HFKC/HFKC-T AUTOMOTIVE RELAY

Single

Twin

Features

- Subminature automotive relay
- Maximum continuous current 30A
- Twin separate systems (Twin version)
- The reflow soldering Version (open vent hole) available (HFKC-T)
- RoHS & ELV compliant

Typical Applications

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

CHARACTERISTICS

Contact arrangement	Single: 1A, 1C Twin: 2A, 2C
Voltage drop (initial) 1)	Typ.: 100mV (at 10A) Max.: 250mV (at 10A)
Max. continuous current	NO/NC: 30A/25A (at 23˚C) 20A/15A (at 85˚C)
Max. switching current 2) (NO contact)	Make: 40A 3) Break: 30A
Electrical endurance	See "CONTACT DATA" table
Mechanical endurance	$1x10^7$OPS (300OPS/min)
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength	500VAC (1min, leakage current less than 1mA)
Operate time	Typ.: 4ms Max.: 10ms (at nomi. vol.)

Release time	Typ.: 2ms Max.: 10ms 4)
Ambient temperature	-40˚C to 105˚C
Storage temperature	-40˚C to 155˚C
Vibration resistance	10Hz to 500Hz 58.8m/s^2 (6g)
Shock resistance	294m/s^2 (30g)
Termination	PCB 5)
Construction	Wash tight, Flux proofed
Unit weight	Single version: Approx. 4g Twin version: Approx. 8g

1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).
2) The value apply to a resistive or inductive load with suitable spark suppression.
3) For a load current duration maximum 3s for a on/off ratio of 1:10.
4) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
5) 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 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	3	3×10^5	$AgSnO_2$ AgNi0.15	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	3	3×10^5	$AgSnO_2$ AgNi0.15	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. When special $AgSnO_2$ contacts are applied, please heed the anode and cathode's request when wired.

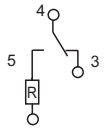


diagram 1

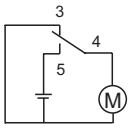


diagram 2

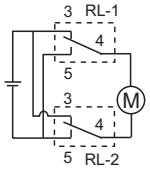


diagram 3

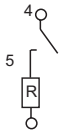


diagram 4

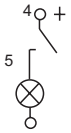


diagram 5

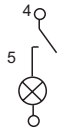


diagram 6

5) 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 [1] VDC	
					23˚C	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
24	13.8	3.0	1016	0.55	53	31

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

ORDERING INFORMATION

	HFKC /	012	Z	S	P	T	(XXX)

Type	**HFKC**: Standard **HFKC-T**: Reflow soldering version	
Coil voltage	**006**: 6VDC **010**: 10VDC **012**: 12VDC **024**: 24VDC	
Contact arrangement	**Z**: 1 Form C **2Z**: 2 Form C	**H**: 1 Form A **2H**: 2 Form A
Construction	**S**: Wash tight (HFKC)	**Nil**: Flux proofed (HFKC-T)
Coil power	**P**: 0.8W	**Nil**: 0.55W
Contact material	**3**: AgNi0.15	**T**: $AgSnO_2$
Customer special code 1)	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.	

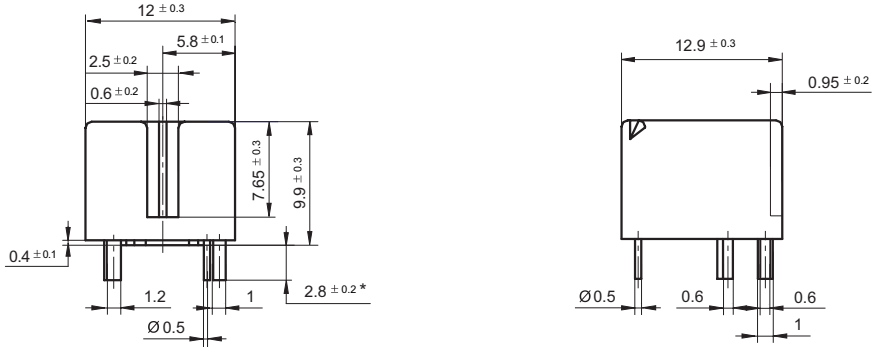
1) HFKC/HFKC-T is an environmental friendly product, please mark special code (555) when order.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

