HFKD AUTOMOTIVE RELAY

Double

Single

Features

- Micro miniature
- Single relay & double relay available
- Silent double relay available
- Coil insulation class H (180 ˚C)
- RoHS & ELV compliant

Typical Applications

Door locking systems, Immobilizers, Seat adjustment, Seatbelt prevention, Sunroof, Window motors control, Power door & windows

CHARACTERISTICS

Contact arrangement	1C (Single), 2C (Double)
Voltage drop (initial) 1)	Typ.: 50mV (at 10A) Max.: 250mV (at 10A)
Max. switching current	25A 2)
Max. switching voltage	40VDC 2)
Min. contact load	1A 6VDC
Electrical endurance	See "CONTACT DATA" table
Mechanical endurance	$1x10^7$ OPS (300OPS/min)
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength 3)	between contacts: 500VAC between coil & contacts: 500VAC
Operate time	Typ.: 3ms Max.: 10ms (at nomi. vol.)
Release time	Typ.: 1.3ms Max.: 10ms 4)

Ambient temperature	-40˚C to 85˚C
Storage temperature	-40˚C to 155˚C
Vibration resistance	10Hz to 55Hz 1.5mm DA 55Hz to 200Hz 98m/s^2
Shock resistance	294m/s^2
Termination	PCB 5)
Construction	Wash tight
Unit weight	Single relay: Approx. 5g Double relay: Approx. 10g

1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).
2) See "Load limit curve".
3) 1min, leakage current less 1mA.
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 4)

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	Ambient temp.	Load wiring diagram 3)
13.5VDC	Simulate motor operation	Make 1)	25	---	0.02	3.6	1×10^5	AgNi0.15	85˚C	See diagram 1
		Transient1 1)	15	---	0.03					
		Transient2 1)	10	---	0.03					
		Break	6	---	0.32					
	Resistive	Make	20	---	1	3	2×10^5	$AgSnO_2$	80˚C	See diagram 2
		Break	20	---						
	Lamp 2)	Make	4 x21W	---	1	5	2×10^5	$AgSnO_2$	80˚C	See diagram 3
		Break								

1) Current of turn on transient 1, transient 2 is subsection simulation to that of motor start-up peak value.
2) The load in the table excludes flasher. When applied in flasher, a special silver alloy ($AgSnO_2$) 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) The load wiring diagrams are listed below:

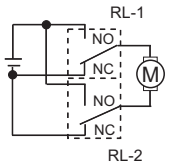


diagram 1

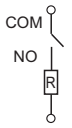


diagram 2

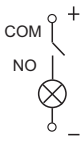


diagram 3

4) 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
Standard HFKD/ST	12	7.2	1.0	255	0.56	20	16
Low pick-up voltage HFKD/SPT	12	5.8	0.8	178	0.81	17	13.5

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

ORDERING INFORMATION

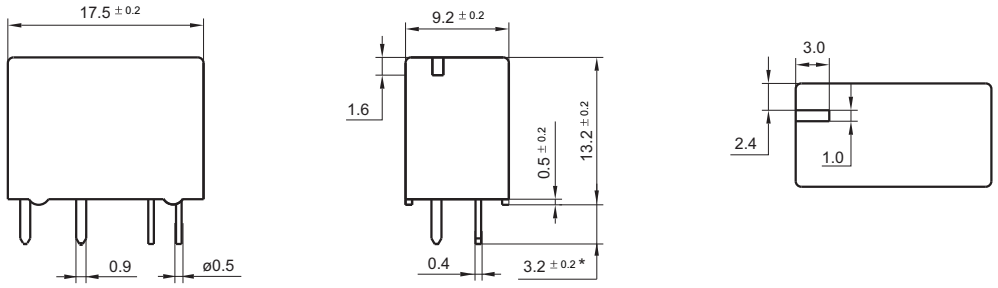
	HFKD /	012	2Z	S	P	T	(XXX)
Type							
Coil voltage	12VDC						
Contact arrangement	**1Z**: 1 Form C (Single relay) **2Z**: 2 x 1 Form C (Double relay)						
Construction	**S**: Wash tight						
Coil power	**P**: Low pick-up voltage			**Nil**: Standard			
Contact material	**T**: $AgSnO_2$			**Nil**: AgNi0.15			
Customer special code	e.g. (170) stands for flasher load						

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

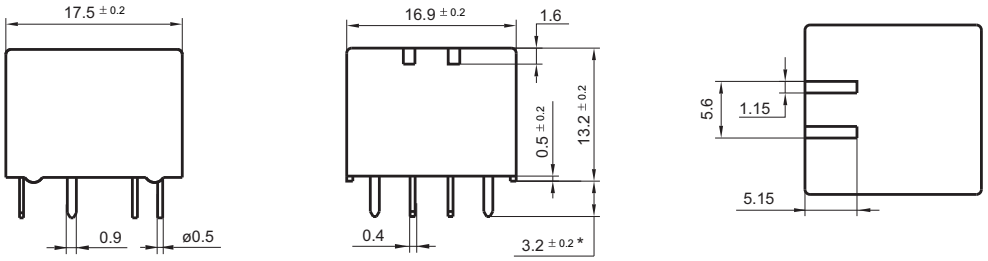
Unit: mm

Outline Dimensions

1C (Single version)



