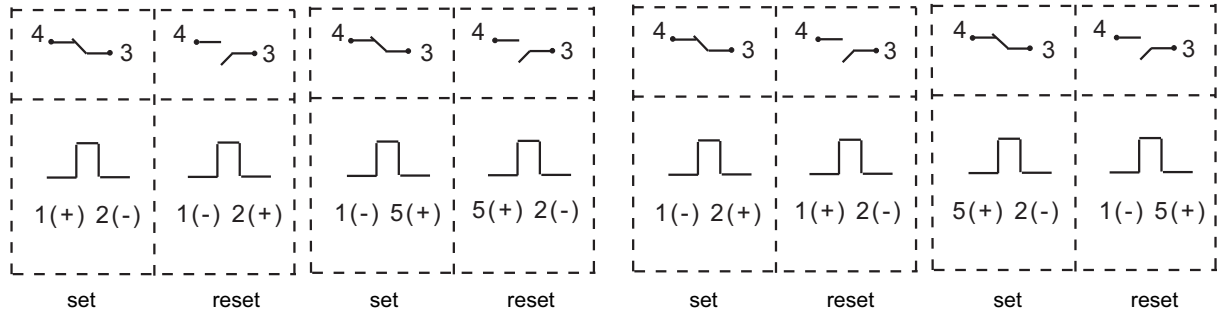
Negative polarity

Single coil latching, 1 Form A

Double coils latching, 1 Form A

Single coil latching, 1 Form B

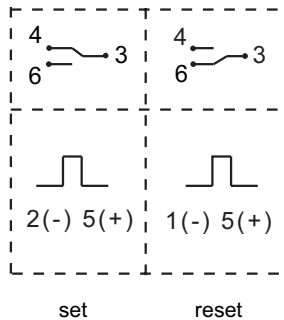
Double coils latching, 1 Form B



HFE10-1, HFE10-2, HFE10-3, HFE10-4, HFE10-5

(399):Special polarity

Double coils latching



Notice:

1. When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C to 260°C, 2s to 5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s.
2. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
3. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.

Disclaimer

The specification is for reference only. Specifications subject to change without notice.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFE10-L

MINIATURE HIGH POWER LATCHING RELAY



File No.:E134517



File No.:40035869



Features

- 20A switching capability
- The relay can stand short circuit SCCR 5000A peak current for 10ms
- Meet IEC60669-2-1
- Max. inrush current 500A/2ms
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (39.0 x 15.0 x 29.3)mm

CONTACT DATA

Contact arrangement	1A, 1B
Contact resistance	1.5mΩ max.(at 1A 6VDC)
Contact material	AgSnO ₂
Contact rating ¹⁾	277VAC 20A, 1 x 10 ⁵ OPS (Resistive) 30VDC 20A, 1 x 10 ⁵ OPS (Resistive) 250VAC 60A, 3 x 10 ⁴ OPS (General purpose) 250VAC 5000W, 3 x 10 ⁴ OPS (Incandescent lamp) 277VAC 20A, 3 x 10 ⁴ OPS (Standard ballast) 277VAC 16A, 3 x 10 ⁴ OPS (Electronic ballast)
Max. switching voltage	440VAC
Max. switching current	60A
Max. switching power	10000VA
Max. continuous current	40A
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	See rated load

Notes: Conform to EN60947-4-1(VDE0660-102),EN60669-1(VDE0632-1), EN60669-2-1, (VDE0632-1) lamp load request.

SAFETY APPROVAL RATINGS

UL/CUL	1A,1B	General purpose: 250VAC,60A Standard ballast: 277VAC,20A Electronic ballast: 277VAC,16A Incandescent lamp: 250VAC,5000W
VDE	1A,1B	Resistive load: 277VAC 20A Fluorescent lamp (uncompensated): 250VAC 20A Fluorescent lamp (parallel compensated): 250VAC 20A Incandescent lamp:250VAC,5000W AC-1 AC-3

Notes: 1) All values unspecified are at room temperature.

2) Only some typical ratings are listed above. If more details are required, please contact us.

COIL

Coil power	Single coil latching: Approx. 1.5W Double coils latching: Approx. 3.0W
------------	---

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1500VAC 1min
Creepage distance (input to output)		12mm
Set time (at nomi. volt.)		15ms max.
Reset time (at nomi. volt.)		15ms max.
Max. operate frequency		20cycles/min
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		PCB
Unit weight		Approx. 32g
Construction		Plastic sealed

Notes: The data shown above are initial values.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
6	4.8	50	Single coil latching	22
9	7.2	50		54
12	9.6	50		100
15	12	50		150
24	19.2	50		360
48	38.4	50		1600
6	4.8	50	Double coils latching	11+11
9	7.2	50		27+27
12	12	50		50 +50
15	9.6	50		75 + 75
24	19.2	50		180 +180
48	38.4	50		800 +800

ORDERING INFORMATION

Type	HFE10	-L/	12	-D	T	-L2	-R	(XXX)
Version	L: Products series code							
Coil voltage	6, 9, 12, 15, 24, 48VDC							
Contact form ¹⁾	D: 1 Form B H: 1 Form A							
Contact material	T: AgSnO ₂							
Sort	L1: Single coil latching L2: Double coils latching							
Polarity	R: Negative polarity Nil: Positive polarity							
Special code ²⁾	XXX: Customer special requirement Nil: Standard							

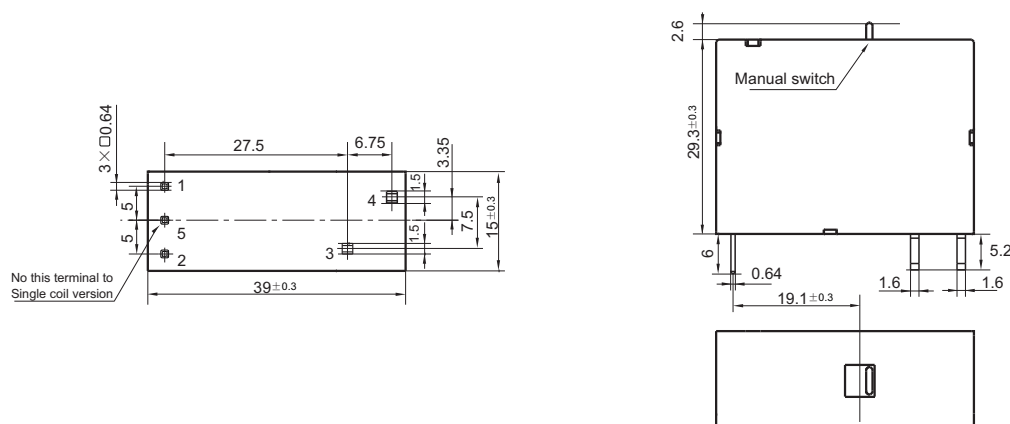
Notes: 1) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery. If no speical required by customer, we will keep the relay on the "set" status when delivery.

2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

Outline Dimensions



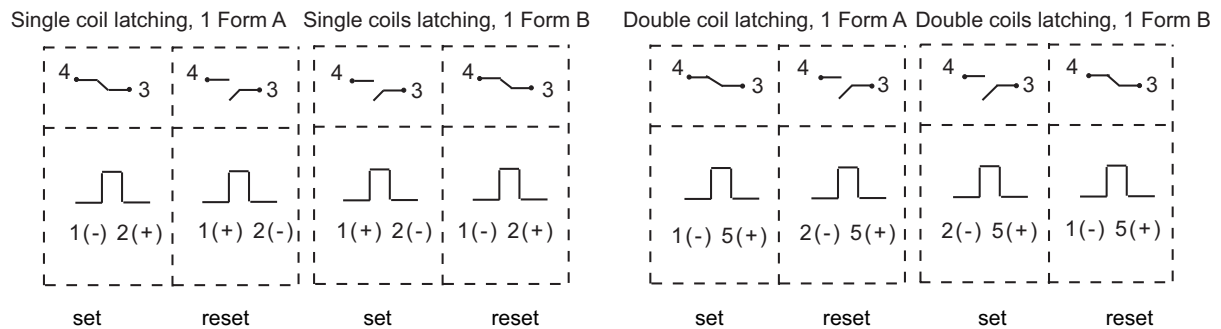
OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

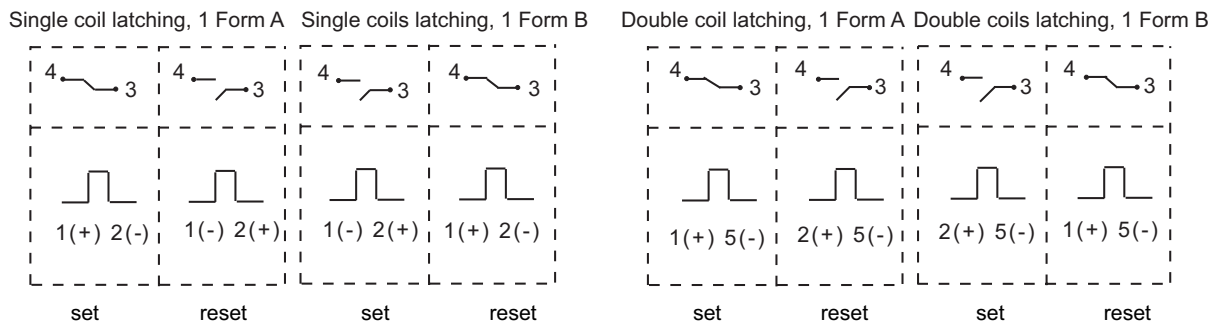
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Wiring Diagram

Positive polarity



Negative polarity



Notice:

1. When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C to 260°C , 2s to 5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s.
2. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
3. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
4. Relays are made with dust proof structure, So no longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

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We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFE12

MINIATURE HIGH POWER LATCHING RELAY



File No.: CQC12002086395



Features

- Latching relay
- 120A switching capability at Res.load
- According to the fault current and electrical life test of IEC 62055-31: UC1, UC2, UC3 (please see below table and notes2)
- 4kV dielectric strength (between coil and contacts)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (52.0 x 43.0 x 22.0) mm

CONTACT DATA

Contact arrangement	1A, 1B
Contact resistance	Typ.:0.35mΩ max.(at 100A) ¹⁾
Contact material	AgSnO ₂
Contact rating (Res. load)	100A 220VAC / 28VDC
Max. switching voltage	440VAC
Max. switching current	120A
Max. switching power	22000VA / 2800W
Mechanical endurance	1 x 10 ⁵ OPS

Notes: 1) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		8mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		QC
Unit weight		Approx. 85g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 2.4W Double coils latching: Approx. 4.8W
------------	---

COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
6	4.8	75	Single coil latching	16
9	7.2	75		34
12	9.6	75		60
24	19.2	75		250
48	38.4	75		1000
6	4.8	75	Double coils latching	8+8
9	7.2	75		17+17
12	9.6	75		30+30
24	19.2	75		125+125
48	38.4	75		500+500

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (ops)	
415 (UC1)	220VAC	80A	COSØ=1	10:20	3000	Total:6000
		10A	COSØ=0.4		3000	
416 (UC2)		80A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	
417 (UC3)		100A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	
NIL: (UC3)		100A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement, do the inductive load test after the resistive load test.
2) Only some typical ratings of UC are listed above, if more special ratings required, please contact us.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

ORDERING INFORMATION

Type	HFE12	-C	120/	12	-D	T	2	-R	(XXX)
Version	A: Type A contact terminal B: Type B contact terminal C: Type C contact terminal D: Type D contact terminal F: Type F contact terminal G: Type G contact terminal								
Shunt ¹⁾	120: 120μΩ Nil: Without shunt								
Coil voltage	6, 9, 12, 24, 48VDC								
Contact form ²⁾	D: 1 Form B H: 1 Form A								
Contact material	T: AgSnO ₂								
Sort	1: Single coil latching 2: Double coils latching								
Polarity	R: Negative polarity Nil: Positive polarity								
Special code ^{3) 4)}	XXX: Customer special requirement Nil: Standard(See electrical endurance)								

Notes: 1) 120: 120μΩ is just the reference value, further resistance upon request.

2) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery. If no speical required by customer, we will keep the relay on the "set" status when delivery.

3) Please make clear your technical requirements, and choose from the following 3 UC ratings:

UC1: meet the UC1 requirements on IEC62055-31: Carrying test 2400A peak current for 10ms;

UC2: meet the UC2 requirements on IEC62055-31: Making test:2.5kA/10ms, carrying test 4.5kA /10ms;

UC3: meet the UC3 requirements on IEC62055-31: Making test:3kA/10ms, carrying test 6kA/10ms.

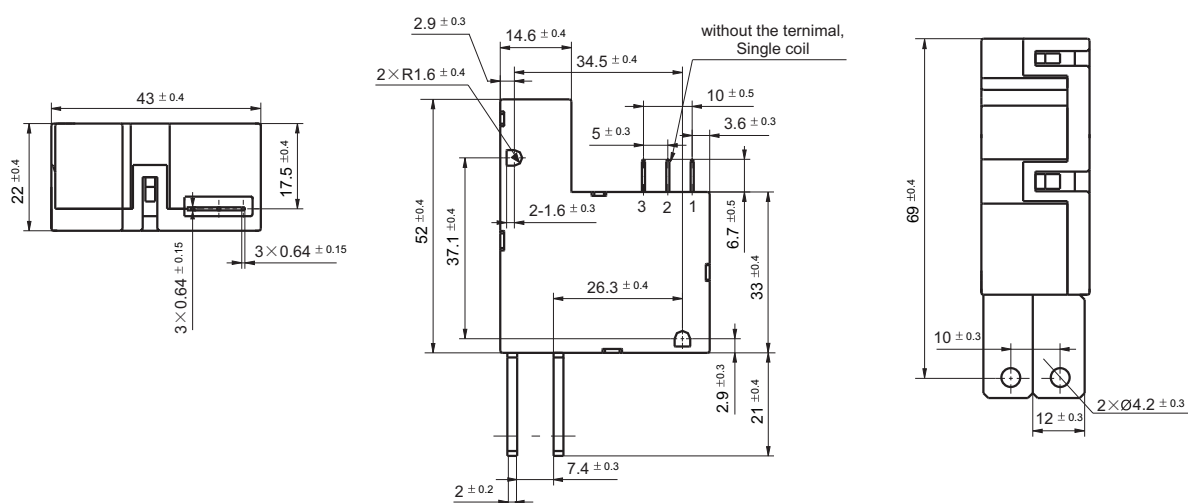
4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (415) stands for UC1; e.g. (416) stands for UC2; e.g. (417) stands for UC3.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

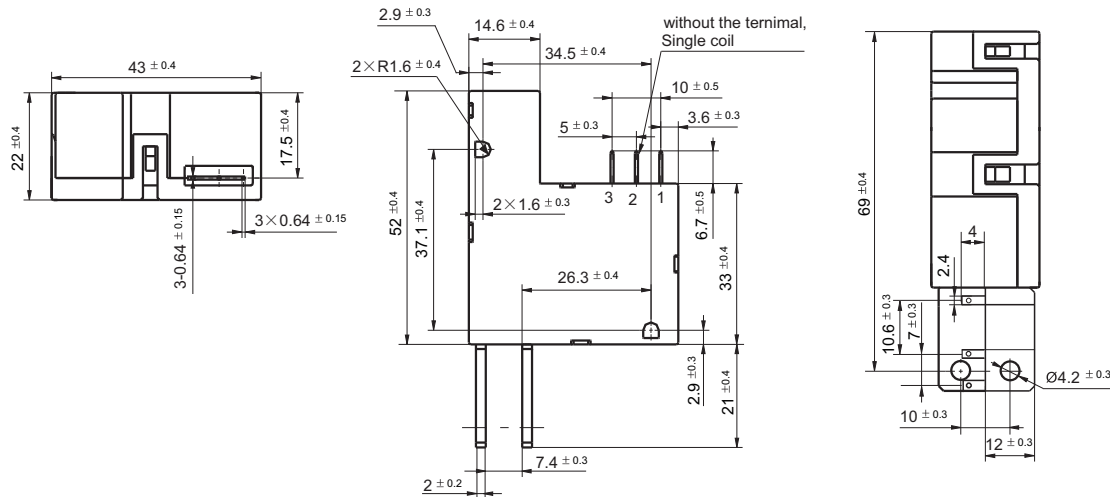
Outline Dimensions

Type C contact terminal

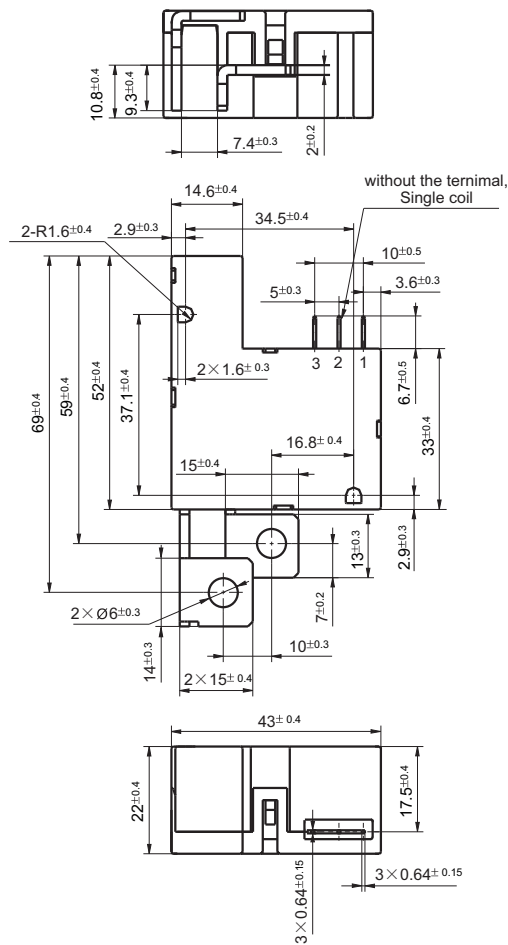


Outline Dimensions

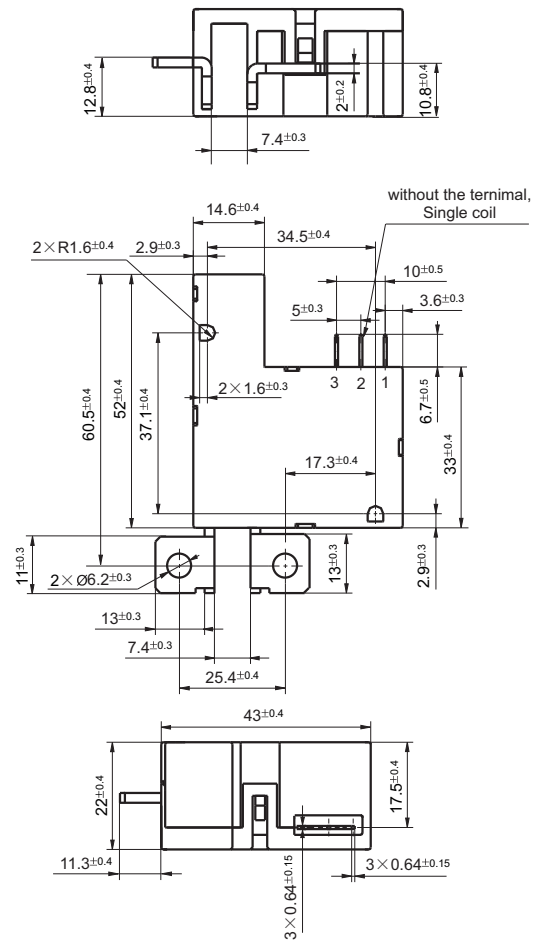
Typical shunt (120 $\mu\Omega$)



Type A contact terminal

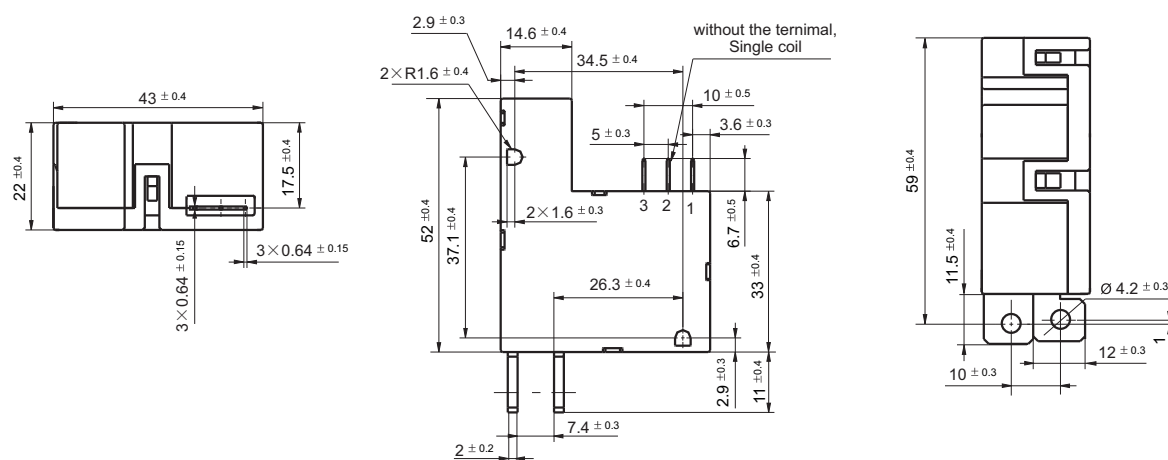


Type B contact terminal

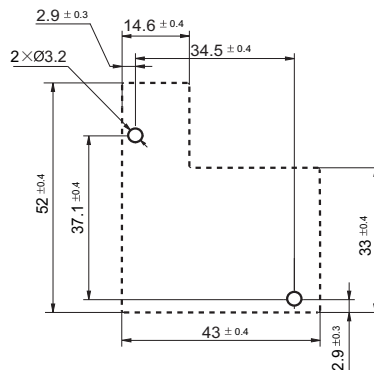


Unit: mm

Type D contact terminal



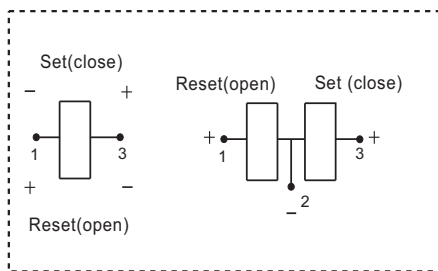
PCB Layout



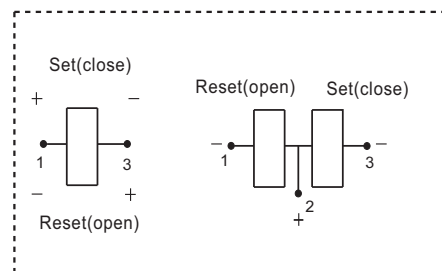
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.1\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Coil Wiring Diagram

Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully, more over two terminals can not be fixed at the same time.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

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HFE17

HIGH POWER LATCHING RELAY



Features

- Latching relay
- 200A switching capability
- According to ANSI C 12.1
(Carrying: 12kA current/66.7ms; 7kA peak current/100ms)
- Switching power up to 55.4kVA
- 4kV dielectric strength (between coil and contacts)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (97.6 x 73.2 x 29.5) mm

CONTACT DATA

Contact arrangement	2A, 2B
Contact resistance	Typ.:0.25mΩ max.(at 200A) ¹⁾
Contact material	AgSnO ₂
Contact rating (Res. load)	200A 277VAC/28VDC
Max. switching voltage	440VAC
Max. switching current	200A
Max. switching power	55400VA / 5600W
Mechanical endurance	5 x 10 ⁴ OPS
Electrical endurance	6 x 10 ³ OPS (200A 240VAC, Resistive load, Room temp., 1s on 9s off)

Notes: 1) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		9.6mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% ~85% RH
Ambient temperature		-40°C to 85°C
Termination		QC
Unit weight		Approx. 500g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 12W Double coils latching: Approx. 24W
------------	---

COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%)Ω	
12	9.6	200	Single coil latching	12
24	19.2	200		48
48	38.4	200		190
12	9.6	200	Double coils latching	6+6
24	19.2	200		24+24
48	38.4	200		95+95

Notes: When requiring other nominal voltage, special order allowed.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

ORDERING INFORMATION

	HFE 17	-A /	12	-2D	T	2	-R	(XXX)
Type								
Version	A: Type A contact terminal							
Coil voltage	12, 24, 48VDC							
Contact form ¹⁾	2D: 2 Form B 2H: 2 Form A							
Contact material	T: AgSnO ₂							
Coil Sort	1: Single coil latching 2: Double coils latching							
Polarity	R: Negative polarity Nil: Positive polarity							
Special code ²⁾	XXX: Customer special requirement Nil: Standard							

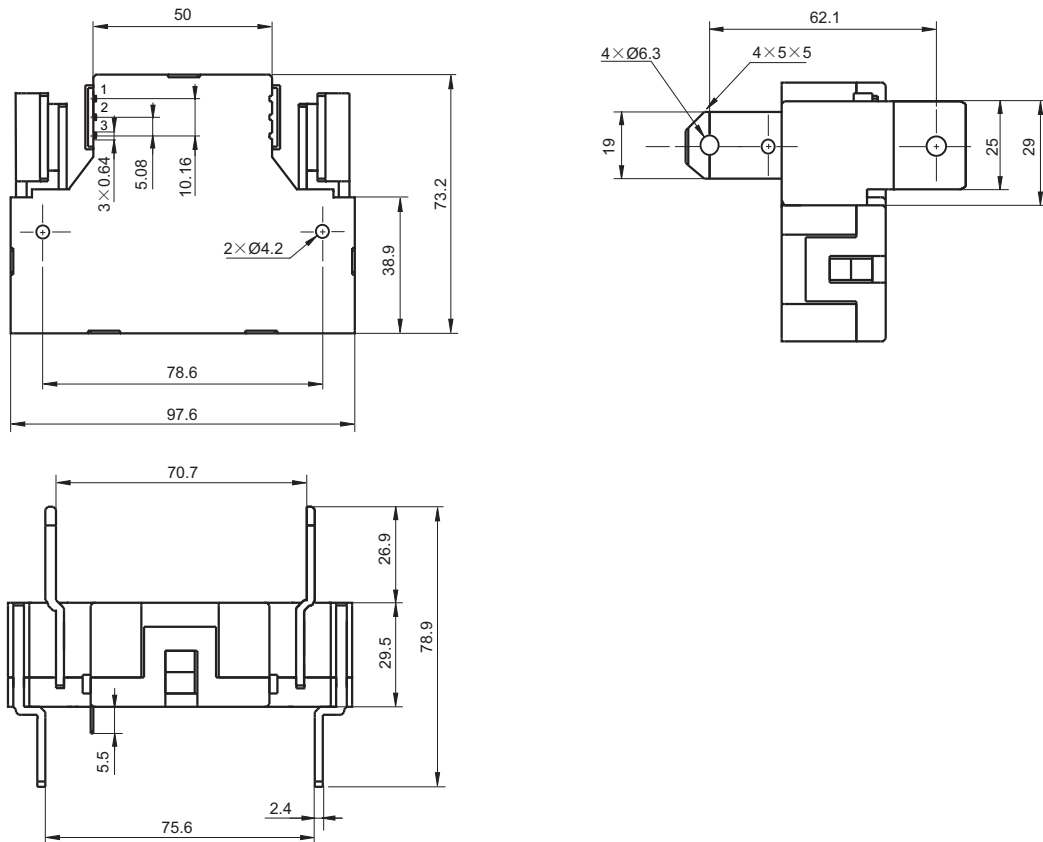
Notes: 1) 2H means that relay is on the "reset" status when delivery; 2D means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

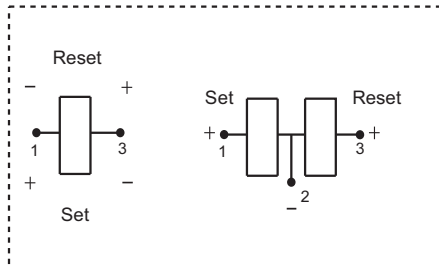
Outline Dimensions



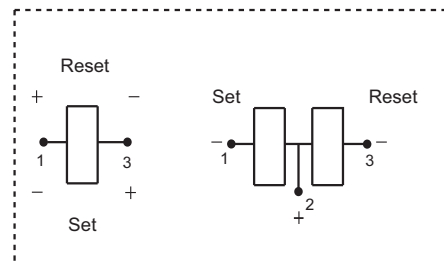
Remark: In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.

Coil Wring Diagram

Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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HFE19-60

MINIATURE HIGH POWER LATCHING RELAY



Features

- 60A switching capability
- Latching relay
- Making test 1800A peak short circuit current
- Carrying the 3500A short circuit current without explosion
- 4kV dielectric strength (between coil and contact)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (38.0 x 30.0 x 16.5) mm

CONTACT DATA

Contact arrangement	1A, 1B
Contact resistance	1mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	60A 250VAC
Max. switching voltage	250VAC
Max. switching current	60A
Max. switching power	22500VA
Mechanical endurance	Meter: 1 x 10 ⁵ OPS
Electrical endurance	Meter: 6000 OPS (60A 250VAC, Resistive load, Room temp., 0.6s on 5.4s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1500VAC 1min
Creepage distance		8mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		QC
Unit weight		Approx. 50g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 1.0 W
	Double coils latching: Approx. 2.0 W

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω
9	6.3	100	80
12	8.4	100	145
24	16.8	100	575
48	33.6	100	2270

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω
9	6.3	100	40+40
12	8.4	100	72+72
24	16.8	100	285+285
48	33.6	100	1135+1135



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

ORDERING INFORMATION

Type	HFE19	-60/	12	D	T	2	1	-R	(XXX)
Contact rating	60: 60A								
Coil voltage	9, 12, 24, 48VDC								
Contact form ¹⁾	D: 1 Form B H: 1 Form A								
Contact material	T: AgSnO ₂								
Coil angle form	2: Distance 5mm; No bowleg 4: Distance 5mm; L-bowleg								
Sort	1: Single coil latching 2: Double coils latching								
Polarity	R: Negative polarity Nil: Positive polarity								
Special code ³⁾	XXX: Customer special requirement Nil: Standard								

Notes: 1) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) we can make special design according to customer's requirement.

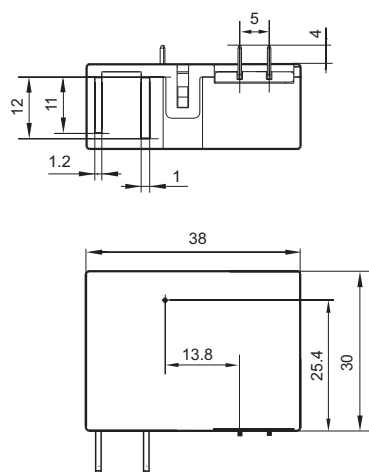
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

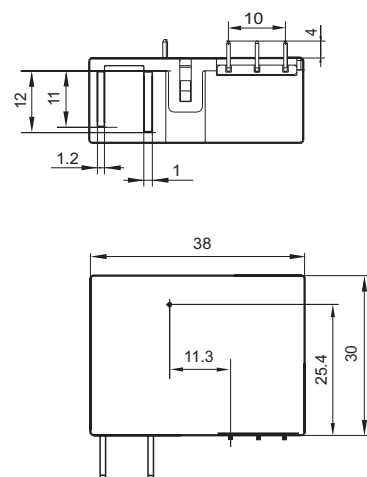
Unit: mm

Outline Dimensions

1 coil latching



2 coils latching

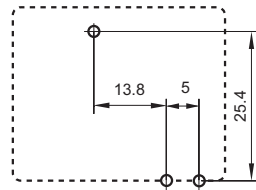


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

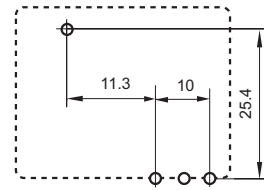
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

PCB Layout (Bottom view)

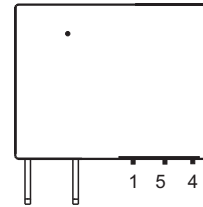
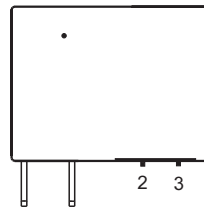
Single coil latching



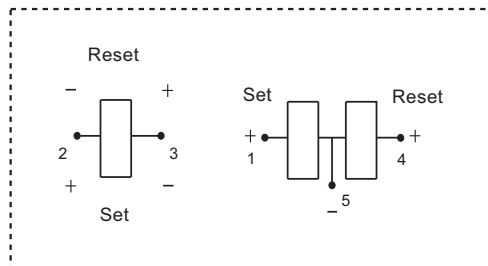
Double coils latching



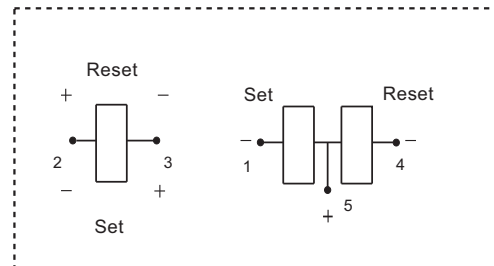
Wiring Diagram (Bottom view)



Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

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HFE19-90

MINIATURE HIGH POWER LATCHING RELAY



Features

- 90A Latching relay
- Carrying 2400A peak current/10ms and contact won't welded (Type:445)
- 4kV dielectric strength (between coil and contact)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (38.0 x 30.0 x 16.5) mm

CONTACT DATA

Contact arrangement	1A, 1B
Contact resistance	Typ.: 0.45mΩ max.(at 80A) ¹⁾
Contact material	AgSnO ₂
Contact rating (Res. load)	90A 265VAC
Max. switching voltage	265VAC
Max. switching current	90A
Max. switching power	23850VA
Mechanical endurance	1 x 10 ⁵ OPS

Notes: 1) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1500VAC 1min
Creepage distance		8mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		QC
Unit weight		Approx. 50g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 1.5W Double coils latching: Approx. 3.0W
------------	---

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω
5	3.5	100	16
6	4.2	100	24
9	6.3	100	54
12	8.4	100	96
24	16.8	100	384
48	33.6	100	1536

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω
5	3.5	100	8+8
6	4.2	100	12+12
9	6.3	100	27+27
12	8.4	100	48+48
24	16.8	100	192+192
48	33.6	100	768+768

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (OPS)	
445 (UC1)	220VAC	60A	COSØ=1	10:20	3000	Total:6000
		10A	COSØ=0.4		3000	
Nil	265VAC	60A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement,do the inductive load test after the resistive load test.

2) Only some typical ratings of UC are listed above, if more special ratings required, please contact us.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.10

ORDERING INFORMATION

Type	HFE19	-90/	12	D	T	2	1	-R	(XXX)
Contact rating	90: 90A								
Coil voltage	5, 6, 9, 12, 24, 48VDC								
Contact form ¹⁾	D: 1 Form B H: 1 Form A								
Contact material	T: AgSnO ₂								
Coil angle form	2: Distance 5mm; No bowleg 4: Distance 5mm; L-bowleg								
Sort	1: Single coil latching 2: Double coils latching								
Polarity	R: Negative polarity Nil: Positive polarity								
Special code ^{2) 4)}	XXX: Customer special requirement Nil: Standard(See electrical endurance)								

Notes: 1) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery. If no speical required by customer, we will keep the relay on the "set" status when delivery.

2) UC1: Meet the UC1 requirements on IEC62055-31;Relays are able to pass the 30Imax short circuit.

3) We can make special design according to customer's requirement,Please see the typical design.

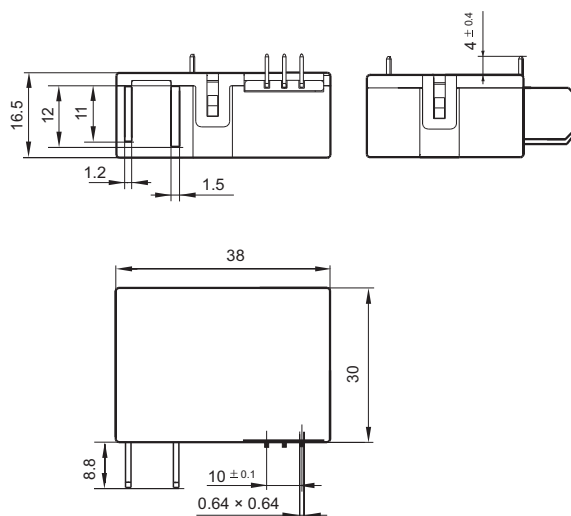
4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (459): Coil pins with reverse eduction way; e.g. (445): UC1, Carrying 2400A peak current(10ms) and contact won't welded.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

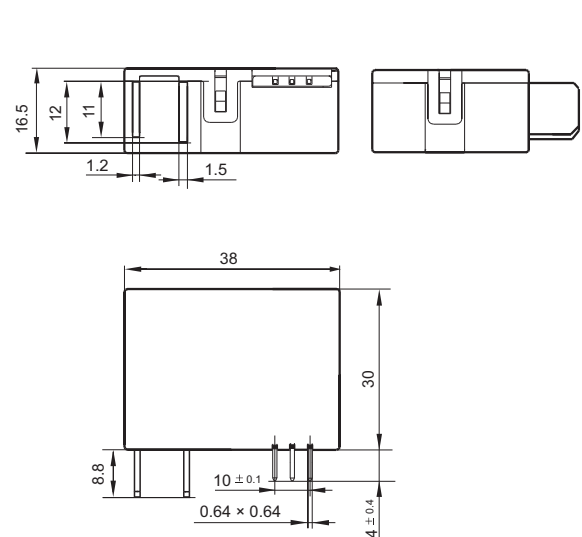
Unit: mm

Outline Dimensions

L-bowleg



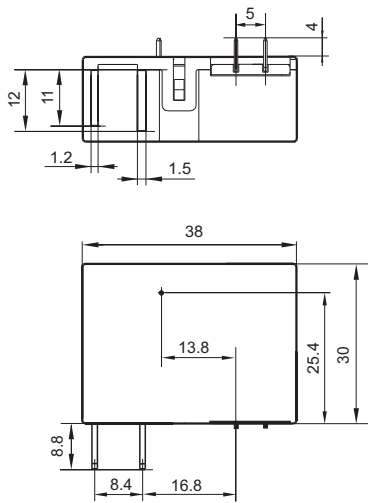
No bowleg



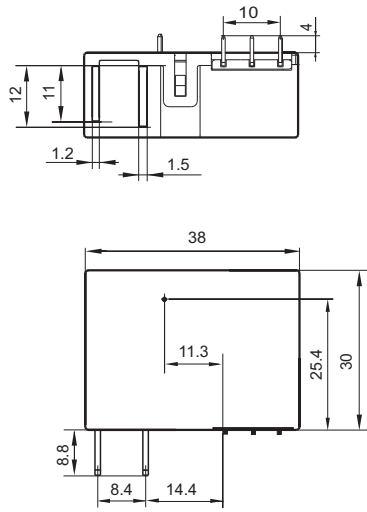
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

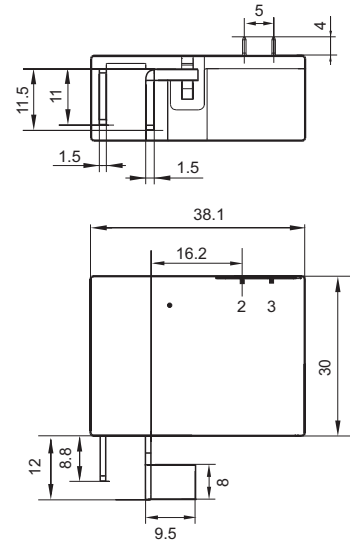
1 coil latching



2 coils latching

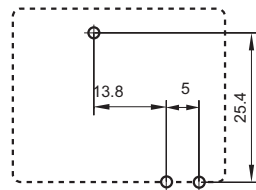


(459): Coil pins with reverse reduction way

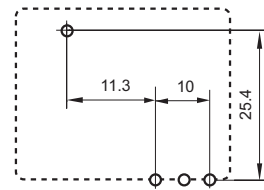


PCB Layout (Bottom view)

Single coil latching

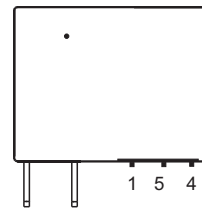
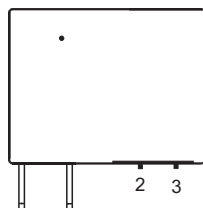


Double coils latching

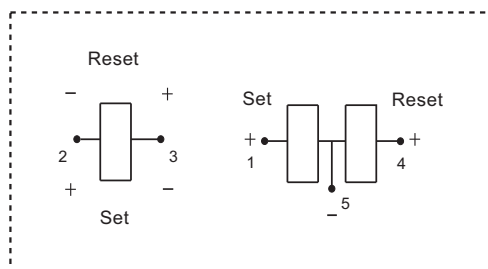


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

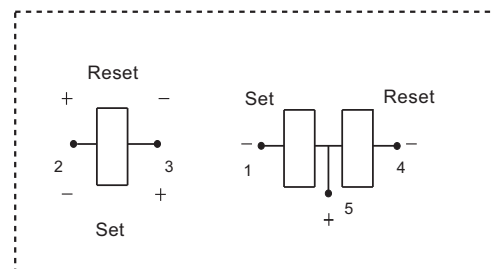
Wiring Diagram (Bottom view)



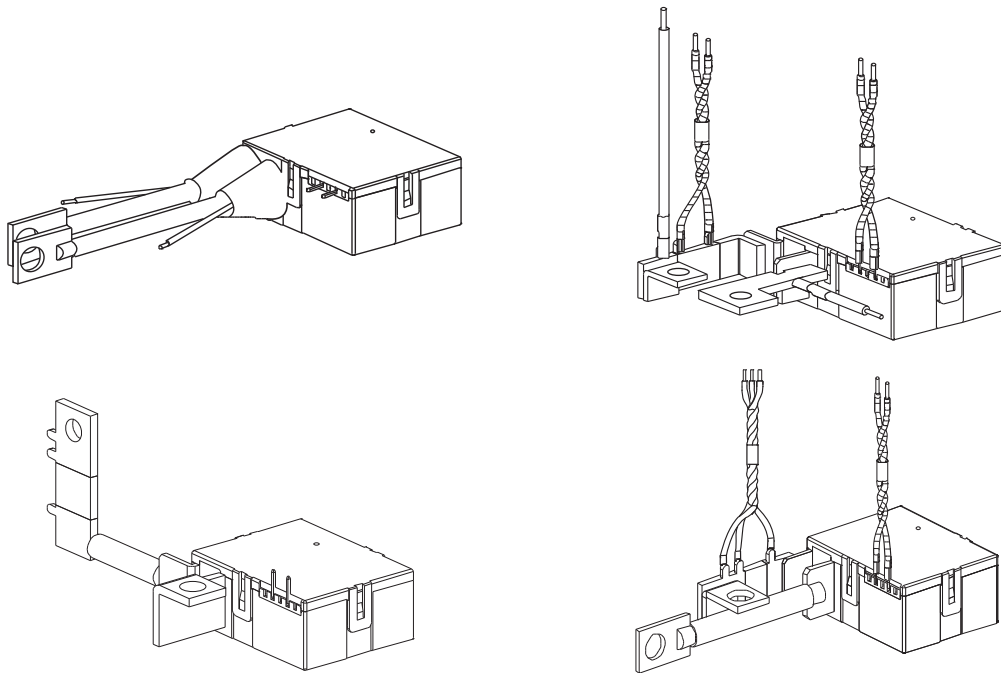
Positive polarity



Negative polarity



Typical Design



Remark: The drawing shown above are typical design, we can make special design according to customer's requirement. Please provide us with the drawing.

Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

The specification is for reference only. Specifications subject to change without notice.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFE20

MINIATURE HIGH POWER LATCHING RELAY

c R US

File No.:E134517



File No.: 40031831



File No.: CQC14002113728



Features

- 16A switching capability
- Latching relay
- Have passed TV-8 (UL) certification
- Inrush current Capacitor
500A/2ms and 320A/2ms
(Contact material: W+AgSnO₂ and AgSnO₂)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.7 x 15.7)mm

CONTACT DATA

Contact arrangement	1A, 1B, 1C
Contact resistance	20mΩ max. (at 1A 24VDC)
Contact material	AgSnO ₂ , W+AgSnO ₂
Contact rating	1A,1B: 16A 250VAC, 1 x 10 ⁵ OPS (Resistive, at 85°C, 1s on 9s off) 1A,1B: 20A 250VAC, 2 x 10 ⁴ OPS (Resistive, at 70°C, 1s on 9s off) 1A,1B: 1.5HP 250VAC 4 x 10 ⁴ OPS (Motor, at 40°C, 0.5s on 0.5s off) 1A,1B: 8A 220VAC COSØ=0.4, 1x10 ⁵ OPS (Inductive, at 85°C, 1s on 9s off) HFE20-1/X-1HD: 3300W 277VAC, 2 x 10 ⁴ OPS (Electronic rectifier, at 40°C, 1s on 9s off) 1C: 16A 250VAC, 5 x 10 ⁴ OPS (Resistive, at 85°C, 3s on 3s off)
Max. switching voltage	277VAC
Max. switching current	20A
Max. switching power	4000VA
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	See "Contact rating"

SAFETY APPROVAL RATINGS

UL/CUL	1 Form A	20A 250VAC at 70°C 16A 250VAC at 85°C 1.5HP 250VAC at 40°C
	1 Form C	NO:20A 250VAC at 70°C 16A 250VAC at 85°C NC:16A 250VAC at 85°C
VDE	1 Form A	20A 250VAC(COSØ=1) at 70°C 16A 250VAC(COSØ=1) at 85°C 8A 250VAC (COSØ=0.4) at 85°C
	1 Form C	16A 250VAC(COSØ=1) at 85°C

Notes: Only typical loads are listed above. other load specifications can be available upon request.

COIL

Coil power	Single coil latching: Approx 400mW Double coils latching: Approx 600mW
------------	---

COIL DATA

at 23°C

Single coil latching

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω
3	2.4	50	22.5
5	4.0	50	62.5
6	4.8	50	90
9	7.2	50	202.5
12	9.6	50	360
24	19.2	50	1440

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Creepage distance		8mm
Surge voltage(Between coil & contacts)		10000V
Set time (at nomi. volt.)		10ms max.
Reset time (at nomi. volt.)		10ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		PCB
Termination		-40°C to 85°C
Unit weight		Approx. 13g
Construction		Plastic sealed, Flux proofed

Notes: The data shown above are initial values.



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

2016 Rev. 1.10

COIL DATA

at 23°C

Double coils latching

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω
3	2.4	50	15+15
5	4.0	50	42+42
6	4.8	50	60+60
9	7.2	50	135+135
12	9.6	50	240+240
24	19.2	50	886+886

ORDERING INFORMATION

Type	HFE20	- 3	/12	-1D	S	T	-L2	-R	(XXX)
Version	1: 5mm pin 2: 3.5mm pin 3: 2.5mm pin								
Coil voltage	3, 5, 6, 9, 12, 24 VDC								
Contact form ¹⁾	1D: 1 Form B 1H: 1 Form A 1Z: 1 Form C (Only for HFE20-1, HFE20-2)								
Construction ²⁾	S: Plastic sealed Nil: Flux proofed								
Contact material	T: AgSnO ₂ D: W+AgSnO ₂ (Only for HFE20-1/□□ -1H, UL certification only)								
Sort	L1: Single coil latching L2: Double coils latching								
Polarity	R: Reverse polarity Nil: Positive polarity								
Special code ³⁾	XXX: Customer special requirement Nil: Standard								

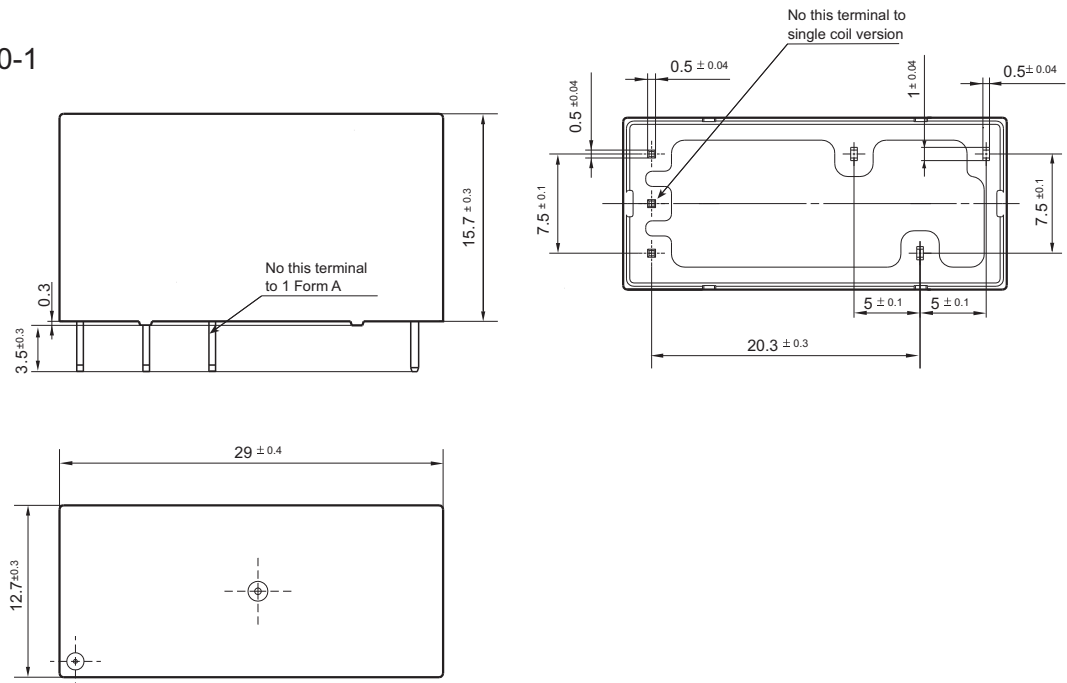
Notes: 1) 1H means that relay is on the "reset" status when delivery; 1D means that relay is on the "set" status when delivery. we will recommend use one form B if customer can use normally (except the pre-make version HFE20-1/□□-1H□D).

2) If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts.

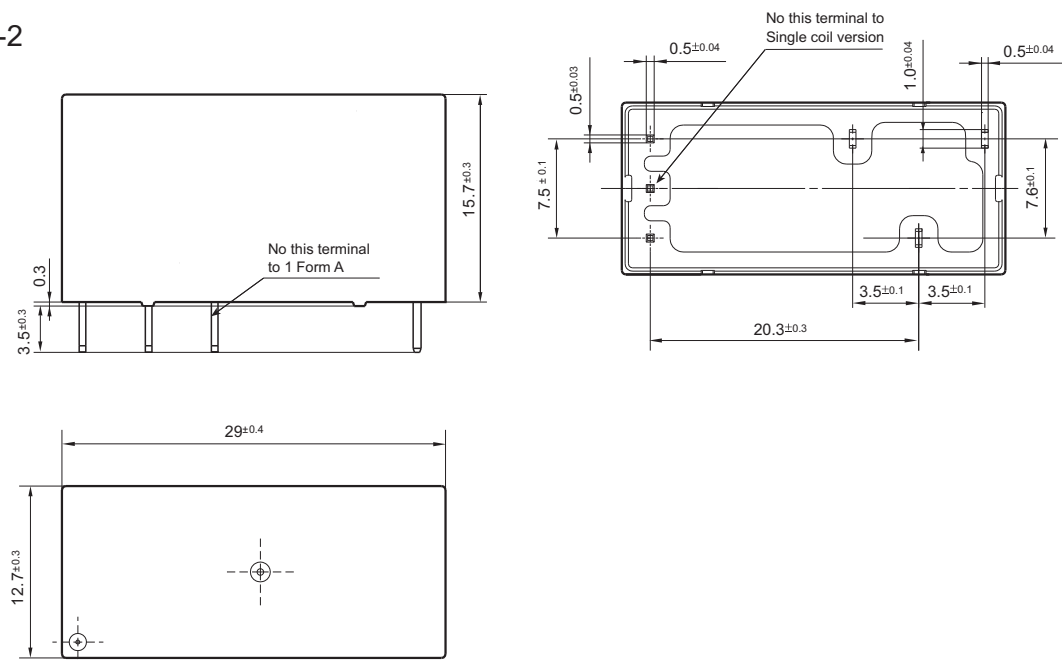
3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (359) stands for lamp load; e.g. (399) stands for special polarity(See Wiring Diagram).

Outline Dimensions

HFE20-1



HFE20-2

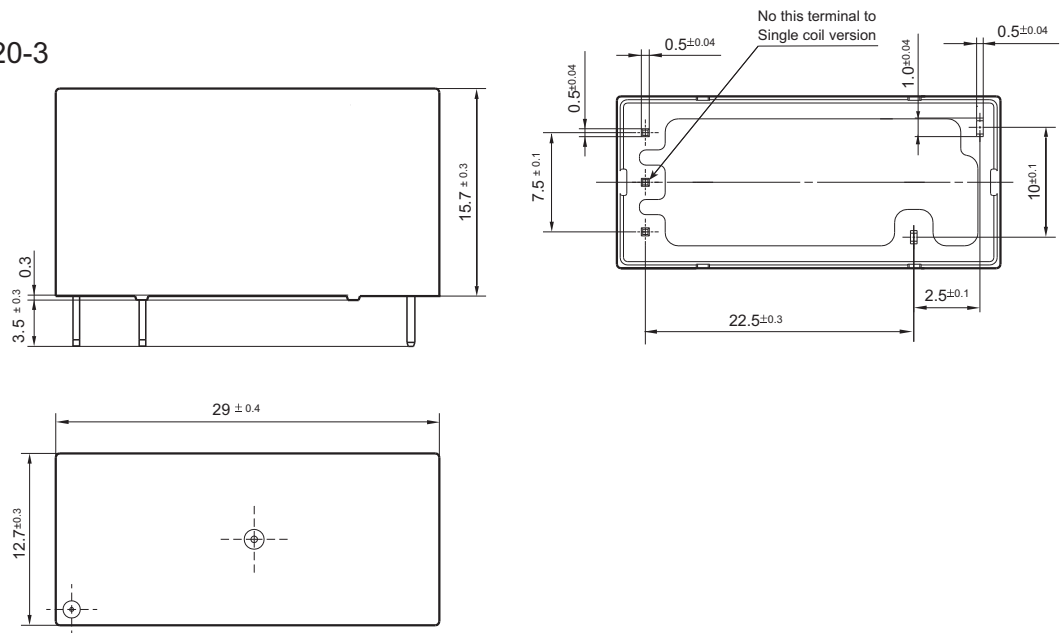


OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

Outline Dimensions

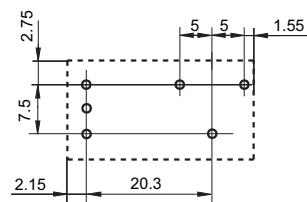
HFE20-3



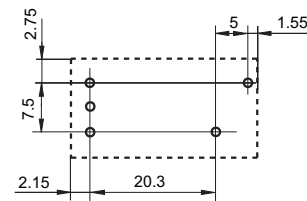
PCB Layout (Bottom view)

HFE20-1

1 Form C

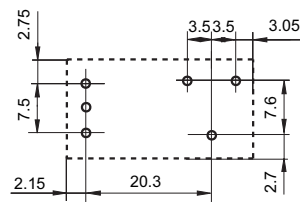


1 Form A, 1 Form B

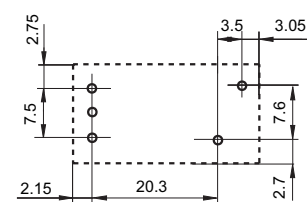


HFE20-2

1 Form C

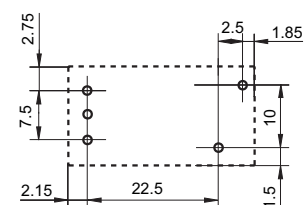


1 Form A, 1 Form B



HFE20-3

1 Form A, 1 Form B



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Wiring Diagram (Bottom view)

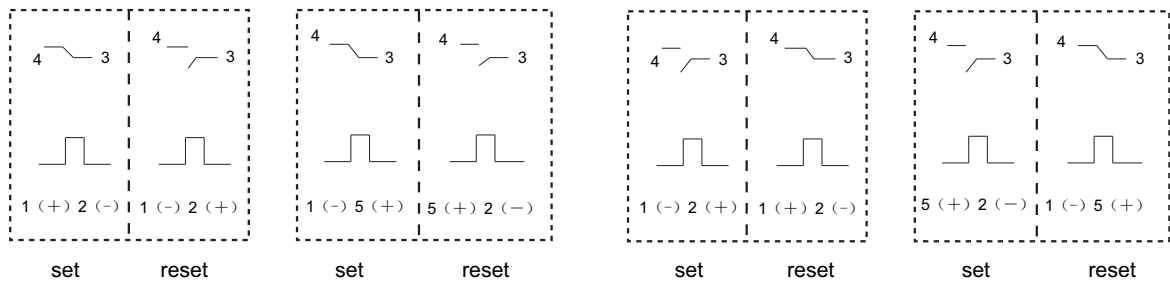
HFE20-3



Positive polarity

Single coil latching, 1 Form A Double coils latching, 1 Form A

Single coil latching, 1 Form B Double coils latching, 1 Form B

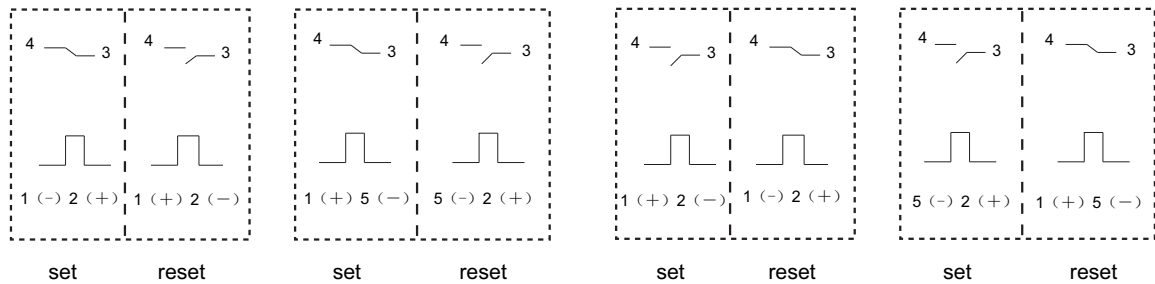


Wiring Diagram (Bottom view)

Reverse polarity

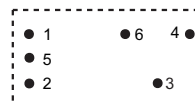
Single coil latching, 1 Form A Double coils latching, 1 Form A

Single coil latching, 1 Form B Single coils latching, 1 Form B



Wiring Diagram (Bottom view)

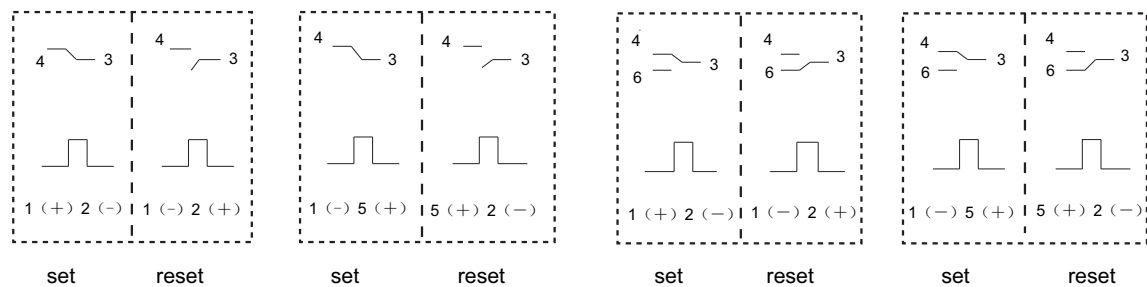
HFE20-1
HFE20-2



Positive polarity

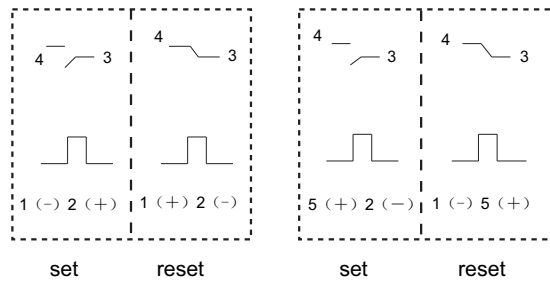
Single coil latching, 1 Form A Double coils latching, 1 Form A

Single coil latching, 1 Form C Double coils latching, 1 Form C



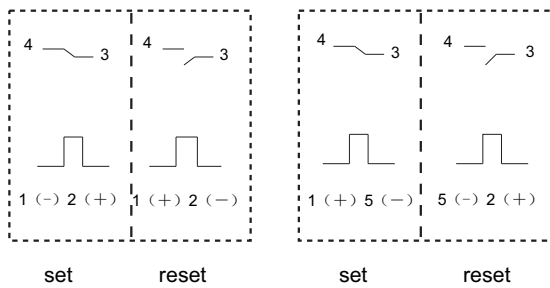
Wiring Diagram (Bottom view)

Single coil latching, 1 Form B Double coils latching, 1 Form B

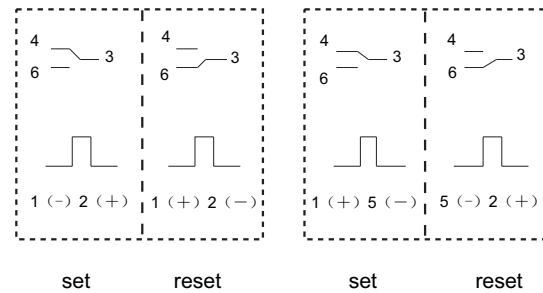


Reverse polarity

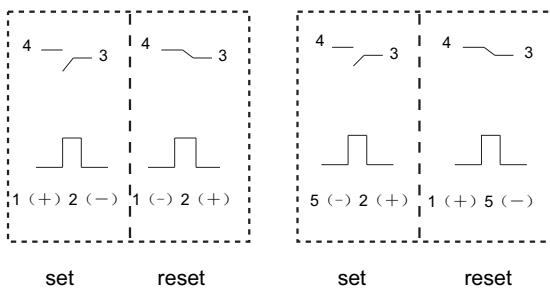
Single coil latching, 1 Form A Double coils latching, 1 Form A



Single coil latching, 1 Form C Double coils latching, 1 Form C

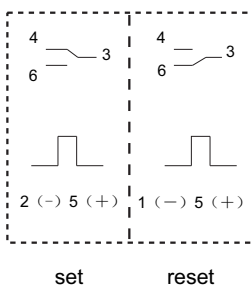


Single coil latching, 1 Form B Double coils latching, 1 Form B



(399):Special polarity

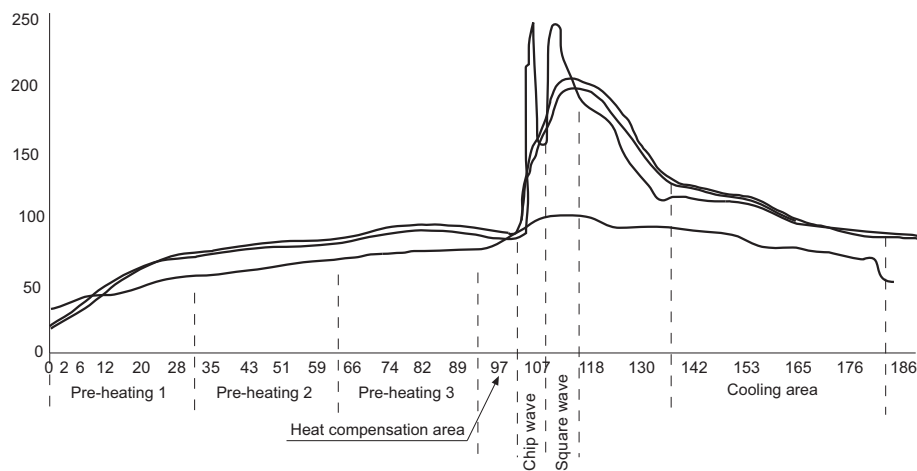
Double coils latching



Notice:

1. Latching relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C to 260°C, 2s to 5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s; the below chart is the wave soldering temperature distribution chart we recommended for your reference.

