HFV15 AUTOMOTIVE RELAY





Features

- 40A switching capability
- 1 Form A & 1 Form C contact arrangement
- Plastic sealed and dust protected types available
- QC terminal and PCB terminal available
- RoHS & ELV compliant
- Pin assignment similar to ISO 7588-1

Typical Applications

Fog lamp & headlight control, Rear window defogger, Air-conditioning, Fuel pump control, Cooling fan control, Battery disconnection device, Start / stop control

CHARACTERISTICS

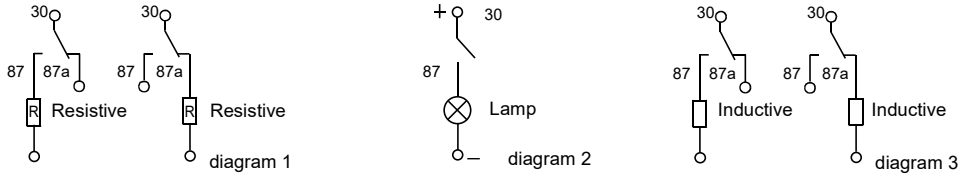
Contact arrangement	1A, 1C
Voltage drop	NO: Typ.20mV, 250mV max.(at 10A) NC: Typ.30mV, 250mV max.(at 10A)
Max. continuous current 1) 10)	NO: 60A (at 23˚C), 40A(at 85˚C), 17A(at 125˚C) NC: 45A (at 23˚C), 30A(at 85˚C), 12A(at 125˚C)
Max. switching current 10)	Make (NO): 150A 2) Break (NO): 40A (Resistive, 13.5VDC)
Min. contact load	1A 12VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	1 x 10^6OPS (300OPS/min)
insulation resistance	100MΩ (at 500VDC)
Withstand voltage 3)	500VAC
Operate time 10)	Max.: 10ms (at nomi. vol.)
Release time 10)	Max.: 10ms 4)
Ambient temperature	-40˚C to 125˚C
Vibration resistance 5) 10)	5Hz to 22.3Hz 10mm DA 22.3Hz to 500Hz 98m/s^2
Shock resistance 5) 10)	294m/s^2
Flammability 6)	UL94-HB or better (meets FMVSS 302)
Termination	QC 11), PCB 7)
Construction	Plastic sealed, Dust protected
Unit weight	Approx. 35g
Mechanical data 8)	housing retention (pull & push): 200N min. terminal retention (pull & push): 100N min. terminal resisitance to bending (front & side): 10N min. 9)

1) For NO contacts, measured when applying 100% rated votage on coil. For NC contacts, measured when applying zero voltage on coil.
2) Inrush peak current under lamp load, at 13.5VDC.
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) 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.
6) FMVSS: Federal Motor Vehicle Safety Standard.
7) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (260±3)˚C , (5±0.5)s.
8) Only valid for QC version.
9) Test point is at 2mm away from teminal end, and after removing testing force, the terminal transfiguration shall not exceed 0.5mm.
10) Only for the 12VDC coil voltage type.
11) Do NOT knock on relays with hard objects such as rubber rod and rubber hammer during mounting, which might lead to relay damage.

CONTACT DATA 5)6)

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurance 3) OPS	Contact material	Load wiring diagram 4)	Ambient temp.
			1C		1A	On s	Off s				
			NO	NC							
13.5VDC	Resistive	Make	40	30	40	2	2	1×10^5	$AgSnO_2$	See diagram 1	See Ambient Temp. Curve
		Break	40	30	40						
	Lamp 1)	Make	150 2)	—	150 2)	2	2	1×10^5	$AgSnO_2$	See diagram 2	
		Break	30	—	30						
	Inductive	Make	80	40	80	2	2	1×10^5	$AgSnO_2$	See diagram 3	
		Break	33	20	33						
27VDC	Resistive	Make	20	10	20	2	2	1×10^5	$AgSnO_2$	See diagram 1	
		Break	20	10	20						

1) 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, terminal 30 should connect with anode.
2) Corresponds to the peak inrush current on initial actuation (cold filament).
3) A low resistive or diode suppression device in parallel to the relay coil increases the release time and reduces the life time caused by increased erosion and / or higher risk of contact welding.
4) The load wiring diagrams are listed below (Ratings of NO, NC are tested based on different samples seperately) :



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 2) x(1±5%)Ω	Equivalent resistance Ω	Power consumption W	Max. allowable overdrive voltage 1) VDC	
							at 23°C	at 85°C
12	7.2	1.2	90	—	—	1.6	20.2	15.7
12	7.2	1.2	90	680	79.5	1.8	20.2	15.7
24	16	2.4	320	—	—	1.8	40.5	31.5
24	16	2.4	320	2700	286	2.0	40.5	31.5

1) Max. allowable overdrive voltage is stated with no load applied.
2) Illustrated with the type with parallel resistor (680Ω, 12V), (2700Ω,24V).

