

# HFD3

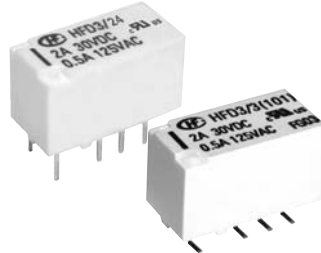
# SUBMINIATURE SIGNAL RELAY



File No.:E133481



File No.:40018867



## Features

- High dielectric withstand voltage of 2000VAC (between coil and contacts)
- Surge withstand voltage up to 2500VAC, meets FCC Part 68 and Telecordia
- Meets EN60950 / EN41003
- SMT and DIP types available
- Bifurcated contacts
- Single side stable and latching type available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (15.0 x 7.5 x 9.0) mm

## CONTACT DATA

|                            |                                          |
|----------------------------|------------------------------------------|
| Contact arrangement        | 2C                                       |
| Contact resistance         | 50mΩ (at 0.1A 6VDC)                      |
| Contact material           | AgNi + Au plated                         |
| Contact rating (Res. load) | 2A 30VDC<br>0.5A 125VAC                  |
| Max. switching power       | 62.5VA / 60W                             |
| Max. switching voltage     | 250VAC / 220VDC                          |
| Max. switching current     | 2A                                       |
| Min. applicable load       | 10mV 10μA                                |
| Mechanical endurance       | 1 x 10 <sup>8</sup> OPS                  |
| Electrical endurance       | 5 x 10 <sup>5</sup> OPS (at 1A 30VDC)    |
|                            | 1 x 10 <sup>5</sup> OPS (at 2A 30VDC)    |
|                            | 1 x 10 <sup>5</sup> OPS (at 0.5A 125VAC) |

## COIL

|                  |                    |       |
|------------------|--------------------|-------|
| Coil power       | Single side stable | 140mW |
|                  | 1 coil latching    | 100mW |
|                  | 2 coils latching   | 200mW |
| Temperature rise | 50K max.           |       |

## CHARACTERISTICS

|                                  |                         |                             |
|----------------------------------|-------------------------|-----------------------------|
| Insulation resistance            |                         | 1000MΩ (at 500VDC)          |
| Dielectric strength              | Between coil & contacts | 2000VAC 1min                |
|                                  | Between open contacts   | 1000VAC 1min                |
|                                  | Between contact sets    | 1500VAC 1min                |
| Surge withstand voltage          |                         |                             |
| Between open contacts (10×160μs) |                         | 1500VAC (FCC part 68)       |
| Between coil & contacts (2×10μs) |                         | 2500VAC (Telecordia)        |
| Operate time (Set time)          |                         | 4ms max.                    |
| Release time (Reset time)        |                         | 4ms max.                    |
| Ambient temperature              |                         | -40°C to 85°C               |
| Humidity                         |                         | 35% to 85% RH               |
| Vibration resistance             | Functional              | 10Hz to 55Hz 3.3mm DA       |
|                                  | Destructive             | 10Hz to 55Hz 5.0mm DA       |
| Shock resistance                 | Functional              | 750m/s <sup>2</sup> (75g)   |
|                                  | Destructive             | 1000m/s <sup>2</sup> (100g) |
| Termination                      |                         | DIP, SMT                    |
| Unit weight                      |                         | Approx. 2g                  |
| Construction                     |                         | Wash tight                  |

**Notes:** The data shown above are initial values.

## SAFETY APPROVAL RATINGS

|        |             |
|--------|-------------|
| UL&CUR | 2A 30VDC    |
|        | 0.5A 125VAC |
| VDE    | 2A 30VDC    |
|        | 0.5A 125VAC |

