# HF3FF SUBMINIATURE HIGH POWER RELAY

c UL us
File No.:E134517

File No.:40025218

File No.:R50148356

File No.:CQC08002027861

## Features

- 15A switching capability
- 1 Form A and 1 Form C configurations
- Subminiature, standard PCB layout
- Plastic sealed and flux proofed types available
- Class B insulation system
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (19.0 x 15.2 x 15.5) mm

## CONTACT DATA

| | | |
|---|---|---|
| Contact arrangement | 1A | 1C |
| Contact resistance | 100mΩ max.(at 1A 6VDC) | |
| Contact material | $AgSnO_2$, AgCdO | |
| Contact rating (Res. load) | 10A 277VAC/28VDC | |
| Max. switching voltage | 277VAC / 30VDC | |
| Max. switching current | 15A | 10A |
| Max. switching power | 2770VA / 210W | |
| Mechanical endurance | 1 x $10^7$OPS | |
| Electrical endurance 1) | 1 x $10^5$OPS (NO, at 7A 250VAC)<br>5 x $10^4$OPS (NO, at 10A 250VAC) | |

## CHARACTERISTICS

| | | |
|---|---|---|
| Insulation resistance | | 100MΩ (at 500VDC) |
| Dielectric strength | Between coil & contacts | 1500VAC 1min |
| | Between open contacts | 750VAC 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 | | 35% to 85% RH |
| Ambient temperature | | -40˚C to 70˚C |
| Termination | | PCB |
| Unit weight | | Approx. 10g |
| Construction | | Plastic sealed, Flux proofed |

**Notes:** 1) For sealed type, the vent-hole cover should be excised.
2) The data shown above are initial values.
3) Please find coil temperature curve in the characteristic curves below.

## COIL

| | |
|---|---|
| Coil power | 5VDC to 24VDC: Approx. 360mW;<br>48VDC: Approx. 510mW |

## COIL DATA at 23˚C

| Nominal Voltage VDC | Pick-up Voltage VDC max. | Drop-out Voltage VDC min. | Max. Allowable Voltage VDC | Coil Resistance Ω |
|---|---|---|---|---|
| 5 | 3.80 | 0.5 | 6.5 | 70 x (1±10%) |
| 6 | 4.50 | 0.6 | 7.8 | 100 x (1±10%) |
| 9 | 6.80 | 0.9 | 11.7 | 225 x (1±10%) |
| 12 | 9.00 | 1.2 | 15.6 | 400 x (1±10%) |
| 18 | 13.5 | 1.8 | 23.4 | 900 x (1±10%) |
| 24 | 18.0 | 2.4 | 31.2 | 1600 x (1±10%) |
| 48 | 36.0 | 4.8 | 62.4 | 4500 x (1±10%) |
| 48 1) | 36.0 | 4.8 | 62.4 | 6400 x (1±10%) |

**Notes:** 1) There are 2 types for 48V--510mW and 360mW. The coil resistance for 510mW type is 4500ohm while for that for 360mW type is 6400ohm. If 360mW type is required, please add a special suffix (068) in the ordering information.

## SAFETY APPROVAL RATINGS

| | | |
|---|---|---|
| **UL/CUL** | 1 Form A | 10A 277VAC / 28VDC<br>TV-5 120VAC<br>15A 125VAC<br>12A 125VAC<br>1/2HP 125VAC |
| | 1 Form C | 10A 277VAC / 28VDC<br>10A 120VAC<br>1/2 HP 125/250VAC |
| **VDE ($AgSnO_2$)** | 1 Form A | 10A 250VAC<br>12A 125VAC |
| | 1 Form C | 5A 250VAC<br>NO: 10A 250VAC<br>NO: 12A 125VAC |

