

HFV9

AUTOMOTIVE RELAY



Typical Applications

Headlight control, Fuel pump control, Horn control, A/C compressor clutch

Features

- 15A continuous contact rating at 125°C.
- Extended temperature range: -40°C to 125°C
- 1 Form A & 1 Form C contact arrangement
- 2.8mm QC terminals available
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1A, 1C	Ambient temperature	-40°C to 125°C
Voltage drop (initial) ¹⁾	Typ.: 50mV (at 10A) Max.: 250mV (at 10A)	Storage temperature	-40°C to 155°C
Max.continuous current	NO: 20A (at 23°C) NC: 10A (at 23°C)	Vibration resistance	10Hz to 40Hz 1.27mm DA 40Hz to 70Hz 49m/s ² (5g) 70Hz to 100Hz 0.5mm DA 100Hz to 500Hz 98m/s ² (10g)
Max.switching current	Make ²⁾ : NO: 120A, NC: 68A Break ³⁾ : NO: 30A, NC: 15A	Shock resistance	196m/s ² (20g)
Min. contact load	1A 6VDC	Termination	2.8mm QC
Electrical endurance	1x10 ⁵ OPS	Construction	Dust protected
Mechanical endurance	1x10 ⁷ OPS 300OPS/min	Unit weight	Approx. 20g
Initial insulation resistance	100MΩ (at 500VDC)	Mechanical data	cover retention (pull & push): 200N min. terminal retention (pull & push): 100N min. terminal resistance to bending (front & side): 10N min.
Dielectric strength ⁴⁾	between contacts: 500VAC between coil & contacts: 500VAC		
Operate time	Typ.: 5ms Max.: 10ms (at nomi. vol.)		
Release time	Typ.: 3ms Max.: 10ms ⁵⁾		

- 1) Equivalent to the max. initial contact resistance is 100mΩ (1A 6VDC).
 2) At 14VDC, the peak inrush current of lamp.
 3) At 14VDC.
 4) 1min, leakage current less than 1mA.
 5) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.

CONTACT DATA ²⁾

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurance OPS	Contact material	Ambient temp.
			1C		On s	Off s				
			NO	NC			NO			
13.5VDC	Resistive	Make	20	10	20	2	2	1×10 ⁵	AgSnO ₂	-40°C to 125°C
		Break	20	10	20					
	Lamp ¹⁾	Make	74	---	74	11	11	1×10 ⁵	AgSnO ₂	-40°C to 130°C
		Break	11.5	---	11.5					
	Inductive	Make	50	---	50	2	4	3.5×10 ⁵	AgSnO ₂	-40°C to 130°C
		Break	20	---	20					
	Lamp ¹⁾	Make	---	68	---	11	11	1×10 ⁵	AgSnO ₂	-40°C to 130°C
		Break	---	9.5	---					



HONGFA RELAY

ISO9001、ISO/TS16949、ISO14001、OHSAS18001 CERTIFIED

2007 Rev. 1.00

- 1) When applied in flasher, a special silver alloy (AgSnO₂) 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.
- 2) 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	Parallel resistance ¹⁾ x(1±5%)Ω	Equivalent resistance Ω	Power consumption W	Max. allowable overdrive voltage ²⁾ VDC	
							23°C	85°C
12	7.2	1.2	109	---	---	1.3	20.4	14.9
12	7.2	1.2	109	680	93.9	1.5	20.4	14.9

- 1) The power consumption of parallel resistance is 0.5W.
2) Max. allowable overdrive voltage is stated with no load applied.

ORDERING INFORMATION

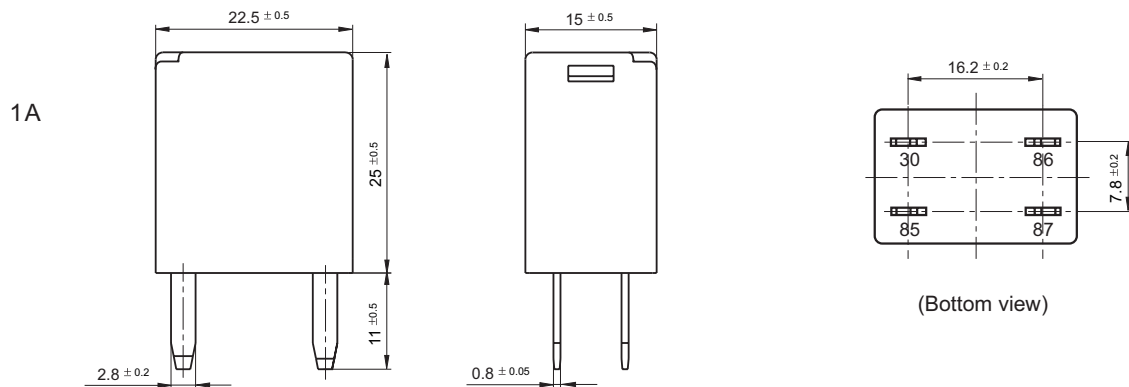
	HFV9 /	012	1H	R	(XXX)
Type					
Coil voltage	012: 12VDC				
Contact arrangement	1H: 1 Form A		1Z: 1 Form C		
Transient suppression resistor	R: With resistor		Nil: Without resistor		
Customer special code ¹⁾	e.g. (170) stands for flasher load, (555) stands for RoHS & ELV compliant. In case there are multiple special requirements, all special codes should be followed one by one.				

