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
- 1 Form A & 1 Form C contact arrangement
- PCB terminals available
- Two pin out choices
- Open and sealed IP67 types available
- RoHS & ELV compliant (555)

CHARACTERISTICS

Contact arrangement	1A, 1C
Voltage drop (initial) 1)	Typ.: 20mV (at 10A) Max.: 250mV (at 10A)
Min.contact load	1A 6VDC
Electrical life	See " CONTACT DATA " table
Mechanical life	$1x10^7$OPS 300OPS/min
Max. switching voltage	75VDC 2)
Max. switching current 3)	Make: 100A (Lamp, Inrush current) Break: 60A
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/s² (5g) 70Hz to 100Hz 0.5mm DA 100Hz to 500Hz 98m/s² (10g)
Shock resistance	Functional: 98m/s² (10g) Destructive: 196m/s² (20g)
Termination	PCB 6)
Construction	Sealed IP67 & Open
Unit weight	Approx. 20g

1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).
2) NO contact, see "Load limit curve".
3) NO contact, at 14VDC.
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 is 240˚C to 260˚C.

CONTACT DATA 3)

Load voltage	Load type		Load current (A) 1C NO	1C NC	1A NO	On/Off ratio On (s)	On/Off ratio Off (s)	Electrical life	Contact material	Ambient temp.	Load wiring diagram 2)
14VDC	Resistive	Make	45	30	45	1.5	1.5	$1x10^5$OPS	$AgSnO_2$	23˚C	See diagram 1
		Break	45	30	45						
	Resistive	Make	45	30	45	1.5	1.5	$1x10^5$OPS	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			

1) When it is utilized in flasher, a special $AgSnO_2$ contact material should be used and the ordering key should be 170 as a special suffix. Please connect by the polarity according to the diagram below.
2) The load wiring diagrams are listed below:

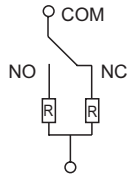


diagram 1

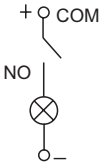


diagram 2

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 (Ω±10%)	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

	HFKP 1) /	012	1H	1	T	S	XXX

Type

Coil voltage **006**: 6VDC **012**: 12VDC **024**: 24VDC

Contact arrangement **1H**: 1 Form A **1Z**: 1 Form C

Version **1**: U.S.A. Open Model **2**: U.S.A. Sealed Model **3**: European Open Model **4**: European Sealed Model **5**: U.S.A. Sealed Model, 3 yoke terminals **6**: European Sealed Model, 3 yoke terminals

Contact Material **T**: $AgSnO_2$ **Nil**: AgNi0.15

Coil Power **S**: Sensitive **Nil**: Standard

Customer special code 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.

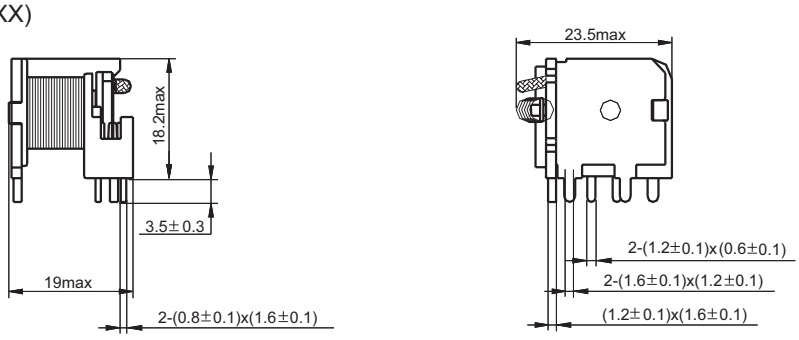
1) HFKP is an environmental friendly product, please mark special code (555) when order.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

