

# HF118F

## MINIATURE HIGH POWER RELAY



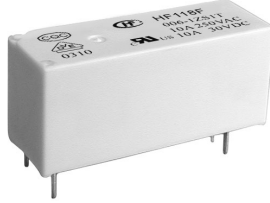
File No.: E134517



File No.: 40010480



File No.: CQC09002035071  
CQC18002206322



### 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
- Through-Hole Reflow Version available

### CONTACT DATA

Contact arrangement	1A, 1B, 1C
Contact material	See ordering info.
Contact resistance <sup>1)</sup>	100mΩ max.(at 1A 6VDC)
Contact rating (Res. load)	10A 250VAC/30VDC
Max. switching voltage	440VAC / 300VDC
Max. switching current	10A
Max. switching power	2500VA / 300W
Mechanical endurance	1 x 10 <sup>7</sup> OPS
Electrical endurance	1H type: 1 x 10 <sup>5</sup> OPS (AgNi, 8A 250VAC, Resistive load, at 85°C, 5s on 5s off)

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

### 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 rated. vot.)		10ms max.
Release time (at rated. vot.)		5ms max.
Temperature rise (at rated. Volt.)		55K max.
Shock resistance *	Functional	NC: 49m/s <sup>2</sup> NO: 98m/s <sup>2</sup>
	Destructive	980m/s <sup>2</sup>
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
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### COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max. <sup>1)</sup>	Drop-out Voltage VDC min. <sup>1)</sup>	Max. Voltage VDC <sup>2)</sup>	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 <sup>2)</sup>	33.60	4.8	72.0	8000 x (1±15%)
60 <sup>2)</sup>	42.00	6.0	90.0	12500 x (1±15%)

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

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).



HONGFA RELAY

ISO9001, IATF16949, ISO14001, ISO45001, IECQ QC 080000, ISO/IEC 27001 CERTIFIED

2023 Rev. 2.00

## SAFETY APPROVAL RATINGS

<b>UL/CUL</b> (AgNi, AgSnO <sub>2</sub> )	version 1,3,5,6	10A 250VAC 10A 30VDC B300 R300 1/2HP 240VAC (NO only) AgSnO <sub>2</sub> : 1/3HP 120VAC (NO only)
<b>VDE</b> (AgNi, AgNi+Au)	1H (;S) (1;3;5) (-;G) 1D (;S) (1;3;6) (-;G) 1Z (-;S) (1;3) (-;G)	10A 250VAC at 85°C 8A 250VAC at 85°C 10A 250VAC at 85°C
<b>VDE</b> (AgSnO <sub>2</sub> , AgSnO <sub>2</sub> +Au)	1H (-;S) (1;3;5), T.(-;G) 1D (-;S) (1;3;6), T.(-;G) 1Z (-;S) (1;3), T.(-;G) 1H (-;S) (1;3;5), T.(-;G) 1Z (-;S) (1;3), T.(-;G)	10A 250VAC at 85°C 8A 250VAC at 85°C 10A 250VAC at 85°C AC-15 (Make: 30A 250VAC COS Ø=0.7 at 85°C Break: 3A 250VAC COS Ø=0.4 at 85°C) 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

<b>Type</b>	HF118F / 012 -1H S 5 G (XXX)
<b>Coil voltage</b>	5, 6, 9, 12, 18, 24, 48, 60VDC
<b>Contact arrangement</b>	1H: 1 Form A 1D: 1 Form B 1Z: 1 Form C
<b>Construction</b> <sup>1)2)</sup>	S: Plastic sealed Nil: Flux proofed
<b>Version</b> (See Wiring Diagram below)	1: 3.2mm 1 Form C 3: 3.2mm 1 Form C, double pinning 5: 5mm, 1 Form A 6: 5mm, 1 Form B
<b>Contact material</b> <sup>3)</sup>	T: AgSnO <sub>2</sub> G: AgNi+Au plated TG: AgSnO <sub>2</sub> +Au plated Nil: AgNi
<b>Special code</b> <sup>4)</sup>	XXX: Customer special requirement Nil: Standard

Notes: 1) We recommend flux proofed types for a clean environment (free from contaminations like H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, 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) means Through-Hole Reflow Version(valid for Flux proofed only).

