

# 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
- 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 (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 <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        |
|                                         | Between contact sets            | 2500VAC 1min        |
| Surge voltage (between coil & contacts) | 10kV (1.2 x 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 <sup>2</sup>  |
|                                         | Destructive                     | 980m/s <sup>2</sup> |
| Vibration resistance *                  | 10Hz to 150Hz 10g/5g            |                     |
| Humidity                                | 35% to 85% RH                   |                     |
| Ambient temperature                     | -40°C to 85°C                   |                     |
| Termination                             | PCB                             |                     |
| Unit weight                             | Approx. 13.5g                   |                     |
| 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 | 400mW |
|------------|-------|

### COIL DATA

at 23°C

| Nominal Voltage VDC | Pick-up Voltage VDC | Drop-out Voltage VDC | Max. Allowable 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%)    |
| 60                  | 42.00               | 6.0                  | 90                           | 7500 x (1±15%)    |
| 110                 | 77.00               | 11.0                 | 165                          | 25200 x (1±15%)   |

Notes: \* The max. allowable voltage refers to the maximum value in a varying range of pick-up voltage, not the voltage for continuous operation.



HONGFA RELAY

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

2010 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 COS $\phi$ =0.4           | at 70°C             |
| HF115F....1Z(S)3(G)(F)  | 16A 250VAC                      | at 70°C                             |                     |
|                         | 9A 250VAC COS $\phi$ =0.4       | at 70°C                             |                     |
| AgNi                    | HF115F....2(H;Z)(S)4B(G)(F)     | 5A 400VAC                           | at 85°C             |
|                         |                                 | 8A 250VAC                           | at 85°C             |
|                         | HF115F....1H(S)(1;2)B(G)(F)     | 12A 250VAC                          | at 85°C             |
|                         | HF115F....1Z(S)(1;2)B(G)(F)     | 12A 250VAC                          | at 85°C             |
|                         | HF115F....1H(S)3B(G)(F)         | 16A 250VAC                          | at 85°C             |
|                         |                                 | 12A 250VAC                          | at 85°C             |
|                         |                                 | 9A 250VAC COS $\phi$ =0.4           | at 85°C             |
|                         | HF115F....1Z(S)3B(G)(F)         | 16A 250VAC (NO only)                | at 85°C             |
|                         |                                 | 12A 250VAC                          | at 85°C             |
|                         |                                 | 9A 250VAC COS $\phi$ =0.4 (NO only) | at 70°C             |
| 10(4)A 250VAC (NO only) |                                 | at 65°C                             |                     |
|                         | 12(2)A 250VAC (NO only)         | at 65°C                             |                     |
| AgSnO <sub>2</sub>      | HF115F....2(H;Z)(S)4A(G)(F)     | 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 COS $\phi$ =0.4           | at 70°C             |
|                         | HF115F....1Z(S)3A(G)(F)         | 16A 250VAC (NO only)                | at 85°C             |
|                         |                                 | 9A 250VAC COS $\phi$ =0.4 (NO only) | at 70°C             |

### UL/CUL

|                                      |                    |                                 |                    |
|--------------------------------------|--------------------|---------------------------------|--------------------|
| Version 1 or 2 (AgCdO)               | 12A 277VAC         | Version 3 (AgSnO <sub>2</sub> ) | 16A 277 VAC        |
|                                      | 1/2HP 250VAC       |                                 | 1/3HP 125VAC       |
|                                      | 1/3HP 125VAC       |                                 | 1/2HP 250VAC       |
| Version 1 or 2 (AgSnO <sub>2</sub> ) | 12A / 277VAC       | Version 3 (AgNi)                | B300               |
|                                      | B300               |                                 | R300               |
|                                      | R300               |                                 | 16A 277VAC         |
| Version 1 or 2 (AgNi)                | 12A 277VAC         |                                 | 5FLA, 30LRA 250VAC |
| Version 3 (AgCdO)                    | 16A 277 VAC        | Version 4 (AgCdO)               | 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 <sub>2</sub> ) | 8A 277VAC          |
|                                      |                    | Version 4 (AgNi)                | 8A 277VAC          |

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

## 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<br>2H: 2 Form A                                                                                                   |  | 1D: 1 Form B<br>2D: 2 Form B              |                   | 1Z: 1 Form C<br>2Z: 2 Form C      |  |
| Construction <sup>1)</sup>     | S: Plastic sealed                                                                                                              |  |                                           | Nil: Flux proofed |                                   |  |
| Version                        | 1: 3.5mm 1 pole 12A<br>3: 5.0mm 1 pole 16A                                                                                     |  | 2: 5.0mm 1 pole 12A<br>4: 5.0mm 2 pole 8A |                   |                                   |  |
| Contact material <sup>2)</sup> | A: AgSnO <sub>2</sub><br>AG: AgSnO <sub>2</sub> + Au plated                                                                    |  | B: AgNi                                   |                   | Nil: AgCdO<br>BG: AgNi+ Au plated |  |
| Insulation standard            | F: Class F                                                                                                                     |  | Nil: Class B                              |                   |                                   |  |
| Customer special code          | e.g. (335) stands for product in accordance to IEC 60335-1 (GWT)<br>(253) stands for Reflow soldering version, for 1 pole type |  |                                           |                   |                                   |  |

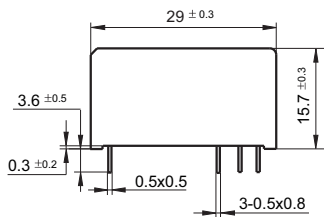
**Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H<sub>2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

