HFKDV (JQC-16FV) AUTOMOTIVE RELAY



Features

- Micro miniature
- Silent type
- Two sets of separated relay system
- Double relay
- RoHS & ELV compliant

Typical Applications

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

CHARACTERISTICS

Contact arrangement	2C
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	10 Hz to 55Hz 1.5mm DA 55 Hz to 200Hz 98m/s^2 (10g)
Shock resistance	294m/s^2 (30g)
Termination	PCB 5)
Construction	Wash tight
Unit weight	Approx. 15g

1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).
2) No contact, see "Load limit curve".
3) 1min, leakage current less than 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		On/Off ratio		Electrical life OPS	Contact material	Ambient temp.	Load wiring diagram 3)
			2C		On s	Off s				
			NO	NC						
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:

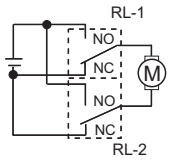


diagram 1

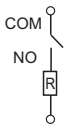


diagram 2

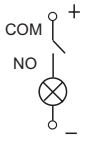


diagram 3

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 HFKDV/ST (JQC-16FV/ST)	12	7.2	1.0	255	0.56	20	16
Low pick-up voltage HFKDV/SPT (JQC-16FV/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

HFKDV / 012 2Z S P T (XXX)

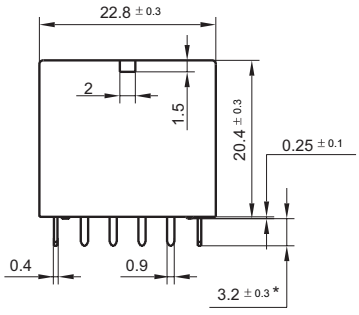
Type 1)	HFKDV JQC-16FV (Old type)
Coil voltage	12VDC
Contact arrangement	**2Z**: 2 x 1 Form C (Double relays)
Construction	**S**: Wash tight
Coil power	**P**: Low pick-up voltage **Nil**: Standard
Contact material	**T**: $AgSnO_2$ **Nil**: AgNi0.15
Customer special code 2)	e.g. (170) stands for flasher load, (555) stands for RoHS & ELV compliant. In case there are multiple special requirements, all special codes should be followed one by one.

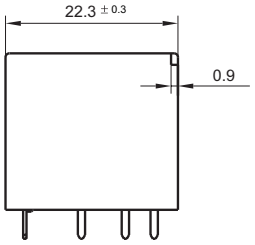
1) We has now gradually updated our ordering information. We suggest new type should be selected. If necessary, old type can be kept for some period for the old customers.
2) HFKDV (JQC-16FV) is an environmental friendly product, please mark special code (555) when order.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions



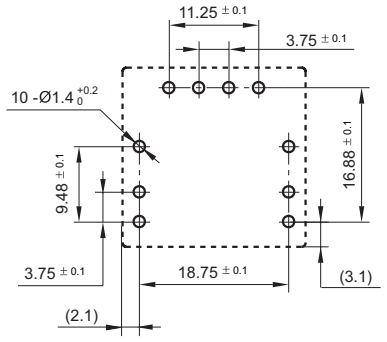


Notes: 1) * The additional tin top is max. 1mm;
2) The terminal vertical deviation tolerance is 0.2mm.

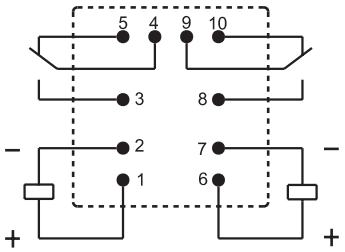
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

PCB Layout
(Bottom view)



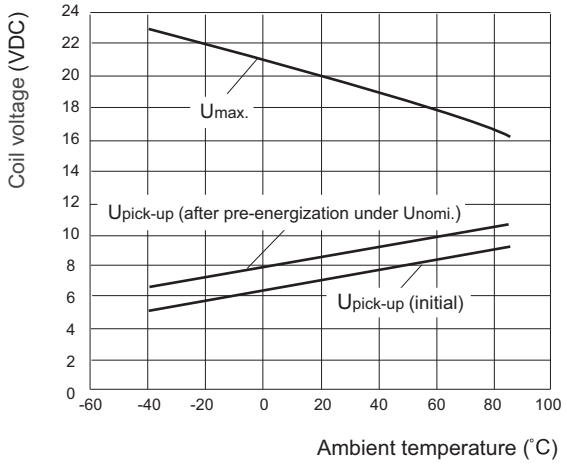
Wiring Diagram
(Bottom view)



