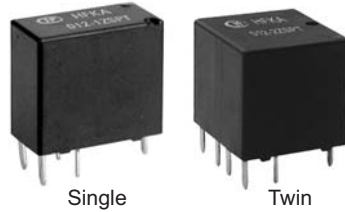


# HFKA/HFKA-T

# AUTOMOTIVE RELAY



Single

Twin

### Typical Applications

Power windows and doors, Central door lock, Sunroof, Seat adjustment, Mirror adjustment, Indicator lamp control, Wiper control

### Features

- 25A motor locked load
- Extremely small relay
- Low pick-up type available
- Single and twin version available
- Coil wire insulation class H (180°C)
- HFKA-T (reflow soldering version) available
- RoHS & ELV compliant

## CHARACTERISTICS

Contact arrangement	1C (Single), 2C (Twin)
Voltage drop (initial)	Max.: 250mV (at 10A)
Max. carrying current	NO/NC: 25A 1h (at 23°C)
Max. switching current	30A <sup>1)</sup>
Max. switching voltage	16VDC <sup>1)</sup>
Min. contact load	1A 6VDC
Electrical endurance	1x10 <sup>5</sup> OPS
Mechanical endurance	1x10 <sup>6</sup> OPS (300OPS/min)
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength <sup>2)</sup>	between contacts: 500VAC
	between coil & contacts: 500VAC
Operate time	Typ.: 2.5ms
	Max.: 10ms (at nomi. vol.)
Release time	Typ.: 1.2ms
	Max.: 10ms <sup>3)</sup>

Ambient temperature	HFKA: -40°C to 85°C HFKA-T: -40°C to 105°C
Storage temperature	-40°C to 155°C
Vibration resistance	10Hz to 500Hz 49m/s <sup>2</sup> (5g)
Shock resistance	98m/s <sup>2</sup> (10g)
Termination	PCB <sup>4)</sup>
Construction	HFKA: Wash tight
	HFKA-T: Flux proofed
Unit weight	Single: Approx. 4g
	Twin: Approx. 8g

1) NO contact; See " Load limit curve ".

2) 1min, leakage current less than 1mA.

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

4) 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 <sup>3)</sup>

Load voltage	Load type <sup>2)</sup>		Load current A		On/Off ratio		Electrical endurance OPS	Contact material	Ambient temp.	Load wiring diagram				
			1C, 2C		On s	Off s								
			NO	NC										
13.5VDC	Motor locked	Make <sup>1)</sup>	25	---	0.3	19.7	1x10 <sup>5</sup>	AgSnO <sub>2</sub>	23°C					
		Break	25	---										
	Simulate window operation	Make <sup>1)</sup>	25	---	0.2	4					1x10 <sup>5</sup>	AgSnO <sub>2</sub>	23°C	
		Stable	10	---										2.3
		Break	25	---										
	Simulate motor operation	Make <sup>1)</sup>	27	---	0.02	1.8					1x10 <sup>5</sup>	AgSnO <sub>2</sub>	23°C	
		Transient	17	---						0.03				
		Break	8	---										0.15

- 1) Corresponds to the peak inrush current on initial actuation (motor).
- 2) When applied in flasher, a special silver alloy (AgSnO<sub>2</sub>) contact material should be used and the customer special code should be (170) as a suffix. Please heed the anode and cathode's request when wired, common terminal should connect with anode.
- 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 <sup>1)</sup> VDC	
						23°C	85°C
Standard HFKA/ST HFKA-T/T	12	7.2	1.0	225	0.64	20	16
Low pick-up voltage HFKA/SPT HFKA-T/PT	12	6.5	1.0	180	0.8	18	14

1) Max. allowable overdrive voltage is stated with no load applied.

