HFKF/HFKF-T AUTOMOTIVE RELAY


Single


Twin


Twin(8 pins)


Twin(10 pins)

Features

- 25A motor locked load
- Extremely small relay
- Change-over contact version
- Single and twin(8 pins or 10 pins) version available
- Coil wire insulation class H (180˚C)
- HFKF-T (reflow soldering version) available
- RoHS & ELV compliant

Typical Applications

Central door lock, Power doors and windows, Seat adjustment, Sunroof motor control, Mirror adjustment

CHARACTERISTICS

Contact arrangement		1C (Single), 2C Twin(8 pins), 2C Twin(10 pins)
Voltage drop (initial) 1)		Typ.: 50mV (at 10A) Max.: 250mV (at 10A)
Max. continuous current2)		35A 2min 12VDC at 23˚C HFKF:25A 2min 12VDC at 85˚C HFKF-T:30A 2min 12VDC at 85˚C HFKF-T:20A 2min 12VDC at 125˚C
Max. switching current3)		NO:60A NC:30A
Max. switching voltage		16VDC
Min. contact load4)		1A 12VDC
Electrical endurance		See "CONTACT DATA"
Mechanical endurance		1 x 10^7 OPS (300OPS/min)
Initial insulation resistance		100MΩ (at 500VDC)
Withstand voltage5)		between contacts: 500VAC between coil & contacts: 500VAC
Operate time		Max.:10ms (at nomi. vol.);Typ.:2ms
Release time6)		Max.: 10ms;Typ.:1ms
Ambient temperature		HFKF: -40˚C to 85˚C HFKF-T: -40˚C to 125˚C
Vibration resistance	Functional7)	10Hz to 300Hz 43m/s^2
	Destructive	10Hz to 500Hz 43m/s^2, 200h
Shock resistance	Functional 8)	100m/s^2 (pulse duration: 11ms)
	Destructive	1000m/s^2 (pulse duration: 6ms)
Termination		PCB 9)
Construction		Plastic sealed, Flux proofed
Unit weight		Single relay: Approx. 3.5g Twin relay: Approx. 6.5g

1) Equivalent to the Typ. initial contact resistance is 5mΩ (at 10A).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 thinkness of the copper foil is 4oz(140μm),the width of each copper foil is 3.76x(1±5%)mm,the length of copper foil is 50mm±1mm and the Tg value of the PCB board is 150˚C.
c.The products of 2Z or BZ adopt bridge connection method.
d.The installation spacing between relay samples is 100mm.
e.It varies by connection conditions. Additionally, reliable performance under repeated power-on cannot be guaranteed. Verify based on actual operating conditions during use.
3) 23˚C,14VDC(100 cycles, resistive load);
4) 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.
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 1ms, when non-energized, opening time of NC contacts shall not exceed 1ms, meantime, NO contacts shall not be closed.
8) When energized, opening time of NO contacts shall not exceed 10μs, when non-energized, opening time of NC contacts shall not exceed 10μs, 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.

CONTACT DATA 3)

at 23˚C

Load voltage	Load type 2)		Load current A 1C, 2C NO	Load current A 1C, 2C NC	On/Off ratio On s	On/Off ratio Off s	Electrical endurance OPS	Contact material	Load wiring diagram
14VDC	Resistive	Make	20	10	1	9	1 × 10^5	$AgSnO_2$	See diagram 1
		Break	20	10					
	Motor	Make 1)	25	—	0.5	9.5	1 × 10^5	$AgSnO_2$	See diagram 2
		Break	25	—					
	Simulate motor operation	Make 1)	25	—	0.02	9.5	2 × 10^5	$AgSnO_2$	
		Transient	15	—	0.03				
		Break	5	—	0.45				

Notes:1) Corresponds to the peak inrush current on initial actuation (motor).
2) The load wiring diagrams are listed below:

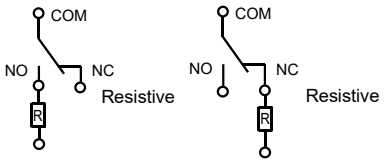


diagram 1

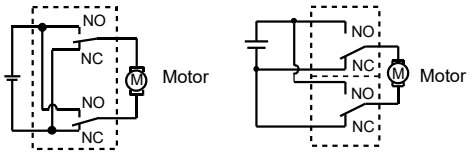


diagram 2

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

COIL DATA

Nominal voltage VDC	Pick-up voltage VDC max.			Drop-out voltage VDC min.			Coil resistance x(1±10%)Ω			Coil power consumption W
	23˚C	85˚C	125˚C	23˚C	85˚C	125˚C	23˚C	85˚C	125˚C	23˚C
12	6.5	8.1	9.1	0.8	1	1.13	160	199.7	225.3	0.9
12	7.7	9.6	10.9	0.8	1	1.13	220	274.6	309.8	0.655

