

# HFV20-150

## AUTOMOTIVE RELAY



### Typical Applications

Engine Start Preheating System, Power management system, Heating plug, Front windshield heating, Start / stop control, etc

### Features

- Max. continuous current 130A (85°C), 150A (23°C)
- Covers both 12VDC and 24VDC applications
- Ambient Temperature -40°C ~ +125°C
- Strong impact (50G) and vibration resistance
- With separate mounting plate

RoHS compliant

## CHARACTERISTICS

Contact arrangement	1A	
Contact resistance	Typ.: 0.7mΩ (at 100A) initial	
Contact rating <sup>1)</sup>	12VDC 150A 24VDC 150A	
Max. continuous current <sup>1)</sup>	180A (23°C) 5min 150A (23°C) long-term 130A (85°C) long-term 70A (125°C) long-term	
Overload current <sup>1)</sup>	300A 1min (23°C) 750A 5s (23°C)	
Short Circuit Resistance Current <sup>1)2)</sup>	1500A 1s (23°C) 2000A 500ms (23°C) 3000A 20ms (23°C)	
Max. switching current <sup>1)</sup>	12V	Breaking 14VDC 1000A > 3 OPS Breaking 14VDC 1500A > 1 OPS
	24V	Breaking 28VDC 1000A > 3 OPS Breaking 28VDC 1500A > 1 OPS
Min. contact load	1A 6VDC	
Electrical endurance <sup>1)</sup>	See "CONTACT DATA"	
Mechanical endurance	> 1×10 <sup>7</sup> OPS (60 OPS/min)	
Insulation resistance	Initial	100MΩ (500VDC 1min)
	After test	20MΩ (500VDC 1min)
Dielectric strength <sup>3)</sup>	Between open contacts	1000VAC 1min
	Between coil & contacts	1000VAC 1min
Operate time <sup>4)</sup>	Typ. : 25ms	
Release time <sup>4)</sup>	Typ. : 10ms	
Noise <sup>5)</sup>	Typ. : 75dB(A)	

Ambient Temperature	-40°C ~ +125°C, No condensation and ice
Vibration resistance (random)(Functional) <sup>6)</sup>	10Hz~2000Hz, > 3g GB/T 28046.3 4.1.2.4 Test IV
Shock resistance	Energize: 50g (Half Sine, pulse 11ms) Non-energize: 20g (Half Sine, pulse 11ms)
Termination	Screw connection
Construction	Plastic sealed, Dust cover type
Unit weight	Appros. 220g
Protection grade <sup>7)</sup>	Plastic sealed: IP6K7 (GB/T 30038) Dust cover type: IP5K4 (GB/T 30038)
Mechanical properties	Housing retention: (Pull/press) ≥ 500N Retention force of Termination: (Pull/press) ≥ 150N Termination torque: 6N·m ~ 8N·m

Notes: 1) The conductor cross section 25mm<sup>2</sup>;

2) Failure criterion: No smoke, fire or explosion occurs during the test;

3) 1 min, leakage current less than 1mA;

4) Measurement of coil shunt resistance at rated voltage;

5) Test distance 0.4m;

6) When energized, opening time of closed NO contact shall not exceed 10μs, when non-energized, close time of NO contacts shall not exceed 10μs;

7) Use matching sealed connectors for protection level testing.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, ISO45001, IECQ QC 080000, ISO/IEC 27001 CERTIFIED

2024 Rev. 1.00

## CONTACT DATA

Load voltage VDC	Load type	Load current A	On/Off ratio		Electrical endurance ops	Contact material	Ambient temp
			On s	Off s			
14	Resistive	200	3	7	5×10 <sup>4</sup>	AgSnO <sub>2</sub>	23℃
28	Resistive	150	3	7	5×10 <sup>4</sup>		

Notes: 1) Load in this table is only for coil shunt resistance, Zener Diode or other components, please contact Hongfa for more technical supports; while the inductive load and the lamp load are the analog load. If the load conditions are not consistent with this table, please provide the corresponding detailed conditions to Hongfa for more support.

## COIL DATA

23℃

Nominal voltage VDC	Pick-up voltage VDC			Drop-out voltage VDC			Coil resistance ×(1±10%) Ω	Parallel resistance ×(1±5%) Ω	Equivalent resistance ×(1±10%) Ω	Power consumption W
	-40℃	23℃	125℃	-40℃	23℃	125℃				
12	≤7	≤8	≤11.5	≥0.8	≥1.2	≥1.4	40.8	-	-	3.5
12	≤7	≤8	≤11.5	≥0.8	≥1.2	≥1.4	40.8	390	37	3.9
24	≤14.5	≤16	≤24	≥1.6	≥2.4	≥2.8	177.5	-	-	3.2
24	≤14.5	≤16	≤24	≥1.6	≥2.4	≥2.8	177.5	680	141	4.1

## ORDERING INFORMATION

Type	HFV20-150 /24 -12 -H A S T -R (XXX)
Load voltage <sup>1)</sup>	12: 12VDC 24: 24VDC
Coil voltage	12: 12VDC 24: 24VDC
Contact arrangement	H: 1 Form A
Installation method	A: With mounting plate
Construction	S: Plastic sealed(IP6K7) <sup>2)</sup>
Contact material	T: AgSnO <sub>2</sub>
Parallel coil components	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 <sup>3)</sup>	XXX: Customer special requirement Nil: Standard

Notes: 1) When the load voltage is the same as the coil voltage, the load voltage and the subsequent connector are omitted.

