

# HF32FV-16

## SUBMINIATURE HIGH POWER RELAY



File No.: E134517



File No.: 40012204



File No.: CQC14002120720



### Features

- 16A switching capability
- Dielectric strength 4kV(between coil and contacts)
- 1 Form A configuration
- UL insulation system: Class F
- Product in accordance to IEC 62368-1 available
- Products which coincident with TV-8 & TV-10 products are available
- Provides products that meet 16A 1 x 10<sup>5</sup>ops electrical durability

**RoHS compliant**

### CONTACT DATA

|                                  |                             |
|----------------------------------|-----------------------------|
| Contact arrangement              | 1A                          |
| Contact resistance <sup>1)</sup> | 100mΩ max. (at 1A 6VDC)     |
| Contact material                 | AgSnO <sub>2</sub>          |
| Contact rating<br>(General use)  | 16A 250VAC<br>TV-10<br>TV-8 |
| Max. switching voltage           | 277VAC                      |
| Max. switching current           | 16A                         |
| Max. switching power             | 4432VA                      |
| Mechanical endurance             | 5 x 10 <sup>6</sup> OPS     |

|                      |   |
|----------------------|---|
| Electrical endurance | Standard type:<br>1 x 10 <sup>4</sup> OPS<br>(16A 250VAC General use, 85°C, 1s on 9s off)<br>5x 10 <sup>4</sup> OPS<br>(16A 250VAC Resistive load, 85°C, 1s on 9s off)<br>Sensitive type:<br>5x 10 <sup>4</sup> OPS<br>(16A 250VAC General use, 85°C, 1s on 9s off)<br>5x 10 <sup>4</sup> OPS<br>(16A 250VAC Resistive load, 85°C, 1s on 9s off)<br>1x 10 <sup>5</sup> OPS<br>(16A 250VAC Resistive load, at room temp., 1s on 9s off)<br>Sensitive type:('590' special code)<br>5 x 10 <sup>4</sup> OPS<br>(16A 250VAC, Resistive load, 85°C, 1s on 9s off)<br>TV-10<br>Sensitive type:('931' special code)<br>1 x 10 <sup>4</sup> OPS<br>(16A 250VAC General use, 85°C, 1s on 9s off)<br>5 x 10 <sup>4</sup> OPS<br>(16A 250VAC, Resistive load, 85°C, 1s on 9s off)<br>Super Sensitive type:('590' special code)<br>5 x 10 <sup>4</sup> OPS<br>(16A 250VAC Resistive load, 85°C, 1s on 9s off)<br>TV-8 |
|                      |   |

**Notes:**1) The data shown above are initial values.

### CHARACTERISTICS

|                               |                         |                       |
|-------------------------------|-------------------------|-----------------------|
| Insulation resistance         |                         | 1000MΩ (at 500VDC)    |
| Dielectric strength           | Between coil & contacts | 4000VAC 1min          |
|                               | Between open contacts   | 1000VAC 1min          |
| Operate time (at nomi. volt.) |                         | 10ms max.             |
| Release time (at nomi. volt.) |                         | 5ms max.              |
| Humidity                      | 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          |
| Ambient temperature           |                         | -40°C to 85°C         |
| Termination                   |                         | PCB                   |
| Unit weight                   |                         | Approx. 7g            |
| Construction                  |                         | Flux proofed          |

**Notes:**1) The data shown above are initial values.

### COIL

|            |                                   |
|------------|-----------------------------------|
| Coil power | Standard:Approx. 800mW            |
|            | Sensitive type:Approx.400mW       |
|            | Super sensitive type:Approx.200mW |

### COIL DATA

at 23°C

#### Standard type

| Nominal Voltage VDC | Pick-up Voltage VDC max.1) | Drop-out Voltage VDC min.1) | Max. Voltage VDC *2) | Coil Resistance Ω |
|---------------------|----------------------------|-----------------------------|----------------------|-------------------|
| 12                  | 9                          | 0.6                         | 13.2                 | 180 x (1±10%)     |
| 24                  | 18                         | 1.2                         | 26.4                 | 720 x (1±10%)     |



