

# 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 <sub>2</sub> , AgNi                                                                                                                                                           |
| Contact rating (Res. load) | 3A 250VAC/30VDC<br>5A 250VAC/30VDC                                                                                                                                                  |
| Max. switching voltage     | 277VAC / 30VDC                                                                                                                                                                      |
| Max. switching current     | 5A                                                                                                                                                                                  |
| Max. switching power       | 1385VA / 150W                                                                                                                                                                       |
| Mechanical endurance       | 5 x 10 <sup>6</sup> OPS                                                                                                                                                             |
| Electrical endurance       | 1 x 10 <sup>5</sup> OPS (5A 250VAC, Resistive load, AgNi, at 85°C, 1s on 1s off)<br>5 x 10 <sup>4</sup> OPS (5A 250VAC, Resistive load, AgSnO <sub>2</sub> , 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 & 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 <sup>2</sup>    |
|                                         | Destructive             | 980m/s <sup>2</sup>   |
| 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/s<sup>2</sup> 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               | 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 <sub>2</sub> | 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 <sub>2</sub> | 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

2015 Rev. 1.00

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

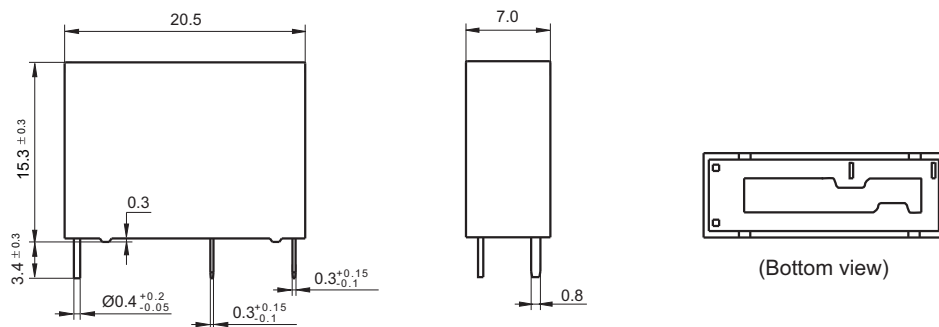
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

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.

## Unit: mm

HF46F/□□-HS1□□ (XXX)



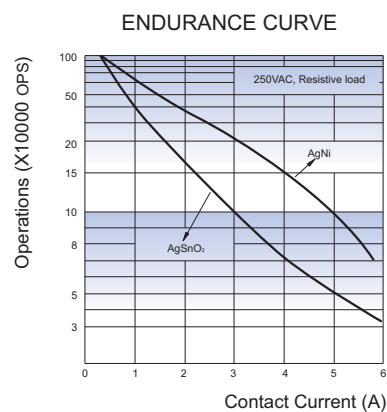
Technical drawing of a stepped shaft. The shaft has a total length of 20 units, divided into three sections: 11.5 units, 7 units, and 1.05 units. The diameter is 4 units, with a tolerance of  $\pm 0.1$  units. The shaft has a central hole with a diameter of 4 units. The drawing shows the shaft in a perspective view with dimensions and a tolerance specification.

## 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,  
AgSnO<sub>2</sub>, 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.