Wave soldering temperature distribution chart



Disclaimer

The specification is for reference only. Specifications subject to change without notice.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFE21

MINIATURE HIGH POWER LATCHING RELAY



Features

- Latching relay
- 120A switching capability at Res.load
- According to the fault current and electrical life test of IEC 62055-31: UC1, UC2, UC3 (please see below table and notes2)
- 4kV dielectric strength(between coil and contacts)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (52.0 x 43.0 x 22.0) mm

CONTACT DATA

Contact arrangement	1A, 1B, 1U, 1V
Contact resistance	Typ.:0.35mΩ max. (at 100A) ¹⁾
Contact material	AgSnO ₂
Contact rating (Res. load)	100A 220VAC / 28VDC
Max. switching voltage	440VAC
Max. switching current	120A
Max. switching power	22000VA / 2800W
Mechanical endurance	1 x 10 ⁶ OPS

Notes: 1) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continuous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		8mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		QC
Unit weight		Approx. 85g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 3.0W Double coils latching: Approx. 6.0W
------------	---

COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
6	4.8	75	Single coil latching	13
12	9.6	75		50
24	19.2	75		210
48	38.4	75		860
6	4.8	75	Double coils latching	6.5+6.5
12	9.6	75		25+25
24	19.2	75		105+105
48	38.4	75		430+430

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (OPS)	
415 (UC1)	220VAC	80A	COSØ=1	10:20	3000	Total:6000
		10A	COSØ=0.4		3000	
416 (UC2)		80A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	
417 (UC3)		100A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	
NIL: (UC3)		100A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement,do the inductive load test after the resistive load test.

2) Only some typical ratings of UC are listed above, if more special ratings required, please contact us.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

ORDERING INFORMATION

Type	HFE21										-C	120	/12	-D	T	2	-R	(XXX)
Version	A: Type A contact terminal B: Type B contact terminal C: Type C contact terminal D: Type D contact terminal G: Type G contact terminal I: Type I contact terminal J: Type J contact terminal																	
shunt ¹⁾	120:120μΩ										Nil: Without shunt							
Coil voltage	6, 12, 24, 48VDC																	
Contact form ²⁾	D: 1 Form B (Single-contact) H: 1 Form A (Single-contact) SD: 1 Form B (Double-contact of 1 Form B) SH: 1 Form A (Double-contact of 1 Form A)																	
Contact material	T: AgSnO ₂																	
Sort	1: Single coil latching										2: Double coils latching							
Polarity	R: Negative polarity										Nil: Positive polarity							
Special code ^{3) 4)}	XXX: Customer special requirement										Nil: Standard(See electrical endurance)							

Notes: 1) 120: 120μΩ is just the reference value, further resistance upon request.

2) H, SH means that relay is on the "reset" status when delivery; D, SD means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

3) Please make clear your technical requirements, and choose from the following 3 UC ratings:

UC1: meet the UC1 requirements on IEC62055-31: Carrying test 2400A peak current for 10ms;

UC2: meet the UC2 requirements on IEC62055-31: Making test:2.5kA/10ms carrying test 4.5kA /10ms;

UC3: meet the UC3 requirements on IEC62055-31: Making test:3kA/10MS; carrying test 6kA/10ms.

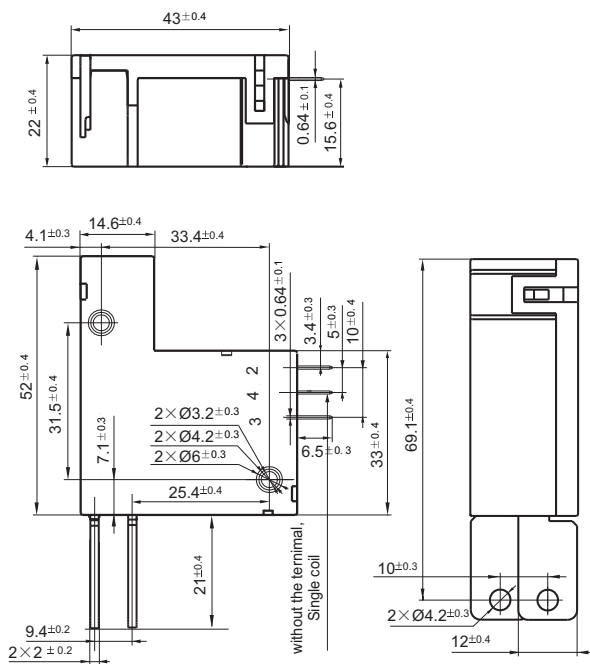
4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (415) stands for UC1; e.g. (416) stands for UC2; e.g. (417) stands for UC3.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

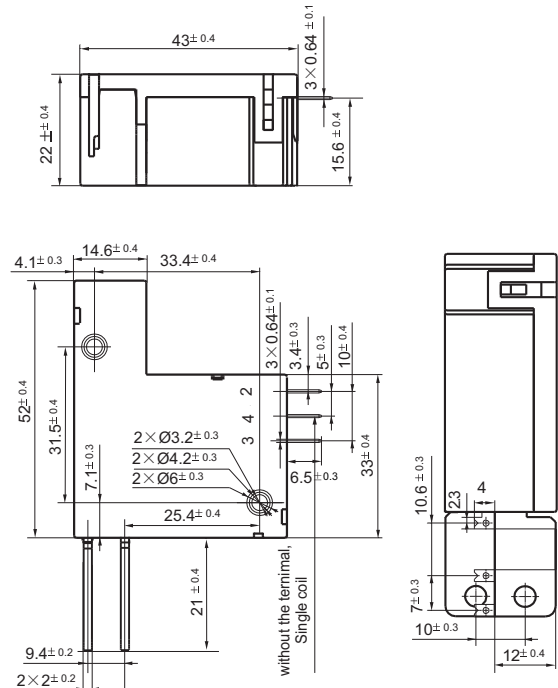
Unit: mm

Outline Dimensions

Type C contact terminal

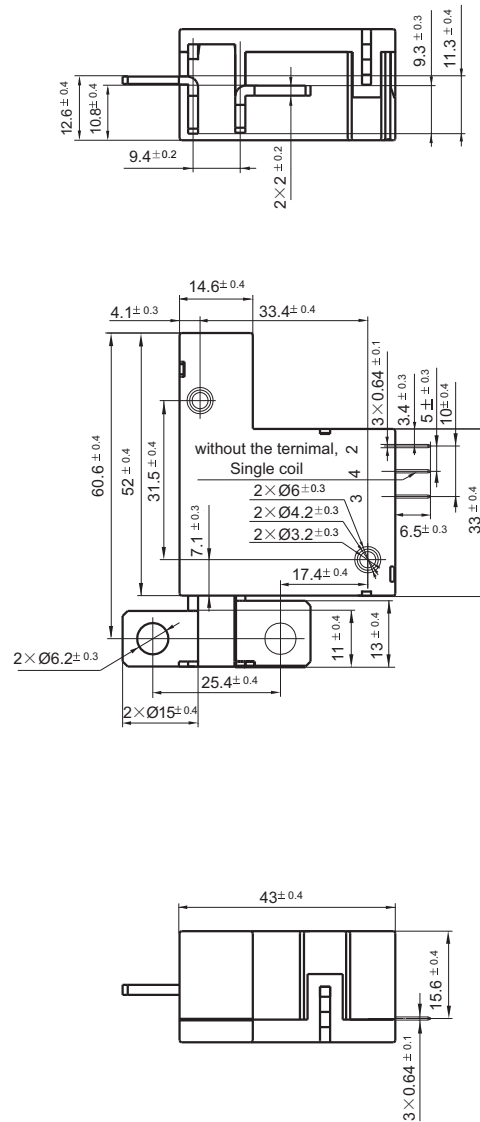


Typical shunt(120μΩ)

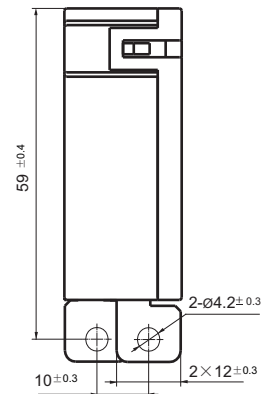
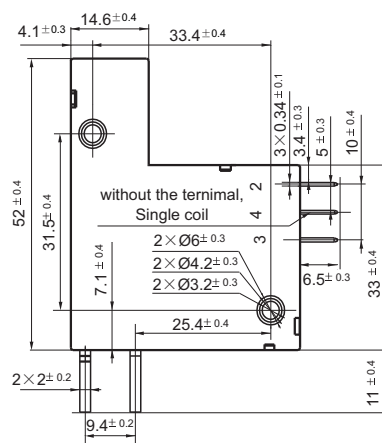
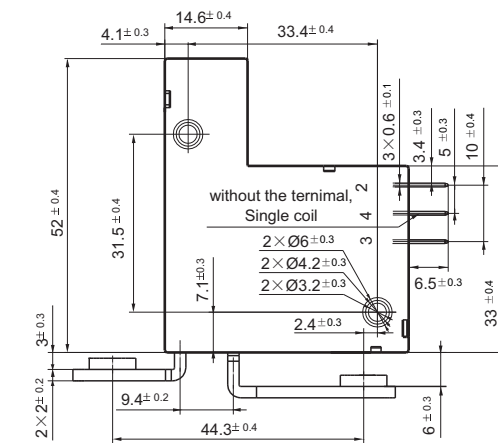


Unit: mm

Type B contact terminal

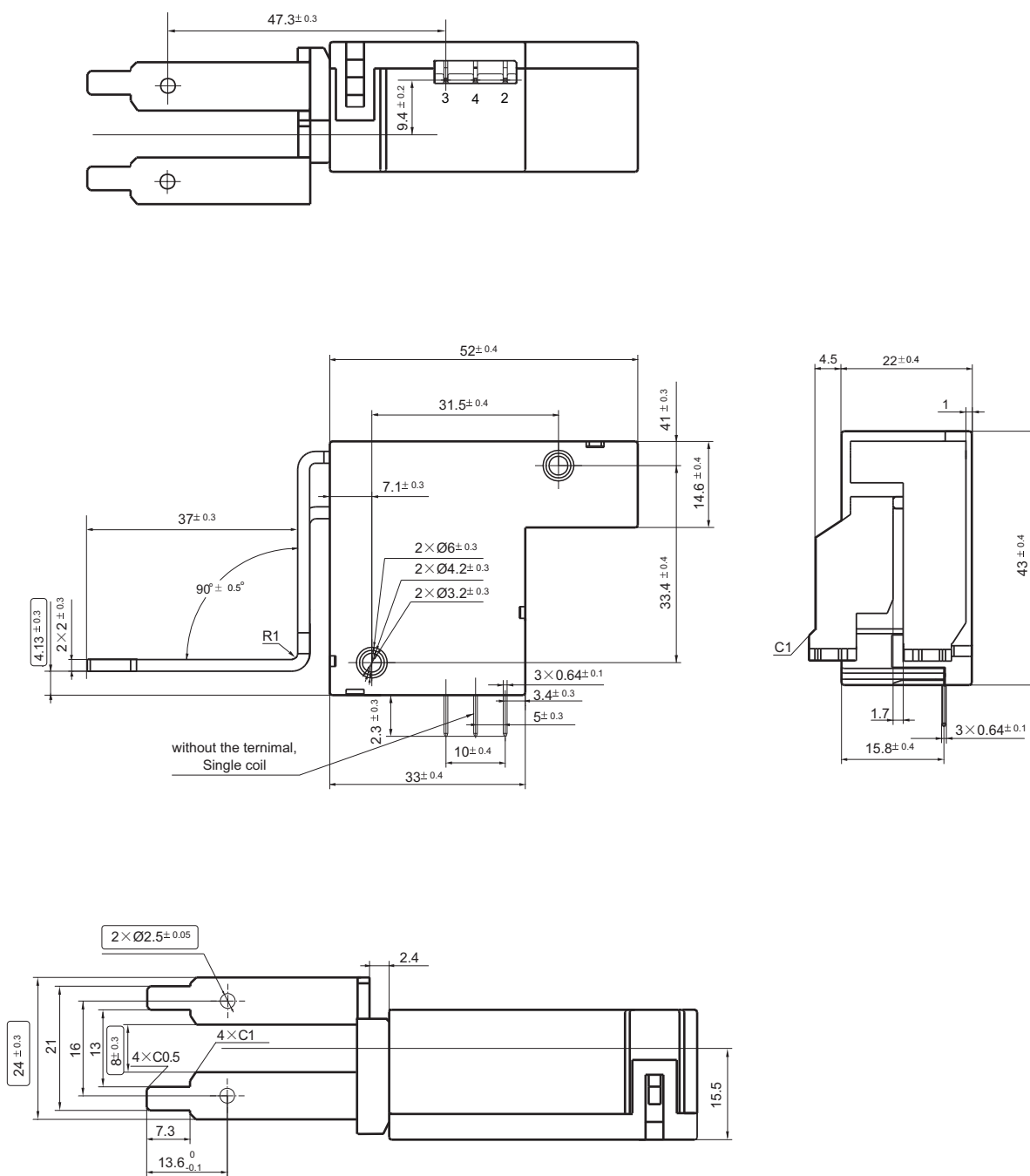


Type D contact terminal



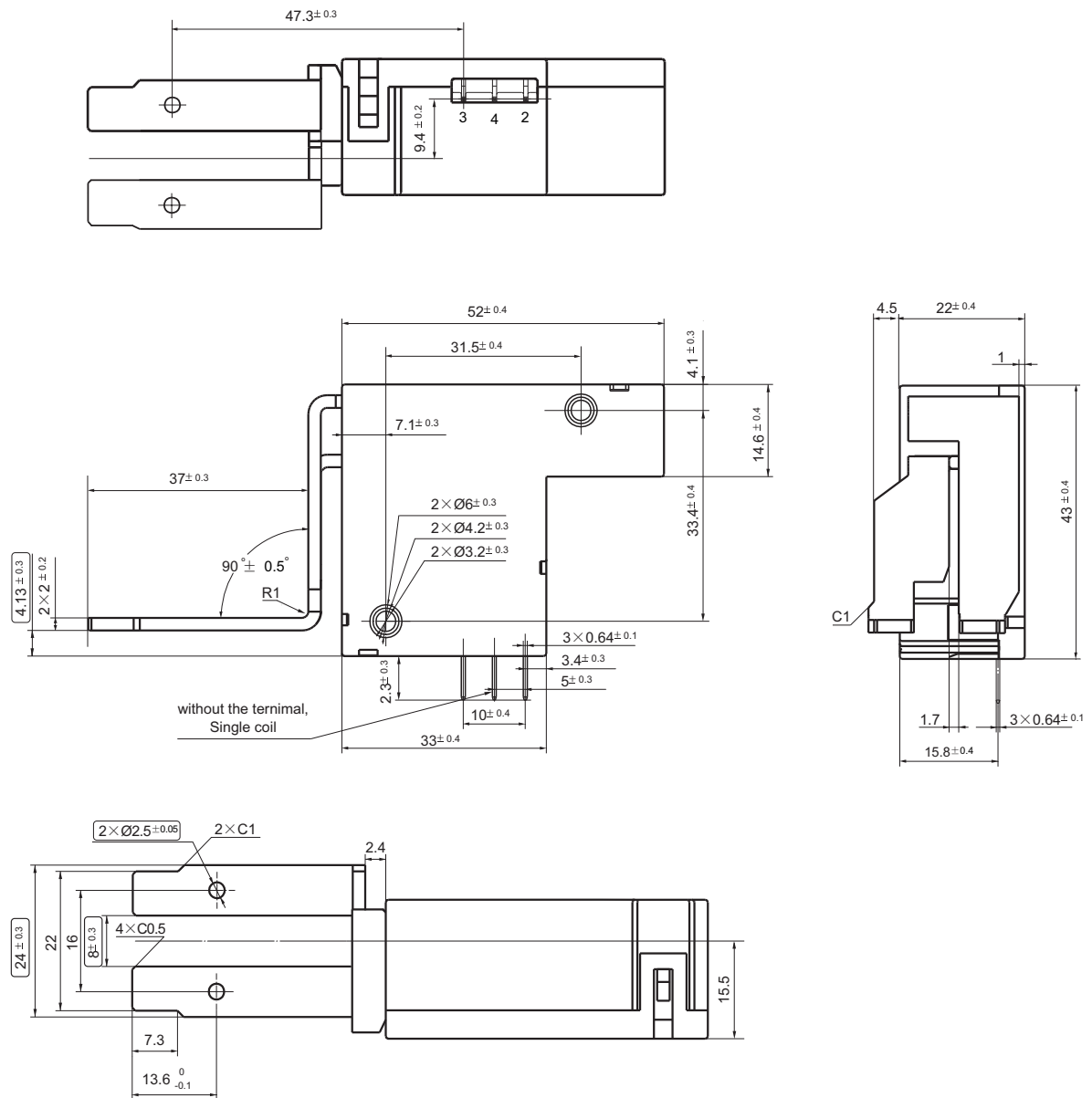
Outline Dimensions

Type I contact terminal



Outline Dimensions

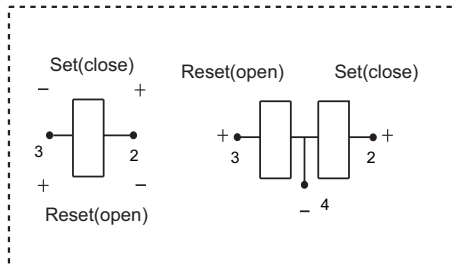
Type J contact terminal



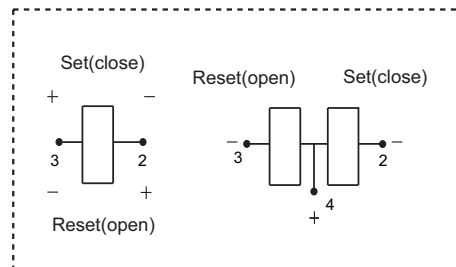
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.1\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Coil Wiring Diagram

Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully.
4. relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements.No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

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HFE22

MINIATURE HIGH POWER LATCHING RELAY



File No.: E133481



Features

- 100A Latching relay
- Making test 1500A 10ms
short circuit current without explosion
- Heavy load up to 27700VA
- 4kV dielectric strength (between coil and contacts)
- Micro switch on mounting board available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (60.0 x 40.0 x 21.0) mm

CONTACT DATA

Contact arrangement	1A, 1B
Contact resistance	Typ.:0.35mΩ max.(at 100A) ¹⁾
Contact material	AgSnO ₂
Contact rating (Res. load)	100A 277VAC/28VDC
Max. switching voltage	440VAC
Max. switching current	100A
Max. switching power	27700VA / 2800W
Mechanical endurance	1 x 10 ⁵ OPS
Electrical endurance	1 x 10 ⁴ OPS (100A 220VAC, Resistive load, Room temp., 1s on 9s off)

Notes: 1) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	2000VAC 1 min
Creepage distance		8mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms max.
Shock resistance	Functional	294m/s²
	Destructive	980m/s²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		QC
Unit weight		Approx. 100g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 2.4W Double coils latching: Approx. 4.8W
------------	---

COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
6	4.8	100	Single coil latching	16
12	9.6	100		60
24	19.2	100		250
48	38.4	100		1000
6	4.8	100	Double coils latching	8+8
12	9.6	100		30+30
24	19.2	100		125+125
48	38.4	100		500+500

Notes: When requiring other nominal voltage, special order allowed.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

ORDERING INFORMATION

	HFE22	-A / 12	-D	1	T	2	1	-R	(XXX)
Type									
Version	A: Type A contact terminal B: Type B contact terminal C: Type C contact terminal								
Coil voltage	6, 12, 24, 48VDC								
Contact form ¹⁾	D: 1 Form B H: 1 Form A								
Coil terminal type	1: Type 1 2: Type 2								
Contact material	T: AgSnO ₂								
Sort	1: Single coil latching 2: Double coils latching								
Mounting board form	1: Without micro switch 2: With micro switch								
Polarity	R: Negative polarity Nil: Positive polarity								
Special code ²⁾	XXX: Customer special requirement Nil: Standard								

Notes: 1) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery. If no speical required by customer, we will keep the relay on the "set" status when delivery.

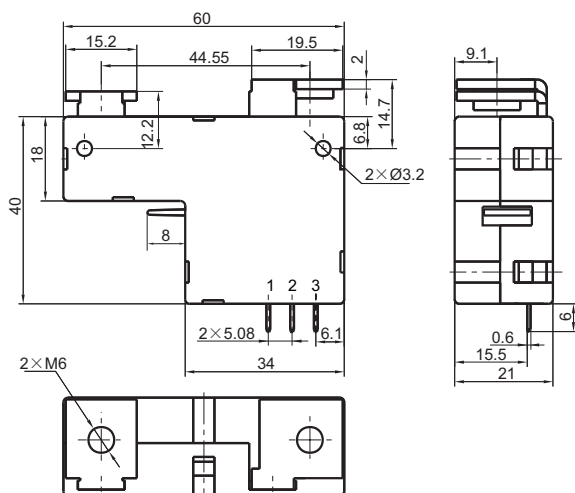
2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

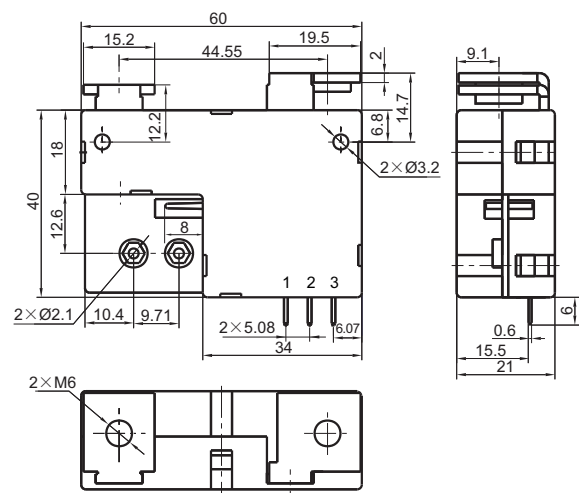
Unit: mm

Outline Dimensions

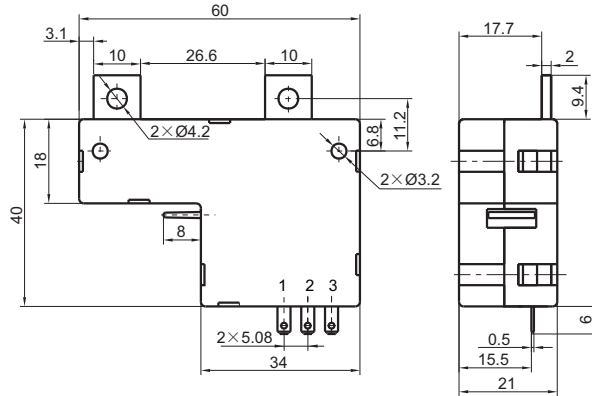
Type A contact terminal, Without micro switch



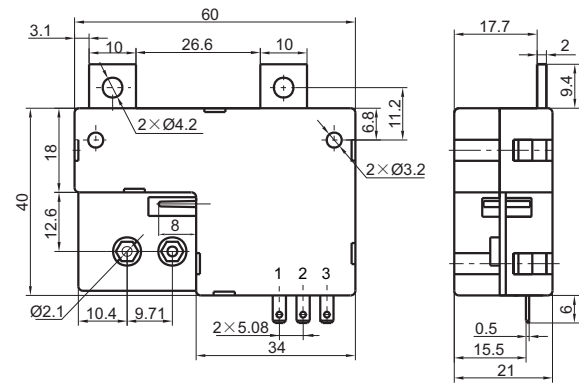
Type A contact terminal, With micro switch



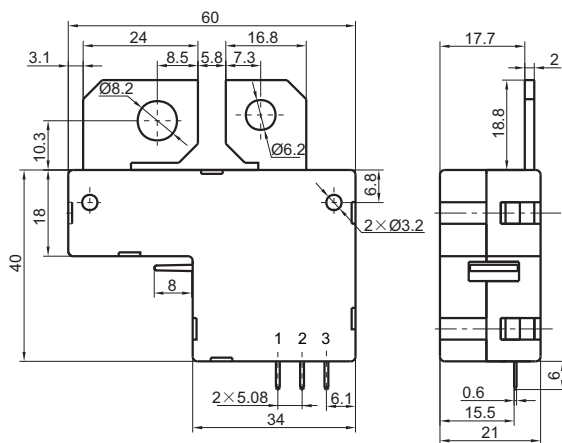
Type B contact terminal, Without micro switch



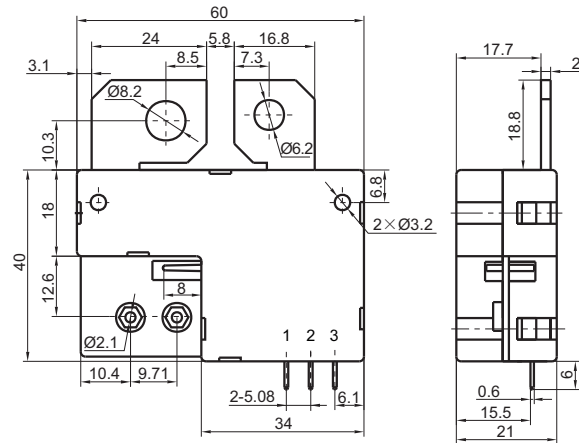
Type B contact terminal, With micro switch



Type C contact terminal, Without micro switch

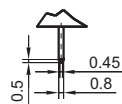


Type C contact terminal, With micro switch

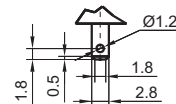


Coil Terminal Type

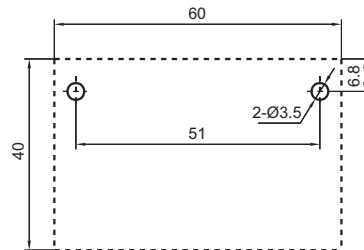
type 1



type 2



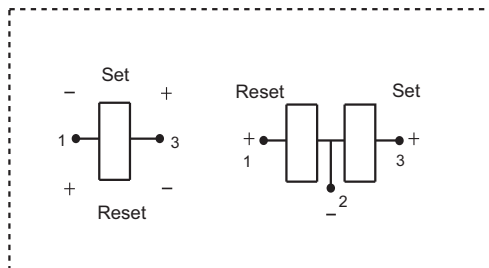
PCB Layout



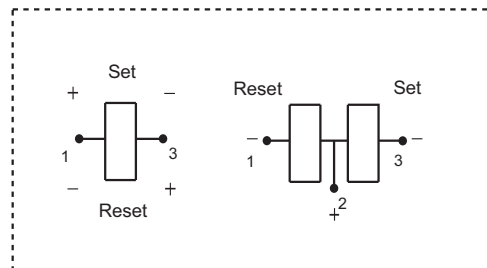
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

Coil Wiring Diagram

Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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HFE23

MINIATURE 3-PHASES RELAY



Features

- 3-phases latching relay
- 120A switching capability at Res.load
- According to the fault current and electrical life test of IEC 62055-31: UC1, UC2, UC3 (please see below table and notes2)
- Heavy load up to 27.6kVA
- 4kV dielectric strength (between coil and contacts)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (115.0 x 54.0 x 24.0) mm

CONTACT DATA

Contact arrangement	3A, 3B, 3U, 3V
Contact resistance	Typ.:0.35mΩ max. (at 100A) ¹⁾
Contact material	AgSnO ₂
Contact rating (Res. load)	120A 230VAC
Max. switching voltage	440VAC
Max. switching current	120A
Max. switching power	27600VA
Mechanical endurance	1 x 10 ⁵ OPS

Notes: 1) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	2500VAC 1 min
Creepage distance		8mm
Set time (at nomi. volt.)		30ms max.
Reset time (at nomi. volt.)		30ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		QC
Unit weight		Approx.300g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 5W Double coils latching: Approx. 10W
------------	--

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
6	4.8	100	Single coil latching	7
9	7.2	100		16
12	9.6	100		29
24	19.2	100		115
48	38.4	100	Double coils latching	460
6	4.8	100		3.5+3.5
9	7.2	100		8+8
12	9.6	100		14.5+14.5
24	19.2	100		57.5+57.5
48	38.4	100		230+230

Notes: When requiring other nominal voltage, special order allowed.

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (ops)	
415 (UC1)	220VAC	80A	COSØ=1	10:20	3000	Total:6000
		10A	COSØ=0.4		3000	
416 (UC2)		80A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	
417 (UC3)		100A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement, do the inductive load test after the resistive load test.

2) Only some typical ratings of UC are listed above, if more special ratings required, please contact us.

ORDERING INFORMATION

	HFE23		-A /	12	-3D	T	2	-R	(XXX)
Type									
Version	A: Type A contact terminal								
Coil voltage	6, 9, 12, 24, 48VDC								
Contact form ¹⁾	3D: 3 Form B (Single-contact) 3H: 3 Form A (Single-contact) 3SD: 3 Form B (Double-contact) 3SH: 3 Form A (Double-contact)								
Contact material	T: AgSnO ₂								
Sort	1: Single coil latching				2: Double coils latching				
Polarity	R: Negative polarity Nil: Positive polarity								
Special code ²⁾³⁾	XXX: Customer special requirement								

Notes: 1) 3H, 3SH means that relay is on the "reset" status when delivery; 3D, 3SD means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) Please make clear your technical requirements, and choose from the following 3 UC ratings:

UC1: meet the UC1 requirements on IEC62055-31: Carrying test 3000A peak current for 10ms;

UC2: meet the UC2 requirements on IEC62055-31: Making test: 2.5KA/10ms, carrying test 4.5KA/10ms;

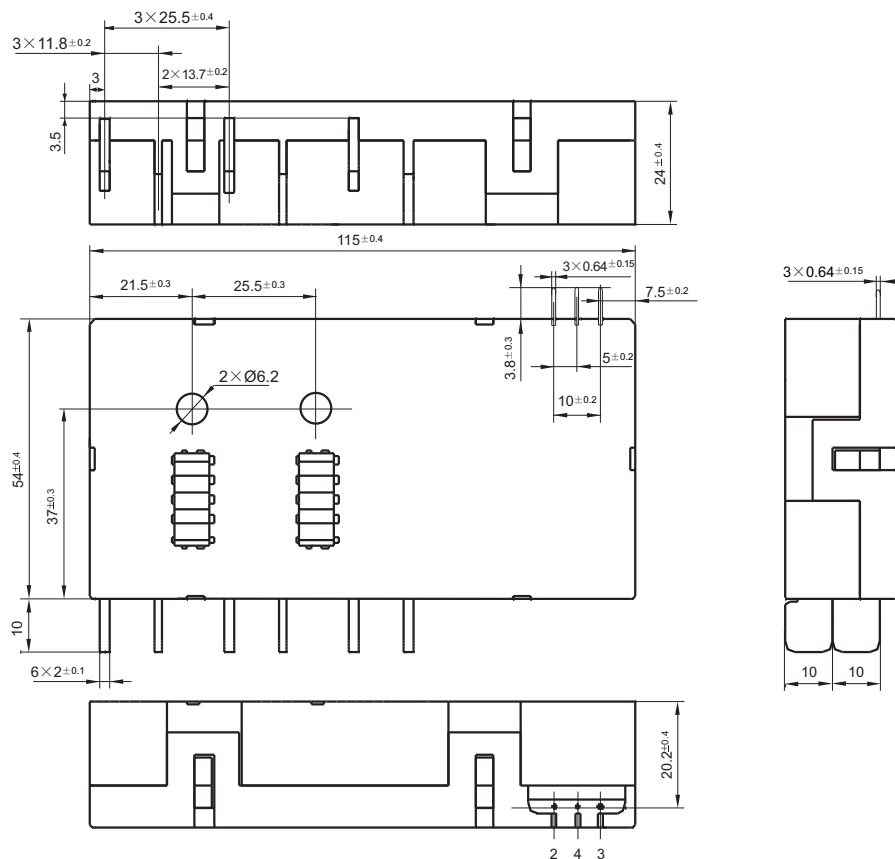
UC3: meet the UC3 requirements on IEC62055-31: Making test: 3KA/10ms, carrying test 6KA/10ms.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (415) stands for UC1; e.g. (416) stands for UC2; e.g. (417) stands for UC3.

OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

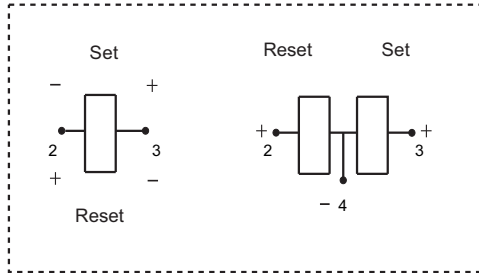
Outline Dimensions



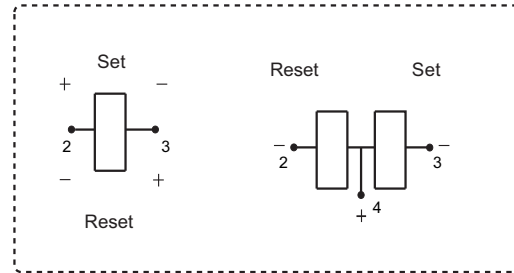
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.1\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Coil Wiring Diagram

Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully, more over two terminals can not be fixed at the same time.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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HFE25

HIGH POWER LATCHING RELAY



Features

- Latching relay
- 200A switching capability
- According to ANSI C 12.1
(Carrying: 12kA current / 66.7ms;
7kA peak current/100ms)
- Switching power up to 55.4kVA
- 4kV dielectric strength (between coil and contacts)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (73.3 x 74.8 x 29.5) mm

CONTACT DATA

Contact arrangement	2A, 2B
Contact resistance	Typ.:0.25mΩ max.(at 200A) ¹⁾
Contact material	AgSnO ₂
Contact rating (Res. load)	200A 277VAC/28VDC
Max. switching voltage	440VAC
Max. switching current	200A
Max. switching power	55400VA / 5600W
Mechanical endurance	5 x 10 ⁴ OPS
Electrical endurance	6 x 10 ³ OPS (200A 240VAC, Resistive load, Room temp., 1s on 9s off)

Notes: 1) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continuous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		9.6mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		QC
Unit weight		Approx. 400g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 12W Double coils latching: Approx. 24W
------------	---

COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%)Ω	
12	9.6	100	Single coil latching	12
24	19.2	100		48
48	38.4	100		190
12	9.6	100	Double coils latching	6+6
24	19.2	100		24+24
48	38.4	100		95+95

Notes: When requiring other nominal voltage, special order allowed.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

ORDERING INFORMATION

Type	HFE25	-A /	12	-2D	T	2	-R	(XXX)
Version	A: Type A contact terminal							
Coil voltage	12, 24, 48VDC							
Contact form ¹⁾	2D: 2 Form B 2H: 2 Form A							
Contact material	T: AgSnO ₂							
Coil Sort	1: Single coil latching 2: Double coils latching							
Polarity	R: Negative polarity Nil: Positive polarity							
Special code ²⁾	XXX: Customer special requirement Nil: Standard							

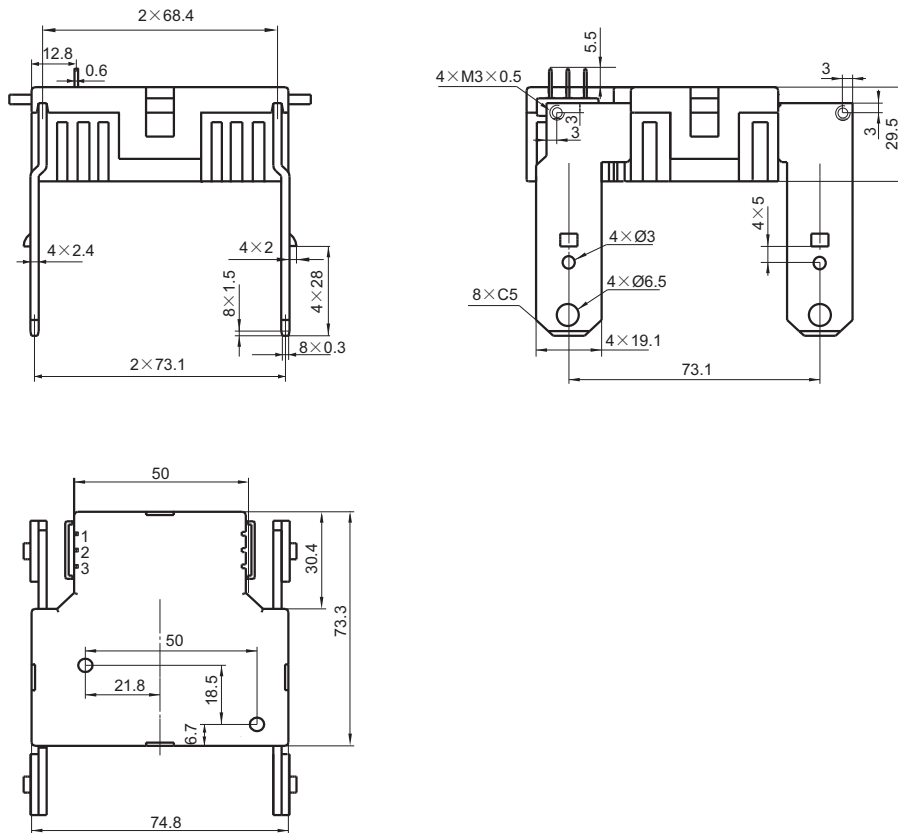
Notes: 1) 2H means that relay is on the "reset" status when delivery; 2D means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

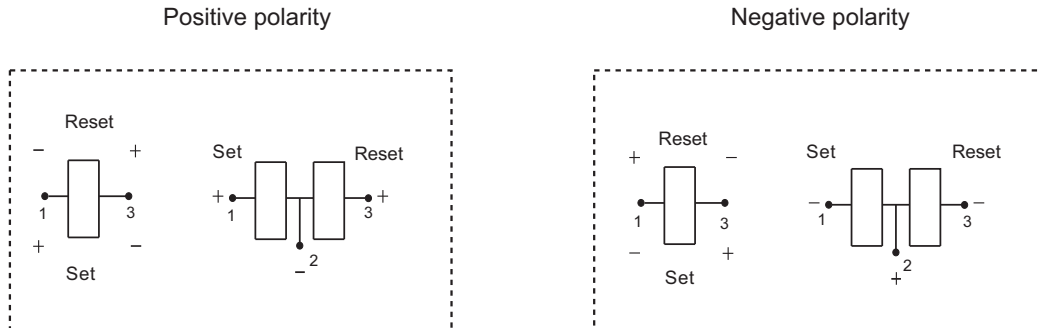
Unit: mm

Outline Dimensions



Remark: In case of no tolerance shown in outline dimension: outline dimension ≤ 1mm, tolerance should be ±0.2mm; outline dimension > 1mm and ≤ 5mm, tolerance should be ±0.3mm; outline dimension > 5mm, tolerance should be ±0.4mm.

Coil Wring Diagram



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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HFE26

MINIATURE HIGH POWER LATCHING RELAY



Features

- 25A, 40A switching capability
- Latching relay
- Manual switch function available
- Creepage distance: 8mm
- Dielectric strength: more than 4kV (between coil and contacts)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (38.8 x 15.0 x 28.7)mm

CONTACT DATA

Contact arrangement	1A, 1C
Contact resistance	2mΩ max. (at 1A 24VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	1C: 25A 250VAC 1A: 40A 250VAC
Max. switching voltage	250VAC
Max. switching current	40A
Max. switching power	10000VA
Max. continuous current	40A
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	1A type: 3 x 10 ⁴ OPS (40A 250VAC, Resistive load, at 70°C, 5s on 5s off) 1C type: 3 x 10 ⁴ OPS (25A 250VAC, Resistive load, at 70°C, 5s on 5s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1500VAC 1min
Creepage distance (input to output)		8mm
Set time (at nomi. volt.)		10ms max.
Reset time (at nomi. volt.)		10ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Storage temperature		-40°C to 100°C
Termination		PCB & QC
Unit weight		Approx. 36g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	25A: Single coil latching: Approx. 1.0W Double coils latching: Approx. 2.0W
	40A: Single coil latching: Approx. 1.5W Double coils latching: Approx. 3.0W

COIL DATA

at 23°C

25A

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
5	4	50	Single coil latching	25
6	4.8	50		36
9	7.2	50		81
12	9.6	50		144
15	12	50		225
24	19.2	50		576
48	38.4	50		2304
5	4	50	Double coils latching	12.5+12.5
6	4.8	50		18+18
9	7.2	50		41+41
12	9.6	50		72+72
15	12	50		113+113
24	19.2	50		288+288
48	38.4	50		1152+1152

Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.



HONGFA RELAY

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COIL DATA

at 23°C

40A

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
5	4	50	Single coil latching	16.8
6	4.8	50		24
9	7.2	50		54
12	9.6	50		96
15	12	50		150
24	19.2	50		384
48	38.4	50		1536

40A

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
5	4	50	Double coils latching	8.4+8.4
6	4.8	50		12+12
9	7.2	50		27+27
12	9.6	50		48+48
15	12	50		75+75
24	19.2	50		192+192
48	38.4	50		768+768

ORDERING INFORMATION

Type	HFE26 -40/ 12 -Z A T -L2 -1 -R (XXX)									
Contact rating	40: 40A 25: 25A									
Coil voltage	5, 6, 9, 12, 15, 24, 48VDC									
Contact form	H: 1 Form A (Only for 40A) Z: 1 Form C (Only for 25A)									
Manual switch	A: With manual switch B: No manual switch									
Contact material	T: AgSnO ₂									
Sort	L1: Single coil latching L2: Double coils latching									
Layout of the coil pin (for details please check the outline dimensions)	1: In parallel with the relay's longer edge 2: In parallel with the relay's shorter edge									
Polarity	R: Negative polarity Nil: Positive polarity									
Special code ¹⁾	XXX: Customer special requirement Nil: Standard									

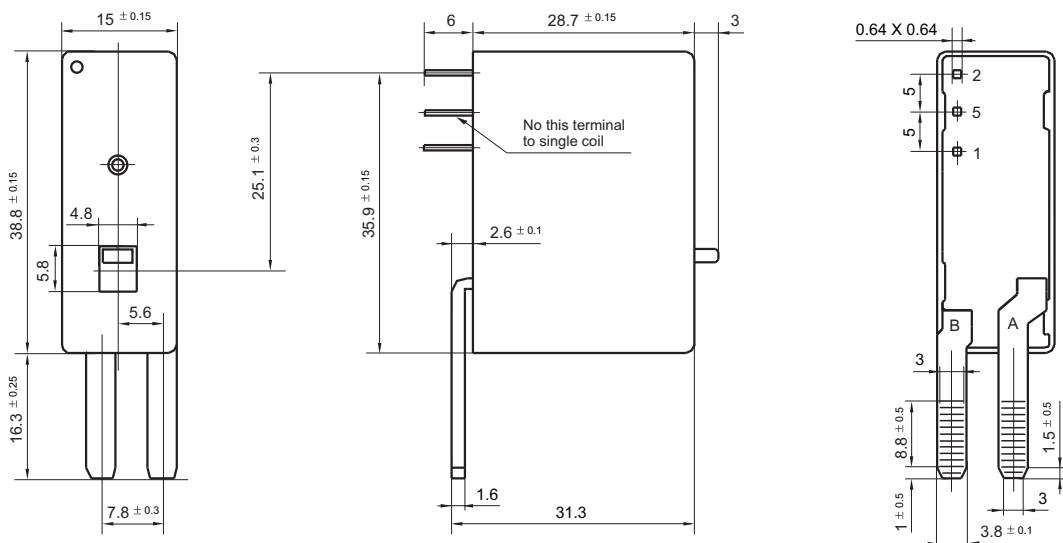
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

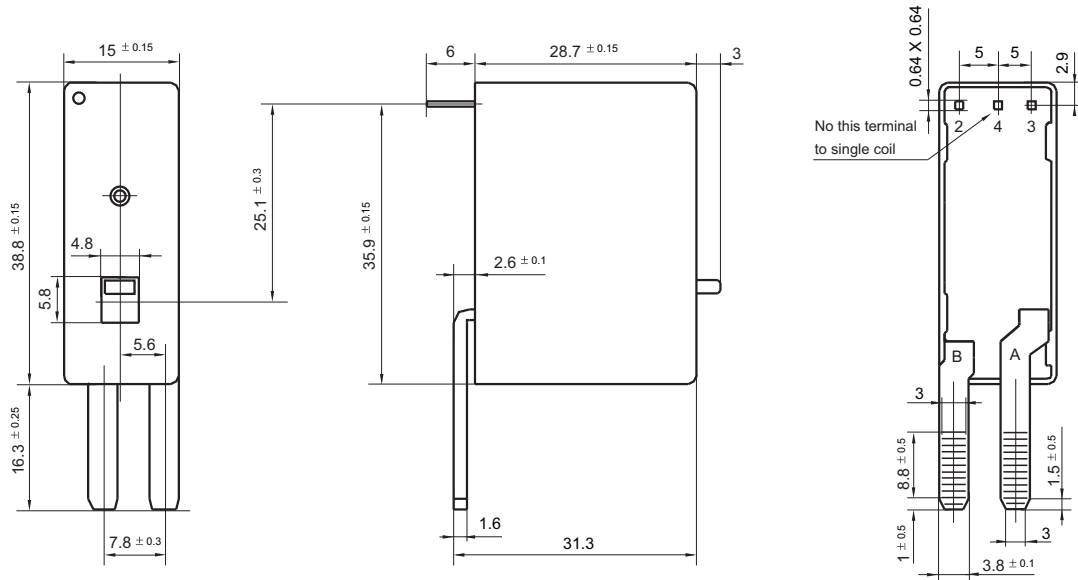
HFE26-40 / □□ -H□□ -L□ -1

Outline Dimensions

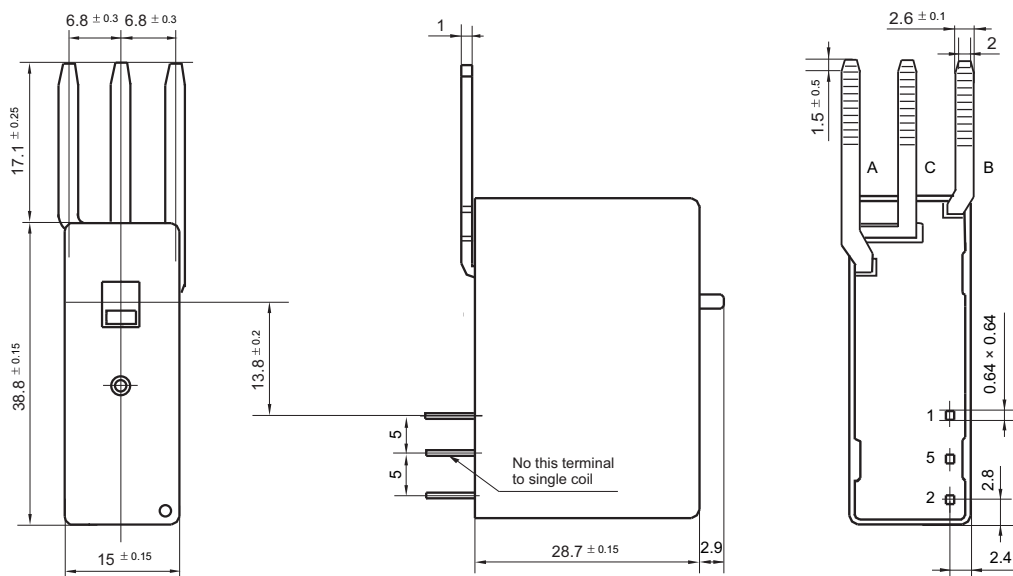


Outline Dimensions

HFE26-40 / □□-H□□-L□-2



HFE26-25 / □□-Z□□-L□-1

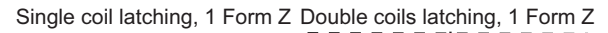


Unit: mm

[illegible]

Wiring Diagram

Single coil latching, 1 Form Z Double coils latching, 1 Form Z



HFE27

MINIATURE HIGH POWER LATCHING RELAY



File No.:E134517



Features

- 16A, 25A switching capability
- Latching relay
- Manual switch function available
- Dielectric strength: more than 4kV (between coil and contacts)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (66.7 x 51.0 x 13.6)mm

CONTACT DATA

Contact arrangement	1A, 1B, 1C
Contact resistance	20mΩ max.(at 1A 24VDC)
Contact material	AgSnO ₂
Contact rating (Res. load)	16A 250VAC
Max. switching voltage	250VAC
Max. switching current	25A
Max. switching power	4000VA
Max. continuous current	25A
Mechanical endurance	1 x 10 ⁶ OPS
Electrical endurance	9.5 x 10 ⁴ OPS (16A 250VAC, Resistive load, at 85°C, 3s on 3s off) 3 x 10 ⁴ OPS (25A 250VAC, Resistive load, at 85°C, 3s on 3s off)

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1500VAC 1min
Creepage distance (input to output)		8mm min.
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		QC
Unit weight		Approx. 38.2g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 0.7W Double coils latching: Approx. 1.4W
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COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
3	2.4	50	Single coil latching	12.8
5	4.0	50		35.7
6	4.8	50		51.4
12	9.6	50		205.7
14	11.2	50		280
24	19.2	50		822.8
48	38.4	50		3291.4
3	2.4	50	Double coils latching	6.4+6.4
5	4.0	50		17.85+17.85
6	4.8	50		25.7+25.7
12	9.6	50		102.8+102.8
14	11.2	50		140+140
24	19.2	50		411.4+411.4
48	38.4	50		1645.7+1645.7

SAFETY APPROVAL RATINGS

UL/CUL (AgSnO ₂)	1 Form A	Resistive: 16A 250VAC Resistive: 20A 250VAC Standard ballast: 8A 250VAC Motor: 1.5HP 250VAC
	1 Form C	Resistive: 16A 250VAC Resistive: 20A 250VAC Standard ballast: 8A 250VAC Motor: 1.5HP 250VAC

Notes: 1) All values unspecified are at room temperature.

2) Only some typical ratings are listed above. If more details are required, please contact us.



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ORDERING INFORMATION

HFE27		-A /	12	-1Z	T	G	-L2	-R	(XXX)
Type									
Version	A: Type A		B: TypeB						
Coil voltage	3, 5, 6, 12, 14, 24, 48VDC								
Contact form ¹⁾	1H: 1 Form A 1D: 1 FormB(No UL approval) 1Z: 1 Form C								
Contact material	T: AgSnO ₂								
Contact plating	G: Gold plated(No UL approval) Nil: No gold plated								
Sort	L1: Single coil latching				L2: Double coils latching				
Polarity	R: Negative polarity				Nil: Positive polarity				
Special code ²⁾	XXX: Customer special requirement				Nil: Standard				

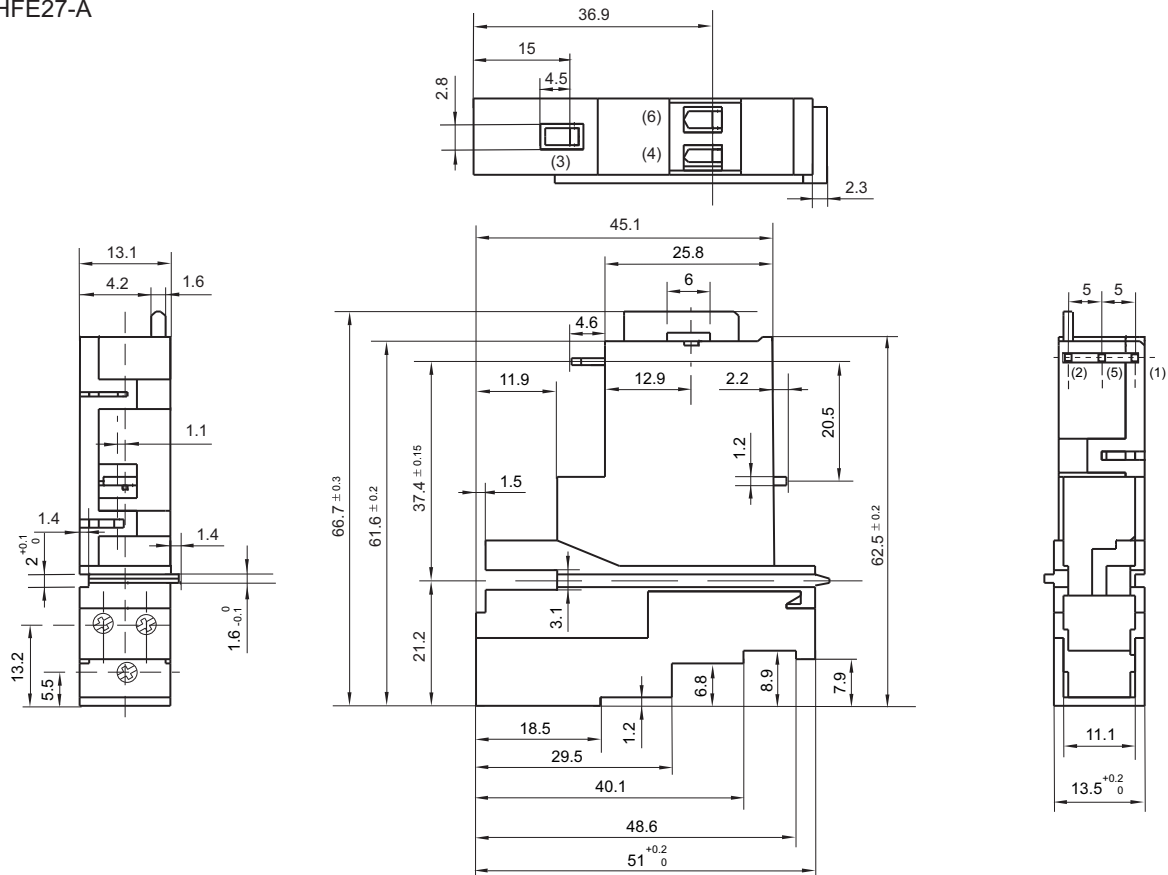
Notes: 1) 1H means that relay is on the "reset" status when delivery; 1D means that relay is on the "set" status when delivery.
2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

Outline Dimensions

HFE27-A

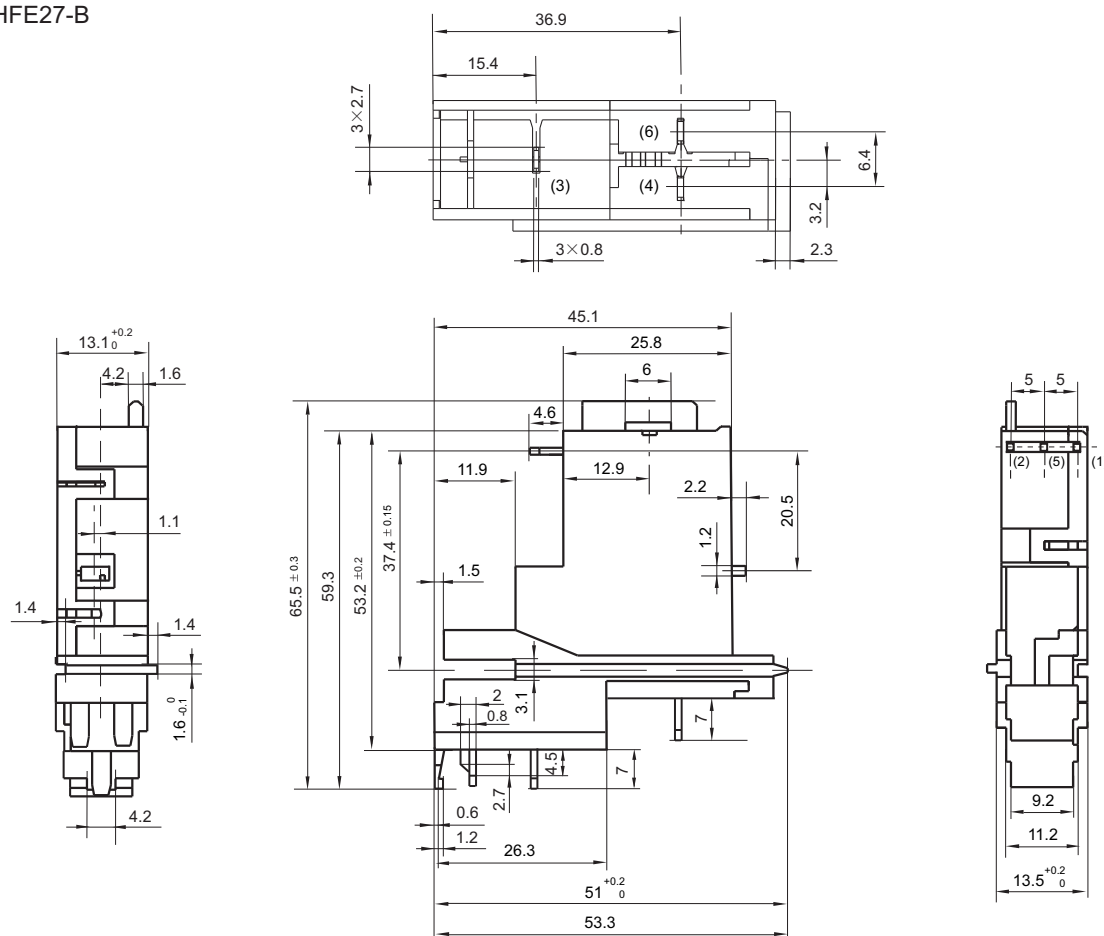


OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

Outline Dimensions

HFE27-B

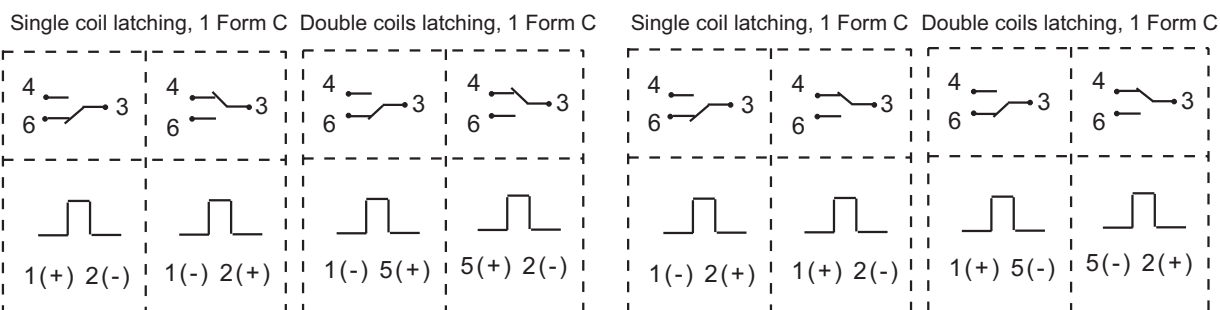


Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Wiring Diagram

Positive polarity

Negative polarity



Disclaimer

The specification is for reference only. Specifications subject to change without notice.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFE28

HIGH POWER LATCHING RELAY



Features

- Latching relay
- 100A switching capability at Res.load
- According to the fault current and electrical life test of IEC 62055-31: UC1, UC2, UC3 (please see below table and notes2)
- AC-voltage driving is feasible
- 4kV dielectric strength (between coil and contacts)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (66.0 x 75.0 x 23.5) mm

CONTACT DATA

Contact arrangement	2A, 2B, 2U, 2V
Contact resistance	Typ.:0.35mΩ max.(at 100A) ¹⁾
Contact material	AgSnO ₂
Contact rating (Res. load)	100A 277VAC/28VDC
Max. switching voltage	440VAC
Max. switching current	120A
Max. switching power	27700VA/2800W
Mechanical endurance	1 x 10 ⁵ OPS

Notes: 1) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2500VAC 1min
Creepage distance		9.6mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		QC
Unit weight		Approx. 220g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 5W
	Double coils latching: Approx. 10W

COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
6	4.8	100	Single coil latching	7.2
12	9.6	100		28.8
24	19.2	100		114
48	36.4	100		460
6	4.8	100	Double coils latching	3.6+3.6
12	9.6	100		14.4+14.4
24	19.2	100		57+57
48	36.4	100		230+230

Nominal Voltage VAC	Set / Reset Voltage VAC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
230	161	50: full-wave rectification	Single coil latching	2420
230	161	100: half-wave rectification	Double coils latching	1210+1210

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (OPS)	
415 (UC1)	230VAC	80A	COSØ=1	10:20	3000	Total:6000
		10A	COSØ=0.4		3000	
416 (UC2)		80A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	
417 (UC3)		100A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement,do the inductive load test after the resistive load test.

2) Only some typical ratings of UC are listed above, if more special ratings required, please contact us.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

ORDERING INFORMATION

Type	HFE28	-140	/12	-2D	T	2	-R	(XXX)
Sampling resistance	140: 140 $\mu\Omega$ 280: 280 $\mu\Omega$ Nil: Without sampling resistance							
Coil voltage	6, 12, 24, 48VDC; 230VAC							
Contact form ¹⁾	2D: 2 Form B (Single-contact) 2H: 2 Form A (Single-contact) 2SD: 2 Form B (Double-contact of 2 Form B) 2SH: 2 Form A (Double-contact of 2 Form A)							
Contact material	T: AgSnO ₂							
Sort	1: Single coil latching	2: Double coils latching						
Polarity	R: Negative polarity	Nil: Positive polarity						
Special code ^{2) 3)}	XXX: Customer special requirement							

Notes: 1) 2H, 2SH means that relay is on the "reset" status when delivery; 2D, 2SD means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) Please make clear your technical requirements, and choose from the following 3 UC ratings:

UC1: meet the UC1 requirements on IEC62055-31: Carrying test 2400A peak current for 10ms;

UC2: meet the UC2 requirements on IEC62055-31: Making test:2.5kA/10ms, carrying test 4.5kA/10ms;

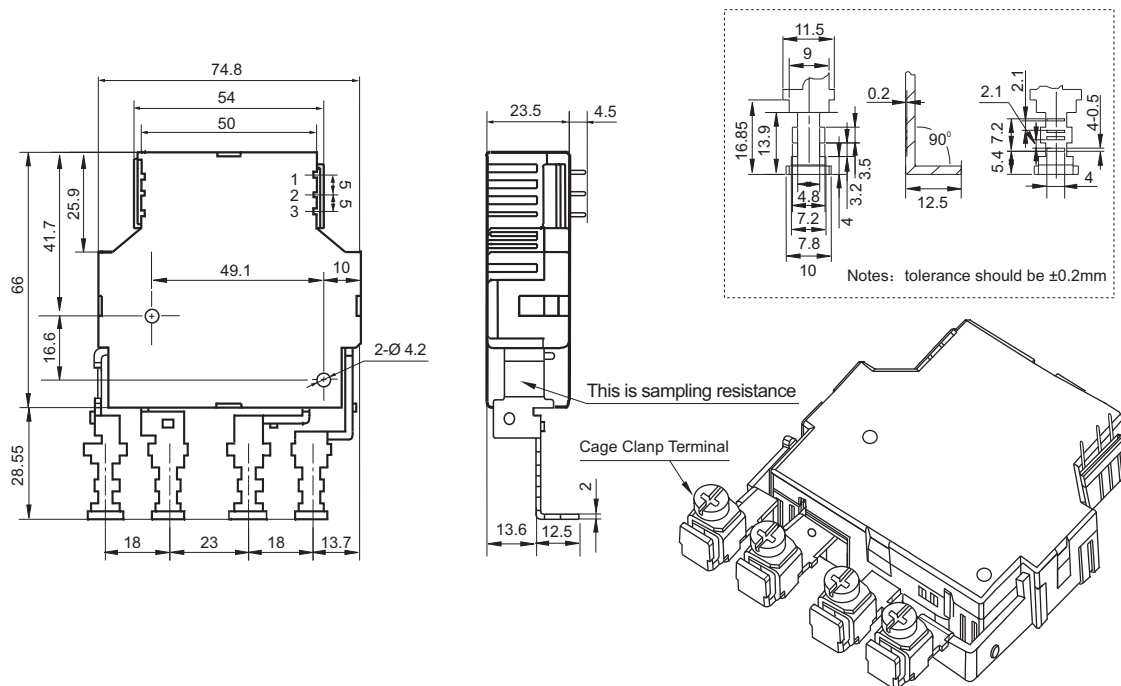
UC3: meet the UC3 requirements on IEC62055-31: Making test:3kA/10ms, carrying test 6kA/10ms.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (415) stands for UC1; e.g. (416) stands for UC2; e.g. (417) stands for UC3.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

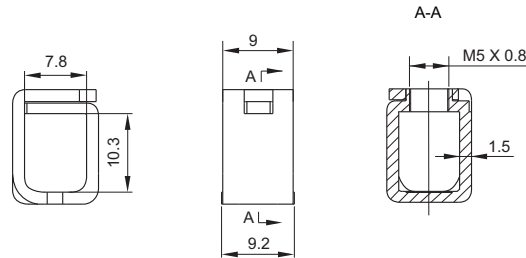
Outline Dimensions



OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

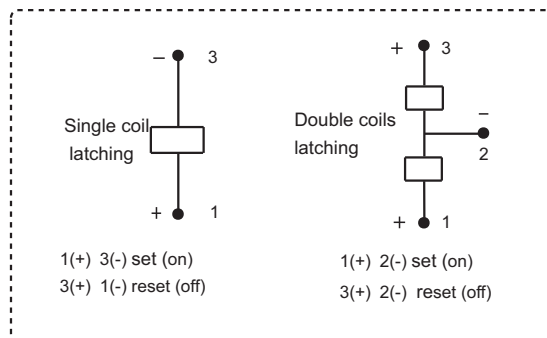
Cage Clamp Terminal



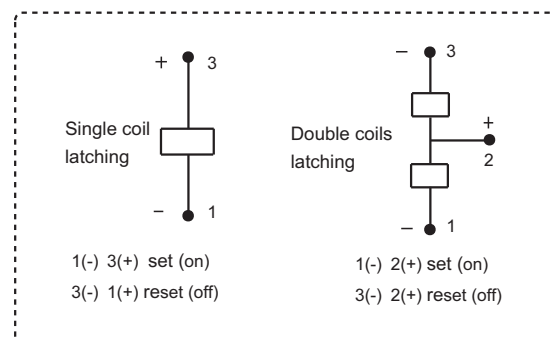
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Coil Wiring Diagram

Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

The specification is for reference only. Specifications subject to change without notice.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFE29

HIGH POWER LATCHING RELAY



Features

- Latching relay
- 100A, 120A switching capability
- According to the fault current and electrical life test of IEC 62055-31: UC1, UC2, UC3 (please see below table and notes2)
- 4kV dielectric strength (between coil and contacts)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions:(43.0 × 37.0 × 22.0) mm

CONTACT DATA

Contact arrangement	1U, 1V
Contact resistance	Typ.:0.35mΩ max. (at 100A) ¹⁾
Contact material	AgSnO ₂
Contact rating (Res. load)	80A 277VAC (HFE29-100) 100A 277VAC (HFE29-120)
Max. switching voltage	440VAC
Max. switching current	100A (HFE29-100) 120A (HFE29-120)
Max. switching power	22160VA (HFE29-100) 27700VA (HFE29-120)
Mechanical endurance	1 x 10 ⁵ OPS

Notes: 1) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continuous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		8mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 70°C
Termination		QC
Unit weight		Approx. 75g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	HFE29-100	Single coil latching: Approx. 2.4W Double coils latching: Approx. 4.8W
	HFE29-120	Single coil latching: Approx. 3W Double coils latching: Approx. 6W

COIL DATA

at 23°C

HFE29-100

Nominal Voltage VDC	Pick-up Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
6	4.8	50	Single coil	15
9	7.2	50		34
12	9.6	50		60
24	19.2	50		250
48	38.4	50	Double coils	1000
6	4.8	50		7.5+7.5
9	7.2	50		17+17
12	9.6	50		30+30
24	19.2	50		125+125
48	38.0	50		500+500

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (ops)	
415 (UC1)	220VAC	80A	COSØ=1	10:20	3000	Total:6000
		10A	COSØ=0.4		3000	
416 (UC2)		80A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	
417 (UC3)		100A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement, do the inductive load test after the resistive load test.