ORDERING INFORMATION

HFV15 / 12 -Z 1 S T J -R (XXX)

Type	**HFV15:** QC type **HFV15-P:** PCB type
Coil voltage	**12**: 12VDC **24**: 24VDC
Contact arrangement	**H**: 1 Form A **Z**: 1 Form C
Version	**1**: QC Terminal **Nil**: PCB type **3**: Weatherproof Cover (Without metal bracket) **4**: Plastic Bracket **5**: Weatherproof Cover (With metal bracket)
Construction 1)	**S**: Plastic sealed 2) **Nil**: Dust protected
Contact material	**T**: $AgSnO_2$
Terminal	**J**: QC Terminal without hole **Nil**: QC Terminal with hole, or PCB type
Parallel coil components 3)	**R**: Parallel transient supression resistors(680Ω, 12V) (2700Ω,24V) **R1**: Parallel transient supression resistors(560Ω, 12V) (1200Ω,24V) **D**: Parallel transient supression diode, with anode connected to terminal#85 **D1**: Parallel transient supression diode, with anode connected to terminal#86 **Nil**: Without parallel components
Special code 4)	**XXX:** Customer special requirement **Nil:** Standard

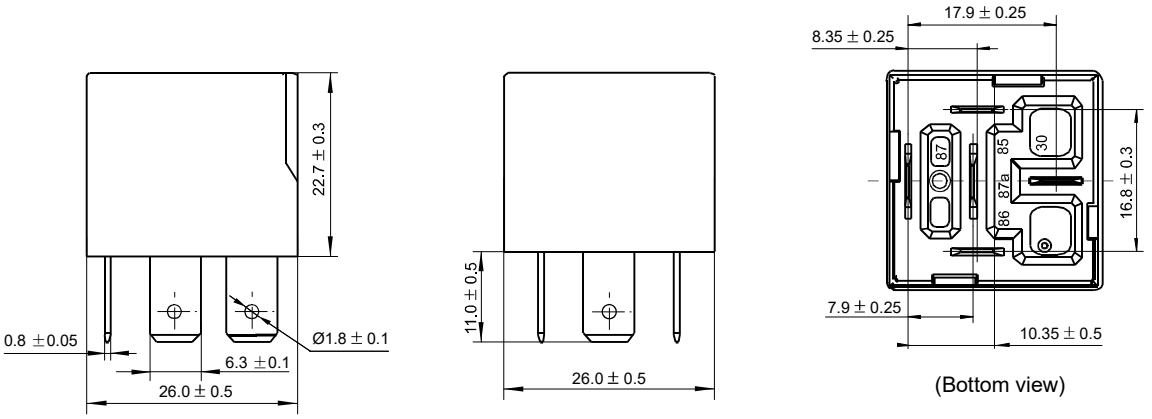
Notes: 1) In environments with high humidity, moisture, or even condensation, and dust, such as relays used in engineering, mining, agriculture and other fields, or relays with mounting brackets installed outside of electrical boxes,
It is recommended to use plastic-encapsulated products; in environments 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) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) If the switch-off peak voltage of coil is required to be smaller than 100V, R1 shall be used (measured voltage of 12V is 13.5V);
If parallel diode, Zener Diode or other components are required, please contact Hongfa for more technical supports;
4) 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

