HFV6 AUTOMOTIVE RELAY



Features

- 30A switching capability
- Ambient temp. range up to 125°C
- 1 Form A & 1 Form C contact arrangement
- Plastic sealed and dust protected types available
- RoHS & ELV compliant

Typical Applications

Lighting control, Headlight control, Electromagnet control
Air-conditioning, Heaters (seat, front/rear windows),
Fan motors control, Fuel pump control, Wiper motors control

CHARACTERISTICS

Contact arrangement	1A, 1C
Voltage drop	NO:Typ.15mV,250mV max.(at 10A) NC:Typ.25mV,250mV max.(at 10A)
Max. continuous current [1) 9)]	NO:30A(23°C),25A(85°C),13A(125°C) NC:20A(23°C),15A(85°C),10A(125°C)
Min. contact load	1A 12VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	1 x 10^7OPS (300OPS/min)
Insulation resistance	20MΩ min. (at 500VDC)
Withstand voltage[2)]	500VAC
Operate time [9)]	Typ.: 5ms (at nomi. vol.) Max.: 10ms (at nomi. vol.)
Release time [3) 9)]	Typ.: 2ms Max.: 10ms
Ambient temperature	-40°C to 125°C
Vibration resistance [4) 9)]	10Hz to 60Hz 0.35mm DA 60Hz to 500Hz 49m/s^2
Shock resistance [4) 9)]	196m/s^2
Flammability [5)]	UL94-HB or better (meets FMVSS 302)
Termination	QC[6)]
Construction	Plastic sealed, Dust protected
Unit weight	Approx. 22g
Mechanical data [7)]	cover retention (pull & push): 200N min. terminal retention (pull & push): 100N min. terminal resistance to bending (front & side): 10N min. [8)]

1) For NO contacts, measured when applying 100% rated votage on coil.
2) 1min, leakage current less than 1mA.
3) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
4) When energized, opening time of NO contacts shall not exceed 100μs, when non-energized, opening time of NC contacts shall not exceed 100μs, meantime, NO contacts shall not be closed.
5) FMVSS: Federal Motor Vehicle Safety Standard.
6) Do NOT knock on relays with hard objects such as rubber rod and rubber hammer during mounting, which might lead to relay damage.
7) Only valid for QC version.
8) Test point is at 2mm away from teminal end, and after removing testing force, the terminal transfiguration shall not exceed 0.5mm.
9) Only for the 12VDC coil voltage type.

CONTACT DATA [5)6)]

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurance OPS	Contact material	Load wiring diagram [3)]	Ambient temp.
			1C		1A						
			NO	NC		On s	Off s				
13.5VDC	Resistive	Make	20	10	30	2	2	1×10^5	$AgSnO_2$	See diagram 1 or diagram 4	See Ambient temp. curve
		Break	20	10	30	2	2				
	Inductive	Make [1)]	40	20	40	2	2	1×10^5	$AgSnO_2$	See diagram 2 or diagram 5	
		Break	20	10	20	2	2				
	Lamp [4)]	Make	100 [2)]	—	100 [2)]	2	2	1×10^5	$AgSnO_2$	See diagram 3	
		Break	20	—	20	2	2				
27VDC	Resistive	Make	20	10	20	2	2	1×10^5	$AgSnO_2$	See diagram 1 or diagram 4	Room temp.
		Break	20	10	20	2	2				
	Inductive	Make [1)]	38	28	38	2	2	1×10^5	$AgSnO_2$	See diagram 2 or diagram 5	See Ambient temp. curve
		Break	15	6	15	2	2				
	Lamp [4)]	Make	70 [2)]	—	70 [2)]	2	2	1×10^5	$AgSnO_2$	See diagram 3	
		Break	7	—	7	2	2				

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

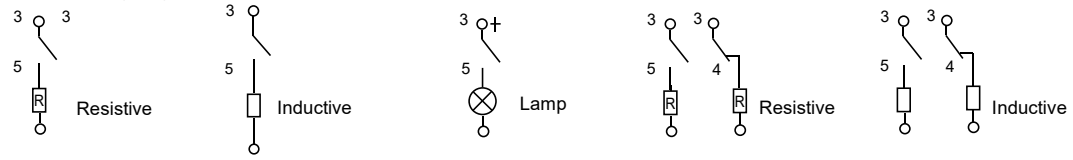


diagram 1 diagram 2 diagram 3 diagram 4 diagram 5

4) The load in the table excludes flasher. When applied in flasher, please connect by the polarity request according diagram 3, a special silver alloy contact material should be used and the customer special code should be (170) as a suffix.
5) Loads mentioned in this chart is for relays with no parallel diode or Zener Diode. For those with parallel diode, Zener Diode or other components, please contact Hongfa for more technical supports.
Please also contact Hongfa if the actual application load is diffrent from what mentioned aboved.
6) The 24V motor control for wipers, windows and door locks is a special application with highly dynamic inductive loads. To ensure reliability, please confirm key details with our technical support before product selection.

