HFKP AUTOMOTIVE RELAY



Features

- 45A switching capability
- PCB terminals
- 1 Form A & 1 Form C contact arrangement
- RoHS & ELV compliant

Typical Applications

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

CHARACTERISTICS

Contact arrangement	1A, 1C
Voltage drop (initial) 1)	NO:Typ.20mV,250mV max.(at 10A) NC:Typ.30mV,250mV max.(at 10A)
Max. continuous current 2) 9)	30A (at 85˚C, 8h)
Max. switching current 3) 9)	Make: 100A (Lamp, Inrush current) Break: 60A (Resistive)
Max. switching voltage 4)	75VDC
Min.contact load 5)	1A 12VDC
Electrical endurance	See " CONTACT DATA "
Mechanical endurance	$1x10^7$OPS (300OPS/min)
Initial insulation resistance	500MΩ (at 500VDC)
Withstand voltage 6)	between contacts: 500VAC between coil & contacts: 500VAC
Operate time 10)	Typ.: 5ms Max.: 10ms (at nomi. vol.)
Release time 7) 10)	Typ.: 3ms Max.: 10ms
Ambient temperature	-40˚C to 125˚C
Vibration resistance 8) 10)	10Hz to 40Hz 1.27mm DA 40Hz to 70Hz 49m/s^2 70Hz to 100Hz 0.5mm DA 100Hz to 500Hz 98m/s^2
Shock resistance 8) 10)	98m/s^2
Termination	PCB 9)
Construction	Plastic sealed
Unit weight	Approx. 20g

1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).
2) Test under the following conditions:
   a.The relay is mounted on the PCB,the coil is applied with 100% rated votage;
   b.The PCB board is a double layer board. The thickness of the copper foil is 4 oz (140μm),the width of each copper foil is 5.4x(1±5%)mm, the length of the copper foil is (50±1)mm,and the Tg value of the PCB board is 150˚C;
   c.The sample orders were only tested.
   d.It varies by connection conditions. Additionally, reliable performance under repeated power-on cannot be guaranteed. Verify based on actual operating conditions during use.
3) For NO contacts, at 23˚C, 13.5VDC, resistive load (100 cycles).
4) For NO contacts, see "Load limit curve" for details.
5) Lower limit target for on-off operation at low load. This value varies by on-off frequency, environmental conditions and expected reliability level; verify with actual load during use.
6) 1min, leakage current less than 1mA.
7) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
8) 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.
9) 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±0.5)s.
10) Only for the 12VDC coil voltage type.

CONTACT DATA 3)

at 23˚C

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurace	Contact material	Load wiring diagram 2)
			1C		1A					
			NO	NC		On s	Off s			
13.5VDC	Resistive	Make	45	30	45	1.5	1.5	1×10^5OPS	$AgSnO_2$	See diagram 1
		Break	45	30	45					
	Flasher 1)		2×21W+5W	—	2×21W+5W	0.375	0.375	1000h	Special $AgSnO_2$	See diagram 2
			4×21W+2×5W	—	4×21W+2×5W	0.375	0.375	360h		

Notes: 1) When it is utilized in flasher, a special $AgSnO_2$ 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:

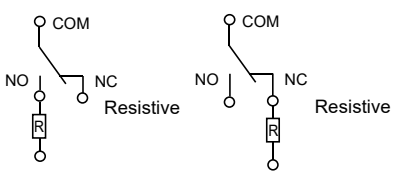


diagram 1

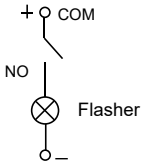


diagram 2

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

Coil Power	Nominal voltage VDC	Pick-up voltage VDC. max.			Drop-out voltage VDC min.			Coil resistance x(1±10%)Ω	Power consumption W
		23˚C	85˚C	125˚C	23˚C	85˚C	125˚C		
Standard	6	3.3	4.1	4.7	0.6	0.7	0.8	19	1.9
	12	6.8	8.5	9.7	1.2	1.5	1.7	90	1.6
	24	13.9	17.3	19.9	2.4	3.0	3.3	362	1.6
Sensitive	6	4.5	5.6	6.4	0.6	0.7	0.8	30	1.2
	12	9.0	11.2	12.9	1.2	1.5	1.7	120	1.2
	24	19.2	23.9	27.4	2.4	3.0	3.3	480	1.2

ORDERING INFORMATION

	HFKP /	012	-1H	4	T	S	(XXX)

Type

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

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

Version[1)] **4**: European Plastic sealed model
6: European Plastic sealed model, 3 yoke terminals

Contact Material **T**: $AgSnO_2$

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

Special code[2)] **XXX:** Customer special requirement **Nil:** Standard

Notes: 1)Contact us for suitable soldering conditions and product specifications if post-soldering cleaning or surface treatment is required after the relays are soldered onto the PCB.

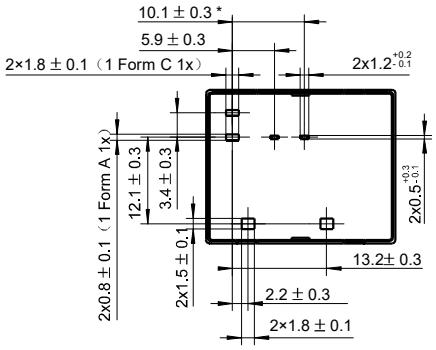
2)The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load.The performance parameters of products with characteristic numbers shall be subject to the specific specifications provided by Hongfa.