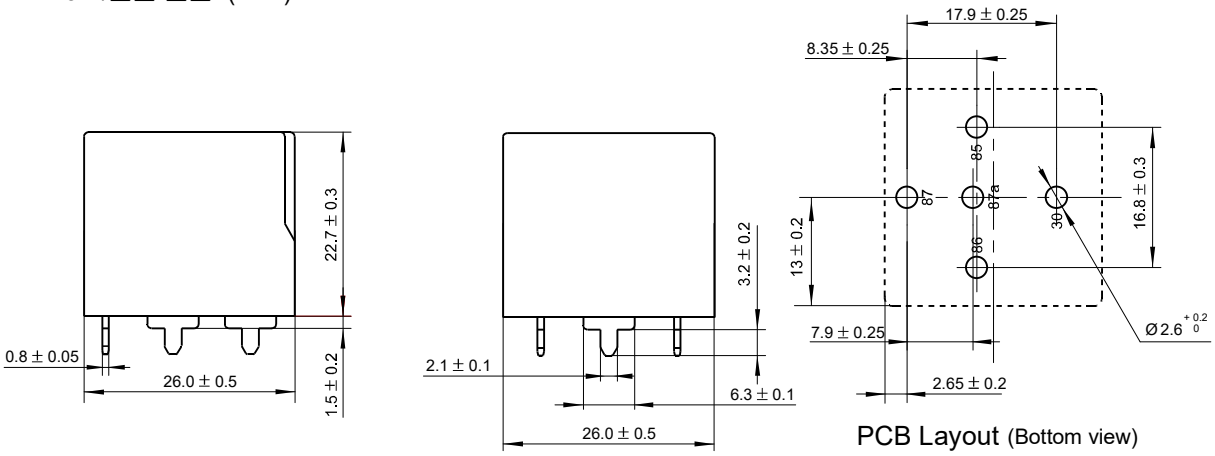
Outline Dimensions

HFV15/□□-□1□T□-□□(XXX)



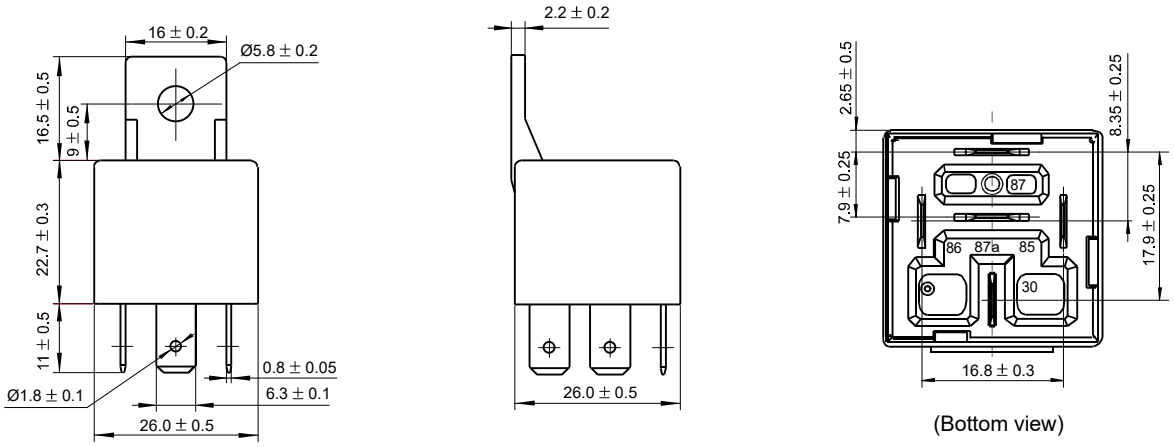
(Bottom view)

HFV15-P/□□-□□T(XXX)



PCB Layout (Bottom view)

HFV15/□□-□4□T□-□□(XXX)

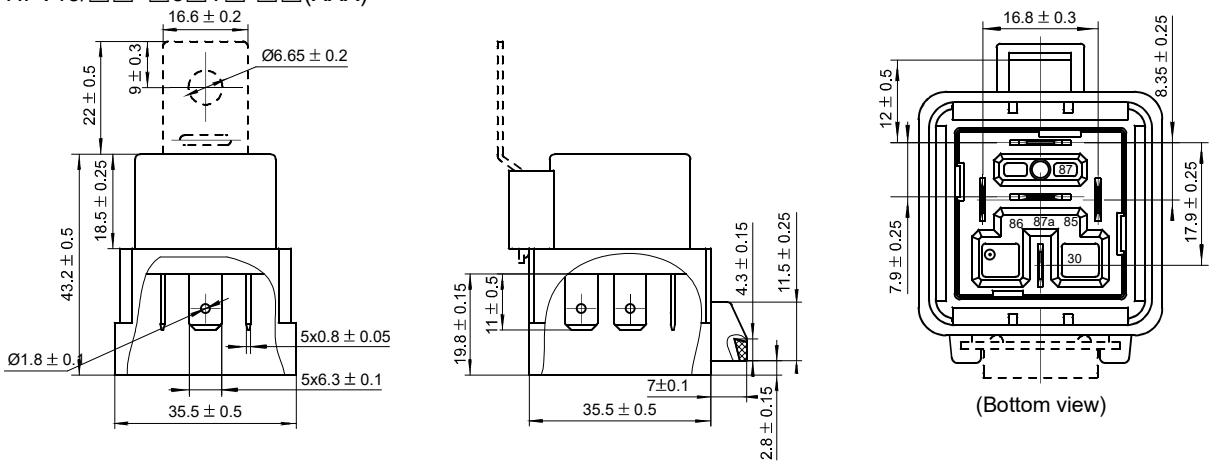


(Bottom view)

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

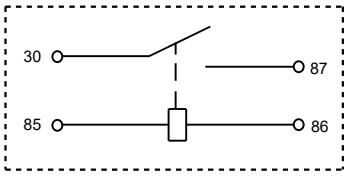
HFV15/□□-□3□T□-□□(XXX)
HFV15/□□-□5□T□-□□(XXX)



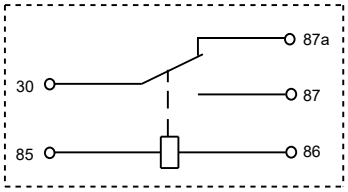
Remark: Terminal vertical deviation tolerance is 0.3mm.

