

HFE7

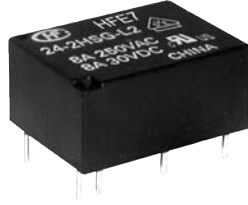
SUBMINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:40027342



Features

- High switching capacity
1A, 1B: 10A 250VAC/30VDC;
2A, 2B, 1A + 1B: 8A 250VAC/30VDC
- High sensitive
- 4kV dielectric strength (between coil & contacts)
- Single side stable and latching types available
- 1 Form A, 1 Form B, 2 Form A, 2 Form B and 1A + 1B contact arrangement
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (20.0 x 15.0 x 10.2) mm

CONTACT DATA

| Contact arrangement | 1A, 1B | 2A, 2B, 1A + 1B |
|----------------------------|---|-----------------|
| Contact resistance | AgNi +Au plated: 30mΩ max.(at 1A 6VDC) | |
| | AgNi: 50mΩ max.(at 1A 6VDC) | |
| | AgSnO ₂ +Au plated: 60mΩ max.(at 1A 6VDC) | |
| | AgSnO ₂ : 80mΩ max.(at 1A 6VDC) | |
| Contact material | AgSnO ₂ , AgNi | |
| Contact rating (Res. load) | 10A 250VAC/30VDC | 8A 250VAC/30VDC |
| Max. switching Voltage | 277VAC | 277VAC |
| Max. switching current | 10A | 8A |
| Max. switching power | 2500VA | 2000VA |
| Mechanical endurance | 1 x 10 ⁷ OPS | |
| Electrical endurance | 1H,1D type: 1 x 10 ⁵ OPS (10A 250VAC, Resistive load., at 70°C, 1.5s on 1.5s off) | |
| | 1HD,2H,2D type: 3 x 10 ⁴ OPS (8A 250VAC, Resistive load., at 70°C, 1.5s on 1.5s off) | |

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 (Reset) time (at nomi. volt.) | 10ms max. |
| Max. operate frequency (under rated load) | 20 cycles /min |
| Temperature rise (at nomi. volt.) | 50 K max. |
| Vibration resistance | 10Hz to 55Hz 1.5mm DA |
| Shock resistance | 98m/s ² |
| Humidity | 5% to 85% RH |
| Ambient temperature | -40 °C to 70 °C |
| Termination | PCB |
| Unit weight | Approx. 6g |
| Construction | Plastic sealed, Flux proofed |

Notes: The data shown above are initial values.

COIL

| Type | | Coil power | |
|-----------------------|----------|---------------|----------------|
| | | Sensitive | High sensitive |
| Single side stable | 1A,1A+1B | Approx. 420mW | Approx. 200mW |
| | 2A | | Approx. 280mW |
| Single coils latching | | Approx. 300mW | Approx. 200mW |
| Double coils latching | | Approx. 420mW | Approx. 280mW |

COIL DATA

at 23°C

Single side stable

| Nominal Voltage VDC | Pick-up Voltage VDC max. | Drop-out Voltage VDC min. | Coil Resistance x (1±10%)Ω | | |
|---------------------|--------------------------|---------------------------|----------------------------|-------|--------|
| | | | 200mW | 280mW | 420mW |
| 3 | 2.1 | 0.3 | 45 | 32.1 | 21.4 |
| 5 | 3.5 | 0.5 | 125 | 89.3 | 59.5 |
| 6 | 4.2 | 0.6 | 180 | 129 | 85.7 |
| 9 | 6.3 | 0.9 | 405 | 289 | 192.9 |
| 12 | 8.4 | 1.2 | 720 | 514 | 342.9 |
| 24 | 16.8 | 2.4 | 2880 | 2056 | 1371.4 |

