

# 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 / 125VDC   |
| 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 (8A 250VAC, Resistive load, AgNi, 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 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. <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>3)</sup>    | 33.60                                  | 4.8                                     | 72.0                           | 8000 x (1±15%)    |
| 60 <sup>3)</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, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2020 Rev. 1.00

## SAFETY APPROVAL RATINGS

|   |                           |  |
|---|---------------------------|--|
| <b>UL/CUL</b><br>(AgNi, AgSnO <sub>2</sub> )                | version 1,3,5,6           | 10A 250VAC at 85°C<br>10A 30VDC at 85°C<br>B300 at 85°C<br>R300 at 85°C<br>1/2HP 240VAC at 85°C<br>AgSnO <sub>2</sub> : 1/3HP 120VAC at 85°C |
| <b>VDE</b><br>(AgNi, AgNi+Au)                               | 1H (;S) (1;3;5) (-;G)     | 10A 250VAC at 85°C   |
|   | 1D (;S) (1;3;6) (-;G)     | 8A 250VAC at 85°C  |
|   | 1Z (-;S) (1;3) (-;G)      | 10A 250VAC at 85°C   |
| <b>VDE</b><br>(AgSnO <sub>2</sub> , AgSnO <sub>2</sub> +Au) | 1H (-;S) (1;3;5), T.(-;G) | 10A 250VAC at 85°C   |
|   | 1D (-;S) (1;3;6), T.(-;G) | 8A 250VAC at 85°C  |
|   | 1Z (-;S) (1;3), T.(-;G)   | 10A 250VAC at 85°C   |
|   | 1H (-;S) (1;3;5), 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)   |
|   | 1Z (-;S) (1;3), T.(-;G)   | 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:** 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>          | <b>S:</b> Plastic sealed <b>Nil:</b> Flux proofed   |
| <b>Version</b><br>(See Wiring Diagram below) | <b>1:</b> 3.2mm 1 Form C<br><b>3:</b> 3.2mm 1 Form C, double pinning<br><b>5:</b> 5mm, 1 Form A <b>6:</b> 5mm, 1 Form B |
| <b>Contact material</b> <sup>3)</sup>        | <b>T:</b> AgSnO <sub>2</sub> <b>G:</b> AgNi+Au plated <b>TG:</b> AgSnO <sub>2</sub> +Au plated <b>Nil:</b> AgNi         |
| <b>Special code</b> <sup>4)</sup>            | <b>XXX:</b> Customer special requirement <b>Nil:</b> Standard   |

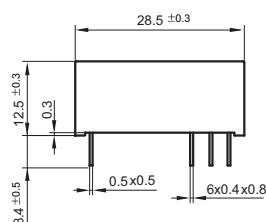
**Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H<sub>2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

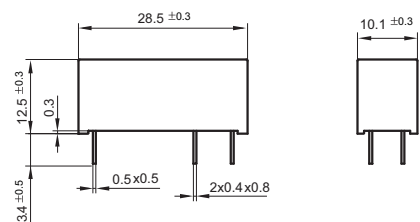
Unit: mm

### Outline Dimensions

#### 3.2mm pinning



#### 5mm pinning



# OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

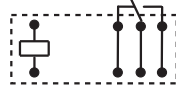
Unit: mm

## Wiring Diagram (Bottom view)

1 Form C, Version 1



1 Form C, Version 3



1 Form A, Version 5

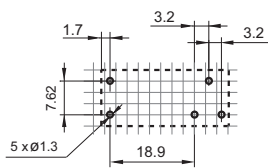


1 Form B, Version 6

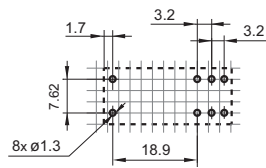


## PCB Layout (Bottom view)

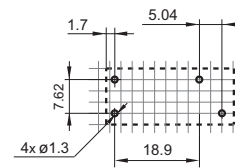
Version 1



Version 3



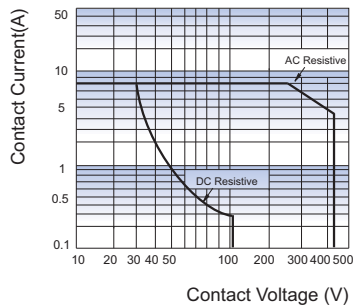
Version 5/6



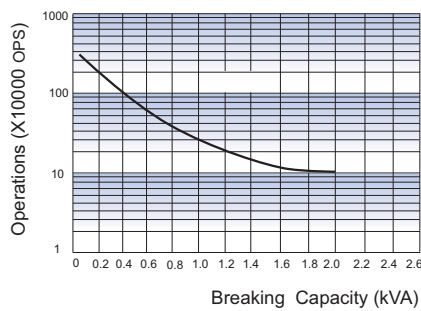
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension  $\leq 1\text{mm}$ , tolerance should be  $\pm 0.2\text{mm}$ ; outline dimension  $> 1\text{mm}$  and  $\leq 5\text{mm}$ , tolerance should be  $\pm 0.3\text{mm}$ ; outline dimension  $> 5\text{mm}$ , tolerance should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

