

# HFE82V-20

# DIRECT CURRENT RELAY



## Features

- Hermetically sealed with ceramic brazing technology, without risk of arc leaking, no fire or explosion.
- Filled with hydrogen gas to prevent the oxidation and burnout of contacts; Low and stable contact resistance, with IP67 compliant.
- 20A continuous carry current capability at 85°C.
- Max. insulation resistance up to 1000MΩ (@1000 VDC), dielectric strength (coil-contact) up to 4kV, IEC 60664-1 compliant.
- No specific polarity requirements for the connection

RoHS compliant

## CONTACT DATA

Contact arrangement	1 Form A	
Contact resistance 1)	$\leq 4.5\text{m}\Omega(20\text{A})$	
Contact rating	20A	
Mechanical endurance	$2 \times 10^5$ ops	
Max. switching voltage	1000 VDC	
Max. breaking current	200A(1000 VDC)1 op	
Max. switching power	30kW	
	Type 450V	Type 750V
Electrical endurance 2)	Switching: $7.5 \times 10^4$ ops (450 VDC,20A)	Switching: $5 \times 10^4$ ops (750 VDC,20A)
	Type 1000V	
Electrical endurance 2)	Switching: $3 \times 10^4$ ops(1000 VDC,20A)	
Current carrying 3) capacity	20A: Cont.	
	30A: 1h	
	40A:20min	
	80A:30s	
	120A:10s	
	200A: 0.6s	

Notes: 1) The above values are the initial values.

2) Unless otherwise specified, the temperature of electrical endurance is at 23°C and the on-off ratio is 0.6s:5.4s.

The coil was not connected to the surge suppression device during the test. Please note that the use of a well-connected diode will greatly increase the release time of the relay, resulting in a reduced lifetime.

3) Ambient temperature is at 85°C and cross section area of wire is 4mm<sup>2</sup> min. See Fig. Endurance Capacity Curve for more information.

## COIL

23°C

Rated Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Coil power W
12	$\leq 9$	$\geq 1$	2.6
24	$\leq 18$	$\geq 2$	2.6
48	$\leq 36$	$\geq 4$	2.6

## CHARACTERISTICS

Insulation resistance		1000MΩ(1000 VDC)
Dielectric strength	Between coil & contacts	4000 VAC 1min
	Between open contacts	3000 VAC 1min
Operate time (at rated volt.)		$\leq 30\text{ms}$
Release time (at rated volt.)		$\leq 10\text{ms}$
Shock resistance	Functional	196m/s <sup>2</sup>
	Destructive	490m/s <sup>2</sup>
Vibration resistance		10Hz ~ 500Hz 49m/s <sup>2</sup>
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		QC terminal
Unit weight		Approx. 140g
Outline Dimensions		See "outline dimensions"

Notes: Above is the initial value in the room temperature.



HONGFA RELAY

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

2024 Rev.1.00

## ORDERING INFORMATION

Type	HFE82	V	-20/	1000-	12 -	H-	Q	2	J	-1	(XXX)
Application	V: Vehicle										
Contact rating	20: 20A										
Load voltage	Nil:450VDC 750:750VDC 1000:1000VDC										
Coil voltage	12:12VDC 24:24VDC 48:48VDC										
Contact arrangement	H: 1 Form A										
Coil terminal structure	Q: QC terminal										
Load terminal structure	2: QC terminal										
Base structure	J: Layout base without mounting boss M: Layout base with mounting boss										
Coil characteristic	1: Single coil										
Special code <sup>1)</sup>	XXX: Customer special requirement										

