

# HFE82V-40E

# DIRECT CURRENT RELAY



File No.:E133481



## 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.
- 40A 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	1H	
Contact resistance 1)	≤3mΩ(40A)	
Contact rating	40A	
Mechanical endurance	2x10 <sup>5</sup> ops	
Max. switching voltage	1000 VDC	
Max. breaking current	400A(300 VDC) 1 op	
Max. switching power	60kW	
	<b>Type 450V</b>	<b>Type 750V</b>
Electrical endurance 2)	Switching:2×10 <sup>4</sup> ops (450 VDC,40A)	Switching:1×10 <sup>5</sup> ops (750 VDC,40A)
	Making:7.5×10 <sup>4</sup> ops (450 VDC,40A)	Making:7.5×10 <sup>4</sup> ops (750 VDC,40A)
	<b>Type 1000V</b>	
Electrical endurance 2)	Switching:500 ops(1000 VDC,40A)	
	Making:5×10 <sup>4</sup> ops(1000 VDC,40A)	
Current carrying 3) capacity	40A: Cont.	
	60A:1h	
	80A: 20min	
	160A: 30s	
	320A: 2s	
	400A: 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 10mm<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	3
24	≤18	≥2	3

## 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.)	≤10ms	
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	M4 screw terminal female	
Unit weight	Approx. 140g	
Outline Dimensions	67.0 x 36.2 x 47.0mm	

**Notes:**The above values are the initial values measured at room temperature.

## SAFETY APPROVAL RATINGS

UL/CUL	Resistive switching: 30A 750VDC 6000 ops 85°C
	Resistive switching: 40A 750VDC 1000 ops room temperature
	Resistive switching: 40A 1000VDC 500 ops room temperature

**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.



HONGFA RELAY

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

2024 Rev.1.00

## ORDERING INFORMATION

Type	HFE82 V -40 E / 1000-12- H- C 5 J -1 (XXX)
Application	V: Vehicle
Contact rating	40: 40A
Series breakdown	E: series
Load voltage	Nil:450VDC 750:750VDC 1000:1000VDC
Coil voltage	12: 12VDC 24: 24VDC
Contact arrangement	H: 1 Form A
Coil terminal structure	C: Connector L: Lead wire
Load terminal structure	5: Screw terminal female
Base structure	J: Layout base without mounting boss
Coil characteristic	1: Single coil
Special code <sup>1)</sup>	XXX: Customer special requirement

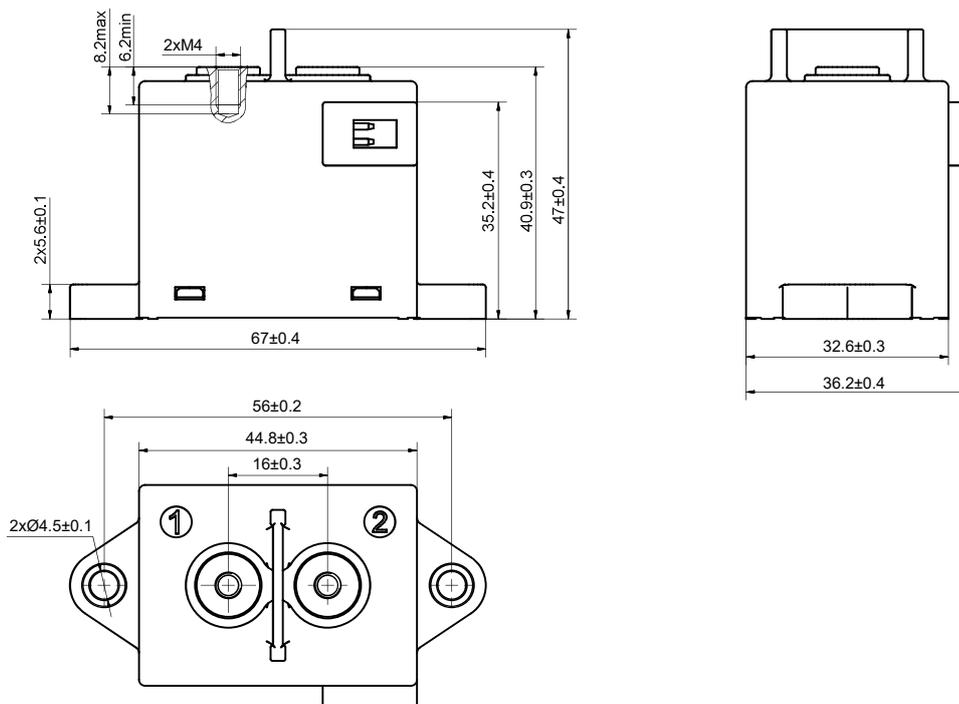
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

## OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

### Outline Dimensions

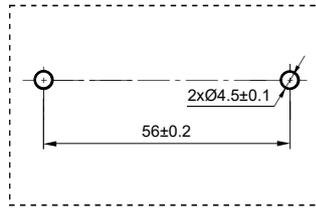
HFE82V-40E/XXX-XX-H-C5J-1



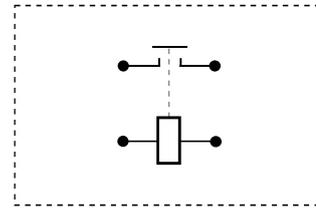
## OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

### Mounting Hole



### Terminal Arrangement



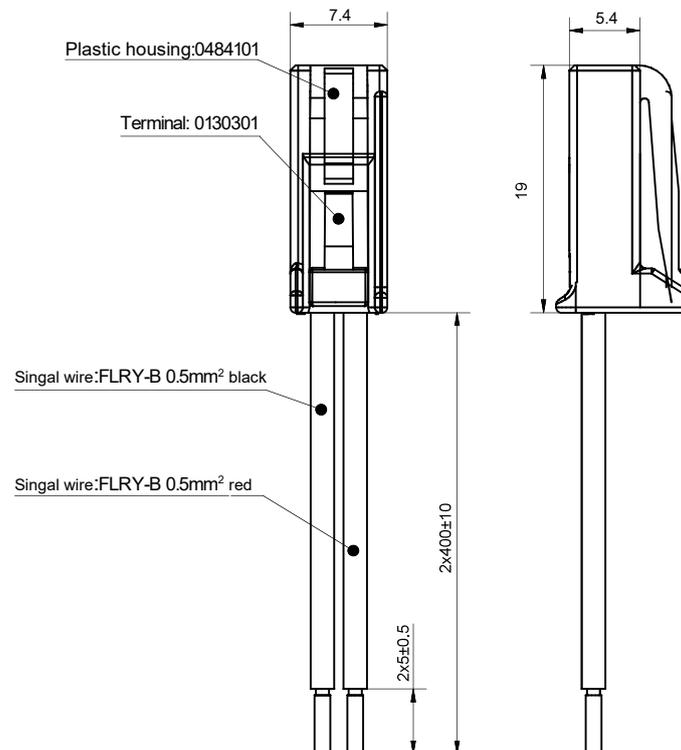
**Notes:** No polarity on the load and coil sides.

## WIRING DIAGRAM

Unit: mm

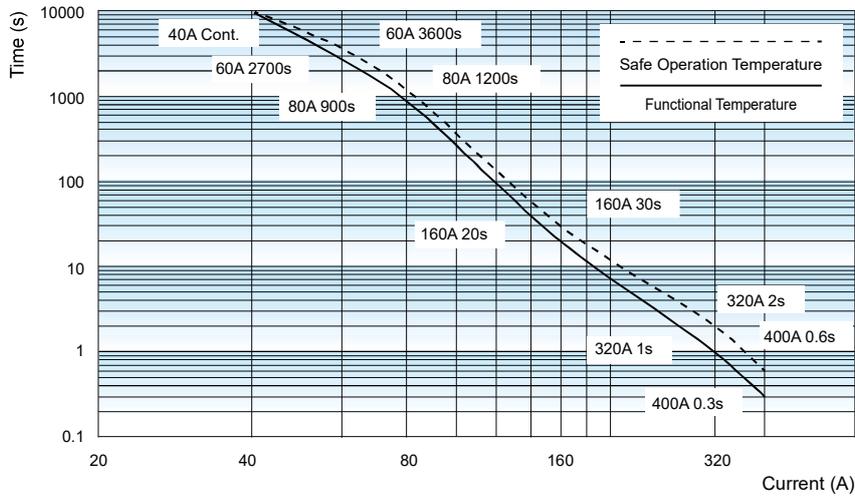
### C:Connector

(Configured by customers: THB 0484101, Yazaki 7283-5845)