Single coil latching

| Nominal Voltage VDC | Set /Reset Voltage VDC max. | Pulse Duration ms min. | Coil Resistance x (1±10%)Ω | |
|---------------------|-----------------------------|------------------------|----------------------------|-------|
| | | | 300mW | 200mW |
| 3 | 2.1 | 50 | 30 | 45 |
| 5 | 3.5 | 50 | 83.3 | 125 |
| 6 | 4.2 | 50 | 120 | 180 |
| 9 | 6.3 | 50 | 270 | 405 |
| 12 | 8.4 | 50 | 480 | 720 |
| 24 | 16.8 | 50 | 1920 | 2880 |



HONGFA RELAY

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

2015 Rev. 1.00

COIL DATA

at 23°C

Double coils latching

| Nominal Voltage VDC | Set / Reset Voltage VDC max. | Pulse Duration ms min. | Coil Resistance x (1±10%) Ω | |
|------------------------|------------------------------------|------------------------------|-----------------------------|-----------|
| | | | 420mW | 280mW |
| 3 | 2.1 | 50 | 21.4+21.4 | 32.1+32.1 |
| 5 | 3.5 | 50 | 59.5+59.5 | 89.3+89.3 |
| 6 | 4.2 | 50 | 85.7+85.7 | 129+129 |
| 9 | 6.3 | 50 | 192.9+192.9 | 289+289 |
| 12 | 8.4 | 50 | 342.9+342.9 | 514+514 |
| 24 | 16.8 | 50 | 1371.4+1371.4 | 2056+2056 |

SAFETY APPROVAL RATINGS

| | | | |
|---|-------------------|---------------------------|---|
| UL/CUL | 1 Form A | AgNi | 10A 250VAC 8A 30VDC 1/4HP 125VAC 1/3HP 250VAC |
| | | AgSnO ₂ | 10A 30VDC B300, R300 10A 250VAC 1/4 HP 125VAC 1/3 HP 250VAC |
| | 2 Form A | AgSnO ₂ , AgNi | 8A 250VAC/30VDC 1/4HP 125VAC 1/3HP 250VAC |
| | | AgSnO ₂ | 600W 125VAC B300, R300 |
| | 1 Form A+1 Form B | AgSnO ₂ , AgNi | 8A 250VAC/30VDC 1/4HP 125VAC 1/3HP 250VAC |
| | | AgSnO ₂ | B300, R300 |
| VDE (No UL approval on Single side stable version) | 1 Form A | AgNi | 10A 250VAC (cosφ=1) 5A 250VAC (cosφ=0.4) |
| | 2 Form A | AgNi | 8A 250VAC (cosφ=1) 3.5A 250VAC (cosφ=0.4) |
| | 1 Form A+1 Form B | AgNi | 8A 250VAC (cosφ=1) 3.5A 250VAC (cosφ=0.4) |
| | | AgNi | 3.5A 250VAC (cosφ=0.4) |

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 | HFE7 / | 12 | -1H | S | T | G | -L2 | -R | (412) | (XXX) |
| Coil voltage | 3, 5, 6, 9, 12, 24VDC | | | | | | | | | |
| Contact form | 1 ¹⁾ 1H: 1 Form A 1D: 1 Form B 2 ²⁾ 2H: 2 Form A 2D: 2 Form B 1HD: 1A + 1B | | | | | | | | | |
| Construction | 2 ²⁾ S: Plastic sealed Nil: Flux proofed | | | | | | | | | |
| Contact material | 3 ³⁾ T: AgSnO ₂ Nil: AgNi | | | | | | | | | |
| Contact plating | G: Gold plated Nil: No gold plated | | | | | | | | | |
| Sort | L1: 1 coil latching L2: 2 coils latching Nil: Single side stable | | | | | | | | | |
| Polarity | R: Negative polarity Nil: Positive polarity | | | | | | | | | |
| Customer special code (Coil power) | 4 ⁴⁾ (412): Sensitive Nil: High sensitive | | | | | | | | | |
| Special code | 5 ⁵⁾ XXX: Customer special requirement Nil: Standard | | | | | | | | | |

Notes: 1) 1H, 2H means that relay is on the "reset" status when delivery; 1D, 2D means that relay is on the "set" status when delivery. There are no UL approval on 1D, 2D version.

