

# HFE12

# MINIATURE HIGH POWER LATCHING RELAY



## Features

- 120A Latching relay
- Electrical endurance 10000ops
- According to IEC62055-31:UC3
- Contact resistance  $\leq 0.35m\Omega$

## CONTACT DATA

|                                  |   |
|----------------------------------|---|
| Contact arrangement              | 1A, 1B  |
| Contact resistance <sup>1)</sup> | Typ.:0.35m $\Omega$ max.(at 100A) <sup>2)</sup> |
| Contact material                 | AgSnO <sub>2</sub>                              |
| Contact rating                   | 100A 220VAC                                     |
| Max. switching voltage           | 253VAC  |
| Max. switching current           | 120A  |
| Rated switching power            | 22000VA   |
| Mechanical endurance             | 1 x 10 <sup>5</sup> OPS                         |

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

2) Typical value: Sampling quantity for contact resistance shall not less than 20 pcs, take the average value from 5 continous measurements for each sample.

## CHARACTERISTICS

|                             |                         |                            |
|-----------------------------|-------------------------|----------------------------|
| Insulation resistance       |                         | 1000M $\Omega$ (at 500VDC) |
| Dielectric strength         | Between coil & contacts | 4000VAC 1min               |
|                             | Between open contacts   | 2000VAC 1min               |
| Creepage distance           |                         | 8mm                        |
| Set time (at nomi. volt.)   |                         | 20ms max.                  |
| Reset time (at nomi. volt.) |                         | 20ms max.                  |
| 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               |
| Ambient temperature         |                         | -40°C to 85°C              |
| Termination                 | Coil termination        | PCB&QC                     |
|                             | Load termination        | QC                         |
| Unit weight                 |                         | Approx. 85g                |
| Construction                |                         | Dust protected             |

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

## COIL

|            |   |
|------------|---|
| Coil power | Single coil latching: Approx. 2.4W<br>Double coils latching: Approx. 4.8W |
|------------|---|

## COIL DATA

at 23°C

Single coil latching

| Nominal Voltage VDC | Set / Reset Voltage VDC <sup>1)</sup> max. | Pulse Duration (Recommended) ms | Coil Resistance x (1 $\pm$ 10%) $\Omega$ |
|---------------------|--|---------------------------------|--|
| 6                   | $\leq 4.8$                                 | 50 ~ 100                        | 16                                       |
| 9                   | $\leq 7.2$                                 | 50 ~ 100                        | 34                                       |
| 12                  | $\leq 9.6$                                 | 50 ~ 100                        | 60                                       |
| 24                  | $\leq 19.2$                                | 50 ~ 100                        | 250                                      |
| 48                  | $\leq 38.4$                                | 50 ~ 100                        | 1000                                     |

Double coils latching

| Nominal Voltage VDC | Set / Reset Voltage VDC <sup>1)</sup> max. | Pulse Duration (Recommended) ms | Coil Resistance x (1 $\pm$ 10%) $\Omega$ |
|---------------------|--|---------------------------------|--|
| 6                   | $\leq 4.8$                                 | 50 ~ 100                        | 8+8                                      |
| 9                   | $\leq 7.2$                                 | 50 ~ 100                        | 17+17                                    |
| 12                  | $\leq 9.6$                                 | 50 ~ 100                        | 30+30                                    |
| 24                  | $\leq 19.2$                                | 50 ~ 100                        | 125+125                                  |
| 48                  | $\leq 38.4$                                | 50 ~ 100                        | 500+500                                  |

**Notes:**1) The data shown above are initial values ; recommended driving voltage is 1~1.5times of rated voltage.

## ELECTRICAL ENDURANCE

| UC Class   | Voltage (Uc) | Current (Ic) | Power Factor    | Close Open time (s) | Electrical endurance (ops) |
|------------|--------------|--------------|-----------------|---------------------|----------------------------|
| 417 (UC3)  | 220VAC       | 100A         | COS $\phi$ =1   | 10:20               | 5000                       |
|            |              |              | COS $\phi$ =0.5 |                     | 5000                       |
| NIL: (UC3) |              | 100A         | COS $\phi$ =1   |                     | 5000                       |
|            |              |              | COS $\phi$ =0.5 |                     | 5000                       |
|            |              |              |                 |                     | Total:10000                |
|            |              |              |                 |                     | Total:10000                |

**Notes:** 1) Electrical endurance meet IEC62055-31 test requirement,do the inductive load test after the resistive load test.

2) The coil is driven at rated voltage.