Wiring Diagram

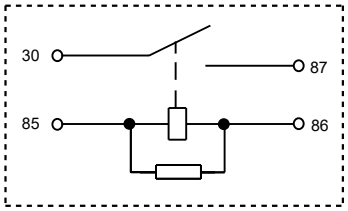
HFV15/□□-H□□□□(XXX)



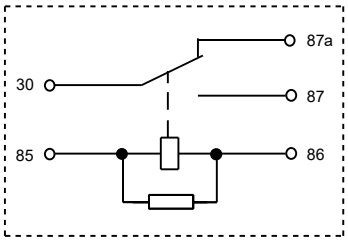
HFV15/□□-Z□□□□(XXX)



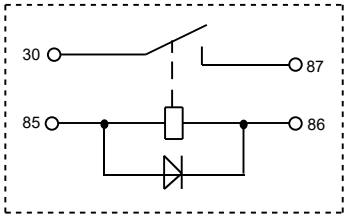
HFV15/□□-H□□□□-R(XXX)



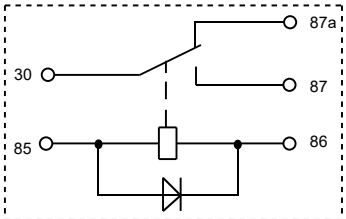
HFV15/□□-Z□□□□-R(XXX)



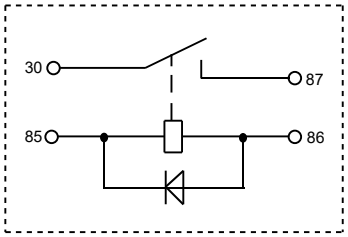
HFV15/□□-H□□□□-D(XXX)



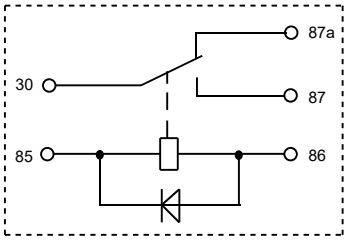
HFV15/□□-Z□□□□-D(XXX)



HFV15/□□-H□□□□-D1(XXX)

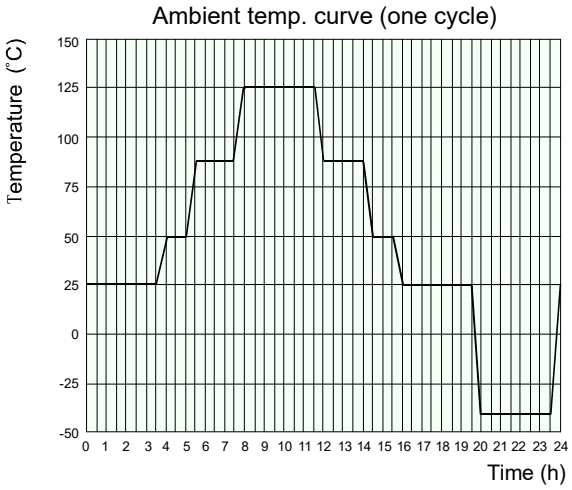


HFV15/□□-Z□□□□-D1(XXX)



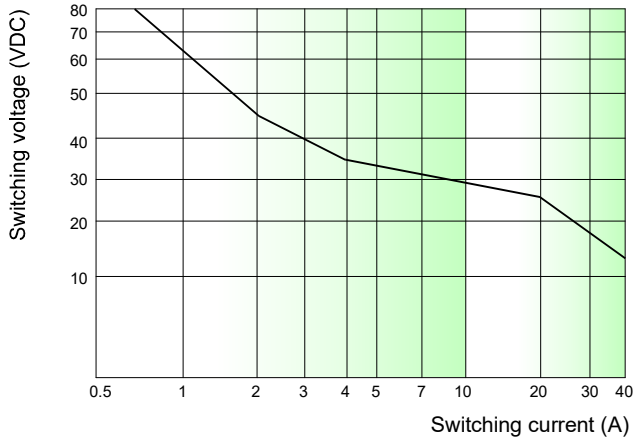
CHARACTERISTIC CURVES

1. Ambient temperature curve of the electrical endurance test



1) The minimum temperature is -40°C.
2) The maximum temperature is 125°C.

2. Load limit curve (at 23°C)



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
The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications 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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