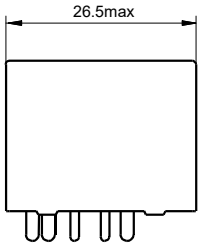
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

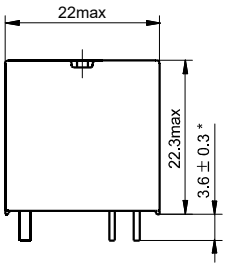
Unit: mm

Outline Dimensions

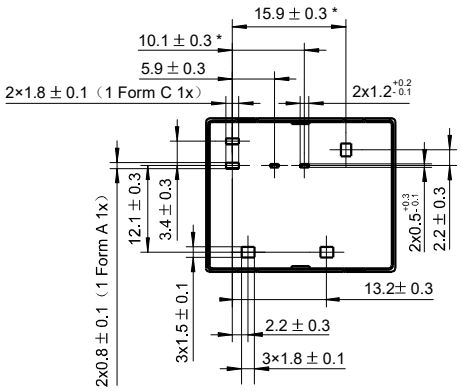
HFKP/□□□-1□4□□(XXX)

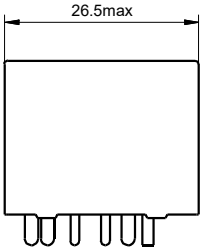


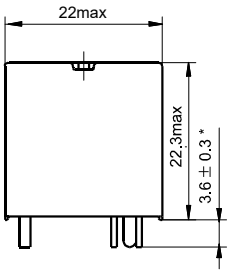




HFKP/□□□-1□6□□(XXX)





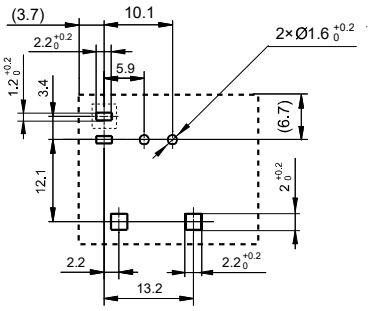


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

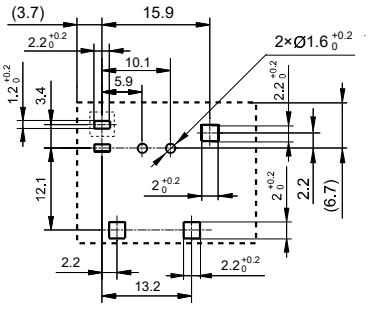
Unit: mm

PCB Layout (Bottom view)

HFKP/□□□-1□4□□(XXX)



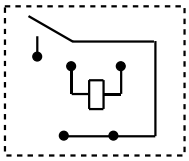
HFKP/□□□-1□6□□(XXX)



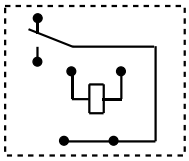
Remark: 1) * The additional tin top is max. 1mm.
2) The tolerance without indicating is always ±0.1mm.
3) Means that the mounting hole doesn't exist for HFKP/□□□-1H□□□(XXX) type.

Wiring Diagram (Bottom view)

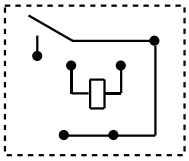
HFKP/□□□−1H4□□(XXX)



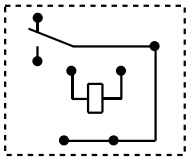
HFKP/□□□−1Z4□□(XXX)



HFKP/□□□-1H6□□(XXX)



HFKP/□□□-1Z6□□(XXX)

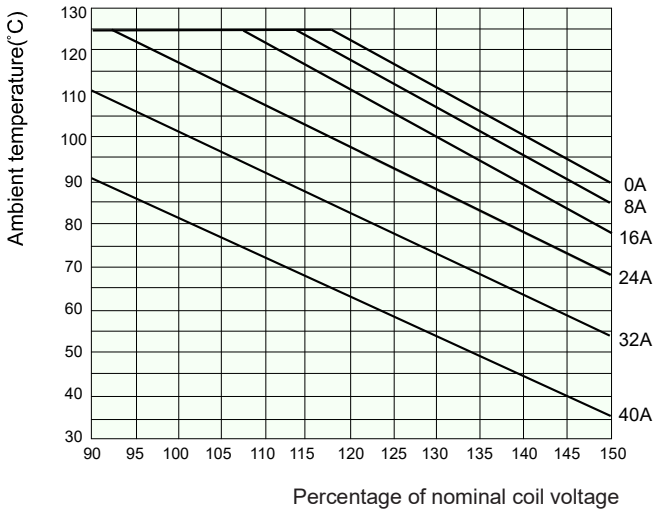


CHARACTERISTIC CURVES

Unit: mm

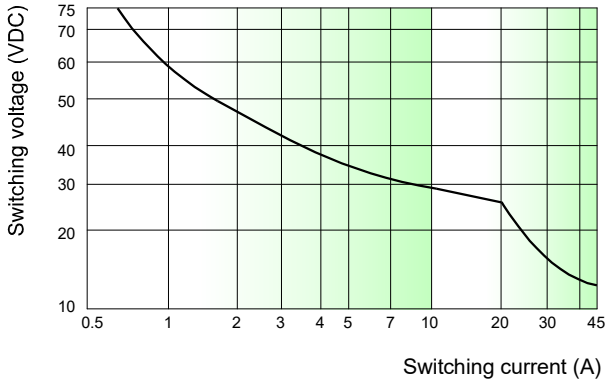
CHARACTERISTIC CURVES

1. Coil operating voltage range



1) 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.
2) 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, 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

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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