

# HF105F-4

## MINIATURE HIGH POWER RELAY

c  us

File No.:E134517



File No.:40025518 (DC type)



File No.:CQC09002031229(DC type)



### Features

- 40A switching capability
- 2.5kV dielectric strength  
(between coil and contacts)
- Heavy load up to 7,200VA
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (50 x 27.2 x 27.8) mm

### CONTACT DATA

| Contact arrangement     | 1A                                                                                             | 1B                      | 1C (NO)                 | 1C (NC)                 |
|-------------------------|------------------------------------------------------------------------------------------------|-------------------------|-------------------------|-------------------------|
| Contact resistance      | 50mΩ max.(at 1A 24VDC)                                                                         |                         |                         |                         |
| Contact material        | AgSnO <sub>2</sub> , AgCdO                                                                     |                         |                         |                         |
| Max. switching capacity | 7200VA/560W                                                                                    | 3600VA/280W             | 4800VA/560W             | 2400VA/280W             |
| Max. switching voltage  | 277VAC/28VDC                                                                                   |                         |                         |                         |
| Max. switching current  | 40A                                                                                            | 15A                     | 20A                     | 10A                     |
| HF105F-4 rating         | 30A 240VAC<br>20A 28VDC                                                                        | 15A 240VAC<br>10A 28VDC | 20A 240VAC<br>20A 28VDC | 10A 240VAC<br>10A 28VDC |
| HF105F-4L rating        | 25A 240VAC<br>20A 28VDC                                                                        | 15A 240VAC<br>10A 28VDC | 20A 240VAC<br>20A 28VDC | 10A 240VAC<br>10A 28VDC |
| Mechanical endurance    | 1 x 10 <sup>7</sup> OPS                                                                        |                         |                         |                         |
| Electrical endurance    | 1H type: 1 x 10 <sup>5</sup> OPS (28A 277VAC, Resistive load, AgCdO, Room temp., 1s on 9s off) |                         |                         |                         |

### CHARACTERISTICS

|                               |                                        |                     |
|-------------------------------|----------------------------------------|---------------------|
| Insulation resistance         | 1000MΩ (at 500VDC)                     |                     |
| Dielectric strength           | Between coil & contacts                | 2500VAC 1min        |
|                               | Between open contacts                  | 1500VAC 1min        |
| Operate time (at nomi. volt.) | DC type: 15ms max.                     |                     |
| Release time (at nomi. volt.) | DC type: 10ms max.                     |                     |
| Ambient temperature           | DC: -55°C to 85°C<br>AC: -55°C to 60°C |                     |
| Shock resistance              | Functional                             | 98m/s <sup>2</sup>  |
|                               | Destructive                            | 980m/s <sup>2</sup> |
| Vibration resistance          | 10Hz to 55Hz 1.5mm DA                  |                     |
| Humidity                      | 5% to 85% RH                           |                     |
| Termination                   | QC                                     |                     |
| Unit weight                   | Approx. 36g                            |                     |
| Construction                  | Plastic sealed,<br>Dust protected      |                     |

**Notes:** 1) For plastic sealed type, the venting-hole should be excised in test.  
2) The data shown above are initial values.  
3) Please find coil temperature curve in the characteristic curves below.  
4) UL insulation system: Class F, Class B.

### COIL

|            |                                                 |
|------------|-------------------------------------------------|
| Coil power | DC type: Approx. 900mW;<br>AC type: Approx. 2VA |
|------------|-------------------------------------------------|