2) Only some typical ratings of UC are listed above, if more special ratings required, please contact us.



HONGFA RELAY

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COIL DATA

at 23°C

HFE29-120

Nominal Voltage VDC	Set/Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
6	4.8	50	Single coil	12
9	7.2	50		27
12	9.6	50		48
24	19.2	50		192
48	38.4	50		768

Nominal Voltage VDC	Set/Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
6	4.8	50	Double coils	6+6
9	7.2	50		13.5+13.5
12	9.6	50		24+24
24	19.2	50		96+96
48	38.0	50		384+384

Notes: When requiring other nominal voltage, special order allowed.

ORDERING INFORMATION

Type	HFE29 -120 /12 -SD T -2 -R (XXX)						
Contact rating	100: 100A 120: 120A						
Coil voltage	6, 9, 12, 24, 48VDC						
Contact form ¹⁾	SD: 1 Form B (Double-contact of 1 Form B) SH: 1 Form A (Double-contact of 1 Form A)						
Contact material	T: AgSnO ₂						
Sort	1: Single coil latching 2: Double coils latching						
Polarity	R: Negative polarity Nil: Positive polarity						
Special code ^{2) 3)}	XXX: Customer special requirement						

Notes: 1) SH means that relay is on the "reset" status when delivery; SD means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) Please make clear your technical requirements, and choose from the following 3 UC ratings:

UC1: meet the UC1 requirements on IEC62055-31: Carrying test 2400A/10ms;

UC2: meet the UC2 requirements on IEC62055-31: Making test: 2.5KA/10ms, carrying test 4.5KA/10ms;

UC3: meet the UC3 requirements on IEC62055-31: Making test: 3KA/10ms, carrying test 6KA/10ms.

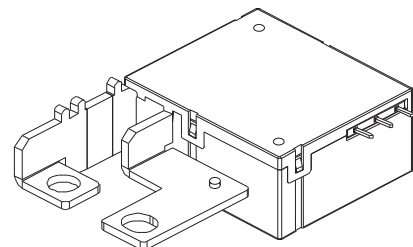
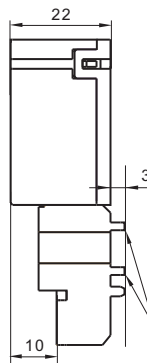
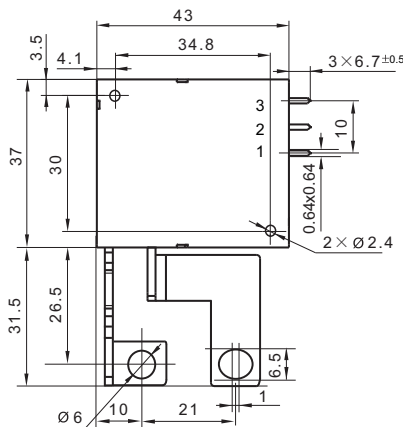
Nil: Only some typical ratings of UC are listed above, if need more special requirement, please contact us.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (415) stands for UC1(HFE29-100); e.g. (416) stands for UC2(HFE29-100); e.g. (417) stands for UC3(HFE29-120).

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

Outline Dimensions

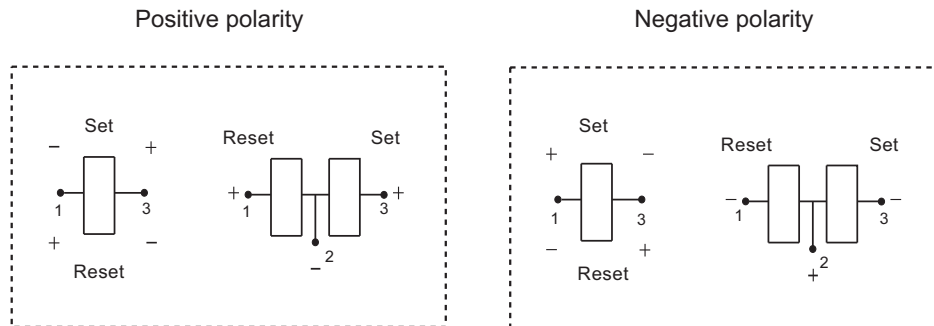


This is sampling resistance Sampling resistance=100μΩ

Remark: 1) The dimension of the load terminals as well as the sampling resistance can be made per customer request.

2) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.

Wiring Diagram



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

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HFE31

HIGH POWER LATCHING RELAY



Features

- Latching relay
- 200A switching capability
- Carrying:7kA peak current/500ms
- According to the fault current test of IEC 62055-31:UC3 (Carrying: 6kA current / 10ms; Making:3kA current / 10ms)
- 4kV dielectric strength (between coil and contacts)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (61.3 x 57.0 x 29.3) mm

CONTACT DATA

Contact arrangement	1U, 1V
Contact resistance	Typ.:0.25mΩ max. (at 200A) ¹⁾
Contact material	AgSnO ₂
Contact rating (Res. load)	200A 250VAC
Max. switching voltage	400VAC
Max. switching current	200A
Max. switching power	50kVA
Mechanical endurance	1 x 10 ⁵ OPS
Electrical endurance	5 x 10 ³ OPS (200A 250VAC, Resistive load, Room temp., 0.6s on 5.4s off)

Notes: 1) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continuous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2000VAC 1min
Creepage distance		9.6mm
Set time (at nomi. volt.)		25ms max.
Reset time (at nomi. volt.)		25ms max.
Shock resistance	Functional	196m/s²
	Destructive	980m/s²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		QC
Unit weight		Approx. 151g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching:Approx. 5W Double coils latching: Approx.10W
------------	--

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%)Ω	
6	4.8	150	Single coil latching	7.2
12	9.6	150		28.8
24	19.2	150		115.2
48	38.4	150		460.8
6	4.8	150	Double coils latching	3.6+3.6
12	9.6	150		14.4+14.4
24	19.2	150		57.6+57.6
48	38.4	150		230.4+230.4

Notes: When requiring other nominal voltage, special order allowed.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

ORDERING INFORMATION

Type	HFE31	/ 6	-SD	1	T	-2	-R	(XXX)
Coil voltage	6, 12, 24, 48VDC							
Contact form ¹⁾	SD: 1 Form B (Double-contact of 1 Form B) SH: 1 Form A (Double-contact of 1 Form A)							
Termination	1: With mounting aperture 2: No mounting aperture							
Contact material	T: AgSnO ₂							
Coil Sort	1: Single coil latching 2: Double coils latching							
Polarity	R: Negative polarity Nil: Positive polarity							
Special code ²⁾	XXX: Customer special requirement Nil: Standard							

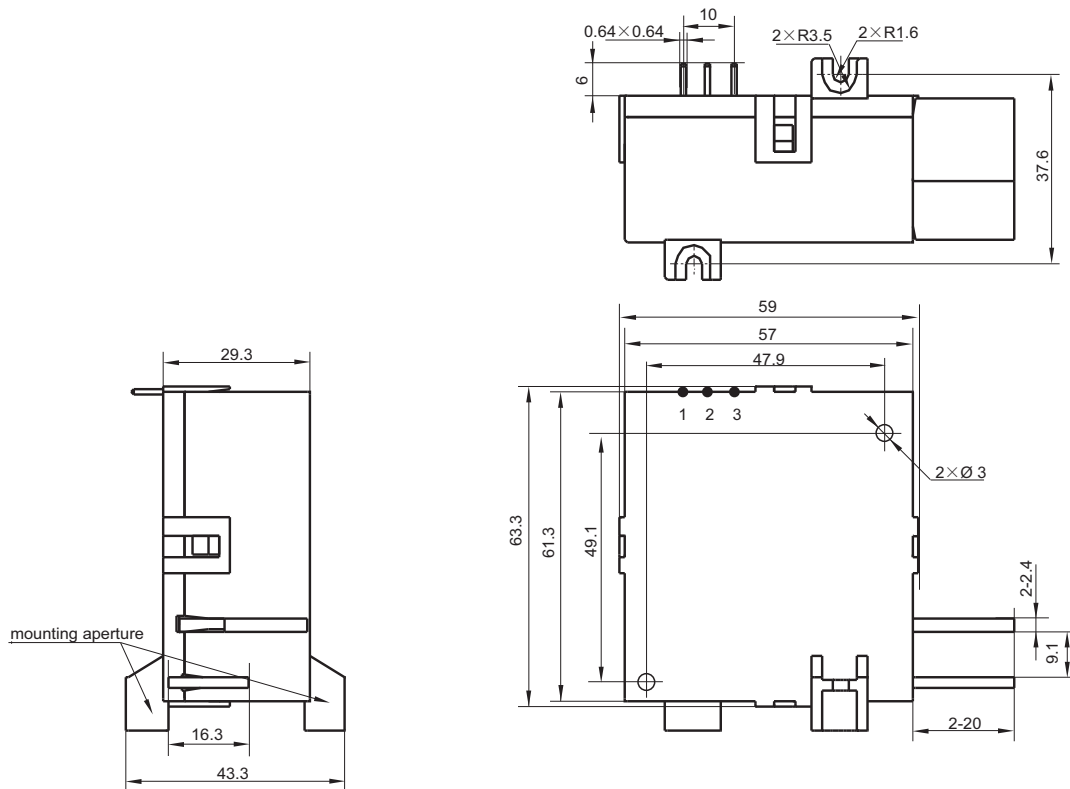
Notes: 1) SH means that relay is on the "reset" status when delivery; SD means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

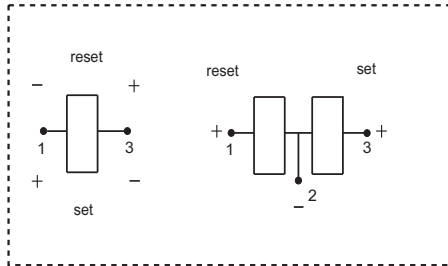
Outline Dimensions



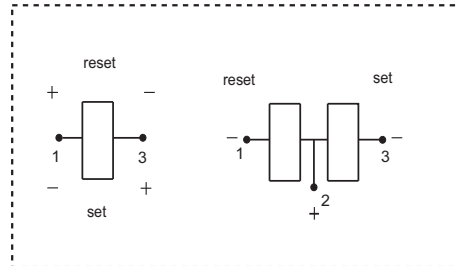
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Coil Wring Diagram

Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

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HFE35

MINIATURE 3-PHASES RELAY



Features

- 3-phases latching relay
- 100A switching capability at Res.load
- According to the fault current and electrical life test of IEC 62055-31: UC1, UC2, UC3 (please see below table and notes2)
- Heavy load up to 22.2kVA
- 4kV dielectric strength (between coil and contacts)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (128.0 x 30.5 x 34.5) mm

CONTACT DATA

Contact arrangement	3U, 3V
Contact resistance	Typ.:0.35mΩ max. (at 100A) ¹⁾
Contact material	AgSnO ₂
Contact rating (Res. load)	100A 220VAC
Max. switching voltage	440VAC
Max. switching current	100A
Max. switching power	22000VA
Mechanical endurance	1 x 10 ⁵ OPS

Notes: 1) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	2000VAC 1 min
Creepage distance		8mm
Set time (at nomi. volt.)		30ms max.
Reset time (at nomi. volt.)		30ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 75°C
Termination		QC
Unit weight		Approx.300g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 5W
	Double coils latching: Approx. 10W

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
6	4.8	100	Single coil latching	4.5
9	7.2	100		10
12	9.6	100		18
24	19.2	100		72
48	38.4	100	Double coils latching	288
6	4.8	100		2.25+2.25
9	7.2	100		5+5
12	9.6	100		9+9
24	19.2	100		36+36
48	38.4	100		144+144

Notes: When requiring other nominal voltage, special order allowed.

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (ops)	
415 (UC1)	220VAC	80A	COSØ=1	10:20	3000	Total:6000
		10A	COSØ=0.4		3000	
416 (UC2)		80A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	
417 (UC3)		100A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement,do the inductive load test after the resistive load test.

2) Only some typical ratings of UC are listed above, if more special ratings required, please contact us.

ORDERING INFORMATION

Type	HFE35	12	-3D	T	2	-R	(XXX)
Coil voltage	6, 9, 12, 24, 48VDC						
Contact form ¹⁾	3SD: 3 Form B (Double-contact) 3SH: 3 Form A (Double-contact)						
Contact material	T: AgSnO ₂						
Sort	1: Single coil latching 2: Double coils latching						
Polarity	R: Negative polarity Nil: Positive polarity						
Special code ^{2) 3)}	XXX: Customer special requirement						

Notes: 1) 3H, 3SH means that relay is on the "reset" status when delivery; 3D, 3SD means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) Please make clear your technical requirements, and choose from the following 3 UC ratings:

UC1: meet the UC1 requirements on IEC62055-31: Carrying test 3000A peak current for 10ms;

UC2: meet the UC2 requirements on IEC62055-31: Making test:2.5KA/10ms, carrying test 4.5KA/10ms;

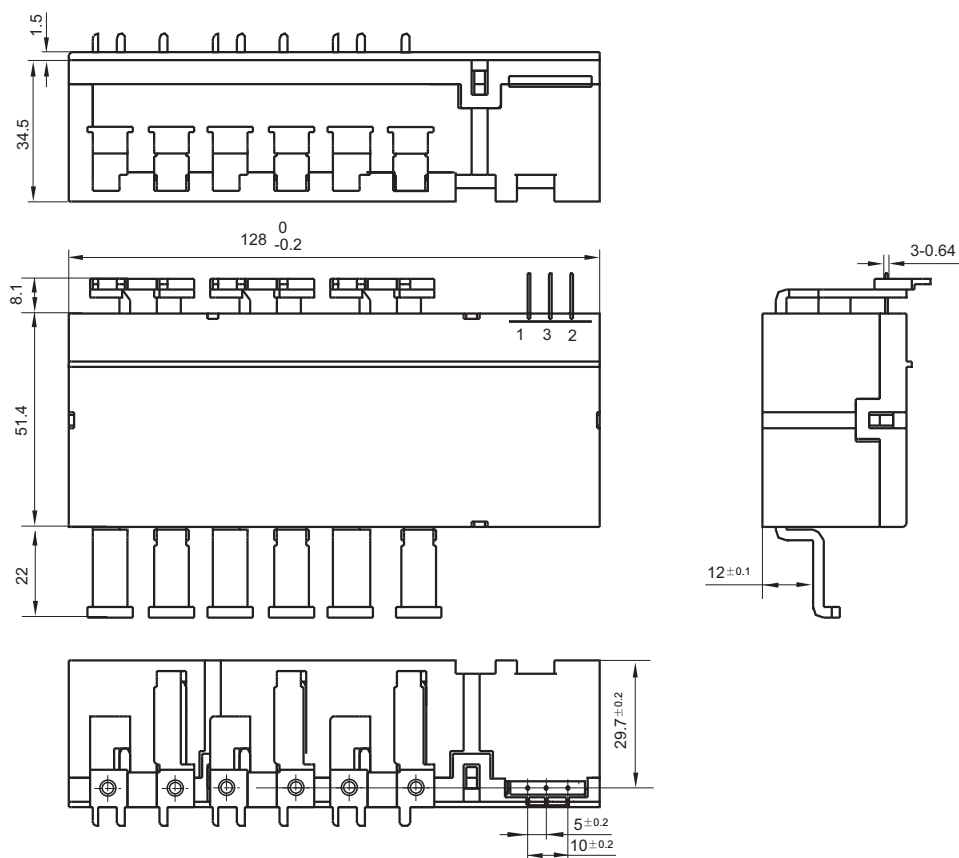
UC3: meet the UC3 requirements on IEC62055-31: Making test:3KA/10ms, carrying test 6KA/10ms.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (415) stands for UC1; e.g. (416) stands for UC2; e.g. (417) stands for UC3.

OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

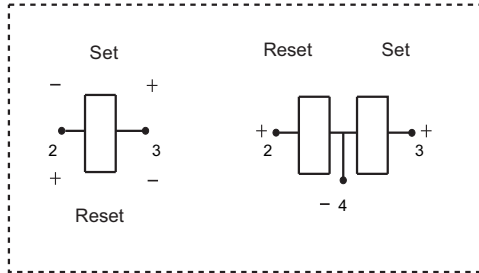
Outline Dimensions



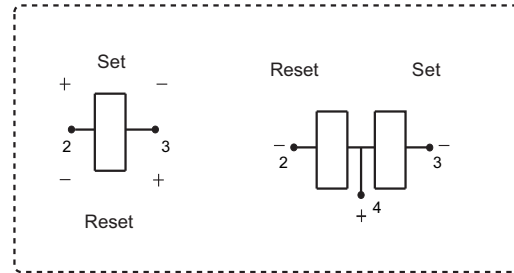
Remark: In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.1 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.2 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.

Coil Wiring Diagram

Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully, more over two terminals can not be fixed at the same time.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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HFE36

MINIATURE 3-PHASES RELAY



Features

- 3-phases latching relay
- 100A switching capability at Res.load
- Heavy load up to 22.2kVA
- 4kV dielectric strength (between coil and contacts)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (128.0 x 30.5 x 34.5) mm

CONTACT DATA

Contact arrangement	3U, 3V
Contact resistance	Typ.:0.35mΩ max. (at 100A) ¹⁾
Contact material	AgSnO ₂
Contact rating (Res. load)	100A 230VAC
Max. switching voltage	440VAC
Max. switching current	100A
Max. switching power	23000VA
Mechanical endurance	1 x 10 ⁵ OPS
Electrical endurance	5 x 10 ³ OPS (100A 230VAC, Resistive load, Room temp., 10s on 20s off)

Notes: 1) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1 min
	Between open contacts	1500VAC 1 min
Creepage distance		8mm
Set time (at nomi. volt.)		30ms max.
Reset time (at nomi. volt.)		30ms max.
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		QC
Unit weight		Approx.300g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 8W Double coils latching: Approx. 16W
------------	--

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
6	4.8	100	Single coil latching	4.5
9	7.2	100		10
12	9.6	100		18
24	19.2	100		72
48	38.4	100		288
6	4.8	100	Double coils latching	2.25+2.25
9	7.2	100		5+5
12	9.6	100		9+9
24	19.2	100		36+36
48	38.4	100		144+144

Notes: When requiring other nominal voltage, special order allowed.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

ORDERING INFORMATION

Type	HFE36 -A / 12 -3SD T 2 -R (XXX)						
Version	A: Type A contact terminal						
Coil voltage	6, 9, 12, 24, 48VDC						
Contact form ¹⁾	3SD: 3 Form B (Double-contact) 3SH: 3 Form A (Double-contact)						
Contact material	T: AgSnO ₂						
Sort	1: Single coil latching			2: Double coils latching			
Polarity	R: Negative polarity			Nil: Positive polarity			
Special code ²⁾	XXX: Customer special requirement			Nil: Standard			

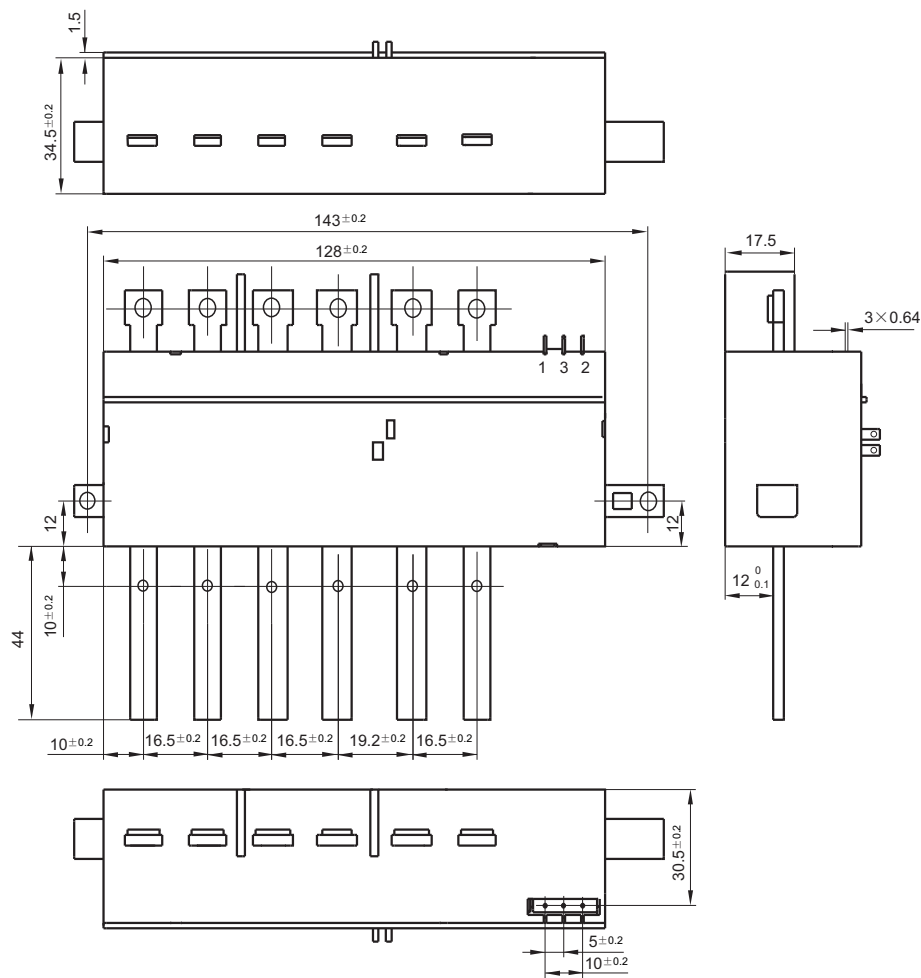
Notes: 1) 3H, 3SH means that relay is on the "reset" status when delivery; 3D, 3SD means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM

Unit: mm

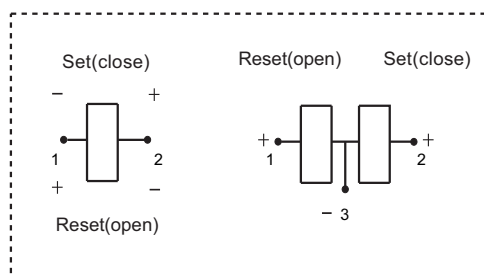
Outline Dimensions



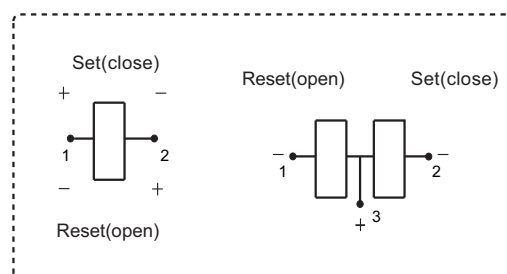
Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.1\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Coil Wiring Diagram

Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully, more over two terminals can not be fixed at the same time.
4. relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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HFE37

HIGH POWER LATCHING RELAY



Features

- Latching relay
- 100A switching capability at Res.load
- According to the fault current and electrical life test of IEC 62055-31: UC1, UC2, UC3 (please see below table and notes2)
- AC-voltage driving is feasible
- 4kV dielectric strength (between coil and contacts)
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (60.0 x 52.0 x 23.0) mm

CONTACT DATA

Contact arrangement	2U, 2V
Contact resistance	Typ.:0.35mΩ max.(at 100A) ¹⁾
Contact material	AgSnO ₂
Contact rating (Res. load)	100A 277VAC/28VDC
Max. switching voltage	440VAC
Max. switching current	100A
Max. switching power	27700VA/2800W
Mechanical endurance	1 x 10 ⁵ OPS

Notes: 1) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continuous measurements for each sample.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	2500VAC 1min
Creepage distance		9.6mm
Set time (at nomi. volt.)		20ms max.
Reset time (at nomi. volt.)		20ms max.
Shock resistance	Functional	294m/s ²
	Destructive	980m/s ²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Ambient temperature		-40°C to 85°C
Termination		QC
Unit weight		Approx. 160g
Construction		Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single coil latching: Approx. 4W Double coils latching: Approx. 8W
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COIL DATA

at 23°C

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
6	4.8	50	Single coil latching	9
12	9.6	50		36
24	19.2	50		144
48	36.4	50		576
6	4.8	50	Double coils latching	4.5+4.5
12	9.6	50		18+18
24	19.2	50		72+72
48	36.4	50		288+288

Nominal Voltage VAC	Set / Reset Voltage VAC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
230	161	50: full-wave rectification	Single coil latching	3024
230	161	100: half-wave rectification	Double coils latching	1512+1512

ELECTRICAL ENDURANCE

UC Class	Voltage (Uc)	Current (Ic)	Power Factor	Close Open time (s)	Electrical endurance (OPS)	
415 (UC1)	277VAC	80A	COSØ=1	10:20	3000	Total:6000
		10A	COSØ=0.4		3000	
416 (UC2)		80A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	
417 (UC3)		100A	COSØ=1		5000	Total:10000
			COSØ=0.5		5000	

Notes: 1) Electrical endurance meet IEC62055-31 test requirement, do the inductive load test after the resistive load test.

2) Only some typical ratings of UC are listed above, if more special ratings required, please contact us.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

ORDERING INFORMATION

	HFE37	- 280	/12	-2SD	T	2	-R (XXX)
Type							
Sampling resistance	280: 280 $\mu\Omega$ Nil: Without sampling resistance						
Coil voltage	6, 12, 24, 48VDC; 230VAC						
Contact form ¹⁾	2SD: 2 Form B (Double-contact of 2 Form B) 2SH: 2 Form A (Double-contact of 2 Form A)						
Contact material	T: AgSnO ₂						
Sort	1: Single coil latching 2: Double coils latching						
Polarity	R: Negative polarity Nil: Positive polarity						
Special code ^{2) 3)}	XXX: Customer special requirement						

Notes: 1) 2SH means that relay is on the "reset" status when delivery; 2SD means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) Please make clear your technical requirements, and choose from the following 3 UC ratings:

UC1: meet the UC1 requirements on IEC62055-31: Carrying test 2400A peak current for 10ms;

UC2: meet the UC2 requirements on IEC62055-31: Making test: 2.5kA/10ms, carrying test 4.5kA/10ms;

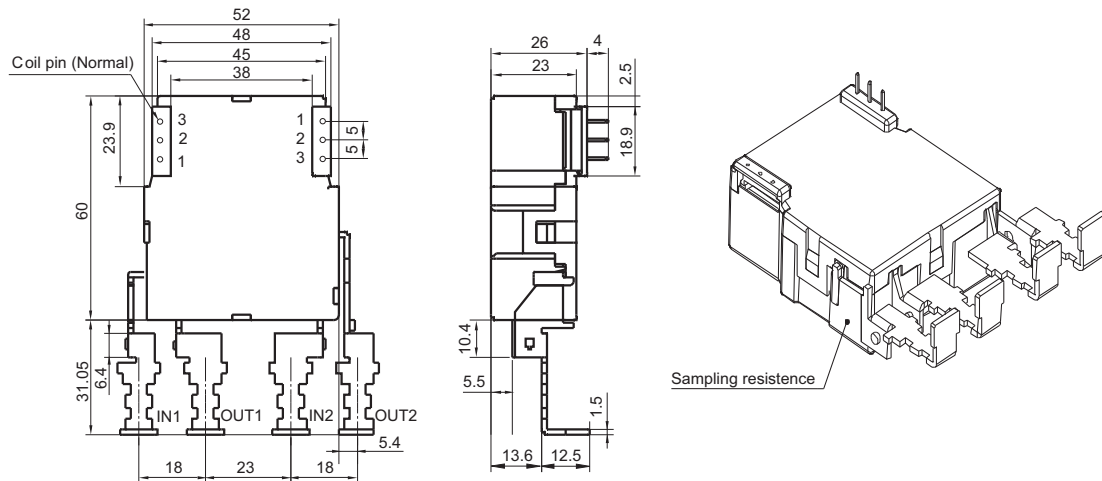
UC3: meet the UC3 requirements on IEC62055-31: Making test: 3kA/10ms, carrying test 6kA/10ms.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (415) stands for UC1; e.g. (416) stands for UC2; e.g. (417) stands for UC3.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

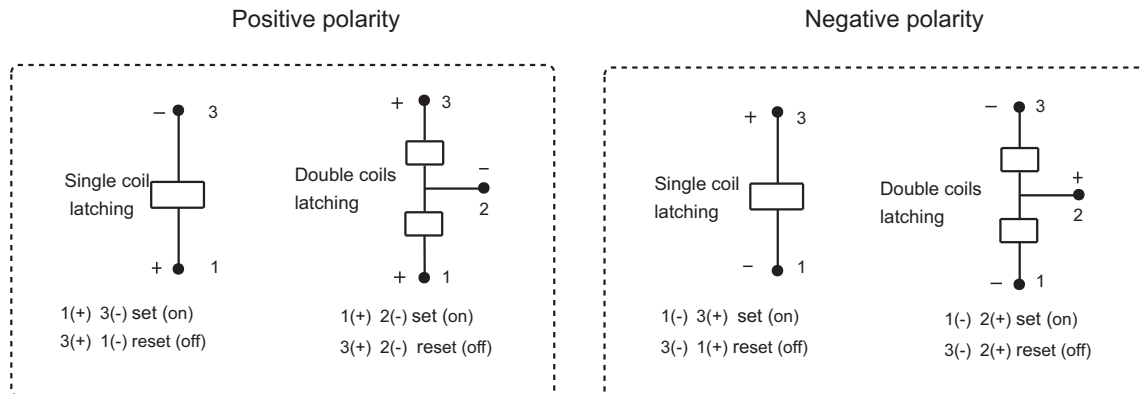
Unit: mm

Outline Dimensions



Remark: In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

Coil Wiring Diagram



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without twisted copper wire can not be tin-soldered, can not be moved willfully.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

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HFE39

MINIATURE HIGH POWER LATCHING RELAY



Features

- 16A switching capability
- Latching relay
- Max.inrush current 350A/2ms
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (20.0 x 30.0 x 10.2)mm

CONTACT DATA

Contact arrangement	2A, 2B, 1A+1B	
Contact resistance	20mΩ max. (at 1A 24VDC)	
Contact material	AgSnO ₂	
Contact rating	2A	16A 250VAC, 1 x 10 ⁵ ops (Resistance) 20A 250VAC, 5 x 10 ⁴ ops (Resistance) 1.5HP 250VAC 5 x 10 ⁴ ops (Motor) 10A 277VAC 2 x 10 ⁴ ops (Electronic ballast)
	2B	10A 277VAC, 3 x 10 ⁴ ops (Standard ballast) 10A 240VAC, 2.5 x 10 ⁴ ops (TV-10)
	1A+1B	16A 250VAC, 5 x 10 ⁴ ops (Resistance)
Max. switching voltage	277VAC	
Max. switching current	20A	
Max. switching power	4000VA	
Mechanical endurance	1 x 10 ⁶ OPS	
Electrical endurance	See "Contact rating"	

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Creepage distance	8mm min.	
Set time (at nomi. volt.)	15ms max.	
Reset time (at nomi. volt.)	15ms max.	
Shock resistance	Functional	98m/s ²
	Destructive	980m/s ²
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	PCB	
Unit weight	Approx.12g	
Construction	Plastic sealed, Flux proofed	

Notes: The data shown above are initial values.



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

COIL

Coil power	Standard: Single coil latching: Approx 1W Double coils latching: Approx 2W
	Sensitive: Single coil latching: Approx 0.6W Double coils latching: Approx 1.2W

COIL DATA

at 23°C

Standard type:

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
3	2.1	50	Single coil latching	9
5	3.5	50		25
6	4.2	50		36
9	6.3	50		81
12	8.4	50		144
24	16.8	50		576
48	33.6	50		2304
3	2.1	50	Double coils latching	4.5+4.5
5	3.5	50		12.5+12.5
6	4.2	50		18+18
9	6.3	50		40.5+40.5
12	8.4	50		72+72
24	16.8	50		288+288
48	33.6	50		1152+1152

SAFETY APPROVAL RATINGS

UL/CUL	2A, 2B (Only for standard type)	16A 250VAC Resistance at 85°C 1.5HP 250VAC Motor at 40°C 277VAC 10A Standard ballast at 40°C 277VAC 10A Electronic ballast at 40°C 240VAC 10A TV-10 at 40°C

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

COIL DATA

at 23°C

Sensitive type:

Nominal Voltage VDC	Set / Reset Voltage VDC max.	Pulse Duration ms min.	Coil Resistance x (1±10%) Ω	
3	2.1	50	Single coil latching	15
5	3.5	50		42
6	4.2	50		60
9	6.3	50		135
12	8.4	50		240
24	16.8	50		960
3	2.1	50	Double coils latching	7.5+7.5
5	3.5	50		21+21
6	4.2	50		30+30
9	6.3	50		67.5+67.5
12	8.4	50		120+120
24	16.8	50		480+480

ORDERING INFORMATION

Type	HFE39	-1	/12	-2D	S	L	T	-L1	-R (XXX)
Version	1: with manual switch Nil: No manual switch								
Coil voltage	3, 5, 6, 9, 12, 24VDC 48 VDC(Only for standard type)								
Contact form ¹⁾	1HD: 1 Form A + 1 Form B 2D: 2 Form B 2H: 2 Form A								
Construction ²⁾	S: Plastic sealed(No for HFE39-1) Nil: Flux proofed								
Coil power	L: Sensitive Nil: Standard								
Contact material	T: AgSnO2								
Sort	L1: Single coil latching L2: Double coils latching								
Polarity	R: Reverse polarity Nil: Positive polarity								
Special code ³⁾	XXX: Customer special requirement Nil: Standard								

Notes: 1) 2H means that relay is on the "reset" status when delivery; 2D means that relay is on the "set" status when delivery. If no speical required by customer, we will keep the relay on the "set" status when delivery.

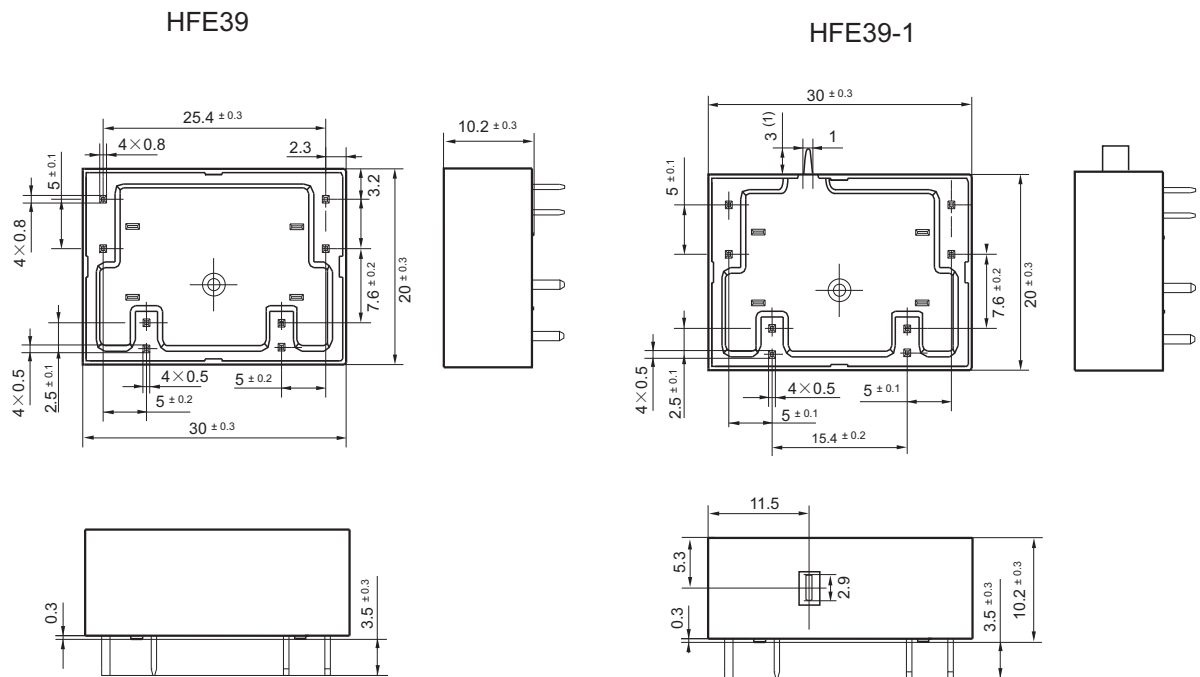
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relay on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa.

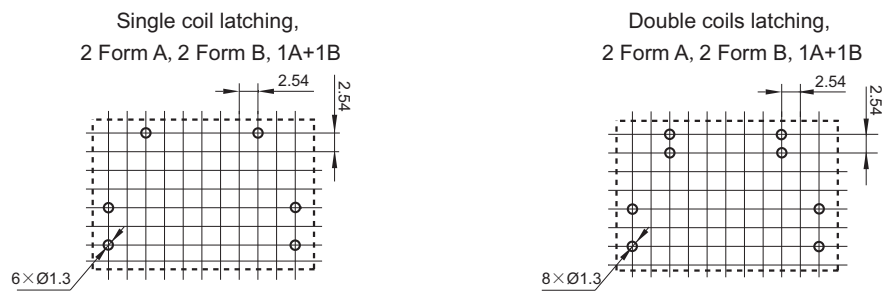
OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

Outline Dimensions



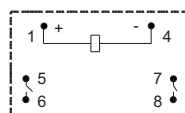
PCB Layout (Bottom view)



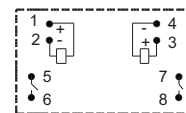
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) This size for reference only. Contact is recommended for suitable specifications if you have any special requirements.

Wiring Diagram (Bottom view)

Single coil latching



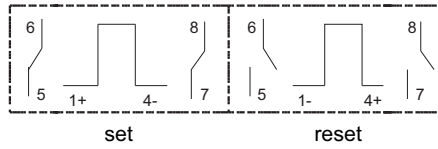
Double coils latching



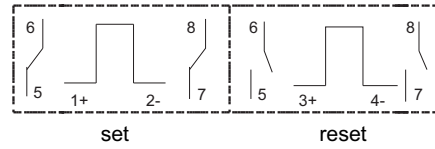
2 Form A

Positive polarity

Single coil latching

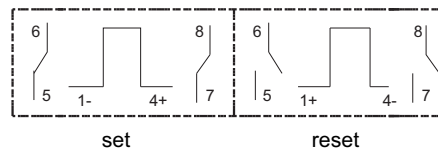


Double coils latching

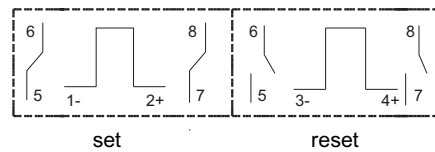


Reverse polarity

Single coil latching



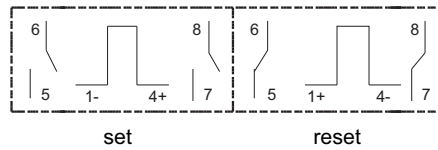
Double coils latching



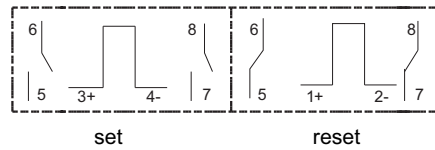
2 Form B

Positive polarity

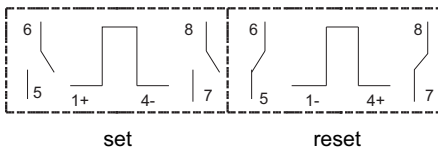
Single coil latching



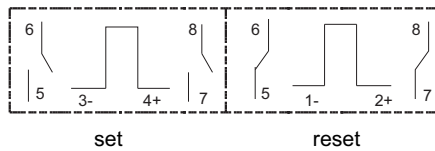
Double coils latching



Single coil latching



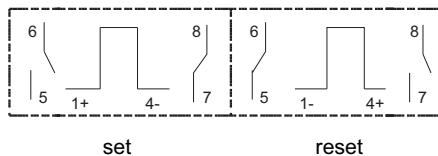
Double coils latching



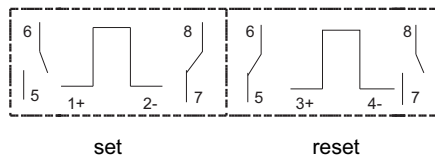
1 Form A + 1 Form B

Positive polarity

Single coil latching

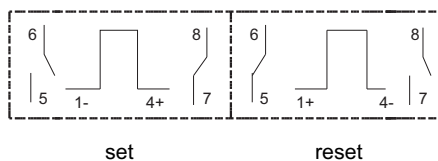


Double coils latching

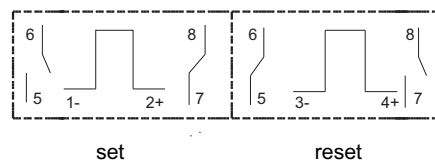


Reverse polarity

Single coil latching



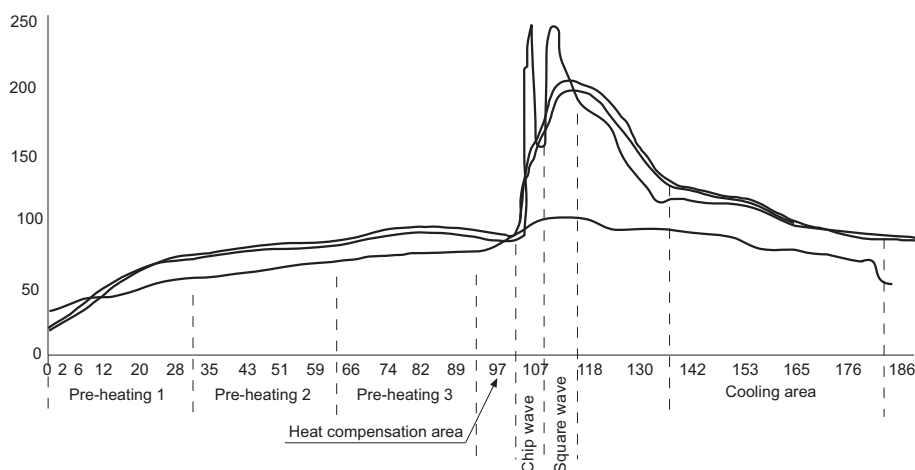
Double coils latching



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C to 260°C, 2s to 5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s; the below chart is the wave soldering temperature distribution chart we recommended for your reference.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Wave soldering temperature distribution chart



Disclaimer

The specification is for reference only. Specifications subject to change without notice.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFE60

SUBMINIATURE INTERMEDIATE POWER RELAY



File No.: E134517



File No.: B121253286006



Features

- Low height 10.5mm
- Low coil power
- High switching capacity
1A: 8A 250VAC
2A, 1A+1B: 5A 250VAC
- 1 Form A, 2 Form A, 1 Form A+1 Form B configuration
- 3kV dielectric strength (between coil and contacts)
- Environmental friendly product (RoHS compliant)

CONTACT DATA

Contact arrangement	1A	2A, 1A+1B
Contact resistance	No gold plated: 50mΩ (at 1A 6VDC) Gold plated: 50mΩ (at 0.1A 6VDC)	
Contact material	AgSnO ₂	
Contact rating	8A 250VAC (COSφ=1.0) 5A 30VDC(τ=0ms)	5A 250VAC (COSφ=1.0) 5A 30VDC(τ=0ms)
Max. switching voltage	380VAC / 240VDC	
Max. switching current	8A	5A
Max. switching power	2000VA/150W	1250VA/150W
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1 x 10 ⁵ OPS (8A 250VAC, at 40°C, 1s on 9s off) 3 x 10 ⁴ OPS (5A 250VAC, at 40°C, 2s on 2s off)	

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	3000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2000VAC 1min
Surge voltage (between coil and contacts)	5kV (1.2/50μs)	
Operate time (single side stable)	10ms max.	
Release time (single side stable)	5ms max.	
Set time(latching)	10ms max.	
Reset time (latching)	10ms max.	
Shock resistance	Functional	196m/s ²
	Destructive	980m/s ²
Vibration resistance	Functional	10Hz to 55Hz 2.0mm DA
	Destructive	10Hz to 55Hz 3.5mm DA
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	PCB	
Unit weight	Approx. 4.5g	
Construction	Plastic sealed Flux proofed	

Notes: The data shown above are initial values.

COIL

Coil power	Single side stable: Approx. 300mW 1 coil latching: Approx. 150mW 2 coils latching: Approx. 300mW
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COIL DATA

at 23°C

Single side stable (300mW)

Nominal Voltage VDC	Pick-up VDC max.	Drop-out VDC min.	Max. Allowable Voltage VDC	Coil Resistance
3	2.4	0.3	3.9	30 x (1±10%)
5	4.0	0.5	6.5	83 x (1±10%)
6	4.8	0.6	7.8	120 x (1±10%)
9	7.2	0.9	11.7	270 x (1±10%)
12	9.6	1.2	15.6	480 x (1±10%)
18	14.4	1.8	23.4	1080 x (1±10%)
24	19.2	2.4	31.2	1920 x (1±10%)

1 coil latching (150mW)

Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	Max. Allowable Voltage VDC	Coil Resistance
3	2.4	2.4	3.9	60 x (1±10%)
5	4.0	4.0	6.5	167 x (1±10%)
6	4.8	4.8	7.8	240 x (1±10%)
9	7.2	7.2	11.7	540 x (1±10%)
12	9.6	9.6	15.6	960 x (1±10%)
18	14.4	14.4	23.4	2160 x (1±10%)
24	19.2	19.2	31.2	3840 x (1±10%)

2 coils latching (300mW)

Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	Max. Allowable Voltage VDC	Coil Resistance
3	2.4	2.4	3.9	30 x (1±10%)
5	4.0	4.0	6.5	83 x (1±10%)
6	4.8	4.8	7.8	120 x (1±10%)
9	7.2	7.2	11.7	270 x (1±10%)
12	9.6	9.6	15.6	480 x (1±10%)
18	14.4	14.4	23.4	1080 x (1±10%)
24	19.2	19.2	31.2	1920 x (1±10%)



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

SAFETY APPROVAL RATINGS

UL/CUL	1A: 8A 250VAC 5A 30VDC B300 R150 1/6HP 125VAC/250VAC	2A/1A+1B: 5A 250VAC 5A 30VDC B300 R150 1/6HP 125VAC/250VAC(For 1HD) 1/10HP 125VAC/250VAC(For 2H)
TÜV	1A: 8A 250VAC 5A 250VAC (COSØ=0.4) 5A 30VDC	2A/1A+1B: 5A 250VAC 3A 250VAC (COSØ=0.4) 5A 30VDC

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HFE60/	12	-1HD	S	T	G	-L2	-R	(XXX)
Coil voltage	3, 5, 6, 9, 12, 18, 24VDC								
Contact form	1H: 1 Form A 2H: 2 Form A 1HD: 1 Form A +1 Form B								
Construction	S: Plastic sealed Nil: Flux proofed								
Contact material	T: AgSnO ₂								
Contact plating	G: Gold plated Nil: No gold plated								
Sort	L1: 1 coil latching L2: 2 coils latching Nil: Single side stable								
Polarity	R: Reverse polarity Nil: Standard polarity								
Special code ¹⁾	XXX: Customer special requirement Nil: Standard								

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

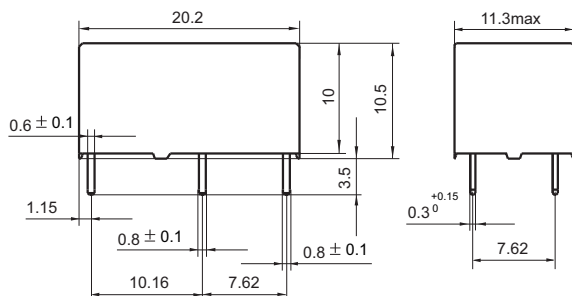
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

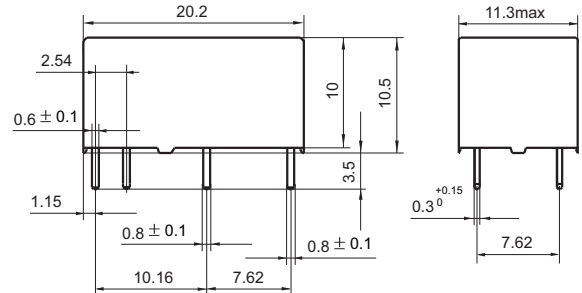
Unit: mm

Outline Dimensions

Single side stable / 1 coil latching



2 coils latching

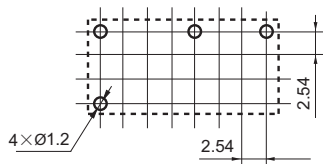


PCB Layout

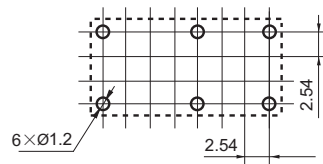
(Bottom view)

Single side stable/1 coil latching

1 Form A

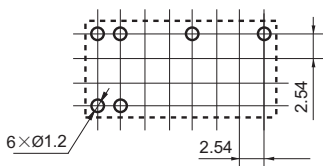


2 Form A or 1 Form A +1 Form B

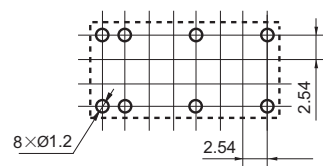


2 coils latching

1 Form A



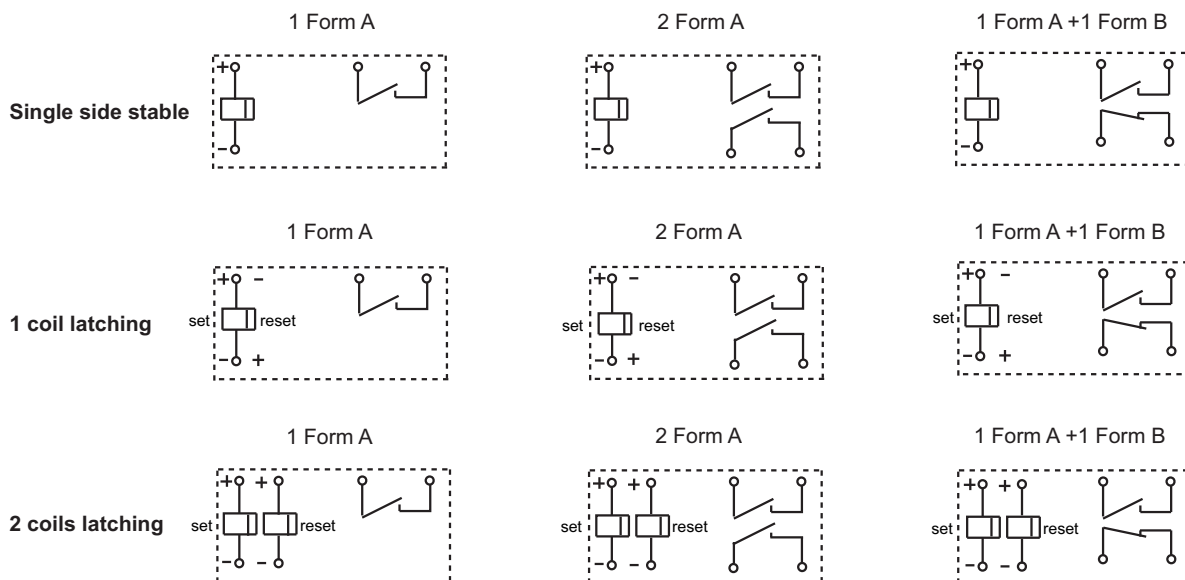
2 Form A or 1 Form A +1 Form B



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
3) The width of the gridding is 2.54mm.

Wiring Diagram

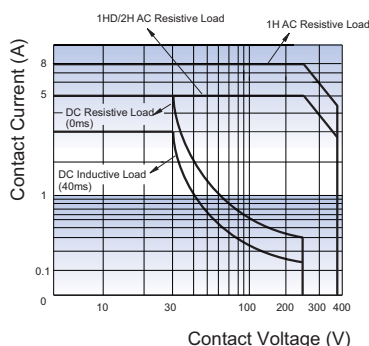
(Bottom view)



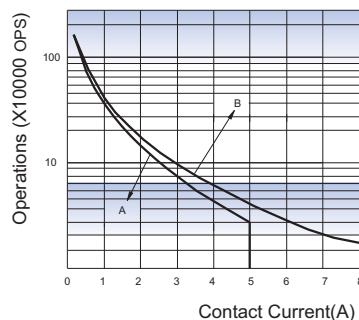
Remark: The above is wiring diagram for product with standard polarity, the coil polarity of reverse polarity and standard polarity is opposite.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



ENDURANCE CURVE



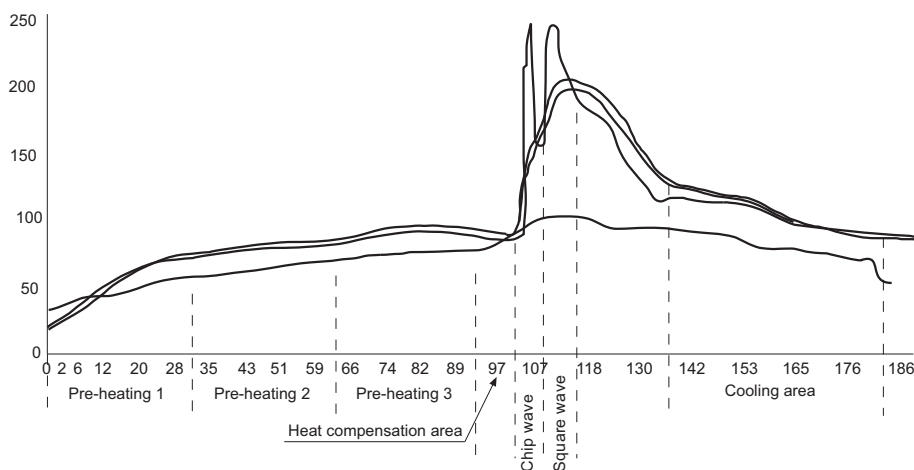
Test conditions:

- 1) Curve A: 1A+1B type (or 2A type)
Curve B: 1A type
- 2) Test conditions:
Resistive load, 120VAC~250VAC, 40°C.

Notice:

1. Latching relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C to 260°C, 2s to 5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s; the below chart is the wave soldering temperature distribution chart we recommended for your reference.
4. Keep the product away from strong magnetic field during transportation, storage and application, to avoid change of set/reset voltage.
5. This is a polarized relay. Please pay attention to the coil polarity according to the datasheet when using it.

Wave soldering temperature distribution chart



Disclaimer

The specification is for reference only. Specifications subject to change without notice.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HFE60P

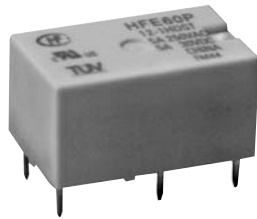
SUBMINIATURE INTERMEDIATE POWER RELAY



File No.: E134517



File No.: B121253286006



Features

- Low height 10.5mm
- Low coil power
- High switching capacity
1A: 8A 250VAC
2A, 1A+1B: 5A 250VAC
- 1 Form A, 2 Form A, 1 Form A+1 Form B configuration
- 3kV dielectric strength (between coil and contacts)
- Environmental friendly product (RoHS compliant)

CONTACT DATA

Contact arrangement	1A	2A, 1A+1B
Contact resistance	No gold plated: 30mΩ (at 1A 6VDC) Gold plated: 20mΩ (at 0.1A 6VDC)	
Contact material	AgSnO ₂	
Contact rating	8A 250VAC(COSφ=1.0) 5A 250VAC(COSφ=0.4) 0.3A 240VDC(τ=0ms) 0.15A 240VDC(τ=40ms) 5A 30VDC(τ=0ms)	5A 250VAC(COSφ=1.0) 3A 250VAC(COSφ=0.4) 0.3A 240VDC(τ=0ms) 0.15A 240VDC(τ=40ms) 5A 30VDC(τ=0ms)
Max. switching voltage	380VAC / 240VDC	
Max. switching current	8A	5A
Max. switching power	2000VA / 150W	1250VA / 150W
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance	1 x 10 ⁴ OPS(at 40°C, 1.5s on 1.5s off)	

CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	3000VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	2000VAC 1min
Surge voltage (between coil and contacts)	5kV (1.2/50μs)	
Operate time (single side stable)	10ms max.	
Release time (single side stable)	5ms max.	
Set time (latching)	10ms max.	
Reset time (latching)	10ms max.	
Shock resistance	Functional	196m/s ²
	Destructive	980m/s ²
Vibration resistance	Functional	10Hz to 55Hz 2.0mm DA
	Destructive	10Hz to 55Hz 3.5mm DA
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	PCB	
Unit weight	Approx. 4.5g	
Construction	Plastic sealed	

Notes: The data shown above are initial values.

COIL

Coil power	Single side stable: Approx. 300mW 1 coil latching: Approx. 150mW 2 coils latching: Approx. 300mW
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COIL DATA

at 23°C

Single side stable (300mW)

Nominal Voltage VDC	Pick-up VDC max.	Drop-out Voltage VDC min.	Max. Allowable Voltage VDC	Coil Resistance
3	2.4	0.3	3.9	30 x (1±10%)
5	4.0	0.5	6.5	83 x (1±10%)
6	4.8	0.6	7.8	120 x (1±10%)
9	7.2	0.9	11.7	270 x (1±10%)
12	9.6	1.2	15.6	480 x (1±10%)
18	14.4	1.8	23.4	1080 x (1±10%)
24	19.2	2.4	31.2	1920 x (1±10%)

1 coil latching (150mW)

Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	Max. Allowable Voltage VDC	Coil Resistance
3	2.4	2.4	3.9	60 x (1±10%)
5	4.0	4.0	6.5	167 x (1±10%)
6	4.8	4.8	7.8	240 x (1±10%)
9	7.2	7.2	11.7	540 x (1±10%)
12	9.6	9.6	15.6	960 x (1±10%)
18	14.4	14.4	23.4	2160 x (1±10%)
24	19.2	19.2	31.2	3840 x (1±10%)

2 coils latching (300mW)

Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	Max. Allowable Voltage VDC	Coil Resistance
3	2.4	2.4	3.9	30 x (1±10%)
5	4.0	4.0	6.5	83 x (1±10%)
6	4.8	4.8	7.8	120 x (1±10%)
9	7.2	7.2	11.7	270 x (1±10%)
12	9.6	9.6	15.6	480 x (1±10%)
18	14.4	14.4	23.4	1080 x (1±10%)
24	19.2	19.2	31.2	1920 x (1±10%)



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

SAFETY APPROVAL RATINGS

UL/CUL	1 Form A: 8A 250VAC 5A 30VDC B300 R150 1/6HP 125VAC/250VAC	2 Form A / 1 Form A+1 Form B: 5A 250VAC 5A 30VDC B300 R150 1/6HP 125VAC/250VAC(For 1HD) 1/10HP 125VAC/250VAC(For 2H)
TÜV	1 Form A: 8A 250VAC 5A 250VAC (COSØ=0.4) 5A 30VDC	2 Form A / 1 Form A+1 Form B: 5A 250VAC 3A 250VAC (COSØ=0.4) 5A 30VDC

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

Type	HFE60P/ 12 -1HD S T G -L2 -R (XXX)
Coil voltage	3, 5, 6, 9, 12, 18, 24VDC
Contact form	1H: 1 Form A 2H: 2 Form A 1HD: 1 Form A +1 Form B
Construction	S: Plastic sealed
Contact material	T: AgSnO ₂
Contact plating	G: Gold plated Nil: No gold plated
Sort	L1: 1 coil latching L2: 2 coils latching Nil: Single side stable
Polarity	R: Reverse polarity Nil: Standard polarity
Special code ¹⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

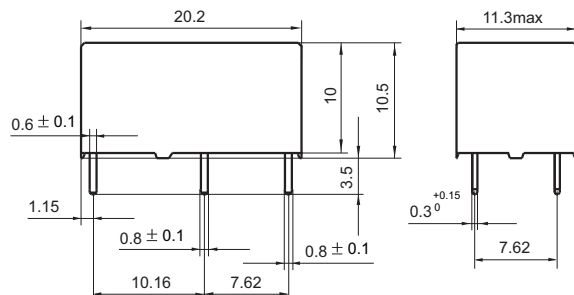
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

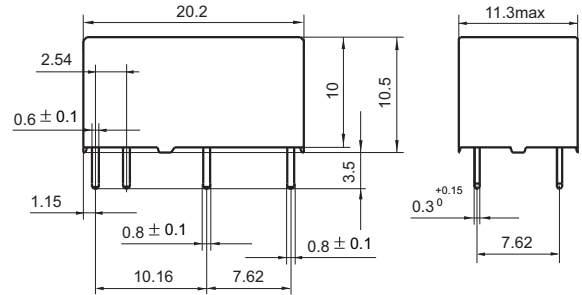
Unit: mm

Outline Dimensions

Single side stable/1 coil latching



2 coils latching

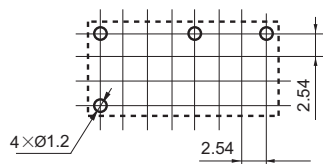


PCB Layout

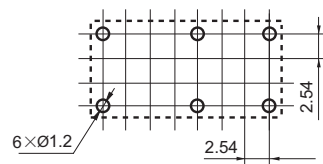
(Bottom view)

Single side stable/1 coil latching

1 Form A

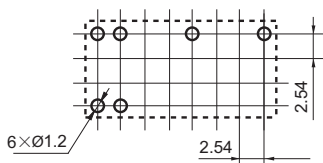


2 Form A or 1 Form A +1 Form B

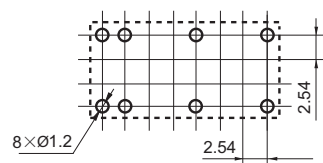


2 coils latching

1 Form A



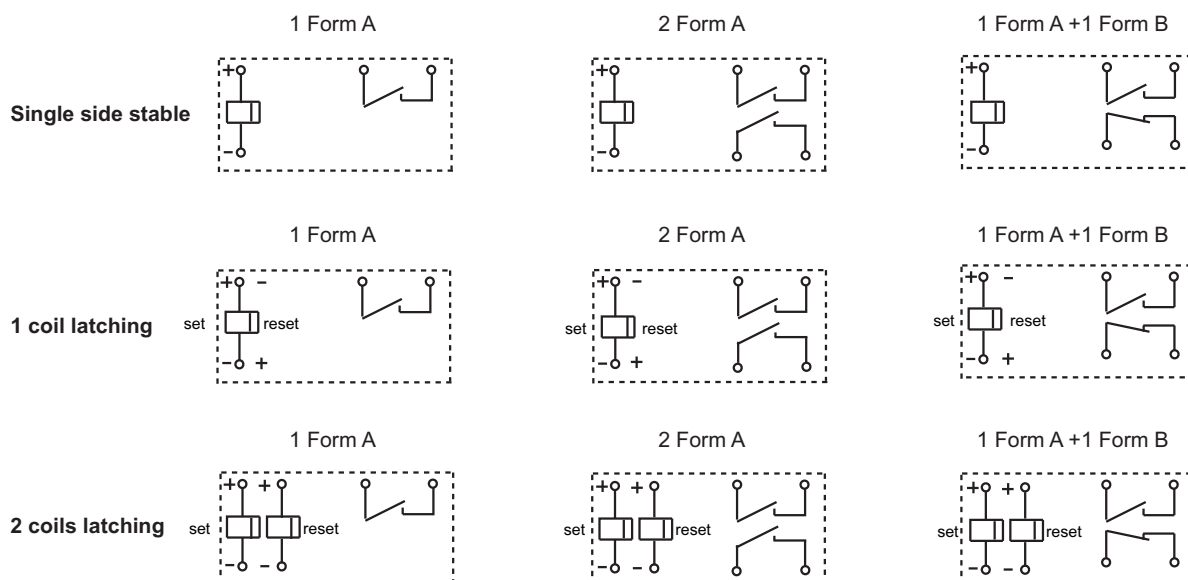
2 Form A or 1 Form A +1 Form B



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
3) The width of the gridding is 2.54mm.