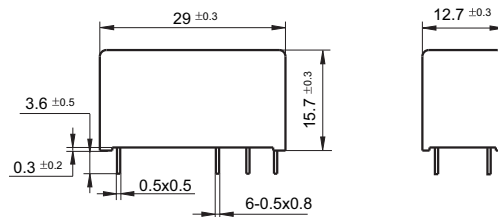
Unit: mm

### Outline Dimensions

3.5mm Pinning (HF115F/ □□□ -□□ -□ -1 -□□ )

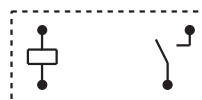


5mm Pinning (HF115F/ □□□ -□□ -□ -2/3/4 -□□ )

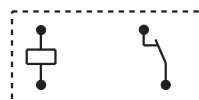


### Wiring Diagram (Bottom view)

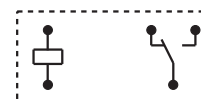
3.5/5mm Pinning, 1 Pole, 12A, HF115F/ □□□ -□□ -□ -1/2-□□



1 Form A

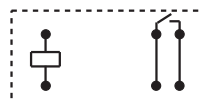


1 Form B

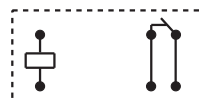


1 Form C

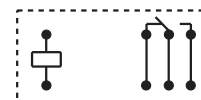
5mm Pinning, 1 Pole, 16A, HF115F/ □□□ -□□ -□ -3-□□



1 Form A

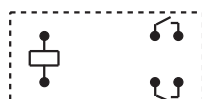


1 Form B

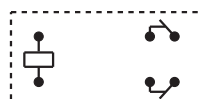


1 Form C

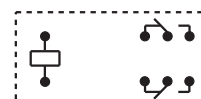
5mm Pinning, 2 Pole, 8A, HF115F/ □□□ -□□ -□ -4-□□



2 Form A

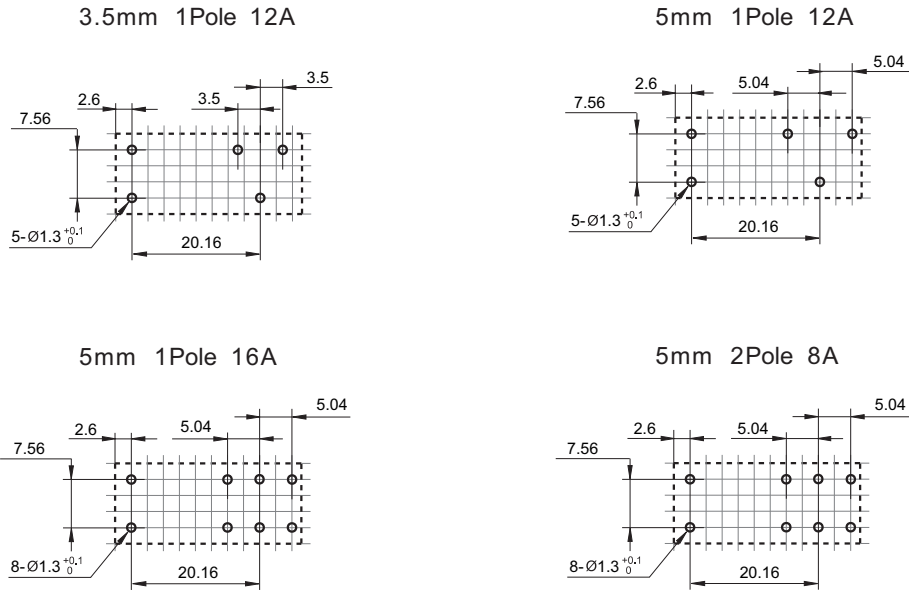


2 Form B



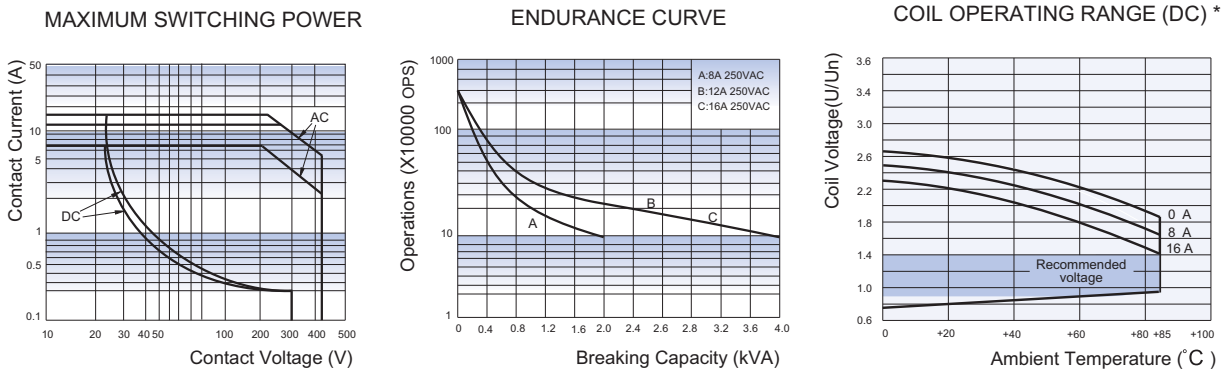
2 Form C

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



**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

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.