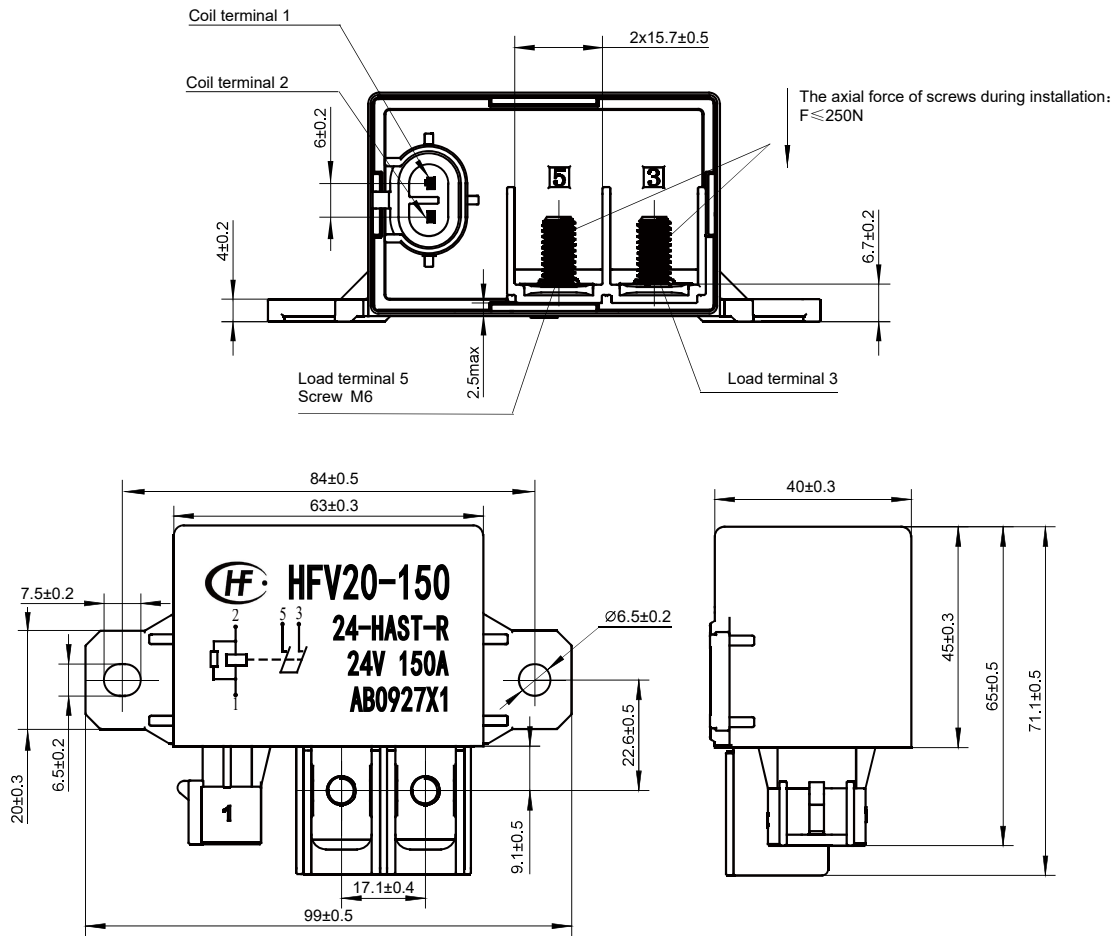
2) The sealing performance will be impacted when relay is being screwed or in actual application; therefore IP6K7 only refers to the initial tested value before delivery and please use the matched sealed connector during test.

3) The customer special requirement express as special code after evaluating by Hongfa.

# OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

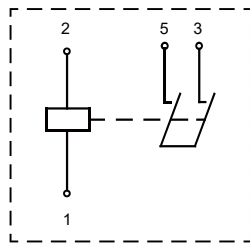
Unit: mm

## Outline Dimensions

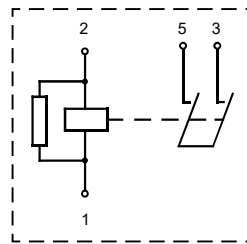


## Wiring Diagram

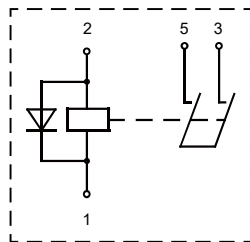
HFV20-150 / □□-HA□T (XXX)



