

HFKP**AUTOMOTIVE RELAY****Typical Applications**

Central door lock, Anti-theft lock, Power doors & windows, Turning lamp, dangerous signal & scram lamp control, Seat adjustment, Audio system, Air-conditioning, Fuel pump control, Low temperature control, Rear window defoggers, Sunroof motor control, Starter solenoid switches

Features

- 45A switching capability
- PCB terminals
- Two pin layout choices
- 1 Form A & 1 Form C contact arrangement
- Unenclosed and plastic sealed types available
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A, 1C	Ambient temperature	-40°C to 125°C
Voltage drop (initial) ¹⁾	NO: Typ. 20mV, 250mV max. (at 10A) NC: Typ. 30mV, 250mV max. (at 10A)	Vibration resistance ^{7) 9)}	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. continuous current ^{2) 9)}	30A (at 85°C, 8h)	Shock resistance ^{7) 9)}	98m/s ²
Max. switching current ^{3) 9)}	Make: 100A (Lamp, Inrush current) Break: 60A (Resistive)	Termination	PCB ⁸⁾
Max. switching voltage ⁴⁾	75VDC	Construction	Plastic sealed, Unenclosed
Min. contact load	1A 6VDC	Unit weight	Unenclosed: Approx. 16g Plastic sealed: Approx. 20g
Electrical endurance	See "CONTACT DATA"		
Mechanical endurance	1x10 ⁷ OPS (300 OPS/min)		
Initial insulation resistance	500MΩ (at 500VDC)		
Dielectric strength ⁵⁾	between contacts: 500VAC between coil & contacts: 500VAC		
Operate time ⁹⁾	Typ.: 5ms Max.: 10ms (at nomi. vol.)		
Release time ^{6) 9)}	Typ.: 3ms Max.: 10ms		

1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).

2) For NO contacts, measured when applying 100% rated voltage on coil.

3) For NO contacts, at 23°C, 13.5VDC, resistive load (100 cycles).

4) For NO contacts, see "Load limit curve" for details.

5) 1min, leakage current less than 1mA.

6) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.

7) When energized, opening time of NO contacts shall not exceed 100μs, when non-energized, opening time of NC contacts shall not exceed 1ms, meantime, NO contacts shall not be closed.

8) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C, (5±0.3)s.

9) Only for the 12VDC coil voltage type.

CONTACT DATA³⁾

at 23°C

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurance	Contact material	Load wiring diagram ²⁾
			1C		1A	On s	Off s			
			NO	NC	NO					
13.5VDC	Resistive	Make	45	30	45	1.5	1.5	1x10 ⁵ OPS	AgSnO ₂	See diagram 1
		Break	45	30	45					
	Flasher ¹⁾	2x21W+5W	---	---	2x21W+5W	0.375	0.375	1000h	Special AgSnO ₂	See diagram 2
		4x21W+2x5W	---	---	4x21W+2x5W	0.375	0.375	360h		



HONGFA RELAY

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

2012 Rev. 1.01

- 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 diagram below.
- 2) The load wiring diagrams are listed below:

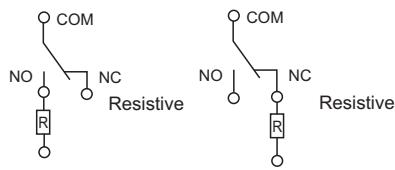


diagram 1

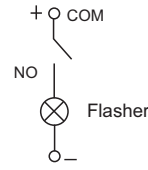


diagram 2

- 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 $\times(1\pm 10\%)\Omega$	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
						at 23°C	at 85°C
Standard	6	3.3	0.6	19	1.9	9.0	6.5
	12	6.8	1.2	90	1.6	19.6	14.3
	24	13.9	2.4	362	1.6	39.3	28.6
Sensitive	6	4.5	0.6	30	1.2	11.0	8.0
	12	9.0	1.2	120	1.2	22.1	16.0
	24	19.2	2.4	480	1.2	44.3	30.0

1) Max. allowable overdrive voltage is stated with no load applied, illustrated with open version.

