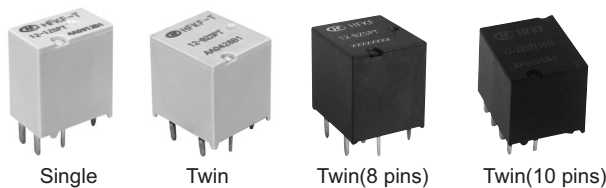


# HFKF/HFKF-T

## AUTOMOTIVE RELAY



### Typical Applications

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

### 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

## CHARACTERISTICS

Contact arrangement	1C (Single), 2C Twin(8 pins), 2C Twin(10 pins)
Voltage drop (initial) <sup>1)</sup>	Typ.: 50mV (at 10A) Max.: 250mV (at 10A)
Max. continuous current <sup>2)</sup>	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 current <sup>3)</sup>	NO:60A NC:30A
Max. switching voltage	16VDC
Min. contact load <sup>4)</sup>	1A 12VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	1 x 10 <sup>7</sup> ops (300ops/min)
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength <sup>5)</sup>	between contacts: 500VAC between coil & contacts: 500VAC
Operate time	Max.:10ms (at nomi. vol.);Typ.:2ms
Release time <sup>6)</sup>	Max.: 10ms;Typ.:1ms
Ambient temperature	HFKF: -40°C to 85°C HFKF-T: -40°C to 125°C

Vibration resistance	Functional <sup>7)</sup>	10Hz to 300Hz 43m/s <sup>2</sup>
	Destructive	10Hz to 500Hz 43m/s <sup>2</sup> , 200h
Shock resistance	Functional <sup>8)</sup>	100m/s <sup>2</sup> (pulse duration: 11ms)
	Destructive	1000m/s <sup>2</sup> (pulse duration: 6ms)
Termination	PCB <sup>9)</sup>	
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 voltage.

b)The PCB board is a double layer board.the thickness 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.

3) 23°C,14VDC(100 cycles, resistive load);

4) This value can change due to the switching frequency,environmental conditions and desired reliability lever,therefore it is recommended to check this with the actual load.

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±0.3)s.

## CONTACT DATA <sup>3)</sup>

at 23°C

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

Note:1) Corresponds to the peak inrush current on initial actuation (motor).

2) The load wiring diagrams are listed below:



HONGFA RELAY

ISO9001, IATF16949, ISO14001, ISO45001, IECQ QC 080000, ISO/IEC 27001 CERTIFIED

2025. Rev. 1.00

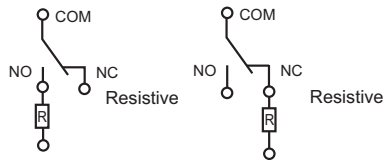


diagram 1

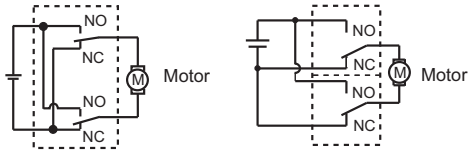


diagram 2

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 $\times(1\pm10\%) \Omega$			Power consumption W
	23°C	85°C	125°C	23°C	85°C	125°C	23°C	85°C	125°C	
12	$\leq 6.5$	$\leq 8.1$	$\leq 9.1$	$\geq 0.8$	$\geq 1$	$\geq 1.13$	160	199.7	225.3	0.9
12	$\leq 7.7$	$\leq 9.6$	$\leq 10.9$	$\geq 0.8$	$\geq 1$	$\geq 1.13$	220	274.6	309.8	0.655

## ORDERING INFORMATION

<b>HFKF / 12 -1Z S P T (XXX)</b>	
<b>Type</b>	HFKF: Standard HFKF-T: Reflow soldering version or high heat-resistant version
<b>Coil voltage</b>	12: 12VDC
<b>Contact arrangement</b>	1Z: 1 Form C (Single version) BZ: 2 Form C (Twin(8 pins) version) 2Z: 2 Form C (Twin(10 pins) version)
<b>Construction<sup>1)</sup></b>	S: Plastic sealed Nil: Flux proofed
<b>Coil power</b>	P: 0.9W Nil: 0.655W
<b>Contact material</b>	T: AgSnO <sub>2</sub>
<b>Special code<sup>2)</sup></b>	XXX: Customer special requirement Nil: Standard

