

HF140FF

MINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:R50149131



File No.:CQC09002030294



Features

- 10A switching capability
- 5kV dielectric strength (between coil and contacts)
- 2.0mm contact gap available
- Sockets available
- Plastic sealed and dust protected types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 13.0 x 26.3) mm

CONTACT DATA

| | |
|----------------------------|--|
| Contact arrangement | 2A, 2C |
| Contact resistance | 50mΩ max.(at 1A 24VDC) |
| Contact material | AgSnO ₂ , AgNi, AgCdO |
| Contact rating (Res. load) | 10A 250VAC 8A 30VDC |
| Max. switching voltage | 250VAC / 30VDC |
| Max. switching current | 10A |
| Max. switching power | 2500VA / 240W |
| Mechanical endurance | Standard: 1 x 10 ⁷ OPS W type(1.5mm): 5 x 10 ⁵ OPS W type(2.0mm): 3 x 10 ⁵ OPS |
| Electrical endurance | 1 x 10 ⁵ OPS (NO or NC, 10A 250VAC, Resistive load, Room temp., 1s on 9s off) 1 x 10 ⁵ OPS (NO or NC, 8A 30VDC, Resistive load, Room temp., 1s on 9s off) |

CHARACTERISTICS

| | | |
|---|------------------------------|---|
| Insulation resistance | 1000MΩ (at 500VDC) | |
| Dielectric strength | Between coil & contacts | 5000VAC 1min |
| | Between contacts sets | 3000VAC 1min |
| | Between open contacts | Standard:1000VAC 1min W type(1.5mm):2000VAC 1min W type(2.0mm):2500VAC 1min |
| Surge voltage (between coil & contacts) | 10kV (1.2/50 μs) | |
| Operate time (at nomi. volt.) | 15ms max. | |
| Release time (at nomi. volt.) | 5ms max. | |
| Humidity | 5% to 85% RH | |
| Ambient temperature | -40°C to 85°C | |
| Shock resistance | Functional | 98m/s ² |
| | Destructive | 980m/s ² |
| Vibration resistance | 10Hz to 55Hz 1.5mmDA | |
| Termination | PCB | |
| Unit weight | Approx. 18g | |
| Construction | Plastic sealed, Flux proofed | |

- 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.

COIL

| | |
|------------|---|
| Coil power | Standard: Approx. 530mW |
| | W type(1.5mm): Approx. 800mW W type(2.0mm): Approx. 1.4W |

COIL DATA

at 23°C

Standard type

| Nominal Voltage VDC | Pick-up Voltage VDC max. | Drop-out Voltage VDC min. | Max. Voltage VDC * | Coil Resistance Ω |
|---------------------|--------------------------|---------------------------|--------------------|-------------------|
| 3 | 2.25 | 0.3 | 3.9 | 17 x (1±10%) |
| 5 | 3.75 | 0.5 | 6.5 | 47 x (1±10%) |
| 6 | 4.50 | 0.6 | 7.8 | 68 x (1±10%) |
| 9 | 6.75 | 0.9 | 11.7 | 160 x (1±10%) |
| 12 | 9.00 | 1.2 | 15.6 | 275 x (1±10%) |
| 18 | 13.5 | 1.8 | 23.4 | 620 x (1±10%) |
| 24 | 18.0 | 2.4 | 31.2 | 1100 x (1±10%) |
| 48 | 36.0 | 4.8 | 62.4 | 4170 x (1±10%) |
| 60 | 45.0 | 6.0 | 78.0 | 7000 x (1±10%) |



