



Typical Applications

Central door lock, Power doors & windows,
Lighting, flashlight & indicator lamp control, Instrument control,
Sunroof motor control, Immobilizers, Low temperature start

Features

- Switching capability up to 20A
- Six different contact arrangements
- RoHS & ELV compliant

CHARACTERISTICS

| | | | |
|--------------------------------------|---|---|--|
| Contact arrangement | 1A, 1B, 1C, 1U, 1V, 1W | Operate time ⁷⁾ | Typ.: 3ms (at nomi. vol.) Max.: 10ms (at nomi. vol.) |
| Voltage drop (initial) ¹⁾ | NO:Typ.40mV,250mV max.(at 10A) NC:Typ.50mV,250mV max.(at 10A) | Release time ^{4) 7)} | Typ.: 1.5ms Max.: 10ms |
| Max. make current ^{2) 7)} | 1A:60A 1B:12A | Ambient temperature | -40°C to 85°C |
| | 1C(NO/NC): 60/12A 1U: 2×40A 1V:2×8A 1W(NO/NC):2×30A/2×5A | Vibration resistance ^{5) 7)} | 10Hz to 40Hz 1.27mm DA 40Hz to 70Hz 49m/s ² 70Hz to 100Hz 0.5mm DA 100Hz to 500Hz 98m/s ² |
| Max. break current ^{2) 7)} | 1A: 20A 1B: 10A 1C(NO/NC): 20A/10A 1U: 2×20A 1V: 2×7A 1W (NO/NC): 2×15A/2×5A | | Shock resistance ^{5) 7)} |
| | Max. switching voltage | See "Load Limit curve" | Termination |
| Min. contact load | 1A 6VDC | Construction | Plastic sealed |
| Electrical endurance | See "CONTACT DATA" | Unit weight | Plastic sealed: Approx.12g |
| Mechanical endurance | 1 x 10 ⁷ OPS (300OPS/min) | 1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC). 2) At 23°C, 13.5VDC, resistive load (100 cycles). 3) 1min, leakage current less than 1mA. 4) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit. 5) When energized, opening time of NO contacts shall not exceed 100μs, when non-energized, opening time of NC contacts shall not exceed 100μs, meantime, NO contacts shall not be closed. 6) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (260±3)°C , (5±0.3)s. 7) Only for the 12VDC coil voltage type. | |
| Initial insulation resistance | 100MΩ (at 500VDC) | | |
| Dielectric strength ³⁾ | 500VAC | | |

CONTACT DATA ³⁾

at 23°C

| Load voltage | Load type | | Load current A | | | | On/Off ratio | | Electrical endurance OPS | Contact material | Load wiring diagram ²⁾ |
|--------------|------------------|-------|----------------|-----|-------|-----|--------------|-------|--------------------------|--------------------|-----------------------------------|
| | | | 1C | | 1A | 1B | On s | Off s | | | |
| | | | NO | NC | NO | NC | | | | | |
| 13.5VDC | Resistive | Make | 15 | 10 | 15 | 10 | 2 | 2 | 2×10 ⁵ | AgSnO ₂ | See diagram 1 |
| | | Break | 15 | 10 | 15 | 10 | 2 | 2 | | | |
| | Lamp | Make | 3×21W | --- | 3×21W | --- | 2 | 2 | 1.5×10 ⁵ | AgSnO ₂ | See diagram 2 |
| | | Break | | | | | | | | | |
| | Motor L=0.5mH | | 26 | --- | --- | --- | 0.2 | 2 | 1×10 ⁵ | AgSnO ₂ | See diagram 3 |
| | | | 26 | --- | --- | --- | | | | | |