Wiring Diagram

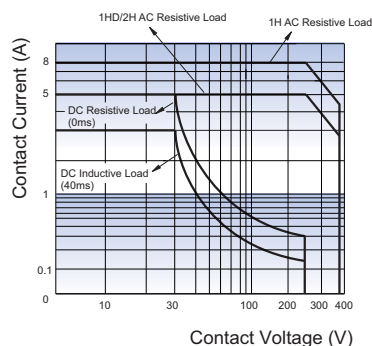
(Bottom view)



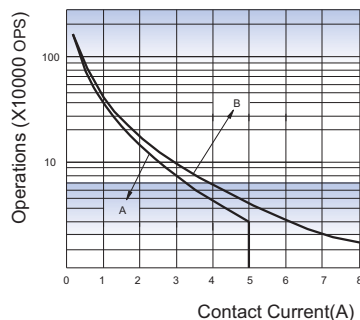
Remark: The above is wiring diagram for product with standard polarity, the coil polarity of reverse polarity and standard polarity is opposite.

CHARACTERISTIC CURVES

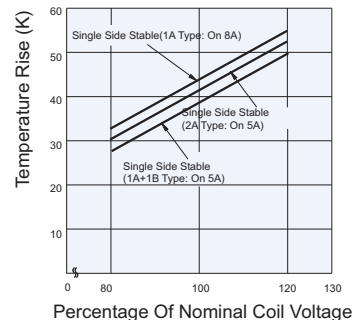
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



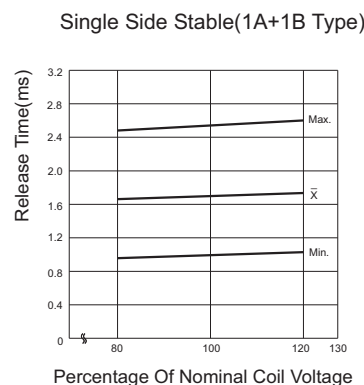
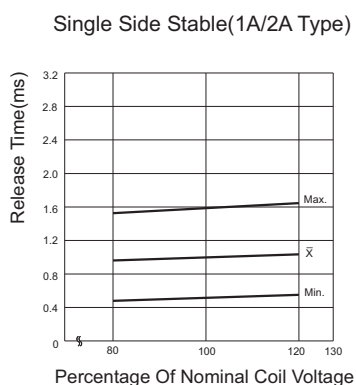
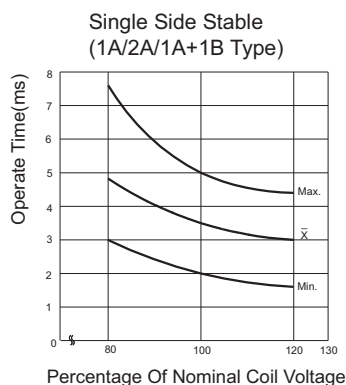
COIL TEMPERATURE RISE



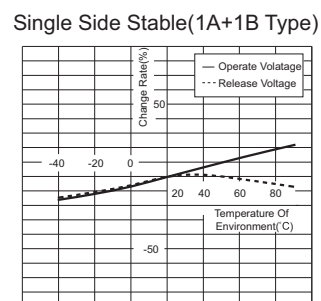
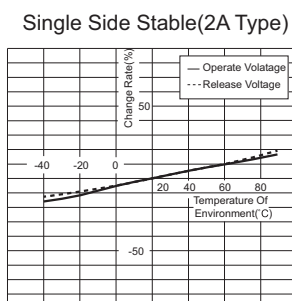
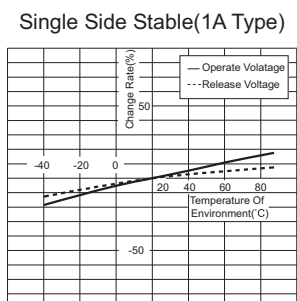
Test conditions:

- 1) Curve A: 1A+1B type (or 2A type)
Curve B: 1A type
- 2) Test conditions:
Resistive load, 120VAC~250VAC, 40°C.

Operate & Release Time



Operate & Release Voltage

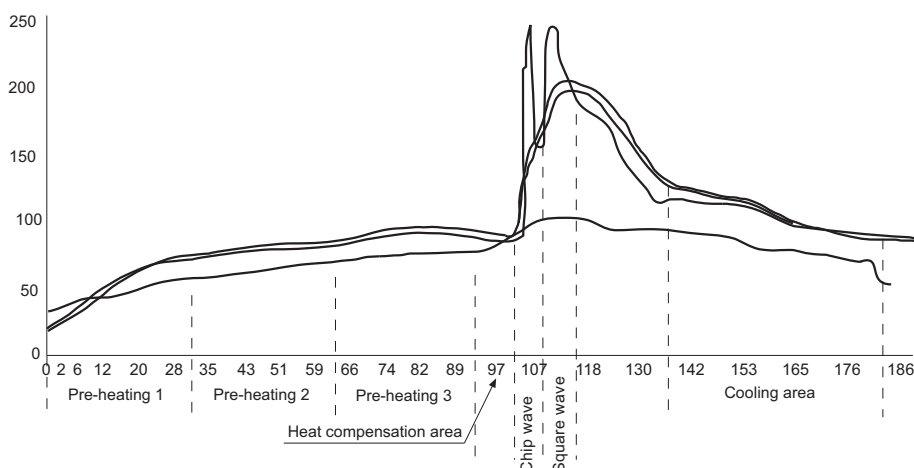


CHARACTERISTIC CURVES

Notice:

1. Latching relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. When choose the relay with PCB termination, the recommended welding temperature range and duration is 240°C to 260°C, 2s to 5s; Please do not use the reflow welding method, if the reflow is really required, please contact our technicals; the normal recommended wave soldering temperature is 250°C within 2s; the below chart is the wave soldering temperature distribution chart we recommended for your reference.
4. Keep the product away from strong magnetic field during transportation, storage and application, to avoid change of set/reset voltage.
5. This is a polarized relay. Please pay attention to the coil polarity according to the datasheet when using it.

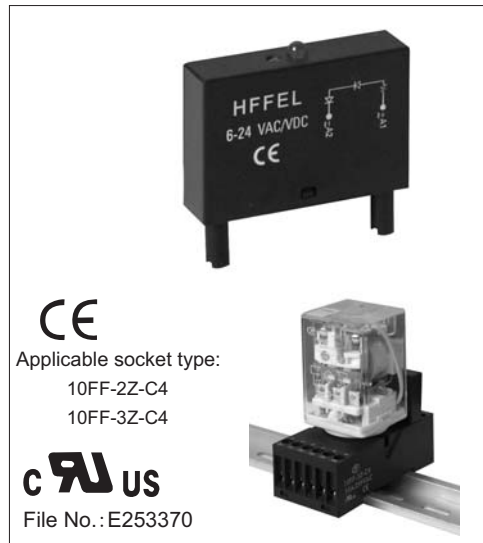
Wave soldering temperature distribution chart



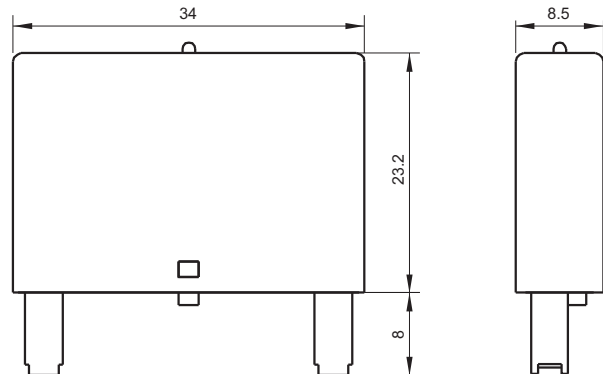
Disclaimer

The specification is for reference only. Specifications subject to change without notice.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.



OUTLINE DIMENSIONS



SPECIFICATIONS FOR MODULES

Ordering Code ¹⁾	Circuit Diagram	Voltage	Components	Functions
HFFAA		6VDC to 220VDC	Diode	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current
HFFAB		6VDC to 220VDC	Diode	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current
HFFBC (R) HFFBC (G)		6VDC to 24VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFFBD (R) HFFBD (G)		24VDC to 60VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFFBE (R) HFFBE (G)		110VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage

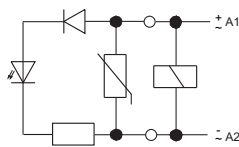
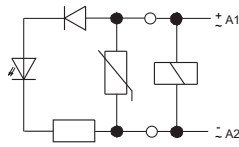
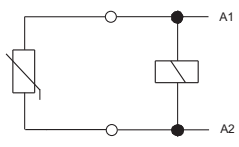
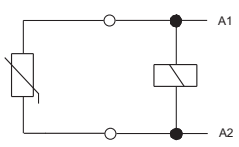
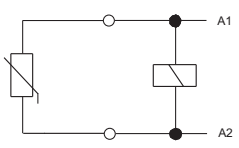
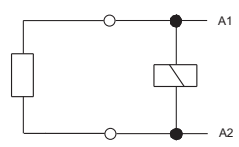


HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2016 Rev. 1.00

Ordering Code ¹⁾	Circuit Diagram	Voltage	Components	Functions
HFFCF (R) HFFCF (G)		6VDC to 24VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFFCG (R) HFFCG (G)		24VDC to 60VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFFCH (R) HFFCH (G)		110VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFFDI		6V to 24V AC / DC	Capacitor Resistor	<ul style="list-style-type: none"> ● With RC to protect the coil and to absorb instant starting surge current
HFFDJ		24V to 60V AC / DC	Capacitor Resistor	<ul style="list-style-type: none"> ● With RC to protect the coil and to absorb instant starting surge current
HFFDK		110V to 230V AC / DC	Capacitor Resistor	<ul style="list-style-type: none"> ● With RC to protect the coil and to absorb instant starting surge current
HFFEL (R) HFFEL (G)		6V to 24V AC / DC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFFEM (R) HFFEM (G)		24V to 60V AC / DC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFFEN (R) HFFEN (G)		110VAC to 230VAC 110VDC	Diode LED Resistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage
HFFFO (R) HFFFO (G)		6V to 24V AC / DC	Diode LED Resistor Varistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage ● With varistor in parallel connection to absorb instant starting surge current

Ordering Code ¹⁾	Circuit Diagram	Voltage	Components	Functions
HFFFP (R) HFFFP (G)		24V to 60V AC / DC	Diode LED Resistor Varistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage ● With varistor in parallel connection to absorb instant starting surge current
HFFFQ (R) HFFFQ (G)		110VAC to 230VAC 110VDC	Diode LED Resistor Varistor	<ul style="list-style-type: none"> ● With diode to protect the coil and to eliminate the converse current ● With LED to show the coil in voltage ● With varistor in parallel connection to absorb instant starting surge current
HFFGR		24VAC	Varistor	<ul style="list-style-type: none"> ● With varistor in parallel connection to absorb instant starting surge current
HFFGS		115VAC	Varistor	<ul style="list-style-type: none"> ● With varistor in parallel connection to absorb instant starting surge current
HFFGT		230VAC	Varistor	<ul style="list-style-type: none"> ● With varistor in parallel connection to absorb instant starting surge current
HFFHU		110VAC to 230VAC	Resistor	<ul style="list-style-type: none"> ● With resistor to protect the coil and to spread around current

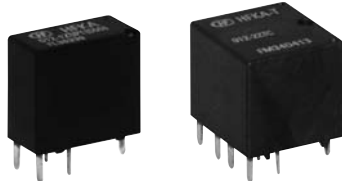
Notes: 1) When there is LED in the module, please indicate (R) or (G) to show the color of the light, for example HFBC(R) or HFBC (G). (R) means red light while (G) means green light.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

HFKA/HFKA-T

AUTOMOTIVE RELAY



Single

Twin

Typical Applications

Central door lock, Power doors and windows,
Indicator lamp control, Seat adjustment, Sunroof motor control,
Mirror adjustment, Wiper control

Features

- 25A motor locked load
- Extremely small relay
- Change-over contact version
- Single and twin version available
- Coil wire insulation class H (180°C)
- HFKA-T (reflow soldering version) available
- RoHS & ELV compliant

CHARACTERISTICS

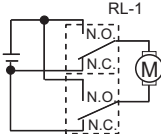
Contact arrangement	1C (Single), 2C (Twin)
Voltage drop (initial) ¹⁾	Typ.: 50mV (at 10A) Max.: 250mV (at 10A)
Max. continuous current ²⁾	25A (at 23°C, 1h)
Max. switching current	30A
Max. switching voltage ³⁾	16VDC
Min. contact load	1A 6VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	1 x 10 ⁷ OPS (300OPS/min)
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength ⁴⁾	between contacts: 500VAC between coil & contacts: 500VAC
Operate time	Typ.: 2.5ms (at nomi. vol.) Max.: 10ms (at nomi. vol.)
Release time ⁵⁾	Typ.: 1.2ms Max.: 10ms

Ambient temperature	HFKA: -40°C to 85°C HFKA-T: -40°C to 105°C
Vibration resistance ⁶⁾	10Hz to 500Hz 49m/s ²
Shock resistance ⁶⁾	98m/s ²
Termination	PCB ⁷⁾
Construction	HFKA: Plastic sealed HFKA-T: Flux proofed
Unit weight	Single relay: Approx. 4g Twin relay: Approx. 8g

- 1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).
2) For NO contacts, measured when applying 100% rated voltage on coil.
3) See "Load limit curve" for details.
4) 1min, leakage current less than 1mA.
5) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
6) When energized, opening time of NO contacts shall not exceed 1ms, when non-energized, opening time of NC contacts shall not exceed 1ms, meantime, NO contacts shall not be closed.
7) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C, (5±0.3)s.

CONTACT DATA ³⁾

at 23°C

Load voltage	Load type ²⁾		Load current A		On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram	
			1C, 2C		On s	Off s				
			NO	NC						
13.5VDC	Motor	Make ¹⁾	25	---	0.3	19.7	1 × 10 ⁵	AgSnO ₂		
		Break	25	---						
	Simulate window operation	Make ¹⁾	25	---	0.2	4	1 × 10 ⁵	AgSnO ₂		
		Stable	10	---						0.5
		Break	25	---						
	Simulate motor operation	Make ¹⁾	27	---	0.02	1.8	1 × 10 ⁵	AgSnO ₂		
		Transient	17	---						0.15
		Break	8	---						



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2015 Rev. 1.00

- 1) Corresponds to the peak inrush current on initial actuation (motor).
- 2) When applied in flasher, a special silver alloy (AgSnO₂) contact material should be used and the customer special code should be (170) as a suffix. Please heed the anode and cathode's request when wired, common terminal should connect with anode.
- 3) When the load requirement is different from content of the table above, please contact Hongfa for relay application support.

COIL DATA

at 23°C

	Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance $x(1\pm10\%)\Omega$	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
						at 23°C	at 85°C
Standard	12	7.2	1.0	225	0.64	20	16
Low pick-up voltage	12	6.5	1.0	180	0.8	18	14

1) Max. allowable overdrive voltage is stated with no load applied.

ORDERING INFORMATION

	HFKA /	012	-1Z	S	P	T	C	(XXX)
Type	HFKA: Standard HFKA-T: Reflow soldering version ¹⁾							
Coil voltage	012: 12VDC							
Contact arrangement	1Z: 1 Form C (Single version) 2Z: 2 Form C (Twin version)							
Construction	S: Plastic sealed (HFKA) ²⁾ Nil: Flux proofed (HFKA-T)							
Coil power	P: Low pick-up voltage Nil: Standard							
Contact material	T: AgSnO ₂							
Packing style	C: Tape and reel packing Nil: Tube packing							
Special code³⁾	XXX: Customer special requirement Nil: Standard							

Notes: 1) The structure of HFKA-T is only flux proof, the open vent hole is on the top of the relay.

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load.

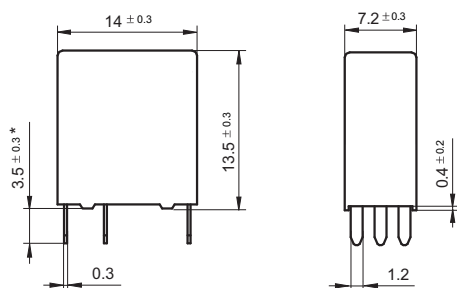
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

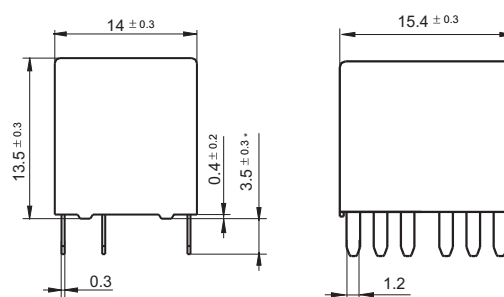
Outline Dimensions

HFKA (Standard)

1 Form C (Single version)



2 Form C (Twin version)



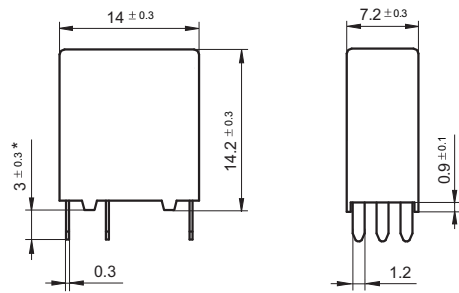
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

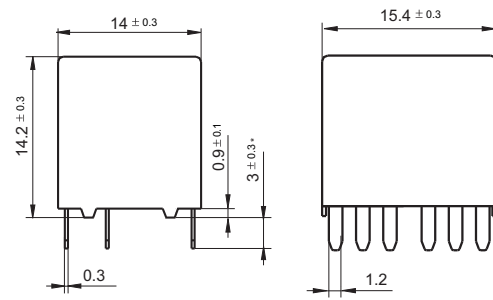
Outline Dimensions

HFKA-T (Reflow soldering version)

1 Form C (Single relay)



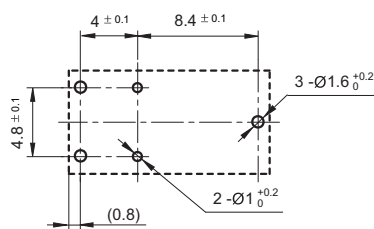
2 Form C (Twin relay)



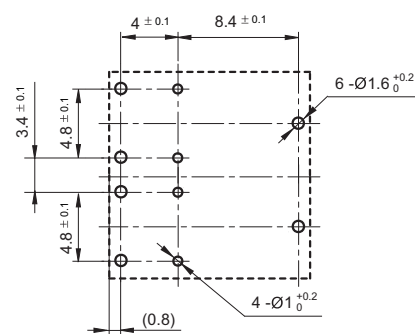
Remark: * The additional tin top is max. 1mm.

PCB Layout (Bottom view)

1 Form C (Single relay)

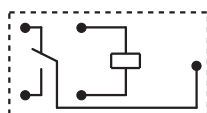


2 Form C (Twin relay)

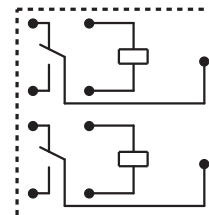


Wiring Diagram (Bottom view)

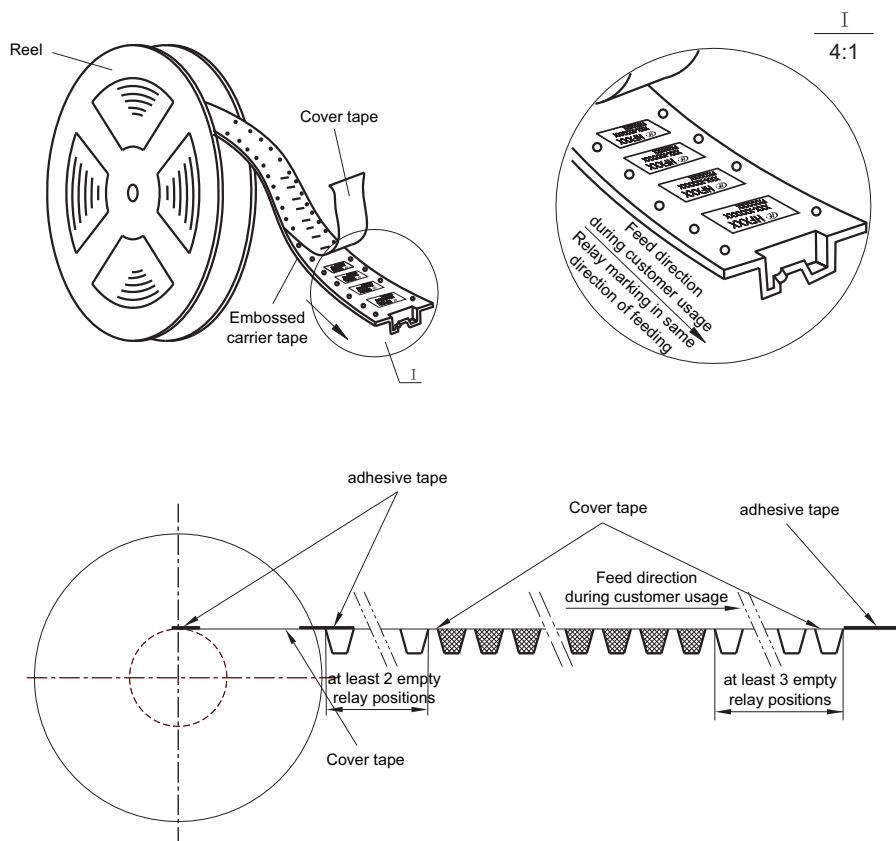
1 Form C (Single relay)



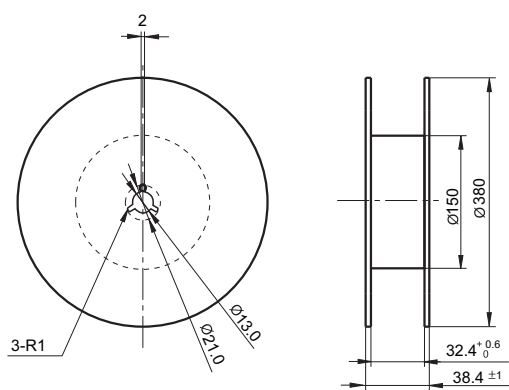
2 Form C (Twin relay)



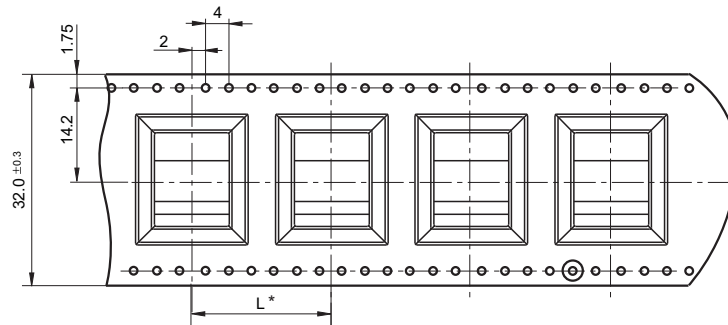
Direction of Relay Insertion



Reel Dimensions



Tape Dimensions

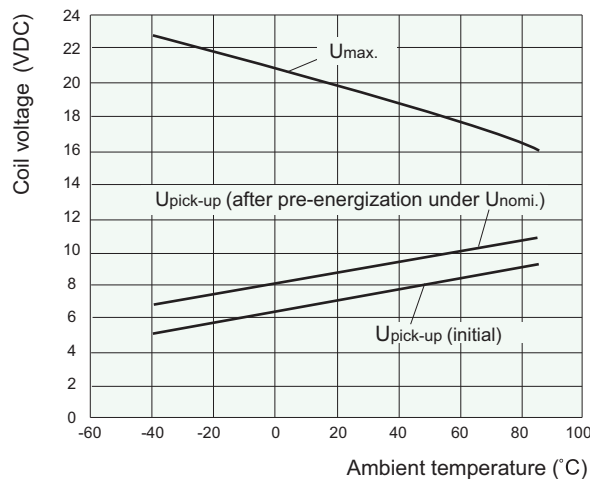


Remark: * For Single relay, L is 20mm; for Twin relay, L is 28mm.

CHARACTERISTIC CURVES

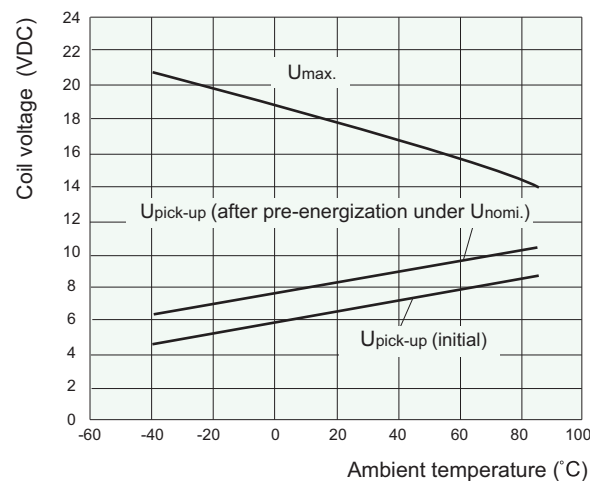
1. Coil operating voltage range

225Ω coil resistance



- 1) There should be no contact load applied when maximum continuous operation voltage is applied on coil.
- 2) The operating voltage is connected with coil pre-energized time and voltage. After pre-energized, the operating voltage will increase.
- 3) The maximum allowable coil temperature is 180°C. For the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 170°C under the different application ambient, different coil voltage and different load etc.
- 4) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

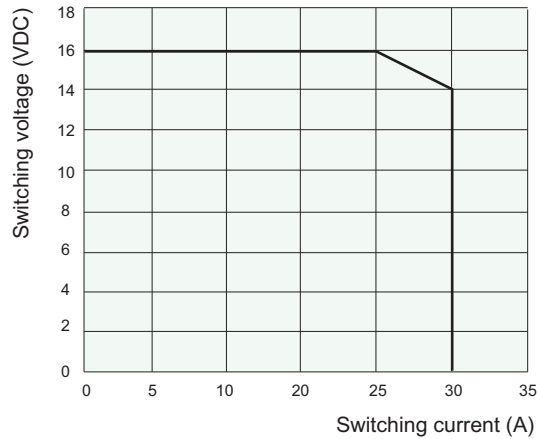
180Ω coil resistance



- 1) There should be no contact load applied when maximum continuous operation voltage is applied on coil.
- 2) The operating voltage is connected with coil pre-energized time and voltage. After pre-energized, the operating voltage will increase.
- 3) The maximum allowable coil temperature is 180°C. For the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 170°C under the different application ambient, different coil voltage and different load etc.
- 4) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

CHARACTERISTIC CURVES

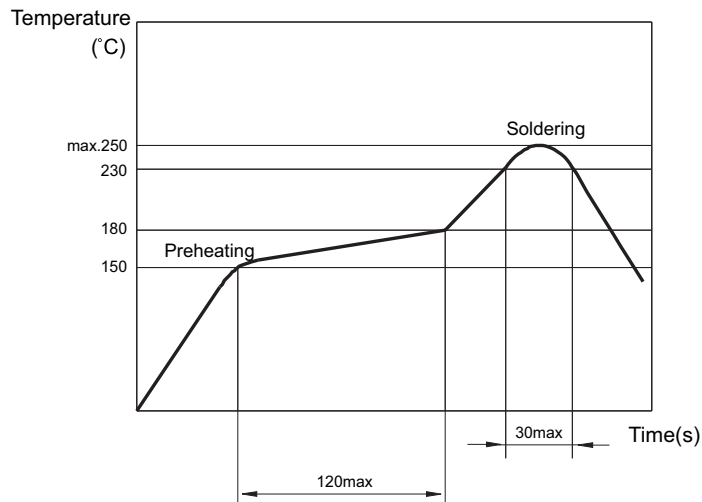
2. Load limit curve (at 23°C)



- 1) This chart takes NO contact, resistive load as example.
- 2) The load and electrical endurance tests are made according to "CONTACT DATA" parameters' table. If actual load voltage, current or operate frequency is different from "CONTACT DATA" table, please arrange corresponding tests for confirmation.

3. Reflow soldering, temperature on PCB board.

(Recommended soldering temperature, only for reflow soldering version)



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We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFKC/HFKC-T

AUTOMOTIVE RELAY



Typical Applications

Central door lock, Anti-theft lock, Power doors & windows, Lighting, flashlight & indicator lamp control, Wiper control, Instrument control, Rear window and seat heating control

Features

- Subminiature automotive relay
- The weight is only 4g for single relay
- Extended temp. range up to 105°C
- The reflow soldering version (open vent hole) available (HFKC-T)
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A, 1C
Voltage drop (initial) ¹⁾	Typ.: 50mV (at 10A) Max.: 250mV (at 10A)
Max. continuous current	NO: 30A (at 23°C, 1h) ²⁾ NC: 25A (at 23°C, 1h) ³⁾
Max. switching current ⁴⁾	30A
Max. switching voltage	16VDC
Min. contact load	1A 6VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	1x10 ⁷ OPS (300OPS/min)
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength ⁵⁾	500VAC
Operate time	Typ.: 4ms (at nomi. vol.) Max.: 10ms (at nomi. vol.)

Release time ⁶⁾	Typ.: 2ms Max.: 10ms
Ambient temperature	-40°C to 105°C
Vibration resistance ⁷⁾	10Hz to 500Hz 58.8m/s ²
Shock resistance ⁷⁾	294m/s ²
Termination	PCB ⁸⁾
Construction	Plastic sealed, Flux proofed
Unit weight	4g

- 1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).
- 2) For NO contacts, measured when applying 100% rated voltage on coil.
- 3) For NC contacts, measured when applying zero voltage on coil.
- 4) At 23°C, 13.5VDC, on & off rate at 1s:5s, resistive load (100 cycles).
- 5) 1min, leakage current less than 1mA.
- 6) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
- 7) When energized, opening time of NO contacts shall not exceed 100μs, when non-energized, opening time of NC contacts shall not exceed 100μs, meantime, NO contacts shall not be closed.
- 8) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C, (5±0.3)s.

CONTACT DATA ⁵⁾

at 23°C

Load voltage	Load type		Load current A		On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram ⁴⁾
			1C		On s	Off s			
			NO	NC					
13.5VDC	Resistive	Make	20	---	1	5	3×10 ⁵	AgSnO ₂	See diagram 1
		Break	20	---					
	Wiper L=1.0mH	Make	25 ¹⁾	---	0.2	2	3×10 ⁵	AgSnO ₂	See diagram 2
		Break	5	---					
	Motor locked L=0.77mH	Make	20	---	0.2	2	1×10 ⁵	AgSnO ₂	See diagram 3
		Break	20	---					



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2015 Rev. 1.00

Load voltage	Load type		Load current A	On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram ⁴⁾
			1A	On s	Off s			
13.5VDC	Resistive	Make	20	1	5	3×10^5	AgSnO ₂	See diagram 4
		Break	20					
	Flasher ³⁾	Make	$3 \times 21W$	0.365	0.365	2×10^6	Special AgSnO ₂	See diagram 5
		Break						
	Lamp	Make	40 ²⁾	2	2	1×10^5	AgSnO ₂	See diagram 6
		Break	10					

1) Corresponds to the peak inrush current on initial actuation (motor).

2) Corresponds to the peak inrush current on initial actuation (cold filament).

3) When it is utilized in flasher, a special AgSnO₂ contact material should be used and the customer special code should be (170) as a suffix. Please connect by the polarity according to the diagrams below.

4) The load wiring diagrams are listed below:

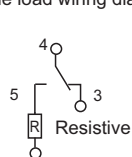


diagram 1

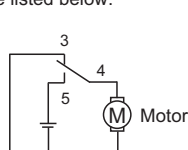


diagram 2

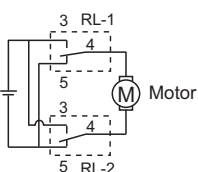


diagram 3

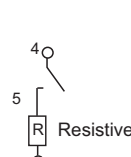


diagram 4

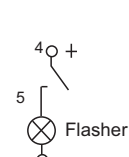


diagram 5

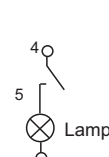


diagram 6

5) When the load voltage is at 24VDC or higher, or the applications conditions are different from the table above, please submit the detailed application conditions to Hongfa to get more support.

COIL DATA

at 23°C

Nominal voltage ¹⁾ VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance $\times(1 \pm 10\%) \Omega$	Power consumption W	Max. allowable overdrive voltage ²⁾ VDC	
					at 23°C	at 85°C
6	3.5	0.8	63	0.55	13.2	7.8
10	5.7	1.25	181	0.55	22	13
12	6.9	1.5	254	0.55	26	16
12	6.9	1.5	181	0.80	22	13

1) When requiring some other nominal voltage, special order allowed.

2) Max. allowable overdrive voltage is stated with no load applied.

ORDERING INFORMATION

HFKC /		012	-Z	S	P	T	(XXX)
Type	HFKC: Standard HFKC-T: Reflow soldering version ¹⁾						
Coil voltage	006: 6VDC 010: 10VDC 012: 12VDC						
Contact arrangement	H: 1 Form A Z: 1 Form C						
Construction	S: Plastic sealed (HFKC) ²⁾ Nil: Flux proofed (HFKC-T)						
Coil power	P: 0.8W (Only for 12VDC type) Nil: 0.55W						
Contact material	T: AgSnO ₂						
Special code ³⁾	XXX: Customer special requirement Nil: Standard						

Notes: 1) The structure of HFKC-T is only flux proof, the open vent hole is on the top of the relay.

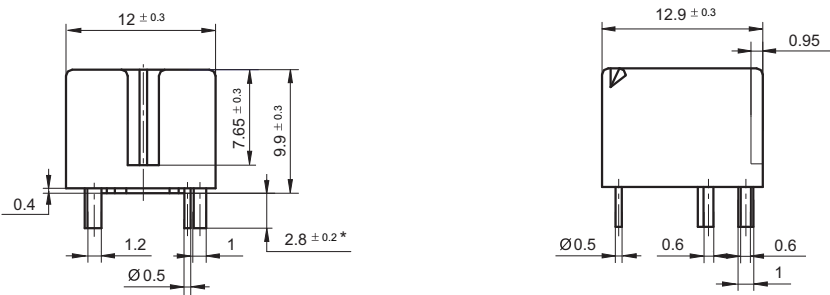
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

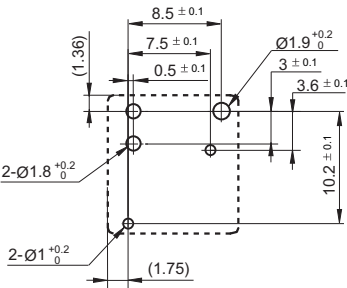
Unit: mm

Outline Dimensions



Remark: * The additional tin top is max. 1mm.

PCB Layout (Bottom view)

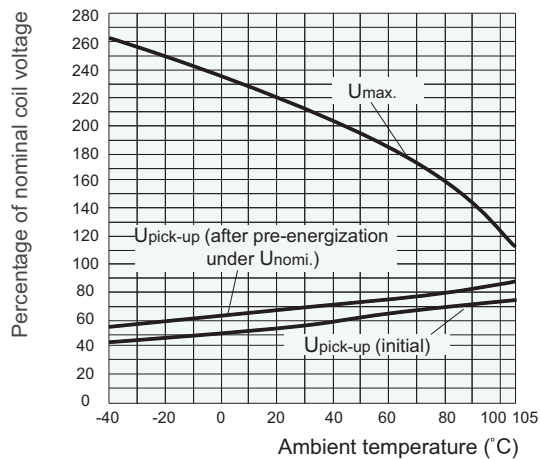


PCB Layout (Bottom view)



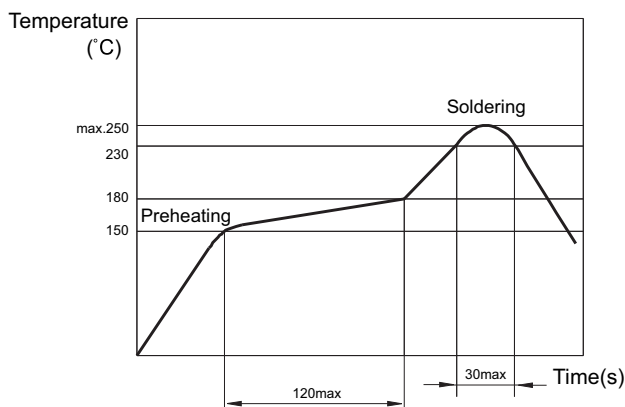
CHARACTERISTIC CURVES

1. Coil operating voltage range



- 1) There should be no contact load applied when maximum continuous operation voltage is applied on coil.
- 2) The operating voltage is connected with coil pre-energized time and voltage. After pre-energized, the operating voltage will increase.
- 3) The maximum allowable coil temperature is 180°C. For the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 170°C under the different application ambient, different coil voltage and different load etc.
- 4) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

2. Reflow soldering, temperature on PCB board. (Recommended soldering temperature, only for reflow soldering version)



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Typical Applications

Power doors & windows, Door locking systems,
Seat adjustment, Seatbelt prevention device, Immobilizers,
Sunroof motor control

Features

- Micro miniature
- Change-over contact version
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	2C (Double)	Ambient temperature	-40°C to 85°C
Voltage drop (initial) ¹⁾	Typ.: 50mV (at 10A) Max.: 250mV (at 10A)	Vibration resistance ⁶⁾	10Hz to 55Hz 1.5mm DA 55Hz to 200Hz 98m/s ²
Max. continuous current ²⁾	15A (at 85°C, 1h)	Shock resistance ⁶⁾	294m/s ²
Max. switching current	25A	Termination	PCB ⁷⁾
Max. switching voltage ³⁾	16VDC	Construction	Plastic sealed
Min. contact load	1A 6VDC	Unit weight	10g
Electrical endurance	See "CONTACT DATA"	¹⁾ Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC). ²⁾ For NO contacts, measured when applying 100% rated voltage on coil of both sides. ³⁾ See "Load limit curve" for details. ⁴⁾ 1min, leakage current less 1mA. ⁵⁾ The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit. ⁶⁾ When energized, opening time of NO contacts shall not exceed 1ms, when non-energized, opening time of NC contacts shall not exceed 1ms, meantime, NO contacts shall not be closed. ⁷⁾ Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C, (5±0.3)s.	
Mechanical endurance	1x10 ⁷ ops (300ops/min)		
Initial insulation resistance	100MΩ (at 500VDC)		
Dielectric strength ⁴⁾	between contacts: 500VAC between coil & contacts: 500VAC		
Operate time	Typ.: 3ms (at nomi. vol.) Max.: 10ms (at nomi. vol.)		
Release time ⁵⁾	Typ.: 1.3ms Max.: 10ms		

CONTACT DATA ⁴⁾

Load voltage	Load type		Load current A		On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram ³⁾	Ambient temp.
			2C		On s	Off s				
			NO	NC						
13.5VDC	Simulate motor operation	Make ¹⁾	25	---	0.02	3.6	1×10 ⁵	AgSnO ₂	See diagram 1	at 85°C
		Transient1 ¹⁾	15	---	0.03					
		Transient2 ¹⁾	10	---	0.03					
		Break	6	---	0.32					
	Resistive	Make	20	---	1	3	2×10 ⁵	AgSnO ₂	See diagram 2	at 80°C
		Break	20	---						
	Lamp ²⁾	Make	4 x21W	---	1	5	2×10 ⁵	AgSnO ₂	See diagram 3	at 80°C
		Break								



HONGFA RELAY

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2016 Rev. 1.00

- 1) Current of turn on transient 1, transient 2 is subsection simulation to that of motor start-up peak value.
- 2) The load in the table excludes flasher. When applied in flasher, a special silver alloy (AgSnO₂) contact material should be used and the customer special code should be (170) as a suffix. Please heed the anode and cathode's request when wired, common terminal should connect with anode.
- 3) The load wiring diagrams are listed below:

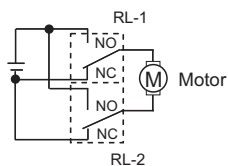


diagram 1

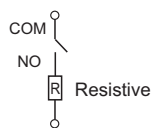


diagram 2

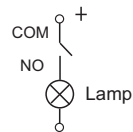


diagram 3

- 4) When the load voltage is at 24VDC or higher, or the applications conditions are different from the table above, please submit the detailed application conditions to Hongfa to get more support.

COIL DATA

at 23°C

	Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance x(1±10%)Ω	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
						at 23°C	at 85°C
Standard	12	7.2	1.0	255	0.56	20	16
Low pick-up voltage	12	5.8	0.8	178	0.81	17	13.5

- 1) Max. allowable overdrive voltage is stated with no load applied.

ORDERING INFORMATION

	HFKD /	012	-2Z	S	P	T	(XXX)
Type							
Coil voltage	012: 12VDC						
Contact arrangement	2Z: 2 x 1 Form C (Double relay)						
Construction	S: Plastic sealed ¹⁾						
Coil power	P: Low pick-up voltage Nil: Standard						
Contact material	T: AgSnO ₂						
Special code²⁾	XXX: Customer special requirement Nil: Standard						

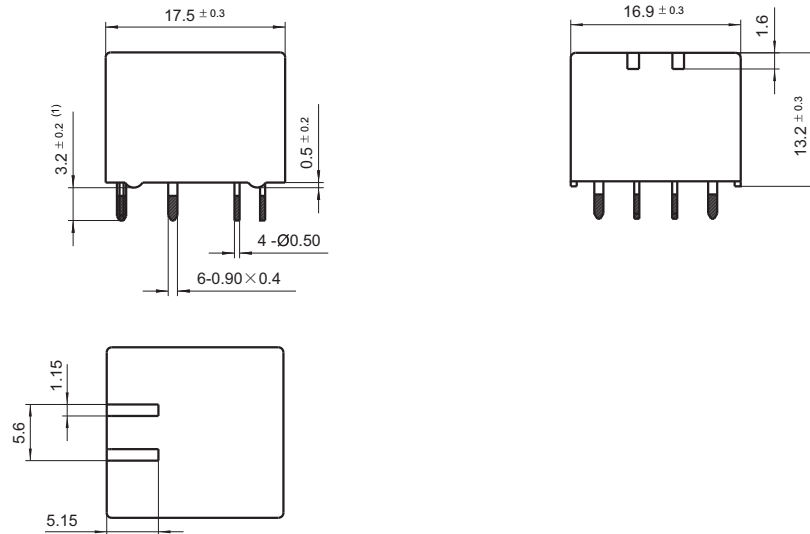
Notes: 1) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

- 2) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

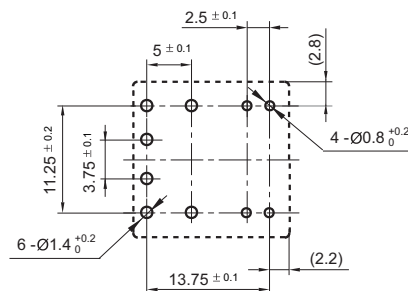
Unit: mm

Outline Dimensions

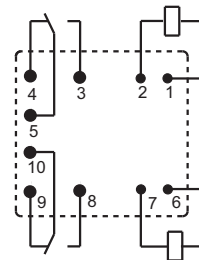


Remark: This dimension does not include tin top; tin top length will not exceed 1mm after tin dipping.

PCB Layout (Bottom view)

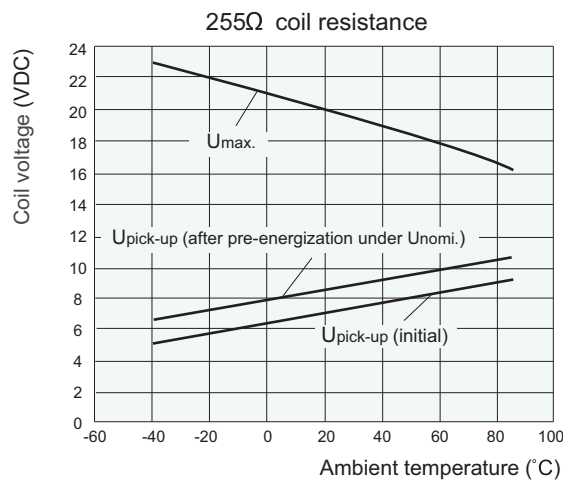


Wiring Diagram (Bottom view)



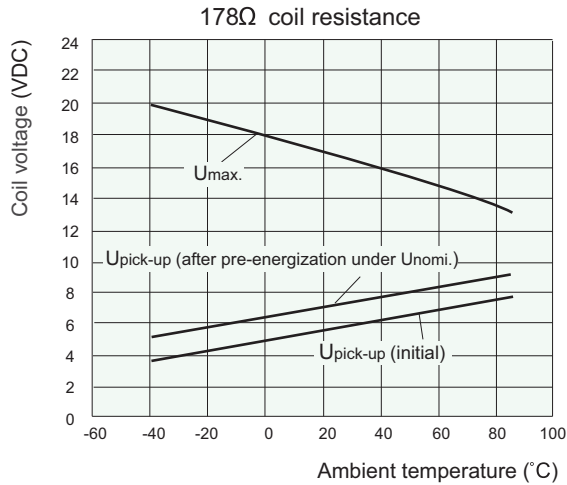
CHARACTERISTIC CURVES

1. Coil operating voltage range



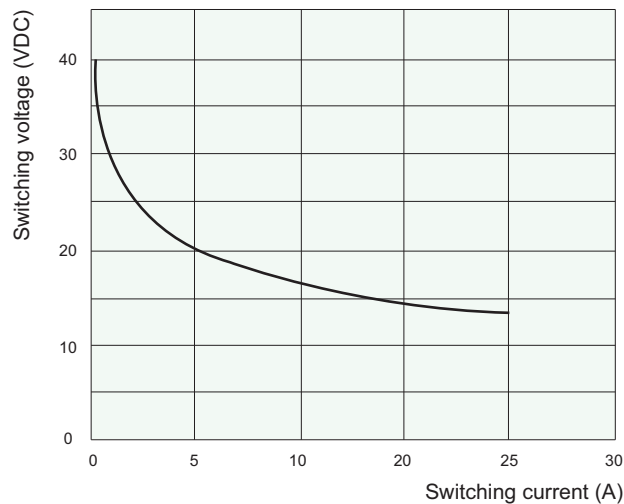
- 1) There should be no contact load applied when maximum continuous operation voltage is applied on coil.
- 2) The operating voltage is connected with coil pre-energized time and voltage. After pre-energized, the operating voltage will increase.
- 3) The maximum allowable coil temperature is 180°C . For the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 170°C under the different application ambient, different coil voltage and different load etc.
- 4) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

CHARACTERISTIC CURVES



- 1) There should be no contact load applied when maximum continuous operation voltage is applied on coil.
- 2) The operating voltage is connected with coil pre-energized time and voltage. After pe-energized, the operating voltage will increase.
- 3) The maximum allowable coil temperature is 180°C. For the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 170°C under the different application ambient, different coil voltage and different load etc.
- 4) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

2. Load limit curve



- 1) This chart takes NO contact, resistive load as example.
- 2) The load and electrical endurance tests are made according to "CONTACT DATA" parameters' table. If actual load voltage, current, or operate frequency is different from "CONTACT DATA" table, please arrange corresponding tests for confirmation.

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HFKF/HFKF-T

AUTOMOTIVE RELAY



Single



Twin(8 pins)



Twin(10 pins)

Typical Applications

Central door lock, Power doors and windows, Seat adjustment, Sunroof motor control, Mirror adjustment

Features

- 25A motor locked load
- Extremely small relay
- Change-over contact version
- Single and twin(8 pins or 10 pins) version available
- Coil wire insulation class H (180°C)
- HFKF-T (reflow soldering version) available
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1C (Single), 2C Twin(8 pins), 2C Twin(10 pins)
Voltage drop (initial) ¹⁾	Typ.: 50mV (at 10A) Max.: 250mV (at 10A)
Max. continuous current ²⁾	25A (at 23°C, 2min)
Max. switching current	30A
Max. switching voltage	16VDC
Min. contact load	1A 6VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	1 x 10 ⁷ OPS (300OPS/min)
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength ³⁾	between contacts: 500VAC between coil & contacts: 500VAC
Operate time	Max.: 10ms (at nomi. vol.)
Release time ⁴⁾	Max.: 10ms

Ambient temperature		HFKF: -40°C to 85°C HFKF-T: -40°C to 110°C
Vibration resistance	Functional ⁵⁾	10Hz to 100Hz 44.1m/s ²
	Destructive	10Hz to 500Hz 44.1m/s ² , 2h
Shock resistance	Functional ⁵⁾	100m/s ² (pulse duration: 11ms)
	Destructive	1000m/s ² (pulse duration: 6ms)
Termination		PCB ⁶⁾
Construction		Plastic sealed, Flux proofed
Unit weight		Single relay: Approx. 3.5g Twin relay: Approx. 6.5g

- 1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).
- 2) For NO contacts, measured when applying 100% rated voltage on coil.
- 3) 1min, leakage current less than 1mA.
- 4) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
- 5) When energized, opening time of NO contacts shall not exceed 10μs, when non-energized, opening time of NC contacts shall not exceed 10μs, meantime, NO contacts shall not be closed.
- 6) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C, (5±0.3)s.

CONTACT DATA ³⁾

at 23°C

Load voltage	Load type ²⁾		Load current A		On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram
			1C, 2C		On s	Off s			
			NO	NC					
14VDC	Resistive	Make	20	10	1	9	1 × 10 ⁵	AgSnO ₂	See diagram 1
		Break	20	10					
	Motor	Make ¹⁾	25	---	0.5	9.5	1 × 10 ⁵	AgSnO ₂	See diagram 2
		Break	25	---					
	Simulate motor operation	Make ¹⁾	25	---	0.02	9.5	2 × 10 ⁵	AgSnO ₂	
		Transient	15	---	0.03				
		Break	5	---	0.45				



HONGFA RELAY

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- 1) Corresponds to the peak inrush current on initial actuation (motor).
- 2) The load wiring diagrams are listed below:

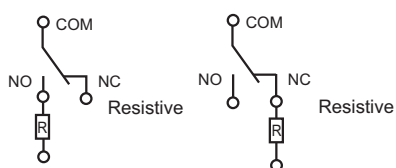


diagram 1

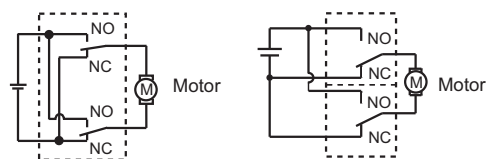


diagram 2

- 3) When the load requirement is different from content of the table above, please contact Hongfa for relay application support.

COIL DATA

at 23°C

Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance $\times(1\pm10\%) \Omega$	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
					at 23°C	at 85°C
12	6.5	0.8	160	0.9	18	14
12	7.7	0.8	220	0.655	20	16

1) Max. allowable overdrive voltage is stated with no load applied (For dual relays, only one side of coil is energized).

ORDERING INFORMATION

		HFKF /		12	-1Z	S	P	T	(XXX)
Type	HFKF: Standard								
	HFKF-T: Reflow soldering version or high heat-resistant version								
Coil voltage		12: 12VDC							
Contact arrangement	1Z: 1 Form C (Single version)								
	BZ: 2 Form C (Twin(8 pins) version)								
	2Z: 2 Form C (Twin(10 pins) version)								
Construction ¹⁾		S: Plastic sealed Nil: Flux proofed							
Coil power		P: 0.9W Nil: 0.655W							
Contact material		T: AgSnO ₂							
Special code ²⁾		XXX: Customer special requirement				Nil: Standard			

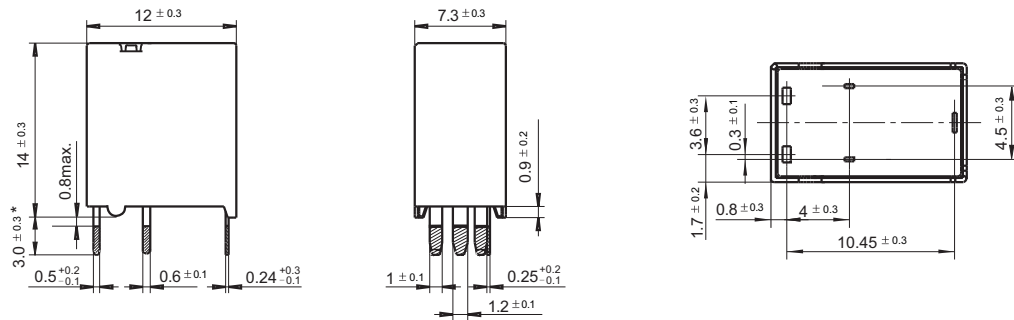
Notes: 1) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

2) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load.

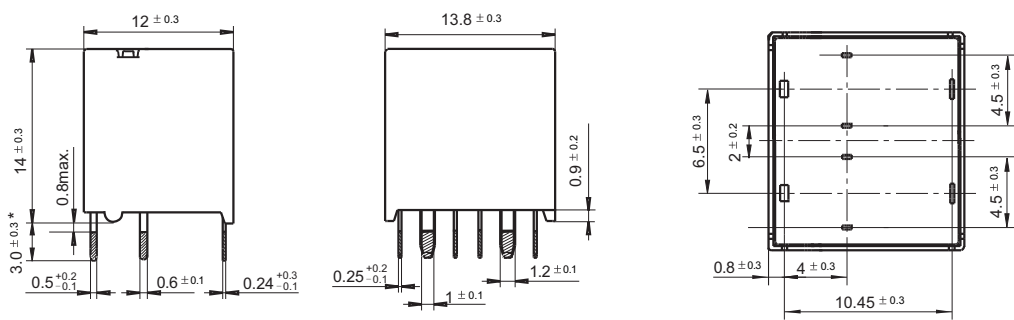
3) When HFKF-T is reflow soldered, only flux proofed is available.

Outline Dimensions

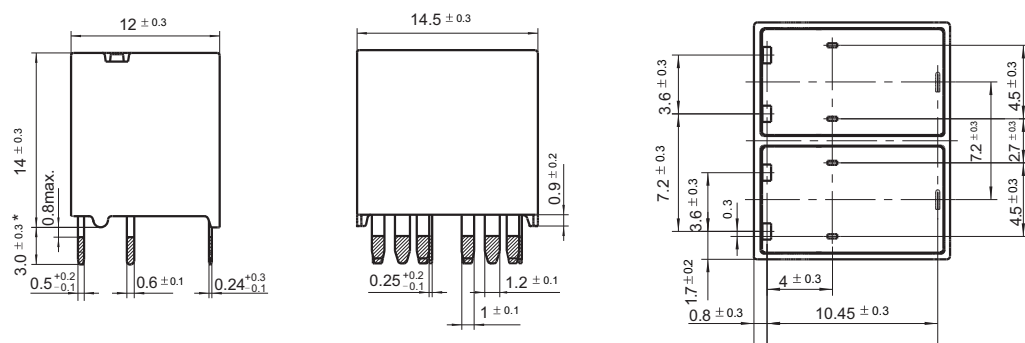
1 Form C (Single relay)



2 Form C (Twin(8 pins)) relay



3 Form C (Twin(10 pins)) relay



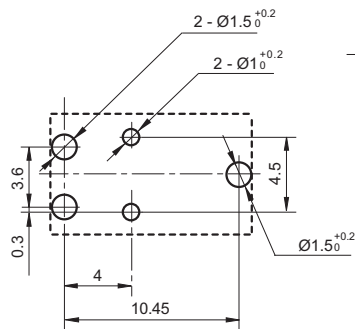
Remark: * The additional tin top is max. 1mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

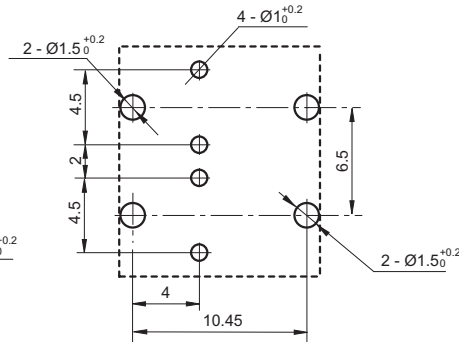
Unit: mm

PCB Layout (Bottom view)

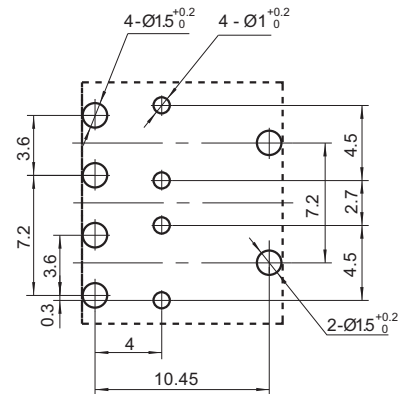
1 Form C (Single relay)



2 Form C (Twin(8 pins)) relay



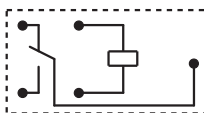
3 Form C (Twin(10 pins)) relay



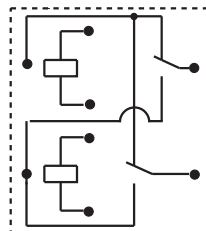
Undeclared tolerance: ± 0.1 .

Wiring Diagram (Bottom view)

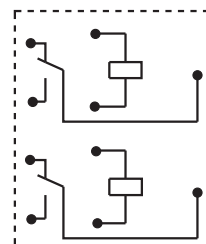
1 Form C (Single relay)



2 Form C (Twin(8 pins)) relay



3 Form C (Twin(10 pins)) relay



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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**Typical Applications**

Central door lock, Power doors and windows, Seat adjustment, Sunroof motor control, Mirror adjustment

Features

- 25A motor locked load
- Extremely small relay
- Change-over contact version
- Coil wire insulation class H (180°C)
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	2C(H-bridge)
Voltage drop (initial) ¹⁾	Typ.: 50mV (at 10A) Max.: 250mV (at 10A)
Max. continuous current ²⁾	25A (at 23°C, 2min)
Max. switching current	30A
Max. switching voltage	16VDC
Min. contact load	1A 6VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	1 x 10 ⁷ OPS (300OPS/min)
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength ³⁾	between contacts: 500VAC between coil & contacts: 500VAC
Operate time	Max.: 10ms (at nomi. vol.)
Release time ⁴⁾	Max.: 10ms

Ambient temperature	HFKJ: -40°C to 85°C	
Vibration resistance	Functional ⁵⁾	10Hz to 100Hz 44.1m/s ²
	Destructive	10Hz to 500Hz 44.1m/s ² , 2h
Shock resistance	Functional ⁵⁾	100m/s ² (pulse duration: 11ms)
	Destructive	1000m/s ² (pulse duration: 6ms)
Termination	PCB ⁶⁾	
Construction	Plastic sealed	
Unit weight	Twin relay: Approx. 6.5g	

- 1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).
 2) For NO contacts, measured when applying 100% rated voltage on coil.
 3) 1min, leakage current less than 1mA.
 4) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
 5) When energized, opening time of NO contacts shall not exceed 10μs, when non-energized, opening time of NC contacts shall not exceed 10μs, meantime, NO contacts shall not be closed.
 6) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C, (5±0.3)s.

CONTACT DATA ³⁾

at 23°C

Load voltage	Load type ²⁾		Load current A		On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram
			2C		On s	Off s			
			NO	NC					
14VDC	Motor	Make ¹⁾	25	---	0.5	9.5	1 × 10 ⁵	AgSnO ₂	See diagram 2
		Break	25	---					
	Simulate motor operation	Make ¹⁾	25	---	0.02	9.5	2 × 10 ⁵	AgSnO ₂	
		Transient	15	---	0.03				
		Break	5	---	0.45				



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.10

- Notes:** 1) Corresponds to the peak inrush current on initial actuation (motor).
2) The load wiring diagrams are listed below:

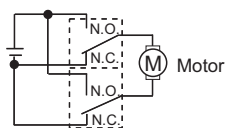


diagram 2

- 3) When the load requirement is different from content of the table above, please contact Hongfa for relay application support.

COIL DATA at 23°C

Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance $x(1\pm10\%)\Omega$	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
					at 23°C	at 85°C
12	6.5	0.8	160	0.9	18	14
12	7.7	0.8	220	0.655	20	16

Notes: 1) Max. allowable overdrive voltage is stated with no load applied (For dual relays, only one side of coil is energized).