HONGFA RELAY

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

2014 Rev. 1.01

COIL DATA

at 23°C

W Type (1.5mm)

| Nominal Voltage VDC | Pick-up Voltage VDC max. | Drop-out Voltage VDC min. | Max. Allowable Voltage VDC* | Coil Resistance Ω |
|---------------------|--------------------------|---------------------------|-----------------------------|-------------------|
| 3 | 2.25 | 0.3 | 3.3 | 11.3 x (1±10%) |
| 5 | 3.75 | 0.5 | 5.5 | 31 x (1±10%) |
| 6 | 4.50 | 0.6 | 6.6 | 45 x (1±10%) |
| 9 | 6.75 | 0.9 | 9.9 | 101 x (1±10%) |
| 12 | 9.00 | 1.2 | 13.2 | 180 x (1±10%) |
| 18 | 13.5 | 1.8 | 19.8 | 405 x (1±10%) |
| 24 | 18.0 | 2.4 | 26.4 | 720 x (1±10%) |
| 48 | 36.0 | 4.8 | 52.8 | 2880 x (1±10%) |
| 60 | 45.0 | 6.0 | 66.0 | 4500 x (1±10%) |

W Type (2.0mm)

| Nominal Voltage VDC | Pick-up Voltage VDC max. | Drop-out Voltage VDC min. | Max. Allowable Voltage VDC* | Coil Resistance Ω |
|---------------------|--------------------------|---------------------------|-----------------------------|-------------------|
| 5 | 3.75 | 0.5 | 5.5 | 18 x (1±10%) |
| 6 | 4.50 | 0.6 | 6.6 | 26 x (1±10%) |
| 9 | 6.75 | 0.9 | 9.9 | 58 x (1±10%) |
| 12 | 9.00 | 1.2 | 13.2 | 102 x (1±10%) |
| 24 | 18.0 | 2.4 | 26.4 | 410 x (1±10%) |
| 48 | 36.0 | 4.8 | 52.8 | 1650 x (1±10%) |

Notes: 1) When require pick-up voltage < 75% of nominal voltage, special order allowed.

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.

SAFETY APPROVAL RATINGS

| UL/CUL | Standard | AgCdO | 2 Form A | TV-3 125VAC 10A 250VAC 10A 30VDC 1/4HP 240VAC 1/8HP 120VAC |
|--------|----------|--------------------|----------|--|
| | | | | 10A 250VAC 10A 30VDC 12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C |
| TÜV | Standard | AgNi | 2 Form A | 10A 250VAC 10A 30VDC 12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C 3/4HP 250VAC at 40°C |
| | | | | 10A 250VAC 10A 30VDC 12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C NO:TV-5 120VAC at 40°C 3/4HP 250VAC at 40°C |
| | W type | AgCdO | 2 Form A | TV-3 125VAC 10A 250VAC |
| | | | | 12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C 3/4HP 250VAC at 40°C |
| TÜV | Standard | AgSnO ₂ | 2 Form A | 10A 250VAC 10A 30VDC 12A 277VAC/250VAC Resistive at 70°C 1/3HP 125VAC at 40°C 3/4HP 250VAC at 40°C |
| | | | | 10A 250VAC 10A 30VDC |
| | | | | 12A 250VAC |
| TÜV | Standard | AgNi | 2 Form A | 10A 250VAC |
| | | | | 10A 250VAC |
| | | | | 12A 250VAC |
| TÜV | Standard | AgSnO ₂ | 2 Form A | 10A 250VAC |
| | | | | 10A 250VAC |
| | | | | 12A 250VAC |

Notes: 1) All values unspecified are at room temperature.

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

ORDERING INFORMATION

| | | | | | | | | | |
|------------------------------|---|-----|-----|---|---|---|---|---|-------|
| Type | HF140FF/ | 012 | -2H | S | W | T | F | G | (XXX) |
| Coil voltage | 3, 5, 6, 9, 12, 18, 24, 48, 60VDC | | | | | | | | |
| Contact arrangement | 2H: 2 Form A 2Z: 2 Form C | | | | | | | | |
| Construction ¹⁾²⁾ | S: Plastic sealed Nil: Flux proofed | | | | | | | | |
| Contact Gap | W: Large contact gap(Only for 2 Form A) ³⁾ Nil: Standard | | | | | | | | |
| Contact material | T: AgSnO ₂ 3: AgNi Nil: AgCdO | | | | | | | | |
| Insulation standard | F: Class F Nil: Class B | | | | | | | | |
| Contact plating | G: Gold plated Nil: No gold plated | | | | | | | | |
| Customer special code | e.g. (456) means contact gap can reach 2.0mm | | | | | | | | |