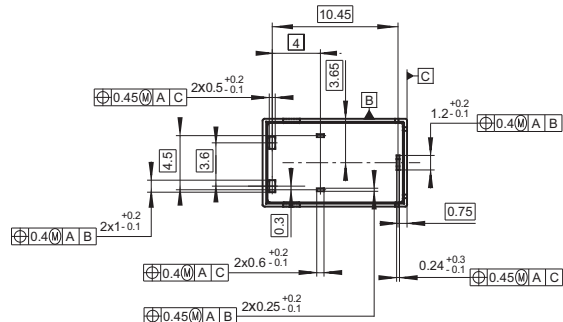
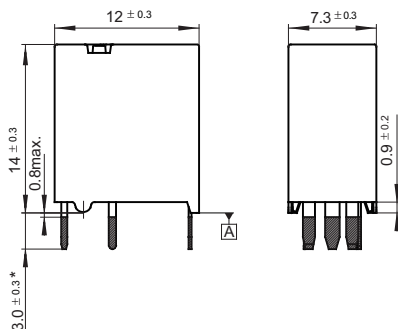
**Notes:** 1) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB;  
2) The customer special requirement express as special code after evaluating by Hongfa. e.g. (170) stands for flasher load. The performance parameters 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)

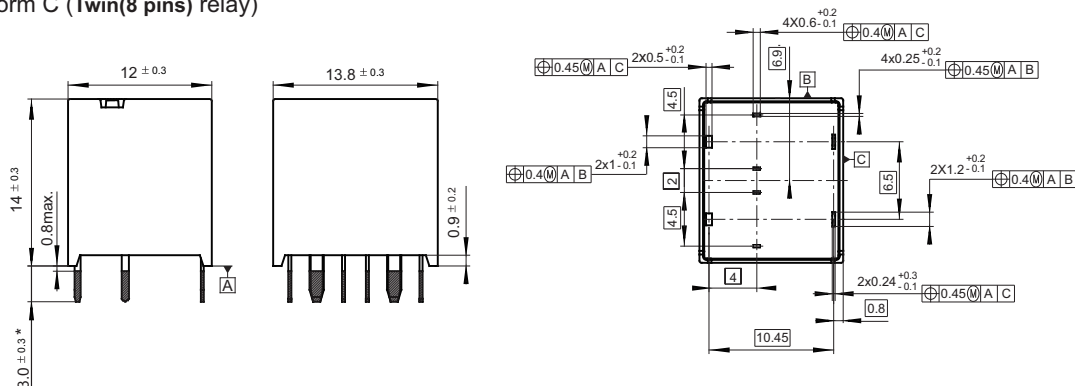


# OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

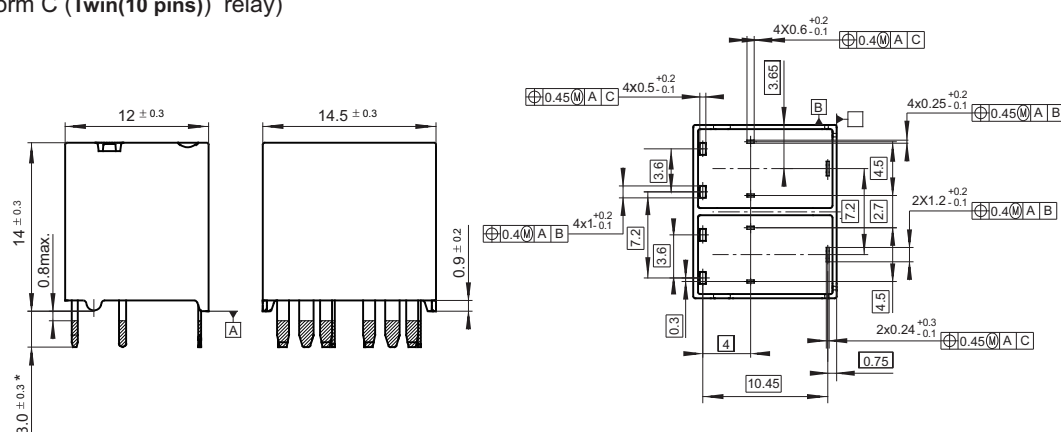
Unit: mm

## Outline Dimensions

2 Form C (Twin(8 pins) relay)



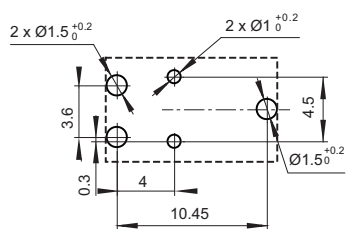
2 Form C (Twin(10 pins) relay)



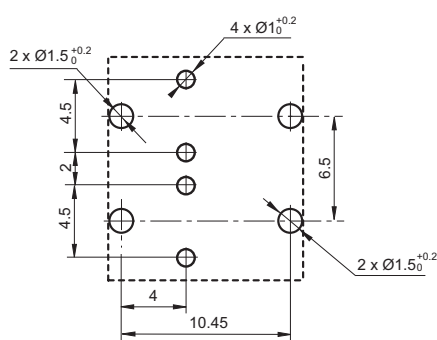
Remark: \* The additional tin top is max. 1mm. Intervals between terminals is measured at A surface level.

## PCB Layout (Bottom view)

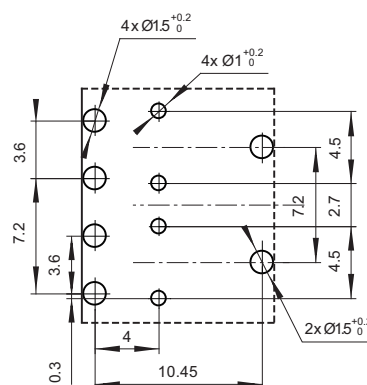
1 Form C (Single relay)



2 Form C (Twin(8 pins) relay)



2 Form C (Twin(10 pins) relay)



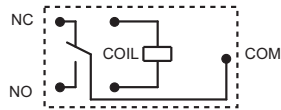