ORDERING INFORMATION

	HFKF /	12	-1Z	S	P	T	(XXX)

Type **HFKF**: Standard
HFKF-T: Reflow soldering version or high heat-resistant version

Coil voltage **12:** 12VDC

Contact arrangement **1Z:** 1 Form C (Single version)
BZ: 2 Form C (Twin(8 pins) version)
2Z: 2 Form C (Twin(10 pins) version)

Construction[1] **S:** Plastic sealed **Nil:** Flux proofed

Coil power **P:** 0.9W **Nil:** 0.655W

Contact material **T:** $AgSnO_2$

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

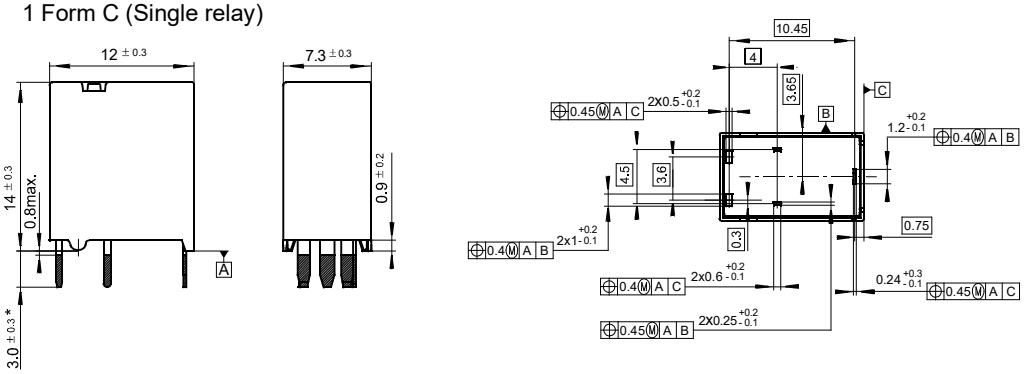
Notes: 1) Contact us for suitable soldering conditions and product specifications if post-soldering cleaning or surface treatment is required after the relays are soldered onto the PCB.
2) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher 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

