

HFKP

AUTOMOTIVE RELAY



Typical Applications

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

Features

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

CHARACTERISTICS

Contact arrangement	1A, 1C
Voltage drop (initial) ¹⁾	Typ.: 20mV (at 10A) Max.: 250mV (at 10A)
Max. switching current ²⁾	Make: 100A (Lamp, Inrush current) Break: 60A
Min.contact load	1A 6VDC
Electrical endurance	See "CONTACT DATA" table
Mechanical endurance	1x10 ⁷ OPS (300OPS/min)
Max. switching voltage	75VDC ³⁾
Initial insulation resistance	500MΩ (at 500VDC)
Dielectric strength ⁴⁾	between contacts: 500VAC between coil & contacts: 500VAC
Operate time	Typ.: 5ms Max.: 10ms (at nomi. vol.)
Release time	Typ.: 3ms Max.: 10ms ⁵⁾

Ambient temperature	-40°C to 125°C
Storage temperature	-40°C to 155°C
Vibration resistance	10Hz to 40Hz 1.27mm DA 40Hz to 70Hz 49m/s ² (5g) 70Hz to 100Hz 0.5mm DA 100Hz to 500Hz 98m/s ² (10g)
Shock resistance	98m/s ² (10g)
Termination	PCB ⁶⁾
Construction	Wash tight, Unenclosed
Unit weight	Approx. 20g

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

2) NO contact, at 14VDC.

3) NO contact, see "Load limit curve".

4) 1min, leakage current less than 1mA.

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

6) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is 240°C to 260°C, 2s to 5s.

CONTACT DATA ³⁾

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurance	Contact material	Ambient temp.	Load wiring diagram ²⁾
			1C		1A	On s	Off s				
			NO	NC	NO						
13.5VDC	Resistive	Make	45	30	45	1.5	1.5	1×10 ⁵	AgSnO ₂	23°C	See diagram 1
		Break	45	30	45						
	Resistive	Make	45	30	45	1.5	1.5	1×10 ⁵	AgNi0.15		
		Break	45	30	45						
	Flasher ¹⁾		2×21W+5W	---	2×21W+5W	0.375	0.375	1000h	Special AgSnO ₂	23°C	See diagram 2
			4×21W+2×5W	---	4×21W+2×5W	0.375	0.375	360h			



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001 CERTIFIED

2007 Rev. 1.00

- 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:

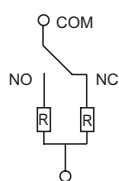


diagram 1

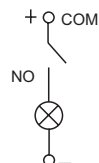


diagram 2

- 3) When the load requirement is different from content of the table above, please contact Hongfa for relay application support.

COIL DATA

at 23°C

	Nominal voltage VDC	Pick-up voltage VDC	Drop-out voltage VDC	Coil resistance x(1±10%)Ω	Power consumption W	Max. allowable overdrive voltage ¹⁾ VDC	
						23°C	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.

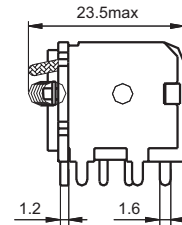
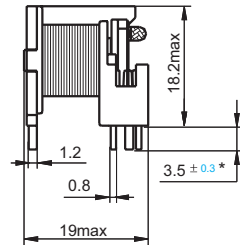
ORDERING INFORMATION

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: U.S.A. Unenclosed model 2: U.S.A. Wash tight model 3: European Unenclosed model 4: European Wash tight model 5: U.S.A. Wash tight model, 3 yoke terminals 6: European Wash tight model 3 yoke terminals						
Contact Material	T: AgSnO ₂ Nil: AgNi0.15						
Coil Power	S: Sensitive Nil: Standard						
Customer special code ¹⁾	e.g. (170) stands for flasher load, (555) stands for RoHS & ELV compliant. In case there are multiple special requirements, all special codes should be followed one by one.						

