

# HF7FD

# SUBMINIATURE HIGH POWER RELAY



File No.:E134517



File No.: 40008374



File No.:CQC09002037921



## Features

- 12A switching capability
- Ambient temperature meets 105°C
- High performance, Low profile
- Product in accordance to IEC 60335-1 available
- 2kV dielectric strength (between coil and contacts)
- UL94, V-0, CTI250 flammability class
- Double pins type available
- 1 Form A and 1 Form C configurations
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (22.0 x 16.0 x 16.4) mm

## CONTACT DATA

|                                                                 |                                        |                                                                                                                                                                           |
|-----------------------------------------------------------------|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contact arrangement                                             | 1A                                     | 1C                                                                                                                                                                        |
| Contact resistance                                              | 100mΩ max.(at 1A 24VDC)                |                                                                                                                                                                           |
| Contact material                                                | AgSnO <sub>2</sub> , AgCdO             |                                                                                                                                                                           |
| Contact rating<br>(Res. load)                                   | 16A 250VAC<br>12A 250VAC<br>10A 250VAC | 12A 125VAC<br>NO: 10A 250VAC<br>NC: 7A 250VAC                                                                                                                             |
| Max. switching voltage                                          | 250VAC / 28VDC                         |                                                                                                                                                                           |
| Max. switching current                                          | 16A                                    | 10A                                                                                                                                                                       |
| Max. switching power                                            | 4000VA / 280W                          | 2500VA / 196W                                                                                                                                                             |
| Mechanical endurance                                            | 1 x 10 <sup>7</sup> OPS                |                                                                                                                                                                           |
| Electrical endurance<br>(See approval reports for more details) | 1A                                     | Flux proofed: 1 x 10 <sup>5</sup> OPS<br>Plastic sealed: 5 x 10 <sup>4</sup> OPS<br>(10A 277VAC, Resistive load, Room temp, 1s on 9s off)                                 |
|                                                                 | 1C                                     | Flux proofed: 5x 10 <sup>4</sup> OPS<br>Plastic sealed: NO: 5 x 10 <sup>4</sup> OPS<br>NC: 1x 10 <sup>4</sup> OPS<br>(7A 277VAC, Resistive load, Room temp, 1s on 9s off) |

## CHARACTERISTICS

|                               |                         |                                                 |
|-------------------------------|-------------------------|-------------------------------------------------|
| Insulation resistance         |                         | 100MΩ (at 500VDC)                               |
| Dielectric strength           | Between coil & contacts | 2000VAC 1min                                    |
|                               | Between open contacts   | 750VAC 1min                                     |
| Operate time (at nomi. volt.) |                         | 10ms max.                                       |
| Release time (at nomi. volt.) |                         | 5ms max.                                        |
| Humidity                      |                         | 5% to 85% RH                                    |
| Shock resistance              | Functional              | 98m/s <sup>2</sup>                              |
|                               | Destructive             | 980m/s <sup>2</sup>                             |
| Ambient temperature           |                         | HF7FD: -40°C to 85°C<br>HF7FD-T: -40°C to 105°C |
| Vibration resistance          |                         | 10Hz to 55Hz 1.5mm DA                           |
| Termination                   |                         | PCB                                             |
| Unit weight                   |                         | Approx. 9.5g                                    |
| Construction                  |                         | Plastic sealed,<br>Flux proofed                 |

**Notes:** 1) The data shown above are initial values.  
2) Please find coil temperature curve in the characteristic curves below.  
3) UL insulation system: Class F, Class B.