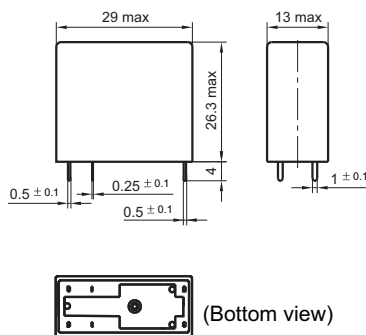
- Notes:**1) We recommend flux proofed types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.). We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc).
- 2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
- 3) There are two specifications to W type: 1.5mm contact gap and 2.0mm contact gap. The default W type is 1.5mm. So please add the special code "(456)" when releasing order, if 2.0mm contact gap is required.
- 4) The standard type is made of black cover. If smoke cover is required, please add a special suffix (611) when ordering. Please take note that smoke cover is only available for flux proofed type.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

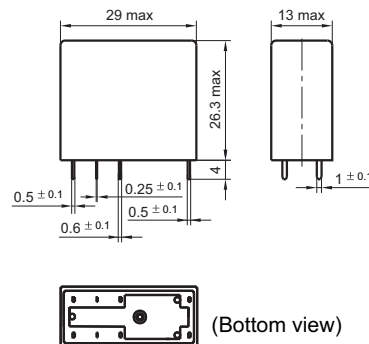
Unit: mm

Outline Dimensions

2 Form A



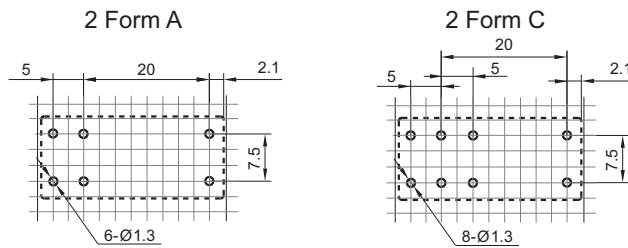
2 Form C



Wiring Diagram (Bottom view)



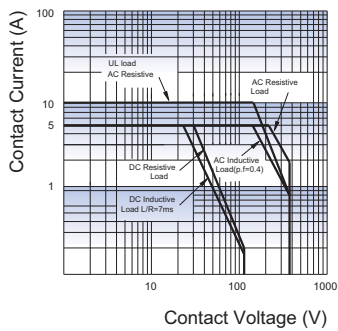
PCB Layout (Bottom view)



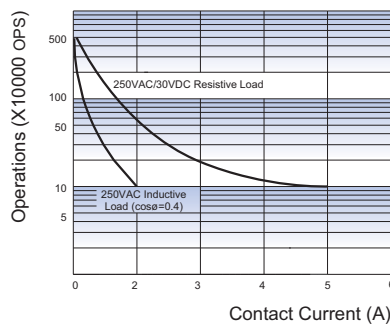
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤ 1 mm, tolerance should be ± 0.2 mm; outline dimension > 1 mm and ≤ 5 mm, tolerance should be ± 0.3 mm; outline dimension > 5 mm, tolerance should be ± 0.4 mm.
 2) The tolerance without indicating for PCB layout is always ± 0.1 mm.
 3) The width of the gridding is 2.5mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER

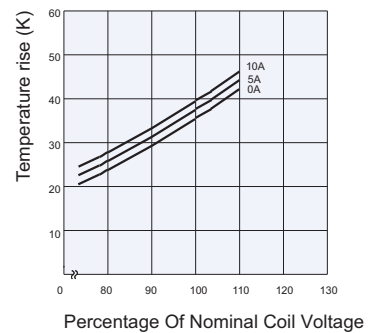


ENDURANCE CURVE



Test conditions:
 No, Resistive load, Flux proofed,
 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.