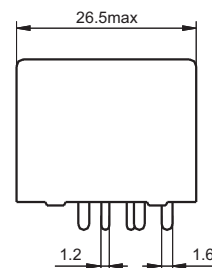
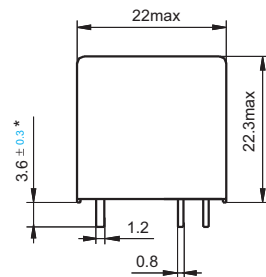
1) HFKP is an environmental friendly product, please mark special code (555) when order.

Outline Dimensions

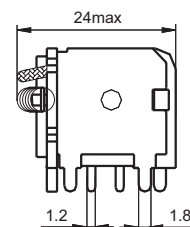
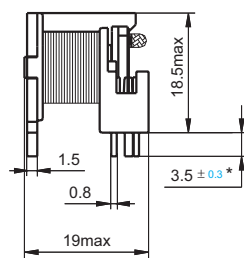
HFKP/□□□-1□1□□(XXX)



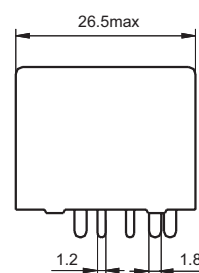
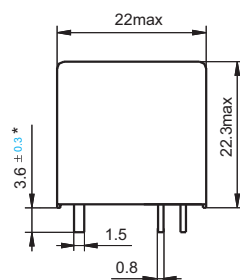
HFKP/□□□-1□2□□(XXX)



HFKP/□□□-1□3□□(XXX)



HFKP/□□□-1□4□□(XXX)

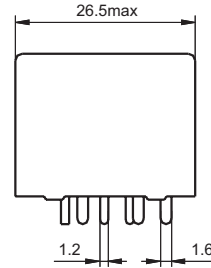
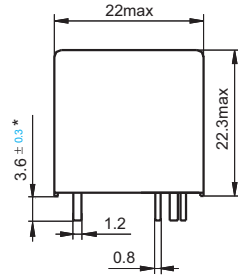


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

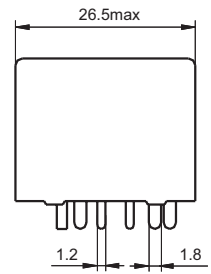
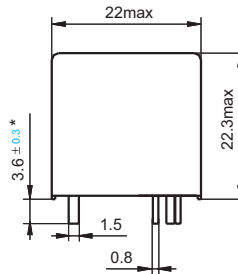
Unit: mm

Outline Dimensions

HFKP/□□□-1□5□□(XXX)

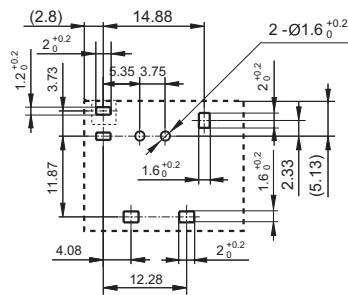


HFKP/□□□-1□6□□(XXX)

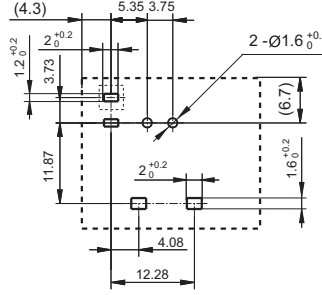


PCB Layout (Bottom view)

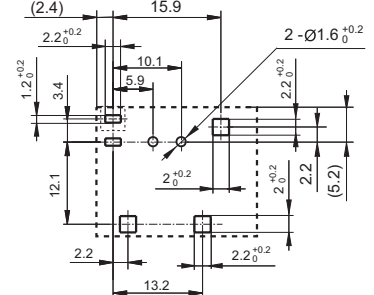
HFKP/□□□-1□1□□(XXX)



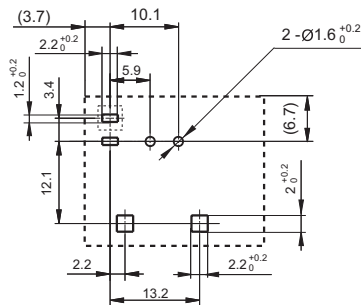
HFKP/□□□-1□2□□(XXX)