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



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001 CERTIFIED

2007 Rev. 2.00

**COIL DATA**

at 23°C

**Single side stable**

| Order Number | Nominal Voltage VDC | Pick-up Voltage VDC | Drop-out Voltage VDC | Coil Resistance $\Omega$ | Nominal Power mW | Max. Allowable Voltage VDC |
|--------------|---------------------|---------------------|----------------------|--------------------------|------------------|----------------------------|
| HFD3/1.5     | 1.5                 | 1.13                | 0.15                 | 16 x (1±10%)             | 140              | 2.2                        |
| HFD3/3       | 3                   | 2.25                | 0.3                  | 64.3 x (1±10%)           | 140              | 4.5                        |
| HFD3/4.5     | 4.5                 | 3.38                | 0.45                 | 145 x (1±10%)            | 140              | 6.7                        |
| HFD3/5       | 5                   | 3.75                | 0.5                  | 178 x (1±10%)            | 140              | 7.5                        |
| HFD3/6       | 6                   | 4.5                 | 0.6                  | 257 x (1±10%)            | 140              | 9                          |
| HFD3/9       | 9                   | 6.75                | 0.9                  | 579 x (1±10%)            | 140              | 13.5                       |
| HFD3/12      | 12                  | 9                   | 1.2                  | 1028 x (1±10%)           | 140              | 18                         |
| HFD3/24      | 24                  | 18                  | 2.4                  | 4114 x (1±10%)           | 140              | 36                         |
| HFD3/48      | 48                  | 36                  | 4.8                  | 8533 x (1±10%)           | 270              | 57.6                       |

**1 coil latching**

| Order Number | Nominal Voltage VDC | Set Voltage VDC | Reset Voltage VDC | Coil Resistance $\Omega$ | Nominal Power mW | Max. Allowable Voltage VDC |
|--------------|---------------------|-----------------|-------------------|--------------------------|------------------|----------------------------|
| HFD3/1.5-L1  | 1.5                 | 1.13            | 1.13              | 22.5 x (1±10%)           | 100              | 2.7                        |
| HFD3/3-L1    | 3                   | 2.25            | 2.25              | 90 x (1±10%)             | 100              | 5.4                        |
| HFD3/4.5-L1  | 4.5                 | 3.38            | 3.38              | 203 x (1±10%)            | 100              | 8.1                        |
| HFD3/5-L1    | 5                   | 3.75            | 3.75              | 250 x (1±10%)            | 100              | 9                          |
| HFD3/6-L1    | 6                   | 4.5             | 4.5               | 360 x (1±10%)            | 100              | 10.8                       |
| HFD3/9-L1    | 9                   | 6.75            | 6.75              | 810 x (1±10%)            | 100              | 16.2                       |
| HFD3/12-L1   | 12                  | 9               | 9                 | 1440 x (1±10%)           | 100              | 21.6                       |
| HFD3/24-L1   | 24                  | 18              | 18                | 5760 x (1±10%)           | 100              | 43.2                       |

**2 coil latching**

| Order Number | Nominal Voltage VDC | Set Voltage VDC | Reset Voltage VDC | Coil Resistance $\Omega$ | Nominal Power mW | Max. Allowable Voltage VDC |
|--------------|---------------------|-----------------|-------------------|--------------------------|------------------|----------------------------|
| HFD3/1.5-L2  | 1.5                 | 1.13            | 1.13              | 11.2 x (1±10%)           | 200              | 2.2                        |
| HFD3/3-L2    | 3                   | 2.25            | 2.25              | 45 x (1±10%)             | 200              | 4.5                        |
| HFD3/4.5-L2  | 4.5                 | 3.38            | 3.38              | 101 x (1±10%)            | 200              | 6.7                        |
| HFD3/5-L2    | 5                   | 3.75            | 3.75              | 125 x (1±10%)            | 200              | 7.5                        |
| HFD3/6-L2    | 6                   | 4.5             | 4.5               | 180 x (1±10%)            | 200              | 9.0                        |
| HFD3/9-L2    | 9                   | 6.75            | 6.75              | 405 x (1±10%)            | 200              | 13.5                       |
| HFD3/12-L2   | 12                  | 9               | 9                 | 720 x (1±10%)            | 200              | 18                         |
| HFD3/24-L2   | 24                  | 18              | 18                | 2880 x (1±10%)           | 200              | 36                         |

**Notes:** When user's requirements can't be found in the above table, please counsel with Hongfa for relay application support.

## ORDERING INFORMATION

|                       |                                                                  |
|-----------------------|------------------------------------------------------------------|
| Type                  | HFD3 / 24 -L2 S R (XXX)                                          |
| Coil voltage          | 1.5, 3, 4.5, 5, 6, 9, 12, 24, 48VDC <sup>1)</sup>                |
| Sort                  | L1: 1 coil latching L2: 2 coils latching Nil: Single side stable |
| Terminal type         | S: SMT Nil: DIP                                                  |
| Packing style         | R: Tape and reel packing (Only for SMT type) Nil: Tube packing   |
| Customer special code | (Only for special requirements)                                  |

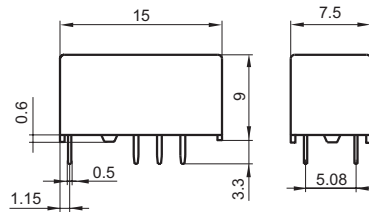
**Notes:** 1) 48VDC coil voltage is only for single side stable version.  
2) HFD3 is also RoHS compliant.

## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

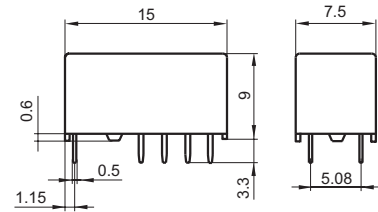
Unit: mm

Outline Dimensions  
(DIP type)

Single side stable & 1 coil latching

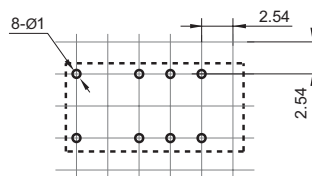


2 coils latching

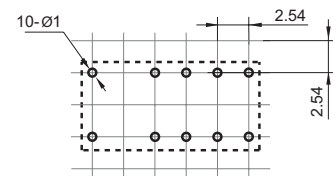


PCB Layout  
(DIP type)  
(Bottom view)

Single side stable & 1 coil latching

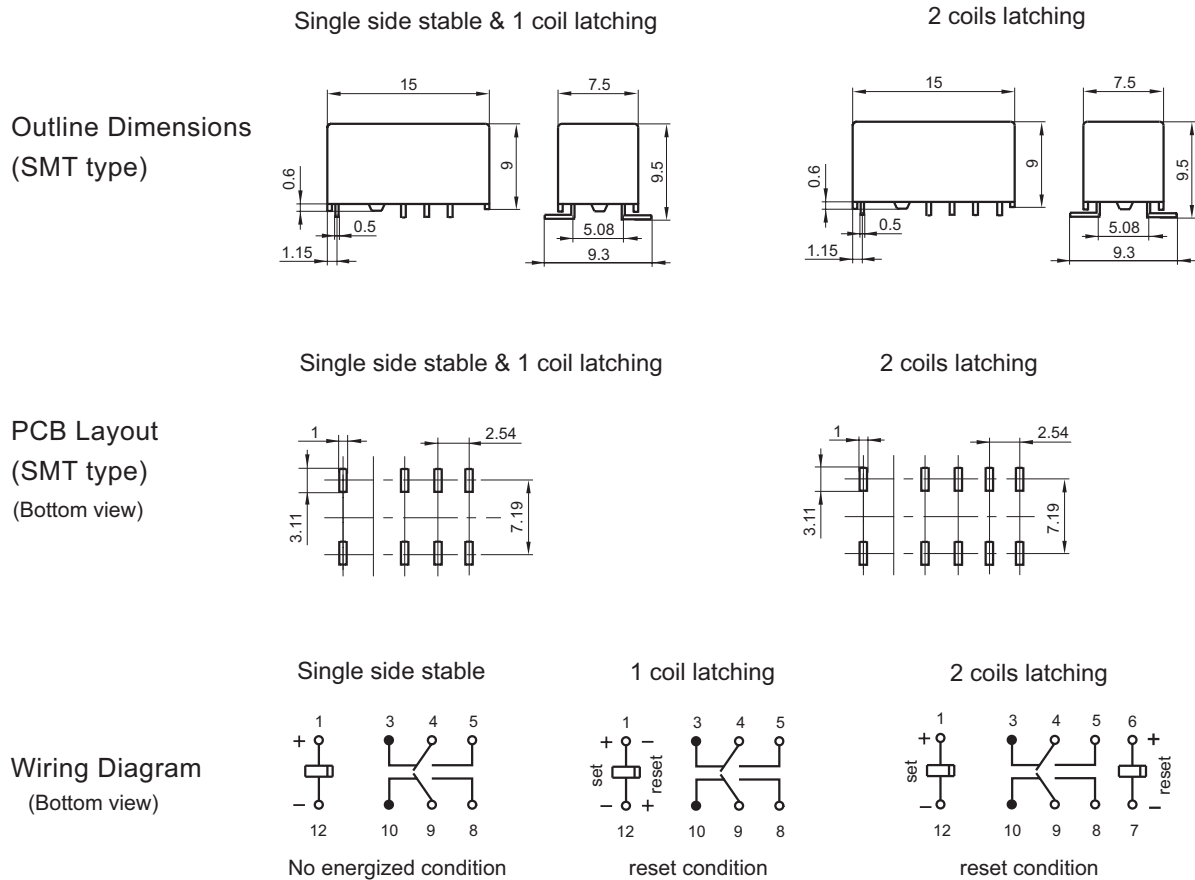


2 coils latching



## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm



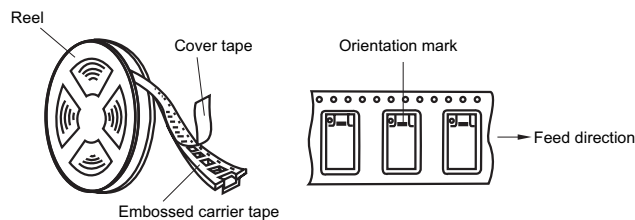
### Notice

- Relay is on the "reset" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
- In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized.

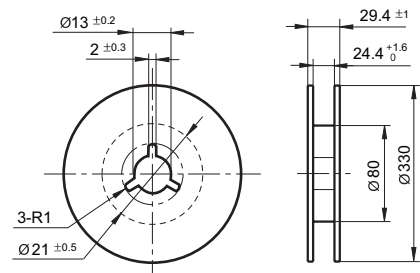
## TAPE PACKING

Unit: mm

### Direction of Relay Insertion



### Reel Dimensions

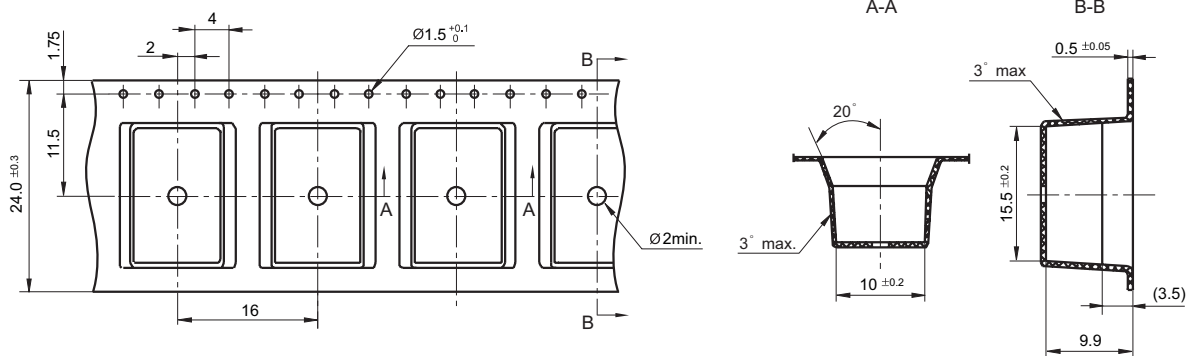


- Notes:**
