

# HFE82V-60

# DIRECT CURRENT RELAY



File No.:E133481



File No.:R50602266



File No.:AN50603213



## 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.
- 60A 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.

**RoHS compliant**

## CONTACT DATA

Contact arrangement	1 Form A
Contact resistance <sup>1)</sup>	≤0.6mΩ(60A)
Contact rating	60A
Mechanical endurance	2.0x10 <sup>5</sup> ops
Max. switching voltage	1000 VDC
Max. breaking current	600A(450 VDC) 1 op
Max. switching power	54kW

	Type 450V	Type 750V
Electrical endurance <sup>2)</sup>	Switching:7.5x10 <sup>4</sup> ops (20 VDC, 60A)	Breaking:500 ops (750 VDC,60A)
	Switching:800 ops (450 VDC, 60A)	Making:5x10 <sup>4</sup> ops (750 VDC,60A)
	Switching:50 ops (450 VDC, 120A)	
	Breaking:100 ops (450 VDC,200A, on-off ratio:0.3s:29.7s)	

	Type 1000V
Electrical endurance <sup>2)</sup>	Breaking:6000 ops (1000VDC,15A)
	Breaking:100 ops (1000 VDC,40A)

Current carrying <sup>3)</sup> capacity	60A: Cont.
	90A: 1h
	120A: 14min
	240A: 20s
	360A: 2s
	600A: 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 15mm<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	≤9	≥1	4.5
24	≤18	≥2	4.5

## 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.)		≤30ms
Release time (at rated volt.)		≤15ms
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		PCB terminal
Unit weight		Approx.175g
Outline Dimensions		55.0 x 39.8 x 41.6mm

**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

## SAFETY APPROVAL RATINGS

<b>UL</b>	DC-1: 10A 800VDC 6000 ops 40°C Resistive switching: 30A 450VDC 6000 ops 40°C Resistive switching: 60A 450VDC 1 op 40°C Resistive switching: 60A 450VDC 1000 ops 40°C Resistive switching: 40A 1000VDC 1 op 40°C Resistive switching: 60A 750VDC 500 ops 40°C Resistive switching: 80A 750VDC 200 ops 40°C
<b>TÜV</b>	DC-1: 10A 800VDC 6000 ops 40°C Resistive switching: 60A 750VDC 500 ops 40°C Resistive switching: 80A 750VDC 200 ops 40°C
<b>CE</b>	DC-1: 10A 800VDC 6000 ops 40°C Resistive switching: 60A 750VDC 500 ops 40°C Resistive switching: 80A 750VDC 200 ops 40°C

**Notes:**1) The load without temperature specified in the table refers to the ambient temperature being room temperature.

2) The above only lists some typical loads certified for this product. The electrical durability varies due to the different detailed testing conditions for each load. If you need more information, please contact us.

## ORDERING INFORMATION

<b>Type</b>	<b>HFE82</b>	<b>V</b>	<b>-60/</b>	<b>750-</b>	<b>12-</b>	<b>H</b>	<b>-P</b>	<b>(XXX)</b>
<b>Application</b>	<b>V: Vehicle</b>							
<b>Contact rating</b>	<b>60: 60A</b>							
<b>Load voltage</b>	<b>Nil: 450 VDC 750: 750 VDC 1000: 1000VDC</b>							
<b>Coil voltage</b>	<b>12: 12 VDC 24: 24 VDC</b>							
<b>Contact arrangement</b>	<b>H: 1 Form A</b>							
<b>Load terminal structure</b>	<b>-P: PCB terminal 2: QC terminal</b>							
<b>Special code<sup>1)</sup></b>	<b>XXX: Customer special requirement</b>							

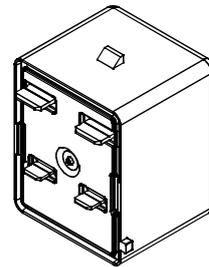
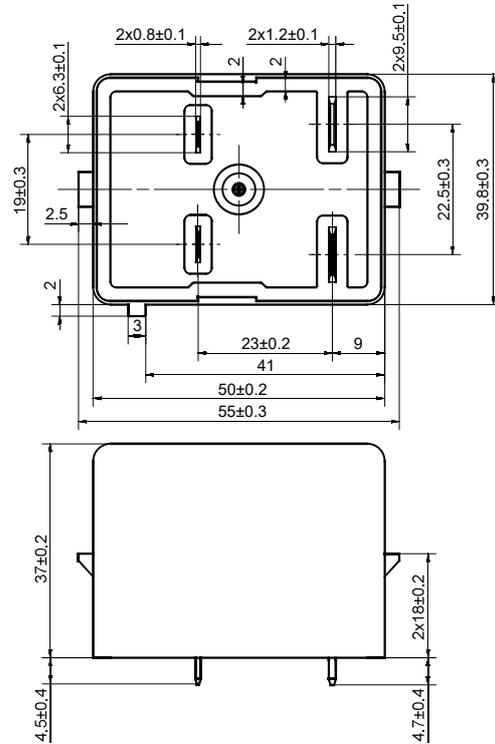
**Notes:** 1) The customer special requirement express as special code after evaluating by Hongfa.

# OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

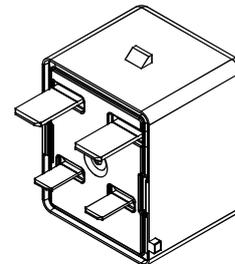
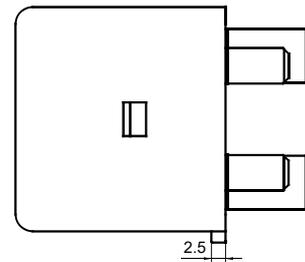
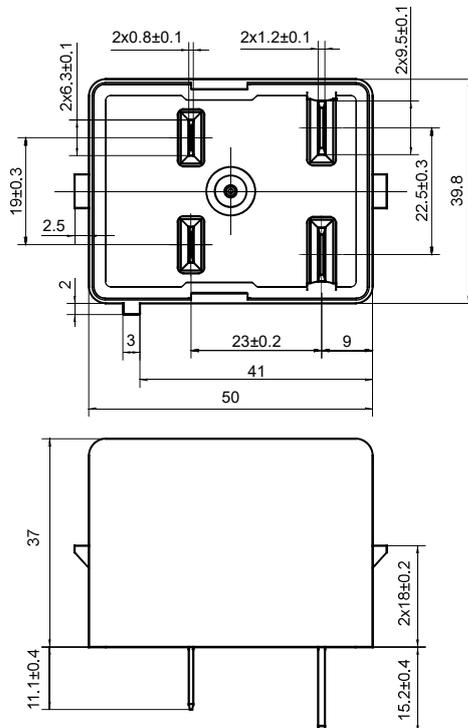
Unit: mm

## Outline Dimensions

HFE82V-60/XXX-XX-H-P



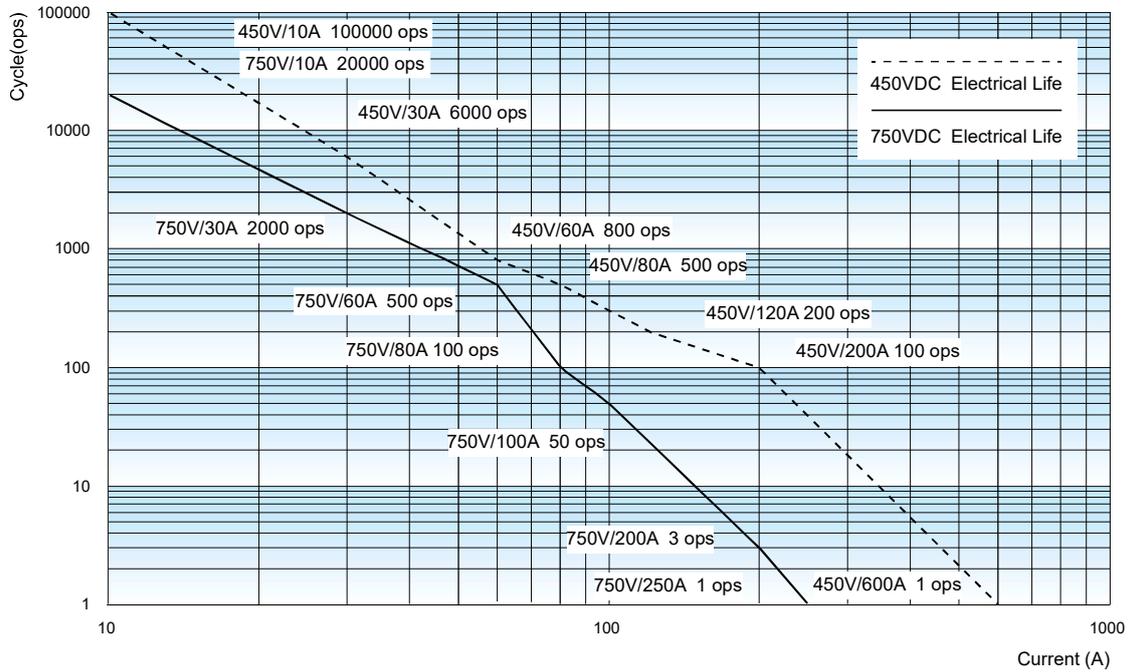
HFE82V-60/XXX-XX-H2



**Notes:** In case of no tolerance shown in outline dimension: outline dimension  $\leq 10$ mm, tolerance should be  $\pm 0.3$ mm; outline dimension  $> 10$ mm and  $\leq 50$ mm, tolerance should be  $\pm 0.5$ mm; outline dimension  $> 50$ mm, tolerance should be  $\pm 0.8$ mm.

