# HF49FD MINIATURE POWER RELAY

c UL us
File No. : E133481

File No. : R50149334

CQC
File No.:CQC10002049162


## Features

- 5A switching capability
- 3kV dielectric strength (between coil and contacts)
- Slim size (width 5mm, height 12.5mm)
- High sensitive: Min. 120mW
- Sockets available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (20.0 x 5.0 x 12.5) mm

## CONTACT DATA

| | |
|---|---|
| Contact arrangement | 1A |
| Contact Resistance | 100mΩ max. (at 1A 6VDC) |
| Contact material | $AgSnO_2$, AgNi |
| Contact rating (Res. load) | 5A 250VAC/30VDC |
| Max. switching voltage | 250VAC /30VDC |
| Max. switching current | 5A |
| Max. switching power | 1250VA / 150W |
| Mechanical endurance | 2 x $10^7$ OPS |
| Electrical endurance[1)] | 1 x $10^5$ OPS 3A 250VAC/30VDC<br>5 x $10^4$ OPS 5A 250VAC/30VDC |

**Notes:** 1) See approval reports for more details of electrical endurance test .

## CHARACTERISTICS

| | | |
|---|---|---|
| Insulation resistance | | 1000MΩ (at 500VDC) |
| Dielectric strength | Between coil & contacts | 3000VAC 1min |
| | Between open contacts | 1000VAC 1min |
| Operate time (at nomi.volt.) | | 10ms max. |
| Release time (at nomi.volt.) | | 5ms max. |
| Shock resistance | Functional | 98m/s² |
| | Destructive | 980m/s² |
| 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. 3g |
| Construction | | Plastic sealed |

**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, Class A.

## COIL

| | |
|---|---|
| Coil power | Approx. 120mW (at 5VDC to 18VDC)<br>Approx. 180mW (at 24VDC) |

## COIL DATA at 23˚C

| Nominal Voltage VDC | Pick-up Voltage VDC max. | Drop-out Voltage VDC min. | Max. Allowable Voltage VDC at 85˚C | Coil Resistance Ω |
|---|---|---|---|---|
| 5 | 3.50 | 0.25 | 6.0 | 208 x (1±10%) |
| 6 | 4.20 | 0.30 | 7.2 | 300 x (1±10%) |
| 9 | 6.30 | 0.45 | 10.8 | 675 x (1±10%) |
| 12 | 8.40 | 0.60 | 14.4 | 1200 x (1±10%) |
| 18 | 12.6 | 0.90 | 21.6 | 2700 x (1±15%) |
| 24 | 16.8 | 1.20 | 28.8 | 3200 x (1±15%) |

**Notes:** 1) All above data are tested when the relays terminals are downward position. Other positions of the terminals, the pick-up and drop-out voltages will have ±5% tolerance. For example, when the relay terminals are transverse position, the max. pick-up voltage change is 75% of nominal voltage.
2) The max. allowable voltage in the COIL DATA is coil overdrive voltage, it is the instantaneous max. voltage which the relay coil could endure in a very short time.
3) 24VDC 120mW type are also available, please see ordering information for more details.

## SAFETY APPROVAL RATINGS

| | |
|---|---|
| **UL/CUL** | 5A 30VDC L/R =0ms<br>3A 30VDC L/R =0ms<br>5A 250VAC COSØ=1<br>3A 250VAC COSØ=1 |
| **TÜV** | 5A 250VAC COSØ=1<br>5A 30VDC L/R =0ms |

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

## ORDERING INFORMATION

HF49FD / 012 -1H 1 2 G T F L (XXX)

| | |
|---|---|
| **Type** | |
| **Coil voltage** | 5, 6, 9, 12,18, 24VDC |
| **Contact arrangement** | **1H:** 1 Form A |
| **Contact version**[1)] | **1:** Single contact **2:** Bifurcated contact |
| **Space between terminals** (See the following) | **1:** 5.08mm **2:** 7.62mm |
| **Contact plating** | **G:** Gold plated **Nil:** No gold plated (Only for single contact) |
| **Contact material** | **T:** $AgSnO_2$ (Only for single contact) **Nil:** AgNi |
| **Insulation standard** | **F:** Class F **B:** Class B **Nil:** Class A |
| **Coil power** | **L:** Sensitive (Only for 24VDC) **Nil:** Standard |
| **Customer special code** | |

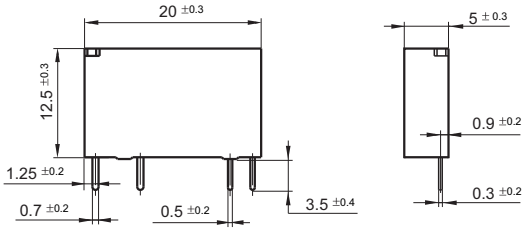
**Notes:** 1) If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts.

## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

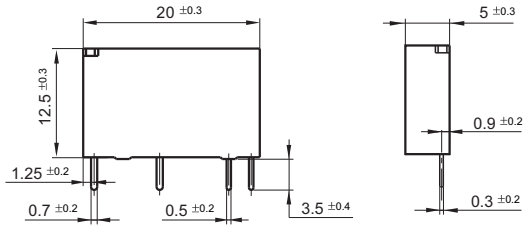
Unit: mm

### Outline Dimensions

HF49FD/□□□ -1H□1(XXX)



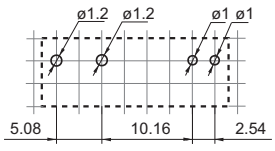

HF49FD/□□□ -1H□2(XXX)



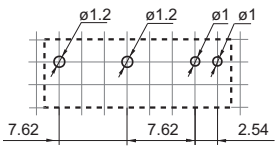

### PCB Layout

(Bottom view)

HF49FD/□□□ -1H□1(XXX)




HF49FD/□□□ -1H□2(XXX)



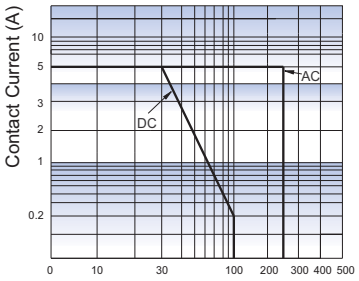

### Wiring Diagram

(Bottom view)

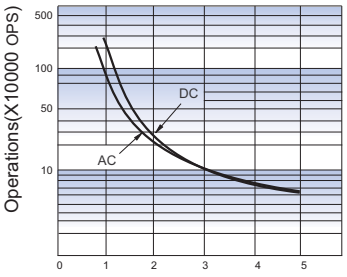
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.
2) The tolerance without indicating for PCB layout is always ±0.1mm.
3) The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

## CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER




ENDURANCE CURVE




COIL TEMPERATURE RISE