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2021 Rev. 1.00

CONTACT DATA ³⁾

at 23°C

| Load voltage | Load type | | Load current A | | | | On/Off ratio | | Electrical life OPS | Contact material | Load wiring diagram ²⁾ |
|--------------|-----------------------|-------|----------------|-----|---------------|-----|--------------|-------|---------------------|----------------------------|-----------------------------------|
| | | | 1W | | 1U | | On s | Off s | | | |
| | | | NO | NC | NO | NC | | | | | |
| 13.5VDC | Resistive | Make | 2×7 | 2×5 | 2×7 | 2×5 | 2 | 2 | 2×10 ⁵ | AgSnO ₂ | See diagram 4 |
| | | Break | 2×7 | 2×5 | 2×7 | 2×5 | 2 | 2 | | | |
| | Flasher ¹⁾ | Make | (4x21W) | --- | (4x21W) | --- | 0.375 | 0.375 | 2×10 ⁶ | Special AgSnO ₂ | See diagram 5 |
| | | Break | x2 | --- | x2 | --- | --- | --- | | | |
| | Lamp | Make | (2x21W +1x5W) | --- | (2x21W +1x5W) | --- | 0.2 | 3 | 1×10 ⁵ | AgSnO ₂ | See diagram 6 |
| | | Break | x2 | --- | x2 | --- | --- | --- | | | |

1) When it is utilized in flasher, a special AgSnO₂ contact material should be used and the customer special code should be (170) as a suffix. Please connect by the polarity according to the diagrams below.

2) The load wiring diagrams are listed below.

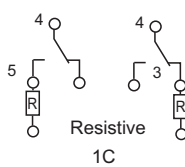


diagram 1

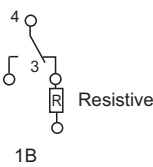
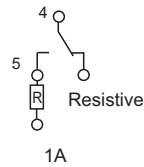


diagram 2

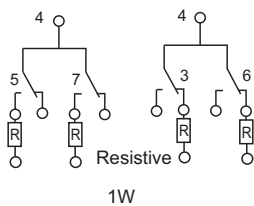
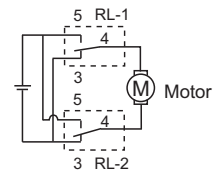
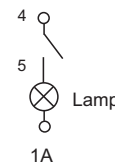


diagram 4

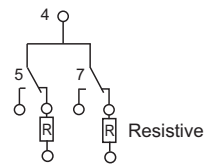
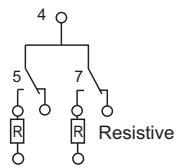


diagram 5

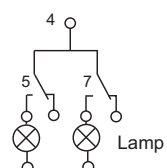
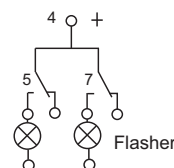


diagram 6

3) When the load voltage is at 24VDC or higher, or the applications conditions are different from the table above, please submit the detailed application conditions to Hongfa to get more support.

COIL DATA

at 23°C

| Nominal voltage VDC | Pick-up voltage VDC max. | | Drop-out voltage VDC min. | | Coil resistance x(±10%)Ω | Power consumption W | Max. allowable overdrive voltage ¹⁾ VDC |
|---------------------|--------------------------|-----|---------------------------|---------------|--------------------------|---------------------|--|
| | 1A, 1B, 1C, 1U, 1V | 1W | 1B, 1V | 1A,1C, 1U, 1W | | | |
| 6 | 3.75 | 4.5 | 0.35 | 0.7 | 28 | 1.1 | 9.0 |
| 12 | 7.5 | 9.0 | 0.7 | 1.4 | 130 | 1.1 | 19.6 |

1) Max. allowable overdrive voltage is stated with NO load applied.

ORDERING INFORMATION

| | | | | | | |
|----------------------------|-----------------------------------|------------------------------|------------------------------|---|---|-------|
| Type | HFKM / 012 | | 1H | S | T | (XXX) |
| Coil voltage | 006: 6VDC | 012: 12VDC | | | | |
| Contact arrangement | 1H: 1 Form A SH: 1 Form U | 1D: 1 Form B SD: 1 Form V | 1Z: 1 Form C SZ: 1 Form W | | | |
| Construction | S: Plastic sealed ¹⁾ | | | | | |
| Contact material | T: AgSnO ₂ | | | | | |
| Special code ²⁾ | XXX: Customer special requirement | | Nil: Standard | | | |