ORDERING INFORMATION

Type	HFKP / 012 -1H 1 T S (XXX)						
Coil voltage	006: 6VDC	012: 12VDC	024: 24VDC				
Contact arrangement	1H: 1 Form A		1Z: 1 Form C				
Version ¹⁾	1: U.S.A. Unenclosed model 2: U.S.A. Plastic sealed model 3: European Unenclosed model 4: European Plastic sealed model 5: U.S.A. Plastic sealed model, 3 yoke terminals 6: European Plastic sealed model 3 yoke terminals						
Contact Material	T: AgSnO ₂						
Coil Power	S: Sensitive		Nil: Standard				
Customer special code	e.g. (170) stands for flasher load						

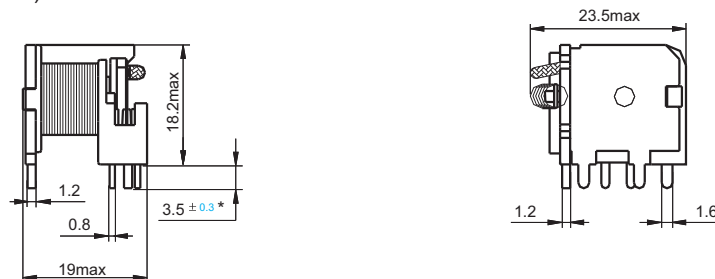
Notes: 1) If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts. For unenclosed type, because there is no cover protection, the products may be contaminated by particles during transportation, assembly or usage which may cause relay failure. So the products should be effectively protected at customer side. Hongfa suggest to use sealed type if no other special requirements.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

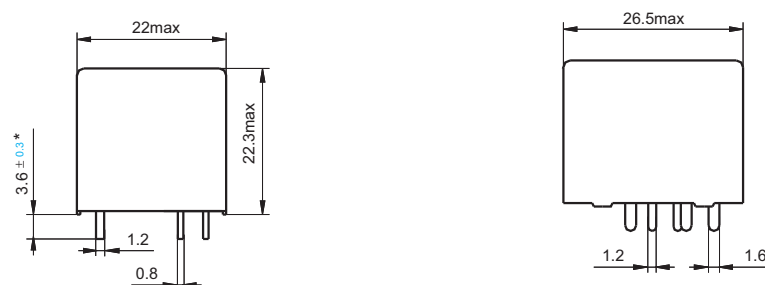
Unit: mm

Outline Dimensions

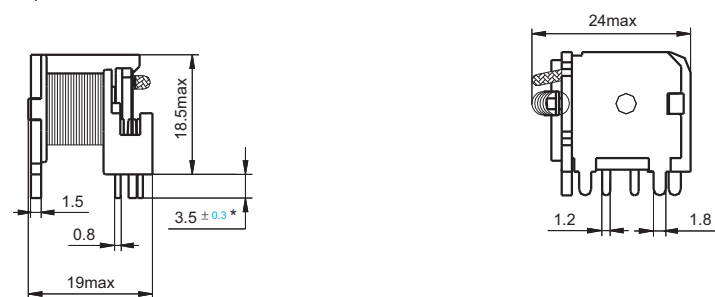
HFKP/□□□-1□1□□(XXX)



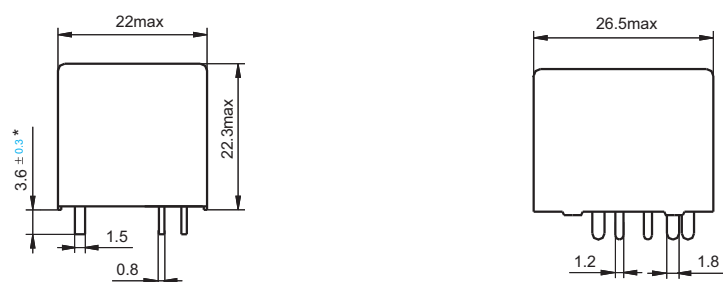
HFKP/□□□-1□2□□(XXX)