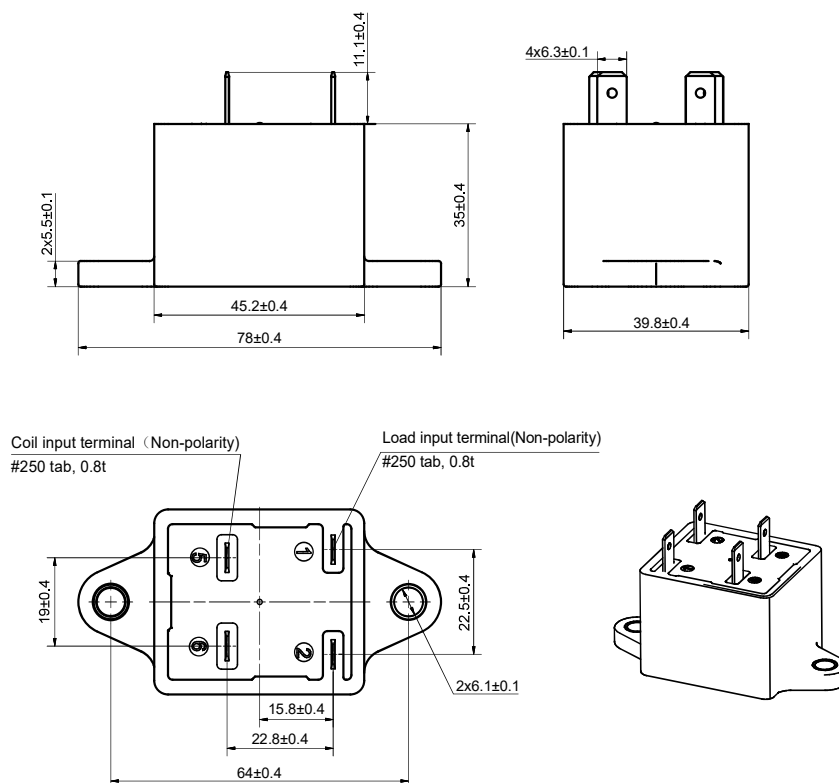
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

## OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

### Outline Dimensions

HFE82V-20/XXX-XX-H-Q2J-1

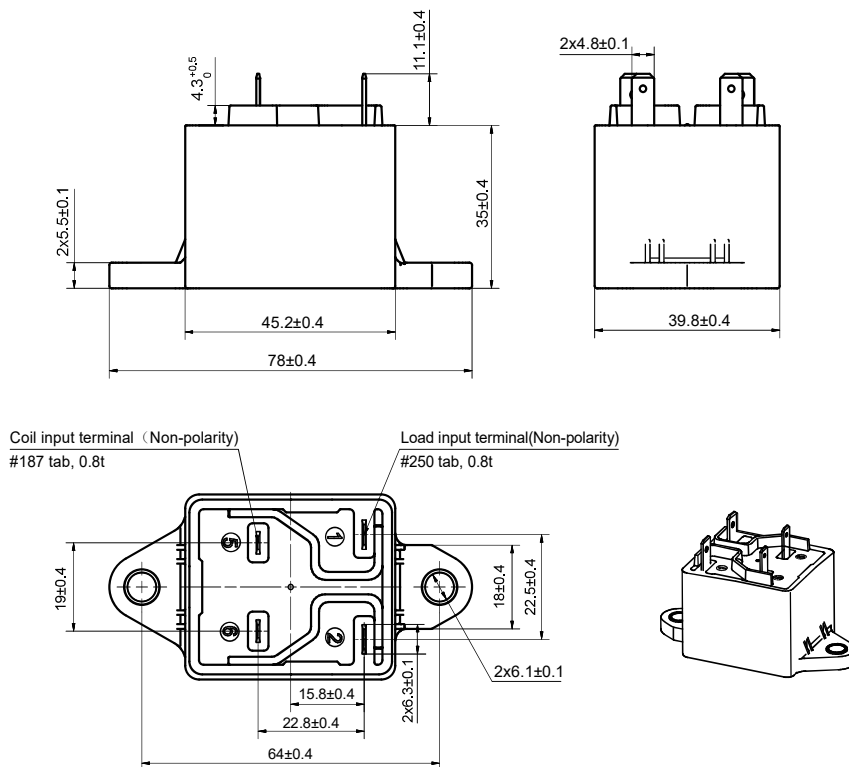


# OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

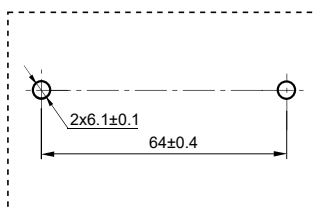
Unit: mm

## Outline Dimensions

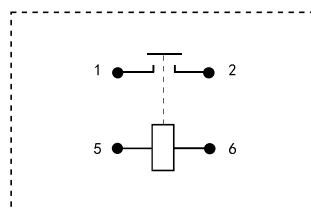
HFE82V-20/XXX-XX-H-Q2M-1



## Mounting Hole



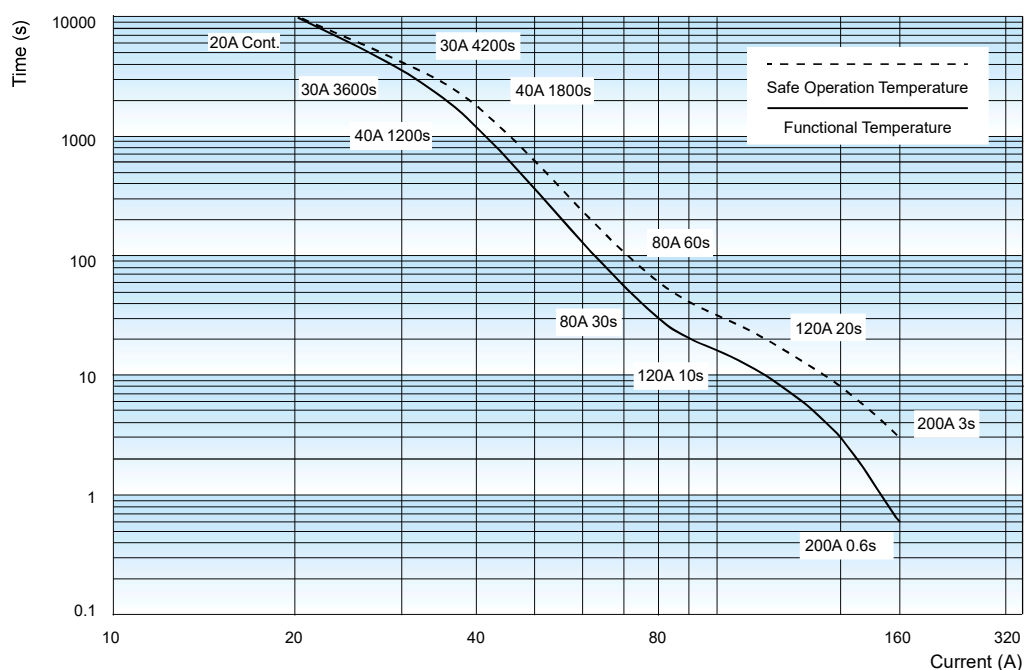
## Terminal Arrangement



Notes: No polarity on the load and coil sides.

## CHARACTERISTIC CURVES

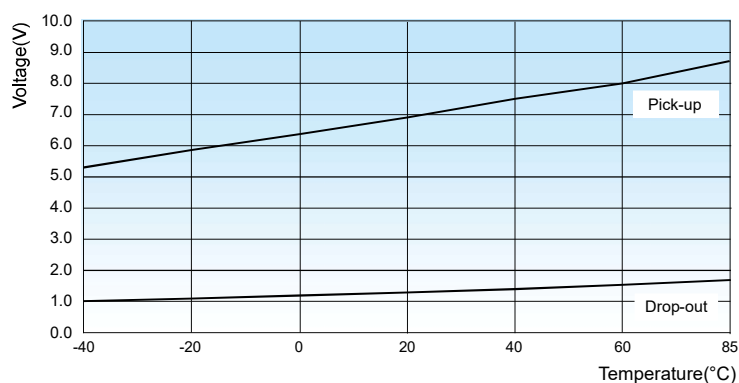
Endurance Capacity Curve



### Notes:

- 1) The data is for design reference, it shall be verified as actual for model selection and fuse mating of short-circuit current test.
- 2) The upper temperature limit of safe operation and function are set for 180°C and 130°C respectively.
- 3) It is recommended that the upper temperature limit shall not exceed 130°C when long time operation. The relay may also fail, if the safe temperature limit of 180°C is exceeded.
- 4) Risks of fire and explosion may exist when the working condition beyond the safe circuit curve. in case of similar working condition, the relay shall be replaced in time.
- 5) The ambient temperature is 85°C for safe operation and function, and for current above 2000A, the temperature is room temperature with cross-sectional area  $\geq 4\text{mm}^2$ .