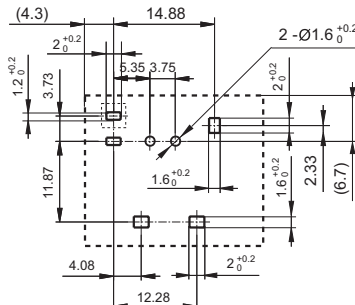
HFKP/□□□-1□3□□(XXX)



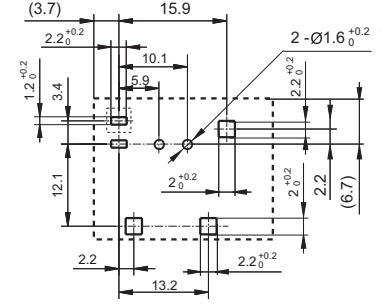
HFKP/□□□-1□4□□(XXX)



HFKP/□□□-1□5□□(XXX)



HFKP/□□□-1□6□□(XXX)



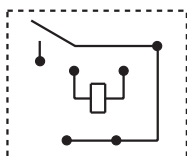
- Notes:**
- 1) * The additional tin top is max. 1mm;
 - 2) The terminal vertical deviation tolerance is 0.2mm;
 - 3) The tolerance without indicating for PCB layout is always ± 0.1 mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

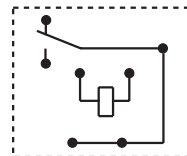
Unit: mm

Wiring Diagram (Bottom view)

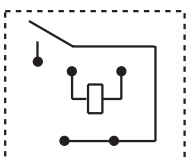
HFKP/□□□-1H1□□(XXX)
HFKP/□□□-1H3□□(XXX)
HFKP/□□□-1H5□□(XXX)
HFKP/□□□-1H6□□(XXX)



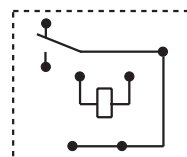
HFKP/□□□-1Z1□□(XXX)
HFKP/□□□-1Z3□□(XXX)
HFKP/□□□-1Z5□□(XXX)
HFKP/□□□-1Z6□□(XXX)



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

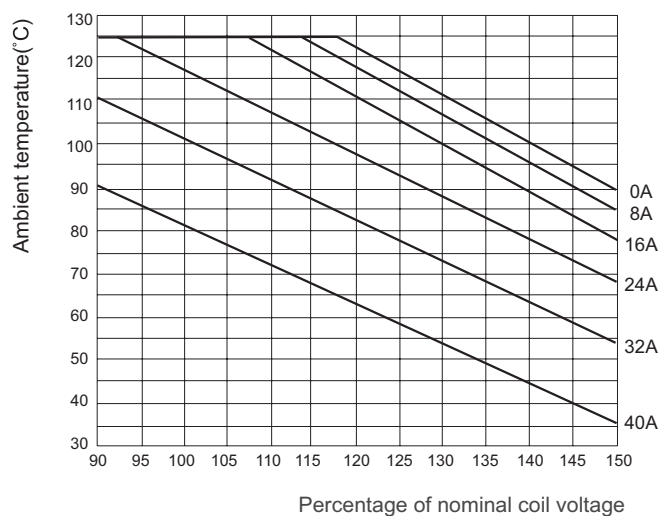


HFKP/□□□-1Z2□□(XXX)
HFKP/□□□-1Z4□□(XXX)



CHARACTERISTIC CURVES

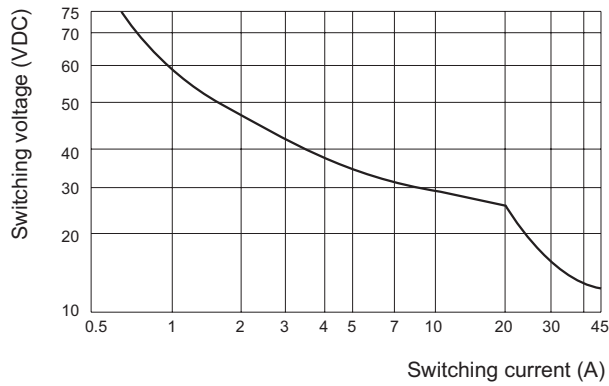
1. Coil operating voltage range



- 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 as example.
- 2) 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.

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.