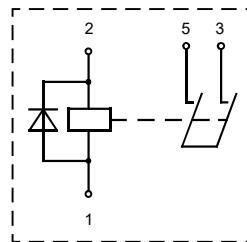
HFV20-150 / □□-HA□T-R (XXX)



HFV20-150 / □□-HA□T-D (XXX)

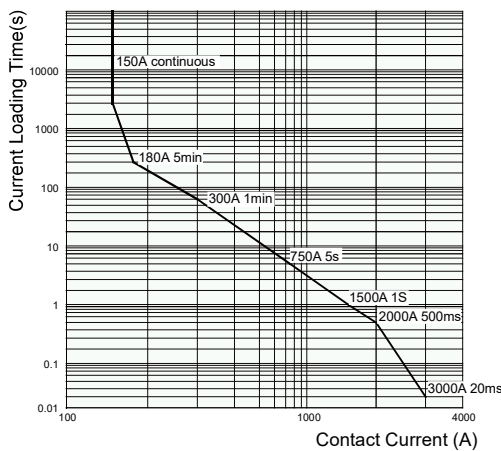


HFV20-150 / □□-HA□T-D1 (XXX)



# CHARACTERISTIC CURVES

CURRENT WITHSTAND CAPABILITY CURVE



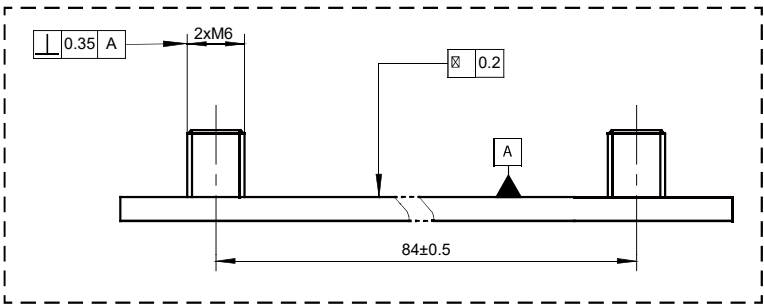
- Notes :
- 1) The temperature is 23°C;
  - 2) Resistive load, Load Line Diameter 25mm<sup>2</sup>;
  - 3) When the actual application conditions exceed the specified range of the curve, please contact Hongfa and provide detailed application conditions for more technical support.

# PRECAUTIONS FOR USE

1. To prevent looseness, please use spring washer or jam nut when installing the relay. See the following table for installation requirements, if the scope is exceeded, the product may be damaged. When the use conditions are inconsistent with this table, please provide the corresponding detailed use conditions to Hongfa for more support.

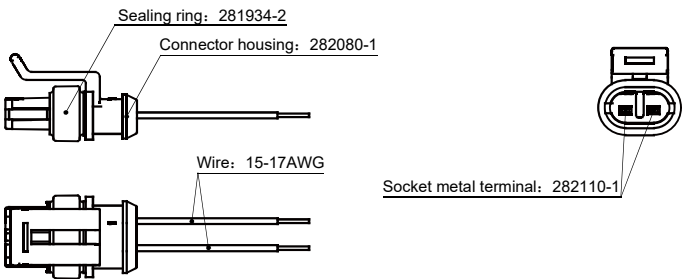
Load terminal mounting requirements						Housing mounting plate installation requirements		
Installation Method	Thread pitch	Torque Requirements	Gasket outer diameter	Copper nose model	Wire diameter	Installation Method	Torque Requirements	Base size requirements
M6 Nut gasket	1.0mm	6N•m ~ 8N•m	<φ15mm	SC25-6	25mm <sup>2</sup>	M6 Screw	3.4N•m ~ 4.2N•m	See figure below for details

Base size requirements



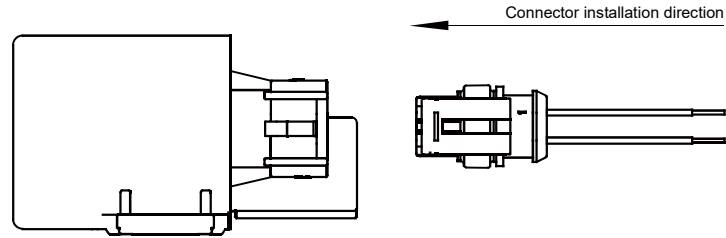
2. Please avoid grease and other foreign bodies on the terminal, please use the recommended specification of copper nose and wires in Article 1 of the precautions for installation, otherwise abnormal heat may occur at the load terminal.
3. Coil Terminal: Connector type AMP SUPERSEAL 1.5 serie (Customer self-configuration: Connector housing 282080-1; Sealing ring 281934-2; Socket metal terminal 282110-1).

TE connector: AMP SUPERSEAL 1.5 serie (Customer self-configuration)



## PRECAUTIONS FOR USE

4. During the installation of the product, make sure that the connectors are inserted smoothly in the correct direction, the snap clips are in place, and do not plug and unplug more than once, to prevent the connector from distorting the opening of the metal terminal that connects, causing unreliable contact.



### 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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