HONGFA RELAY

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

2014 Rev. 1.01

## COIL

|            |               |
|------------|---------------|
| Coil power | Approx. 360mW |
|------------|---------------|

## 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                     | 0.3                       | 3.9                | 25 x (1±10%)      |
| 5                   | 3.75                     | 0.5                       | 6.5                | 70 x (1±10%)      |
| 6                   | 4.50                     | 0.6                       | 7.8                | 100 x (1±10%)     |
| 9                   | 6.75                     | 0.9                       | 11.7               | 225 x (1±10%)     |
| 12                  | 9.00                     | 1.2                       | 15.6               | 400 x (1±10%)     |
| 18                  | 13.5                     | 1.8                       | 23.4               | 900 x (1±10%)     |
| 24                  | 18.0                     | 2.4                       | 31.2               | 1600 x (1±15%)    |
| 48                  | 36.0                     | 4.8                       | 62.4               | 6400 x (1±15%)    |

**Notes:** \*Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

## SAFETY APPROVAL RATINGS

|        |          |                               |                                                                                                                           |
|--------|----------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| UL/CUL | 1 Form A | HF7FD                         | 12A 250VAC (at 85°C, AgSnO <sub>2</sub> , Double pin)<br>10A 277VAC<br>10A 28VDC                                          |
|        |          | HF7FD-T (AgSnO <sub>2</sub> ) | 16A 250VAC (at 40°C)<br>10A 250VAC (at 105°C)<br>8A 250VAC (at 105°C)<br>1/2HP 125VAC (at 40°C)<br>1/2HP 250VAC (at 40°C) |
|        | 1 Form C |                               | 12A 125VAC<br>7A 277VAC<br>7A 28VDC                                                                                       |
|        |          |                               |                                                                                                                           |
| VDE    | 1 Form A |                               | 12A 250VAC (AgSnO <sub>2</sub> , Double pin)<br>10A 250VAC                                                                |
|        | 1 Form C |                               | 7A 250VAC                                                                                                                 |

**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

**HF7FD / 012 -1H P S T G F (XXX)**

**Type** HF7FD: 85°C, HF7FD-T: 105°C

**Coil voltage** 3, 5, 6, 9, 12, 18, 24, 48VDC

**Contact arrangement** 1H: 1 Form A 1Z: 1 Form C

**Pin version** P: Double pins type Nil: Single pin type

**Construction** <sup>1)</sup> S: Plastic sealed Nil: Flux proofed

**Contact material** T: AgSnO<sub>2</sub> Nil: AgCdO

**Contact plating** G: Gold plated Nil: No gold plated

**Insulation standard** F: Class F Nil: Class B

### Customer special code

- Notes:** 1) Under the ambience with dangerous gas like H<sub>2</sub>S, SO<sub>2</sub> or NO<sub>2</sub>, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended.  
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.  
3) If plastic sealed type is selected for cleaning purpose, the vent-hole cover should be excised after cleaning.

## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

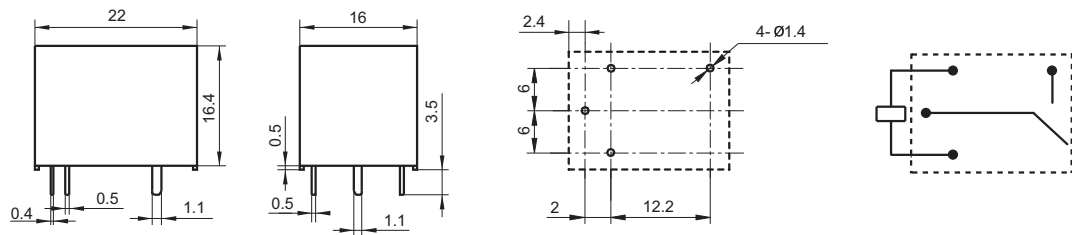
Unit: mm

### Outline Dimensions

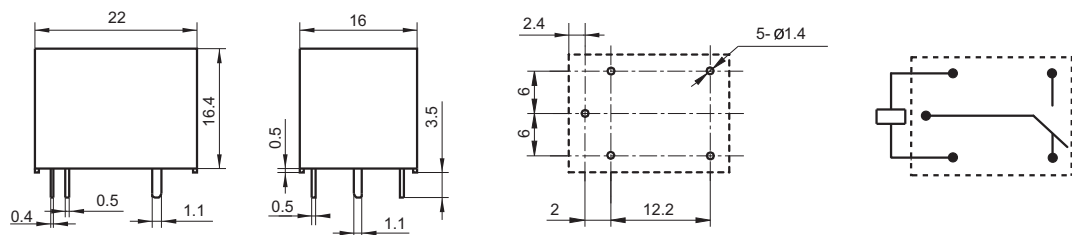
### PCB Layout (Bottom view)