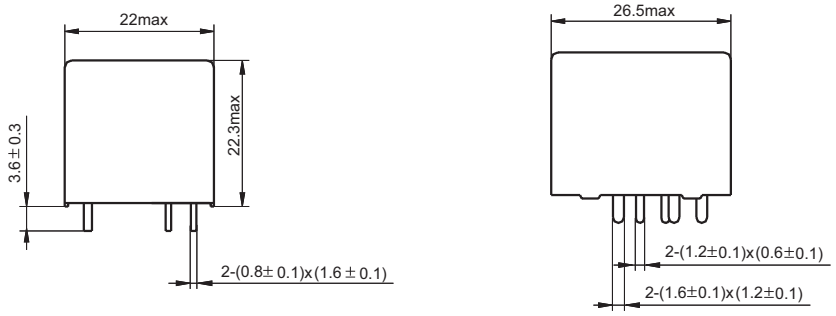
Outline Dimensions

HFKP/□□□-1□1□□(XXX)



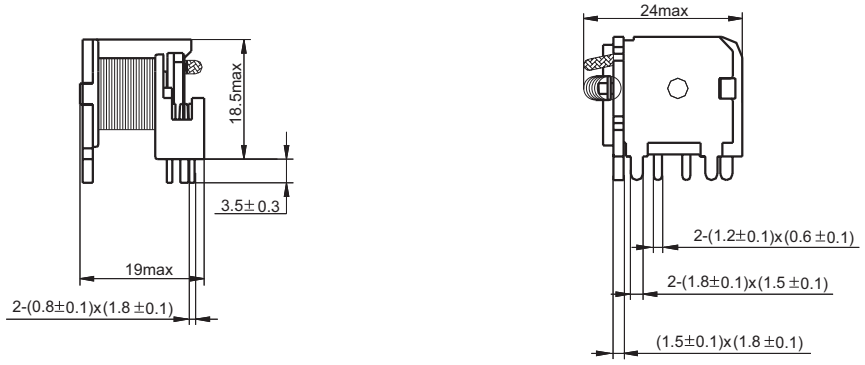
Remark: The dimensions of the terminals are before tin dipping; the terminal vertical deviation tolerance is 0.2mm.

HFKP/□□□-1□2□□(XXX)



Remark: The dimensions of the terminals are before tin dipping; the terminal vertical deviation tolerance is 0.2mm.

HFKP/□□□-1□3□□(XXX)

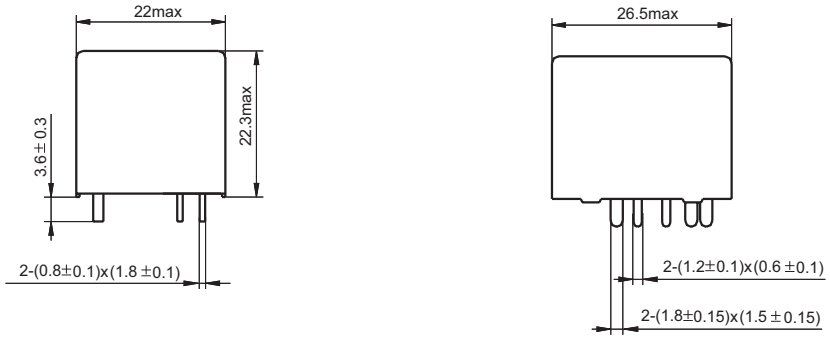


Remark: The dimensions of the terminals are before tin dipping; the terminal vertical deviation tolerance is 0.2mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