## CHARACTERISTIC CURVES

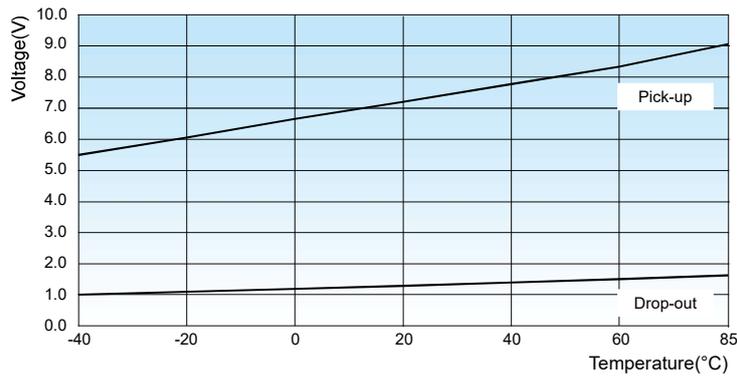
### Breaking Capability Curve (Resistive Load)



#### Notes:

- 1) The data is for reference only.
- 2) Cable cross section:  $\geq 15\text{mm}^2$ .
- 3) The data is measured under the resistive load ( $L/R \leq 1\text{ms}$ ), the duty cycle: 0.6s on: 5.4s off, ambient temperature: 23°C; The values may change according to the load type, duty cycle, and environmental conditions. therefore, it is recommended to confirm the values under actual load.

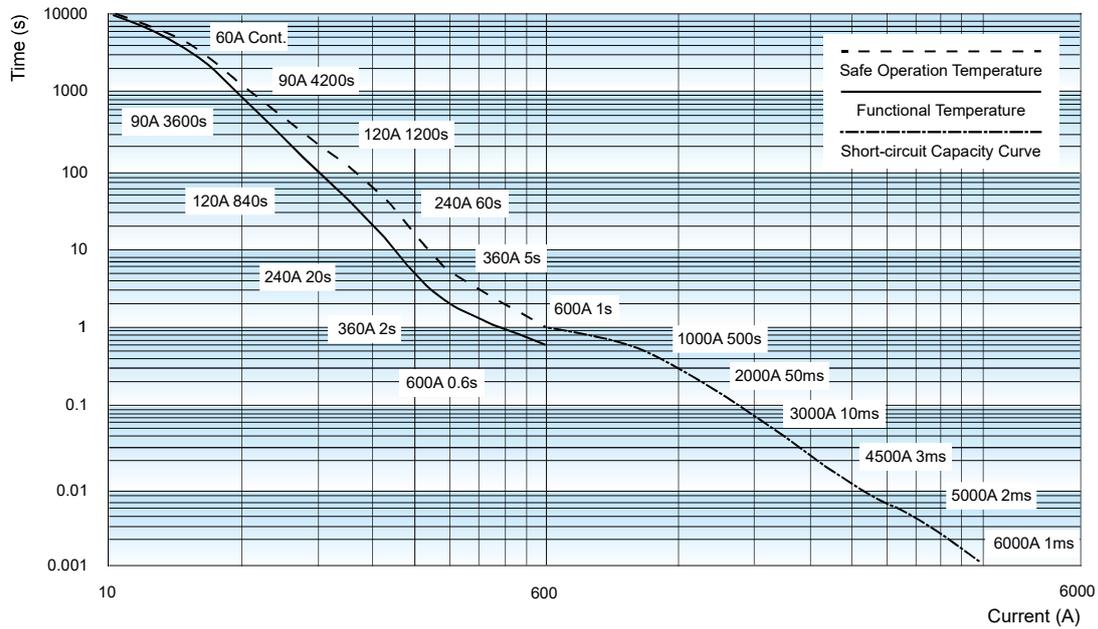
### Pick-up Voltage / Drop-out Voltage Curve



- 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.

## 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  $\geq 15\text{mm}^2$ .
- 6) Even if it is below the safety curve when the current  $\geq 600\text{A}$ , the relay is likely to be bonded during current carrying. If there is a break beyond the specification, fire and explosion may occur.
- 7) The contact is likely to bounce off when the current  $\geq 2000\text{A}$ . If the fuse cannot be fused in time, the relay may explode and may be ignited if the arc continues to burn after the explosion.
- 8) The contact will severely bounce off when the current  $\geq 3000\text{A}$  which may cause the circuit current cannot continue to rise. If the fuse cannot be fused in time, the relay may explode and the arc may ignite the relay after the explosion.

## CAUTIONS

1. 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. 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  $15\text{mm}^2$ , otherwise it may cause the abnormal heating of the terminal part.

### 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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