## ORDERING INFORMATION

		<b>HFKA / 012 1Z S P T (XXX)</b>	
<b>Type</b>	HFKA: Standard HFKA-T: Reflow soldering version <sup>1)</sup>		
<b>Coil voltage</b>	12VDC		
<b>Contact arrangement</b>	1Z: 1 Form C (Single version) 2Z: 2 Form C (Twin version)		
<b>Construction</b>	S: Wash tight (HFKA)	Nil: Flux proofed (HFKA-T)	
<b>Coil power</b>	P: Low pick-up voltage	Nil: Standard	
<b>Contact material</b>	T : AgSnO <sub>2</sub>		
<b>Customer special code</b> <sup>2)</sup>	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) The structure of HFKA-T is only flux proof, the open vent hole is on the top of the relay.

2) HFKA/HFKA-T is an environmental friendly product, please mark special code (555) when order.

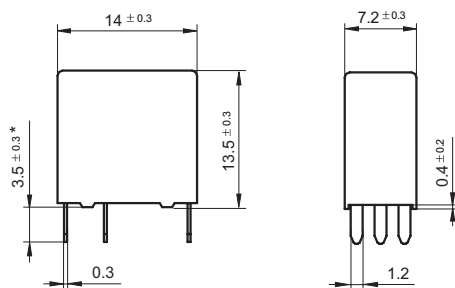
## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

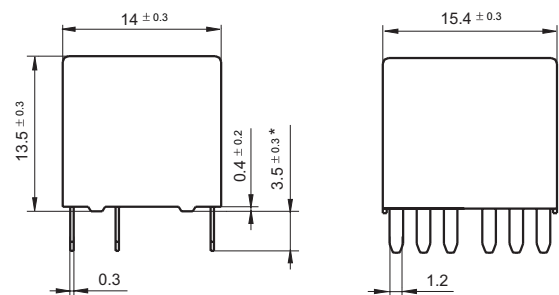
### Outline Dimensions

#### HFKA (Standard)

##### 1C (Single version)



##### 2C (Twin version)



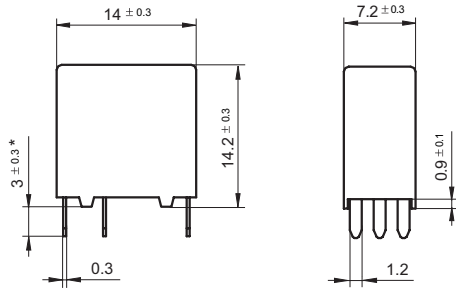
# OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

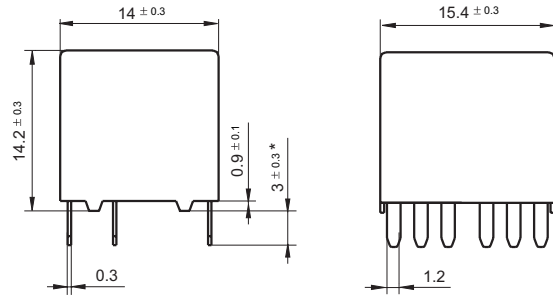
## Outline Dimensions

### HFKA-T (Reflow soldering version)

#### 1C (Single version)



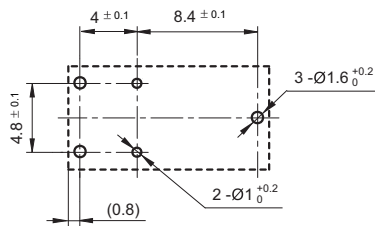
#### 2C (Twin version)



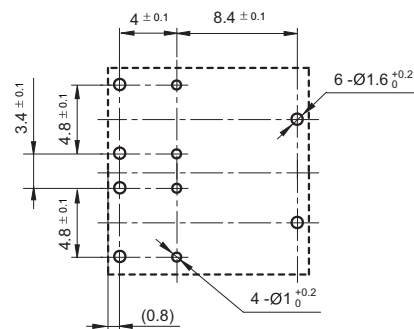
- Notes:** 1) \* The additional tin top is max. 1mm;  
2) The terminal vertical deviation tolerance is 0.2mm.