ORDERING INFORMATION

	HFKJ / 12 -BZ S P T (XXX)
Type	HFKJ: Standard
Coil voltage	12: 12VDC
Contact arrangement	BZ: 2 Form C (Twin(H-bridge) version)
Construction¹⁾	S: Plastic sealed
Coil power	P: 0.9W Nil: 0.655W
Contact material	T: AgSnO₂
Special code²⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

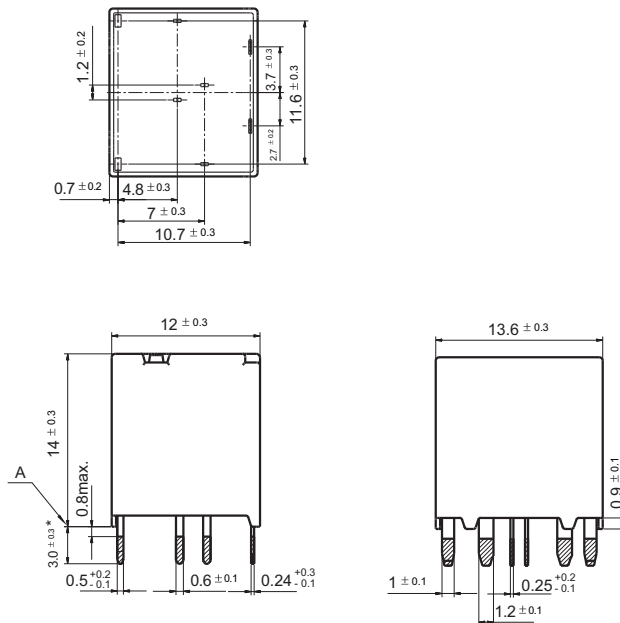
2) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

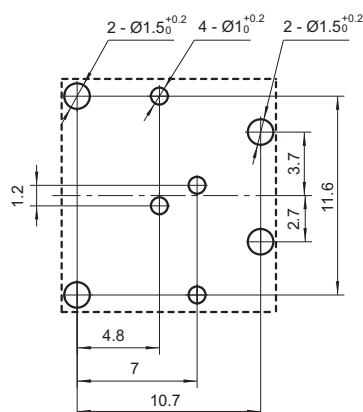
2 Form C (Twin(H-bridge) relay)



Remark: * The additional tin top is max. 1mm. Intervals between terminals is measured at A surface level.

PCB Layout (Bottom view)

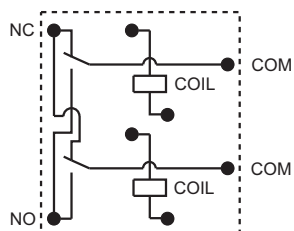
2 Form C (Twin(H-bridge) relay)



Undeclared tolerance: ± 0.1 .

Wiring Diagram (Bottom view)

2 Form C (Twin(H-bridge) relay)



Disclaimer

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We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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Typical Applications

Central door lock, Power doors & windows,
Lighting, flashlight & indicator lamp control, Instrument control,
Sunroof motor control, Immobilizers, Low temperature start

Features

- Switching capability up to 20A
- Six different contact arrangements
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A, 1B, 1C, 1U, 1V, 1W	Operate time ⁷⁾	Typ.: 3ms (at nomi. vol.) Max.: 10ms (at nomi. vol.)
Voltage drop (initial) ¹⁾	NO:Typ.40mV,250mV max.(at 10A) NC:Typ.50mV,250mV max.(at 10A)	Release time ^{4) 7)}	Typ.: 1.5ms Max.: 10ms
Max. make current ^{2) 7)}	1A:60A 1B:12A 1C(NO/NC): 60/12A 1U: 2×40A 1V:2×8A 1W(NO/NC):2×30A/2×5A	Ambient temperature	-40°C to 85°C
Max. break current ^{2) 7)}	1A: 20A 1B: 10A 1C(NO/NC): 20A/10A 1U: 2×20A 1V: 2×7A 1W (NO/NC): 2×15A/2×5A	Vibration resistance ^{5) 7)}	10Hz to 40Hz 1.27mm DA 40Hz to 70Hz 49m/s ² 70Hz to 100Hz 0.5mm DA 100Hz to 500Hz 98m/s ²
Max. switching voltage	See "Load Limit curve"	Shock resistance ^{5) 7)}	98m/s ²
Min. contact load	1A 6VDC	Termination	PCB ⁶⁾
Electrical endurance	See "CONTACT DATA"	Construction	Plastic sealed
Mechanical endurance	1 x 10 ⁷ OPS (300OPS/min)	Unit weight	Plastic sealed: Approx.12g
Initial insulation resistance	100MΩ (at 500VDC)		
Dielectric strength ³⁾	500VAC		

- 1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).
2) At 23°C, 13.5VDC, resistive load (100 cycles).
3) 1min, leakage current less than 1mA.
4) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
5) When energized, opening time of NO contacts shall not exceed 100μs, when non-energized, opening time of NC contacts shall not exceed 100μs, meantime, NO contacts shall not be closed.
6) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C, (5±0.3)s.
7) Only for the 12VDC coil voltage type.

CONTACT DATA ³⁾

at 23°C

Load voltage	Load type		Load current A				On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram ²⁾
			1C		1A	1B	On s	Off s			
			NO	NC	NO	NC					
13.5VDC	Resistive	Make	15	10	15	10	2	2	2×10 ⁵	AgSnO ₂	See diagram 1
		Break	15	10	15	10	2	2			
	Lamp	Make	3×21W	---	3×21W	---	2	2	1.5×10 ⁵	AgSnO ₂	See diagram 2
		Break									
	Motor L=0.5mH		26	---	---	---	0.2	2	1×10 ⁵	AgSnO ₂	See diagram 3
			26	---	---	---					



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

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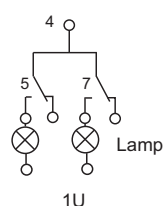
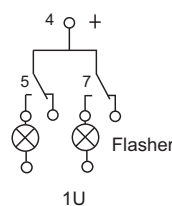
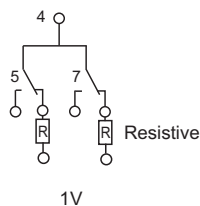
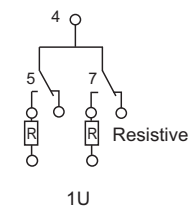
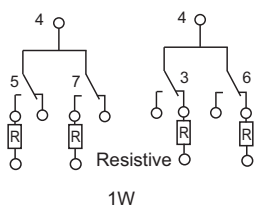
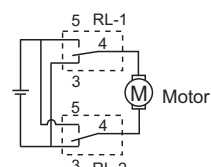
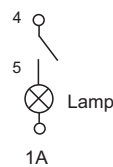
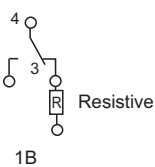
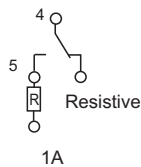
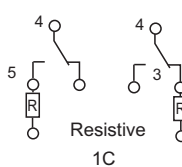
CONTACT DATA ³⁾

at 23°C

Load voltage	Load type		Load current A				On/Off ratio		Electrical life OPS	Contact material	Load wiring diagram ²⁾
			1W		1U	1V	On s	Off s			
			NO	NC	NO	NC					
13.5VDC	Resistive	Make	2×7	2×5	2×7	2×5	2	2	2×10 ⁵	AgSnO ₂	See diagram 4
		Break	2×7	2×5	2×7	2×5	2	2			
	Flasher ¹⁾	Make	(4x21W)	---	(4x21W)	---	0.375	0.375	2×10 ⁶	Special AgSnO ₂	See diagram 5
		Break	x2		x2						
	Lamp	Make	(2x21W +1x5W)	---	(2x21W +1x5W)	---	0.2	3	1×10 ⁵	AgSnO ₂	See diagram 6
		Break	x2		x2						

1) When it is utilized in flasher, a special AgSnO₂ contact material should be used and the customer special code should be (170) as a suffix. Please connect by the polarity according to the diagrams below.

2) The load wiring diagrams are listed below.



3) When the load voltage is at 24VDC or higher, or the applications conditions are different from the table above, please submit the detailed application conditions to Hongfa to get more support.

COIL DATA

at 23°C

Nominal voltage VDC	Pick-up voltage VDC max.		Drop-out voltage VDC min.		Coil resistance x(1±10%)Ω	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC
	1A, 1B, 1C, 1U, 1V	1W	1B, 1V	1A, 1C, 1U, 1W			
6	3.75	4.5	0.35	0.7	28	1.1	9.0
12	7.5	9.0	0.7	1.4	130	1.1	19.6

1) Max. allowable overdrive voltage is stated with NO load applied.

ORDERING INFORMATION

Type	HFKM /	012	1H	S	T	(XXX)
Coil voltage	006: 6VDC	012: 12VDC				
Contact arrangement	1H: 1 Form A SH: 1 Form U	1D: 1 Form B SD: 1 Form V	1Z: 1 Form C SZ: 1 Form W			
Construction	S: Plastic sealed ¹⁾					
Contact material	T: AgSnO ₂					
Special code ²⁾	XXX: Customer special requirement		Nil: Standard			

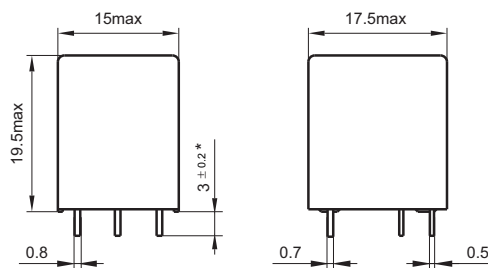
Notes: 1) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

2) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

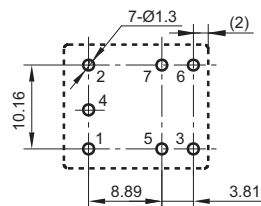
Unit: mm

Outline Dimensions



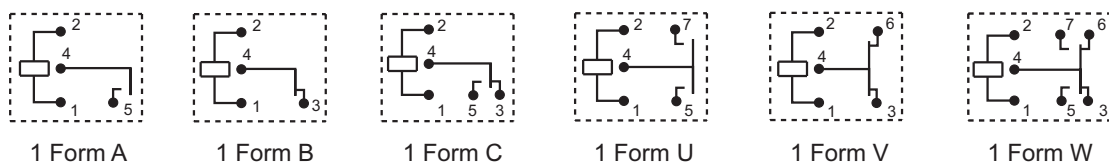
Remark: * The additional tin top is max. 1mm.

PCB Layout (Bottom view)



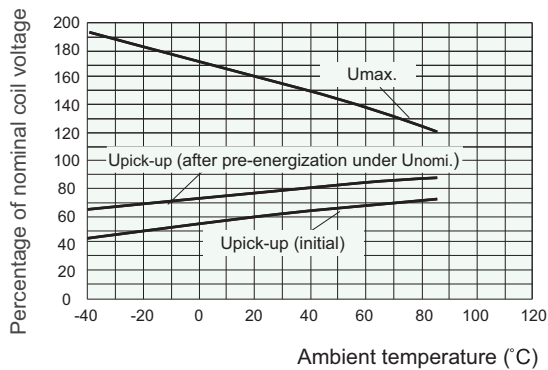
Remark: The tolerance without indicating for PCB layout is always ± 0.1 mm.

Wiring Diagram (Bottom view)



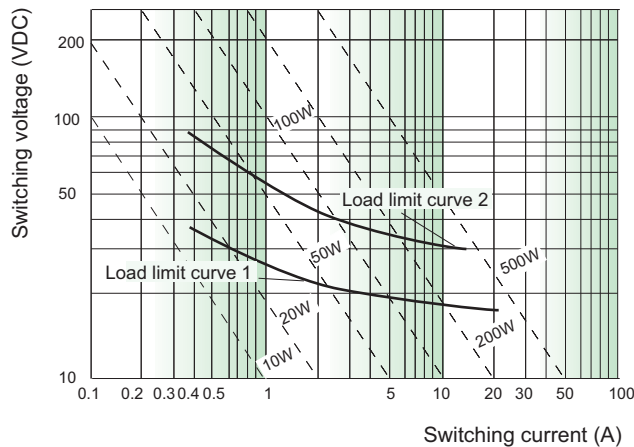
CHARACTERISTIC CURVES

1. Coil operating voltage range



- 1) There should be no contact load applied when maximum continuous operation voltage is applied on coil.
- 2) The operating voltage is connected with coil pre-energized time and voltage. After pre-energized, the operating voltage will increase.
- 3) The maximum allowable coil temperature is 180°C. For the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 155°C under the different application ambient, different coil voltage and different load etc.
- 4) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

2. Load limit curve



- 1) The load and electrical endurance tests are made according to "CONTACT DATA" parameters' table. If actual load voltage, current, or operate frequency is different from "CONTACT DATA" table, please arrange corresponding tests for confirmation.
- 2) Load limit curve 1: arc extinguishes, during transit time (change over contact).
- 3) Load limit curve 2: safe shutdown, no stationary arc (make contact).

Disclaimer

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Typical Applications

Central door lock, Anti-theft lock, Power doors & windows, Turning lamp, dangerous signal & scram lamp control, Seat adjustment, Air-conditioning, Fuel pump control, Low temperature control, Sunroof motor control, Audio system, Rear window defoggers, Starter solenoid switches

Features

- 45A switching capability
- PCB terminals
- 1 Form A & 1 Form C contact arrangement
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A, 1C	Ambient temperature	-40°C to 125°C
Voltage drop (initial) ¹⁾	NO:Typ.20mV,250mV max.(at 10A) NC:Typ.30mV,250mV max.(at 10A)	Vibration resistance ^{7) 9)}	10Hz to 40Hz 1.27mm DA 40Hz to 70Hz 49m/s ² 70Hz to 100Hz 0.5mm DA 100Hz to 500Hz 98m/s ²
Max. continuous current ^{2) 9)}	30A (at 85°C, 8h)	Shock resistance ^{7) 9)}	98m/s ²
Max. switching current ^{3) 9)}	Make: 100A (Lamp, Inrush current) Break: 60A (Resistive)	Termination	PCB ⁸⁾
Max. switching voltage ⁴⁾	75VDC	Construction	Plastic sealed
Min.contact load	1A 6VDC	Unit weight	Approx. 20g
Electrical endurance	See " CONTACT DATA "	¹⁾ Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC). ²⁾ For NO contacts, measured when applying 100% rated voltage on coil. ³⁾ For NO contacts, at 23°C, 13.5VDC, resistive load (100 cycles). ⁴⁾ For NO contacts, see "Load limit curve" for details. ⁵⁾ 1min, leakage current less than 1mA. ⁶⁾ The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit. ⁷⁾ When energized, opening time of NO contacts shall not exceed 100μs, when non-energized, opening time of NC contacts shall not exceed 1ms, meantime, NO contacts shall not be closed. ⁸⁾ Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C , (5±0.3)s. ⁹⁾ Only for the 12VDC coil voltage type.	
Mechanical endurance	1x10 ⁷ OPS (300OPS/min)		
Initial insulation resistance	500MΩ (at 500VDC)		
Dielectric strength ⁵⁾	between contacts: 500VAC between coil & contacts: 500VAC		
Operate time ⁹⁾	Typ.: 5ms Max.: 10ms (at nomi. vol.)		
Release time ^{6) 9)}	Typ.: 3ms Max.: 10ms		

CONTACT DATA ³⁾

at 23°C

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurance	Contact material	Load wiring diagram ²⁾
			1C		1A	On s	Off s			
			NO	NC	NO					
13.5VDC	Resistive	Make	45	30	45	1.5	1.5	1×10 ⁵ OPS	AgSnO ₂	See diagram 1
		Break	45	30	45					
	Flasher ¹⁾		2×21W+5W	---	2×21W+5W	0.375	0.375	1000h	Special AgSnO ₂	See diagram 2
			4×21W+2×5W	---	4×21W+2×5W	0.375	0.375	360h		



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2015 Rev. 1.00

- 1) When it is utilized in flasher, a special AgSnO₂ contact material should be used and the customer special code should be (170) as a suffix. Please connect by the polarity according to the diagram below.
- 2) The load wiring diagrams are listed below:

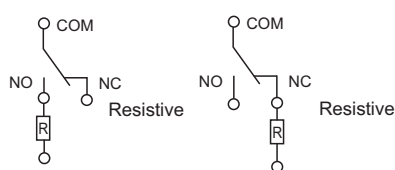


diagram 1

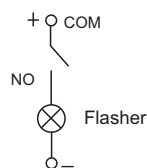


diagram 2

- 3) When the load voltage is at 24VDC or higher, or the applications conditions are different from the table above, please submit the detailed application conditions to Hongfa to get more support.

COIL DATA

at 23°C

	Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance $\times(1\pm10\%) \Omega$	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
						at 23°C	at 85°C
Standard	6	3.3	0.6	19	1.9	9.0	6.5
	12	6.8	1.2	90	1.6	19.6	14.3
	24	13.9	2.4	362	1.6	39.3	28.6
Sensitive	6	4.5	0.6	30	1.2	11.0	8.0
	12	9.0	1.2	120	1.2	22.1	16.0
	24	19.2	2.4	480	1.2	44.3	30.0

1) Max. allowable overdrive voltage is stated with no load applied.

ORDERING INFORMATION

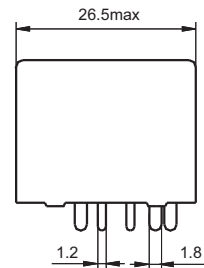
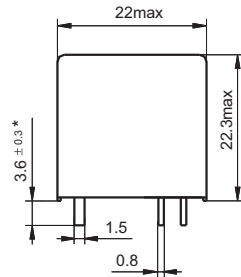
Type	HFKP / 012 -1H 4 T S (XXX)
Coil voltage	006: 6VDC 012: 12VDC 024: 24VDC
Contact arrangement	1H: 1 Form A 1Z: 1 Form C
Version ¹⁾	4: European Plastic sealed model 6: European Plastic sealed model, 3 yoke terminals
Contact Material	T: AgSnO ₂
Coil Power	S: Sensitive Nil: Standard
Special code ²⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

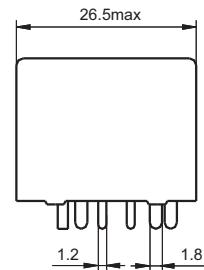
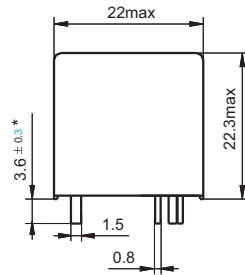
2) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load.

Outline Dimensions

HFKP/□□□-1□4□□(XXX)

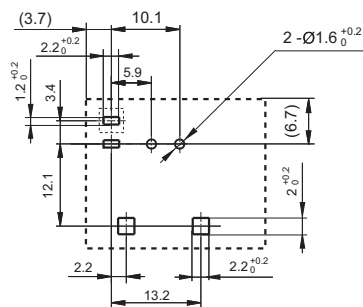


HFKP/□□□-1□6□□(XXX)

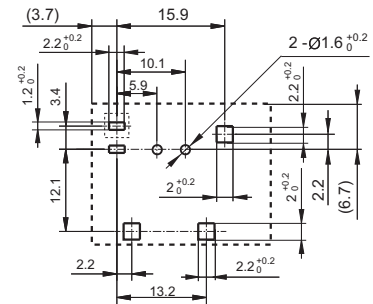


PCB Layout (Bottom view)

HFKP/□□□-1□4□□(XXX)



HFKP/□□□-1□6□□(XXX)



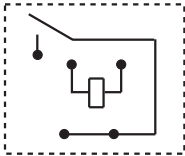
Remark: 1) * The additional tin top is max. 1mm.

2) The tolerance without indicating is always ±0.1mm.

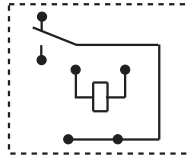
3) □ means that the mounting hole doesn't exist for HFKP/□□□-1H□□□(XXX) type.

Wiring Diagram (Bottom view)

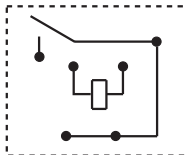
HFKP/□□□-1H4□□(XXX)



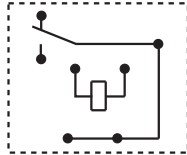
HFKP/□□□-1Z4□□(XXX)



HFKP/□□□-1H6□□(XXX)

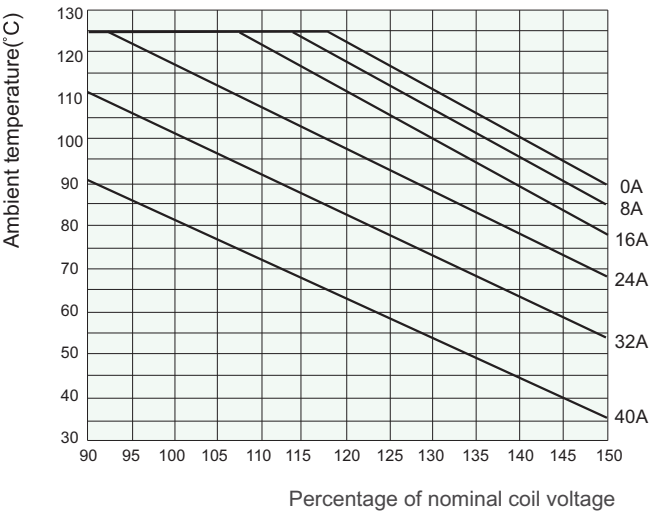


HFKP/□□□-1Z6□□(XXX)



CHARACTERISTIC CURVES

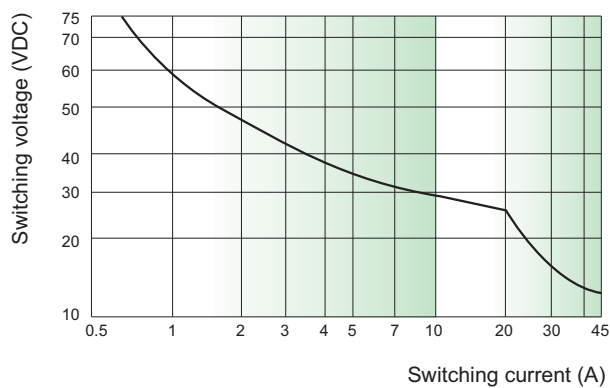
1. Coil operating voltage range



- 1) The maximum allowable coil temperature is 180°C. For the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 170°C under the different application ambient, different coil voltage and different load etc.
- 2) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

CHARACTERISTIC CURVES

2. Load limit curve (at 23°C)



- 1) This chart takes NO contact, Resistive load as example.
- 2) The load and electrical endurance tests are made according to "CONTACT DATA" parameters' table. If actual load voltage, current, operate frequency, or ambient temperature is different from "CONTACT DATA" table, please arrange corresponding tests for confirmation.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFKT/HFKT-T

AUTOMOTIVE RELAY



Typical Applications

ABS control, Cooling fan, Engine control, Fuel pump, Heating plug, Hazard warning lamp, Fog lamp & headlight, EPS, window & mirror defogger

Features

- Max.continuous current 40A
- Max.making current 200A
- Extended temp. range up to 105°C
- With highly established reliability
- Strong resistance ability to shock & vibration
- Reflow soldering version available
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A
Voltage drop (initial) ¹⁾	Typ.: 30mV (at 10A) Max.: 300mV (at 10A)
Max. continuous current ²⁾	40A (at 23°C) 33A (at 85°C) 22A (at 105°C)
Max. switching current	Make: 200A ³⁾ Break: 40A (Resistive, 13.5VDC)
Max. switching voltage	16VDC
Min. contact load	1A 6VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	2 x 10 ⁶ OPS
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength ⁴⁾	500VAC
Operate time	Typ.: 4ms, Max.: 10ms

Release time ⁵⁾	Typ.: 1.5ms Max.: 5ms
Ambient temperature	-40°C to 105°C
Vibration resistance ⁶⁾	30Hz to 440Hz, 196m/s ² 294m/s ² , close time of NO contacts <100μs 980m/s ² , release time of closed NO contacts <100μs
Shock resistance ⁶⁾	
Termination	PCB ⁷⁾
Construction	Plastic sealed, Flux proofed
Unit weight	Approx. 11g

- 1) Initial value
- 2) Measured when applying 100% rated voltage on coil.
- 3) Inrush peak current under lamp load, at 13.5VDC.
- 4) 1min, leakage current less than 1mA.
- 5) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
- 6) when non-energized, close time of NO contacts shall not exceed 100μs, When energized, opening time of closed NO contacts shall not exceed 100μs.
- 7) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C, (5±0.3)s.

CONTACT DATA¹⁾

Load voltage	Load type		Load current	On/Off ratio		Electrical endurance ¹⁾ OPS	Contact material	Ambient temp.
			1A	On s	Off s			
			NO					
13.5VDC	Resistive	Make	40	0.5	4.5	1×10 ⁵	AgSnO ₂	See Ambient Temp. Curve
		Break	40					
	Inductive L=0.5mH	Make	60	0.5	4.5	1×10 ⁵	AgSnO ₂	
		Break	35					
	Lamp	Make	200	0.5	4.5	1×10 ⁵	AgSnO ₂	
		Break	20					

1) Loads mentioned in this chart is for relays with no parallel diode or Zener Diode. For those with parallel diode, Zener Diode or other components, please contact Hongfa for more technical supports.

Please also contact Hongfa if the actual application load is different from what mentioned above.



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA

at 23°C

Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance $\times(1\pm10\%) \Omega$	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC
10	5.6	1.3	120	0.833	14.8
12	6.9	1.5	176	0.818	18

1) Max. allowable overdrive voltage is stated with no load applied.

ORDERING INFORMATION

Type		HFKT /	12	-H	S	T	(XXX)
		HFKT: Standard HFKT-T: Reflow soldering version ¹⁾					
Coil voltage		10: 10VDC 12: 12VDC					
Contact arrangement		H: 1 Form A					
Construction		S: Plastic sealed ²⁾ Nil: Flux proofed (Reflow soldering version)					
Contact Material		T: AgSnO ₂					
Special code ³⁾		XXX: Customer special requirement		Nil: Standard			

Notes: 1) The structure of HFKT-T is only flux proof, the open vent hole is on the top of the relay;
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

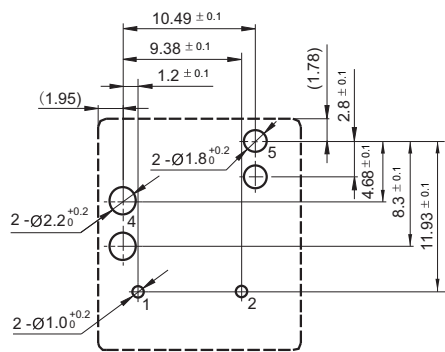


Remark: * The additional tin top is max. 1mm.

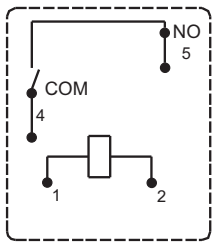
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

PCB Layout (Bottom view)



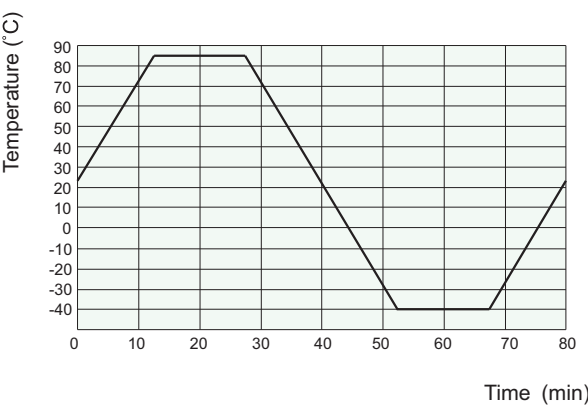
Wiring Diagram(Bottom view)



CHARACTERISTIC CURVES

Ambient temperature curve of the electrical endurance test

Ambient temp. curve (one cycle)



- 1) The minimum temperature is -40°C.
- 2) The maximum temperature is 85°C.

Disclaimer

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HFKT-L/HFKT-LT

AUTOMOTIVE RELAY



Typical Applications

Energy management, engine control, ignition, main switch/supply relay, preheating system, quiescent current management

Features

- Max. continuous current 50A
- Max. making current 200A
- Extended temp. range up to 125°C
- With highly established reliability
- Strong resistance ability to shock & vibration
- No change of switching state version at breakdown of battery voltage
- Reflow soldering version available
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A	Release time	Typ.: 1.5ms Max.: 5ms
Voltage drop (initial) ¹⁾	Typ.: 30mV (at 10A) Max.: 300mV (at 10A)	Ambient temperature	-40°C to 125°C
Max. continuous current ²⁾	50A (at 23°C) 40A (at 85°C) 30A (at 125°C)	Vibration resistance	30Hz to 440Hz, 196m/s ²
Max. switching current	Make: 200A ³⁾ Break: 40A (Resistive, 13.5VDC)	Shock resistance	294m/s ² , close time of NO contacts 100μs Max. 980m/s ² , release time of closed NO contacts 100μs Max.
Max. switching voltage	16VDC	Termination	PCB ⁵⁾
Min. contact load	1A 6VDC	Construction	Plastic sealed, Flux proofed
Electrical endurance	See "CONTACT DATA"	Unit weight	Approx. 11g
Mechanical endurance	2 x 10 ⁶ OPS	¹⁾ Initial value. ²⁾ To energize an impulse for 10ms to 100ms at coil terminals so that contacts switch. ³⁾ Inrush peak current under lamp load, at 13.5VDC. ⁴⁾ 1min, leakage current less than 1mA. ⁵⁾ Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C, (5±0.3)s.	
Initial insulation resistance	100MΩ (at 500VDC)		
Dielectric strength ⁴⁾	500VAC		
Operate time	Typ.: 1.5ms, Max.: 10ms		

CONTACT DATA

Load voltage	Load type		Load current	On/Off ratio		Electrical endurance OPS	Contact material	Ambient temp.
			1A	On s	Off s			
			NO					
13.5VDC	Resistive	Make	40	0.5	4.5	1×10 ⁵	AgSnO ₂	See Ambient Temp. Curve
		Break	40					
	Inductive L=0.5mH	Make	60	0.5	4.5	1×10 ⁵	AgSnO ₂	
		Break	35					
	Lamp	Make	200	0.5	4.5	1×10 ⁵	AgSnO ₂	
		Break	20					



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001、IECQ QC 080000 CERTIFIED

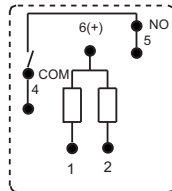
2015 Rev. 1.00

COIL DATA

at 23°C

Nominal voltage VDC	Set voltage ¹⁾ VDC max.	Reset voltage ¹⁾ VDC max.	Set coil resistance (Between pin 1 & 6) $\times(1\pm10\%) \Omega$	Reset coil resistance (Between pin 2 & 6) $\times(1\pm10\%) \Omega$	Max. allowable overdrive voltage ²⁾ VDC
12	6.9	6.9	20	19	18

1) The impulse width should be 10ms to 100ms. Energizing voltage mode should be acted as per the diagram below.



Polarity for set/reset	Set	Reset
energization	Pin1(-), pin6(+)	Pin2(-), pin6(+)

2) Max. allowable overdrive voltage is stated with no load applied and minimum coil resistance. Max. allowed inflection time is 1s.

ORDERING INFORMATION

	HFKT-L /	12	-H	S	T	(XXX)
Type	HFKT-L: Latching(sealed) HFKT-LT: Latching, Reflow soldering version ¹⁾					
Coil voltage	12: 12VDC					
Contact arrangement	H: 1 Form A					
Construction	S: Plastic sealed ²⁾ Nil: Flux proofed (Reflow soldering version)					
Contact Material	T: AgSnO ₂					
Special code³⁾	XXX: Customer special requirement Nil: Standard					

Notes: 1) The structure of HFKT-LT is only flux proof, the open vent hole is on the top of the relay;

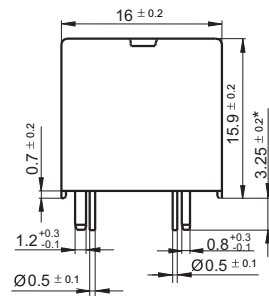
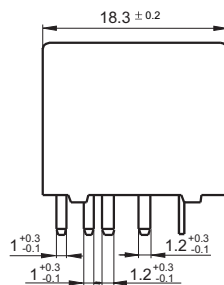
2) If washing or surface treatment is required after the relay is assembled on PCB, please provide with the conditions in details for our confirmation or our recommendation with suitable products.

3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

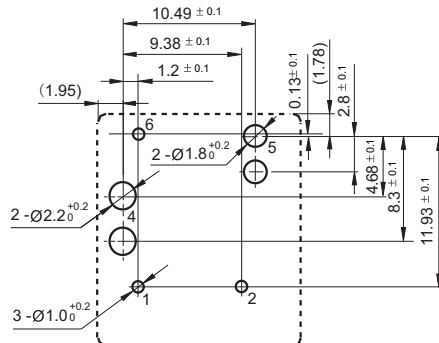


Remark: * The additional tin top is max. 1mm.

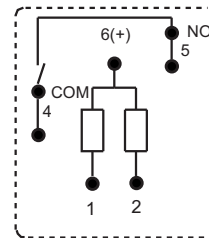
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

PCB Layout (Bottom view)



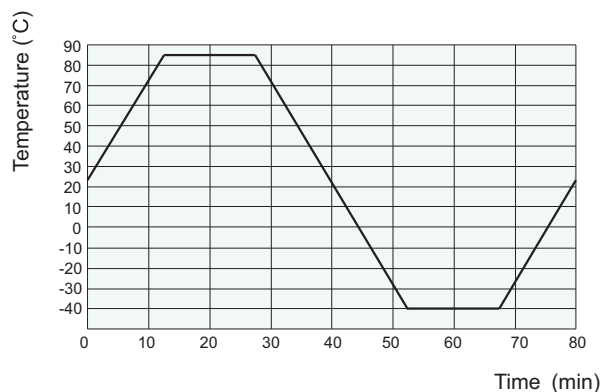
Wiring Diagram(Bottom view)



CHARACTERISTIC CURVES

Ambient temperature curve of the electrical endurance test

Ambient temp. curve (one cycle)



- 1) The minimum temperature is -40°C .
- 2) The maximum temperature is 85°C .

Notice

- 1) Relay is on the "reset" status when being released from stock, with the consideration of shock risen from transit and relay mounting, it should be changed to "set" status when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
- 2) In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 10ms to 100ms. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
- 3) To avoid using relays under strong magnetic field which will change the parameters of relays such as pick-up voltage and drop-out voltage.

Disclaimer

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Typical Applications

Central door lock, Power doors & windows, Turning lamp control, Mirror adjustment, Seat adjustment, Speed-limit indicator control, Warm-up control, Wiper control

Features

- Tight structure and light weight
- High current contact capacity
(Carrying current: 35A/10min 25A/1h)
- Improved heat resistance
- Reflow soldering version available
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A, 1C
Voltage drop (initial) ¹⁾	Typ.: 50mV (at 10A) Max.: 250mV (at 10A)
Max. continuous current ²⁾	35A (at 23°C, 10min) 25A (at 23°C, 1h)
Max. switching current ³⁾	NO: 35A NC: 20A
Max. switching voltage	16VDC
Min. contact load	1A 6VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	1 x 10 ⁷ OPS (300OPS/min)
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength ⁴⁾	500VAC

Operate time	Max.: 10ms (at nomi. vol.)
Release time ⁵⁾	Max.: 5ms
Ambient temperature	-40°C to 85°C
Vibration resistance ⁶⁾	10Hz to 55Hz 1.5mm DA
Shock resistance ⁶⁾	98m/s ²
Termination	PCB ⁷⁾
Construction	Plastic sealed, Flux proofed
Unit weight	Approx. 6g

- 1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).
 2) For NO contacts, measured when applying 100% rated voltage on coil.
 3) At 23°C, 13.5VDC (100 cycles, resistive load).
 4) 1min, leakage current less than 1mA.
 5) The value is measured when voltage drops suddenly from nominal voltage to 0VDC and coil is not paralleled with suppression circuit.
 6) When energized, opening time of NO contacts shall not exceed 100μs, when non-energized, opening time of NC contacts shall not exceed 100μs, meantime, NO contacts shall not be closed.
 7) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C, (5±0.3)s.

CONTACT DATA ⁵⁾

at 23°C

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram ⁴⁾
			1C		1A	On s	Off s			
			NO	NC	NO					
13.5VDC	Resistive	Make	20	10	20	2	2	2×10 ⁵	AgSnO ₂	See diagram 1
		Break	20	10	20	2	2			
	Resistive	Make	30	---	30	2	2	1×10 ⁵	AgSnO ₂	See diagram 2
		Break	30	---	30					
	Motor Locked	Make	25 ³⁾	---	25 ³⁾	0.2	2	1×10 ⁵	AgSnO ₂	See diagram 3
		Break	25 ³⁾	---	25 ³⁾					



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2015 Rev. 1.00

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram ⁴⁾
			1C		1A	On s	Off s			
			NO	NC	NO					
13.5VDC	Lamp ¹⁾	Make	90 ²⁾	---	90 ²⁾	1	9	1×10 ⁵ (at 85°C)	AgSnO ₂	See diagram 4
		Break	8.8	---	8.8					
	Lamp ¹⁾	Make	6×21W	---	6×21W	1	6	1×10 ⁵	AgSnO ₂	See diagram 4
		Break								
	Flasher	Make	3×21W	---	3×21W	0.365	0.365	2×10 ⁶	Special AgSnO ₂	See diagram 5
		Break								

1) When it is utilized in flasher, a special AgSnO₂ contact material should be used and the customer special code should be (170) as a suffix. Please connect by the polarity according to the diagram below.

2) Corresponds to the peak inrush current on initial actuation (cold filament).

3) Corresponds to the peak inrush current on initial actuation (motor).

4) The load wiring diagrams are listed below (Ratings of NO, NC are tested based on different samples separately) :

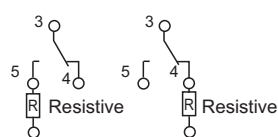


diagram 1

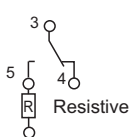


diagram 2

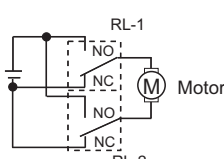


diagram 3

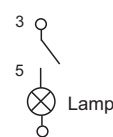


diagram 4

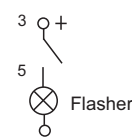


diagram 5

5) When the load voltage is at 24VDC or higher, or the applications conditions are different from the table above, please submit the detailed application conditions to Hongfa to get more support.

COIL DATA

at 23°C

Nominal voltage ¹⁾ VDC	Pick-up voltage VDC max.		Drop-out voltage VDC min.	Coil resistance x(1±10%)Ω	Power consumption W	Max. allowable overdrive voltage ²⁾ VDC	
	at 23°C	at 85°C				at 23°C	at 85°C
6	3.6	4.5	0.5	60	0.6	9	8
9	5.4	6.8	0.7	135	0.6	13.5	12
10	6.3	7.9	0.8	180	0.6	15	13.3
12	7.3	9.0	1.0	240	0.6	18	16

1) Other types on request.

2) Max. allowable overdrive voltage is stated with no load applied.

ORDERING INFORMATION

Type	HFKW /	012	-1Z	W	-L	C	(XXX)
Coil voltage	006: 6VDC	009: 9VDC					
	010: 10VDC	012: 12VDC					
Contact arrangement	1H: 1 Form A	1Z: 1 Form C					
Contact material	W: AgSnO ₂						
Construction ¹⁾	L: Flux proofed (Reflow soldering version)	Nil: Plastic sealed ²⁾					
Packing style	C: Tape and reel packing	Nil: Tube packing					
Special code ³⁾	XXX: Customer special requirement	Nil: Standard					

Notes: 1) The structure of HFKW/□□□-1ZW-L□ is only flux proof, the open vent hole is at the bottom of the base.

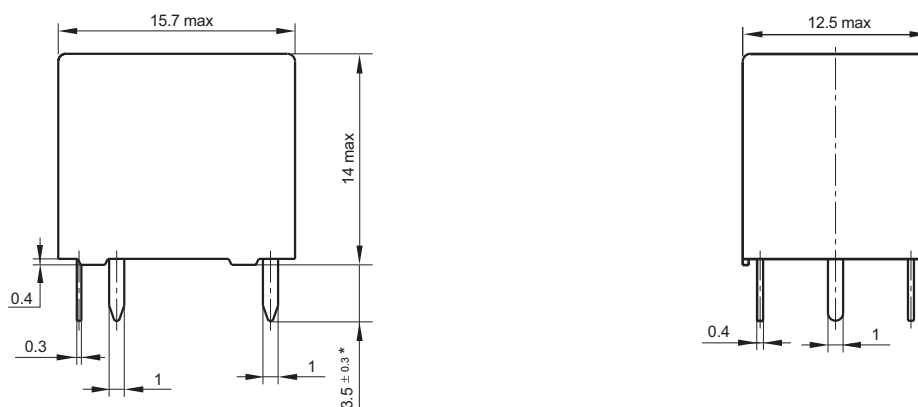
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

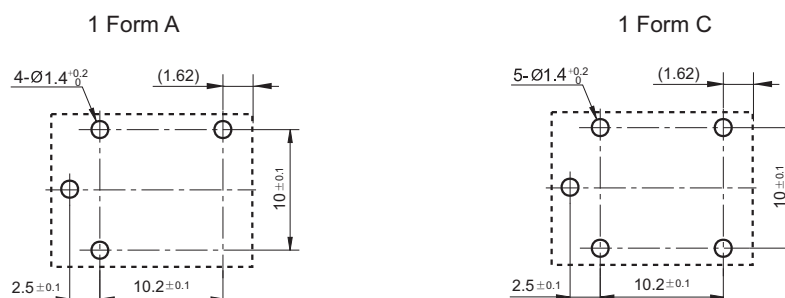
Outline Dimensions(1 Form A / 1 Form C)



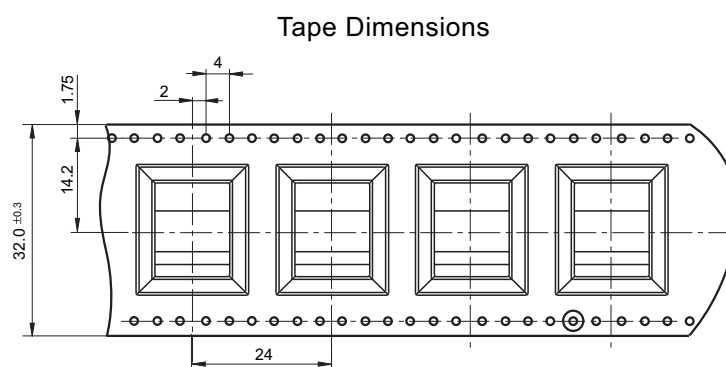
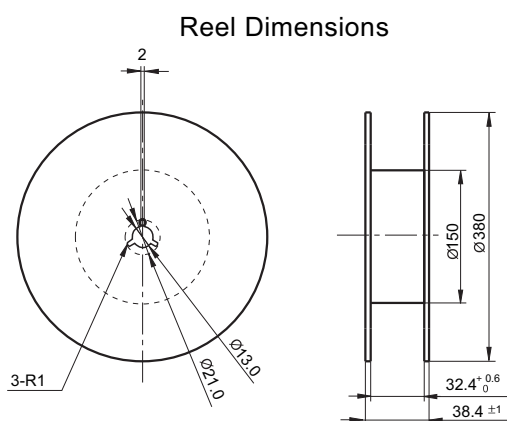
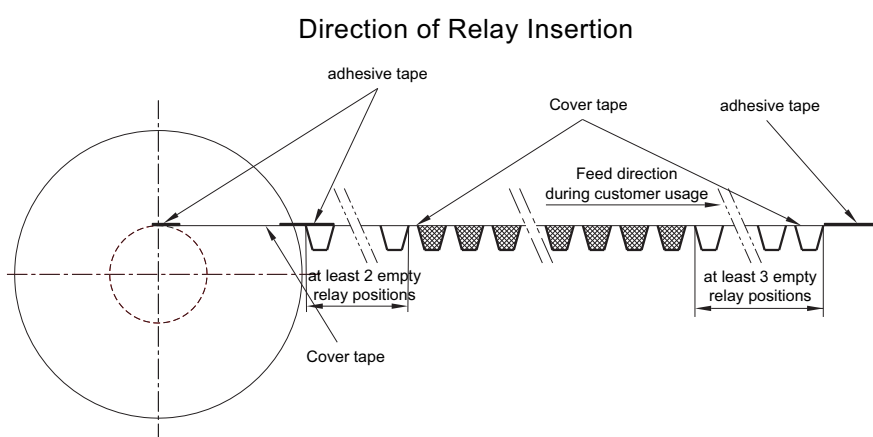
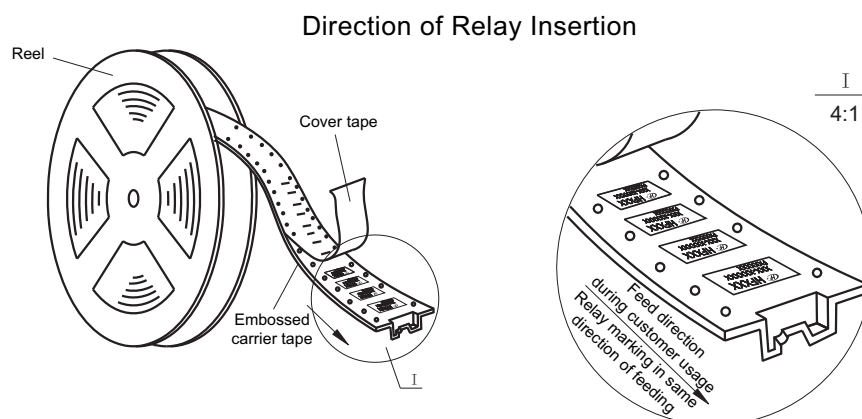
PCB Layout (Bottom view)



Wiring Diagram (Bottom view)

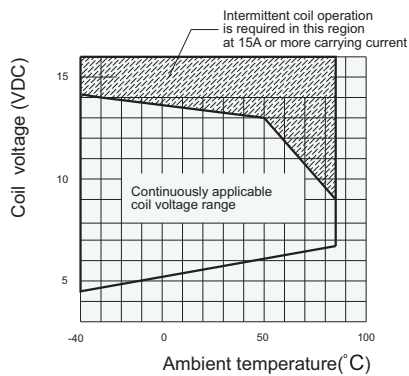


Remark: * The additional tin top is max. 1mm.

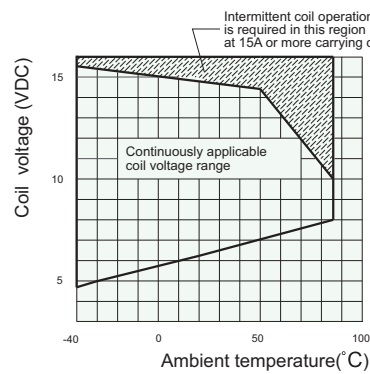


CHARACTERISTIC CURVES

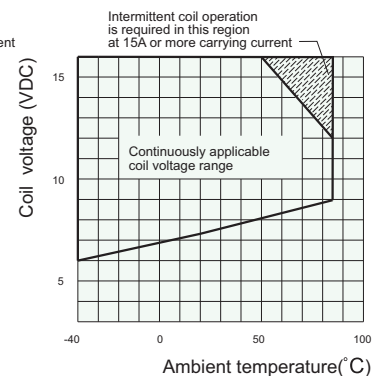
1. Coil operating voltage range (NO contacts, at 13.5VDC)



HFKW/009-1ZW(XXX)



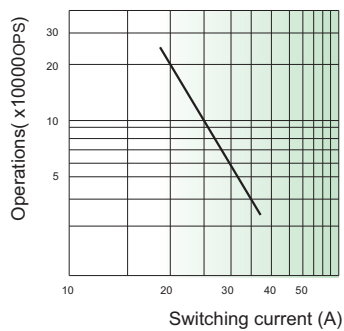
HFKW/010-1ZW(XXX)



HFKW/012-1ZW(XXX)

2. Load curve (NO contacts, at 23°C)

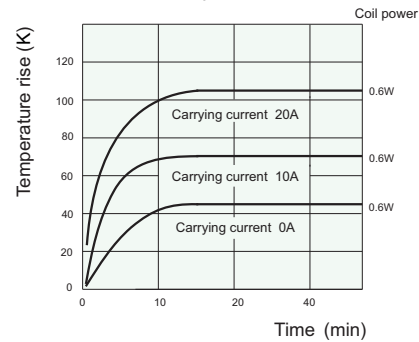
Electrical endurance curve (Motor locked)



HFKW/012-1ZW(XXX)

Test conditions: 0.2s ON, 2s OFF

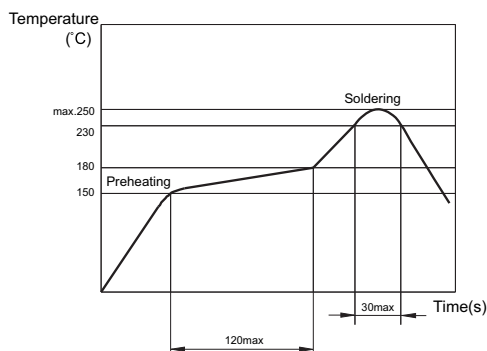
Coil temperature rise



HFKW/012-1ZW(XXX)

3. Reflow soldering, temperature on PCB board.

(Recommended soldering temperature, only for reflow soldering version)



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFKW-SH

AUTOMOTIVE RELAY



Typical Applications

Anti-theft lock, Lighting control

Features

- Small size
- Double NO contacts
- Standard terminal pitch employed
- Plastic sealed and flux proofed types available
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1U (Double NO contacts)
Voltage drop (initial) ¹⁾	Typ.: 50mV (at 10A) Max.: 250mV (at 10A)
Max. continuous current ²⁾	2 × 10A (at 23°C, 1h)
Max. switching current ³⁾	2 × 10A
Min.contact load	1A 6VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	1 × 10 ⁷ OPS (300OPS/min)
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength ⁴⁾	500VAC
Operate time	Max.: 10ms (at nomi. vol.)
Release time ⁵⁾	Max.: 5ms

Ambient temperature	-40°C to 85°C
Vibration resistance ⁶⁾	10Hz to 55Hz 1.5mm DA
Shock resistance ⁶⁾	98m/s ²
Termination	PCB ⁷⁾
Construction	Plastic sealed, Flux proofed
Unit weight	Approx. 6g

1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).

2) For NO contacts, measured when applying 100% rated voltage on coil.

3) At 23°C, 13.5VDC (100 cycles, resistive load).

4) 1min, leakage current less than 1mA.

5) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.

6) When energized, opening time of NO contacts shall not exceed 100μs.

7) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C, (5±0.3)s.

CONTACT DATA ³⁾

at 23°C

Load voltage	Load type		Load current A	On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram ²⁾
			1 U	On s	Off s			
13.5VDC	Resistive	Make	2 × 6	2	2	2 × 10 ⁵	AgSnO ₂	See diagram 1
		Break	2 × 6	2	2			
	Lamp ¹⁾		(2×21W+1×5W) × 2	0.3	2	1 × 10 ⁵	AgSnO ₂	See diagram 2
	Lamp ¹⁾		(2×21W) × 2	1	14	1 × 10 ⁵	AgSnO ₂	See diagram 2



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2015 Rev. 1.00

- 1) When it is utilized in flasher, a special AgSnO₂ contact material should be used and the customer special code should be (170) as a suffix.
Please connect by the polarity according to the diagram below.
- 2) The load wiring diagrams are listed below:

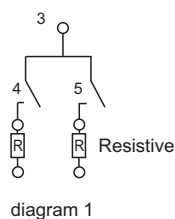


diagram 1

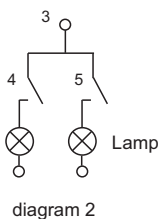


diagram 2

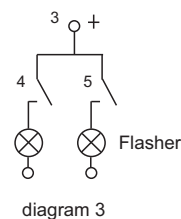


diagram 3

- 3) When the load voltage is at 24VDC or higher, or the applications conditions are different from the table above, please submit the detailed application conditions to Hongfa to get more support.

COIL DATA

at 23°C

Nominal voltage ¹⁾ VDC	Pick-up voltage VDC max.		Drop-out voltage VDC min.	Coil resistance x(1±10%)Ω	Power consumption W	Max. allowable overdrive voltage ²⁾ VDC	
	at 23°C	at 85°C				at 23°C	at 85°C
6	3.5	4.5	0.5	36	1	9	7
9	5.2	6.8	0.7	81	1	13.5	10.5
10	5.8	7.9	0.8	100	1	15	11.7
12	6.9	9.0	1.0	144	1	18	14

1) Other types on request.

2) Max. allowable overdrive voltage is stated with no load applied.

ORDERING INFORMATION

Type	HFKW / 012 -SH W L C (XXX)
Coil voltage	006: 6VDC 009: 9VDC 010: 10VDC 012: 12VDC
Contact arrangement	SH: 1 Form U (Double NO contacts)
Contact material	W: AgSnO ₂
Construction ¹⁾	L: Flux proofed (Reflow soldering version) Nil: Plastic sealed ²⁾
Packing style	C: Tape and reel packing Nil: Tube packing
Special code ³⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) The structure of HFKW/□□□-SHW-L□ is only flux proof, the open vent hole is at the bottom of the base.

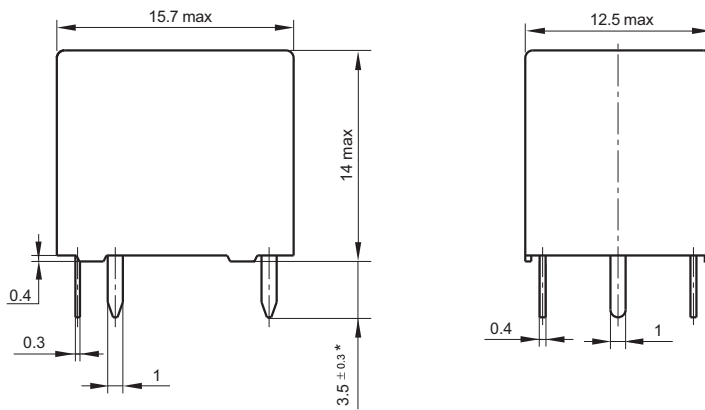
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load.

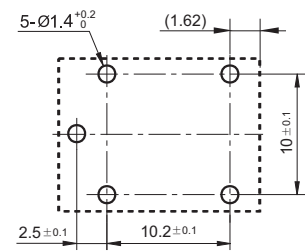
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

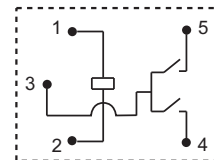
Outline Dimensions



PCB Layout
(Bottom view)



Wiring Diagram
(Bottom view)

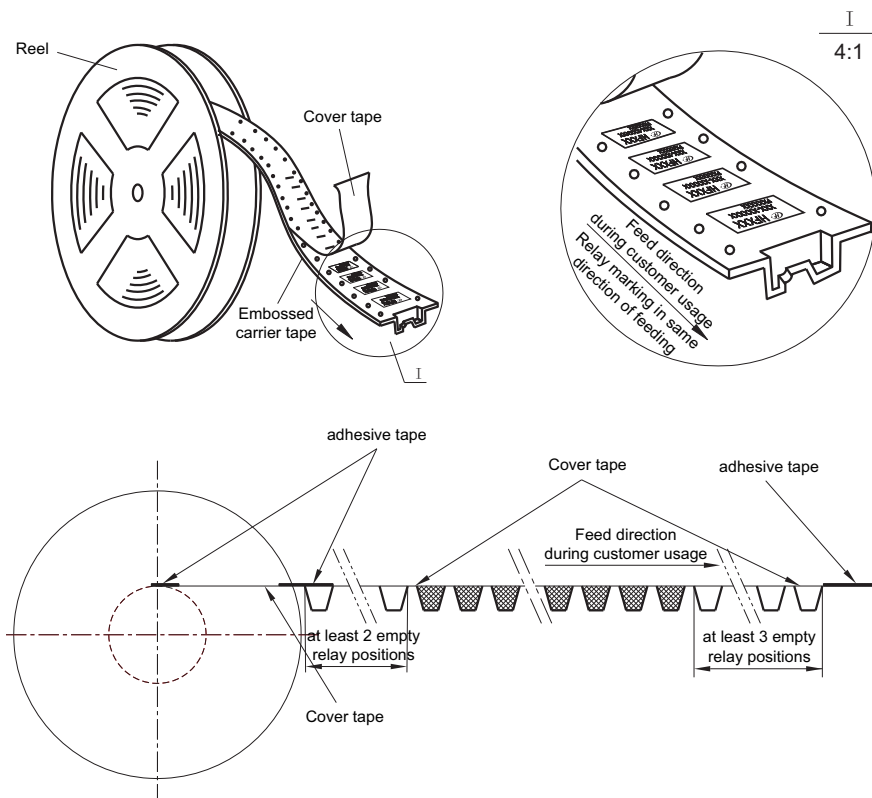


Remark: * The additional tin top is max. 1mm.

TAPE AND REEL PACKING

Unit: mm

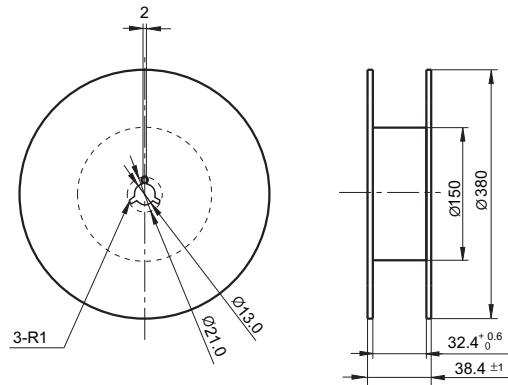
Direction of Relay Insertion



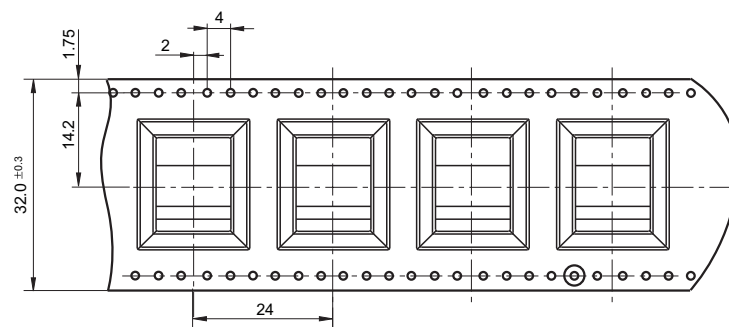
TAPE AND REEL PACKING

Unit: mm

Reel Dimensions

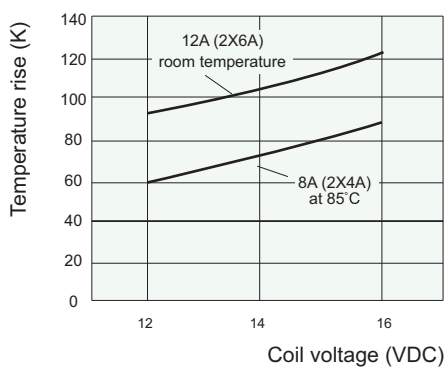


Tape Dimensions



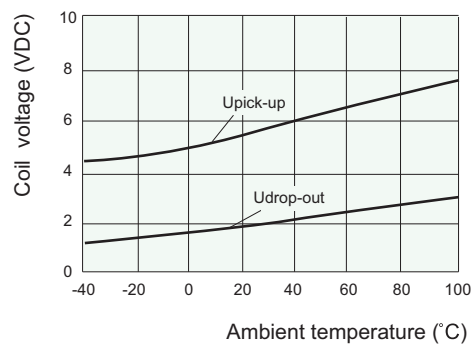
CHARACTERISTIC CURVES

1. Coil temperature rise



2. Pick-up & drop-out voltage - ambient temperature characteristic

HFkW/012-SHW(XXX)



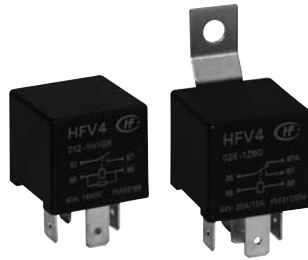
Disclaimer

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HFV4

AUTOMOTIVE RELAY



Typical Applications

Fog lamp & headlight control, Rear window defogger,
Air-conditioning, Fuel pump control, Cooling fan control,
Battery disconnection device

Features

- 40A switching capability
- Various mounting terminations available
- 1 Form A & 1 Form C contact arrangement
- Plastic sealed and dust protected types available
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A, 1C
Voltage drop (initial)	NO: Typ. 20mV, 250mV max. (at 10A) NC: Typ. 30mV, 250mV max. (at 10A)
Max. continuous current ^{1) 10)}	NO: 60A (at 23°C) NC: 40A (at 23°C)
Max. switching current ¹⁰⁾	Make (NO): 150A ²⁾ Break (NO): 40A (Resistive, 13.5VDC)
Max. switching voltage	See "Load limit curve"
Min. contact load	1A 6VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	1 x 10 ⁶ OPS (300 OPS/min)
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength ³⁾	between contacts: 500VAC between coil & contacts: 500VAC
Operate time ¹⁰⁾	Max.: 7ms (at nomi. vol.)
Release time ¹⁰⁾	Max.: 5ms ⁴⁾
Ambient temperature	-40°C to 125°C
Vibration resistance ^{5) 10)}	5Hz to 22.3Hz 10mm DA 22.3Hz to 500Hz 98m/s ²

Shock resistance ^{5) 10)}	294m/s ²
Flammability ⁶⁾	UL94-HB or better (meets FMVSS 302)
Termination	QC ⁷⁾
Construction	Plastic sealed, Dust protected
Unit weight	Weather-proof cover: Approx. 55g Others: Approx. 35g
Mechanical data ⁸⁾	cover retention (pull & push): 200N min. terminal retention (pull & push): 100N min. terminal resistance to bending (front & side): 10N min. ⁹⁾

- 1) For NO contacts, measured when applying 100% rated voltage on coil. For NC contacts, measured when applying zero voltage on coil.
- 2) Inrush peak current under lamp load, at 13.5VDC.
- 3) 1min, leakage current less than 1mA.
- 4) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
- 5) When energized, opening time of NO contacts shall not exceed 1ms, when non-energized, opening time of NC contacts shall not exceed 1ms, meantime, NO contacts shall not be closed.
- 6) FMVSS: Federal Motor Vehicle Safety Standard.
- 7) Do NOT knock on relays with hard objects such as rubber rod and rubber hammer during mounting, which might lead to relay damage.
- 8) Only valid for QC version.
- 9) Test point is at 2mm away from terminal end, and after removing testing force, the terminal transfiguration shall not exceed 0.5mm.
- 10) Only for the 12VDC coil voltage type.

CONTACT DATA ⁵⁾

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurance ³⁾ OPS	Contact material	Load wiring diagram ⁴⁾	Ambient temp.
			1C		1A	On s	Off s				
			NO	NC	NO						
13.5VDC	Resistive	Make	40	30	40	1.5	1.5	1×10 ⁵	AgSnO ₂	See diagram 1	See Ambient Temp. Curve
		Break	40	30	40						
	Lamp ¹⁾	Make	150 ²⁾	---	150 ²⁾	2	2	1×10 ⁵	AgSnO ₂	See diagram 2	
		Break	30	---	30						
	Inductive	Make	80	---	80	2	2	1×10 ⁵	AgSnO ₂	See diagram 3	
		Break	33	---	33						
27VDC	Resistive	Make	20	10	20	2	2	1×10 ⁵	AgSnO ₂	See diagram 1	at 23°C
		Break	20	10	20						

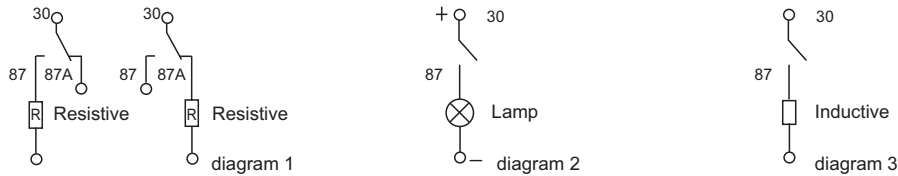


HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

- 1) The load in the table excludes flasher. When applied in flasher, a special silver alloy (AgSnO₂) contact material should be used and the customer special code should be (170) as a suffix. Please heed the anode and cathode's request when wired, terminal 30 should connect with anode.
- 2) Corresponds to the peak inrush current on initial actuation (cold filament).
- 3) A low resistive or diode suppression device in parallel to the relay coil increases the release time and reduces the life time caused by increased erosion and / or higher risk of contact welding.
- 4) The load wiring diagrams are listed below (Ratings of NO, NC are tested based on different samples separately) :



- 5) Loads mentioned in this chart is for relays with no parallel diode or Zener Diode. For those with parallel diode, Zener Diode or other components, please contact Hongfa for more technical supports.
Please also contact Hongfa if the actual application load is different from what mentioned above.