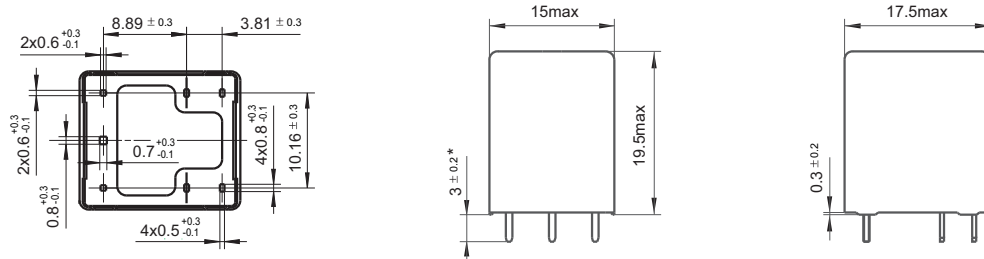
Notes: 1) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

2) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load. The performance parameters of products with characteristic numbers shall be subject to the specific specifications provided by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

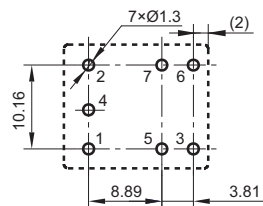
Unit: mm

Outline Dimensions



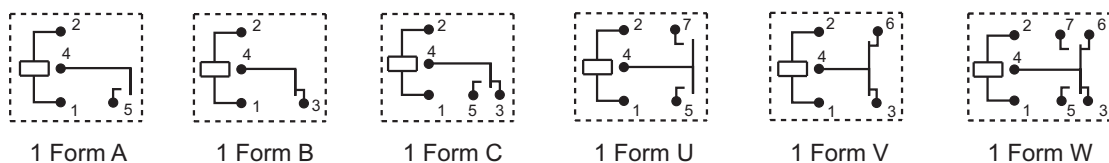
Remark: * The additional tin top is max. 1mm.

PCB Layout (Bottom view)



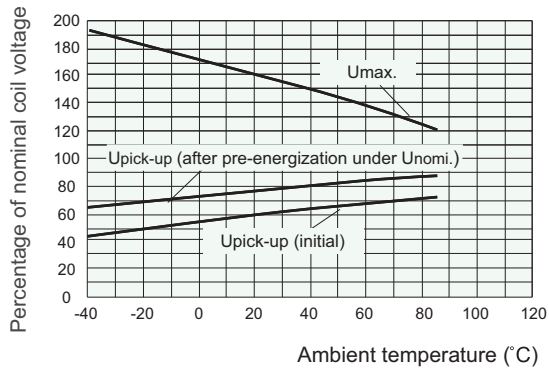
Remark: The tolerance without indicating for PCB layout is always ±0.1mm.

Wiring Diagram (Bottom view)



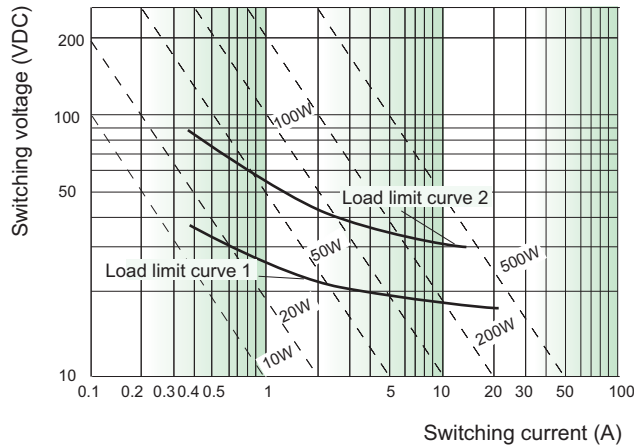
CHARACTERISTIC CURVES

1. Coil operating voltage range



- 1) There should be no contact load applied when maximum continuous operation voltage is applied on coil.
- 2) The operating voltage is connected with coil pre-energized time and voltage. After pre-energized, the operating voltage will increase.
- 3) The maximum allowable coil temperature is 180°C. For the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 155°C under the different application ambient, different coil voltage and different load etc.
- 4) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

2. Load limit curve



- 1) The load and electrical endurance tests are made according to "CONTACT DATA" parameters' table. If actual load voltage, current, or operate frequency is different from "CONTACT DATA" table, please arrange corresponding tests for confirmation.
- 2) Load limit curve 1: arc extinguishes, during transit time (change over contact).
- 3) Load limit curve 2: safe shutdown, no stationary arc (make contact).

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product. 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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