## PCB Layout (Bottom view)

#### 1C (Single version)

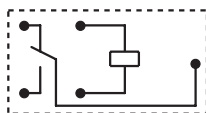


#### 2C (Twin version)

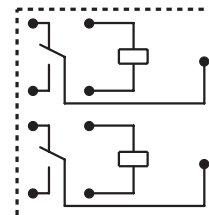


## Wiring Diagram (Bottom view)

#### 1C (Single version)

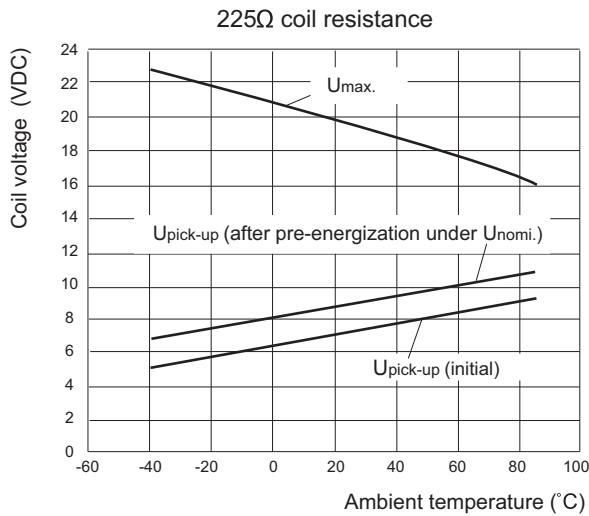


#### 2C (Twin version)

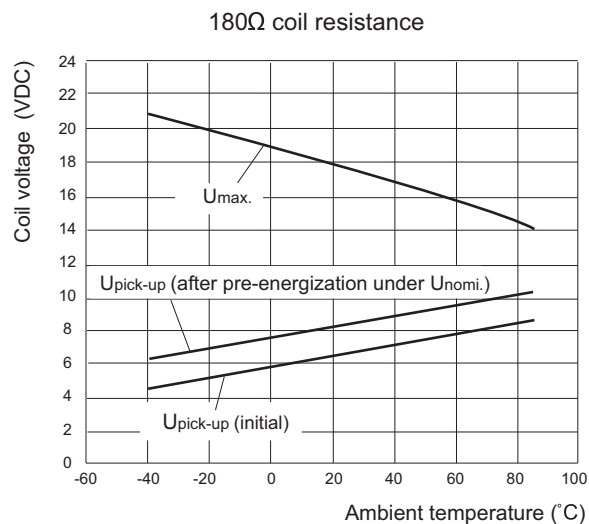


## CHARACTERISTIC CURVES

### 1. Coil operating voltage range

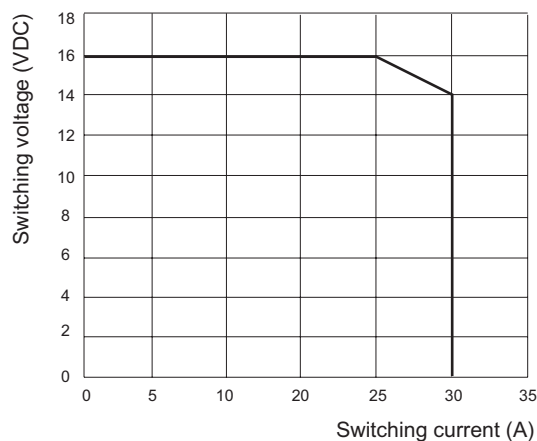


- 1) The curve is applicable under the condition of no contact load applied.
- 2) The operating voltage is connected with coil pre-energized time and voltage. After pre-energized, the operating voltage will increase.
- 3) The maximum allowable coil temperature is 180°C. For the coil temperature rise 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.
- 4) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.