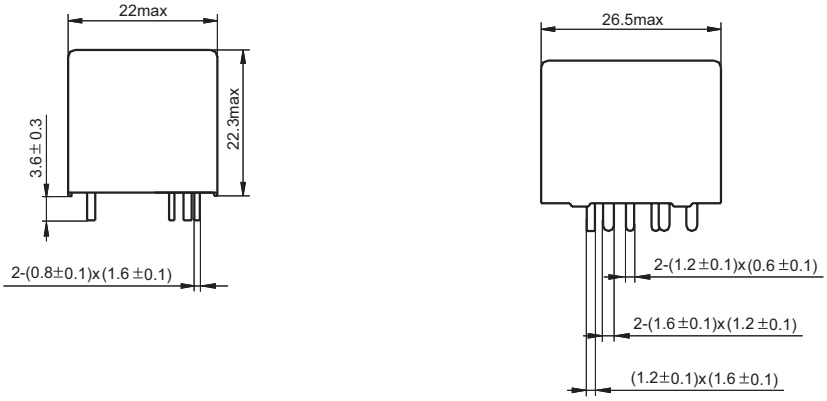
Unit: mm

HFKP/□□□-1□4□□(XXX)



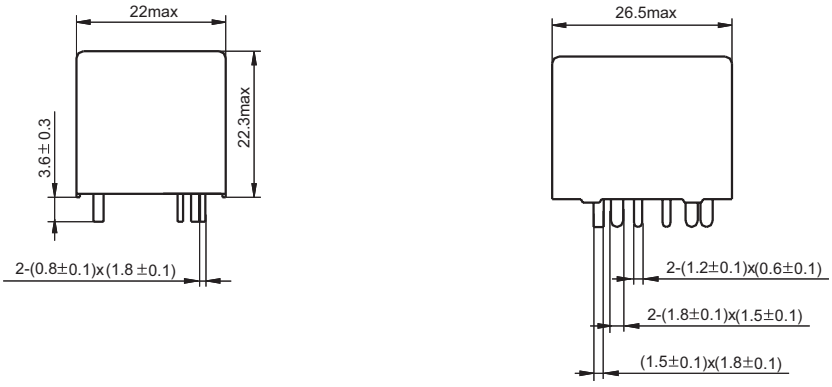
Remark: The dimensions of the terminals are before tin dipping; the terminal vertical deviation tolerance is 0.2mm.

HFKP/□□□-1□5□□(XXX)



Remark: The dimensions of the terminals are before tin dipping; the terminal vertical deviation tolerance is 0.2mm.

HFKP/□□□-1□6□□(XXX)



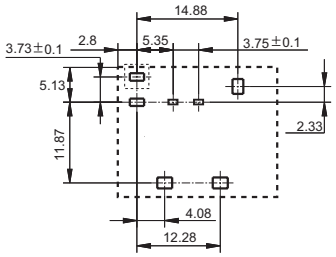
Remark: The dimensions of the terminals are before tin dipping; the terminal vertical deviation tolerance is 0.2mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

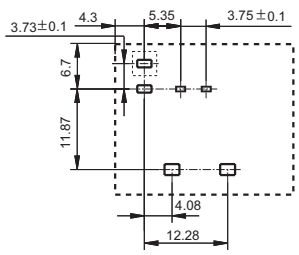
Unit: mm

PCB Layout

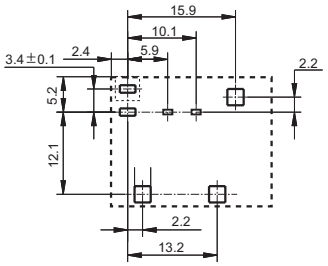
HFKP/□□□-1□1□□(XXX)



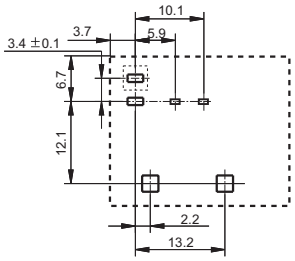
HFKP/□□□-1□2□□(XXX)



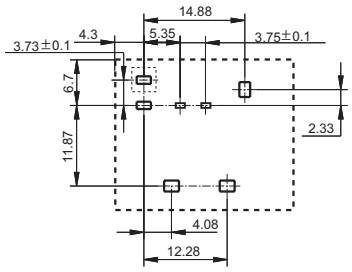
HFKP/□□□-1□3□□(XXX)