COIL DATA								at 23°C	
	Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance x(1±10%)Ω	Parallel resistance ²⁾ x(1±5%)Ω	Equivalent resistance Ω	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
								at 23°C	at 85°C
Weather-proof cover	6	3.6	0.6	22	---	---	1.6	10.1	7.9
	6	3.6	0.6	22	180	19.6	1.8	10.1	7.9
	12	7.2	1.2	90	---	---	1.6	20.2	15.7
	12	7.2	1.2	90	680	79.5	1.8	20.2	15.7
	24	14.4	2.4	350	---	---	1.6	40.5	31.5
	24	14.4	2.4	350	2700	309.8	1.9	40.5	31.5
Others	6	3.9	0.6	22	---	---	1.6	10.1	7.9
	6	3.9	0.6	22	180	19.6	1.8	10.1	7.9
	12	7.8	1.2	85	---	---	1.7	20.2	15.7
	12	7.8	1.2	85	680	75.6	1.9	20.2	15.7
	24	15.6	2.4	350	---	---	1.6	40.5	31.5
	24	15.6	2.4	350	2700	309.8	1.9	40.5	31.5

1) Max. allowable overdrive voltage is stated with no load applied, illustrated with dust cover version.

2) Illustrated with the type with parallel resistor (680Ω, 12V), (2700Ω, 24V).

ORDERING INFORMATION

		HFV4 /		012 -1H		1	S	G	R	(XXX)
Type										
Coil voltage		006: 6VDC 012: 12VDC 024: 24VDC								
Contact arrangement		1H: 1 Form A 1Z: 1 Form C								
Version		1: QC Terminal 4: Plastic Bracket 3: Weatherproof Cover (Without metal bracket) 5: Weatherproof Cover (With metal bracket) 6: Metal Bracket								
Construction ¹⁾		S: Plastic sealed Nil: Dust protected								
Contact Material		G: AgSnO ₂								
Parallel coil ²⁾ components		R: Parallel transient supression resistors(680Ω, 12V) (2700Ω, 24V) R1: Parallel transient supression resistors(560Ω, 12V) (1200Ω, 24V) R2: Parallel transient supression resistors(470Ω, 12V) (1000Ω, 24V) D1: Parallel transient supression diode, with anode connected to terminal#86 D2: Parallel transient supression diode, with anode connected to terminal#85 Nil: Without parallel components								
Special code ³⁾		XXX: Customer special requirement Nil: Standard								

Notes: 1) Dust protected version is recommended.

2) If the switch-off peak voltage of coil is required to be smaller than 100V, R1 or R2 shall be used (measured voltage of 12V is 13.5V, that of 24V is 27V); If parallel diode, Zener Diode or other components are required, please contact Hongfa for more technical supports.

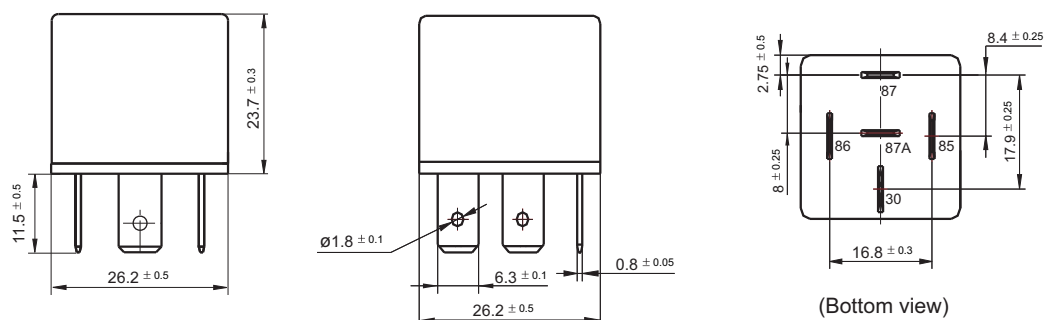
3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

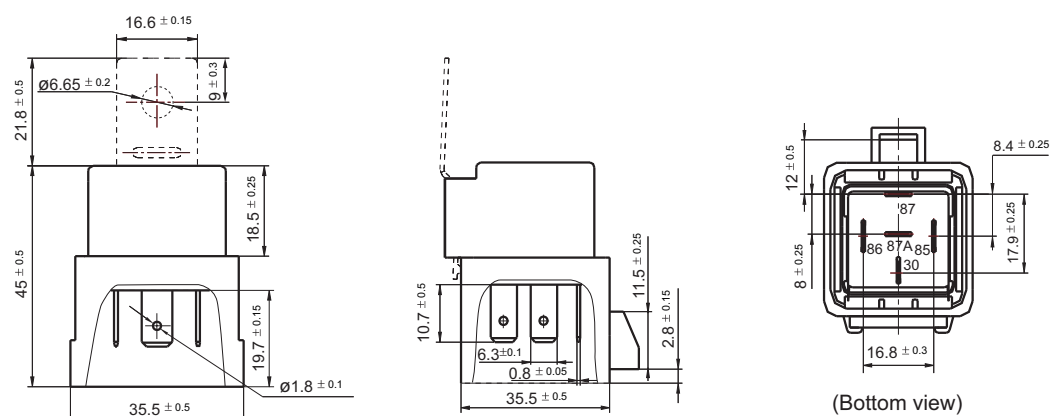
Outline Dimensions

HFV4/□□□-1□1□□□(XXX)



HFV4/□□□-1□3□□□(XXX)

HFV4/□□□-1□5□□□(XXX)

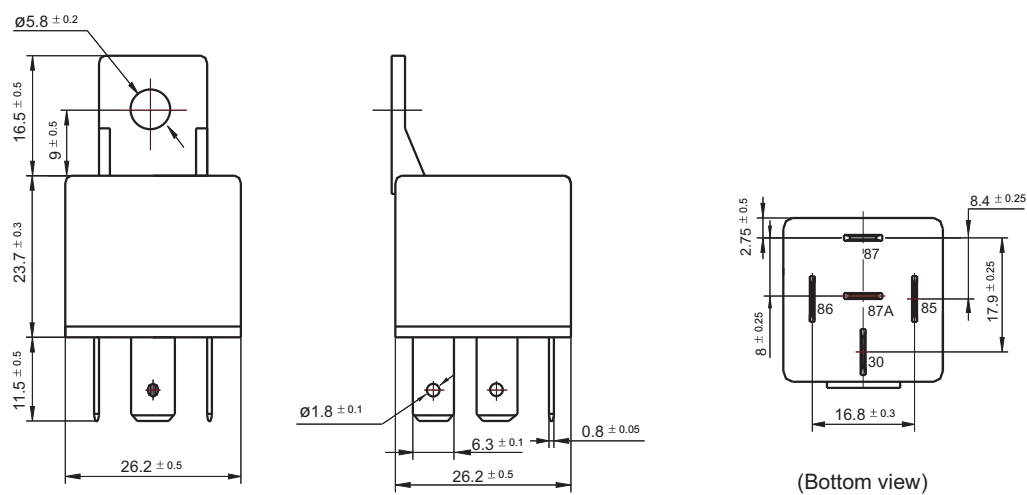


OUTLINE DIMENSIONS AND WIRING DIAGRAM

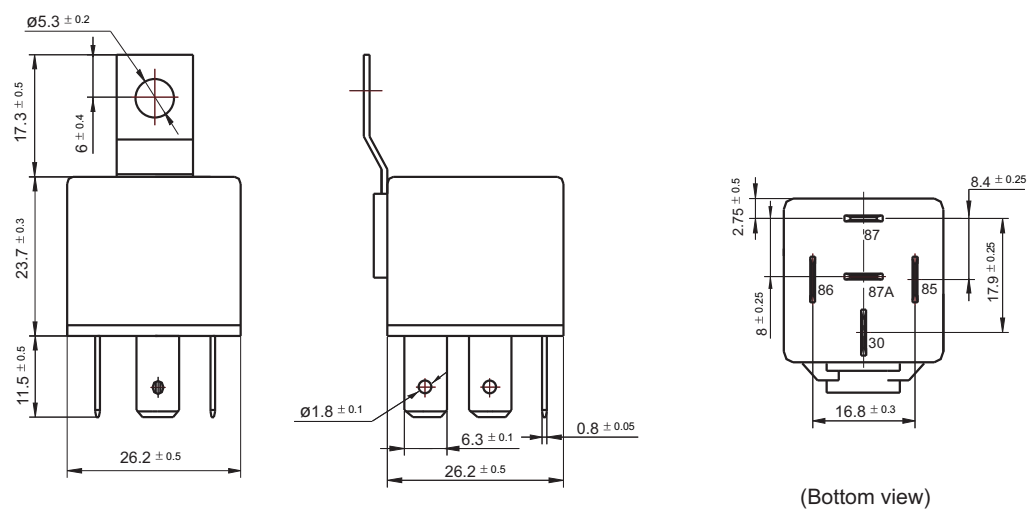
Unit: mm

Outline Dimensions

HFV4/□□□-1□4□□□(XXX)



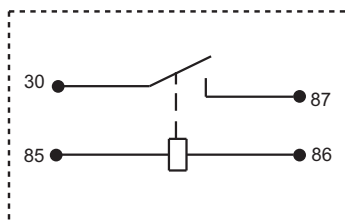
HFV4/□□□-1□6□□□(XXX)



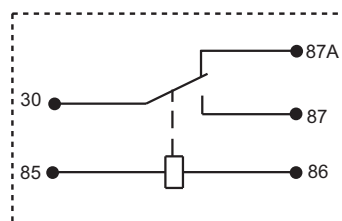
Remark: Terminal vertical deviation tolerance is 0.3mm.

Wiring Diagram

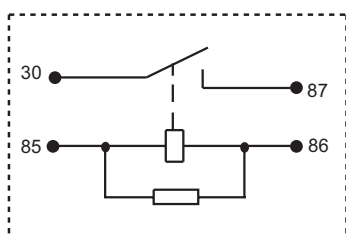
HFV4/□□□-1H□□□(XXX)



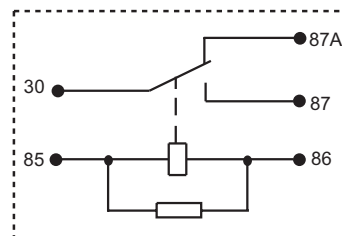
HFV4/□□□-1Z□□□(XXX)



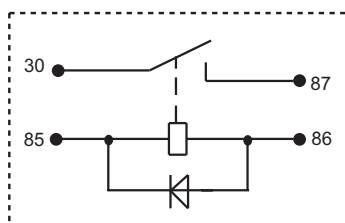
HFV4/□□□-1H□□□R(XXX)



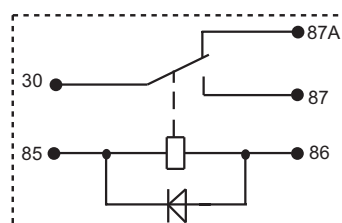
HFV4/□□□-1Z□□□R(XXX)



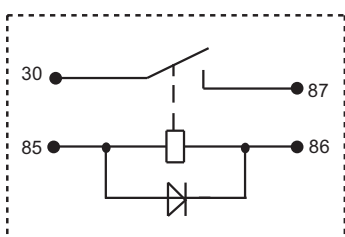
HFV4/□□□-1H□□□D1(XXX)



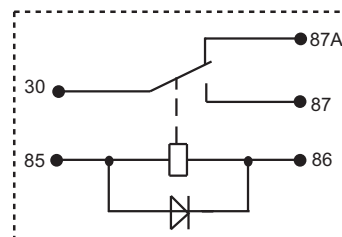
HFV4/□□□-1Z□□□D1(XXX)



HFV4/□□□-1H□□□D2(XXX)

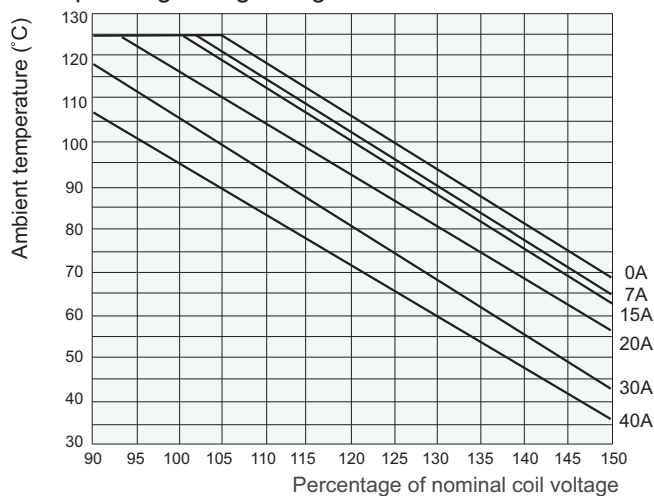


HFV4/□□□-1Z□□□D2(XXX)



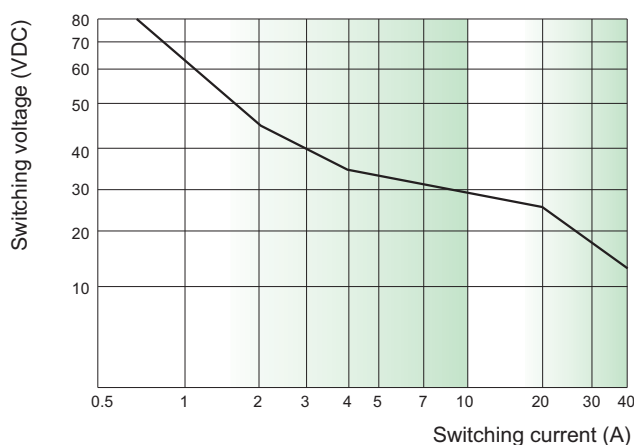
CHARACTERISTIC CURVES

1. Coil operating voltage range



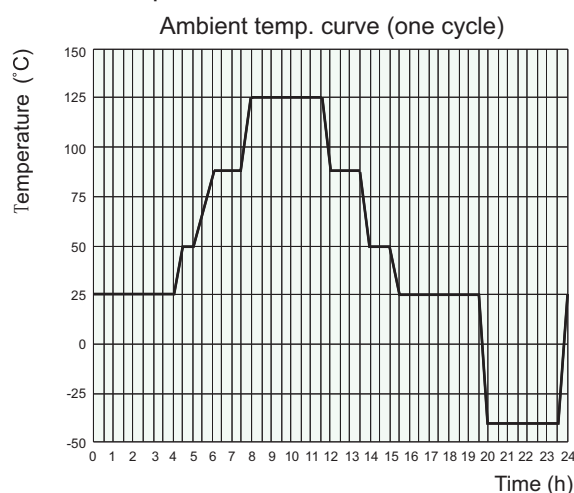
- 1) There should be no contact load applied when maximum continuous operation voltage is applied on coil.
- 2) This chart takes dust protected, 12VDC coil voltage version as example.
- 3) The maximum allowable coil temperature is 180°C. Considering the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 170°C under the different application ambient, different coil voltage and different load etc.
- 4) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

2. Load limit curve (at 23°C)



- 1) This chart takes NO contact, resistive load as example.
- 2) The load and electrical endurance tests are made according to "CONTACT DATA" parameters' table. If actual load voltage, current, or operate frequency is different from "CONTACT DATA" table, please arrange corresponding tests for confirmation.

3. Ambient temperature curve of the electrical endurance test



- 1) The minimum temperature is -40°C.
- 2) The maximum temperature is 125°C.

Disclaimer

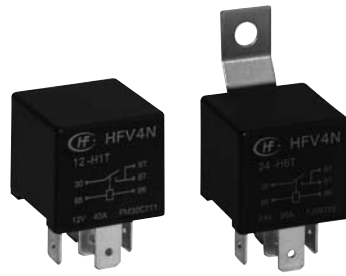
The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFV4N

AUTOMOTIVE RELAY



Features

- 40A switching capability
- Various mounting terminations available
- 1 Form A (2 x 87) contact arrangement
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A
Voltage drop (initial)	Typ.: 20mV (at 10A) Max.: 250mV (at 10A)
Max. continuous current ^{1) 8)}	60A (at 23°C)
Max. switching current ⁸⁾	Make (NO): 150A ²⁾ Break (NO): 40A (Resistive, 13.5VDC)
Max. switching voltage	See "Load limit curve"
Min. contact load	1A 6VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	1 x 10 ⁶ OPS (300OPS/min)
Initial insulation resistance	100MΩ (500VDC)
Dielectric strength ³⁾	between contacts: 500VAC between coil & contacts: 500VAC
Operate time ⁸⁾	Max.: 7ms (at nomi. vol.)
Release time ^{4) 8)}	Max.: 5ms
Ambient temperature	-40°C to 125°C

Vibration resistance ^{5) 8)}	5Hz to 22.3Hz 10mm DA 22.3Hz to 500Hz 98m/s ²
Shock resistance ^{5) 8)}	294m/s ²
Flammability ⁶⁾	UL94-HB or better (meets FMVSS 302)
Termination	QC ⁹⁾
Construction	Dust protected
Unit weight	Approx. 35g
Mechanical data	cover retention (pull & push): 200N min. terminal retention (pull & push): 100N min. terminal resistance to bending (front & side): 10N min. ⁷⁾

1) Measured when applying 100% rated voltage on coil.

2) Inrush peak current under lamp load, at 13.5VDC.

3) 1min, leakage current less than 1mA.

4) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.

5) When energized, opening time of NO contacts shall not exceed 1ms.

6) FMVSS: Federal Motor Vehicle Safety Standard.

7) Test point is at 2mm away from terminal end, and after removing testing force, the terminal transfiguration shall not exceed 0.5mm.

8) Only for the 12VDC coil voltage type.

9) Do NOT knock on relays with hard objects such as rubber rod and rubber hammer during mounting, which might lead to relay damage.

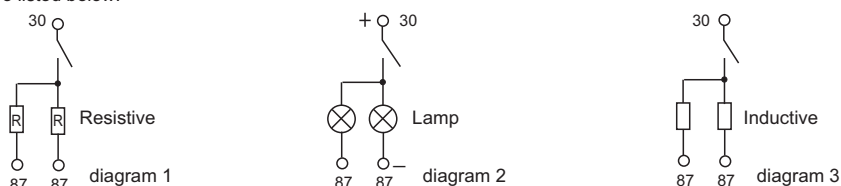
CONTACT DATA⁵⁾

Load voltage	Load type		Load current A	On/Off ratio		Electrical endurance ³⁾ OPS	Contact material	Load wiring diagram ⁴⁾	Ambient temp.
				On s	Off s				
13.5VDC	Resistive	Make	40	2	2	1×10 ⁵	AgSnO ₂	See diagram 1	See Ambient Temp. Curve
		Break	40						
	Lamp ¹⁾	Make	150 ²⁾	2	2	1×10 ⁵	AgSnO ₂	See diagram 2	
		Break	30						
	Inductive	Make	80	2	2	1×10 ⁵	AgSnO ₂	See diagram 3	
		Break	33						

CONTACT DATA⁵⁾ at 23°C

Load voltage	Load type		Load current A	On/Off ratio		Electrical endurance ³⁾ OPS	Contact material	Load wiring diagram ⁴⁾
				On s	Off s			
27VDC	Resistive	Make	20	3	3	1×10 ⁵	AgSnO ₂	See diagram 1
		Break	20					
	Lamp ¹⁾	Make	60 ²⁾	1	4	1×10 ⁵	AgSnO ₂	See diagram 2
		Break	16					
	Inductive	Make	96	1	8	1×10 ⁵	AgSnO ₂	See diagram 3
		Break	16					

- 1) The load in the table excludes flasher. When applied in flasher, a special silver alloy (AgSnO₂) contact material should be used and the customer special code should be (170) as a suffix. Please heed the anode and cathode's request when wired, terminal 30 should connect with anode.
- 2) Corresponds to the peak inrush current on initial actuation (cold filament).
- 3) A low resistive or diode suppression device in parallel to the relay coil increases the release time and reduces the life time caused by increased erosion and / or higher risk of contact welding.
- 4) The load wiring diagrams are listed below:



- 5) Loads mentioned in this chart is for relays with no parallel diode or Zener Diode. For those with parallel diode, Zener Diode or other components, please contact Hongfa for more technical supports.
Please also contact Hongfa if the actual application load is different from what mentioned above.

COIL DATA at 23°C

Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance x(1±10%)Ω	Parallel resistance ²⁾ x(1±5%)Ω	Equivalent resistance Ω	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
							at 23°C	at 85°C
12	7.8	1.2	85	---	---	1.7	20.2	15.7
12	7.8	1.2	85	680	75.6	1.9	20.2	15.7
24	15.6	2.4	350	---	---	1.6	40.5	31.5
24	15.6	2.4	350	2700	309.8	1.9	40.5	31.5

- 1) Max. allowable overdrive voltage is stated with no load applied.
- 2) Illustrated with the type with parallel resistor (680Ω, 12V), (2700Ω, 24V).

ORDERING INFORMATION

		HFV4N /		12	-H	1	T	-R	(XXX)
Type									
Coil voltage		12: 12VDC		24: 24VDC					
Contact arrangement		H: 1 Form A							
Version		1: No Bracket		4: Plastic Bracket		6: Metal Bracket			
Contact Material		T: AgSnO ₂							
Parallel coil ¹⁾ components		R: Parallel transient supression resistors(680Ω, 12V) (2700Ω, 24V)							
		R1: Parallel transient supression resistors(560Ω, 12V) (1200Ω, 24V)							
		R2: Parallel transient supression resistors(470Ω, 12V) (1000Ω, 24V)							
		D1: Parallel transient supression diode, with anode connected to terminal#86							
		D2: Parallel transient supression diode, with anode connected to terminal#85							
		Nil: Without parallel components							
Special code ²⁾		XXX: Customer special requirement				Nil: Standard			

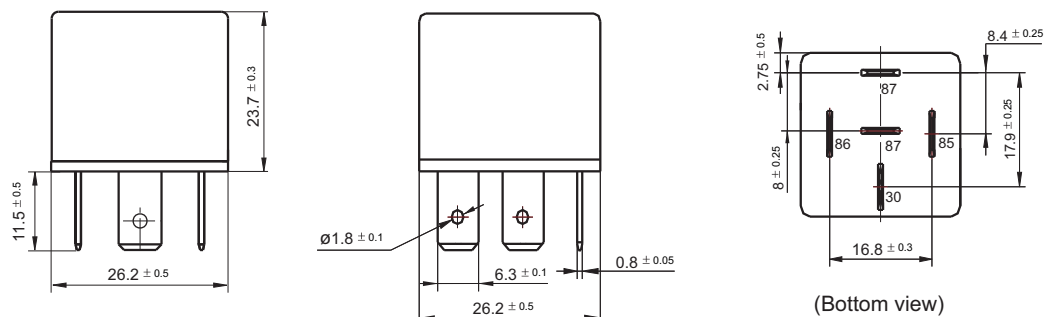
- Notes: 1) If the switch-off peak voltage of coil is required to be smaller than 100V, R1 or R2 shall be used (measured voltage of 12V is 13.5V, that of 24V is 27V); If parallel diode, Zener Diode or other components are required, please contact Hongfa for more technical supports.
- 2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

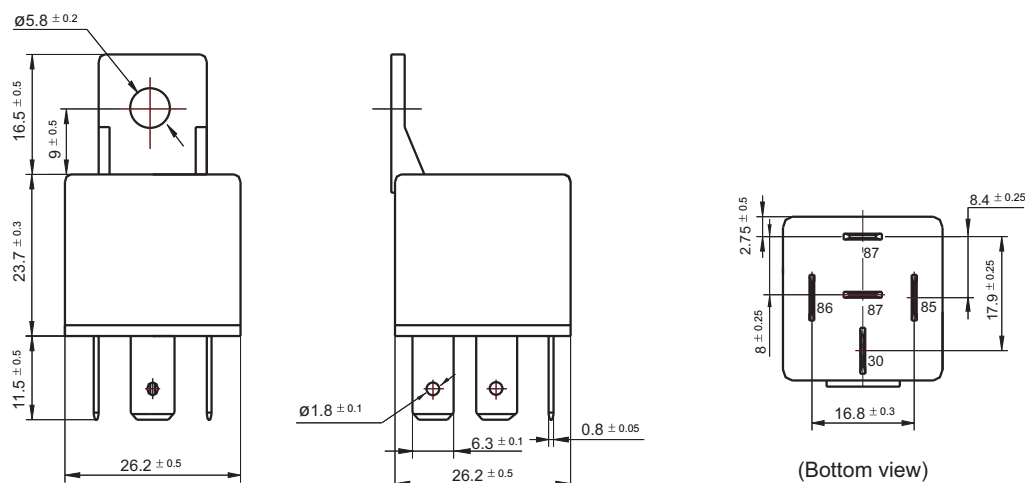
Unit: mm

Outline Dimensions

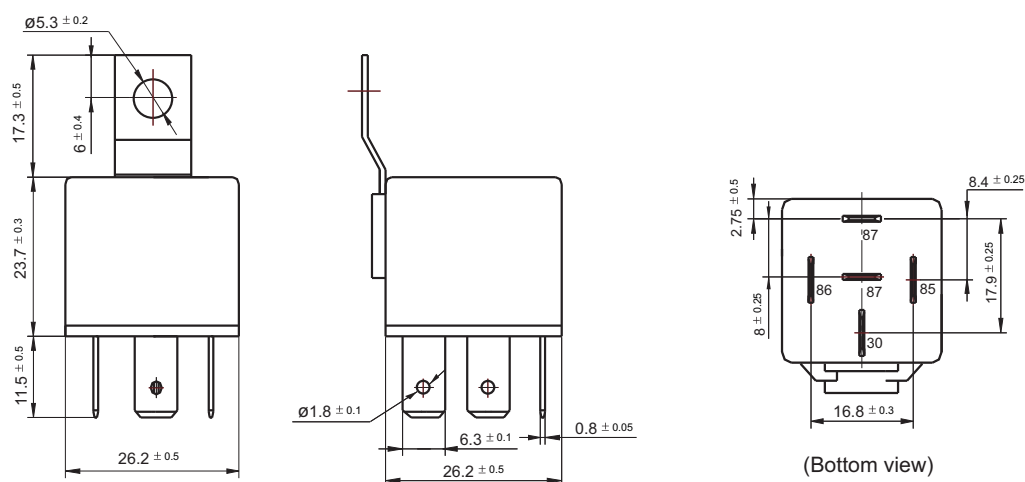
HFV4N/□□-H1□-□(XXX)



HFV4N/□□-H4□-□(XXX)



HFV4N/□□-H6□-□(XXX)



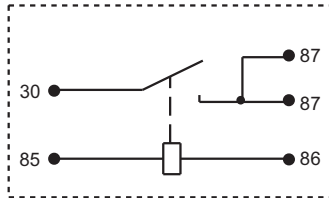
Remark: Terminal vertical deviation tolerance is 0.3mm.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

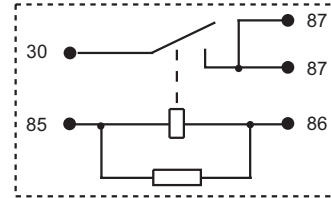
Unit: mm

Wiring Diagram

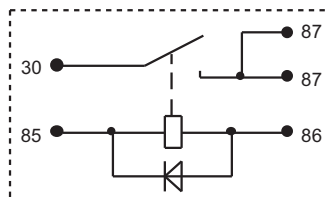
HFV4N/□□-H□T(XXX)



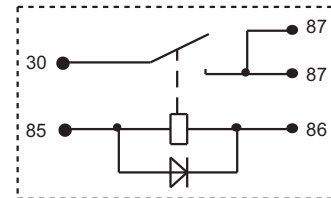
HFV4N/□□-H□T-R(XXX)



HFV4N/□□-H□T-D1(XXX)

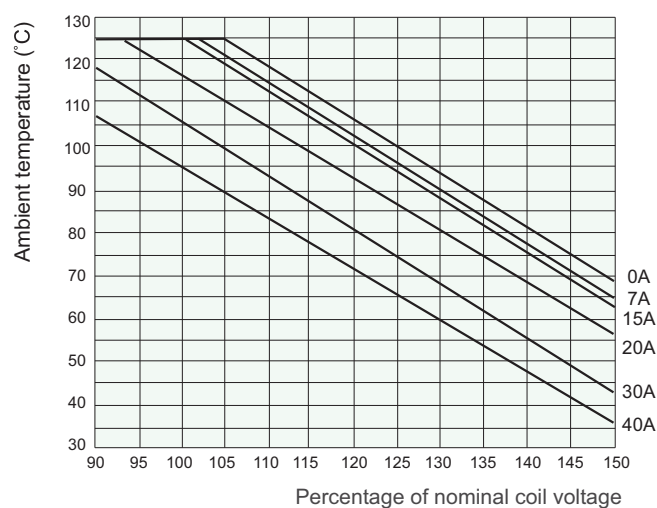


HFV4N/□□-H□T-D2(XXX)



CHARACTERISTIC CURVES

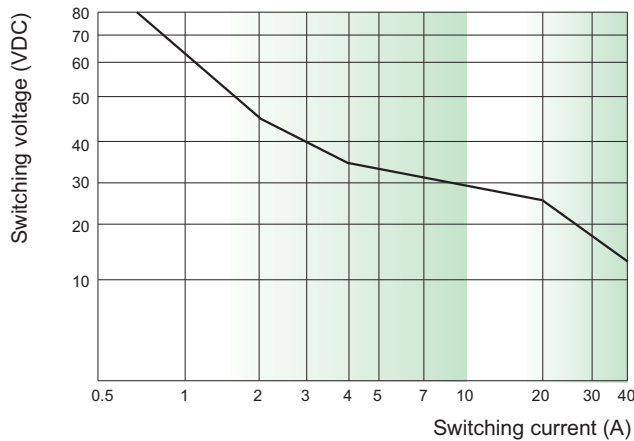
1. Coil operating voltage range



- 1) There should be no contact load applied when maximum continuous operation voltage is applied on coil.
- 2) This chart takes 12VDC coil voltage version as example.
- 3) The maximum allowable coil temperature is 180°C. Considering the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 170°C under the different application ambient, different coil voltage and different load etc.
- 4) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

CHARACTERISTIC CURVES

2. Load limit curve (at 23°C)



- 1) This chart takes resistive load as example.
- 2) The load and electrical endurance tests are made according to "CONTACT DATA" parameters' table. If actual load voltage, current, or operate frequency is different from "CONTACT DATA" table, please arrange corresponding tests for confirmation.

3. Ambient temperature curve of the electrical endurance test

Ambient temp. curve (one cycle)



- 1) The minimum temperature is -40°C.
- 2) The maximum temperature is 125°C.

Disclaimer

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We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFV4-SH

AUTOMOTIVE RELAY



Typical Applications

Fog lamp & headlight control, Rear window & mirror defogger, Air-conditioning, Fuel pump control, Cooling fan control.

Features

- 2x25A switching capability
- Continuous current of 25A per group contacts at 85°C
- Various mounting terminations available
- 1 Form U contact arrangement
- Dust protected type available
- RoHS & ELV compliant

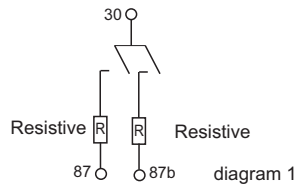
CHARACTERISTICS

Contact arrangement	1U	Shock resistance ^{5) 8)}	294m/s ²
Voltage drop (initial)	Typ.: 20mV (at 10A) Max.: 250mV (at 10A)	Flammability ⁶⁾	UL94-HB or better (meets FMVSS 302)
Max. continuous current ^{1) 8)}	NO1: 25A (at 85°C) NO2: 25A (at 85°C)	Termination	QC ⁹⁾
Max. switching current ⁸⁾	Make : 2 x100A ²⁾ Break : 2x25A (Resistive, 13.5VDC)	Construction	Dust protected
Min. contact load	1A 6VDC	Unit weight	Approx. 35g
Electrical endurance	See "CONTACT DATA"	Mechanical data	cover retention (pull & push): 200N min. terminal retention (pull & push): 100N min. terminal resistance to bending (front & side): 10N min. ⁷⁾
Mechanical endurance	1 x 10 ⁶ OPS (300OPS/min)	1) Measured when applying 100% rated voltage on coil.	
Initial insulation resistance	100MΩ (at 500VDC)	2) Inrush peak current under lamp load, at 13.5VDC.	
Dielectric strength ³⁾	between contacts: 500VAC between coil & contacts: 500VAC	3) 1min, leakage current less than 1mA.	
Operate time ⁸⁾	Max.: 10ms (at nomi. vol.)	4) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.	
Release time ⁸⁾	Max.: 10ms ⁴⁾	5) When energized, opening time of NO contacts shall not exceed 1ms.	
Ambient temperature	-40°C to 125°C	6) FMVSS: Federal Motor Vehicle Safety Standard.	
Vibration resistance ^{5) 8)}	5Hz to 22.3Hz 10mm DA 22.3Hz to 500Hz 98m/s ²	7) Test point is at 2mm away from terminal end, and after removing testing force, the terminal transfiguration shall not exceed 0.5mm.	
		8) Only for the 12VDC coil voltage type.	
		9) Do NOT knock on relays with hard objects such as rubber rod and rubber hammer during mounting, which might lead to relay damage.	

CONTACT DATA³⁾

Load voltage	Load type		Load current A		On/Off ratio		Electrical endurance ¹⁾ OPS	Contact material	Load wiring diagram ²⁾	Ambient temp.
			NO1	NO2	On s	Off s				
13.5VDC	Resistive	Make	25	25	2	2	1×10 ⁵	AgSnO ₂	See diagram 1	See Ambient Temp. Curve
		Break	25	25						
27VDC	Resistive	Make	10	10	1	2	1×10 ⁵	AgSnO ₂	See diagram 1	See Ambient Temp. Curve
		Break	10	10						

- 1) The low resistive or diode suppression device in parallel to the relay coil increases the release time and reduces the life time caused by increased erosion and / or higher risk of contact welding.
- 2) The load wiring diagrams are listed below.



- 3) Loads mentioned in this chart is for relays with no parallel diode or Zener Diode. For those with parallel diode, Zener Diode or other components, please contact Hongfa for more technical supports.
- Please also contact Hongfa if the actual application load is different from what mentioned above.

COIL DATA

at 23°C

Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance $\times(1\pm10\%) \Omega$	Parallel resistance ²⁾ $\times(1\pm5\%) \Omega$	Equivalent resistance Ω	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
							at 23°C	at 85°C
12	7.2	1.2	90	---	---	1.6	20.2	15.7
12	7.2	1.2	90	680	79.5	1.8	20.2	15.7
24	14.4	2.4	350	---	---	1.6	40.5	31.5
24	14.4	2.4	350	2700	309.8	1.9	40.5	31.5

1) Max. allowable overdrive voltage is stated with no load applied, illustrated with dust cover version.

2) Illustrated with the type with parallel resistor (680Ω, 12V), (2700Ω, 24V).

ORDERING INFORMATION

Type	HFV4 /	012	-SH	1	G	R	(XXX)
Coil voltage	012: 12VDC 024: 24VDC						
Contact arrangement	SH: 1 Form U						
Version	1: QC Terminal 3: Weatherproof Cover (Without metal bracket) 5: Weatherproof Cover (With metal bracket)						
Contact Material	G: AgSnO ₂						
Parallel coil ¹⁾ components	R: Parallel transient suppression resistors(680Ω, 12V) (2700Ω, 24V) R1: Parallel transient suppression resistors(560Ω, 12V) (1200Ω, 24V) R2: Parallel transient suppression resistors(470Ω, 12V) (1000Ω, 24V) D1: Parallel transient suppression diode, with anode connected to terminal#86 D2: Parallel transient suppression diode, with anode connected to terminal#85 Nil: Without parallel components						
Special code ²⁾	XXX: Customer special requirement Nil: Standard						

Notes: 1) If the switch-off peak voltage of coil is required to be smaller than 100V, R1 or R2 shall be used (measured voltage of 12V is 13.5V, that of 24V is 27V); If parallel diode, Zener Diode or other components are required, please contact Hongfa for more technical supports.

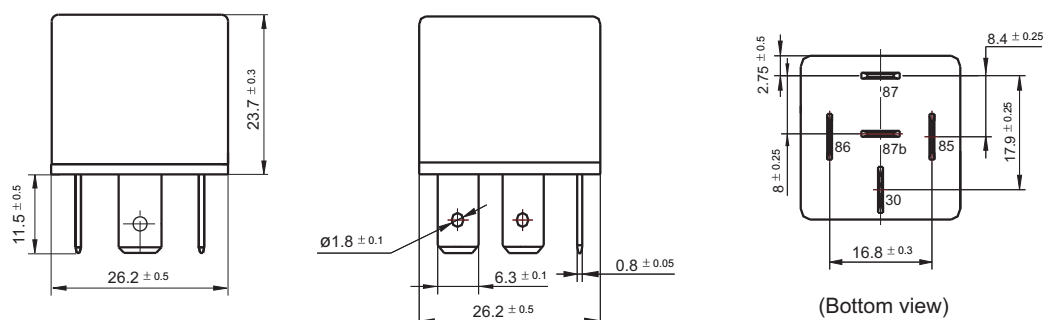
2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

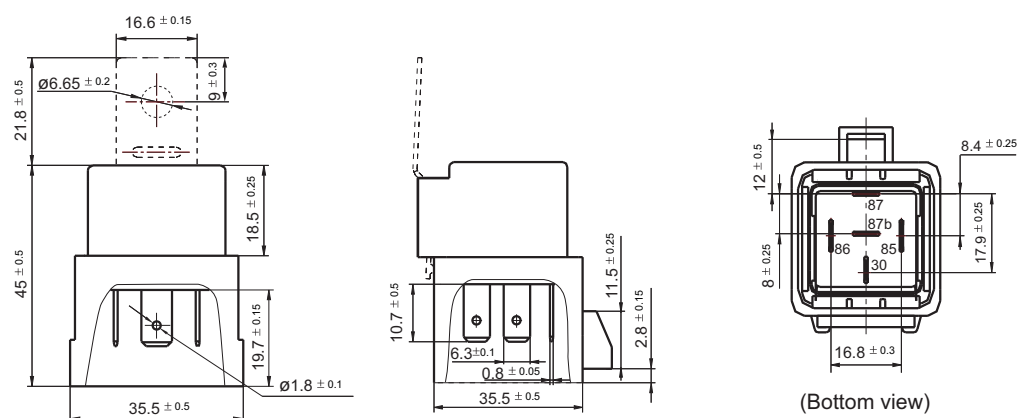
Outline Dimensions

HFV4/□□□-SH1□□(XXX)



HFV4/□□□-SH3□□(XXX)

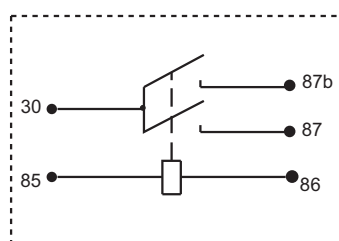
HFV4/□□□-SH5□□(XXX)



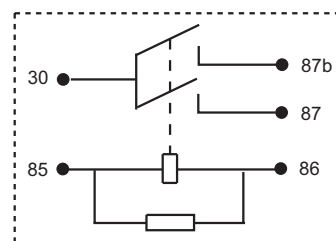
Remark: Terminal vertical deviation tolerance is 0.3mm.

Wiring Diagram

HFV4/□□□-SH□□□(XXX)



HFV4/□□□-SH□□□R(XXX)

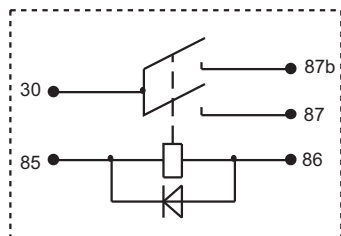


OUTLINE DIMENSIONS AND WIRING DIAGRAM

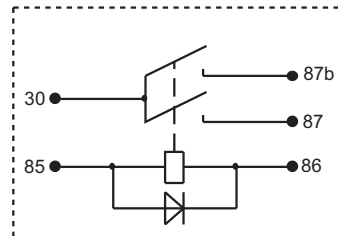
Unit: mm

Wiring Diagram

HFV4/□□□-SH□□□D1(XXX)

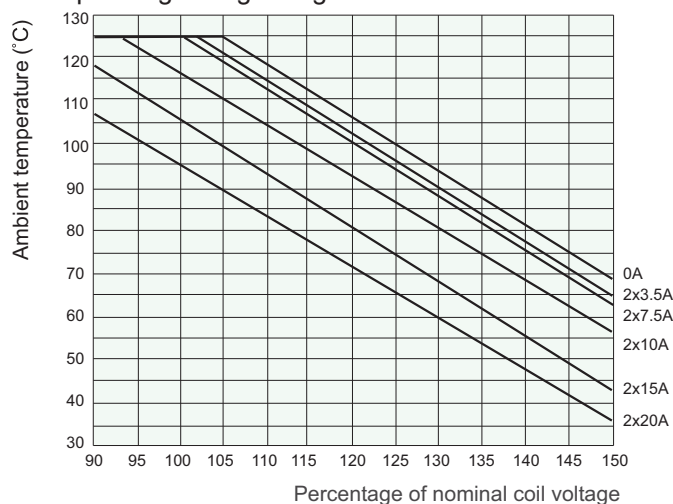


HFV4/□□□-SH□□□D2(XXX)



CHARACTERISTIC CURVES

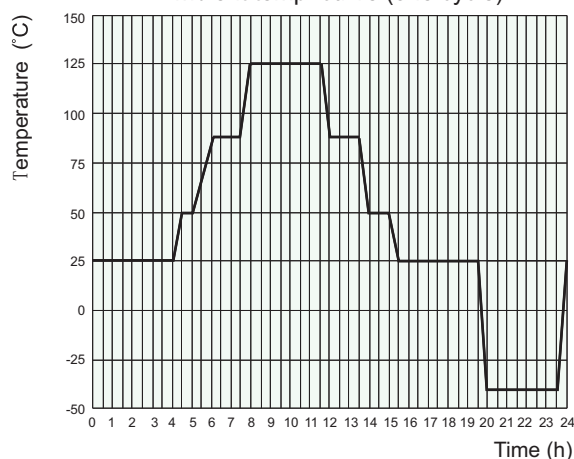
1. Coil operating voltage range



- 1) There should be no contact load applied when maximum continuous operation voltage is applied on coil.
- 2) This chart takes dust protected, 12VDC coil voltage version as example.
- 3) The maximum allowable coil temperature is 180°C. Considering the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 170°C under the different application ambient, different coil voltage and different load etc.
- 4) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

2. Ambient temperature curve of the electrical endurance test

Ambient temp. curve (one cycle)



- 1) The minimum temperature is -40°C.
- 2) The maximum temperature is 125°C.

Disclaimer

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HFV6

AUTOMOTIVE RELAY



Typical Applications

Lighting control, Headlight control, Electromagnet control
Air-conditioning, Heaters (seat, front/rear windows),
Fan motors control, Fuel pump control, Wiper motors control

Features

- 30A switching capability
- Ambient temp. range up to 125°C
- 1 Form A & 1 Form C contact arrangement
- Plastic sealed and dust protected types available
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A, 1C
Voltage drop (initial)	NO: Typ. 15mV, 250mV max. (at 10A) NC: Typ. 25mV, 250mV max. (at 10A)
Max. continuous current ^{1) 10)}	30A (Resistive)
Max. switching current ¹⁰⁾	30A (Resistive)
Max. switching voltage ²⁾	27VDC (Resistive)
Min. contact load	1A 6VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	1 x 10 ⁷ ops (300 ops/min)
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength ³⁾	500VAC
Operate time ¹⁰⁾	Typ.: 5ms (at nomi. vol.) Max.: 10ms (at nomi. vol.)
Release time ^{4) 10)}	Typ.: 2ms Max.: 10ms
Ambient temperature	-40°C to 125°C
Vibration resistance ^{5) 10)}	10Hz to 60Hz 0.35mm DA 60Hz to 500Hz 49m/s ²
Shock resistance ^{5) 10)}	196m/s ²

Flammability ⁶⁾	UL94-HB or better (meets FMVSS 302)
Termination	QC ⁷⁾
Construction	Plastic sealed, Dust protected
Unit weight	Approx. 22g
Mechanical data ⁸⁾	cover retention (pull & push): 200N min. terminal retention (pull & push): 100N min. terminal resistance to bending (front & side): 10N min. ⁹⁾

- 1) For NO contacts, measured when applying 100% rated voltage on coil.
- 2) See "Load limit curve" for details.
- 3) 1min, leakage current less than 1mA.
- 4) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
- 5) When energized, opening time of NO contacts shall not exceed 100μs, when non-energized, opening time of NC contacts shall not exceed 100μs, meantime, NO contacts shall not be closed.
- 6) FMVSS: Federal Motor Vehicle Safety Standard.
- 7) Do NOT knock on relays with hard objects such as rubber rod and rubber hammer during mounting, which might lead to relay damage.
- 8) Only valid for QC version.
- 9) Test point is at 2mm away from terminal end, and after removing testing force, the terminal transfiguration shall not exceed 0.5mm.
- 10) Only for the 12VDC coil voltage type.

CONTACT DATA ⁵⁾

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram ³⁾	Ambient temp.
			1C		1A	On s	Off s				
			NO	NC	NO						
13.5VDC	Resistive	Make	20	10	30	2	2	1×10 ⁵	AgSnO ₂	See diagram 1 or diagram 4	See Ambient temp. curve
		Break	20	10	30	2	2				
	Inductive	Make ¹⁾	40	20	40	2	2	1×10 ⁵	AgSnO ₂	See diagram 2 or diagram 5	
		Break	20	10	20	2	2				
	Lamp ⁴⁾	Make	100 ²⁾	---	100 ²⁾	2	2	1×10 ⁵	AgSnO ₂	See diagram 3	
		Break	20	---	20	2	2				
27VDC	Resistive	Make	20	10	20	2	2	1×10 ⁵	AgSnO ₂	See diagram 1 or diagram 4	See Ambient temp. curve
		Break	20	10	20	2	2				
	Inductive	Make ¹⁾	38	28	38	2	2	1×10 ⁵	AgSnO ₂	See diagram 2 or diagram 5	
		Break	15	6	15	2	2				
	Lamp ⁴⁾	Make	70 ²⁾	---	70 ²⁾	2	2	1×10 ⁵	AgSnO ₂	See diagram 3	
		Break	7	---	7	2	2				

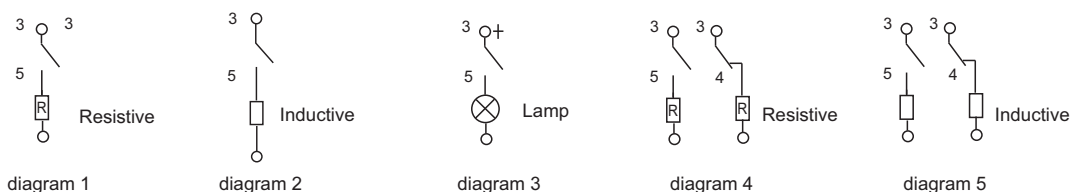


HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.01

- 1) Corresponds to the peak inrush current on initial actuation.
 2) Corresponds to the peak inrush current on initial actuation (cold filament).
 3) The load wiring diagrams are listed below:



- 4) The load in the table excludes flasher. When applied in flasher, please connect by the polarity request according diagram 3, a special silver alloy contact material should be used and the customer special code should be (170) as a suffix.
 5) Loads mentioned in this chart is for relays with no parallel diode or Zener Diode. For those with parallel diode, Zener Diode or other components, please contact Hongfa for more technical supports.
 Please also contact Hongfa if the actual application load is different from what mentioned above.

COIL DATA

at 23°C

	Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance $\times(1\pm10\%) \Omega$	Parallel resistance $\times(1\pm5\%) \Omega$	Equivalent resistance $\times(1\pm10\%) \Omega$	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
								at 23°C	at 85°C
Standard	12	7.2	1.2	90	---	---	1.6	20	15
	12	7.2	1.2	90	680	79.5	1.8	20	15
	24	14.4	2.4	360	---	---	1.6	40	30
	24	14.4	2.4	360	2700	317.6	1.8	40	30
Sensitive	12	7.2	1.2	124	---	---	1.2	25	19
	12	7.2	1.2	124	680	104.9	1.4	20	15
	24	14.4	2.4	441	---	---	1.3	47	35
	24	14.4	2.4	441	1800	354.2	1.6	33	25

1) Max. allowable overdrive voltage is stated with no load applied and minimum coil resistance.

ORDERING INFORMATION

		HFV6 /		012	Z	S	L	-T	R	(XXX)
Type	HFV6: QC	HFV6-K: Grip & QC								
Coil voltage	012: 12VDC		024: 24VDC							
Contact arrangement	H: 1 Form A		Z: 1 Form C							
Construction ¹⁾	S: Plastic sealed		Nil: Dust protected							
Coil power	L: Sensitive		Nil: Standard							
Contact material	T: AgSnO ₂									
Parallel coil ²⁾ components	R: Parallel transient suppression resistors D: Parallel transient suppression diode, with anode connected to terminal#2 D1: Parallel transient suppression diode, with anode connected to terminal#1 Nil: Without parallel components									
Special code ³⁾	XXX: Customer special requirement				Nil: Standard					

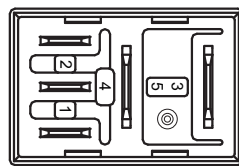
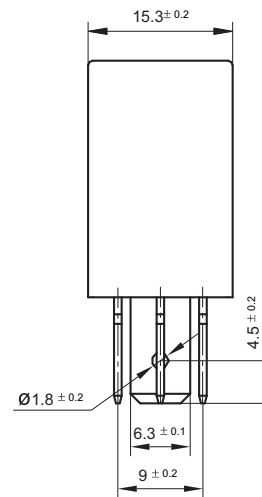
Notes: 1) Dust protected version is recommended.

2) If parallel diode, Zener Diode or other components are required, please contact Hongfa for more technical supports.

3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load.

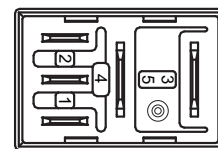
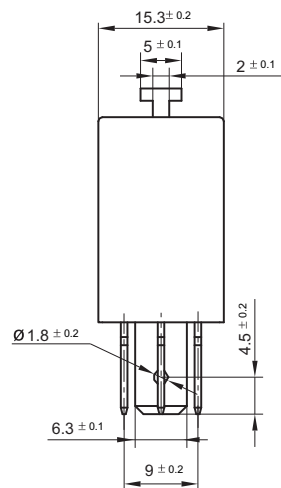
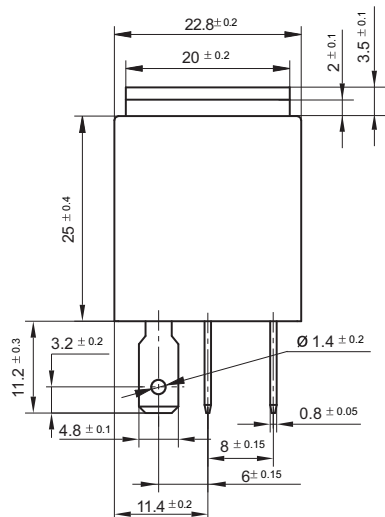
Unit: mm

HFV6/□□□Z□□-□□(XXX)



(Bottom view)

HFV6-K/□□□Z□□-□□(XXX)

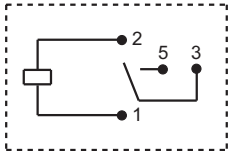


(Bottom view)

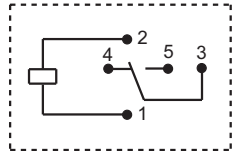
Remark: Terminal vertical deviation tolerance is 0.3mm.

Wiring Diagram

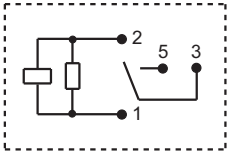
HFV6/□□□H□□-□(XXX)



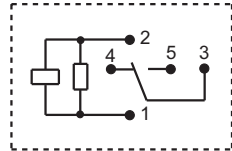
HFV6/□□□Z□□-□(XXX)



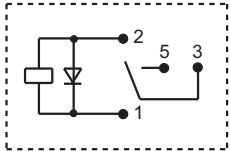
HFV6/□□□H□□-□R(XXX)



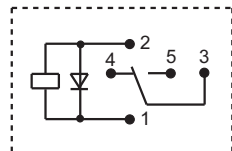
HFV6/□□□Z□□-□R(XXX)



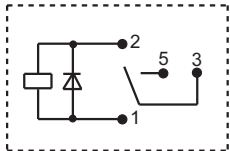
HFV6/□□□H□□-□D(XXX)



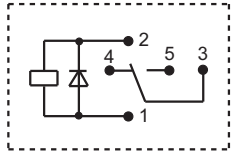
HFV6/□□□Z□□-□D(XXX)



HFV6/□□□H□□-□D1(XXX)

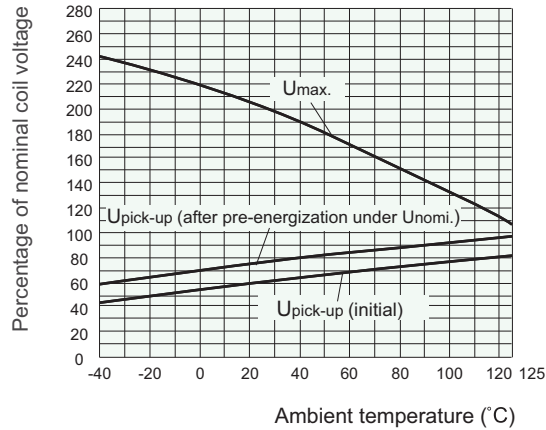


HFV6/□□□Z□□-□D1(XXX)



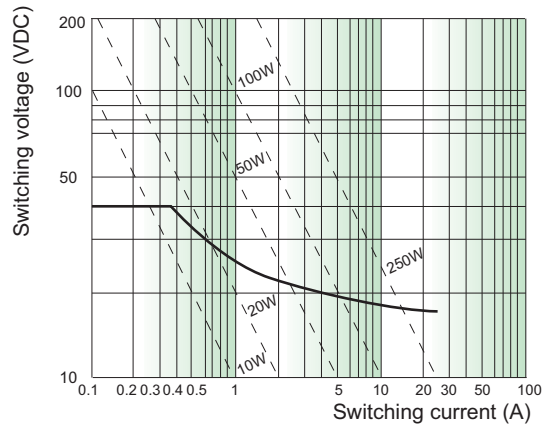
CHARACTERISTIC CURVES

1. Coil operating voltage range



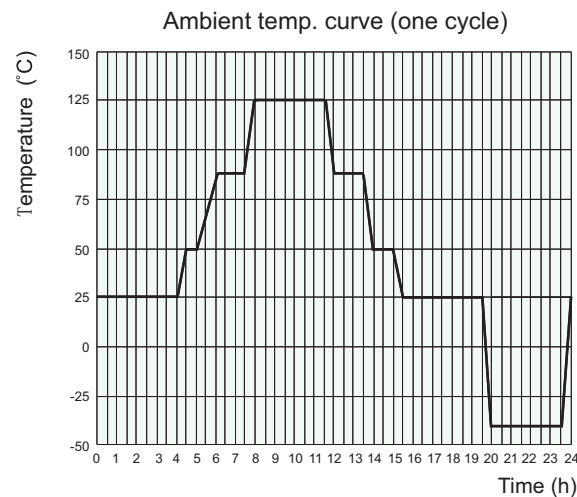
- 1) The operating voltage is connected with coil pre-energized time and voltage. After pre-energized, the operating voltage will increase.
- 2) The maximum allowable coil temperature is 180°C. For the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 170°C under the different application ambient, different coil voltage and different load etc.
- 3) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

2. Load limit curve



- 1) The load and electrical endurance tests are made according to "CONTACT DATA" parameters' table. If actual load voltage, current, or operate frequency is different from "CONTACT DATA" table, please arrange corresponding tests for confirmation.

3. Ambient temperature curve of the electrical endurance test



- 1) The minimum temperature is -40°C.
- 2) The maximum temperature is 125°C.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFV6-G

AUTOMOTIVE RELAY



Typical Applications

Heaters (seat, front/rear windows), Fan motors control, Fuel pump control, Wiper motors control, Headlight control, Air-conditioning, Lighting control, Electromagnet control, Start / Stop control

Features

- 35A switching capability
- Ambient temp.: range up to 125°C
- 1 Form A & 1 Form C contact arrangement
- Plastic sealed and dust protected types available
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A, 1C		
Voltage drop (initial)	NO:Typ.15mV,250mV max.(at 10A) NC:Typ.25mV,250mV max.(at 10A)	Vibration resistance ⁴⁾	5Hz to 17.3Hz 10mm DA 17.3Hz to 50Hz 58.9m/s ² 50Hz to 100Hz 29.4m/s ² 100Hz to 200Hz 19.4m/s ²
Max. continuous current ¹⁾	NO:35A, NC: 20A	Shock resistance ⁴⁾	196m/s ² (20g)
Typ. switching current	Lamp:Make inrush peak current 150A Resistive:Breake 35A	Flammability ⁵⁾	UL94-HB or better (meets FMVSS 302)
Max. switching voltage	16VDC	Termination	QC ⁷⁾
Min. contact load	1A 6VDC	Construction	Plastic sealed, Dust protected
Electrical endurance	1×10 ⁵ OPS	Unit weight	Approx. 22g
Mechanical endurance	1 x 10 ⁷ OPS (300OPS/min)	Mechanical data	cover retention (pull & push): 200N min.
Initial insulation resistance	100MΩ (at 500VDC)		terminal retention (pull & push): 100N min.
Dielectric strength ²⁾	500VAC		terminal resistance to bending (front & side): 10N min. ⁶⁾
Operate time	Typ.: 5ms (at nomi. vol.) Max.: 10ms (at nomi. vol.)	1) For NO contacts, measured when applying 100% rated vottage on coil. 2) 1min, leakage current less than 1mA. 3) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit. 4) When energized, opening time of NO contacts shall not exceed 100μs, when non-energized, opening time of NC contacts shall not exceed 100μs, meantime, NO contacts shall not be closed. 5) FMVSS: Federal Motor Vehicle Safety Standard. 6) Test point is at 2mm away from teminal end, and after removing testing force, the terminal transfiguration shall not exceed 0.5mm. 7) Do NOT knock on relays with hard objects such as rubber rod and rubber hammer during mounting, which might lead to relay damage.	
Release time ³⁾	Typ.: 2ms Max.: 10ms		
Ambient temperature	-40°C to 125°C		
Storage temperature	-40°C to 155°C		

CONTACT DATA ⁴⁾

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram ³⁾	Ambient temp.
			1C		1A	On s	Off s				
			NO	NC	NO						
Standard 13.5VDC	Resistive	Make	35	20	35	2	2	1×10 ⁵	AgSnO ₂	See diagram 1	See Ambient Temp. Curve
		Break	35	20	35						
	Inductive	Make ¹⁾	80	---	80	2	2	1×10 ⁵	AgSnO ₂	See diagram 2	
		Break	30	---	30						
	Lamp	Make	150 ²⁾	---	150 ²⁾	2	2	1×10 ⁵	AgSnO ₂	See diagram 3	
		Break	30	---	30						

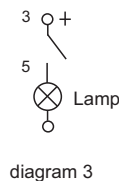
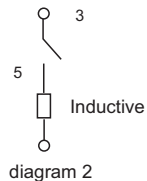
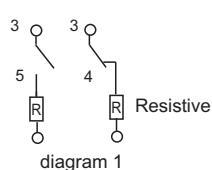


HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

- 1) Corresponds to the peak inrush current on initial actuation.
- 2) Corresponds to the peak inrush current on initial actuation (cold filament).
- 3) The load wiring diagrams are listed below:



- 4) Loads mentioned in this chart is for relays with no parallel diode or Zener Diode. For those with parallel diode, Zener Diode or other components, please contact Hongfa for more technical supports.
Please also contact Hongfa if the actual application load is different from what mentioned above.

COIL DATA

at 23°C

	Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance $\times(1\pm10\%) \Omega$	Parallel resistance ¹⁾ $\times(1\pm5\%) \Omega$	Equivalent resistance $\times(1\pm10\%) \Omega$	Power consumption W	Max. allowable overdrive voltage ²⁾ VDC	
								at 23°C	at 85°C
Standard	12	7.2	1.0	124	---	---	1.16	20	15
	12	7.2	1.0	124	680	104.9	1.37	20	15

1) The power consumption of parallel resistance is 0.5W.

2) Max. allowable overdrive voltage is stated with no load applied and minimum coil resistance.

ORDERING INFORMATION

Type	HFV6-G / 12 -Z S T N -R (XXX)
Coil voltage	12: 12VDC
Contact arrangement	H: 1 Form A Z: 1 Form C
Construction ¹⁾	S: Plastic sealed ²⁾ Nil: Dust protected
Contact material	T: AgSnO ₂
QC Coil Terminal width	N: 2.8 mm Nil: 4.8 mm
Parallel coil ²⁾ components	R: Parallel transient suppression resistors D: Parallel transient suppression diode, with anode connected to terminal#2 D1: Parallel transient suppression diode, with anode connected to terminal#1 Nil: Without parallel components
Special code ³⁾	XXX: Customer special requirement Nil: Standard

Notes: 1) Dust protected version is recommended.

2) If parallel diode, Zener Diode or other components are required, please contact Hongfa for more technical supports.