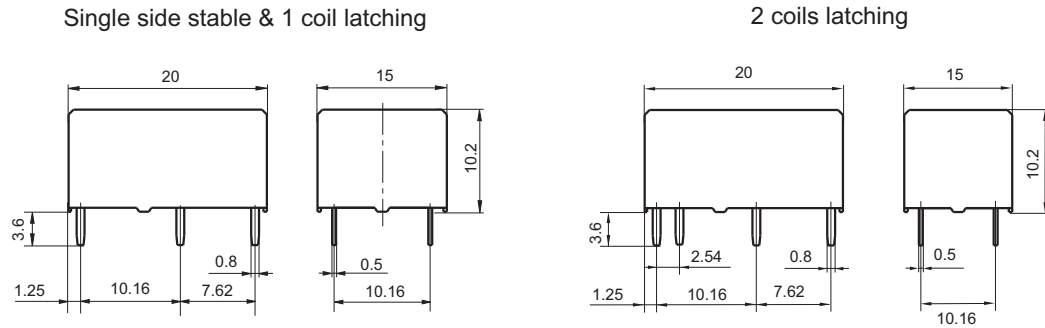
2) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended. Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) For the application with inrush current conditions, such as lamp load, motor load, capacitance load, coil load, etc., we suggest use the flux proof and no golden plated AgSnO₂ contact version.

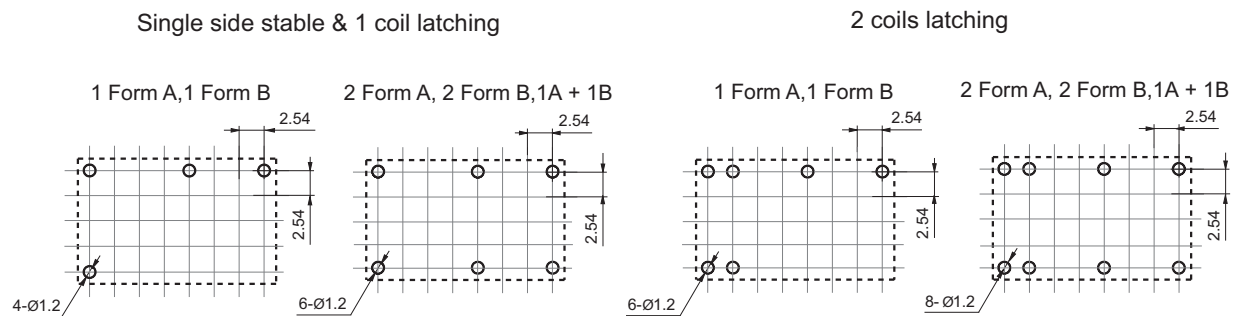
4) We recommend to choose the sensitive version (same part number, but with special suffix (412)) if the higher coil activation is allowable; Please choose the sensitive version (same part number, but with special suffix (412)) if the relay to be used in the extreme environment or welded by wave soldering; Please check with HF's engineer before designing the relay to your application if there are some requirements' outside the specification we provided.

5) The customer special requirement express as special code after evaluating by Hongfa. e.g. (359) stands for Lamp load.

Outline Dimensions



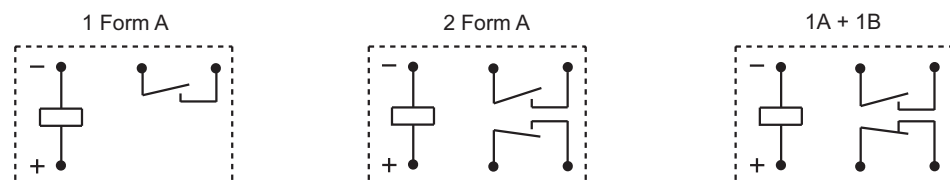
PCB Layout (Bottom view)



- Remark: 1) 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 $\pm 0.4\text{mm}$.
 2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.
 3) The width of the gridding is 2.54mm.