- 1) Packing: 400pcs/reel, 5 reels/carton.
  - 2) MOQ for reel packing is 800pcs.

**TAPE PACKING** Unit: mm

**TAPE PACKING** Unit: mm

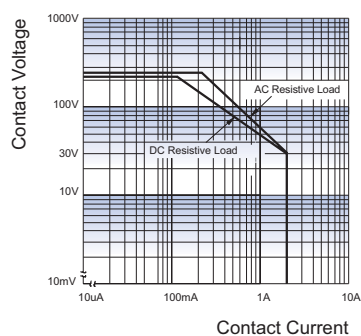
## Tape Dimensions



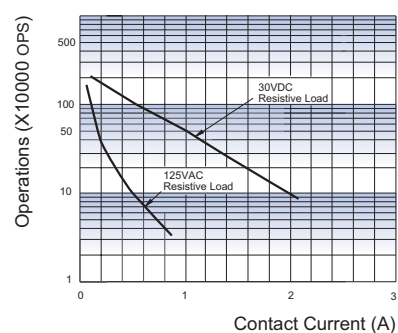
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension  $\leq 1\text{mm}$ , tolerance should be  $\pm 0.2\text{mm}$ ; outline dimension  $> 1\text{mm}$  and  $\leq 5\text{mm}$ , tolerance should be  $\pm 0.3\text{mm}$ ; outline dimension  $> 5\text{mm}$ , tolerance should be  $\pm 0.4\text{mm}$ .  
2) The tolerance without indicating for PCB layout is always  $\pm 0.1\text{mm}$ .  
3) The width of the gridding is  $2.54\text{mm}$ .

## CHARACTERISTIC CURVES

## MAXIMUM SWITCHING POWER



### ENDURANCE CURVE



## 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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