HFKP/□□□-1□3□□(XXX)



HFKP/□□□-1□4□□(XXX)

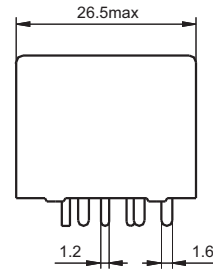
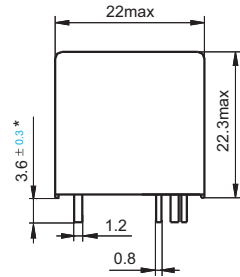


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

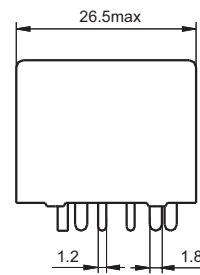
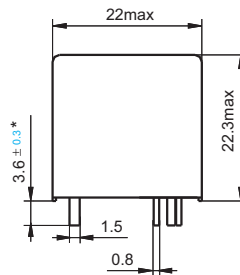
Unit: mm

Outline Dimensions

HFKP/□□□-1□5□□(XXX)

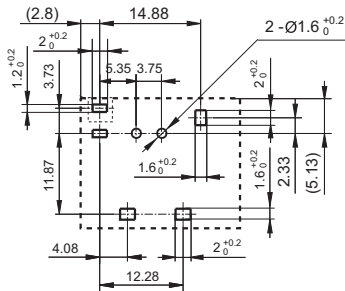


HFKP/□□□-1□6□□(XXX)

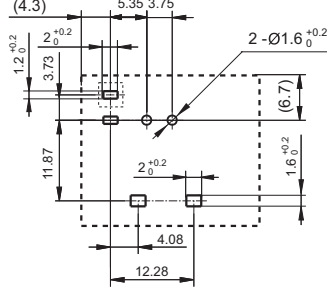


PCB Layout (Bottom view)

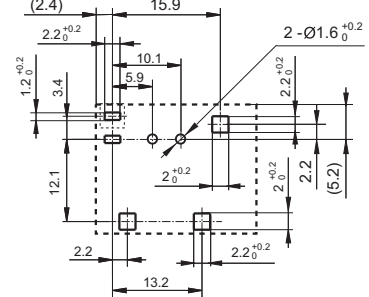
HFKP/□□□-1□1□□(XXX)



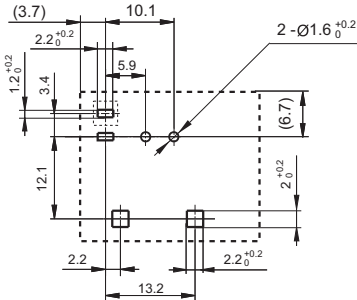
HFKP/□□□-1□2□□(XXX)



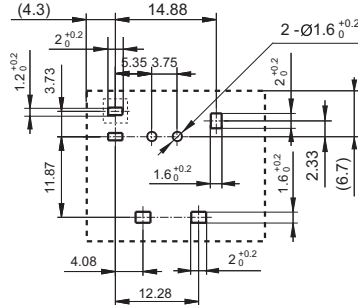
HFKP/□□□-1□3□□(XXX)



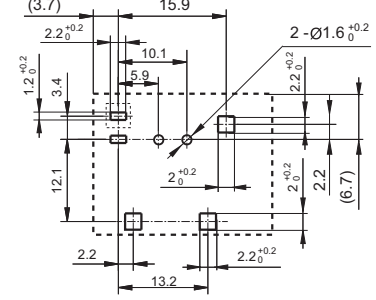
HFKP/□□□-1□4□□(XXX)



HFKP/□□□-1□5□□(XXX)



HFKP/□□□-1□6□□(XXX)



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

2) The tolerance without indicating is always ± 0.1 mm.