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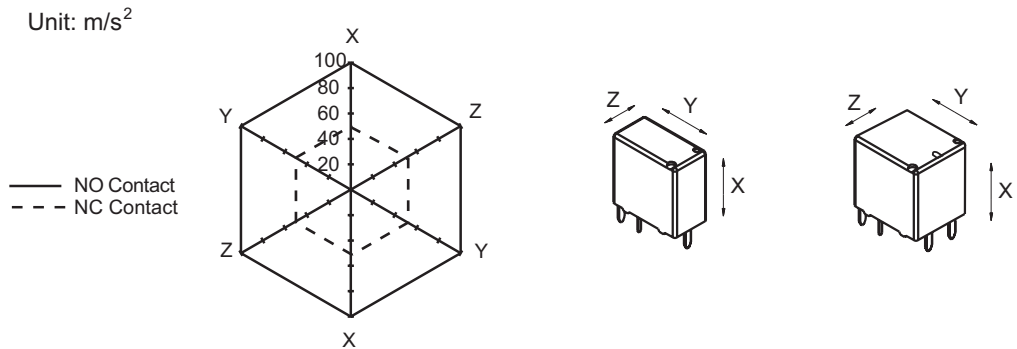
### 2. Load limit curve



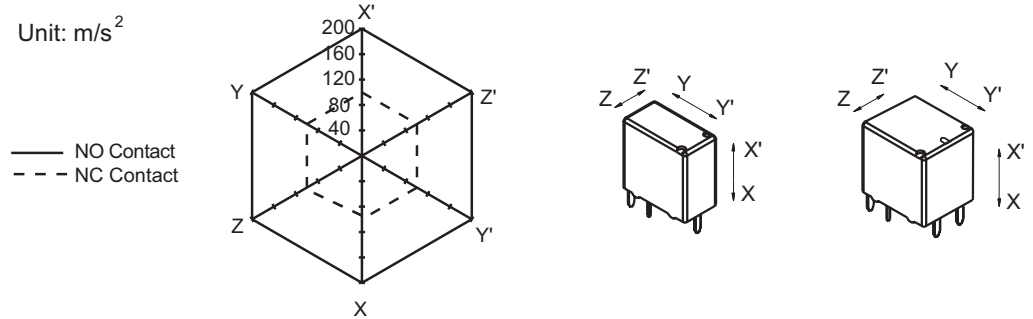
- 1) This chart takes NO contact as example.
- 2) The load and electrical endurance tests are made according to "CONTACT DATA" parameters' table. If actual load voltage, current or operate frequency is different from "CONTACT DATA" table, please arrange corresponding tests for confirmation.

## CHARACTERISTIC CURVES

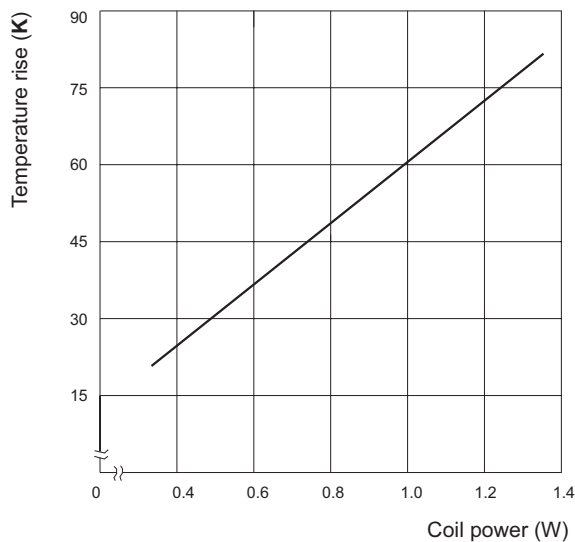
### 3. Vibration resistance characteristics



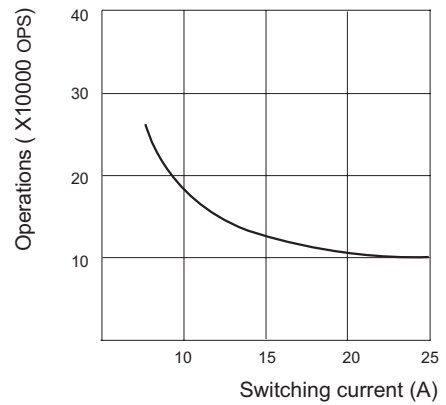
### 4. Shock resistance characteristics



### 5. Coil temperature rise curve



### 6. Electrical endurance curve



#### 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.