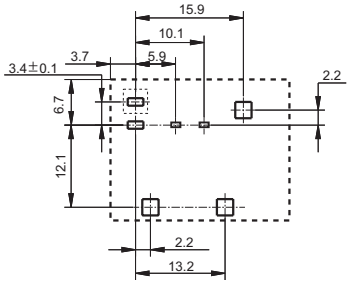
HFKP/□□□-1□4□□(XXX)



HFKP/□□□-1□5□□(XXX)

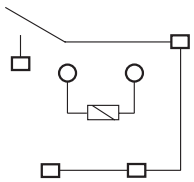


HFKP/□□□-1□6□□(XXX)

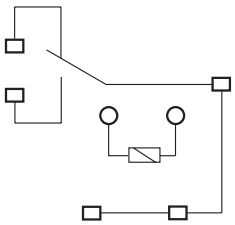


Wiring Diagram (Bottom view)

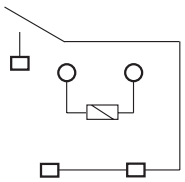
HFKP/□□□-1H1□□(XXX)
HFKP/□□□-1H3□□(XXX)
HFKP/□□□-1H5□□(XXX)
HFKP/□□□-1H6□□(XXX)



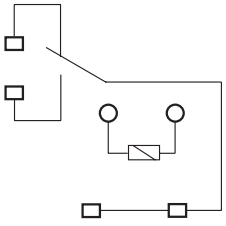
HFKP/□□□-1Z1□□(XXX)
HFKP/□□□-1Z3□□(XXX)
HFKP/□□□-1Z5□□(XXX)
HFKP/□□□-1Z6□□(XXX)



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

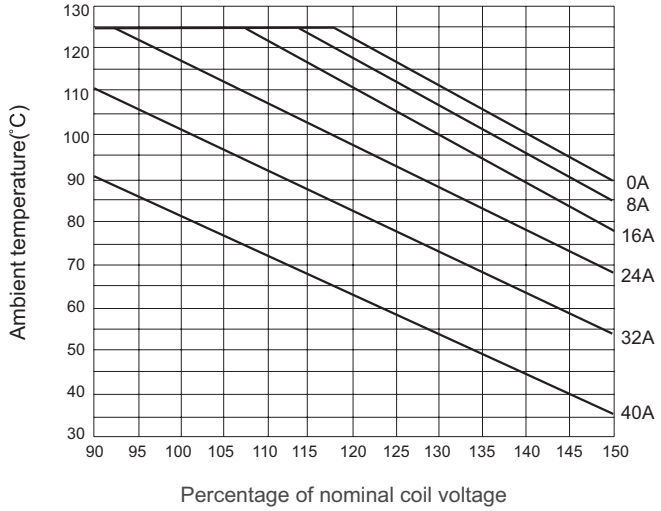


HFKP/□□□-1Z2□□(XXX)
HFKP/□□□-1Z4□□(XXX)



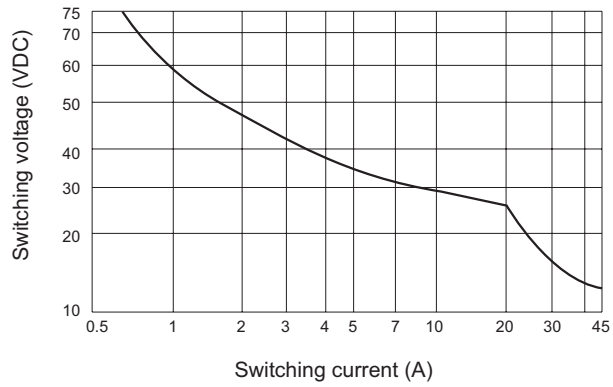
CHARACTERISTIC CURVES

1. Coil operating voltage range



1) This chart takes sensitive open version as example.
2) The maximum allowable coil temperature is 155˚C. For the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 130˚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.

2. Load limit curve (at 23˚C)



1) This chart takes NO contact as example.
2) The load and electrical life 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.