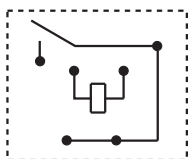
3) □ means that the mounting hole doesn't exist for HFKP/□□□-1H□□□(XXX) type

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

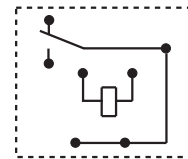
Unit: mm

Wiring Diagram (Bottom view)

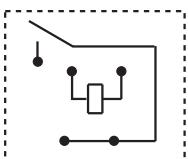
HFKP/□□□-1H1□□(XXX)
 HFKP/□□□-1H3□□(XXX)
 HFKP/□□□-1H5□□(XXX)
 HFKP/□□□-1H6□□(XXX)



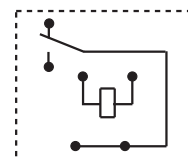
HFKP/□□□-1Z1□□(XXX)
 HFKP/□□□-1Z3□□(XXX)
 HFKP/□□□-1Z5□□(XXX)
 HFKP/□□□-1Z6□□(XXX)



HFKP/□□□-1H2□□(XXX)
 HFKP/□□□-1H4□□(XXX)

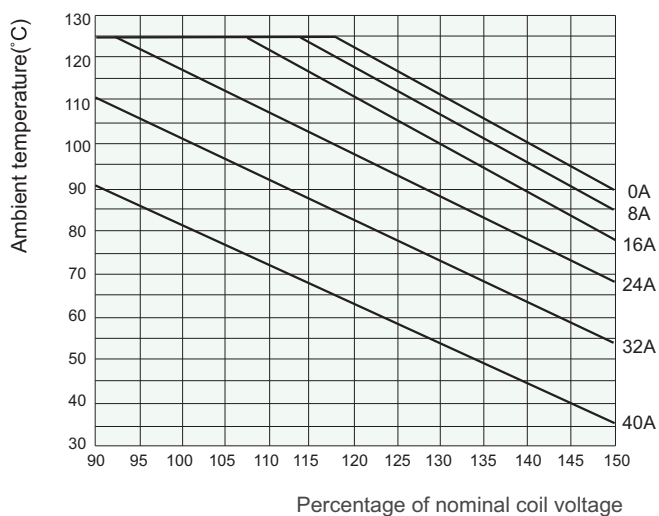


HFKP/□□□-1Z2□□(XXX)
 HFKP/□□□-1Z4□□(XXX)



CHARACTERISTIC CURVES

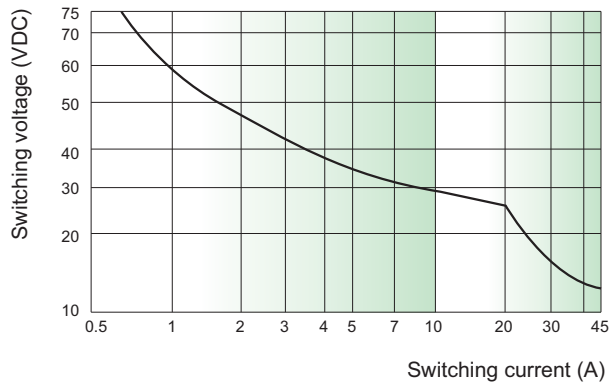
1. Coil operating voltage range



- 1) This chart takes sensitive unenclosed version as example.
- 2) 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 170°C under the different application ambient, different coil voltage and different load etc.
- 3) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

CHARACTERISTIC CURVES

2. Load limit curve (at 23°C)



- 1) This chart takes NO contact, Resistive load as example.
- 2) The load and electrical endurance tests are made according to "CONTACT DATA" parameters' table. If actual load voltage, current, operate frequency, or ambient temperature is different from "CONTACT DATA" table, please arrange corresponding tests for confirmation.

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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