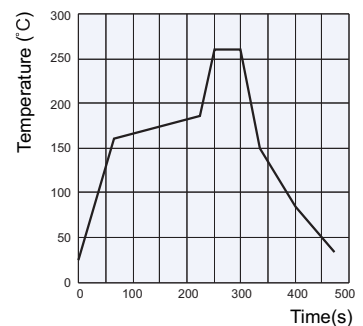
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



REFLOW WELDING TEMPERATURE  
(Reflow soldering version)



**Notes:**

- Curve: 1Z1 type
- Test conditions:  
 NO, Resistive load, 250VAC  
 Flux proofed, Room temp., 1s on 9s off.

# Relay Sockets



## Features


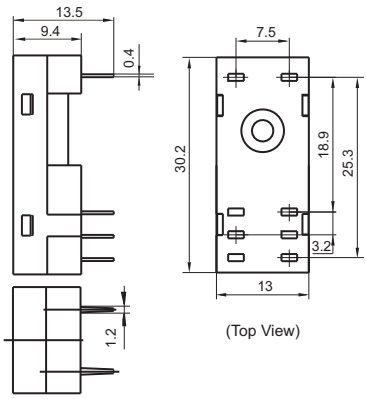
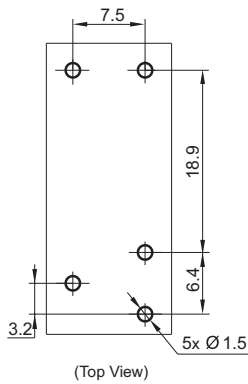

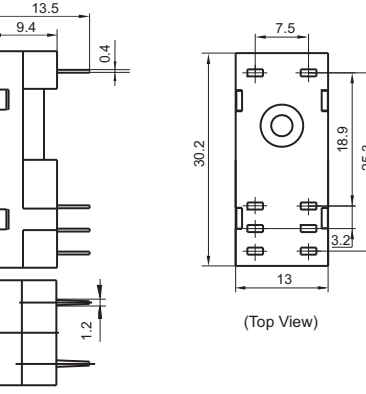
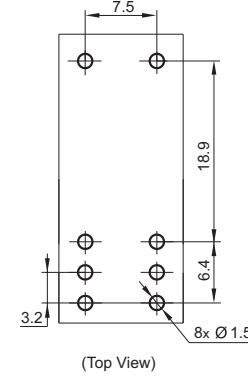
- The dielectric strength can reach 5000VAC and the insulation resistance is 1000MΩ
- Two mounting types are available: PCB and screw mounting.
- Environmental friendly product (RoHS compliant)

## CHARACTERISTICS

| Type         | Nominal Voltage | Nominal Current | Ambient Temperature | Dielectric Strength min. | Unit weight |
|--------------|-----------------|-----------------|---------------------|--------------------------|-------------|
| 118F-1Z-A1-1 | 250VAC          | 10A             | -40 °C to 70°C      | 5000VAC                  | Approx.3g   |
| 118F-2Z-A1   | 250VAC          | 10A             | -40 °C to 70°C      | 5000VAC                  | Approx.3g   |

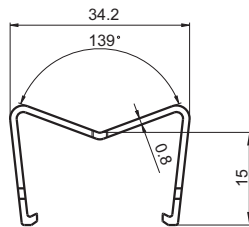
## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

| Socket  | Outline Dimensions  | Wiring Diagram   | Components Available                 |
|---|---|--|--------------------------------------|
| <p>118F-1Z-A1-1</p>  <p>PCB terminal,<br/>PCB or Screw mounting<br/>Applicable for<br/>HF118F/XXX-1XX1XX</p> |  <p>(Top View)</p> |  <p>(Top View)</p> | <p>metallic retainer<br/>118F-H1</p> |
| <p>118F-2Z-A1</p>  <p>PCB terminal,<br/>PCB or Screw mounting<br/>Applicable for<br/>HF118F/XXX-1XX3XX</p>   |  <p>(Top View)</p> |  <p>(Top View)</p> | <p>metallic retainer<br/>118F-H1</p> |

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, outline dimension >50mm ,tolerance should be  $\pm 1\text{mm}$ ; 20mm<outline dimension  $\leq 50\text{mm}$ , tolerance should be  $\pm 0.5\text{mm}$ ; 5mm<outline dimension  $\leq 20\text{mm}$ , tolerance should be  $\pm 0.4\text{mm}$ ; outline dimension  $\leq 5\text{mm}$ , 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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