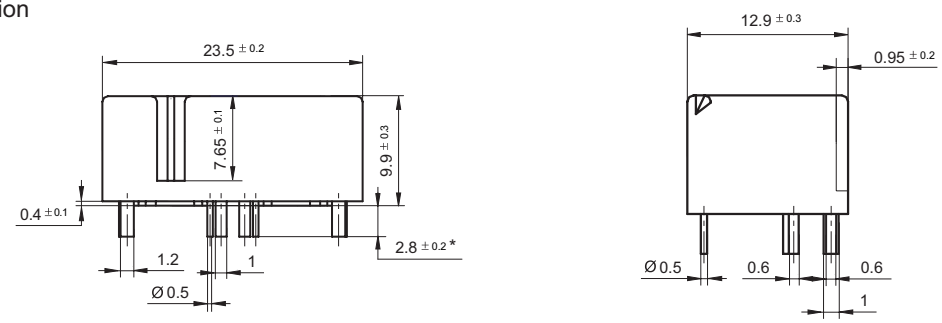
Unit: mm

Outline Dimensions

Single version



Twin version



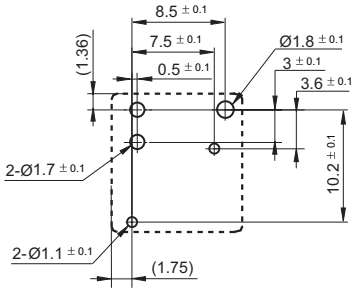
Notes: 1) * The additional tin top is max. 1mm;
2) The terminal vertical deviation tolerance is 0.2mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

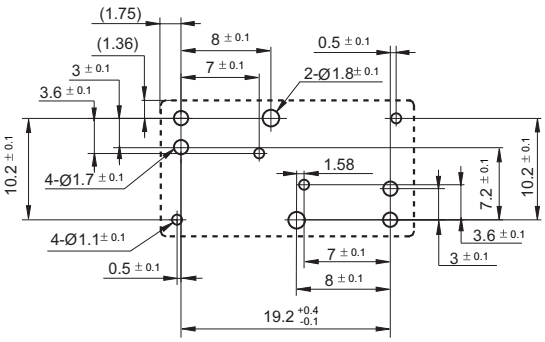
Unit: mm

PCB Layout (Bottom view)

Single version

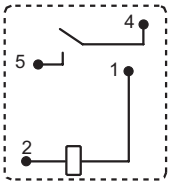


Twin version

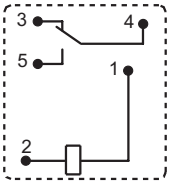


Wiring Diagram (Bottom view)

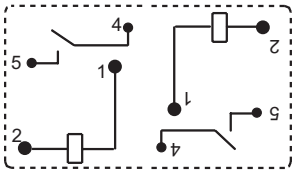
1A



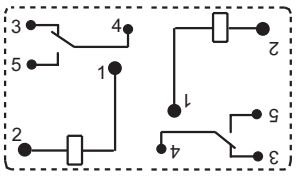
1C



2A

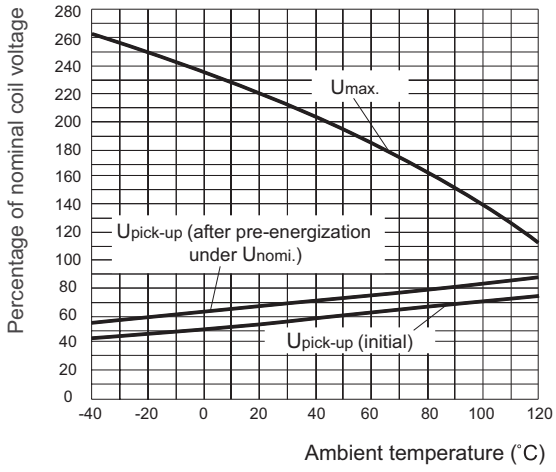


2C



CHARACTERISTIC CURVES

1. Coil operating voltage range



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 155˚C. For the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 130˚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.