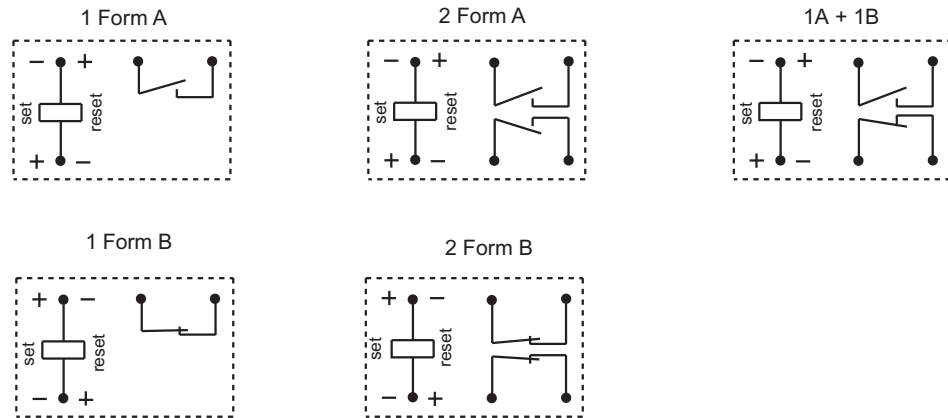
Wiring Diagram (Bottom view)

Single side stable (Standard polarity)

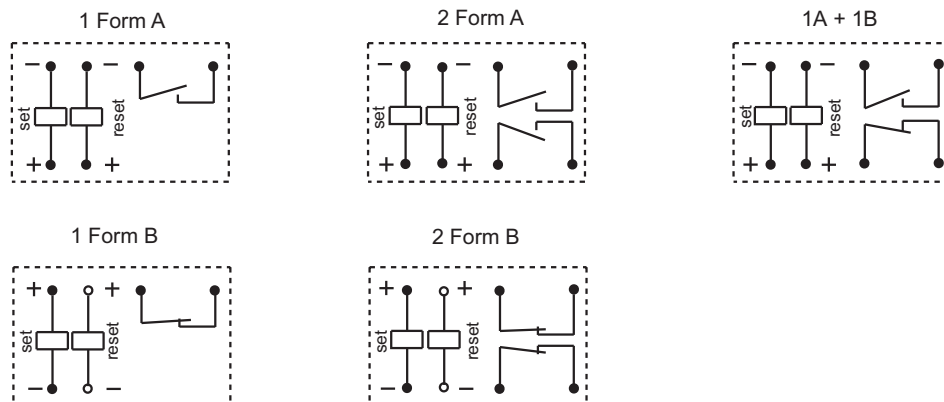


Wiring Diagram (Bottom view)

1 coil latching (Standard polarity)



2 coils latching (Standard polarity)



Remark: The coil polarity of Reverse polarity and Standard polarity is opposite.

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. In order to maintain "set" or "reset" status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than "set" or "reset" time. Do not energize voltage to "set" coil and "reset" coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. As the relay component part's will shrink and deformed due to the high temperature impact, our products are forbidden to be used at the temperature outside our suggested working temperature range (-40°C to 70°C) for long time ; If the wave soldering will be used, the operating parameters we will suggest are: Up limit of the pre-heating time: 120s; Up limit of the pre-heating temperature: 120°C ; Soldering temperature: $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$; Soldering time (10 ± 3) s; Besides our suggested parameters, please try to shorten the pre-heating time and the soldering time and try to lower the temperature for pre-heating and the soldering as you can; the manual soldering for such relay is more recommended.

Disclaimer

This datasheet is for the customers' reference. All the specifications are 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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