HFKD AUTOMOTIVE RELAY

Single

Double

Features

- Micro miniature
- Single & double contact version available
- Change-over contact version
- Silent double relay available
- RoHS & ELV compliant

Typical Applications

Power doors & windows, Door locking systems,
Seat adjustment, Seatbelt prevention device, Immobilizers,
Sunroof motor control

CHARACTERISTICS

Contact arrangement	1C (Single), 2C (Double)
Voltage drop (initial) 1)	Typ.: 50mV (at 10A) Max.: 250mV (at 10A)
Max. continuous current 2)	25A (at 85˚C, 1h)
Max. switching current	25A
Max. switching voltage 3)	40VDC
Min. contact load	1A 6VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	$1x10^7$ OPS (300OPS/min)
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength 4)	between contacts: 500VAC between coil & contacts: 500VAC
Operate time	Typ.: 3ms (at nomi. vol.) Max.: 10ms (at nomi. vol.)
Release time 5)	Typ.: 1.3ms Max.: 10ms

Ambient temperature	-40˚C to 85˚C
Vibration resistance 6)	10Hz to 55Hz 1.5mm DA 55Hz to 200Hz 98m/s^2
Shock resistance 6)	294m/s^2
Termination	PCB 7)
Construction	Plastic sealed
Unit weight	Single relay: Approx. 5g Double relay: Approx. 10g

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) See "Load limit curve" for details.
4) 1min, leakage current less 1mA.
5) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
6) 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.
7) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)˚C , (5±0.3)s.

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

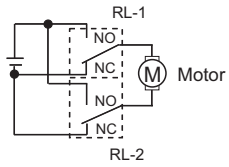


diagram 1

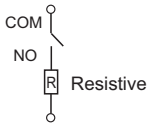


diagram 2

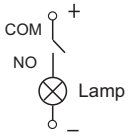


diagram 3

4) When the load 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 VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance x(1±10%)Ω	Power consumption W	Max. allowable overdrive voltage [1] VDC	
						at 23˚C	at 85˚C
Standard	12	7.2	1.0	255	0.56	20	16
Low pick-up voltage	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	**012**: 12VDC
Contact arrangement	**1Z**: 1 Form C (Single relay) **2Z**: 2 x 1 Form C (Double relay)
Construction	**S**: Plastic sealed [1]
Coil power	**P**: Low pick-up voltage **Nil**: Standard
Contact material	**T**: $AgSnO_2$
Customer special code	e.g. (170) stands for flasher load

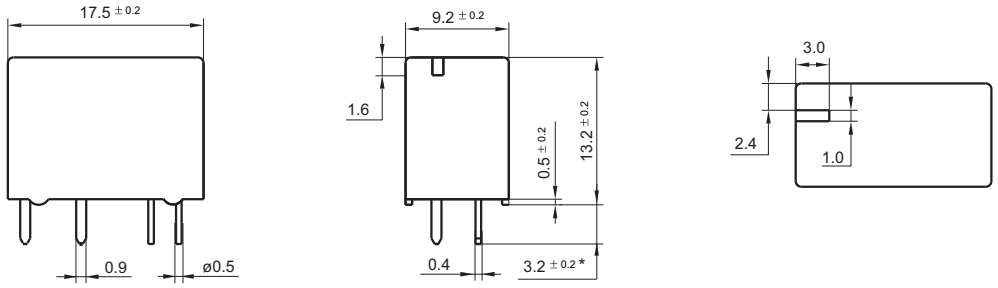
1) If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

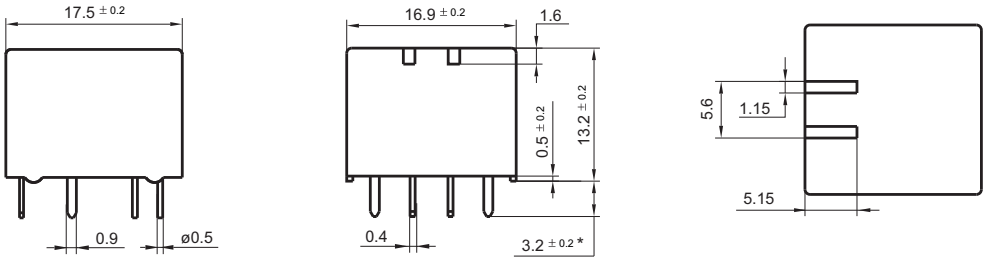
Unit: mm

Outline Dimensions

1 Form C (Single relay)



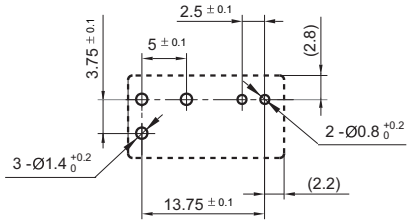
2 x Form C (Double relay)