COIL DATA

at 23˚C

	Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance x(1±10%)Ω	Parallel resistance x(1±5%) Ω	Equivalent resistance x(1±10%)Ω	Power consumption W	Max. allowable overdrive voltage [1] VDC	
								at 23˚C	at 85˚C
Standard	12	7.2	1.2	90	—	—	1.6	20	15
	12	7.2	1.2	90	680	79.5	1.8	20	15
	24	16	2.4	360	—	—	1.6	40	30
	24	16	2.4	360	2700	317.6	1.8	40	30
Sensitive	12	7.2	1.2	124	—	—	1.2	25	19
	12	7.2	1.2	124	680	104.9	1.4	20	15
	24	16	2.4	441	—	—	1.3	47	35
	24	16	2.4	441	1800	354.2	1.6	33	25

Notes: 1) Max. allowable overdrive voltage is stated with no load applied and minimum coil resistance.

ORDERING INFORMATION

HFV6 / 012 Z S L J K -T R (XXX)

Type	**HFV6**: QC **HFV6-K**: Grip & QC
Coil voltage	**012**: 12VDC **024**: 24VDC
Contact arrangement	**H**: 1 Form A **Z**: 1 Form C
Construction [1]	**S**: Plastic sealed **Nil**: Dust protected
Coil power	**L**: Sensitive **Nil**: Standard
Terminal	**J**: QC Terminal without hole **Nil**: QC Terminal with hole
Terminal plating code	**K:** Load terminal hot-dip Tinning,coil terminal electro-tinning **Nil:** Electro-tinning
Contact material	**T**: $AgSnO_2$
Parallel coil components [2]	**R**: Parallel transient suppression resistors **D**: Parallel transient suppression diode, with anode connected to terminal#2 **D1**: Parallel transient suppression diode, with anode connected to terminal#1 **Nil**: Without parallel components
Special code [3]	**XXX:** Customer special requirement **Nil:** Standard

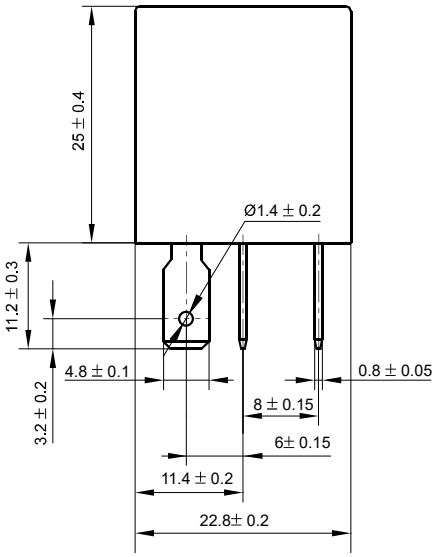
Notes: 1) In environments with high humidity, moisture, or even condensation, and dust, such as relays used in engineering, mining, agriculture and other fields, or relays with mounting brackets installed outside of electrical boxes,It is recommended to use plastic-encapsulated products; in environments containing phosphorus, H_2S, SO_2, NO_2 and other harmful gases, plastic-encapsulated types must be used and tested and confirmed in actual use; in environments containing organic silicon, please avoid using dust-proof covers.
2) If parallel diode, Zener Diode or other components are required, please contact Hongfa for more technical supports.
3) The performance parameters of products with characteristic numbers shall be subject to the specific specifications provided by Hongfa.

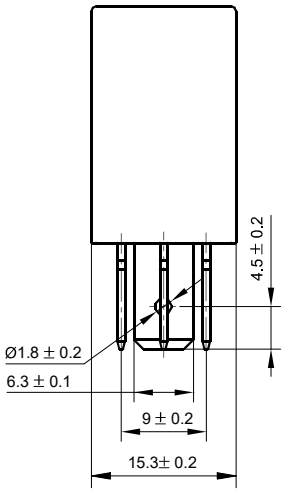
OUTLINE DIMENSIONS AND WIRING DIAGRAM

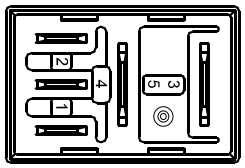
Unit: mm

Outline Dimensions

HFV6/□□□Z□□□□-□□(XXX)

