HFKC/HFKC-T AUTOMOTIVE RELAY

Single

Twin

Typical Applications

Central door lock, Anti-theft lock, Power doors & windows, Lighting, flashlight & indicator lamp control, Wiper control Instrument control, Rear window and seat heating control

Features

- Subminature automotive relay
- Twin separate systems (Twin version)
- The reflow soldering version (open vent hole) available (HFKC-T)
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	Single: 1A, 1C Twin: 2A, 2C
Voltage drop (initial) 1)	Typ.: 50mV (at 10A) Max.: 250mV (at 10A)
Max. continuous current	NO: 30A (at 23˚C, 1h) 2) NC: 25A (at 23˚C, 1h) 3)
Max. switching current 4)	30A
Max. switching voltage	16VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	$1x10^7$OPS (300OPS/min)
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength 5)	500VAC
Operate time	Typ.: 4ms (at nomi. vol.) Max.: 10ms (at nomi. vol.)

Release time 6)	Typ.: 2ms Max.: 10ms
Ambient temperature	-40˚C to 105˚C
Vibration resistance 7)	10Hz to 500Hz 58.8m/s^2
Shock resistance 7)	294m/s^2
Termination	PCB 8)
Construction	Wash tight, Flux proofed
Unit weight	Single relay: Approx. 4g Twin relay: Approx. 8g

1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).
2) For NO contacts, measured when applying 100% rated votage on coil.
3) For NC contacts, measured when applying zero voltage on coil.
4) At 23˚C, 13.5VDC, on & off rate at 1s:5s, resistive load (100 cycles).
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, release time of NO contacts shall not exceed 100μs, when non-energized, release time of NC contacts shall not exceed 100μs, meantime, NO contacts shall not be closed.
8) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)˚C , (3±0.3)s.

CONTACT DATA 5)

at 23˚C

Load voltage	Load type		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 4)
13.5VDC	Resistive	Make	20	---	1	5	3×10^5	$AgSnO_2$	See diagram 1
		Break	20	---					
	Wiper L=1.0mH	Make	25 1)	---	0.2	2	3×10^5	$AgSnO_2$	See diagram 2
		Break	5	---	1.8				
	Motor locked L=0.77mH	Make	20	---	0.2	2	1×10^5	$AgSnO_2$	See diagram 3
		Break	20	---					

Load voltage	Load type		Load current A	On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram [4]
			1A, 2A	On s	Off s			
13.5VDC	Resistive	Make	20	1	5	3×10^5	$AgSnO_2$	See diagram 4
		Break	20					
	Flasher [3]	Make	3×21W	0.365	0.365	2×10^6	Special $AgSnO_2$	See diagram 5
		Break						
	Lamp	Make	40 [(2)]	2	2	1×10^5	$AgSnO_2$	See diagram 6
		Break	10					

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

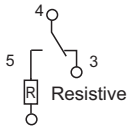


diagram 1

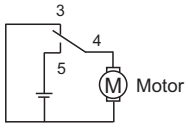


diagram 2

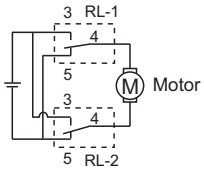


diagram 3

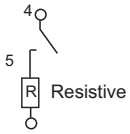


diagram 4

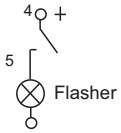


diagram 5

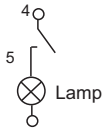


diagram 6

5) 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

Nominal voltage [2] VDC	Pick-up voltage VDC	Drop-out voltage VDC	Coil resistance x(1±10%)Ω	Power consumption W	Max. allowable overdrive voltage [1] VDC	
					at 23˚C	at 85˚C
6	3.5	0.8	63	0.55	13.2	7.8
10	5.7	1.25	181	0.55	22	13
12	6.9	1.5	254	0.55	26	16
12	6.9	1.5	181	0.80	22	13

1) Max. allowable overdrive voltage is stated with no load applied.
2) When requiring some other nominal voltage, special order allowed.

ORDERING INFORMATION

HFKC /	012	-Z	S	P	T	(XXX)

Type — **HFKC**: Standard; **HFKC-T**: Reflow soldering version[1)]

Coil voltage — **006**: 6VDC **010**: 10VDC **012**: 12VDC

Contact arrangement — **H**: 1 Form A **Z**: 1 Form C **2H**: 2 Form A **2Z**: 2 Form C

Construction[2)] — **S**: Wash tight (HFKC) **Nil**: Flux proofed (HFKC-T)