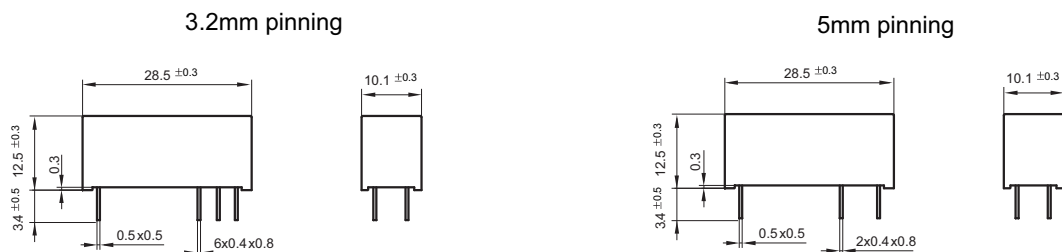
5) Standard tube packing length is 600mm. Any special requirement needed, please contact us for more details.

6) For products that should meet the explosion-proof requirements of "IEC 60079 series", please note [Ex] after the specification while placing orders. Not all products have explosion-proof certification, so please contact us if necessary, in order to select the suitable products.

## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

### Outline Dimensions



## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

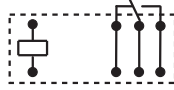
Unit: mm

Wiring Diagram (Bottom view)

1 Form C,Version 1



1 Form C,Version 3



1 Form A,Version 5

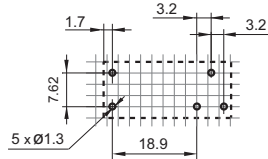


1 Form B,Version 6

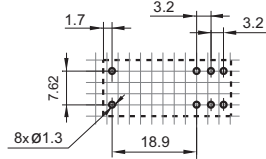


PCB Layout (Bottom view)

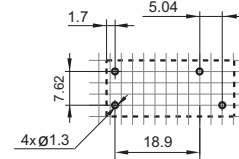
Version 1



Version 3



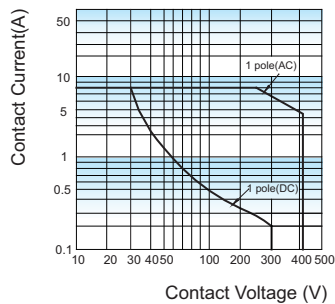
Version 5/6



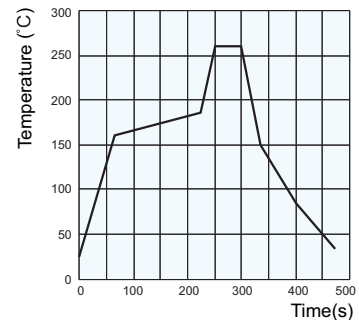
- Remark: 1) The pin dimension of the product outline drawing is the size before tinning (it will become larger after tinning), and the mounting hole size is the recommended design size of the PCB board hole. The specific PCB board hole design size can be mapped and adjusted according to the actual product.
- 2) 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  $\pm 0.4\text{mm}$ .
- 3) The tolerance without indicating for PCB layout is always  $\pm 0.1\text{mm}$ .
- 4) The width of the gridding is 2.54mm.

## CHARACTERISTIC CURVES

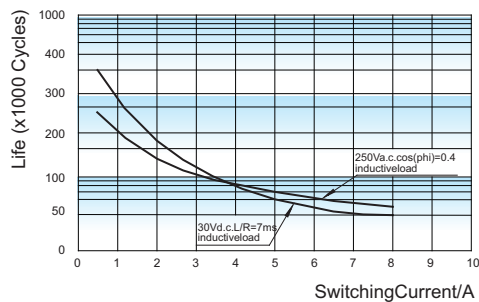
MAXIMUM SWITCHING POWER



REFLOW WELDING TEMPERATURE  
(Reflow soldering version)



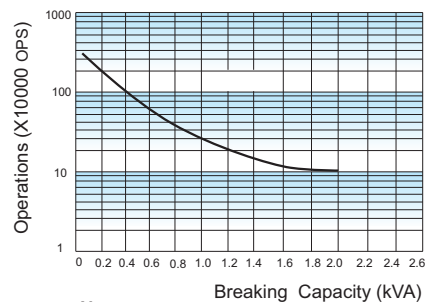
INDUCTIVE ENDURANCE CURVE



### Notes:

- Test conditions:  
NO, Room temp., 1s on 9s off.

ENDURANCE CURVE



### Notes:

- Curve: 1Z1 type
- Test conditions:  
NO, Resistive load, 250VAC  
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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