Undeclared tolerance:  $\pm 0.1$ .

## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

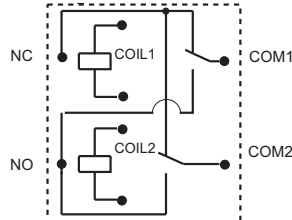
Unit: mm

### Wiring Diagram (Bottom view)

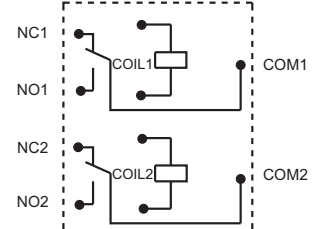
1 Form C (Single relay)



2 Form C (Twin(8 pins)) relay



2 Form C (Twin(10 pins)) relay



## CHARACTERISTIC CURVES

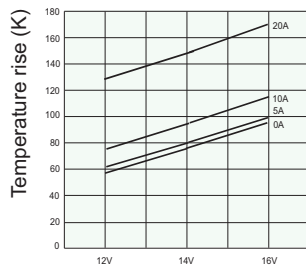
### (1) Coil temperature rise (23°C)

Experiment: HFKF/12-BZSPT

Amount: three

Carrying current: 0A, 5A, 10A, 20A

Ambient temp.: 23°C



Coil voltage (VDC)

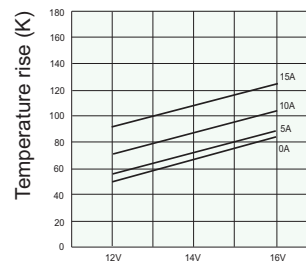
### (2) Coil temperature rise (85°C)

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  $3.76 \times (1 \pm 5\%)$  mm, the length of the copper foil is  $50\text{mm} \pm 1\text{mm}$ , and the Tg value of the PCB board is 150°C. The installation spacing between relay samples is 100mm.

### 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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