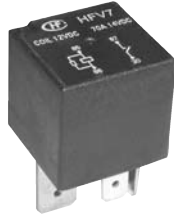


# HFV7

# AUTOMOTIVE RELAY



### Typical Applications

Rear window defogger, Battery disconnection, Air-conditioning, ABS, Heating control, Fog lamp & headlight control, Cooling fan control, Fuel pump control, Traction control system, Power distribution

### Features

- 70A switching capability
- Extended temperature range up to 125°C
- 1 Form A contact arrangement
- Sealed IP67 and dust cover types available
- With transient suppression resistor
- Contact gap: 0.6mm
- RoHS & ELV compliant (555)

## CHARACTERISTICS

Contact arrangement	1A
Voltage drop (initial) <sup>1)</sup>	Typ.: 20mV (at 10A)
	Max.: 30mV (at 10A)
Max. switching voltage	50VDC <sup>2)</sup>
Max. switching current	70A <sup>2)</sup>
Max. continuous current	70A (at 23°C) 50A (at 125°C)
Min. contact load	1A 6VDC
Electrical life	1×10 <sup>5</sup> OPS
Mechanical life	1 × 10 <sup>7</sup> OPS 300 OPS/min
Initial insulation resistance	500MΩ (at 500VDC)
Dielectric strength	500VAC (1min, leakage current less than 1mA)
Operate time	Typ.: 6ms
	Max.: 10ms (at nomi. vol.)

Release time	Typ.: 4ms
	Max.: 7ms <sup>3)</sup>
Ambient temperature	-40°C to +125°C
Storage temperature	-40°C to +155°C
Vibration resistance	10Hz to 500Hz 176 m/s <sup>2</sup> (18g)
Shock resistance	294 m/s <sup>2</sup> (30g)
Termination	QC
Construction	Sealed IP67 & Dust cover
Unit weight	Approx. 38g
Mechanical data	cover retention (pull & push): 245N
	terminal retention (pull & push): 100N
	terminal resistance to bending (front & side): 10N

1) Equivalent to the max. initial contact resistance is 50mΩ (at 1A 24VDC).

2) See " Load limit curve ".

3) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.

## CONTACT DATA <sup>4)</sup>

Load voltage	Load type		Load current (A)	On/Off ratio		Electrical life (OPS)	Contact material	Load wiring diagram <sup>3)</sup>	Ambient temp.
				On (s)	Off (s)				
13.5VDC	Resistive	Make	70	2	2	1×10 <sup>5</sup>	AgNi0.15	See diagram 1	See Ambient temp. curve
		Break	70						
	Motor	Make <sup>1)</sup>	150	2	4	1×10 <sup>5</sup>	AgSnO <sub>2</sub>	See diagram 2	
		Break	50						
	Lamp <sup>2)</sup>	Make	4×H4/60W	0.5	10	1×10 <sup>5</sup>	AgSnO <sub>2</sub>	See diagram 3	
		Break							
27VDC	Resistive	Make	40	2	2	1×10 <sup>5</sup>	AgSnO <sub>2</sub>	See diagram 4	
		Break	40						



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001 CERTIFIED

2005 Rev. 1.00

- 1) Corresponds to the peak inrush current on initial actuation (motor).
- 2) The load in the table excludes flasher. When applied in flasher, a special silver alloy (AgSnO<sub>2</sub>) contact material should be used and the ordering key should be 170 as a special suffix. Please heed the anode and cathode's request when wired, terminal 30 connect with anode.
- 3) The load wiring diagrams are listed below:

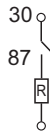


diagram 1

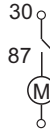


diagram 2

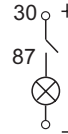


diagram 3

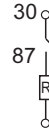


diagram 4

- 4) When the load requirement is different from content of the table above, please contact Hongfa for relay application support.

## COIL DATA

at 20°C

	Nominal voltage (VDC)	Pick-up voltage (VDC)	Drop-out voltage (VDC)	Coil resistance (Ω±10%)	Parallel resistance <sup>1)</sup> (Ω±5%)	Equivalent resistance (Ω)	Power consumption (W)	Max. allowable overdrive voltage <sup>2)</sup> (VDC)	
								20°C	85°C
Standard	6	3.6	0.6	22.5	---	---	1.6	10	9
	6	3.6	0.6	22.5	180	20	1.8	9	9
	12	7.2	1.2	90	---	---	1.6	21	18
	12	7.2	1.2	90	680	79.5	1.8	18	18
	24	14.4	2.4	360	---	---	1.6	43	34
	24	14.4	2.4	360	2700	317.6	1.8	36	34
High power consumption (P)	6	3.6	0.6	18	---	---	2.0	9	7
	6	3.6	0.6	18	180	16.4	2.2	9	7
	12	7.2	1.2	72	---	---	2.0	19	14
	12	7.2	1.2	72	680	65.1	2.2	18	14
	24	14.4	2.4	288	---	---	2.0	39	28
	24	14.4	2.4	288	2700	260.2	2.2	36	28

1) The power consumption of parallel resistance is 0.5W.