Pick-up Voltage / Drop-out Voltage Curve



### Notes:

- 1) The above values are sampling values for reference only;
- 2) The rated voltage of the sample coil is 12VDC;
- 3) The sampling ambient temperature is -40°C ~ 85°C.

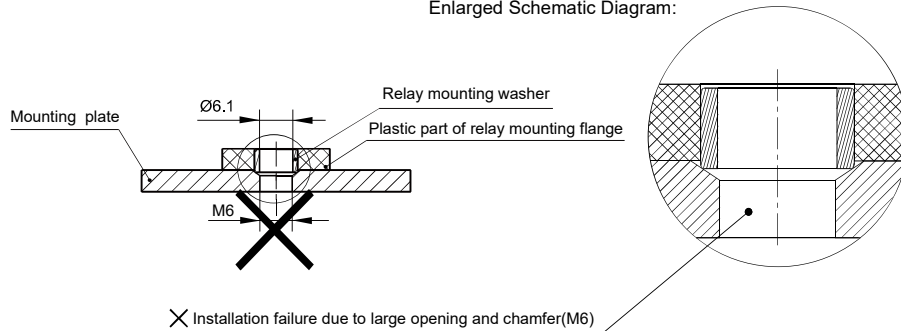
## CAUTIONS

1. In case of looseness, please use washer when install the relay with M5 screw, and the torque within 3N.m to 4N.m, the insertion and withdraw force for terminals is 49N for load terminals and 49N for coil terminals. The torque beyond the range may cause damage.
2. Do not use the relay again when it is dropped.
3. Please avoid adhering to foreign matter such as grease on the terminal lead end and please use the conductor with min. cross section area of 4mm<sup>2</sup>, otherwise it may cause the abnormal heating of the terminal part.
4. Cautions of mounting for relay body:

### Unrecommended method

Large opening of mounting plate at customer-side.

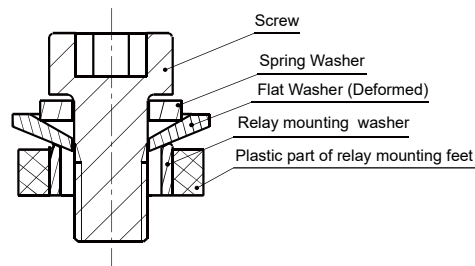
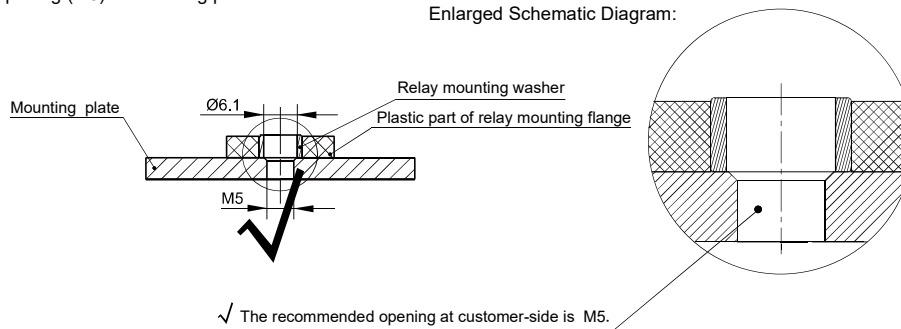
Enlarged Schematic Diagram:



### Recommended method

Appropriate opening (M5) of mounting plate at customer-side.

Enlarged Schematic Diagram:



When use M5 screw, the thickness and strength of the washer needs to be guaranteed or it may deform and burst the cover.

## 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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