HONGFA RELAY

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

2019 Rev. 1.00

## ORDERING INFORMATION

|                              |  |    |     |    |   |   |    |       |
|------------------------------|--|----|-----|----|---|---|----|-------|
| Type                         | HFE12  | -C | /12 | -D | T | 2 | -R | (XXX) |
| Version                      | A: Type A contact terminal<br>B: Type B contact terminal<br>C: Type C contact terminal<br>D: Type D contact terminal<br>F: Type F contact terminal<br>G: Type G contact terminal |    |     |    |   |   |    |       |
| Coil voltage                 | 6, 9, 12, 24, 48VDC  |    |     |    |   |   |    |       |
| Contact form <sup>1)</sup>   | D: 1 Form B<br>H: 1 Form A   |    |     |    |   |   |    |       |
| Contact material             | T: AgSnO <sub>2</sub>  |    |     |    |   |   |    |       |
| Sort                         | 1: Single coil latching    2: Double coils latching  |    |     |    |   |   |    |       |
| Polarity                     | R: Negative polarity    Nil: Positive polarity   |    |     |    |   |   |    |       |
| Special code <sup>2)3)</sup> | XXX: Customer special requirement    Nil: Standard(See electrical endurance)   |    |     |    |   |   |    |       |

**Notes:** 1) H means that relay is on the "reset" status when delivery; D means that relay is on the "set" status when delivery. If no special required by customer, we will keep the relay on the "set" status when delivery.

2) Please make clear your technical requirements, and choose from the following UC rating:

UC3: meet the UC3 requirements on IEC62055-31: Making test:3kA/10ms, carrying test 6kA/10ms.

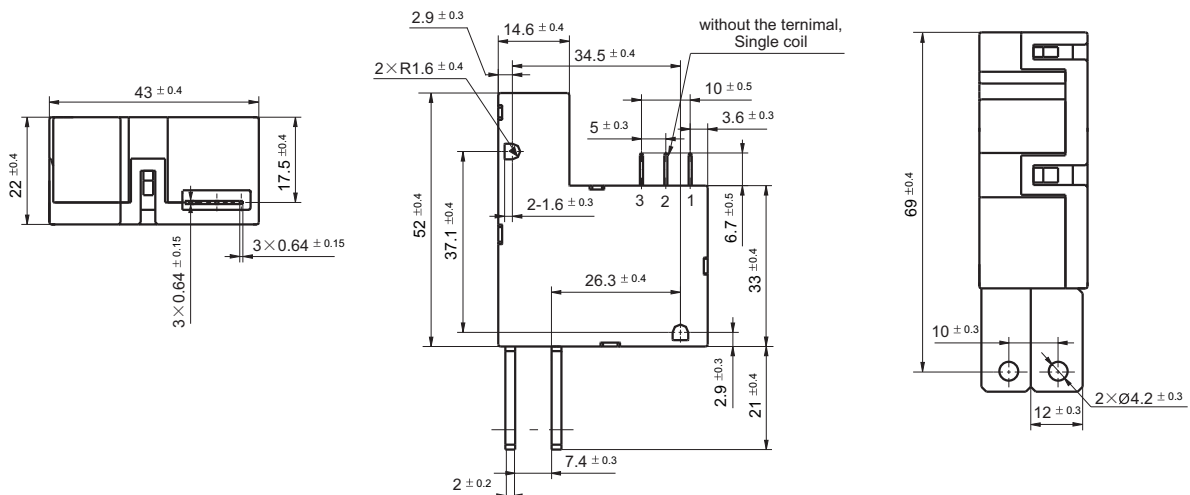
3) The customer special requirement express as special code after evaluating by Hongfa. e.g. (417) stands for UC3.

## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

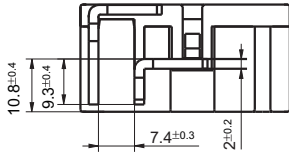
### Outline Dimensions

#### Type C contact terminal

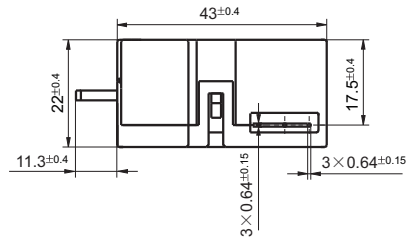
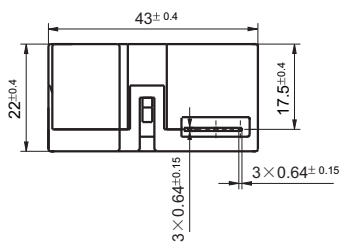
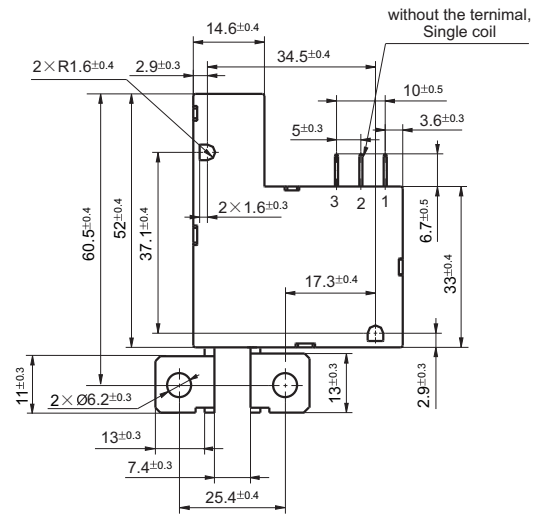
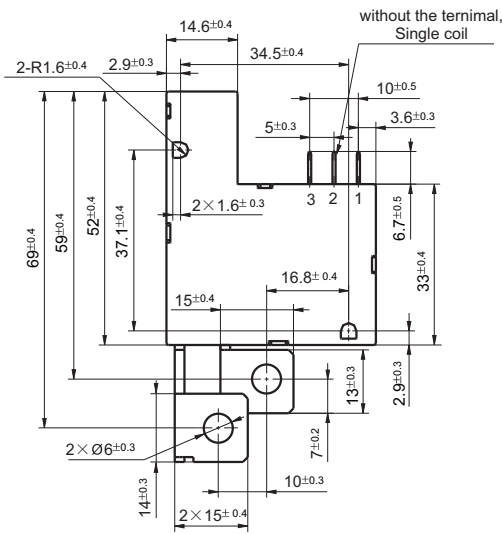
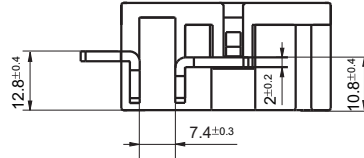


Outline Dimensions

Type A contact terminal

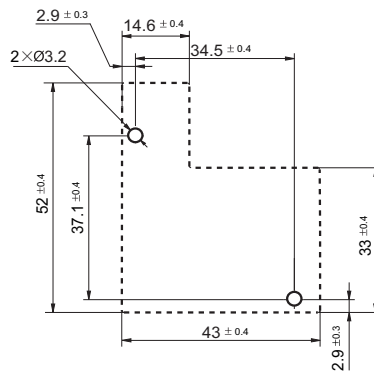


Type B contact terminal





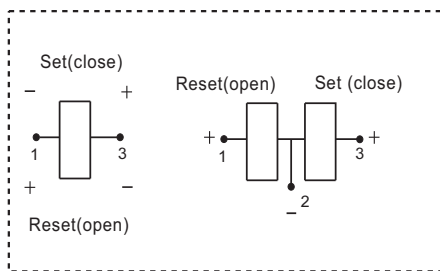
PCB Layout



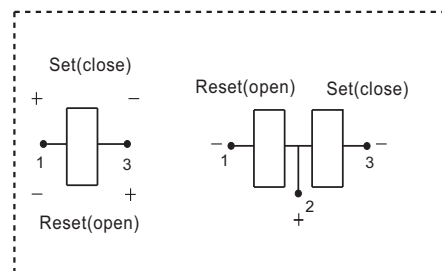
Remark: In case of no tolerance shown in outline dimension: outline dimension  $\leq 1\text{mm}$ , tolerance should be  $\pm 0.1\text{mm}$ ; outline dimension  $> 1\text{mm}$  and  $\leq 5\text{mm}$ , tolerance should be  $\pm 0.2\text{mm}$ ; outline dimension  $> 5\text{mm}$ , tolerance should be  $\pm 0.4\text{mm}$ .

Coil Wiring Diagram

Positive polarity



Negative polarity



Notice:

1. Relay is on the "reset" or "set" status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to "set" or "reset" status, therefore, when application (connecting the power supply), please reset the relay to "set" or "reset" status on request.
2. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. Normally the load terminals are not suitable for reflow solder, wave solder or tin solder, we suggest use spot welding. Load terminals shall be prevented from assembly stress, or freely move.
4. Relays used for metering measuring applications are usually made with dust proof structure, while most relays could be made specially per customer's specific requirements. No longer than 6 months' storage time is recommended for this kind of relay, and please pay attention to the storage environment. To ensure contact reliability, we will keep contact status be closed when delivery if no special required by customer.

Disclaimer

The specification is for reference only. 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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