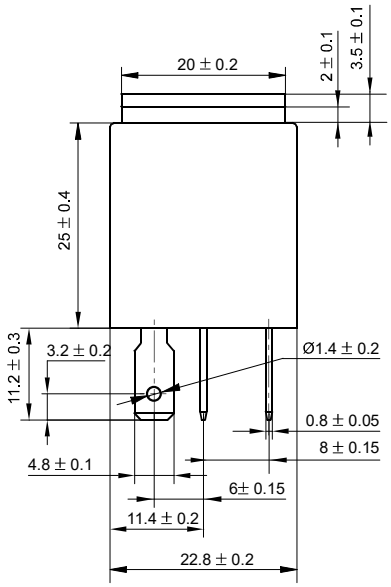


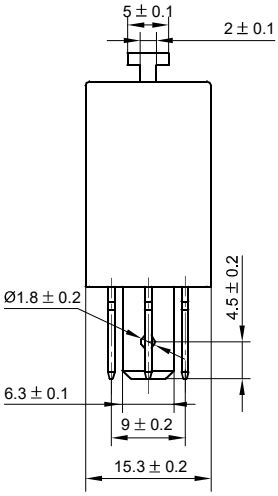


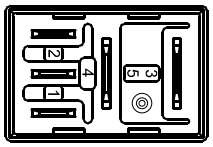


(Bottom view)

HFV6-K/□□□Z□□□□-□□(XXX)







(Bottom view)

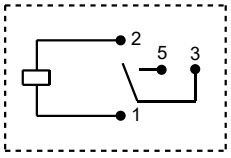
Remark: Terminal vertical deviation tolerance is 0.3mm.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

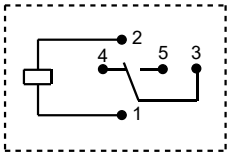
Unit: mm

Wiring Diagram

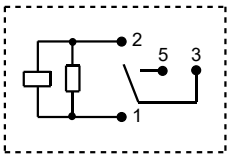
HFV6/□□□H□□□□-□(XXX)



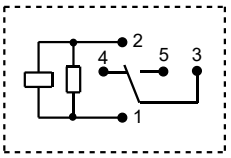
HFV6/□□□Z□□□□-□(XXX)



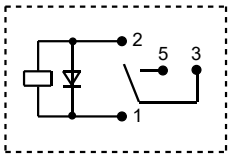
HFV6/□□□H□□□□-□R(XXX)



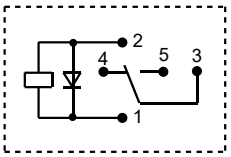
HFV6/□□□Z□□□□-□R(XXX)



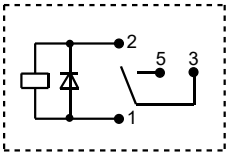
HFV6/□□□H□□□□-□D(XXX)



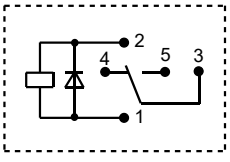
HFV6/□□□Z□□□□-□D(XXX)



HFV6/□□□H□□□□-□D1(XXX)

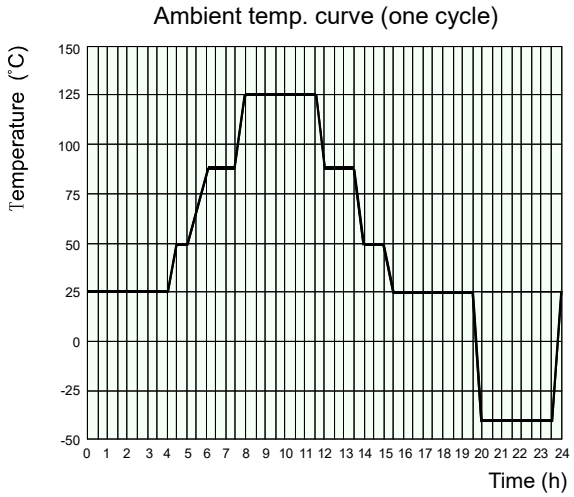


HFV6/□□□Z□□□□-□D1(XXX)



CHARACTERISTIC CURVES

Ambient temperature curve of the electrical endurance test



1) The minimum temperature is -40°C.
2) The maximum temperature is 125°C.
3) The durability test of the product is carried out according to the contact parameter table. If any of the actual load voltage, current and action frequency are different from the contact parameter table, please carry out the confirmation test again.

Disclaimer
The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice.
In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product.
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.

© Xiamen Hongfa Electroacoustic Co., Ltd. All rights of Hongfa are reserved.