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

PCB Layout (Bottom view)

1 Form C (Single version)



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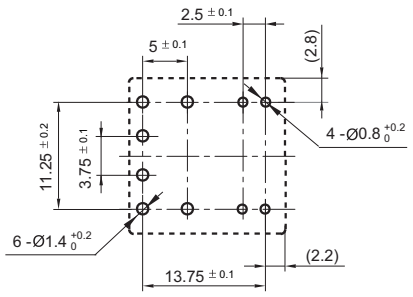
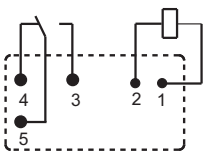
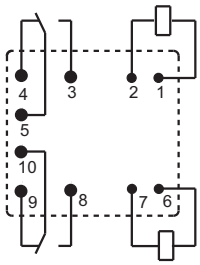


Wiring Diagram (Bottom view)

1 Form C (Single version)



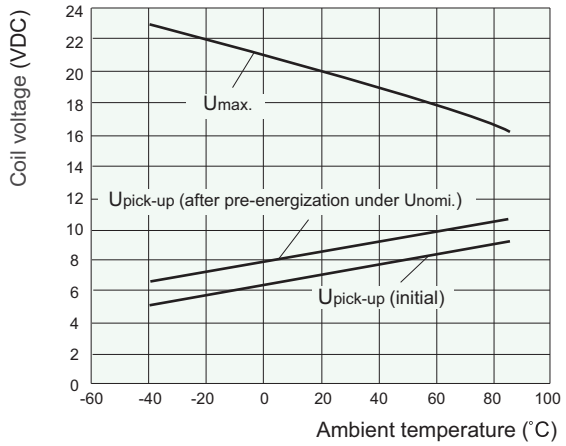
2 x Form C (Double relay)



CHARACTERISTIC CURVES

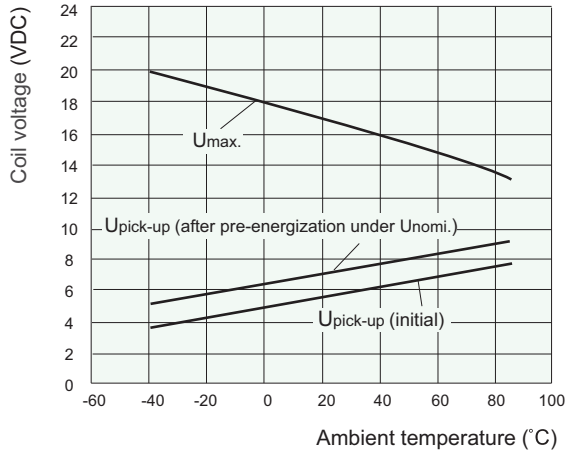
1. Coil operating voltage range

255Ω coil resistance



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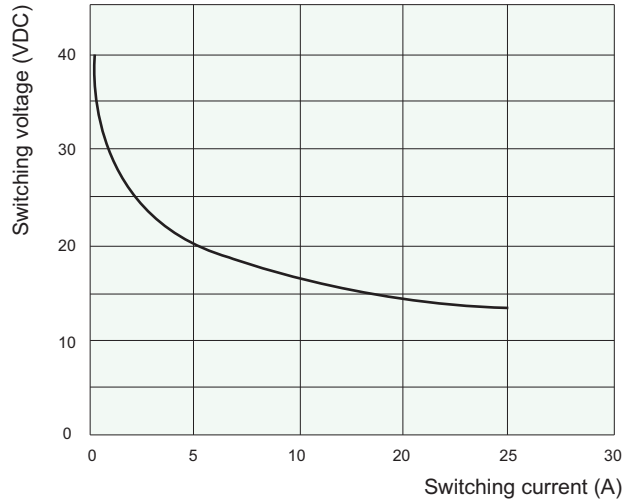
2. Load limit curve



1) This chart takes NO contact, resistive load 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.

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.