### SAFETY APPROVAL RATINGS

|            |          |                    |                                                                                                 |
|------------|----------|--------------------|-------------------------------------------------------------------------------------------------|
| UL/<br>CUL | 1 Form A | AgSnO <sub>2</sub> | 30A 277VAC<br>40A 277VAC<br>2HP 250VAC<br>1HP 125VAC                                            |
|            |          | AgCdO              | 30A 28VDC<br>28A 277VAC<br>277VAC(FLA=20)(LRA=60)                                               |
|            | 1 Form B | AgCdO              | 15A 277VAC<br>10A 28VDC<br>1/2HP 250VAC<br>1/4HP 125VAC<br>277VAC(FLA=10)(LRA=33)               |
|            |          | AgCdO              | 30A 277VAC<br>2HP 250VAC<br>1HP 125VAC                                                          |
|            | 1 Form C | AgCdO              | 20A 277VAC<br>20A 28VDC<br>277VAC(FLA=20)(LRA=60)                                               |
|            |          | AgCdO              | 20A 277VAC<br>1/2HP 250VAC<br>1/4HP 125VAC<br>10A 277VAC<br>10A 28VDC<br>277VAC(FLA=10)(LRA=33) |

**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

2014 Rev. 1.01

## COIL DATA

at 23°C

### DC type

| Nominal Voltage VDC | Pick-up Voltage VDC max. | Drop-out Voltage VDC min. | Max. Voltage VDC * | Coil Resistance $\Omega$ |
|---------------------|--------------------------|---------------------------|--------------------|--------------------------|
| 5                   | 3.75                     | 0.5                       | 6.5                | 27 x (1±10%)             |
| 6                   | 4.50                     | 0.6                       | 7.8                | 40 x (1±10%)             |
| 9                   | 6.75                     | 0.9                       | 11.7               | 97 x (1±10%)             |
| 12                  | 9.00                     | 1.2                       | 15.6               | 155 x (1±10%)            |
| 15                  | 11.25                    | 1.5                       | 19.5               | 256 x (1±10%)            |
| 18                  | 13.50                    | 1.8                       | 23.4               | 380 x (1±10%)            |
| 24                  | 18.00                    | 2.4                       | 31.2               | 660 x (1±10%)            |
| 48                  | 36.00                    | 4.8                       | 62.4               | 2560 x (1±10%)           |
| 70                  | 52.50                    | 7.0                       | 91                 | 5500 x (1±10%)           |
| 110                 | 82.50                    | 11                        | 143                | 13450 x (1±10%)          |

### AC type

| Nominal Voltage VAC | Pick-up Voltage VAC max. | Drop-out Voltage VAC min. | Max. Voltage VDC* | Coil Resistance $\Omega$ |
|---------------------|--------------------------|---------------------------|-------------------|--------------------------|
| 12                  | 9.6                      | 2.4                       | 15.6              | 25 x (1±10%)             |
| 24                  | 19.2                     | 4.8                       | 31.2              | 100 x (1±10%)            |
| 120                 | 96.0                     | 24.0                      | 156               | 2500 x (1±10%)           |
| 208                 | 166.4                    | 41                        | 270.4             | 11000 x (1±10%)          |
| 220                 | 176                      | 44                        | 286               | 13490 x (1±10%)          |
| 240                 | 192                      | 48                        | 286               | 13490 x (1±10%)          |
| 277                 | 220                      | 54                        | 360.1             | 15000 x (1±10%)          |

- Notes:** 1) When requiring pick-up voltage < 80% of nominal voltage, special order allowed.  
 2) The data shown above are initial values at 50Hz. When requiring 60Hz, special order allowed.  
 3) \*Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

## ORDERING INFORMATION

|                                    |                                           |
|------------------------------------|-------------------------------------------|
| HF105F-4 / 018 D K -1H S T F (XXX) |                                           |
| Type                               | HF105F-4: 30A<br>HF105F-4L: 25A           |
| Coil voltage                       | DC: 5VDC to 110VDC<br>AC: 12VAC to 277VAC |
| Coil voltage form                  | D: DC    A: AC                            |
| Coil terminal width                | K: 4.8mm    Nil: 2.8mm                    |
| Contact arrangement                | 1H:1 Form A    1D:1 Form B    1Z:1 Form C |
| Construction <sup>1)</sup>         | S: Plastic sealed    Nil: Dust protected  |
| Contact material                   | T: AgSnO <sub>2</sub> Nil: AgCdO          |
| Insulation standard                | F: Class F    Nil: Class B                |
| Customer special code              |                                           |

- Notes:** 1) We recommend dust protected 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.



## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

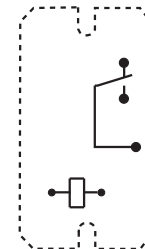
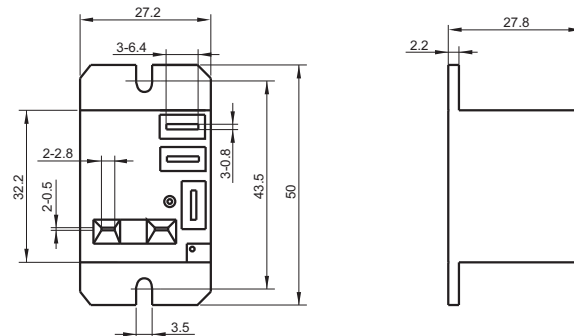
Unit: mm

### 1 Form C

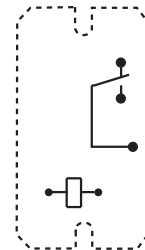
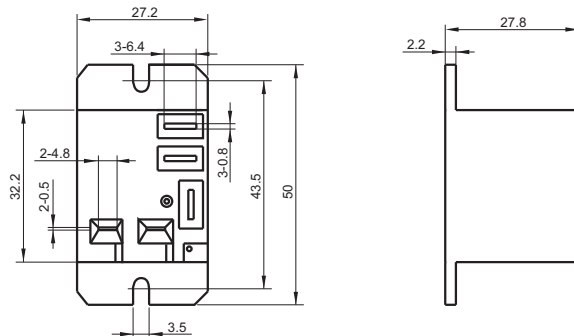
#### Outline Dimensions

#### Wiring Diagram (Top view)

##### 2.8mm Terminal width



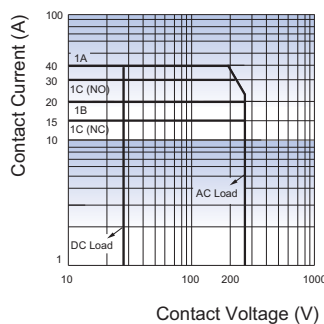
##### 4.8mm Terminal width



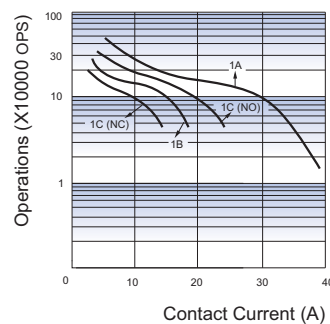
Remark: In case of no tolerance shown in outline dimension: outline dimension  $\leq 1\text{mm}$ , tolerance should be  $\pm 0.2\text{mm}$ ; outline dimension  $> 1\text{mm}$  and  $\leq 5\text{mm}$ , tolerance should be  $\pm 0.3\text{mm}$ ; outline dimension  $> 5\text{mm}$ , tolerance should be  $\pm 0.4\text{mm}$ .

## CHARACTERISTIC CURVES

#### MAXIMUM SWITCHING POWER

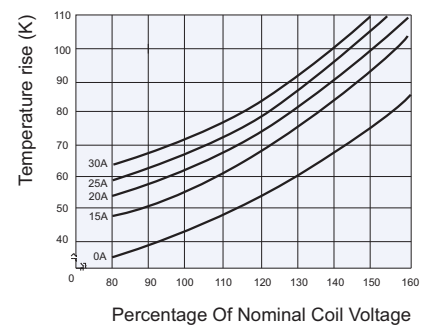


#### ENDURANCE CURVE



**Test conditions:**  
Resistive load, Dust protected,  
AgCdO, Room temp., 1s on 9s off.

#### 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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