

# 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 <sup>7</sup> OPS  |
| Electrical endurance       | 1 x 10 <sup>5</sup> OPS<br>(See approval reports for more details) |

## 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 <sup>2</sup><br>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,<br>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. Allowable Voltage VDC * | 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                  | 33.60                    | 4.8                       | 72.0                         | 8000 x (1±15%)    |
| 60                  | 42.00                    | 6.0                       | 90.0                         | 12500 x (1±15%)   |

Notes: \* The max. allowable voltage in the COIL DATA is coil overdrive voltage, it is the instantaneous max. voltage which the relay coil could endure in a very short time.



HONGFA RELAY

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

2014 Rev. 1.01

## SAFETY APPROVAL RATINGS

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

**Notes:** Only some typical ratings are listed above. If more details are required, please contact us.

## ORDERING INFORMATION

|  |  |
|--|--|
| <b>Type</b>                                  | HF118F / 012 -1H S 1 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)</sup>            | S: Plastic sealed Nil: Flux proofed  |
| <b>Version</b><br>(See Wiring Diagram below) | 1: 3.2mm 1 pole 8A<br>3: 3.2mm 1 pole 10A, double pinning<br>5: 5mm 8A, only 1 Form A 6: 5mm 8A, only 1 Form B |
| <b>Contact material</b> <sup>2)</sup>        | T: AgSnO <sub>2</sub> G: AgNi+Au plated TG: AgSnO <sub>2</sub> +Au plated Nil: AgNi                            |
| <b>Customer special code</b>                 | e.g. (335) stands for product in accordance to IEC 60335-1 (GWT)<br>(253) stands for Reflow soldering version  |

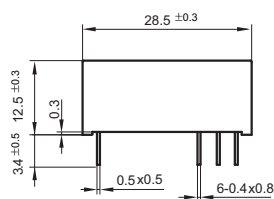
**Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, dust, etc.). 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.

## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

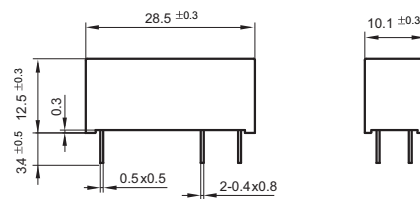
Unit: mm

### Outline Dimensions

#### 3.2mm pinning



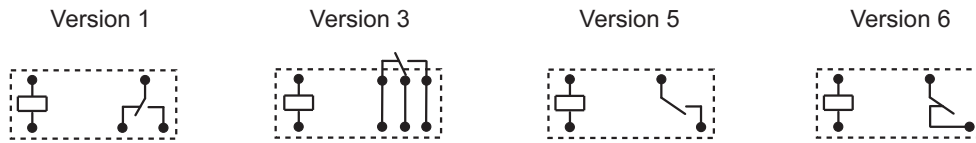
#### 5mm pinning



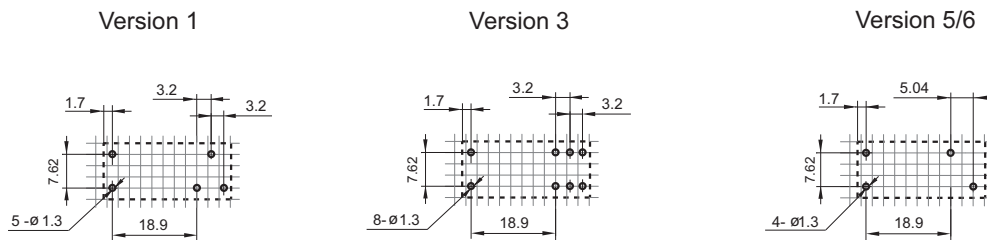
# OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

## Wiring Diagram (Bottom view)



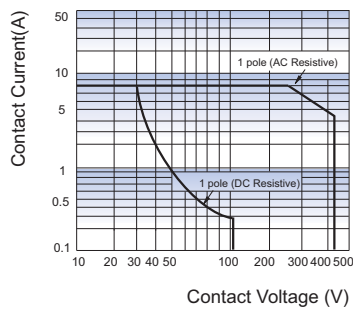
## PCB Layout (Bottom view)



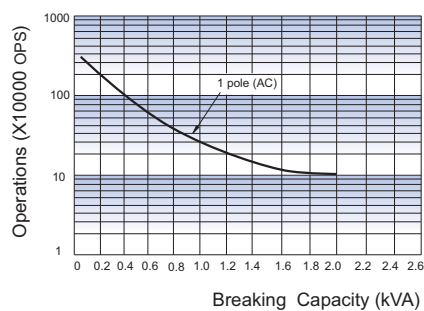
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension  $\leq 1\text{mm}$ , tolerance should be  $\pm 0.2\text{mm}$ ; outline dimension  $> 1\text{mm}$  and  $\leq 5\text{mm}$ , tolerance should be  $\pm 0.3\text{mm}$ ; outline dimension  $> 5\text{mm}$ , tolerance should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

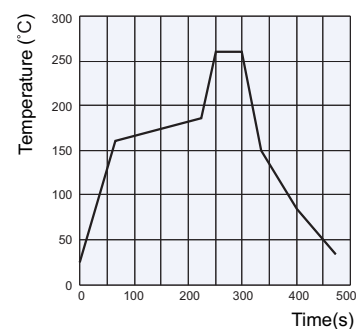
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



REFLOW WELDING TEMPERATURE  
(Reflow soldering version)



## 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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