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

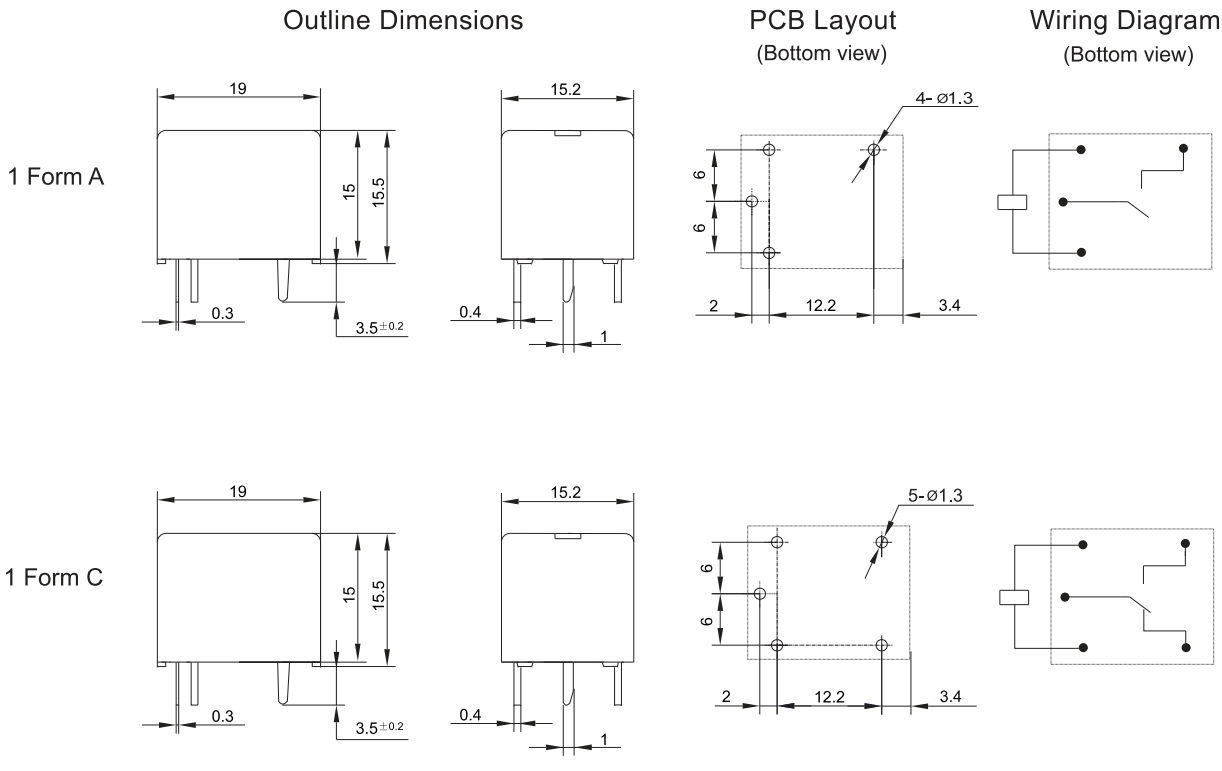
## ORDERING INFORMATION

| | HF3FF / | 012 | -1H | S | T | (XXX) |
|---|---|---|---|---|---|---|
| **Type** | | | | | | |
| **Coil voltage** | 5, 6, 9, 12, 18, 24, 48VDC | | | | | |
| **Contact arrangement** | **1H**:1 Form A | **1Z**:1 Form C | | | | |
| **Construction** [1] | **S**: Plastic sealed | **Nil**: Flux proofed | | | | |
| **Contact material** | **T**: $AgSnO_2$ | **Nil**: AgCdO | | | | |
| **Customer special code** | | | | | | |

**Notes:** 1) Under the ambience with dangerous gas like $H_2S$, $SO_2$ or $NO_2$, plastic sealed type is recommended; Please test the relay in real applications.
If the ambience allows, flux proofed type is preferentially recommended.
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

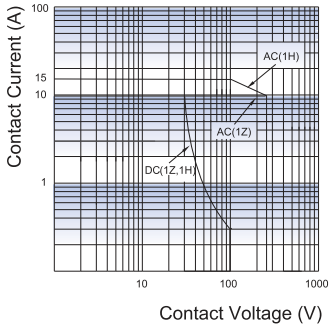
Unit: mm



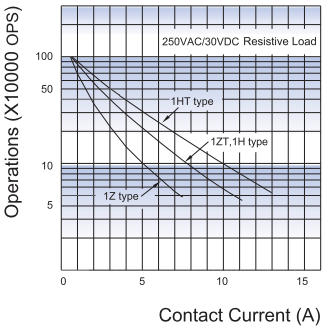

Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.
2) The tolerance without indicating for PCB layout is always ±0.1mm.

## CHARACTERISTIC CURVES

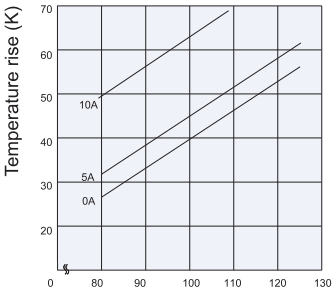
MAXIMUM SWITCHING POWER




ENDURANCE CURVE




COIL TEMPERATURE RISE




(Relay mounting distance should be less than 10mm.)