### Wiring Diagram (Bottom View)

#### 1 Form A (Single pin type)



#### 1 Form C (Single pin type)



## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

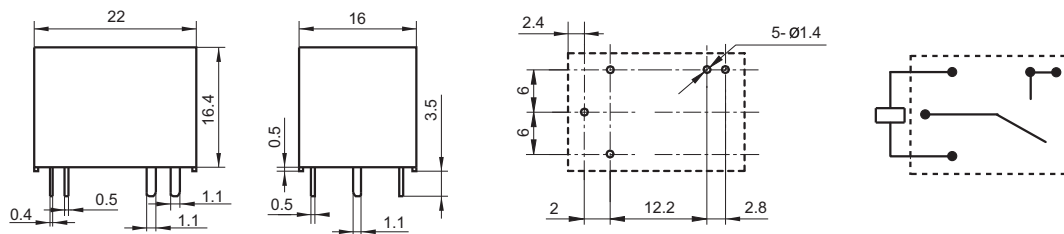
Unit: mm

### Outline Dimensions

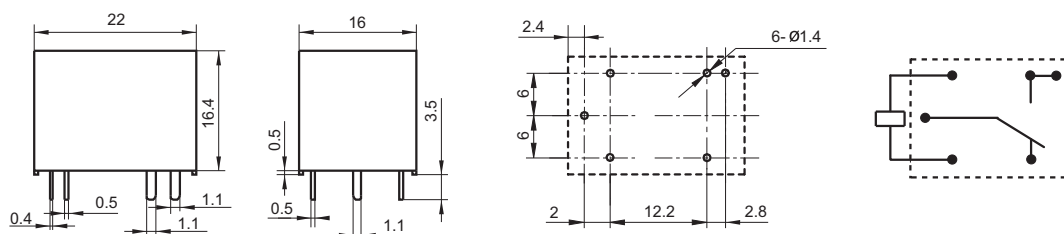
### PCB Layout (Bottom view)

### Wiring Diagram (Bottom View)

#### 1 Form A (Double pins type)



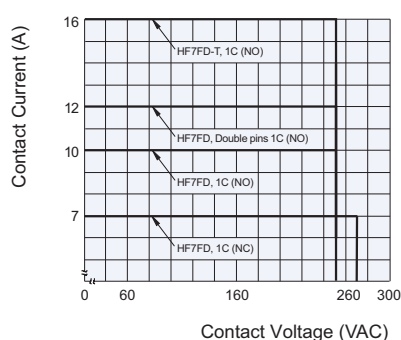
#### 1 Form C (Double pins type)



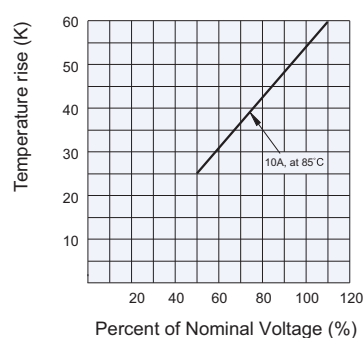
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension  $\leq 1\text{mm}$ , tolerance should be  $\pm 0.2\text{mm}$ ; outline dimension  $> 1\text{mm}$  and  $\leq 5\text{mm}$ , tolerance should be  $\pm 0.3\text{mm}$ ; outline dimension  $> 5\text{mm}$ , tolerance should be  $\pm 0.4\text{mm}$ .  
 2) The tolerance without indicating for PCB layout is always  $\pm 0.1\text{mm}$ .  
 3) Tin-dipped joint is tolerable after terminal tin-dipping as long as the terminal length including the joint is less than 4.0mm.

## CHARACTERISTIC CURVES

### MAXIMUM SWITCHING POWER



### COIL TEMPERATURE RISE



### 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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