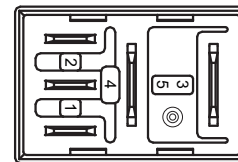
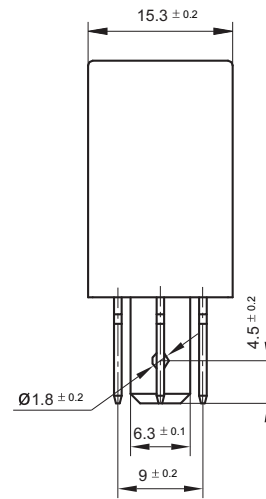
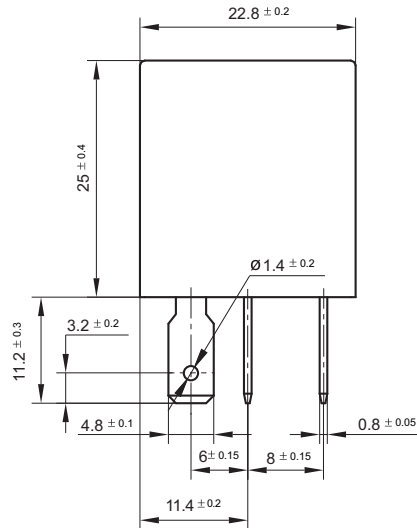
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

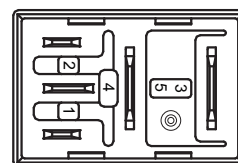
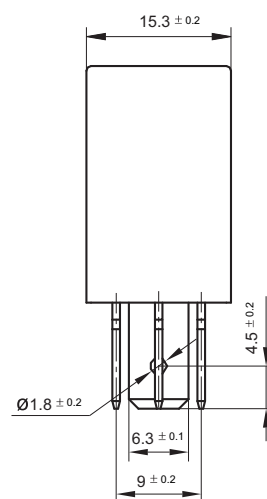
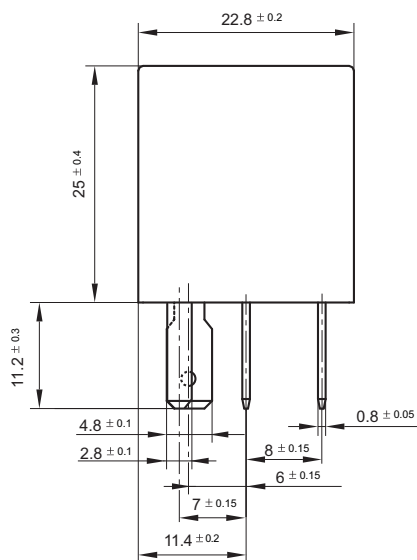
Outline Dimensions

HFV6-G/12-Z□□-□(XXX)



(Bottom view)

HFV6-G/12-Z□□N-□(XXX)



(Bottom view)

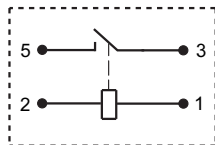
Remark: Terminal vertical deviation tolerance is 0.3mm.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

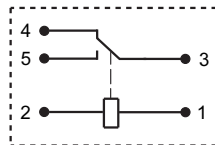
Unit: mm

Wiring Diagram

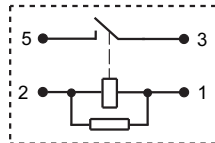
HFV6-G/12-H□□□(XXX)



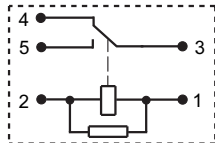
HFV6-G/12-Z□□□(XXX)



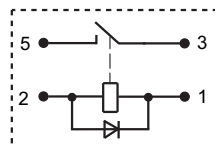
HFV6-G/12-H□□□-R(XXX)



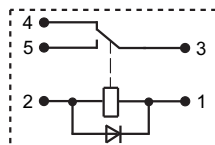
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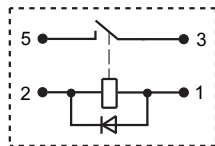
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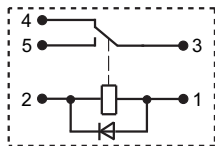
HFV6-G/12-Z□□□-D(XXX)



HFV6-G/12-H□□□-D1(XXX)



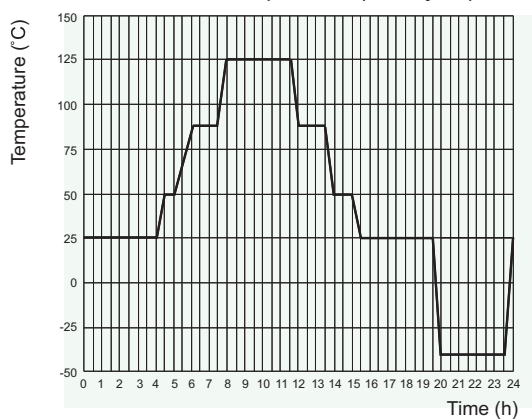
HFV6-G/12-Z□□□-D1(XXX)



CHARACTERISTIC CURVES

Ambient temperature curve of the electrical endurance test

Ambient temp. curve (one cycle)



- 1) The minimum temperature is -40°C.
- 2) The maximum temperature is 125°C.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFV6V

AUTOMOTIVE RELAY



Typical Applications

Lighting control, Heaters (front/rear windows),
Front/rear fog lamp control

Features

- Noise level $\leq 50\text{dB (A)}$
- 30A switching capability
- Ambient temp. range up to 125°C
- 1 Form A contact arrangement
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A	Flammability ⁵⁾	UL94-HB or better (meets FMVSS 302)
Voltage drop(initial)	NO:Typ.50mV;250mV max.(at 10A)	Termination	QC ⁷⁾
Max.continuous current ¹⁾	NO:20A (at 23°C);15A (at 85°C); 8A(at 125°C)	Construction	Dust protected
Max. switching current	NO: 100A (Lamp, surge current, 13.5VDC) NO: 30A (Resistive, 13.5VDC)	Unit weight	Approx. 15g
Min. contact load	1A 6VDC	Mechanical data	cover retention (pull & push): 200N min. terminal retention (pull & push): 100N min. terminal resistance to bending (front & side): 10N min. ⁶⁾
Electrical endurance	See "CONTACT DATA"	<ol style="list-style-type: none"> 1) For NO contacts, measured when applying 100% rated voltage on coil. 2) 1min, leakage current less than 1mA. 3) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit. 4) When energized, opening time of NO contacts shall not exceed 100μs, when non-energized, NO contacts shall not be closed. 5) FMVSS: Federal Motor Vehicle Safety Standard. 6) Test point is at 2mm away from terminal end, and after removing testing force, the terminal transfiguration shall not exceed 0.5mm. 7) Do NOT knock on relays with hard objects such as rubber rod and rubber hammer during mounting, which might lead to relay damage. 	
Mechanical endurance	1 x 10 ⁶ OPS (300OPS/min)		
Initial insulation resistance	100M Ω (at 500VDC)		
Dielectric strength ²⁾	500VAC		
Operate time	Max.: 10ms (at nomi. vol.)		
Release time ³⁾	Max.: 10ms		
Ambient temperature	-40°C to 125°C		
Vibration resistance	10Hz to 60Hz 0.35mm DA 60Hz to 500Hz 49m/s ²		
Shock resistance ⁴⁾	196m/s ²		

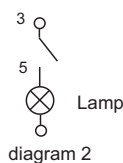
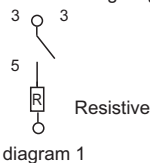
CONTACT DATA

at 23°C

Load voltage	Load type		Load current A	On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram ²⁾
			1A	On s	Off s			
			NO					
13.5VDC	Resistive	Make	20	2	2	1×10^5	AgSnO ₂	See diagram 1
		Break	20	2	2			
	Inductive	Make	40 ¹⁾	2	2	1×10^5	AgSnO ₂	See diagram 2
		Break	10	2	2			

1) Corresponds to the peak inrush current on initial actuation (cold filament).

2) The load wiring diagrams are listed below:



3) Please also contact Hongfa if the actual application load is different from what mentioned above.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA

at 23°C

Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance x(1±10%)	Parallel resistance x(1±5%) Ω	Equivalent resistance x(1±10%)Ω	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
							at 23°C	at 85°C
12	7.2	1.2	254	—	—	0.567	20	16
12	7.2	1.2	254	1200	209.6	0.687	20	16

1) Max. allowable overdrive voltage is stated with no load applied.

ORDERING INFORMATION

Type	HFV6V / 12 -H T -R (XXX)
Coil voltage	012: 12VDC
Contact arrangement	H: 1 Form A
Contact material	T: AgSnO ₂
Parallel coil components	R: Parallel transient suppression resistors Nil: Without parallel components
Special code ¹⁾	XXX: Customer special requirement Nil: Standard

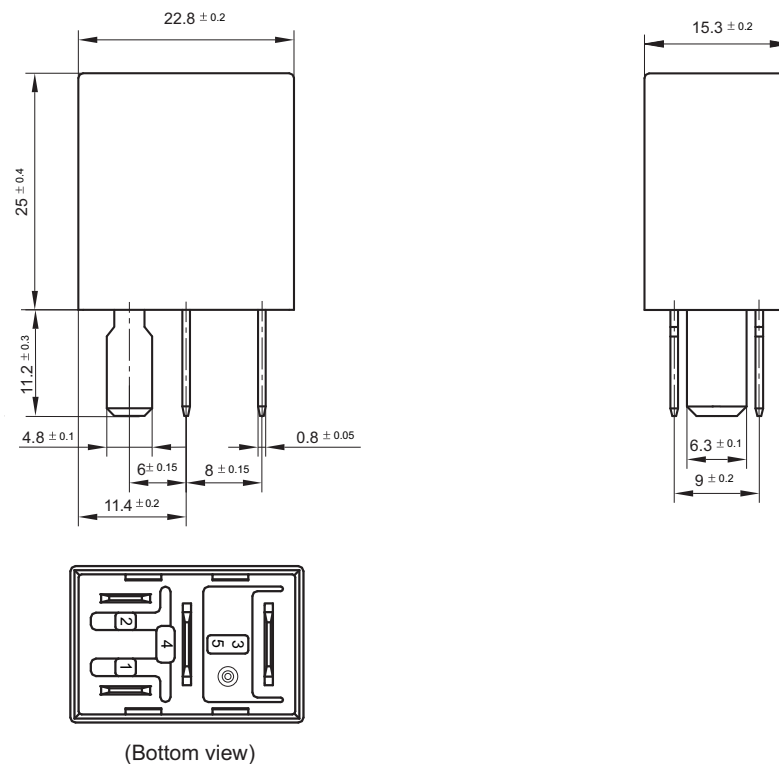
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa. e.g. (614) stands for a grey cover

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

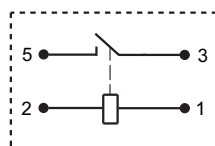
Outline Dimensions

HFV6V/12-HT(XXX)

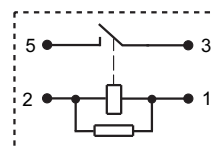


Wiring Diagram

HFV6V/12-HT(XXX)



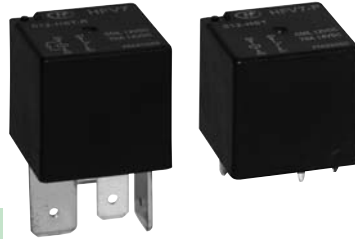
HFV6V/12-HT-R(XXX)



Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.



Typical Applications

Fog lamp & headlight control, Rear window defogger, Air-conditioning, Power distribution, Fuel pump control, ABS, Traction control system, Cooling fan control, Heating control, Power supply management system, Battery disconnection device

Features

- 70A switching capability
- Extended temp. range up to 125°C
- With transient suppression resistor available
- 1 Form A contact arrangement
- Plastic sealed and dust protected types available
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A	Shock resistance ^{5) 10)}	294m/s ²
Voltage drop (initial)	Typ.: 30mV (at 10A) Max.: 250mV (at 10A)	Flammability ⁶⁾	UL94-HB or better (meets FMVSS 302)
Max. continuous current ^{1) 10)}	70A (at 23°C); 50A (at 85°C)	Termination	QC ¹¹⁾ , PCB ⁷⁾
Max. switching current ¹⁰⁾	70A	Construction	Plastic sealed, Dust protected
Max. switching voltage ²⁾	50VDC	Unit weight	Approx. 38g
Min. contact load	1A 6VDC	Mechanical data ⁸⁾	cover retention (pull & push): 200N min. terminal retention (pull & push): 100N min. terminal resistance to bending (front & side): 10N min. ⁹⁾
Electrical endurance	See "CONTACT DATA"		
Mechanical endurance	1 x 10 ⁷ OPS (300OPS/min)		
Initial insulation resistance	100MΩ (at 500VDC)		
Dielectric strength ³⁾	500VAC		
Operate time ¹⁰⁾	Typ.: 6ms (at nomi. vol.) Max.: 10ms (at nomi. vol.)		
Release time ^{4) 10)}	Typ.: 4ms Max.: 7ms		
Ambient temperature	-40°C to 125°C		
Vibration resistance ^{5) 10)}	10Hz to 55Hz 3.0mm DA 55Hz to 500Hz 100m/s ²		

- 1) For 70A type, measured when applying 100% rated voltage on coil.
 2) For 70A type, see "Load limit curve" for details.
 3) 1min, leakage current less than 1mA
 4) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
 5) When energized, opening time of NO contacts shall not exceed 100μs.
 6) FMVSS 302: Federal Motor Vehicle Safety Standard.
 7) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C.(5±0.3)s.
 8) Only valid for QC version.
 9) Test point is at 2mm away from terminal end, and after removing testing force, the terminal transfiguration shall not exceed 0.5mm.
 10) Only for the 12VDC coil voltage type.
 11) Do NOT knock on relays with hard objects such as rubber rod and rubber hammer during mounting, which might lead to relay damage.

CONTACT DATA ⁴⁾

Load voltage	Load type		Load current A	On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram ³⁾	Ambient temp.
				On s	Off s				
Standard 13.5VDC	Resistive	Make	70	2	2	1×10 ⁵	AgSnO ₂	See diagram 1	at 23°C
		Break	70						
	Inductive	Make ¹⁾	150	2	4	1×10 ⁵	AgSnO ₂	See diagram 2	See Ambient temp. curve
		Break	50						
	Lamp ²⁾	Make	200	0.5	10	1×10 ⁵	AgSnO ₂	See diagram 3	
		Break	40						
Standard 27VDC	Resistive	Make	40	2	2	1×10 ⁵	AgSnO ₂	See diagram 1	at 23°C
		Break	40						

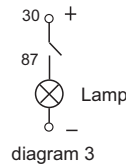
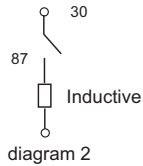
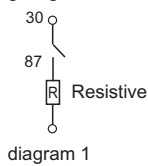


HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

- 1) Corresponds to the peak inrush current on initial actuation.
- 2) The load in the table excludes flasher. When applied in flasher, a special silver alloy (AgSnO₂) contact material should be used and the customer special code should be (170) as a suffix. Please heed the anode and cathode's request when wired, terminal 30 should connect with anode.
- 3) The load wiring diagrams are listed below:



- 4) Loads mentioned in this chart is for relays with no parallel diode or Zener Diode. For those with parallel diode, Zener Diode or other components, please contact Hongfa for more technical supports.
Please also contact Hongfa if the actual application load is different from what mentioned above.

COIL DATA

at 23°C

	Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance x(1±10%)Ω	Parallel resistance x(1±5%)Ω	Equivalent resistance Ω	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
								at 23°C	at 85°C
Standard	6	3.6	0.6	22.5	---	---	1.6	10	9
	6	3.6	0.6	22.5	180	20	1.8	9	9
	12	7.2	1.2	90	---	---	1.6	21	18
	12	7.2	1.2	90	680	79.5	1.8	18	18
	24	14.4	2.4	360	---	---	1.6	43	34
	24	14.4	2.4	360	2700	317.6	1.8	36	34
High power consumption	6	3.6	0.6	18	---	---	2.0	9	7
	6	3.6	0.6	18	180	16.4	2.2	9	7
	12	7.2	1.2	72	---	---	2.0	19	14
	12	7.2	1.2	72	680	65.1	2.2	18	14
	24	14.4	2.4	288	---	---	2.0	39	28
	24	14.4	2.4	288	2700	260.2	2.2	36	28

1) Max. allowable overdrive voltage is stated with no load applied.

ORDERING INFORMATION

HFV7 / 012- H 4 S P T M -R (L) (XXX)									
Type	HFV7: QC type HFV7-P: PCB type								
Coil voltage	006: 6VDC 012: 12VDC 024: 24VDC								
Contact arrangement	H: 1 Form A								
Version	4: Plastic Bracket 6: Metal Bracket Nil: No Bracket								
Construction ¹⁾	S: Plastic sealed ²⁾ Nil: Dust protected								
Coil power	P: High power consumption Nil: Standard								
Contact material	T: AgSnO ₂								
Length of terminal	M: Short terminal & QC type 14.5mm Nil: Long terminal & QC type 17mm, or PCB type								
Parallel coil ³⁾ components	R: Parallel transient suppression resistors D: Parallel transient suppression diode, with anode connected to terminal#85 D1: Parallel transient suppression diode, with anode connected to terminal#86 Nil: Without parallel components								
Load type	(L): Low load type 40A (Only for 12VDC and QC type) Nil: Standard type 70A								
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard								

Notes: 1) Dust protected version is recommended.

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) If parallel diode, Zener Diode or other components are required, please contact Hongfa for more technical supports.

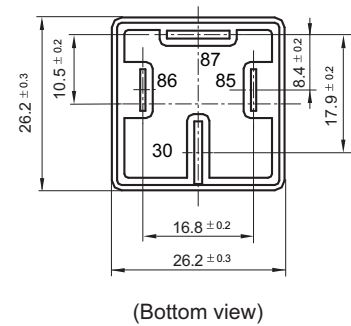
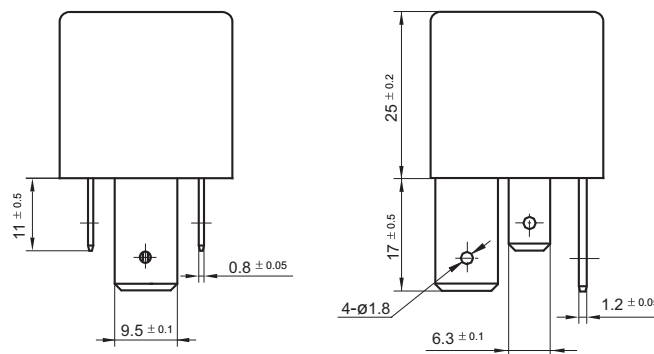
4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

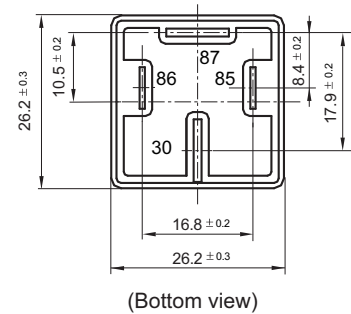
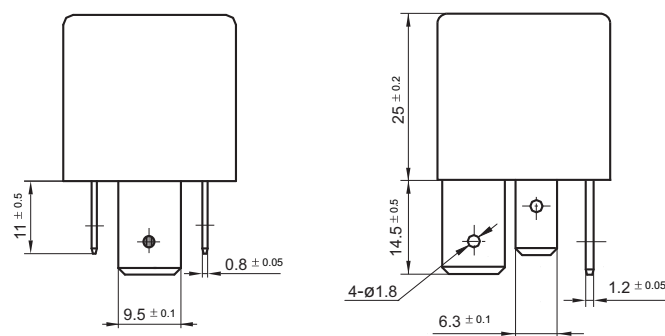
Unit: mm

Outline Dimensions

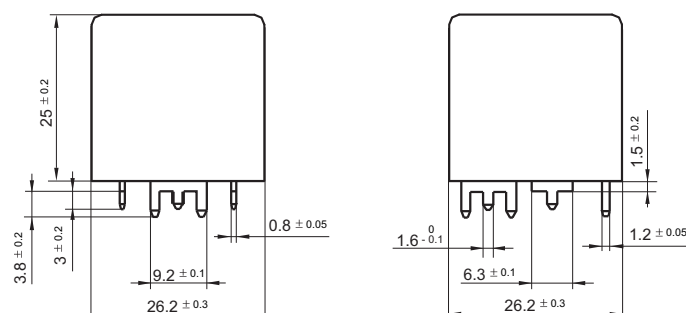
HFV7/□□□-H□□□-□□(XXX)



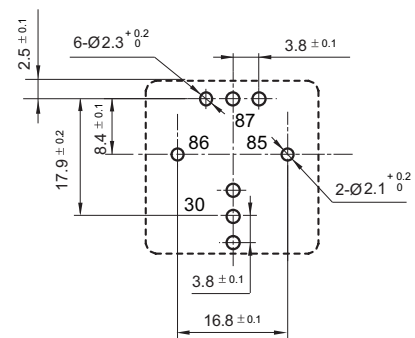
HFV7/□□□-H□□□M-□□(XXX)



HFV7-P/□□□-H□□□-□□(XXX)



PCB Layout (Bottom view)

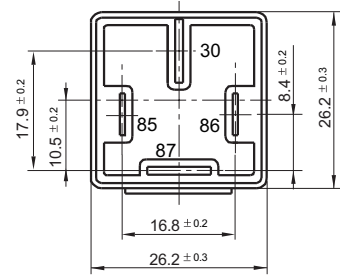
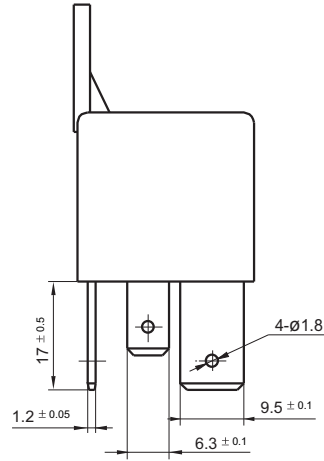
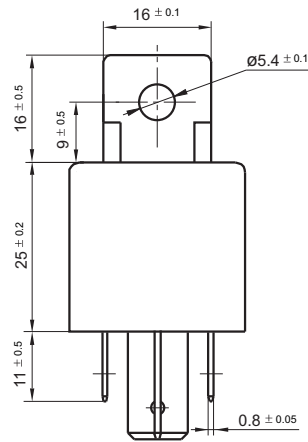


OUTLINE DIMENSIONS

Unit: mm

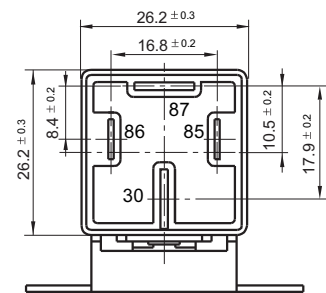
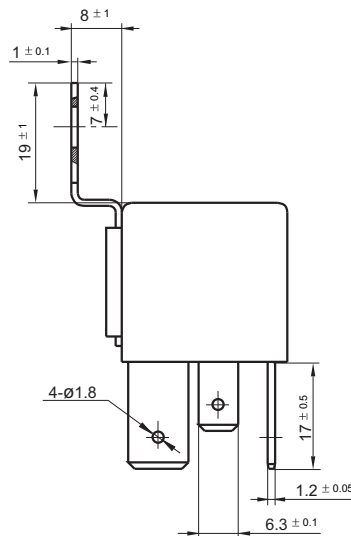
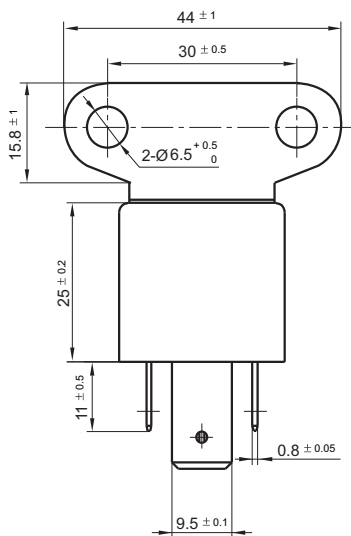
Outline Dimensions

HFV7/□□□-H4□□□-□□(XXX)



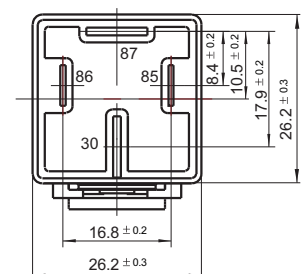
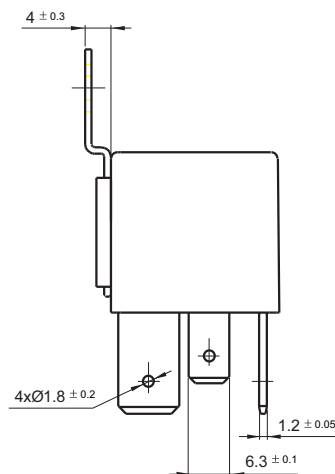
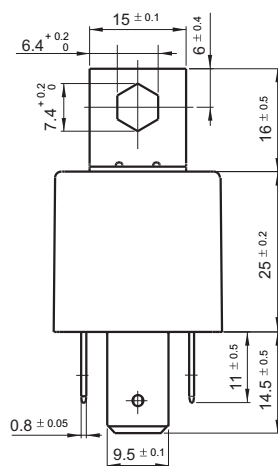
(Bottom view)

HFV7/□□□-H6□□□-□□(XXX)



(Bottom view)

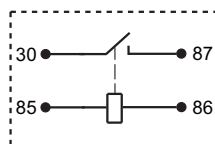
HFV7/□□□-H6□□□M-□□(311)(XXX)



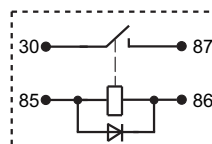
Remark: Terminal vertical deviation tolerance is 0.3mm.

Wiring Diagram

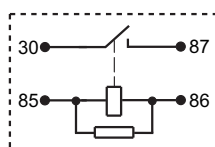
HFV7/□□□-H□□□□(XXX)



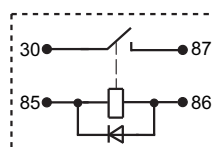
HFV7/□□□-H□□□□-D(XXX)



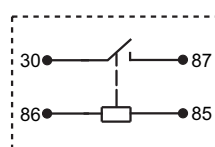
HFV7/□□□-H□□□□-R(XXX)



HFV7/□□□-H□□□□-D1(XXX)

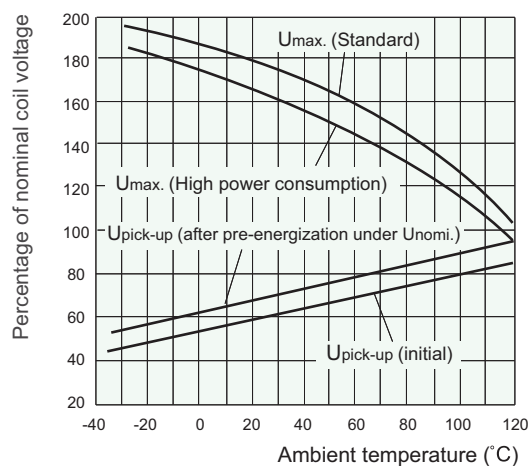


HFV7/□□□-H6□□□-□□(311)(XXX)



Characteristic Curves

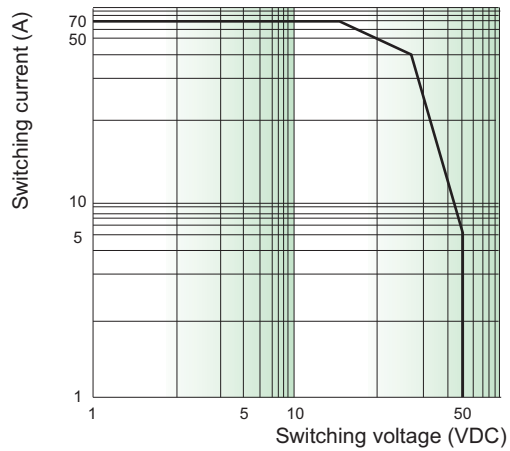
1. Coil operating voltage range



- 1) There should be no contact load applied when maximum continuous operation voltage is applied on coil.
- 2) The operating voltage is connected with coil energized time and voltage. After energized, the operating voltage will increase.
- 3) The maximum allowable coil temperature is 180°C. For the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 170°C under the different application ambient, different coil voltage and different load etc.
- 4) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

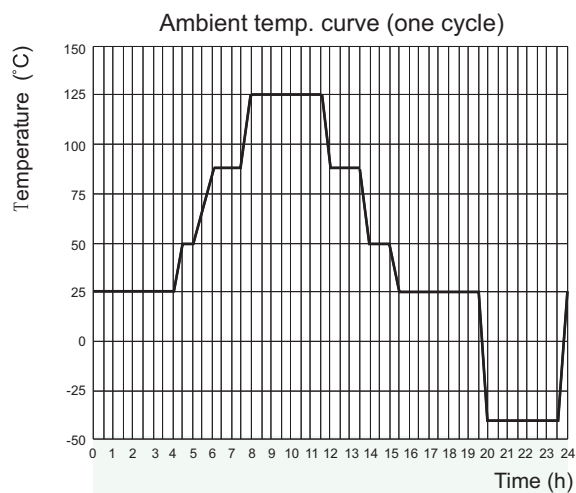
CHARACTERISTIC CURVES

2. Load limit curve



- 1) The contact load is resistive.
- 2) The load and electrical endurance tests are made according to "CONTACT DATA" parameters' table. If actual load voltage, current, or operate frequency is different from "CONTACT DATA" table, please arrange corresponding tests for confirmation.
- 3) This chart takes 70A load as example.

3. Ambient temperature curve of the electrical endurance test



- 1) The minimum temperature is -40°C.
- 2) The maximum temperature is 125°C.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFV7A

AUTOMOTIVE RELAY



Typical Applications

Fog lamp & headlight control, Rear window defogger, ABS, Fuel pump control, Air-conditioning, Cooling fan control, A/C blower, Horn control, Heating control, Battery disconnection device

Features

- 50A switching capability
- Extended temp. range up to 125°C
- With transient suppression resistor available
- 1 Form A & 1 Form C contact arrangement
- Plastic sealed and dust protected types available
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A, 1C	Ambient temperature	-40°C to 125°C
Voltage drop (initial)	NO:Typ.20mV,250mV max.(at 10A) NC:Typ.30mV,250mV max.(at 10A)	Vibration resistance ^{5) 8)}	10Hz to 50Hz 1.0mm DA 50Hz to 500Hz 50m/s ²
Max. continuous current ^{1) 8)}	60A (at 23°C); 40A (at 85°C)	Shock resistance ^{5) 8)}	196m/s ²
Max. switching current ⁸⁾	50A	Flammability ⁶⁾	UL94-HB or better (meets FMVSS 302)
Max. switching voltage ²⁾	50VDC	Termination	QC ⁹⁾
Min. contact load	1A 6VDC	Construction	Plastic sealed, Dust protected
Electrical endurance	See "CONTACT DATA"	Unit weight	Approx. 38g
Mechanical endurance	1 x 10 ⁷ OPS (300OPS/min)	Mechanical data	cover retention (pull & push): 200N min.
Initial insulation resistance	100MΩ (at 500VDC)		terminal retention (pull & push): 100N min.
Dielectric strength ³⁾	500VAC		terminal resistance to bending (front & side): 10N min. ⁷⁾
Operate time ⁸⁾	Typ.: 6ms (at nomi. vol.) Max.: 10ms (at nomi. vol.)		
Release time ^{4) 8)}	Typ.: 4ms Max.: 7ms		

- 1) For NO contacts, measured when applying 100% rated voltage on coil.
2) See "Load limit curve" for details.
3) 1min, leakage current less than 1mA.
4) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
5) When energized, opening time of NO contacts shall not exceed 100μs, when non-energized, opening time of NC contacts shall not exceed 100μs, meantime, NO contacts shall not be closed.
6) FMVSS 302: Federal Motor Vehicle Safety Standard.
7) Test point is at 2mm away from terminal end, and after removing testing force, the terminal transfiguration shall not exceed 0.5mm.
8) Only for the 12VDC coil voltage type.
9) Do NOT knock on relays with hard objects such as rubber rod and rubber hammer during mounting, which might lead to relay damage.

CONTACT DATA ⁴⁾

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram ³⁾	Ambient temp.
			1C		1A	On s	Off s				
			NO	NC	NO						
13.5 VDC	Resistive	Make	50	30	50	2	2	1×10 ⁵	AgSnO ₂	See diagram 1	at 23°C
		Break	50	30	50						
	Inductive	Make ¹⁾	150	---	150	2	4	1×10 ⁵	AgSnO ₂	See diagram 2	See Ambient temp. curve
		Break	35	---	35						
	Lamp ²⁾	Make	150	---	150	0.5	10	1×10 ⁵	AgSnO ₂	See diagram 3	
		Break	30	---	30						



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

- 1) Corresponds to the peak inrush current on initial actuation.
- 2) The load in the table excludes flasher. When applied in flasher, a special silver alloy (AgSnO₂) contact material should be used and the customer special code should be (170) as a suffix. Please heed the anode and cathode's request when wired, terminal 30 should connect with anode.
- 3) The load wiring diagrams are listed below:

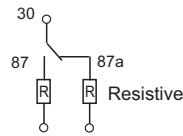


diagram 1

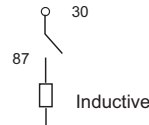


diagram 2

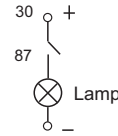


diagram 3

- 4) Loads mentioned in this chart is for relays with no parallel diode or Zener Diode. For those with parallel diode, Zener Diode or other components, please contact Hongfa for more technical supports.
Please also contact Hongfa if the actual application load is different from what mentioned above.

COIL DATA

at 23°C

	Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance $\times(1\pm10\%) \Omega$	Parallel resistance $\times(1\pm5\%) \Omega$	Equivalent resistance Ω	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
								at 23°C	at 85°C
Standard	6	3.6	0.6	22.5	---	--	1.6	10	9
	6	3.6	0.6	22.5	180	20	1.8	9	9
	12	7.2	1.2	90	---	---	1.6	21	18
	12	7.2	1.2	90	680	79.5	1.8	18	18
	24	14.4	2.4	360	---	---	1.6	43	34
	24	14.4	2.4	360	2700	317.6	1.8	36	34
High power consumption	6	3.6	0.6	18	---	--	2.0	9	7
	6	3.6	0.6	18	180	16.4	2.2	9	7
	12	7.2	1.2	72	---	---	2.0	19	14
	12	7.2	1.2	72	680	65.1	2.2	18	14
	24	14.4	2.4	288	---	---	2.0	39	28
	24	14.4	2.4	288	2700	260.2	2.2	36	28

1) Max. allowable overdrive voltage is stated with no load applied.

ORDERING INFORMATION

Type	HFV7A /	012	-H	4	S	P	T	-R	(XXX)
Coil voltage	006: 6VDC 012: 12VDC 024: 24VDC								
Contact arrangement	H: 1 Form A Z: 1 Form C								
Version	4: Plastic Bracket 6: Metal Bracket Nil: No Bracket								
Construction ¹⁾	S: Plastic sealed ²⁾ Nil: Dust protected								
Coil power	P: High power consumption Nil: Standard								
Contact material	T: AgSnO ₂								
Parallel coil ³⁾ components	R: Parallel transient suppression resistors D: Parallel transient suppression diode, with anode connected to terminal#85 D1: Parallel transient suppression diode, with anode connected to terminal#86 Nil: Without parallel components								
Special code ³⁾	XXX: Customer special requirement Nil: Standard								

Notes: 1) Dust protected version is recommended.

2) If parallel diode, Zener Diode or other components are required, please contact Hongfa for more technical supports.

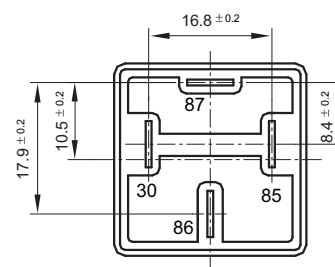
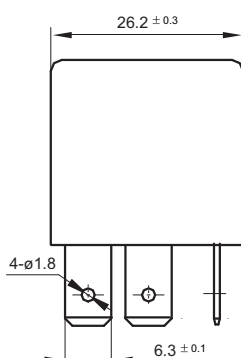
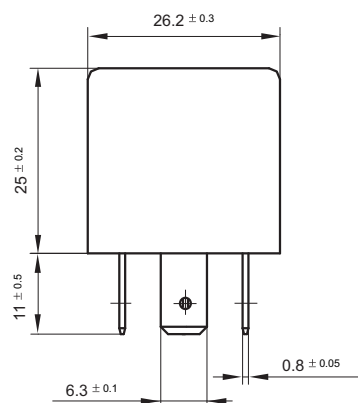
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

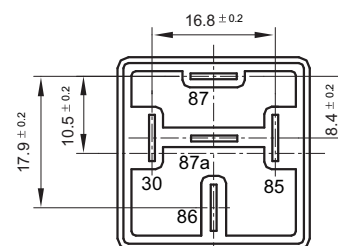
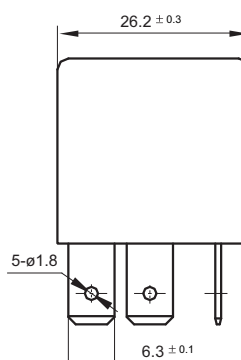
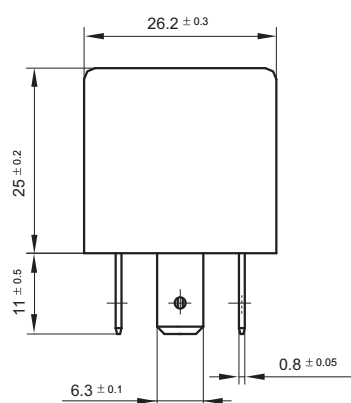
Outline Dimensions

HFV7A/□□□-H□□□-□(XXX)



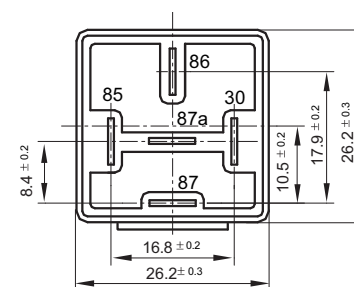
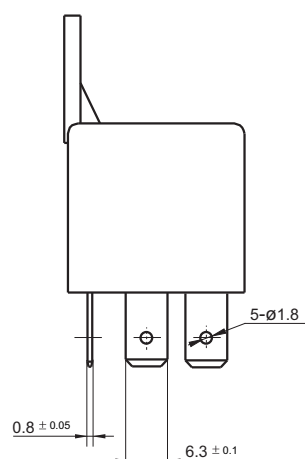
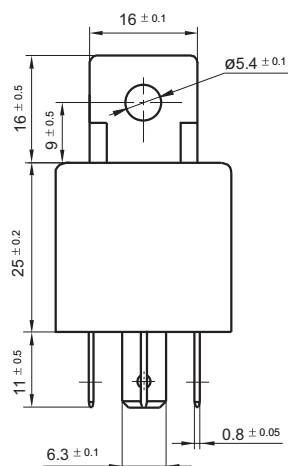
(Bottom view)

HFV7A/□□□-Z□□□-□(XXX)



(Bottom view)

HFV7A/□□□-Z4□□□-□(XXX)



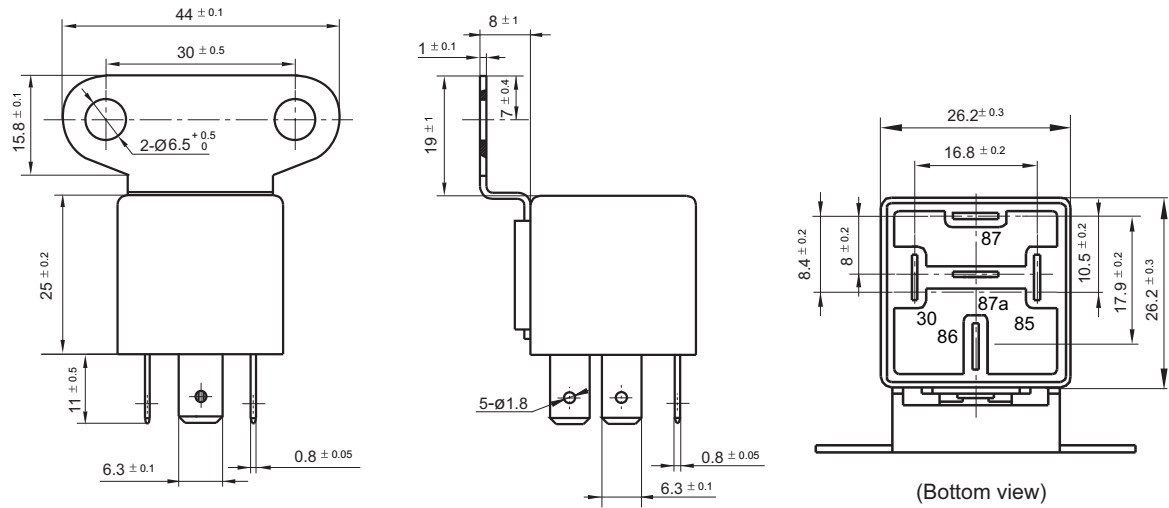
(Bottom view)

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

Outline Dimensions

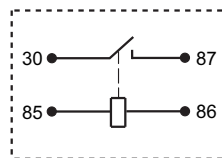
HFV7A/□□□-Z6□□□-□(XXX)



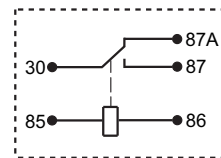
Remark: Terminal vertical deviation tolerance is 0.3mm.

Wiring Diagram

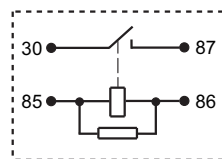
HFV7A/□□□-H□□□□(XXX)



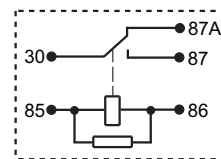
HFV7A/□□□-Z□□□□(XXX)



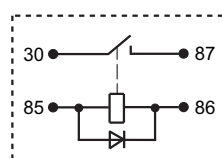
HFV7A/□□□-H□□□□-R(XXX)



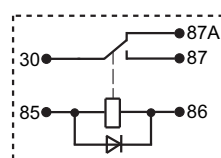
HFV7A/□□□-Z□□□□-R(XXX)



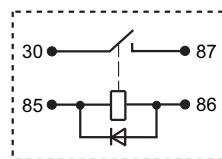
HFV7A/□□□-H□□□□-D(XXX)



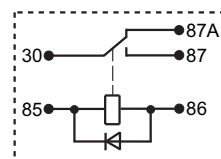
HFV7A/□□□-Z□□□□-D(XXX)



HFV7A/□□□-H□□□□-D1(XXX)

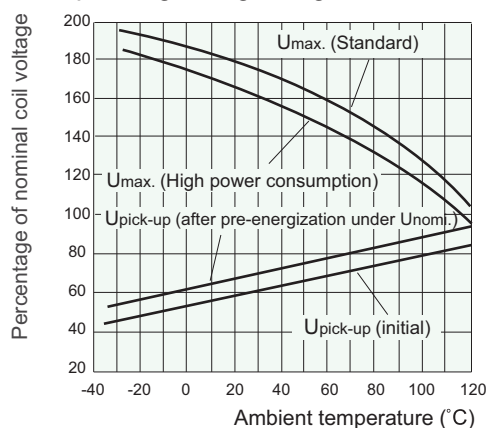


HFV7A/□□□-Z□□□□-D1(XXX)



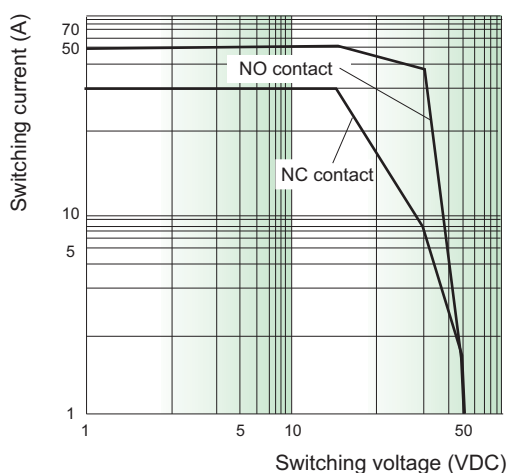
CHARACTERISTIC CURVES

1. Coil operating voltage range



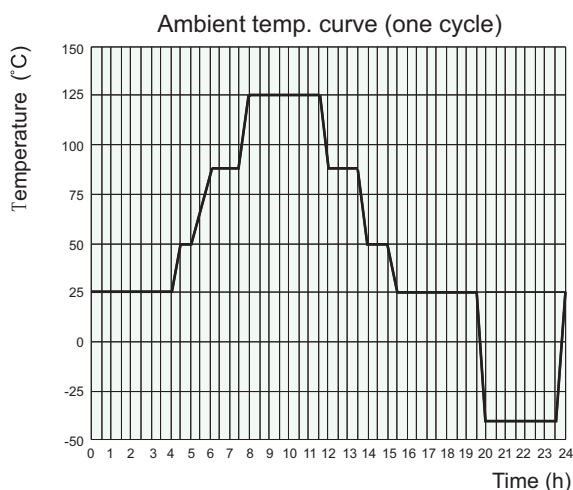
- 1) There should be no contact load applied when maximum continuous operation voltage is applied on coil.
- 2) The operating voltage is connected with coil energized time and voltage. After energized, the operating voltage will increase.
- 3) The maximum allowable coil temperature is 180°C. For the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 170°C under the different application ambient, different coil voltage and different load etc.
- 4) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

2. Load limit curve



- 1) The contact load is resistive.
- 2) The load and electrical endurance tests are made according to "CONTACT DATA" parameters' table. If actual load voltage, current, or operate frequency is different from "CONTACT DATA" table, please arrange corresponding tests for confirmation.

3. Ambient temperature curve of the electrical endurance test



- 1) The minimum temperature is -40°C.
- 2) The maximum temperature is 125°C.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product. We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFV9

AUTOMOTIVE RELAY



Typical Applications

Headlight control, Fuel pump control, Horn control, A/C compressor clutch

Features

- Extended temp. range up to 125°C
- 1 Form A & 1 Form C contact arrangement
- 2.8mm QC terminals
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A, 1C	Vibration	10Hz ~ 1000Hz 19.8m/s ²
Voltage drop (initial)	NO:Typ.20mV,250mV max.(at 10A) NC:Typ.25mV,250mV max.(at 10A)	resistance ^{5) 8)}	
Max.continuous current ^{1) 8)}	30A (at 125°C, 1h)	Shock resistance ^{5) 8)}	1000m/s ²
Max.switching current ⁸⁾	Make(NO): 100A ²⁾ Break(NO): 30A (Resistive, 13.5VDC)	Flammability ⁶⁾	UL94-HB or better (meets FMVSS 302)
Max. switching voltage	See "Load limit curve"	Termination	2.8mm QC ⁹⁾
Min. contact load	1A 6VDC	Construction	Plastic sealed, Dust protected
Electrical endurance	See "CONTACT DATA"	Unit weight	Approx. 20g
Mechanical endurance	1x10 ⁷ OPS 300OPS/min	Mechanical data	cover retention (pull & push): 200N min. terminal retention (pull & push): 100N min. terminal resistance to bending (front & side): 10N min. ⁷⁾
Initial insulation resistance	100MΩ (at 500VDC)		
Dielectric strength ³⁾	between contacts: 500VAC between coil & contacts: 500VAC		
Operate time ⁸⁾	Typ.: 5ms (at nomi. vol.) Max.: 10ms (at nomi. vol.)		
Release time ^{4) 8)}	Typ.: 3ms Max.: 10ms		
Ambient temperature	-40°C to 125°C		

- 1) For NO contacts, measured when applying 100% rated voltage on coil.
- 2) Inrush peak current under lamp load, at 13.5VDC.
- 3) 1min, leakage current less than 1mA.
- 4) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
- 5) When energized, opening time of NO contacts shall not exceed 1ms, when non-energized, opening time of NC contacts shall not exceed 1ms, meantime, NO contacts shall not be closed.
- 6) FMVSS: Federal Motor Vehicle Safety Standard.
- 7) Test point is at 2mm away from terminal end, and after removing testing force, the terminal transfiguration shall not exceed 0.5mm.
- 8) Only for the 12VDC coil voltage type.
- 9) Do NOT knock on relays with hard objects such as rubber rod and rubber hammer during mounting, which might lead to relay damage.

CONTACT DATA²⁾

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram ¹⁾	Ambient temp.
			1C		1A	On s	Off s				
			NO	NC	NO						
13.5VDC	Resistive	Make	20	10	20	2	2	1×10 ⁵	AgSnO ₂	See diagram 1	See Ambient Temp. Curve
		Break	20	10	20						
	Lamp	Make	100	---	100	2	2	1×10 ⁵	AgSnO ₂	See diagram 2	
		Break	20	---	20						
	Inductive	Make	40	20	40	2	4	1×10 ⁵	AgSnO ₂	See diagram 3	
		Break	20	10	20						
27VDC	Resistive	Make	20	10	20	2	2	1×10 ⁵	AgSnO ₂	See diagram 1	
		Break	20	10	20						

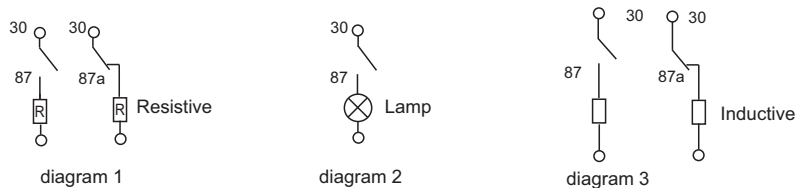


HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

1) The load wiring diagrams are listed below (Ratings of NO, NC are tested based on different samples separately) :



2) Loads mentioned in this chart is for relays with no parallel diode or Zener Diode. For those with parallel diode, Zener Diode or other components, please contact Hongfa for more technical supports.
Please also contact Hongfa if the actual application load is different from what mentioned above.

COIL DATA							at 23°C	
Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance $\times(1\pm10\%) \Omega$	Parallel resistance $\times(1\pm5\%) \Omega$	Equivalent resistance Ω	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
							at 23°C	at 85°C
12	7.2	1.2	109	---	---	1.3	20.4	14.9
12	7.2	1.2	109	680	93.9	1.5	20.4	14.9
24	14.4	2.4	360	---	---	1.6	36	28
24	14.4	2.4	360	2700	317.6	1.8	36	28

1) Max. allowable overdrive voltage is stated with no load applied.

ORDERING INFORMATION

Type	HFV9 / 012 -1H S R (XXX)
Coil voltage	012: 12VDC 024: 24VDC
Contact arrangement	1H: 1 Form A 1Z: 1 Form C
Construction	S: Plastic sealed Nil: Dust protected
Parallel coil components	R: Parallel transient suppression resistors Nil: Without parallel components
Special code ¹⁾	XXX: Customer special requirement Nil: Standard

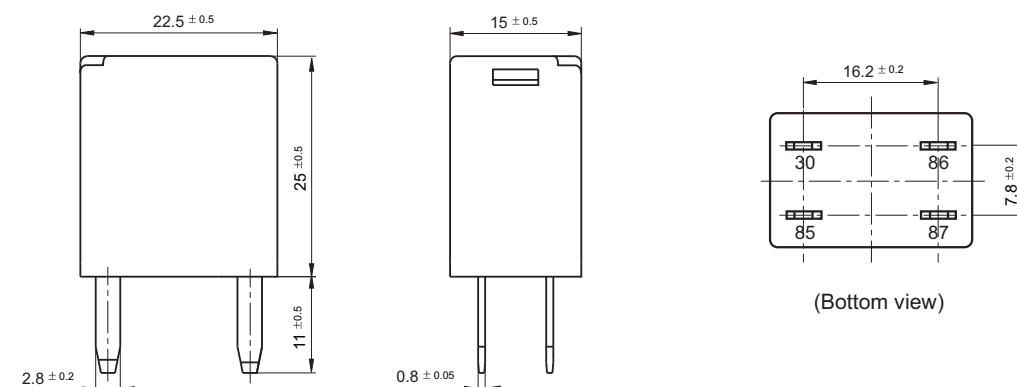
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

Outline Dimensions

HFV9/□□□-1H□□(XXX)



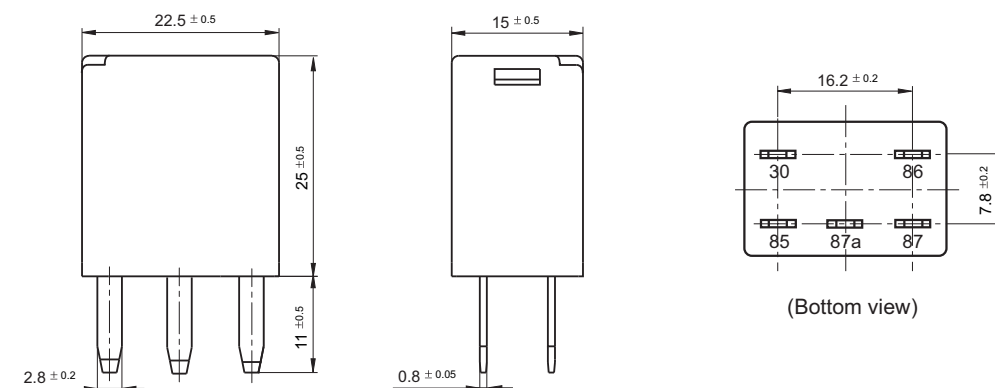
Remark: Terminal vertical deviation tolerance is 0.3mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

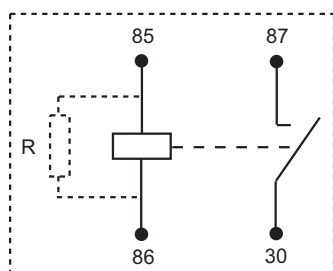
HFV9/□□□-1Z□□(XXX)



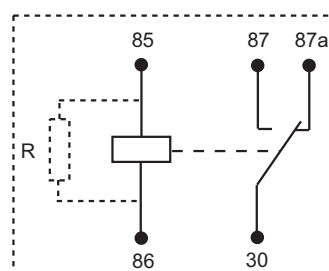
Remark: Terminal vertical deviation tolerance is 0.3mm.

Wiring Diagram

HFV9/□□□-1H□□(XXX)

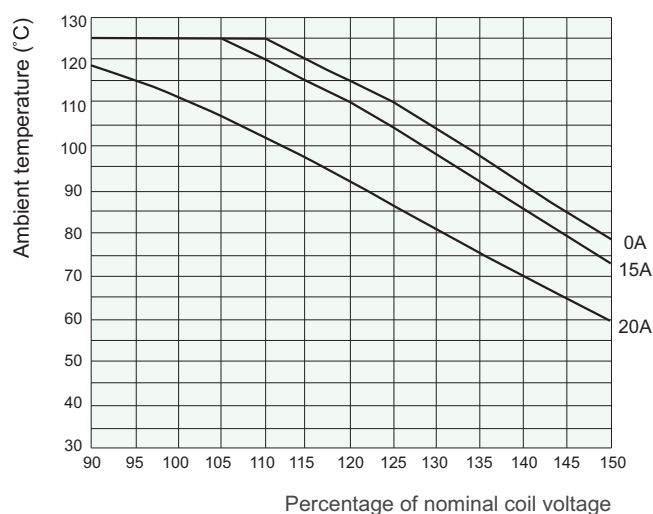


HFV9/□□□-1Z□□(XXX)



CHARACTERISTIC CURVES

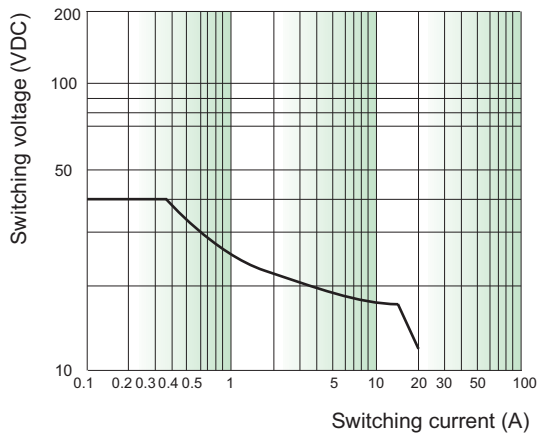
1. Coil operating voltage range



- 1) There should be no contact load applied when maximum continuous operation voltage is applied on coil.
- 2) This chart takes 12VDC coil voltage version as example.
- 3) The maximum allowable coil temperature is 180°C. For the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 170°C under the different application ambient, different coil voltage and different load etc.
- 4) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

CHARACTERISTIC CURVES

2. Load limit curve (at 23°C)



- 1) This chart takes 12VDC, NO contact, resistive load as example.
- 2) The load and electrical endurance tests are made according to "CONTACT DATA" parameters' table. If actual load voltage, current, or operate frequency is different from "CONTACT DATA" table, please arrange corresponding tests for confirmation.

3. Ambient temperature curve of the electrical endurance test

Ambient temp. curve (one cycle)



- 1) The minimum temperature is -40°C.
- 2) The maximum temperature is 125°C.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFV9-G

AUTOMOTIVE RELAY



Typical Applications

Headlight control, Fuel pump control, Horn control, A/C compressor clutch, Star / stop control

Features

- Extended temp. range up to 125°C
- 1 Form A & 1 Form C contact arrangement
- 2.8mm QC terminals
- Standard type and weatherproof type available
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A, 1C
Voltage drop (initial)	NO:Typ.20mV,250mV max.(at 10A) NC:Typ.25mV,250mV max.(at 10A)
Max.continuous current ¹⁾	35A (at 125°C, 1h)
Max.switching current	Make(NO): 150A ²⁾ Break(NO): 35A (Resistive, 13.5VDC)
Max. switching voltage	See "Load limit curve"
Min. contact load	1A 6VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	1x10 ⁷ OPS 300OPS/min
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength ³⁾	between contacts: 500VAC between coil & contacts: 500VAC
Operate time	Typ.: 5ms (at nomi. vol.) Max.: 10ms (at nomi. vol.)
Release time ⁴⁾	Typ.: 3ms Max.: 10ms
Ambient temperature	-40°C to 125°C

Vibration resistance ⁵⁾	10Hz ~ 1000Hz 19.8m/s ²
Shock resistance ⁵⁾	1000m/s ²
Flammability ⁶⁾	UL94-HB or better (meets FMVSS 302)
Termination	2.8mm QC ⁸⁾
Construction	Plastic sealed, Dust protected
Unit weight	Approx. 20g(Standard)
Mechanical data	cover retention (pull & push): 200N min. terminal retention (pull & push): 100N min. terminal resistance to bending (front & side): 10N min. ⁷⁾

- 1) For NO contacts, measured when applying 100% rated voltage on coil.
- 2) Inrush peak current under lamp load, at 13.5VDC.
- 3) 1min, leakage current less than 1mA.
- 4) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
- 5) For standard type When energized, opening time of NO contacts shall not exceed 1ms, when non-energized, opening time of NC contacts shall not exceed 1ms, meantime, NO contacts shall not be closed.
- 6) FMVSS: Federal Motor Vehicle Safety Standard.
- 7) Test point is at 2mm away from terminal end, and after removing testing force, the terminal transfiguration shall not exceed 0.5mm.
- 8) Do NOT knock on relays with hard objects such as rubber rod and rubber hammer during mounting, which might lead to relay damage.

CONTACT DATA ²⁾

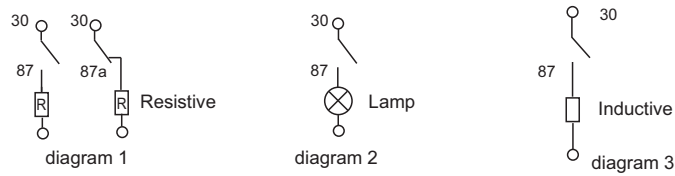
Load voltage	Load type		Load current A			On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram ¹⁾	Ambient temp.
			1C		1A	On s	Off s				
			NO	NC	NO						
13.5VDC	Resistive	Make	35	20	35	2	2	1×10 ⁵	AgSnO ₂	See diagram 1	See Ambient Temp. Curve
		Break	35	20	35						
	Lamp	Make	150	---	150	2	2	1×10 ⁵	AgSnO ₂	See diagram 2	
		Break	30	---	30						
	Inductive	Make	80	---	80	2	2	1×10 ⁵	AgSnO ₂	See diagram 3	
		Break	33	---	33						



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED 2017 Rev. 1.10 (Preliminary)

1) The load wiring diagrams are listed below (Ratings of NO, NC are tested based on different samples separately) :



2) Loads mentioned in this chart is for relays with no parallel diode or Zener Diode. For those with parallel diode, Zener Diode or other components, please contact Hongfa for more technical supports.
Please also contact Hongfa if the actual application load is different from what mentioned above.

COIL DATA							at 23°C	
Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance $\times(1\pm10\%) \Omega$	Parallel resistance $\times(1\pm5\%) \Omega$	Equivalent resistance Ω	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
							at 23°C	at 85°C
12	7.2	1.2	124	---	---	1.2	20.4	14.9
12	7.2	1.2	124	680	104.9	1.4	20.4	14.9

1) Max. allowable overdrive voltage is stated with no load applied.

ORDERING INFORMATION

Type	HFV9-G / 12 -H 5 S -R (XXX)						
Coil voltage	12: 12VDC						
Contact arrangement	H: 1 Form A Z: 1 Form C						
Version	5: Weatherproof cover(only applicable to dust protected version) Nil: Standard						
Construction	S: Plastic sealed Nil: Dust protected						
Parallel coil components	R: Parallel transient suppression resistors Nil: Without parallel components						
Special code ¹⁾	XXX: Customer special requirement Nil: Standard						

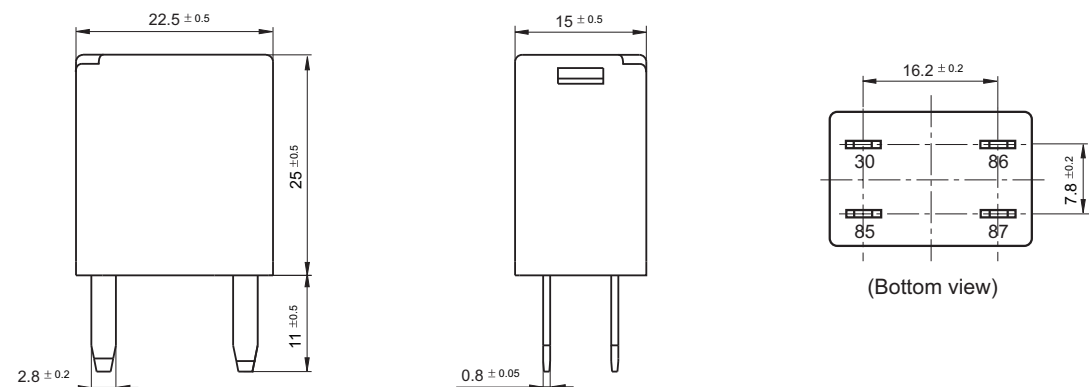
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

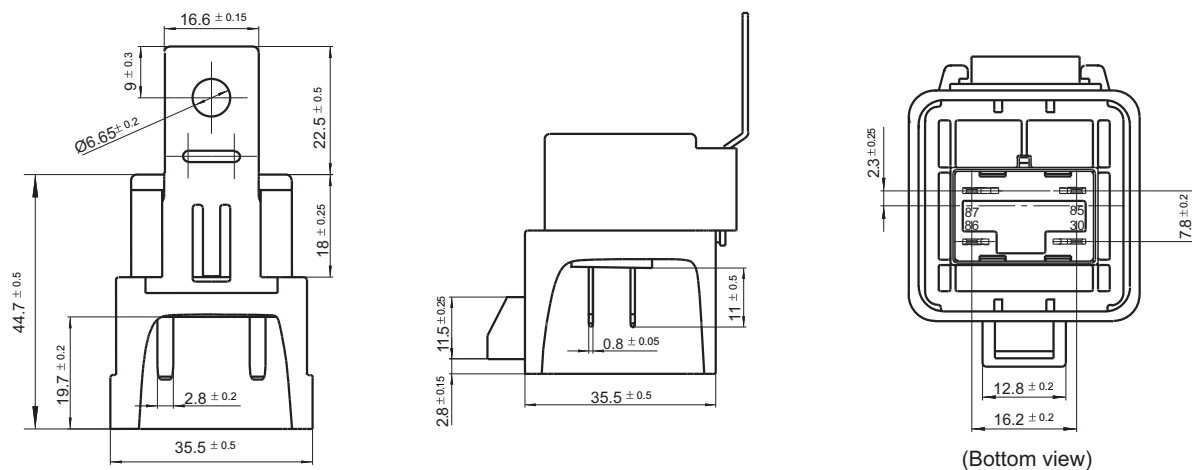
Outline Dimensions

HFV9-G/12-H□-□(XXX)

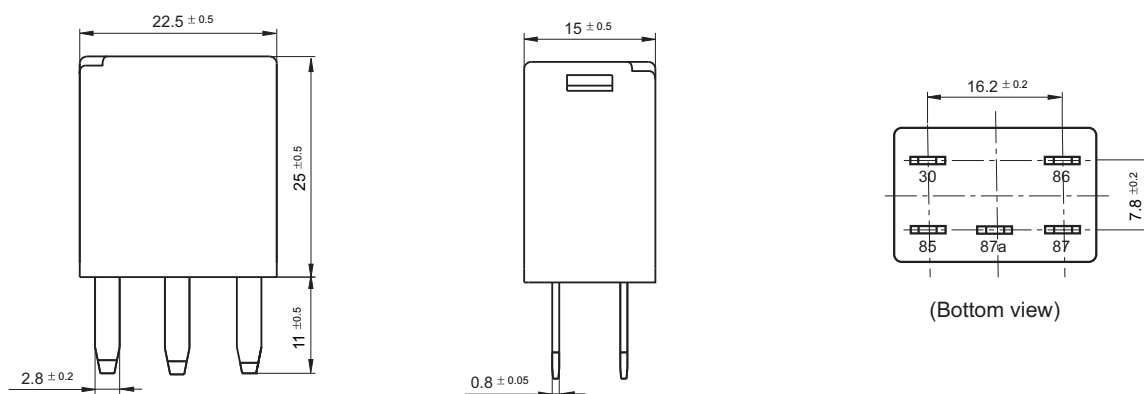


Outline Dimensions

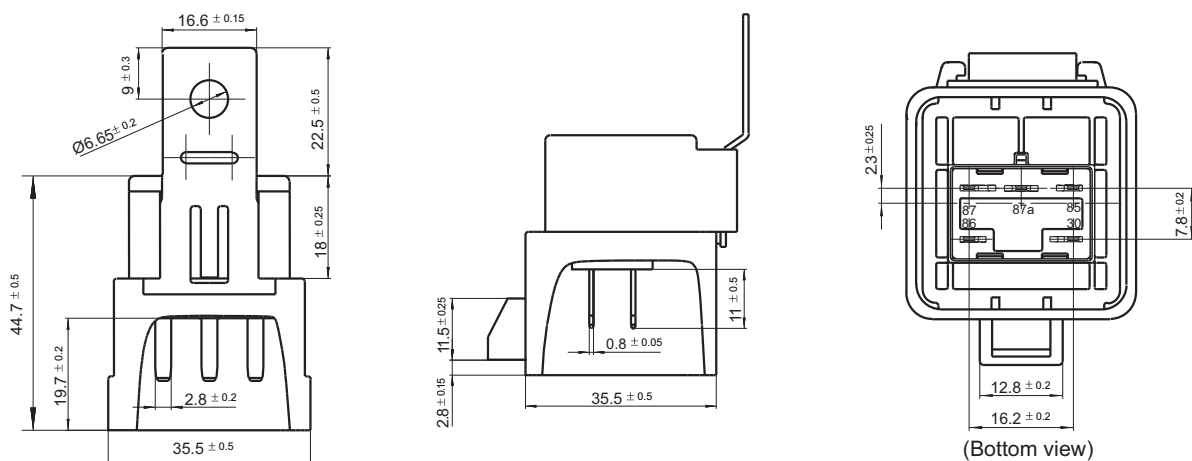
HFV9-G/12-H5□-□(XXX)



HFV9-G/12-Z□-□(XXX)

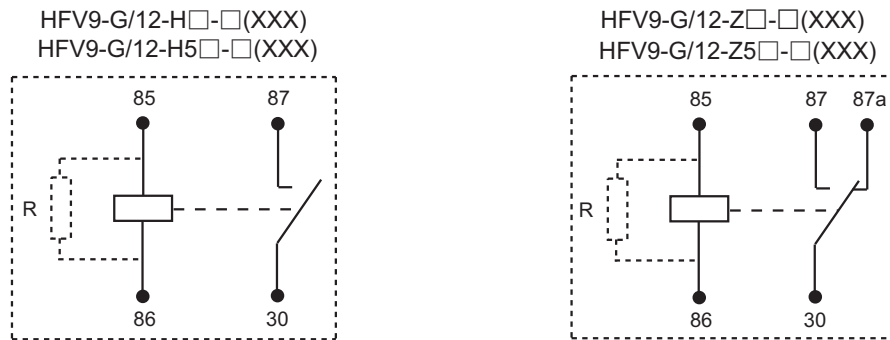


HFV9-G/12-Z5□-□(XXX)



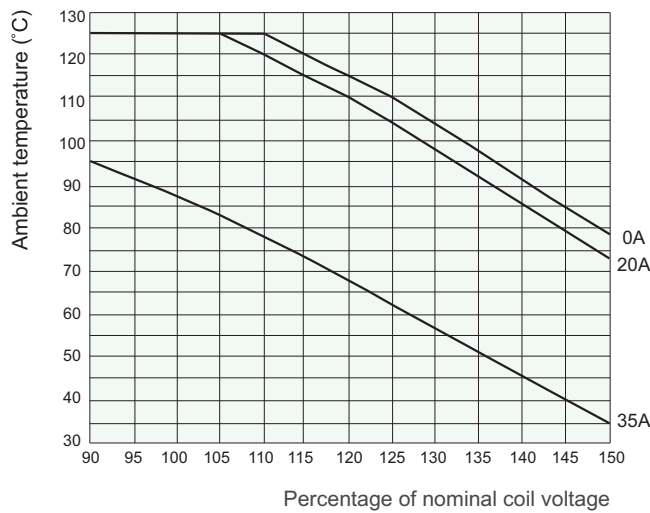
Remark: Terminal vertical deviation tolerance is 0.3mm.