CHARACTERISTIC CURVES

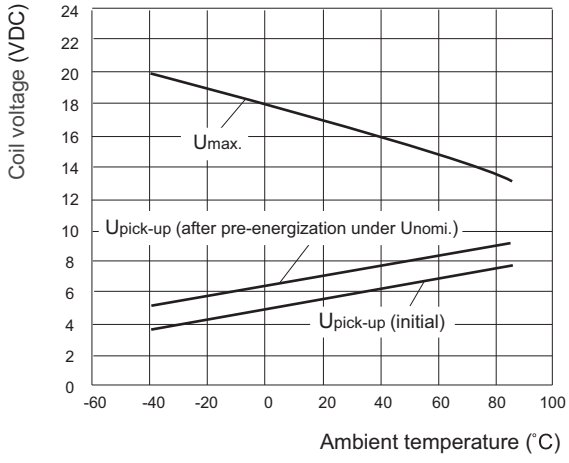
1. Coil operating voltage range

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 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.

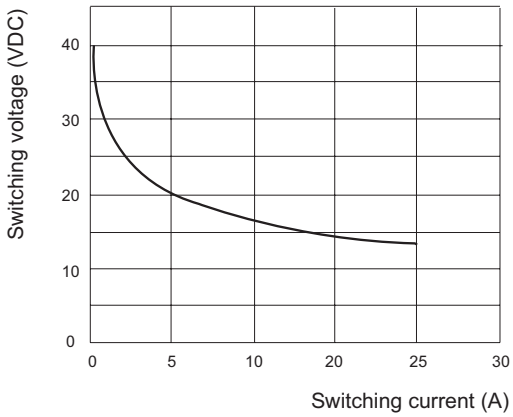
178Ω coil resistance



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 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.

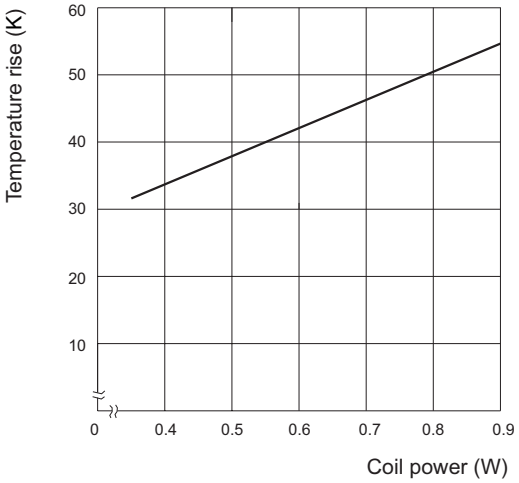
CHARACTERISTIC CURVES

2. Load limit curve

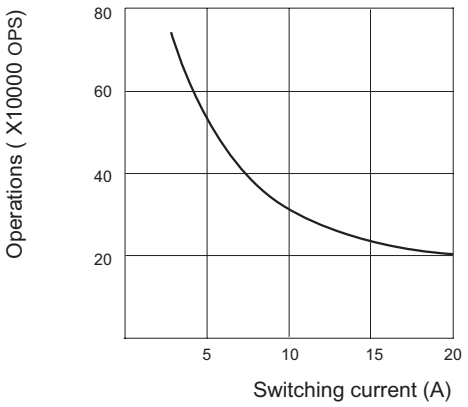


1) This chart takes NO contact as example.
2) The load and electrical endurancee tests are made according to “CONTACT DATA” parameters’ table. If actual load voltage, current, or operate frequency is different from “CONTACT DATA” table, please arrange corresponding tests for confirmation.

3. Coil temperature rise curve



4. 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.

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