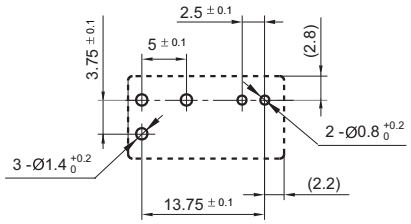
2C (Double version)



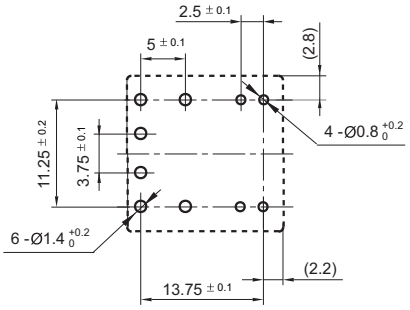
Notes: 1) * The additional tin top is max. 1mm;
2) The terminal vertical deviation tolerance is 0.2mm.

PCB Layout (Bottom view)

1C (Single version)

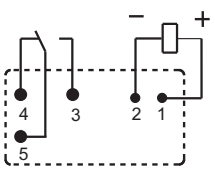


2C (Double version)

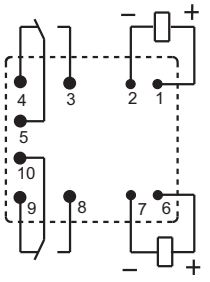


Wiring Diagram (Bottom view)

1C (Single version)



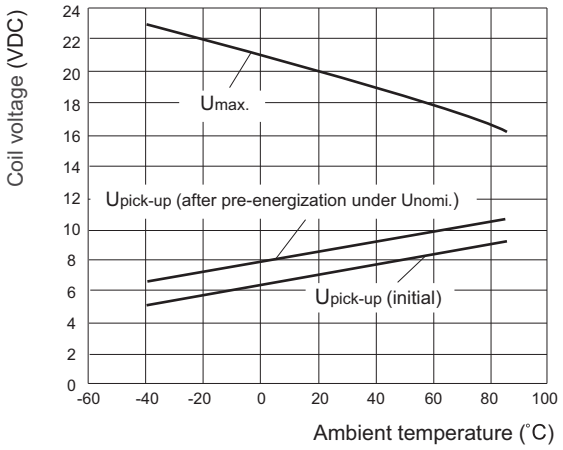
2C (Double version)



CHARACTERISTIC CURVES

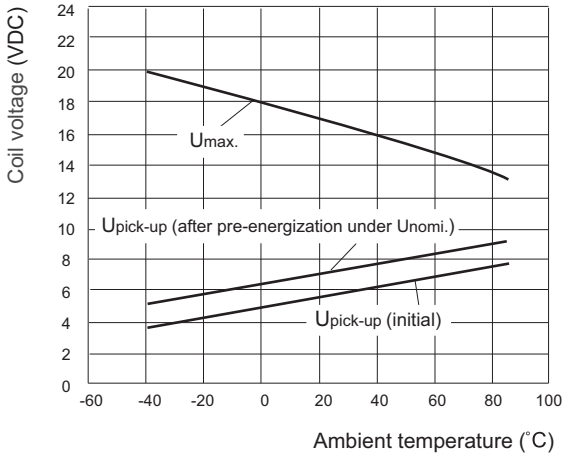
1. Coil operating voltage range

255Ω coil resistance



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 pe-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.

178Ω coil resistance



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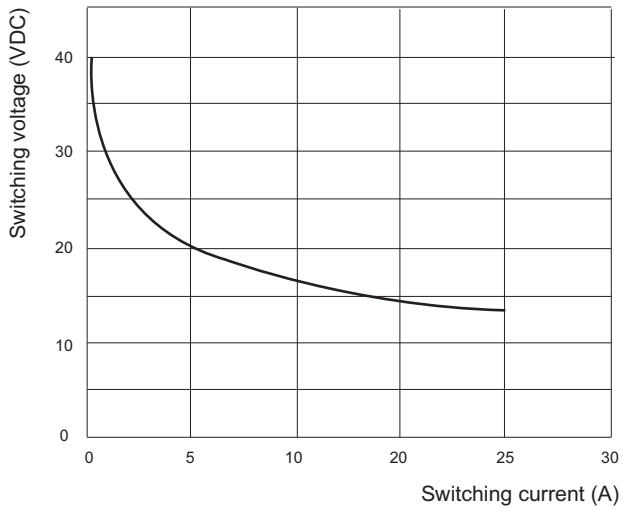
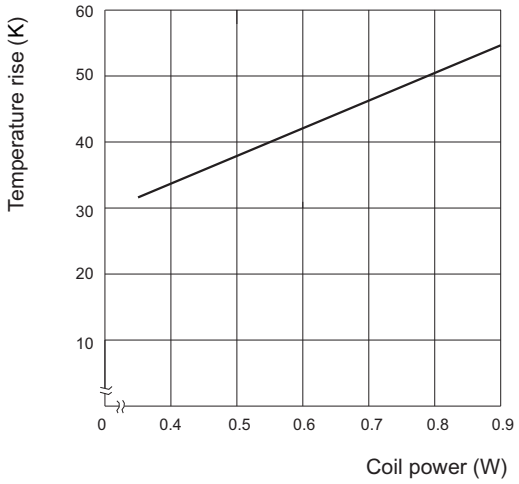
2. Load limit curve



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. Coil temperature rise curve



4. Electrical endurance curve