HONGFA RELAY

ISO9001, IATF16949, ISO14001, ISO45001, IECQ QC 080000, ISO/IEC 27001 CERTIFIED

2023 Rev. 1.00

## COIL DATA

### Sensitive type/Super sensitive type

| Nominal Voltage<br>VDC | Pick-up Voltage<br>VDC<br>max. <sup>1)</sup> | Drop-out Voltage<br>VDC<br>min. <sup>1)</sup> | Max. Voltage<br>VDC *2) | Coil Resistance<br>Ω |                            |
|------------------------|--|---|-------------------------|----------------------|----------------------------|
|                        |  |   |                         | Sensitivel Type<br>Ω | Super Sensitivel Type<br>Ω |
| 3                      | 2.25   | 0.15  | 3.9                     | 22 x (1±10%)         | 45 x (1±10%)               |
| 5                      | 3.75   | 0.25  | 6.5                     | 62 x (1±10%)         | 125 x (1±10%)              |
| 6                      | 4.5  | 0.3   | 7.8                     | 90 x (1±10%)         | 180 x (1±10%)              |
| 9                      | 6.75   | 0.45  | 11.7                    | 202x (1±10%)         | 400 x (1±10%)              |
| 12                     | 9  | 0.6   | 15.6                    | 360x(1±10%)          | 720x (1±10%)               |
| 18                     | 13.5   | 0.9   | 23.4                    | 810x(1±10%)          | 1600x(1±10%)               |
| 24                     | 18   | 1.2   | 31.2                    | 1440x(1±10%)         | 2800x(1±10%)               |
| 48                     | 36   | 2.4   | 62.4                    | 5760x(1±10%)         | 11520x(1±10%)              |

Notes: 1) The data shown above are initial values.

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

3) When using standard products, it needs to drive at rated voltage, and then step down the voltage (50% of rated voltage) to hold.

## SAFETY APPROVAL RATINGS

|        |          |   |
|--------|----------|---|
| UL/CUL | 1 Form A | 16A 250VAC at 85°C Standard type<br>16A 250VAC at 85°C (Sensitive)<br>16A 250VAC at 85°C (Super Sensitive)<br>TV-5 120VAC Standard type<br>TV-10 Sensitive '590' special code type<br>TV-8 Super Sensitive '590' special code type<br>1000W Incandescent '590' special code (Sensitive)<br>Electronic Ballast 5A 120VAC '590' special code (Sensitive)<br>1/2HP 120VAC at 85°C '590' special code (Sensitive)<br>1HP 250VAC at 85°C '590' special code (Sensitive)<br>Electronic Ballast 3A 120VAC '590' special code (Super Sensitive)<br>1/3HP 120VAC at 85°C (Super Sensitive)<br>3/4HP 250VAC at 85°C (Super Sensitive) |
| VDE    | 1 Form A | 16A 250VAC at 85°C Standard type<br>16A 250VAC at 85°C (Sensitive)<br>16A 250VAC at 85°C (Super Sensitive)  |
| CQC    | 1 Form A | 16A 250VAC 85°C Standard type<br>16A 250VAC 85°C (Sensitive)<br>16A 250VAC 85°C (Super Sensitive)   |

Notes: 1) Only typical loads are listed above. Other load specifications can be available upon request.

## ORDERING INFORMATION

|                            |   |    |    |                 |   |   |       |
|----------------------------|---|----|----|-----------------|---|---|-------|
| Type                       | HF32FV-16/                                      | 12 | -H | L <sup>1)</sup> | T | F | (XXX) |
| Coil voltage <sup>1)</sup> | 3, 5, 6, 9, 12, 18, 24, 48VDC                   |    |    |                 |   |   |       |
| Contact arrangement        | H: 1 Form A                                     |    |    |                 |   |   |       |
| Coil power                 | L: Sensitive C: : Super Sensitive Nil: Standard |    |    |                 |   |   |       |
| Contact material           | T: AgSnO <sub>2</sub>                           |    |    |                 |   |   |       |
| Insulation standard        | F: Class F                                      |    |    |                 |   |   |       |
| Special code <sup>2)</sup> | XXX: Customer special requirement               |    |    | Nil: Standard   |   |   |       |

Notes: 1) 3, 5, 6, 9, 12, 18, 24, 48VDC are only applicable to sensitive and super sensitive products.

2) The customer special requirement express as special code after evaluating by Hongfa.

# OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

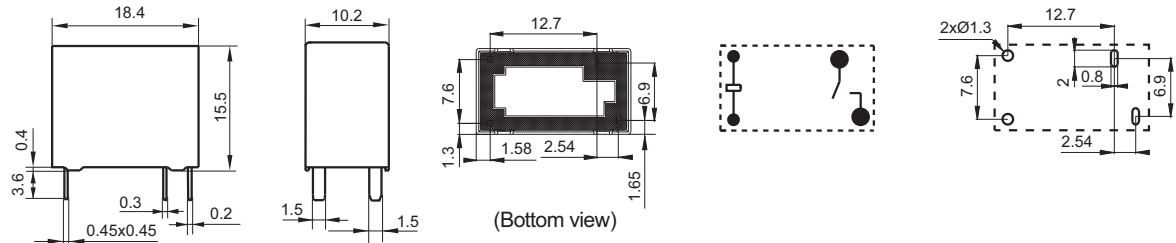
Unit: mm

## Outline Dimensions

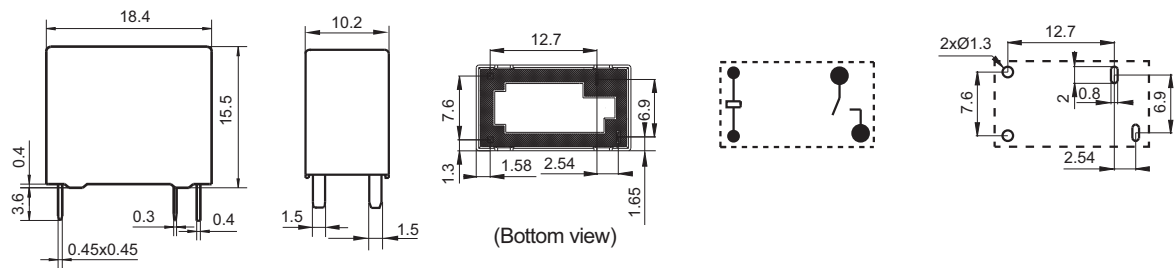
## Wiring Diagram (Bottom view)

## PCB Layout (Bottom view)

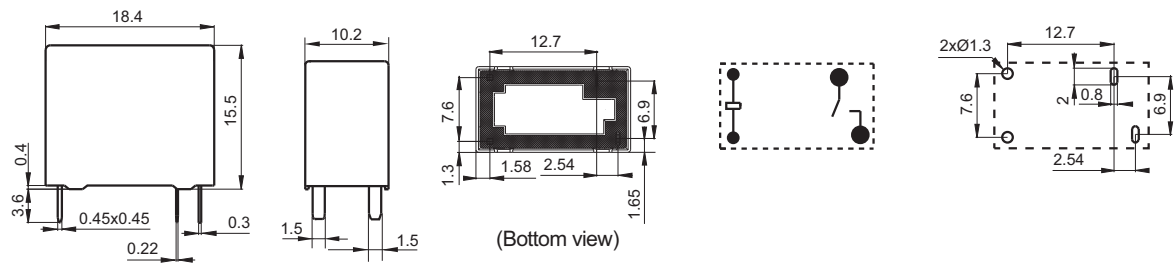
### 1 Form A(Standard type)



### 1 Form A(Sensitive type)

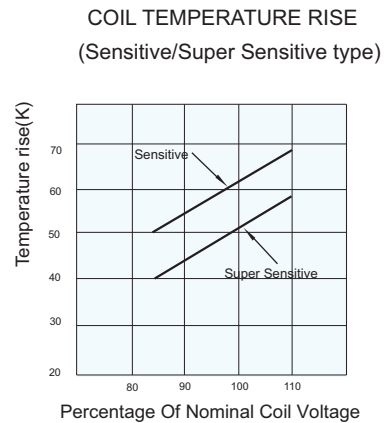
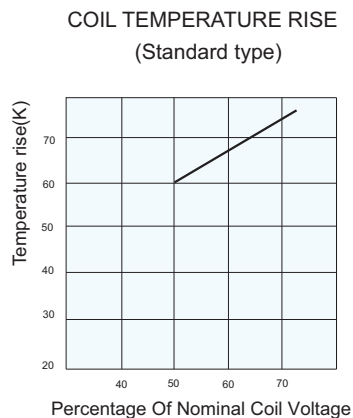
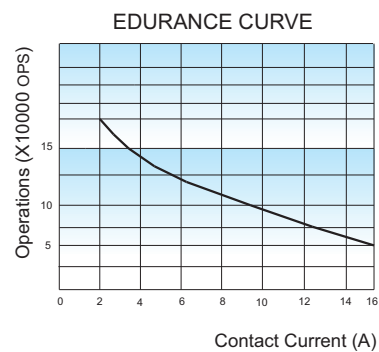
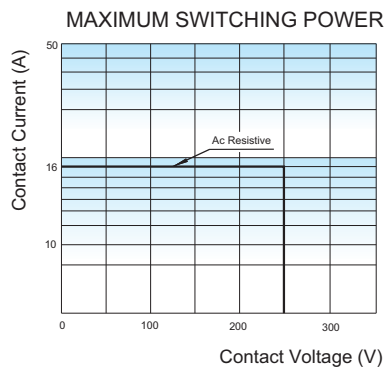


### 1 Form A(Super Sensitive type)



- Remark: 1) The pin dimension of the product outline drawing is the size before tinning (it will become larger after tinning), and the mounting hole size is the recommended design size of the PCB board hole. The specific PCB board hole design size can be mapped and adjusted according to the actual product.
- 2) 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



### 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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