1 Form C (Single relay)

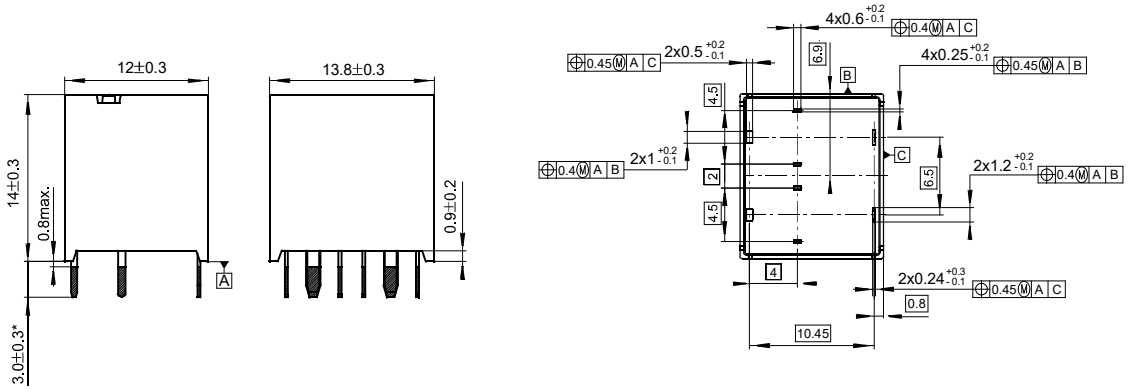


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

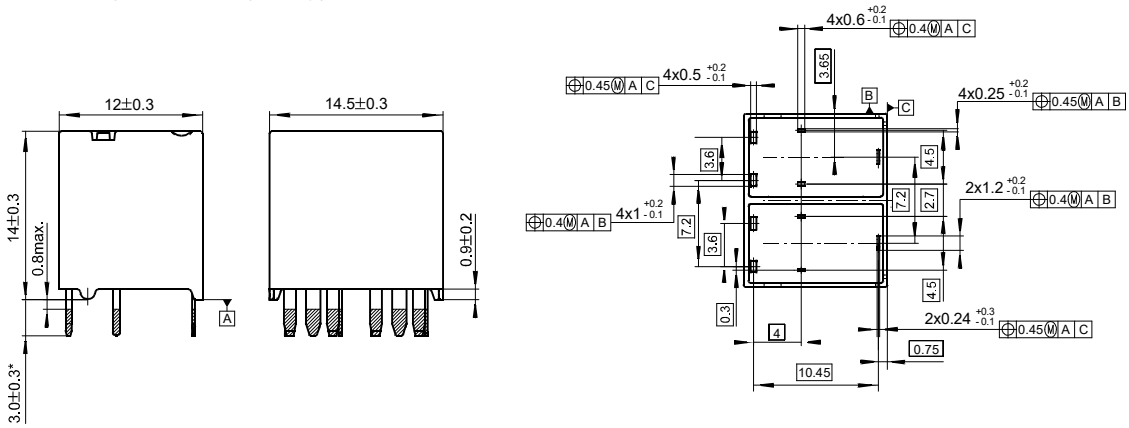
Unit: mm

Outline Dimensions

2 Form C (**Twin(8 pins)** relay)



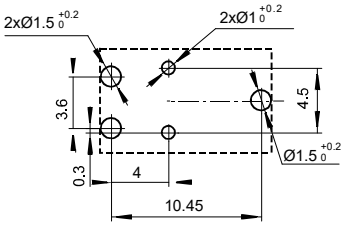
2 Form C (**Twin(10 pins)**) relay)



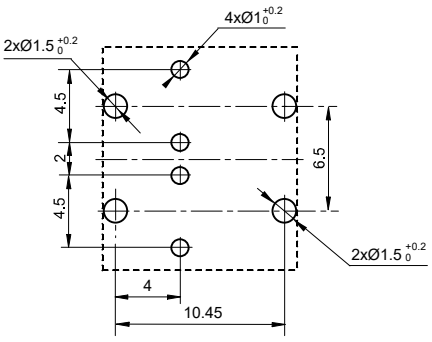
Remark: * The additional tin top is max. 1mm. Intervals between terminals is measured at A surface level.

PCB Layout (Bottom view)

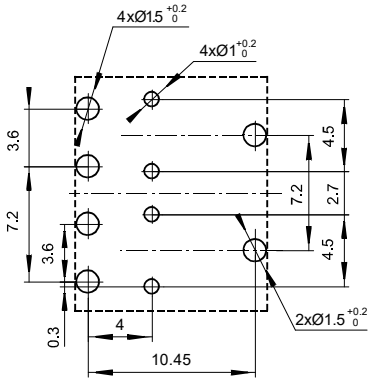
1 Form C (Single relay)



2 Form C (**Twin(8 pins)** relay)



2 Form C (**Twin(10 pins)** relay)



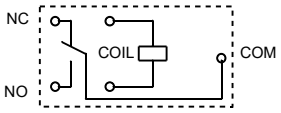
Undeclared tolerance：±0.1。

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Wiring Diagram (Bottom view)

1 Form C (Single relay)



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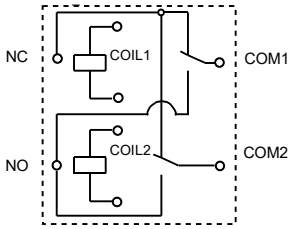
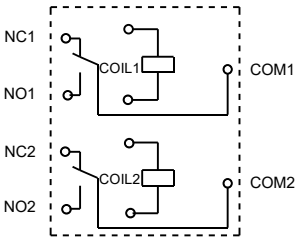


2 Form C (**Twin(10 pins)**) relay)



CHARACTERISTIC CURVES

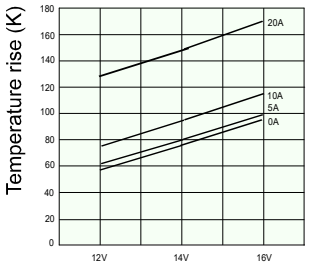
(1) **Coil temperature rise (23˚C)**

Experiment：HFKF/12-BZSPT

Amount：three

Carrying current：0A,5A,10A,20A

Ambient temp.：23˚C



Coil voltage (VDC)

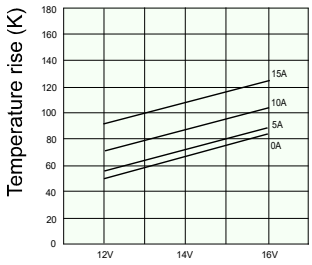
(2) **Coil temperature rise (85˚C)**

Experiment：HFKF/12-BZSPT

Amount：three

Carrying current：0A,5A,10A,15A

Ambient temp.：85˚C



Coil voltage (VDC)

Remark: The coil temperature rise test requires the relay to be installed on the PCB. The PCB is double-layered. The thickness of the copper foil is 4 oz (140 μm), the width of each copper foil is 3.76 × (1 ± 5%) mm, the length of the copper foil is 50mm±1mm, and the Tg value of the PCB board is 150˚C.The installation spacing between relay samples is 100mm.