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

## ORDERING INFORMATION

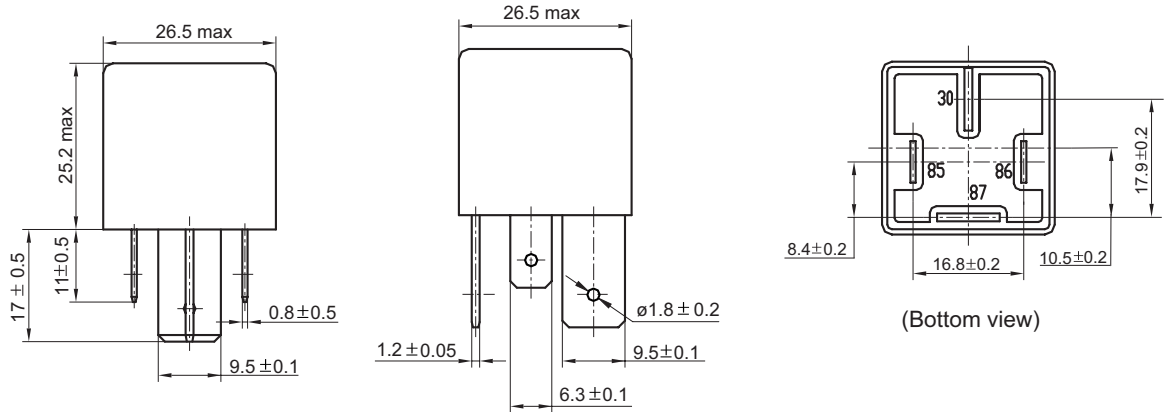
Type	HFV7 <sup>1)</sup> /	012	H	S	P	T	-R	XXX	
Coil voltage	006: 6VDC	012: 12VDC	024: 24VDC						
Contact arrangement	H: 1 Form A								
Structure	S: Sealed IP67		Nil: Dust cover						
Coil power	P: High power consumption		Nil: Standard						
Contact Material	T: AgSnO <sub>2</sub>		3: AgNi0.15						
Transient Suppression Resistor	R: With resistor		Nil: Without resistor						
Customer special code	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) HFV7 is an environmental friendly product, please mark special code (555) when order.

## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

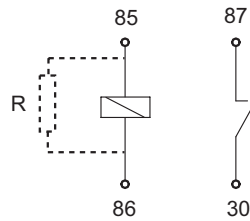
Unit: mm

### Outline Dimensions



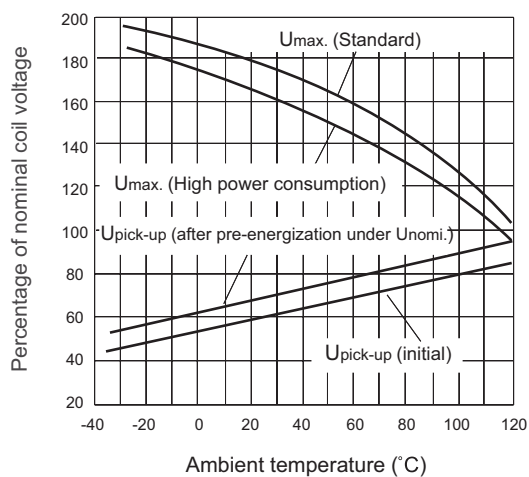
Remark: Terminal vertical deviation tolerance is 0.2mm.

### Wiring Diagram



## CHARACTERISTIC CURVES

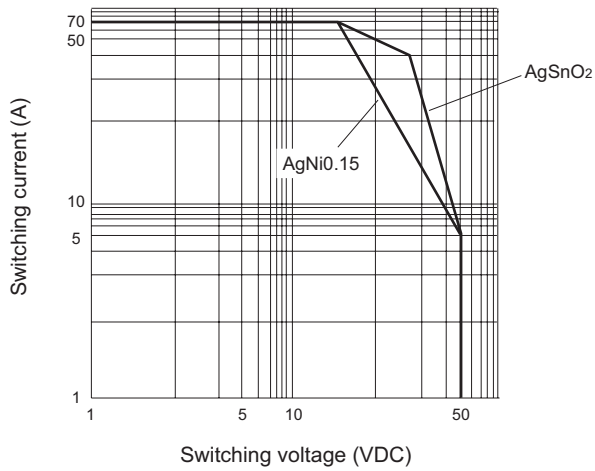
### 1. Coil operating voltage range



- 1) The curve is applicable under the condition of no contact load applied.
- 2) The operating voltage is connected with coil energized time and voltage. After 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.

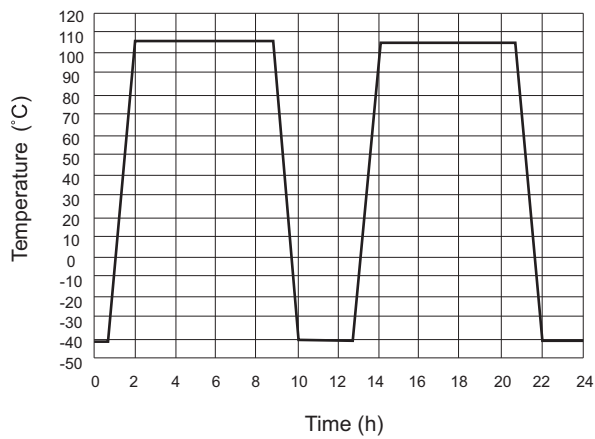
# CHARACTERISTIC CURVES

## 2. Load limit curve



- 1) The contact load is resistive.
- 2) The load and electrical life 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. Ambient temperature curve of the electrical life test



- 1) The minimum temperature is -40°C.
- 2) The maximum temperature is 105°C.

### 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.