Wiring Diagram



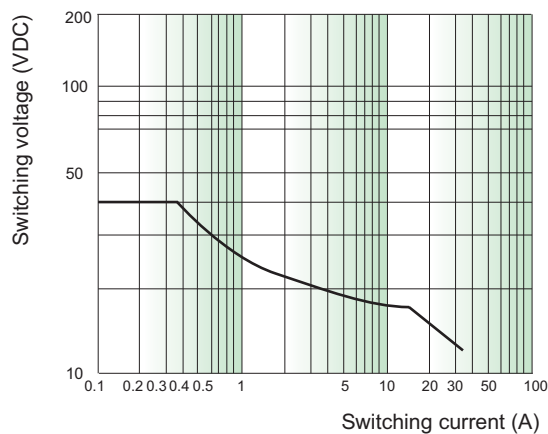
CHARACTERISTIC CURVES

1. Coil operating voltage range



- 1) There should be no contact load applied when maximum continuous operation voltage is applied on coil.
- 2) This chart takes 12VDC coil voltage version as example.
- 3) The maximum allowable coil temperature is 180°C. For the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 170°C under the different application ambient, different coil voltage and different load etc.
- 4) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

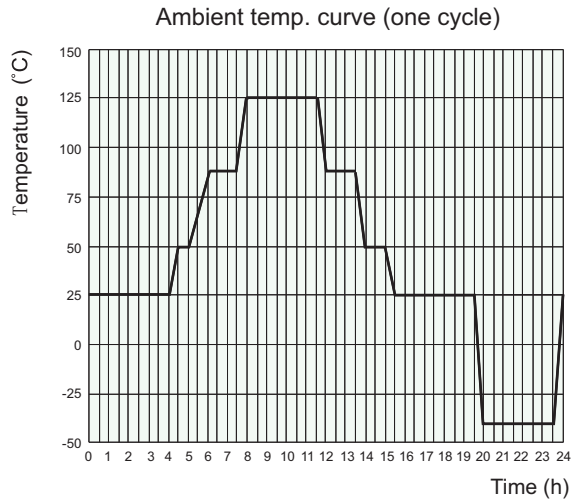
2. Load limit curve (at 23°C)



- 1) This chart takes 12VDC, NO contact, resistive load as example.
- 2) The load and electrical endurance tests are made according to "CONTACT DATA" parameters' table. If actual load voltage, current, or operate frequency is different from "CONTACT DATA" table, please arrange corresponding tests for confirmation.

CHARACTERISTIC CURVES

3. Ambient temperature curve of the electrical endurance test



- 1) The minimum temperature is -40°C.
- 2) The maximum temperature is 125°C.

Disclaimer

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We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFV11

AUTOMOTIVE RELAY



Typical Applications

Headlight control, Fuel pump control, Horn control, A/C compressor clutch

Features

- Miniaturized package: (15.6 x 15.2 x 16.4) mm
- Extended temperature range: -40°C to 125°C
- 1 Form A contact arrangement
- 2.8mm QC terminals available
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A	Vibration resistance ⁵⁾	10Hz ~ 1000Hz 19.8m/s ²
Voltage drop (initial)	Typ.: 20mV (at 10A) Max.: 250mV (at 10A)	Shock resistance ⁵⁾	1000m/s ²
Max.continuous current ¹⁾	20A(at 125°C, 1h)	Flammability ⁶⁾	UL94-HB or better (meets FMVSS 302)
Max.switching current	Make (NO): 100A ²⁾ Break (NO): 30A (at 13.5VDC)	Termination	2.8mm QC ⁸⁾
Min. contact load	1A 6VDC	Construction	Plastic sealed, Dust protected
Electrical endurance	See "CONTACT DATA"	Unit weight	Approx. 11g
Mechanical endurance	1x10 ⁶ OPS 300OPS/min	Mechanical data	cover retention (pull & push): 200N min. terminal retention (pull & push): 100N min. terminal resistance to bending (front & side): 10N min. ⁷⁾
Initial insulation resistance	100MΩ (at 500VDC)		
Dielectric strength ³⁾	between contacts: 500VAC between coil & contacts: 500VAC		
Operate time	Typ.: 5ms (at nomi. vol.) Max.: 10ms (at nomi. vol.)		
Release time ⁴⁾	Typ.: 3ms Max.: 10ms		
Ambient temperature	-40°C to 125°C		

- 1) For NO contacts, measured when applying 100% rated voltage on coil.
2) Inrush peak current under lamp load, at 13.5VDC.
3) 1min, leakage current less than 1mA.
4) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
5) When energized, opening time of NO contacts shall not exceed 100μs.
6) FMVSS: Federal Motor Vehicle Safety Standard.
7) Test point is at 2mm away from terminal end, and after removing testing force, the terminal transfiguration shall not exceed 0.5mm.
8) Do NOT knock on relays with hard objects such as rubber rod and rubber hammer during mounting, which might lead to relay damage.

CONTACT DATA ¹⁾

Load voltage	Load type		Load current A	On/Off ratio		Electrical endurance OPS	Contact material	Ambient temp.
			1A	On s	Off s			
			NO					
13.5VDC	Resistive	Make	20	2	2	1×10 ⁵	AgSnO ₂	See Ambient Temp. Curve
		Break	20					
	Inductive	Make	40	2	2	1×10 ⁵	AgSnO ₂	
		Break	20					
	Lamp	Make	100	2	2	1×10 ⁵	AgSnO ₂	
		Break	20					

1) Loads mentioned in this chart is for relays with no parallel diode or Zener Diode. For those with parallel diode, Zener Diode or other components, please contact Hongfa for more technical supports.

Please also contact Hongfa if the actual application load is different from what mentioned above.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

COIL DATA at 23°C

Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance $\times(1\pm 10\%) \Omega$	Parallel resistance $\times(1\pm 5\%) \Omega$	Equivalent resistance Ω	Power consumption W
12	7.2	1.2	155	---	---	0.95
12	7.2	1.2	155	1000	135	1.1

ORDERING INFORMATION

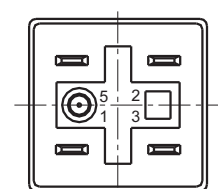
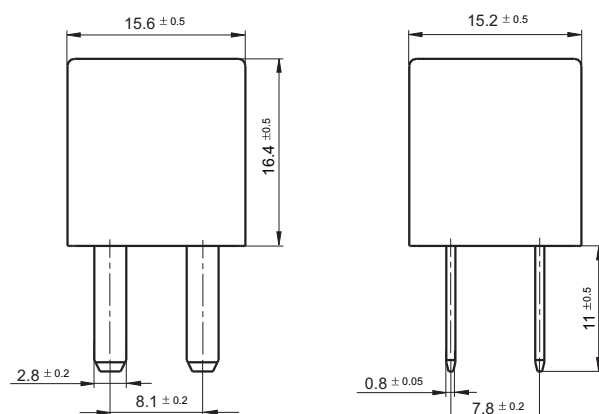
Type	HFV11 /	12	-H	S	-R	(XXX)
Coil voltage	12: 12VDC					
Contact arrangement	H: 1 Form A					
Construction	S: Plastic sealed Nil: Dust protected					
Parallel coil components	R: Parallel transient suppression resistors Nil: Without parallel components					
Special code ¹⁾	XXX: Customer special requirement Nil: Standard					

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

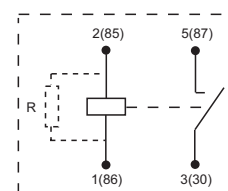
Unit: mm

Outline Dimensions



(Bottom view)

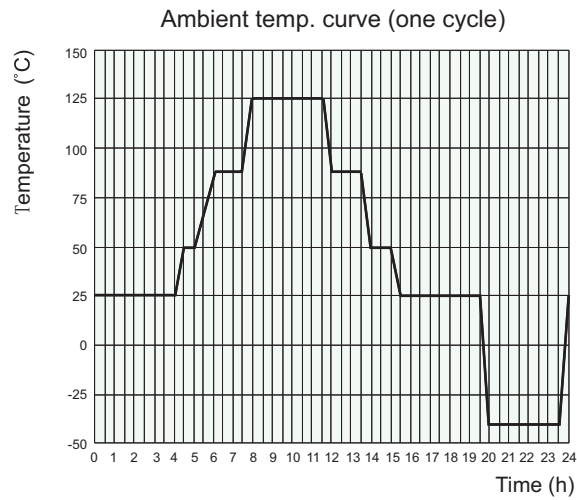
Wiring Diagram



Remark: Terminal vertical deviation tolerance is 0.3mm.

CHARACTERISTIC CURVES

Ambient temperature curve of the electrical endurance test



- 1) The minimum temperature is -40°C.
- 2) The maximum temperature is 125°C.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HFV12

AUTOMOTIVE RELAY



Typical Applications

Battery disconnection in order to prevent fire caused by short circuits during an accident, Energy-management

Features

- Battery Disconnect Relay (Energy-management)
- 2 coils latching automotive relay
- Continuous current of 190 A at 85°C
- Load terminal connection: screw connection (M8 bolt)
- Coil terminal connection: 4-pin connector (AMP 0.070 series)
- Weight: Approx.210g

CHARACTERISTICS

Contact arrangement	1A	Noise level	Typ.: 86dB
Voltage drop (initial)	Typ.: 50mV (at 100A) Max.: 250mV (at 100A)	Protection class	IP54
Max. continuous current ¹⁾	NO: 190A (at 70°C, 48h)	Ambient temperature	-40°C to 120°C
Max. switching current ²⁾	180A	Vibration resistance ⁴⁾	22HZ to 500Hz 98m/s ²
Max. switching voltage	16VDC	Shock resistance ⁴⁾	392m/s ²
Non operate voltage	2V (at 23°C)	Termination	QC, Screw
Limited current	1500A (0.2s, at 70°C) 1000A (1s, at 70°C)	Construction	Plastic sealed
Electrical endurance	See "CONTACT DATA"	Unit weight	Approx.210g
Mechanical endurance	2 x 10 ⁵ OPS (30OPS/min)	1) To energize an impulse for 50ms to 100ms at coil terminals so that contacts switch. 2) At 23°C, 13.5VDC, on & off rate at 1s:5s, resistive load (100 cycles). 3) 1min, leakage current less than 1mA. 4) When energized, opening time of NO contacts shall not exceed 100μs, when non-energized, opening time of NCcontacts shall not exceed 100μs, meantime, NO contacts shall not be closed.	
Initial insulation resistance	100MΩ (at 500VDC)		
Dielectric strength ³⁾	500VAC (1min, leakage current less than 1mA)		
Operate time	Typ.: 5ms (at nomi. vol.) Max.: 20ms (at nomi. vol.)		
Release time	Typ.: 5ms (at nomi. vol.) Max.: 20ms (at nomi. vol.)		

CONTACT DATA

Load voltage	Load type	Load current A	On/Off ratio		Electrical endurance OPS	Contact material	Ambient temp.
			On s	Off s			
14VDC	Inductive 0.1mH	100	1	5	5 × 10 ⁴	AgSnO ₂	See Ambient temp. curve
	Inductive 0.1mH	180	1	5	1.5 × 10 ⁴		

COIL DATA

at 23°C

Nominal Voltage VDC	Ambient temperature	Pick-up Voltage VDC	Drop-out voltage VDC ¹⁾	Set Coil resistance (between pin2 & pin4) x(1±10%)Ω	Reset Coil resistance (between pin1 & pin3) x(1±10%)Ω	Max. Allowable Voltage VDC
12	-40°C	≤4.3	≤7.0	---	---	---
	23°C	≤6.0	≤7.0	5	5	28
	85°C	≤9.0	≤7.0	---	---	16
	120°C	≤10.5	≤7.0	---	---	---

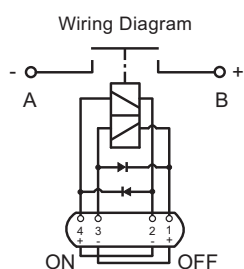


HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2015 Rev. 1.00

1) The impulse width should be 50ms to 100 ms. Energizing voltage mode should be acted as per the diagram below:



Coil terminal	Function
4	Set Coil (+)
3	Reset Coil (-)
2	Set Coil (-)
1	Reset Coil (+)
A	Load terminal
B	Load terminal

2) Max. allowable overdrive voltage is stated with no load applied and minimum coil resistance. Max. allowed infiction time is 1s.

ORDERING INFORMATION

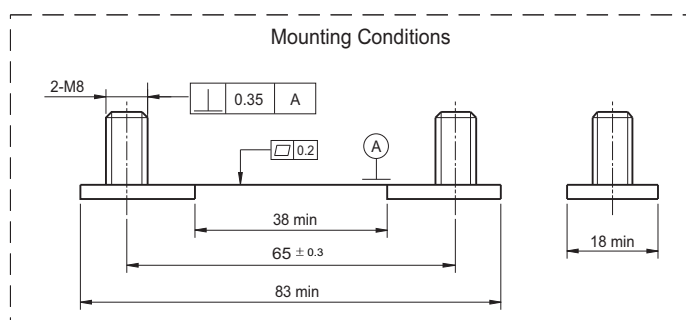
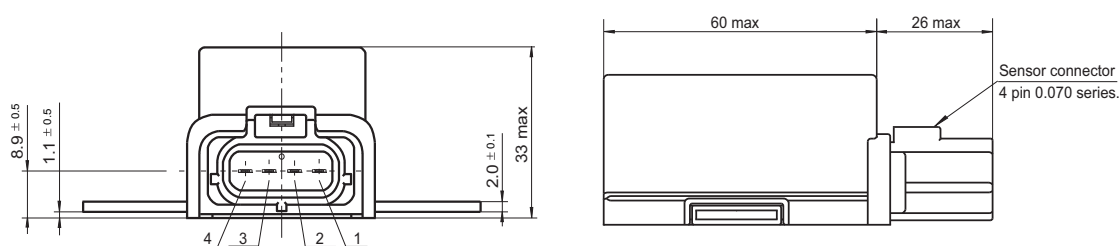
Type	HFV12 /	12	-H	-D	(XXX)
Coil voltage	12: 12VDC				
Contact arrangement	H: 1 Form A				
Instantaneous suppression	D: Diode paralleled to coil				
Special code ¹⁾	XXX: Customer special requirement		Nil: Standard		

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

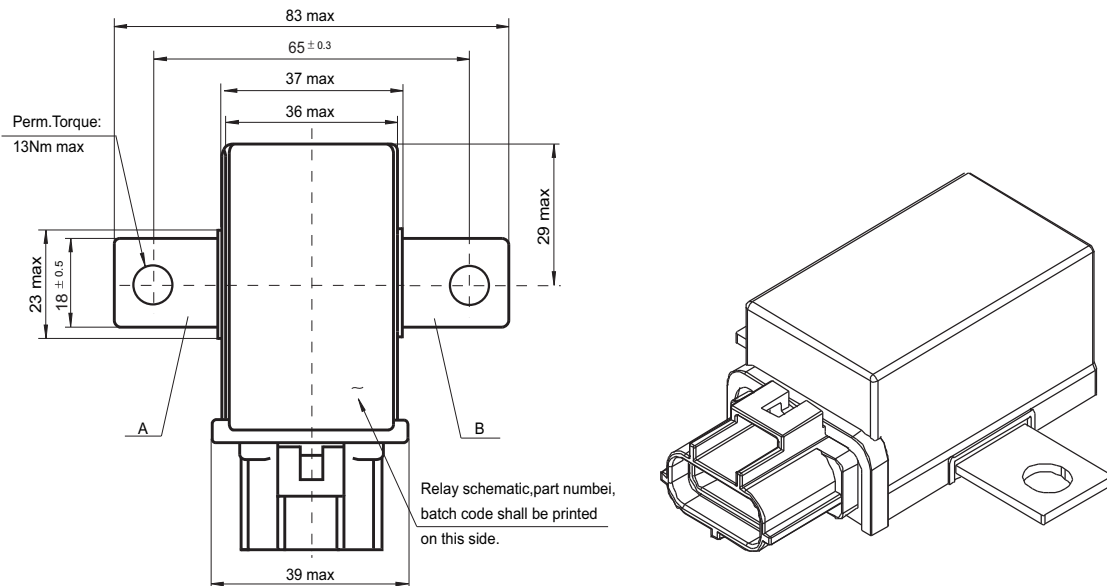
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

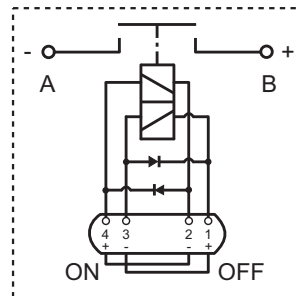
Outline Dimensions



Layout (Bottom view)



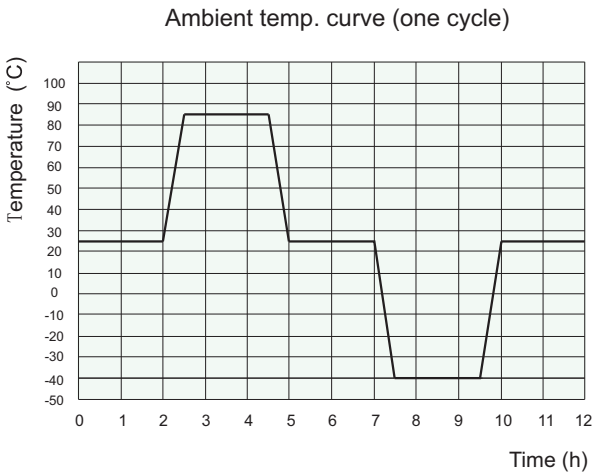
Wiring Diagram
(Bottom view)



- Remark: 1) Relay is on the "reset" status when being released from stock, with the consideration of shock risen from transit and relay mounting, it should be changed to the "set" status when application(connecting to the power supply). Please reset the relay to "set" or "reset" status on request.
- 2) In order to maintain the "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 50ms to 100ms. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
- 3) To avoid using relays under strong magnetic field which will change the parameters of relays such as pick-up voltage and drop-out voltage.

CHARACTERISTIC CURVES

Ambient temperature curve of the electrical endurance test



- 1) The minimum temperature is -40°C.
- 2) The maximum temperature is 85°C.

Disclaimer

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HFV15

AUTOMOTIVE RELAY



Typical Applications

Fog lamp & headlight control, Rear window defogger, Air-conditioning, Fuel pump control, Cooling fan control, Battery disconnection device, Start / stop control

Features

- 40A switching capability
- 1 Form A & 1 Form C contact arrangement
- Plastic sealed and dust protected types available
- QC terminal and PCB terminal available
- RoHS & ELV compliant
- Pin assignment similar to ISO 7588 part 1

CHARACTERISTICS

Contact arrangement	1A, 1C	Shock resistance ^{5) 10)}	294m/s ²
Voltage drop (initial)	NO: Typ.20mV, 250mV max.(at 10A) NC: Typ.30mV, 250mV max.(at 10A)	Flammability ⁶⁾	UL94-HB or better (meets FMVSS 302)
Max. continuous current ^{1) 10)}	NO: 60A (at 23°C), 40A(at 85°C), 17A(at 125°C) NC: 45A (at 23°C), 30A(at 85°C), 12A(at 125°C)	Termination	QC ¹¹⁾ , PCB ⁷⁾
Max. switching current ¹⁰⁾	Make (NO): 150A ²⁾ Break (NO): 40A (Resistive, 13.5VDC)	Construction	Plastic sealed, Dust protected
Min. contact load	1A 6VDC	Unit weight	Approx. 35g
Electrical endurance	See "CONTACT DATA"	Mechanical data ⁸⁾	housing retention (pull & push): 200N min. terminal retention (pull & push): 100N min. terminal resistance to bending (front & side): 10N min. ⁹⁾
Mechanical endurance	1 x 10 ⁶ OPS (300OPS/min)	¹⁾ For NO contacts, measured when applying 100% rated voltage on coil. ²⁾ For NC contacts, measured when applying zero voltage on coil. ³⁾ Inrush peak current under lamp load, at 13.5VDC. ⁴⁾ 1min, leakage current less than 1mA. ⁵⁾ The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit. ⁶⁾ When energized, opening time of NO contacts shall not exceed 1ms, when non-energized, opening time of NC contacts shall not exceed 1ms, meantime, NO contacts shall not be closed. ⁷⁾ FMVSS: Federal Motor Vehicle Safety Standard. ⁸⁾ Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C, (5±0.3)s. ⁹⁾ Only valid for QC version. ¹⁰⁾ Test point is at 2mm away from terminal end, and after removing testing force, the terminal transfiguration shall not exceed 0.5mm. ¹¹⁾ Only for the 12VDC coil voltage type. ¹²⁾ Do NOT knock on relays with hard objects such as rubber rod and rubber hammer during mounting, which might lead to relay damage.	
Initial insulation resistance	100MΩ (at 500VDC)		
Dielectric strength ³⁾	500VAC		
Operate time ¹⁰⁾	Max.: 10ms (at nomi. vol.)		
Release time ¹⁰⁾	Max.: 10ms ⁴⁾		
Ambient temperature	-40°C to 125°C		
Vibration resistance ^{5) 10)}	5Hz to 22.3Hz 10mm DA 22.3Hz to 500Hz 98m/s ²		

CONTACT DATA ⁵⁾

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurance ³⁾ OPS	Contact material	Load wiring diagram ⁴⁾	Ambient temp.
			1C		1A	On s	Off s				
			NO	NC	NO						
13.5VDC	Resistive	Make	40	30	40	2	2	1×10 ⁵	AgSnO ₂	See diagram 1	See Ambient Temp. Curve
		Break	40	30	40						
	Lamp ¹⁾	Make	150 ²⁾	---	150 ²⁾	2	2	1×10 ⁵	AgSnO ₂	See diagram 2	
		Break	30	---	30						
	Inductive	Make	80	40	80	2	2	1×10 ⁵	AgSnO ₂	See diagram 3	
		Break	33	20	33						
27VDC	Resistive	Make	20	10	20	2	2	1×10 ⁵	AgSnO ₂	See diagram 1	
		Break	20	10	20						

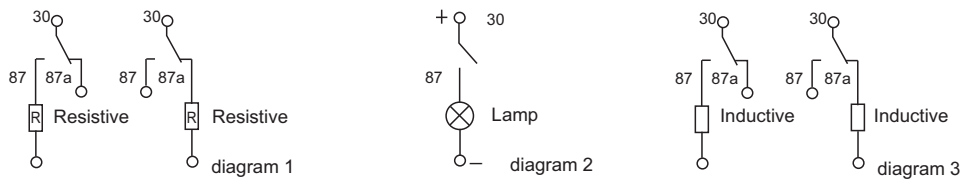


HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

- 1) The load in the table excludes flasher. When applied in flasher, a special silver alloy (AgSnO₂) contact material should be used and the customer special code should be (170) as a suffix. Please heed the anode and cathode's request when wired, terminal 30 should connect with anode.
- 2) Corresponds to the peak inrush current on initial actuation (cold filament).
- 3) A low resistive or diode suppression device in parallel to the relay coil increases the release time and reduces the life time caused by increased erosion and / or higher risk of contact welding.
- 4) The load wiring diagrams are listed below (Ratings of NO, NC are tested based on different samples separately) :



- 5) Loads mentioned in this chart is for relays with no parallel diode or Zener Diode. For those with parallel diode, Zener Diode or other components, please contact Hongfa for more technical supports.
Please also contact Hongfa if the actual application load is different from what mentioned above.

COIL DATA							at 23°C	
Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance $\times(1\pm10\%) \Omega$	Parallel resistance ²⁾ $\times(1\pm5\%) \Omega$	Equivalent resistance Ω	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
							at 23°C	at 85°C
12	7.2	1.2	90	---	---	1.6	20.2	15.7
12	7.2	1.2	90	680	79.5	1.8	20.2	15.7
24	16	2.4	320	---	---	1.8	40.5	31.5
24	16	2.4	320	2700	286	2.0	40.5	31.5

1) Max. allowable overdrive voltage is stated with no load applied.

2) Illustrated with the type with parallel resistor (680 Ω , 12V), (2700 Ω , 24V).

ORDERING INFORMATION

Type	HFV15 / HFV15: QC type HFV15-P: PCB type	12	-Z	1	S	T	J	-R	(XXX)
Coil voltage	12: 12VDC 24: 24VDC								
Contact arrangement	H: 1 Form A Z: 1 Form C								
Version	1: QC Terminal Nil: PCB type 3: Weatherproof Cover (Without metal bracket) 4: Plastic Bracket 5: Weatherproof Cover (With metal bracket)								
Construction ¹⁾	S: Plastic sealed ²⁾ Nil: Dust protected								
Contact material	T: AgSnO ₂								
Terminal	J: QC Terminal without hole Nil: QC Terminal with hole, or PCB type								
Parallel coil ³⁾ components	R: Parallel transient suppression resistors(680 Ω , 12V) (2700 Ω , 24V) R1: Parallel transient suppression resistors(560 Ω , 12V) (1200 Ω , 24V) D: Parallel transient suppression diode, with anode connected to terminal#85 D1: Parallel transient suppression diode, with anode connected to terminal#86 Nil: Without parallel components								
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard								

Notes: 1) Dust protected version is recommended.

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) If the switch-off peak voltage of coil is required to be smaller than 100V, R1 shall be used (measured voltage of 12V is 13.5V);
If parallel diode, Zener Diode or other components are required, please contact Hongfa for more technical supports.

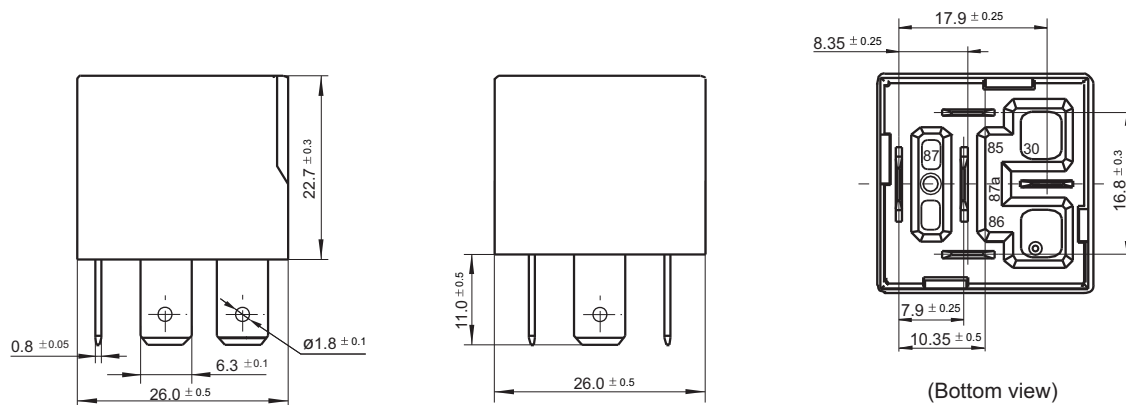
4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

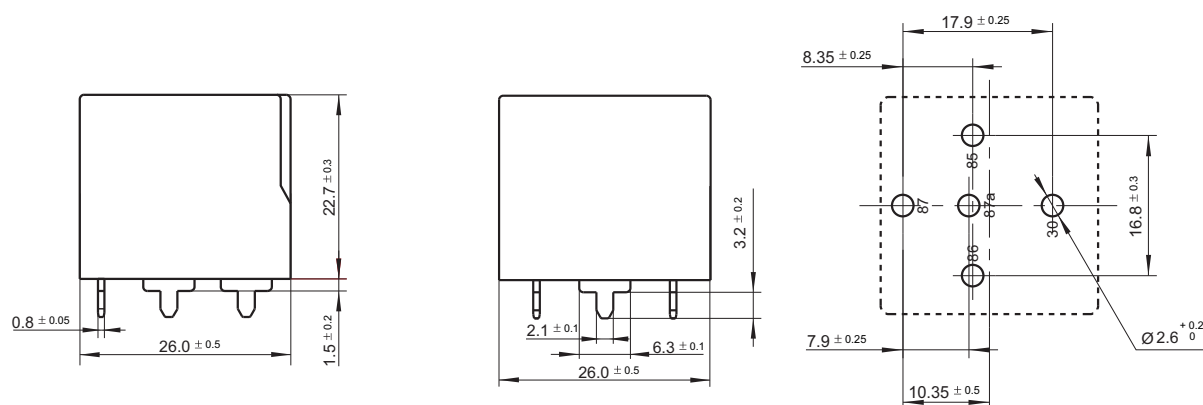
Outline Dimensions

HFV15/□□-□1□T□-□□(XXX)

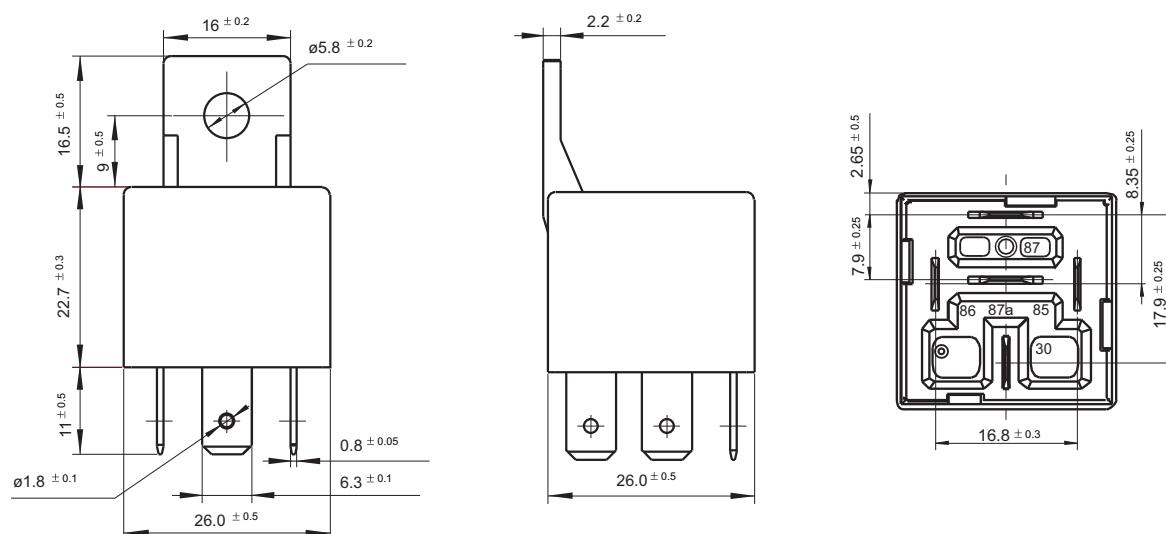


HFV15-P/□□-□□T□-□□(XXX)

PCB Layout (Bottom view)



HFV15/□□-□4□T□-□□(XXX)

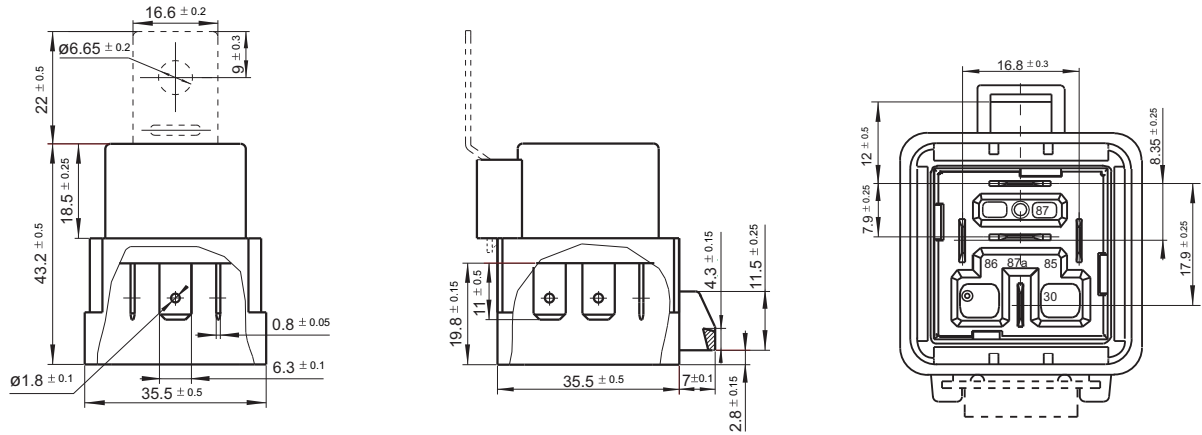


OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

HFV15/□□-□3T□-□□(XXX)

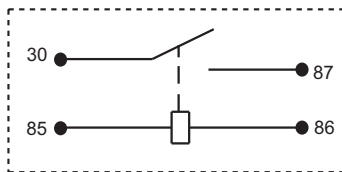
HFV15/□□-□5T□-□□(XXX)



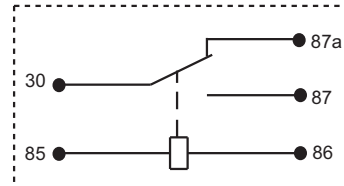
Remark: Terminal vertical deviation tolerance is 0.3mm.

Wiring Diagram

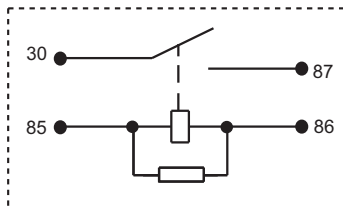
HFV15/□□-H□□□□(XXX)



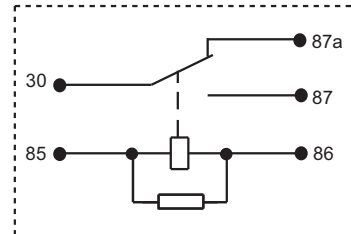
HFV15/□□-Z□□□□(XXX)



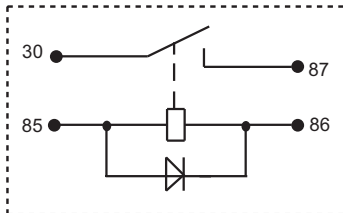
HFV15/□□-H□□□□-R(XXX)



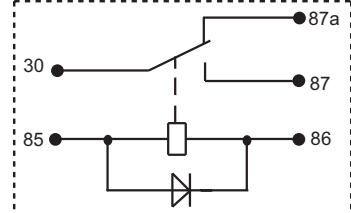
HFV15/□□-Z□□□□-R(XXX)



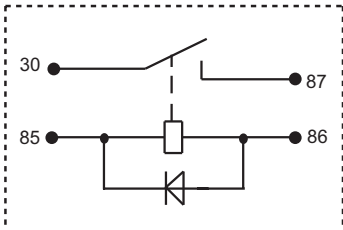
HFV15/□□-H□□□□-D(XXX)



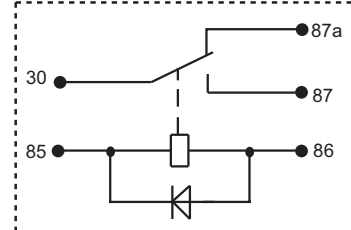
HFV15/□□-Z□□□□-D(XXX)



HFV15/□□-H□□□□-D1(XXX)

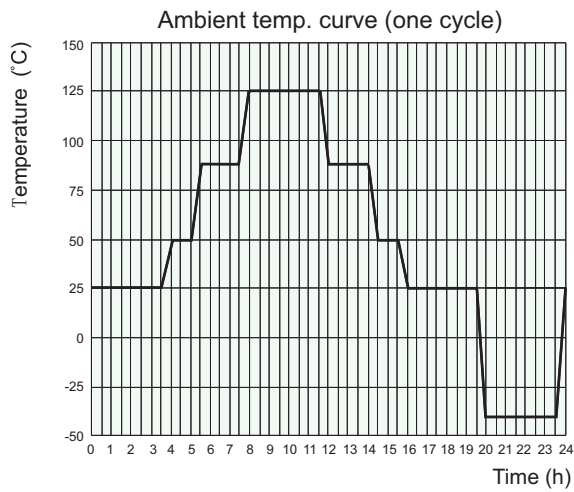


HFV15/□□-Z□□□□-D1(XXX)



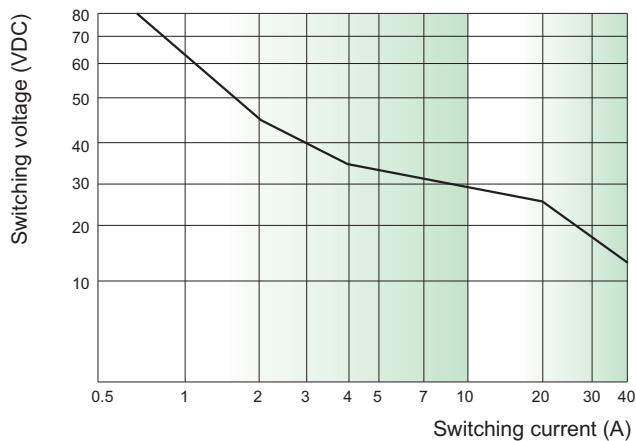
CHARACTERISTIC CURVES

1. Ambient temperature curve of the electrical endurance test



- 1) The minimum temperature is -40°C.
- 2) The maximum temperature is 125°C.

2. Load limit curve (at 23°C)



- 1) This chart takes NO contact, resistive load as example.
- 2) The load and electrical endurance tests are made according to "CONTACT DATA" parameters' table. If actual load voltage, current, or operate frequency is different from "CONTACT DATA" table, please arrange corresponding tests for confirmation.

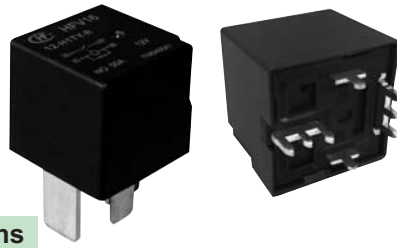
Disclaimer

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HFV16

AUTOMOTIVE RELAY



Typical Applications

Fog lamp & headlight control, Rear window defogger, Air-conditioning, Fuel pump control, ABS, Traction control system, Cooling fan control, Battery disconnection device, High-speed fan control

Features

- 70A switching capability
- Extended temp. range up to 125°C
- Transient suppression resistor or diode available
- 1 Form A contact arrangement
- Plastic sealed and dust protected types available
- QC terminal and PCB terminal available
- RoHS & ELV compliant
- Pin assignment similar to ISO 7588 part 1

CHARACTERISTICS

Contact arrangement	1A	Shock resistance ^{5) 10)}	294m/s ²
Voltage drop (initial)	Typ.: 20mV (at 10A) Max.: 250mV (at 10A)	Flammability ⁶⁾	UL94-HB or better (meets FMVSS 302)
Max. continuous current ^{1) 10)}	70A (at 23°C), 50A (at 85°C), 30A (at 125°C)	Termination	QC ¹¹⁾ , PCB ⁷⁾
Max. switching current ¹⁰⁾	Make (NO): 200A ²⁾ Break (NO): 70A (Resistive, 13.5VDC)	Construction	Plastic sealed, Dust protected
Min. contact load	1A 6VDC	Unit weight	Approx. 38g
Electrical endurance	See "CONTACT DATA"	Mechanical data ⁸⁾	housing retention (pull & push): 200N min. terminal retention (pull & push): 100N min. terminal resistance to bending (front & side): 10N min. ⁹⁾
Mechanical endurance	1 x 10 ⁶ OPS (300OPS/min)		
Initial insulation resistance	100MΩ (at 500VDC)		
Dielectric strength ³⁾	500VAC		
Operate time ¹⁰⁾	Max.: 10ms (at nomi. vol.)		
Release time ^{4) 10)}	Max.: 10ms		
Ambient temperature	-40°C to 125°C		
Vibration resistance ^{5) 10)}	5Hz to 22.3Hz 10mm DA 22.3Hz to 500Hz 98m/s ²		

1) Measured when applying 100% rated voltage on coil.

2) Inrush peak current under lamp load, at 13.5VDC.

3) 1min, leakage current less than 1mA

4) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.

5) When energized, opening time of NO contacts shall not exceed 100μs.

6) FMVSS: Federal Motor Vehicle Safety Standard.

7) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C, (5±0.3)s.

8) Only valid for QC version.

9) Test point is at 2mm away from terminal end, and after removing testing force, the terminal transfiguration shall not exceed 0.3mm.

10) Only for the 12VDC coil voltage type.

11) Do NOT knock on relays with hard objects such as rubber rod and rubber hammer during mounting, which might lead to relay damage.

CONTACT DATA ⁵⁾

Load voltage	Load type		Load current A	On/Off ratio		Electrical endurance ³⁾ OPS	Contact material	Load wiring diagram ⁴⁾	Ambient temp.
				On s	Off s				
13.5VDC	Resistive	Make	70	2	2	1×10 ⁵	AgSnO ₂	See diagram 1	at 23°C
		Break	70						
	Inductive	Make	150	2	4	1×10 ⁵	AgSnO ₂	See diagram 2	See Ambient temp. curve
		Break	50						
	Lamp ¹⁾	Make	200 ²⁾	2	2	1×10 ⁵	AgSnO ₂	See diagram 3	
		Break	40						
27VDC	Resistive	Make	40	2	2	1×10 ⁵	AgSnO ₂	See diagram 1	at 23°C
		Break	40						

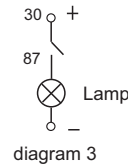
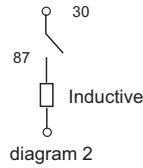
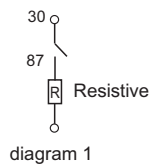


HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2017 Rev. 1.00

- 1) The load in the table excludes flasher. When applied in flasher, a special silver alloy (AgSnO₂) contact material should be used and the customer special code should be (170) as a suffix. Please heed the anode and cathode's request when wired, terminal 30 should connect with anode.
- 2) Corresponds to the peak inrush current on initial actuation (cold filament).
- 3) A low resistive or diode suppression device in parallel to the relay coil increases the release time and reduces the life time caused by increased erosion and / or higher risk of contact welding.
- 4) The load wiring diagrams are listed below:



- 5) Loads mentioned in this chart is for relays with no parallel diode or Zener Diode. For those with parallel diode, Zener Diode or other components, please contact Hongfa for more technical supports.
Please also contact Hongfa if the actual application load is different from what mentioned above.

COIL DATA

at 23°C

Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance $\times(1\pm10\%) \Omega$	Parallel resistance $\times(1\pm5\%) \Omega$	Equivalent resistance Ω	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
							at 23°C	at 85°C
12	7.2	1.2	90	---	---	1.6	20.2	15.7
12	7.2	1.2	90	680	79.5	1.8	20.2	15.7
24	16	2.4	320	---	---	1.8	40.5	31.5
24	16	2.4	320	2700	286	2.0	40.5	31.5

1) Max. allowable overdrive voltage is stated with no load applied.

2) Illustrated with the type with parallel resistor (680 Ω , 12V), (2700 Ω , 24V).

ORDERING INFORMATION

Type	HFV16 / HFV16: QC type HFV16-P: PCB type	12	-H	1	S	T	Y	-R	(XXX)
Coil voltage	12: 12VDC 24: 24VDC								
Contact arrangement	H: 1 Form A								
Version	1: QC Terminal Nil: PCB type 4: Plastic Bracket								
Construction ¹⁾	S: Plastic sealed ²⁾ Nil: Dust protected								
Contact material	T: AgSnO ₂								
Terminal	Y: QC Terminal without hole and 30 & 87 terminal length is 14.5mm Nil: QC Terminal with hole and 30 & 87 terminal length is 14.5mm, or PCB type								
Parallel coil ³⁾ components	R: Parallel transient suppression resistors(680 Ω , 12V) (2700 Ω , 24V) R1: Parallel transient suppression resistors(560 Ω , 12V) (1200 Ω , 24V) D: Parallel transient suppression diode, with anode connected to terminal#85 D1: Parallel transient suppression diode, with anode connected to terminal#86 Nil: Without parallel components								
Special code ⁴⁾	XXX: Customer special requirement Nil: Standard								

Notes: 1) Dust protected version is recommended.

2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) If the switch-off peak voltage of coil is required to be smaller than 100V, R1 shall be used (measured voltage of 12V is 13.5V);
If parallel diode, Zener Diode or other components are required, please contact Hongfa for more technical supports.

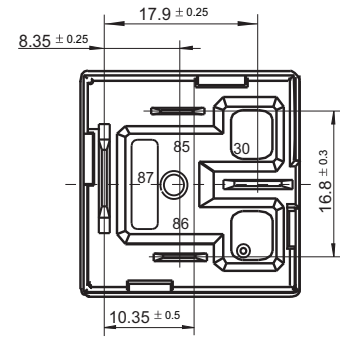
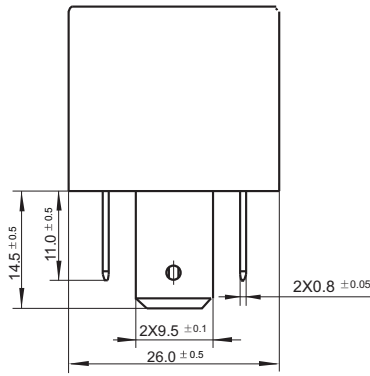
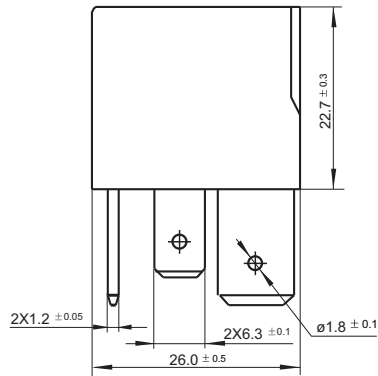
4) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

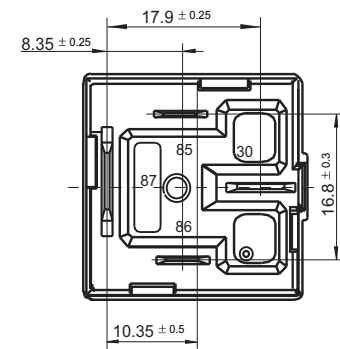
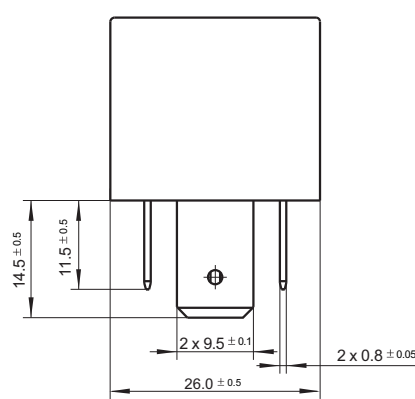
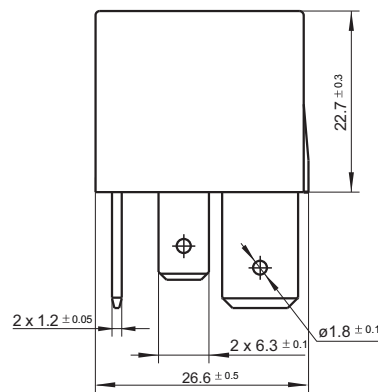
Outline Dimensions

HFV16/□□-H1T□-□□(XXX)



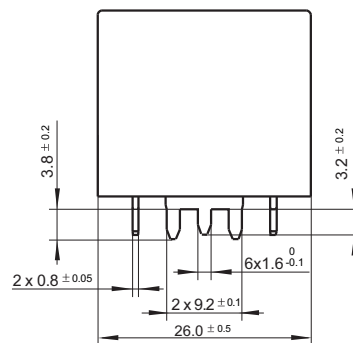
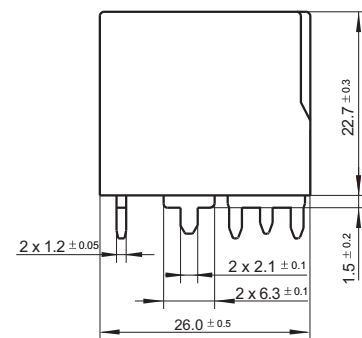
(Bottom view)

HFV16/□□-H1ST□-□□(XXX)

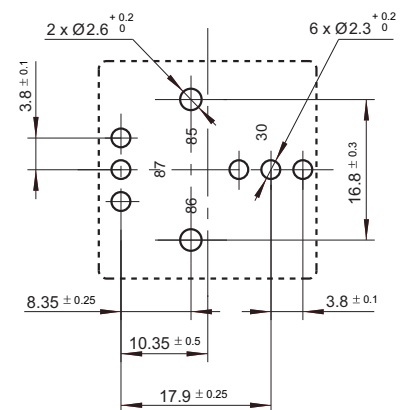


(Bottom view)

HFV16-P/□□-HT-□□(XXX)



PCB Layout (Bottom view)

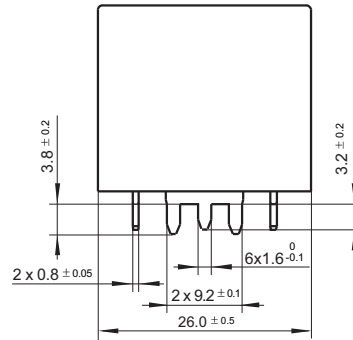
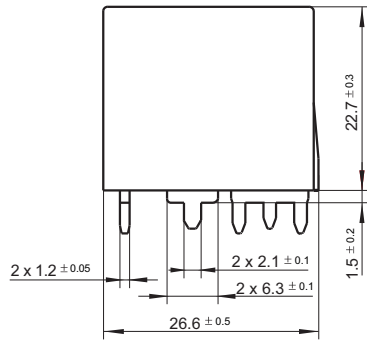


OUTLINE DIMENSIONS AND WIRING DIAGRAM

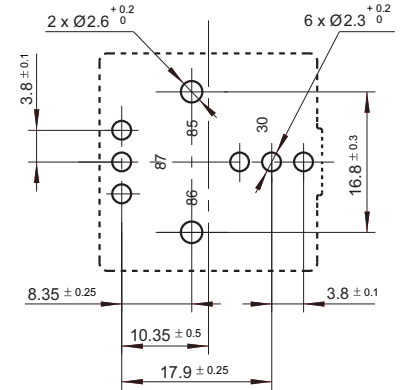
Unit: mm

Outline Dimensions

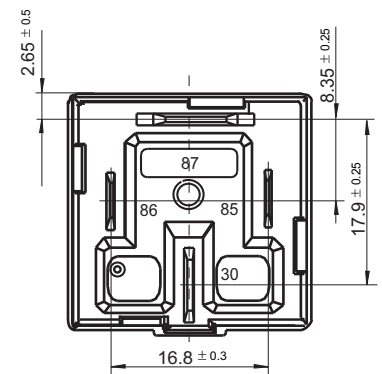
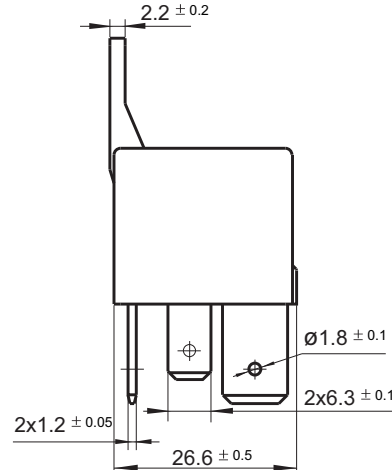
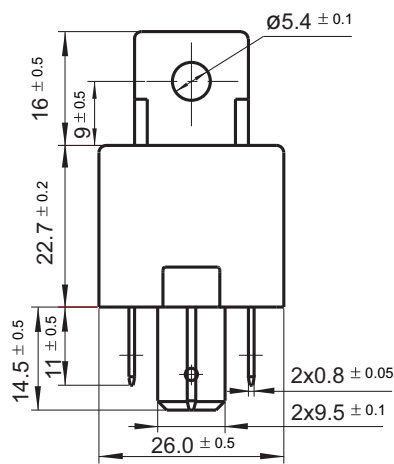
HFV16-P/□□-HST-□□(XXX)



PCB Layout (Bottom view)



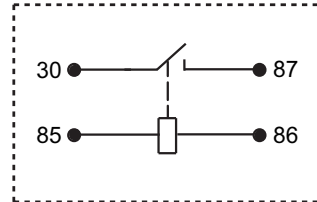
HFV16/□□-H4□T□-□□(XXX)



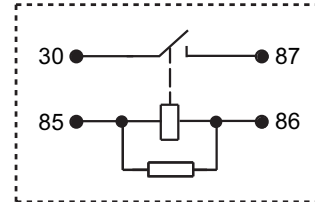
Remark: Terminal vertical deviation tolerance is 0.3mm.

Wiring Diagram

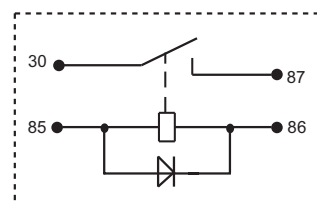
HFV16□□/□□-H□□T□(XXX)



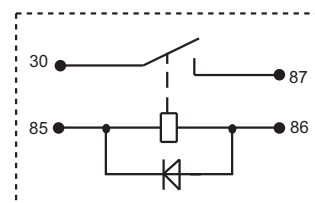
HFV16□□/□□-H□□T□-R(XXX)



HFV16□□/□□-H□□T□-D(XXX)

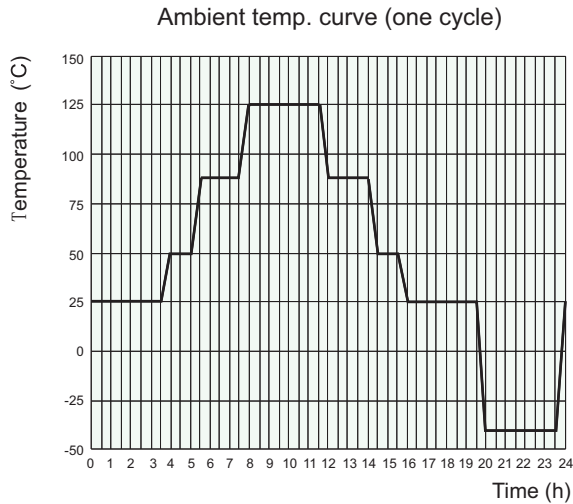


HFV16□□/□□-H□□T□-D1(XXX)



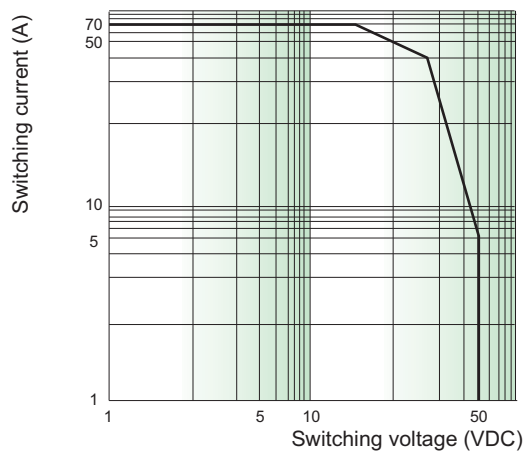
CHARACTERISTIC CURVES

1. Ambient temperature curve of the electrical endurance test



- 1) The minimum temperature is -40°C.
- 2) The maximum temperature is 125°C.

2. Load limit curve



- 1) The contact load is resistive.
- 2) The load and electrical endurance tests are made according to "CONTACT DATA" parameters' table. If actual load voltage, current, or operate frequency is different from "CONTACT DATA" table, please arrange corresponding tests for confirmation.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.

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HF3504 / HF3507

WIPER INTERMITTENT CONTROLLER



Typical Applications

Wiper intermittent control

Features

- Solid base design, stable structure
- Surface mounting technology, advanced craftwork
- Ingress protection: IP50

TYPE

Type	Nominal voltage	Operating voltage range	Nominal motor load	Dimensions	Control mode
HF3504 /12-G	12VDC	9VDC to 16VDC	50W	(30 × 30 × 40)mm	Microcontroller
HF3504A /12-G	12VDC	9VDC to 16VDC	50W	(30 × 30 × 30)mm	Microcontroller
HF3507 /12-G	12VDC	9VDC to 16VDC	50W	(30 × 30 × 40)mm	Separated chip
HF3507 A/24-G	24VDC	18VDC to 32VDC	80W	(30 × 30 × 40)mm	Separated chip

CHARACTERISTICS

Wiping time	HF3504: 3.5s + 2.5s	Vibration resistance	Sine	10Hz to 200Hz 49m/s ²
	HF3507: 3s+3s		Random	10Hz to 1000Hz 19.6m/s ²
Intermittent time	5.5s ± 1.5s	Shock resistance	196m/s ²	
Electrical endurance	1×10 ⁵ OPS (normal motor load)	Weight	Approx. 28g	
Internal voltage drop	150mV max. (at 5A)	Mechanical data	Cover retention: 160N min.	
Ambient temperature	-40°C to 85°C		Terminal retention: 100N min.	

ORDERING INFORMATION

Type	HF3504 / HF3504A / HF3507 / Suffix(A-Z) is for specific extending application		12	-G	-B	(XXX)
Nominal voltage	12: 12VDC	24: 24VDC				
Trigger level	G: High level start-up	L: Low level start-up				
Packing style	B: With bracket	Nil: Without bracket				
Special code ¹⁾	XXX: Customer special requirement		Nil: Standard			

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.



HONGFA RELAY

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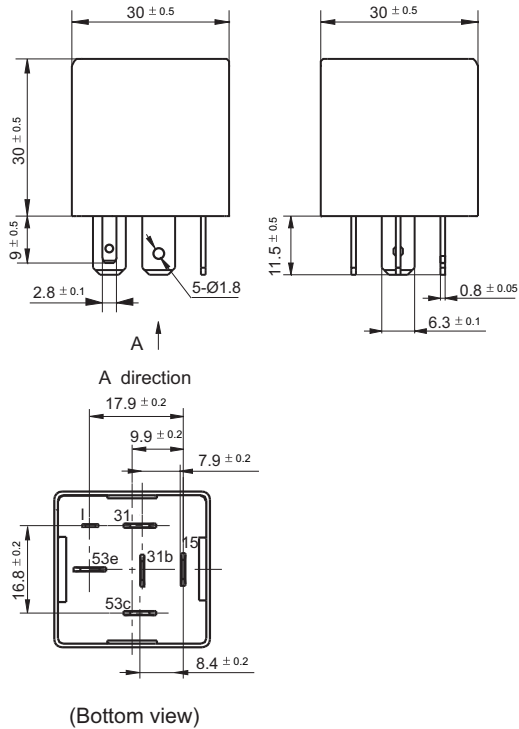
2015 Rev. 1.00

OUTLINE DIMENSIONS, WIRING DIAGRAM

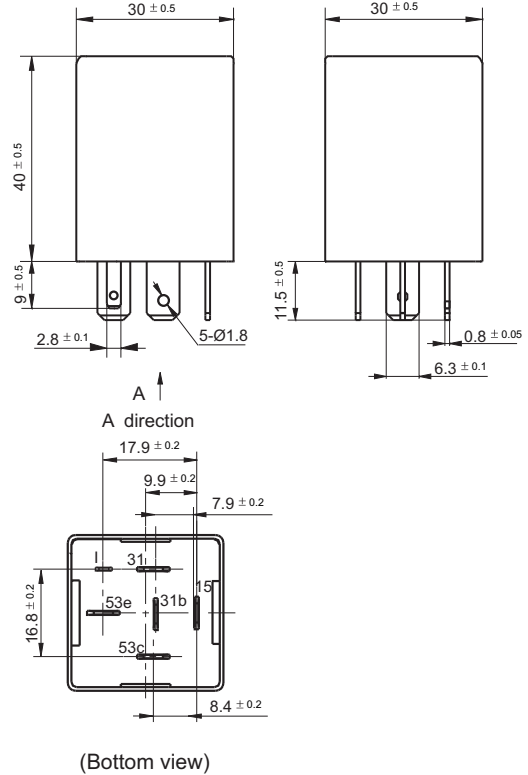
Unit: mm

Outline Dimensions

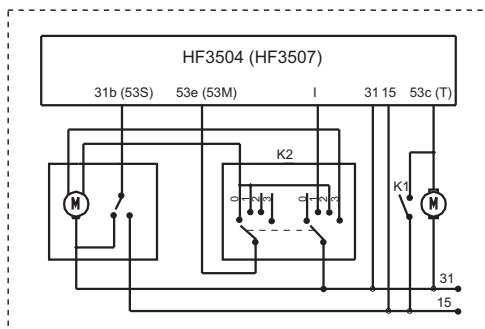
HF3504A/□□-□(XXX)



HF3504/□□-□(XXX)
HF3507/□□-□(XXX)



Wiring Diagram



- 1) As shown on left circuit, the terminal 15 is connected with positive electrode of power supply, terminal 31 is connected with negative electrode of power supply, the terminal I and 53e are connected with combined switch, the terminal 31b is connected with wiper motor switch, the terminal 53c is connected with washing bump switch.
- 2) Intermit wiping, when combined switch K2 is at position 1, the terminal I will receive 12V voltage, the internal relay will start function, the terminal 53e and 15 will be connected, the wiper motor will start to work, when terminal 31b receive the feedback signal from 0V, the internal relay will release and the terminal 53e and 15 will be opened, the wiper motor will stop. The above process will repeat after $5.5s \pm 1.5s$.
- 3) Washing wiping, when K1 is closed, the terminal 53c will receive 12V voltage, the internal relay will start function, the terminal 53e and 15 will be connected, the wiper motor will start to work, when K1 is opened and delayed for $3.5s + 2.5s$ or $3s + 3s$, the internal relay will release and the wiper motor will stop and will remain at stop position.

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