- 1) HFV9 is environmental friendly product, please mark special code (555) when order.

OUTLINE DIMENSIONS AND WIRING DIAGRAM

Unit: mm

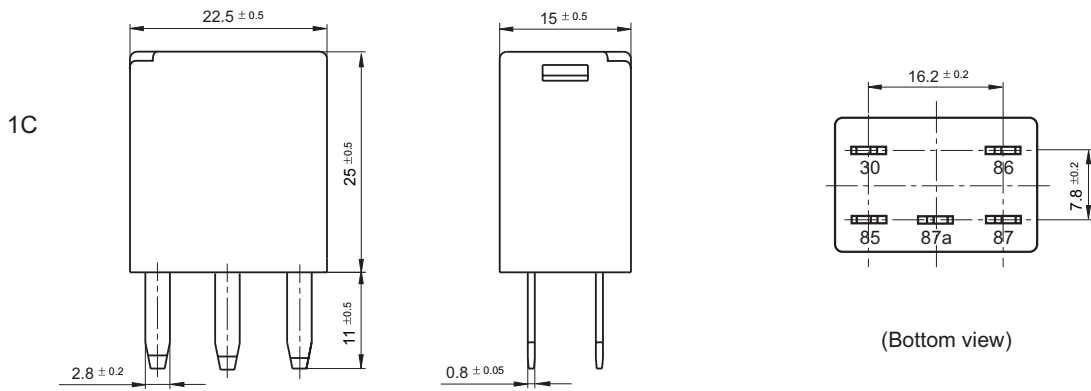
Outline Dimensions



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

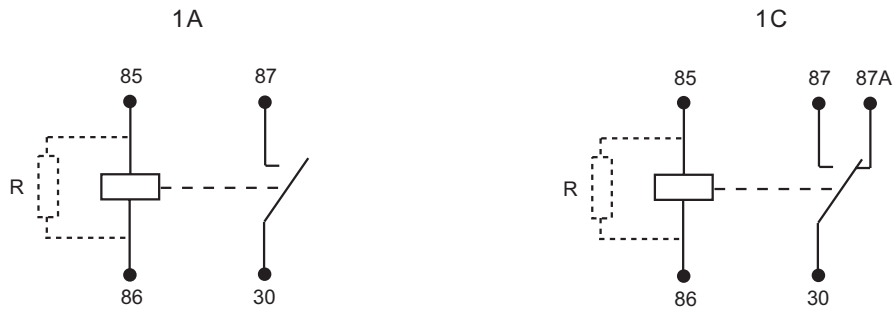
Unit: mm

Outline Dimensions



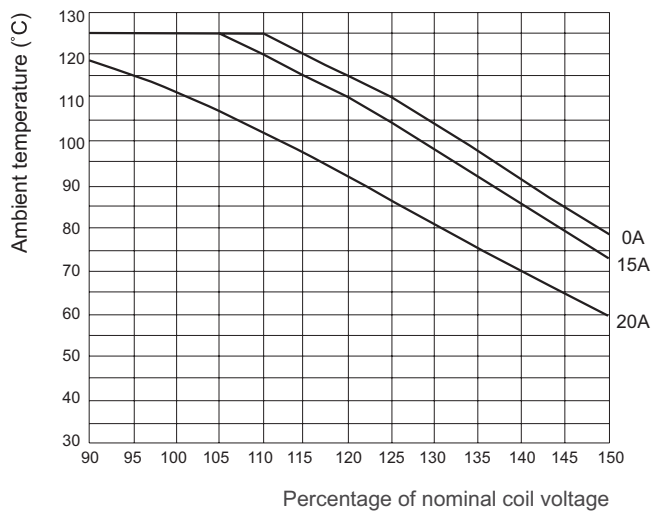
Notes: Terminal vertical deviation tolerance is 0.2mm.

Wiring Diagram



CHARACTERISTIC CURVES

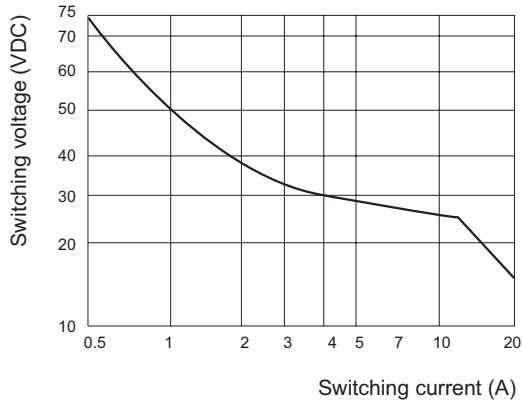
1. Coil operating voltage range



- 1) The curve is applicable under the condition of no contact load applied.
- 2) This chart takes 12VDC coil voltage version as example.
- 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 (at 23°C)



- 1) This chart takes NO contact 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.