Coil power — **P**: 0.8W (Only for 12VDC type) **Nil**: 0.55W

Contact material — **T**: $AgSnO_2$

Customer special code — e.g. (170) stands for flasher load

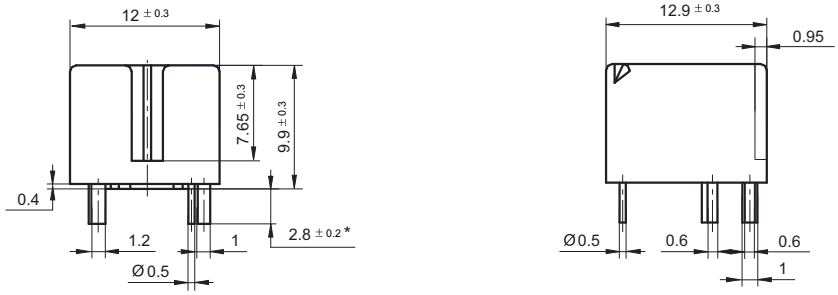
Notes: 1) The structure of HFKC-T is only flux proof, the open vent hole is on the top of the relay.
2) IIf water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

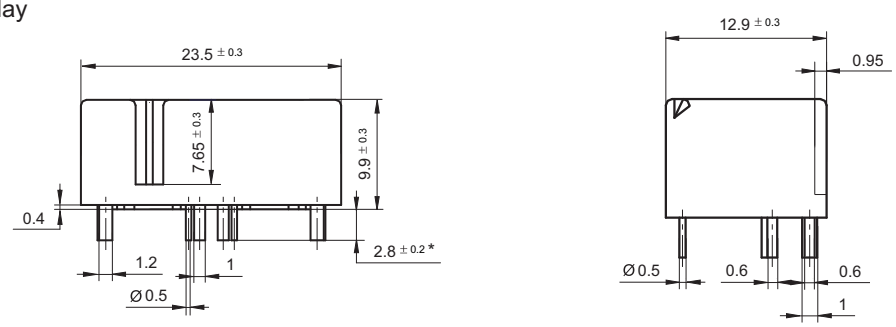
Unit: mm

Outline Dimensions

Single relay



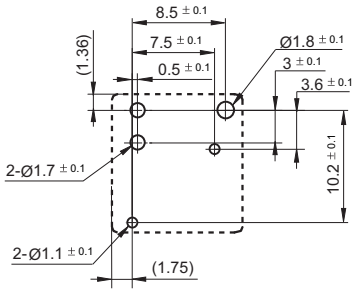
Twin relay



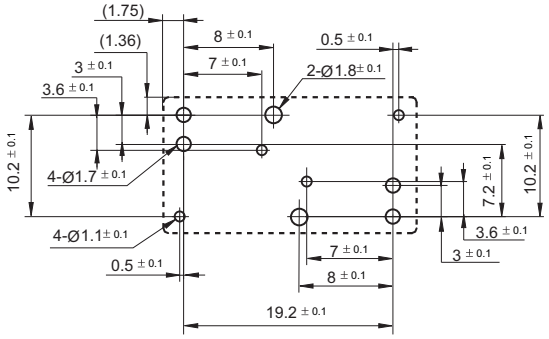
Notes: * The additional tin top is max. 1mm.

PCB Layout (Bottom view)

Single relay



Twin relay

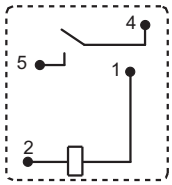


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

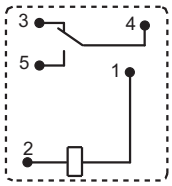
Unit: mm

PCB Layout (Bottom view)

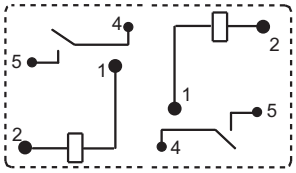
1 Form A
(Single relay)



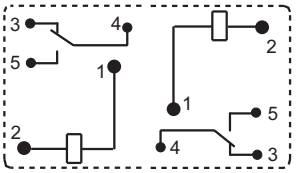
1 Form C
(Single relay)



2 Form A
(Twin relay)

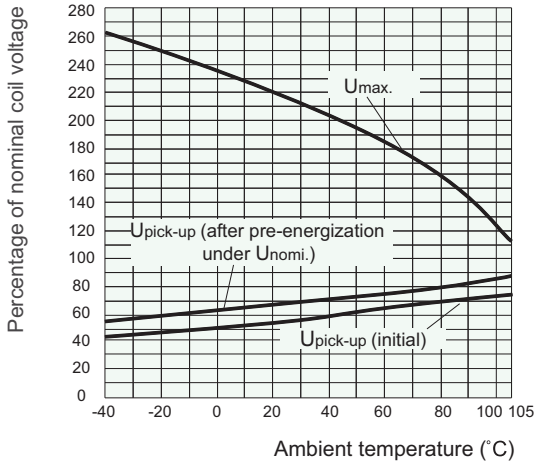


2 Form C
(Twin relay)



CHARACTERISTIC CURVES

1. Coil operating voltage range



1) There should be no contact load applied when maximum continuous operation voltage is applied on coil.

1) The operating voltage is connected with coil pre-energized time and voltage. After pre-energized, the operating voltage will increase.

2) 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.

3) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.