## CHARACTERISTIC CURVES

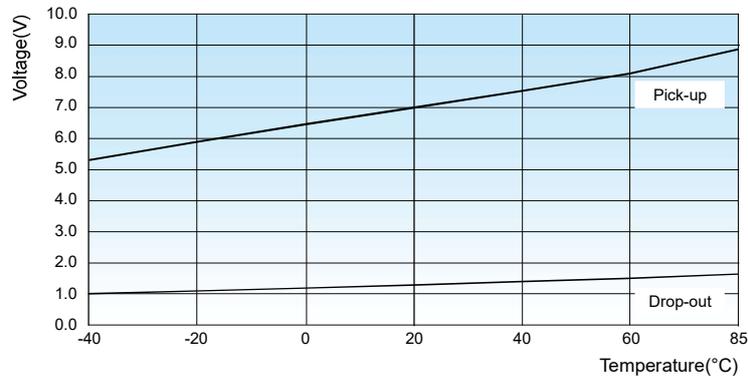
### Endurance Capacity Curve



#### 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  $\geq 10\text{mm}^2$ .

### 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. The torque beyond the range may cause damage.

Mounting for load terminal				Mounting for relay body	
Mounting way	Torque requirement	Hole dia. of copper bus bar	Thickness of copper bus bar	Mounting way	Torque requirement
M4 Screw	2N·m ~ 3N·m	Ø4.0mm ~ Ø4.5mm	1mm ~ 2mm	M4 Screw	2N·m ~ 3N·m

2. Please tighten the load terminal of relay vertically with preloading first when installing. Repeat locking is not recommended.

3. If any special screws and nuts, such as nylok, are used when installing, it is recommended to contact and confirm with Hongfa.

4. If any special installation requirements, such as downward direction, multi busbar connection, are involved, it is recommended to contact and confirm with Hongfa.

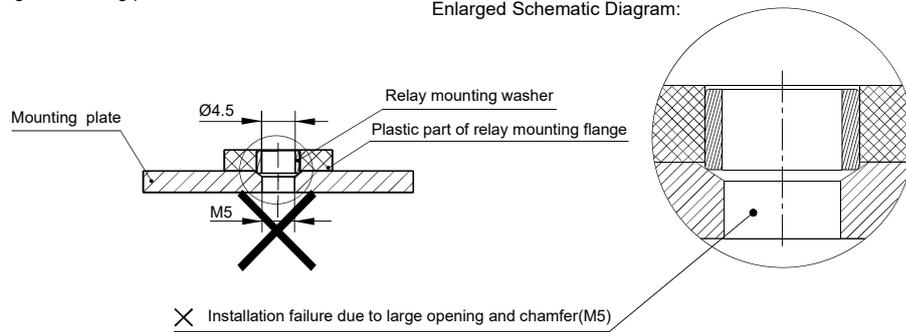
5. Please avoid adhering to foreign matter such as grease on the terminal lead end and please use the conductor with min. cross section area of 10mm<sup>2</sup>, otherwise it may cause the abnormal heating of the terminal part.

6. Cautions of mounting for relay body:

### Unrecommended method

Large opening of mounting plate at customer-side.

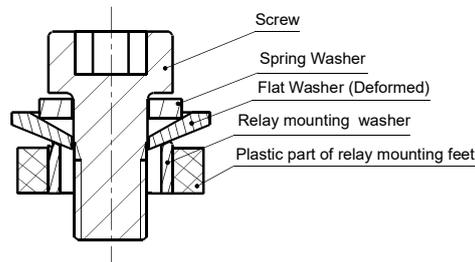
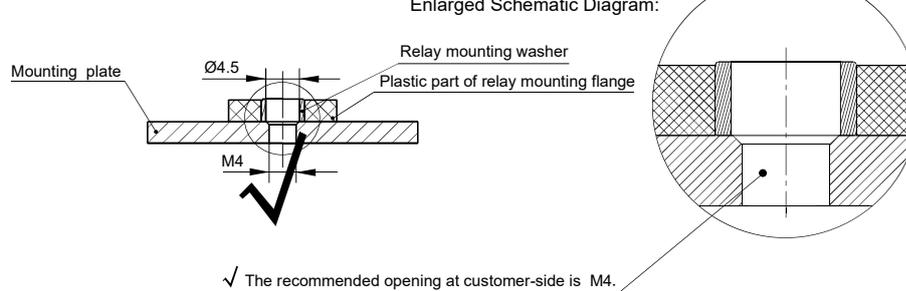
Enlarged Schematic Diagram:



### Recommended method

Appropriate opening (M4) of mounting plate at customer-side.

Enlarged Schematic Diagram:



When use M4 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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