

HFE80V-40

DIRECT CURRENT RELAY



File No.:E133481

RoHS compliant



Features

- Pre-charging and heating relay for new energy vehicles.
- 40A continuous carry current capability at 85°C.
- Safety certification comply with IEC 60664-1.

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤5mΩ(at 20A)
Contact rating	40A
Mechanical endurance	2×10 ⁵ ops
Max. switching voltage	750 VDC
Max. breaking current	50A(450 VDC) ≥ 1op
Max. switching power	22.5kW
Electrical endurance ²⁾	Swithing:1×10 ³ ops(450 VDC, 40A)
	Swithing:1×10 ⁴ ops(450 VDC, 10A)
	Making:7.5×10 ⁴ ops(450 VDC, 35A)
	Swithing:4×10 ³ ops(650VDC, 12A)
	Making:5×10 ⁴ ops(750VDC,40A)
Current carrying ³⁾ capacity	40A:Cont.
	60A:30min
	80A:60s
	160A:5s
	240A:3s
	400A: 0.6s

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

2) Unless otherwise specified, the temperature of eletrical 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 10mm² 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
48	≤36	≥4	3

CHARACTERISTICS

Insulation resistance		1000MΩ(500 VDC)
Dielectric strength	Between coil & contacts	3000 VAC 1min
	Between open contacts	2000 VAC 1min
Operate time (at rated volt.)		≤30ms
Release time (at rated volt.)		≤10ms
Shock resistance	Functional	196m/s ²
	Destructive	490m/s ²
Vibration resistance		10Hz ~ 500Hz 49m/s ²
Humidity		5% ~ 85% RH
Ambient temperature		-40°C ~ 85°C
Load terminal structure		QC terminal, PCBterminal
Unit weight		Approx.55g
Outline Dimensions		See“Outline Dimensions”

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

SAFETY APPROVAL RATINGS

UL/CUL	Resistive Swithing:40A 450VDC 1000 ops 85°C
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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

	HFE80	V	-40/	450-	12-	H	T	Q	2	A	J	(XXX)
Type												
Application	V: Vehicle											
Contact rating	40: 40A											
Load voltage	450: 450 VDC											
Coil voltage	12:12VDC 24:24VDC 48:48VDC											
Contact arrangement	H: 1 Form A											
Contact material	T: AgSnO₂											
Coil terminal structure	Q: QC terminal P:PCB terminal											
Load terminal structure	Nil: PCB terminal 2:QC terminal											
Shell structure	Nil: Standard mounting boss A: A type mounting flange B: B type mounting flange L: Ltype mounting flange											
Base structure	J: Layout base without mounting boss											
Special code¹⁾	XXX: Customer special requirement											

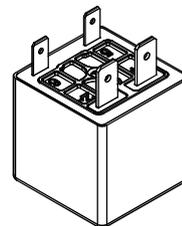
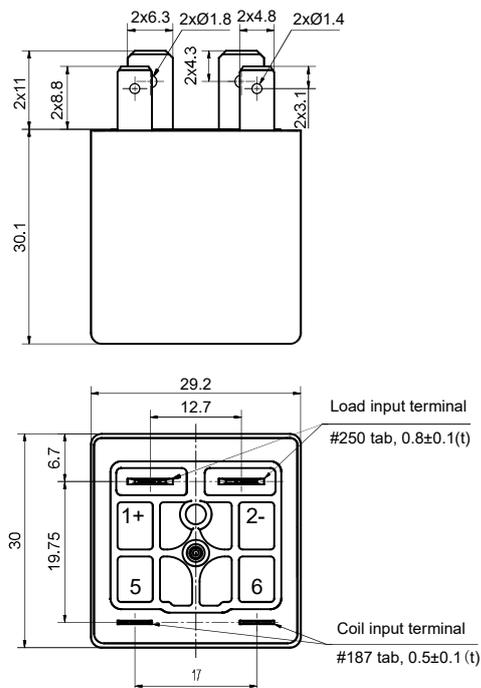
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

HFE80V-40/450-XX-HTQ2AJ

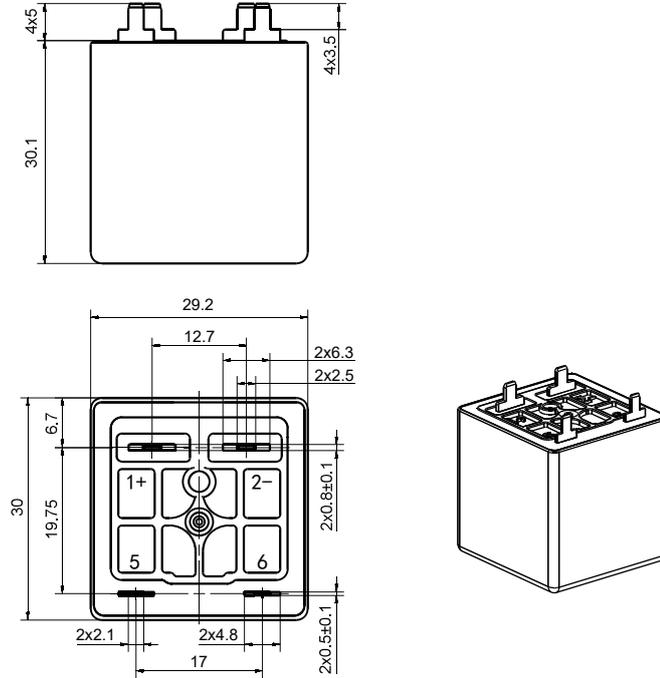


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

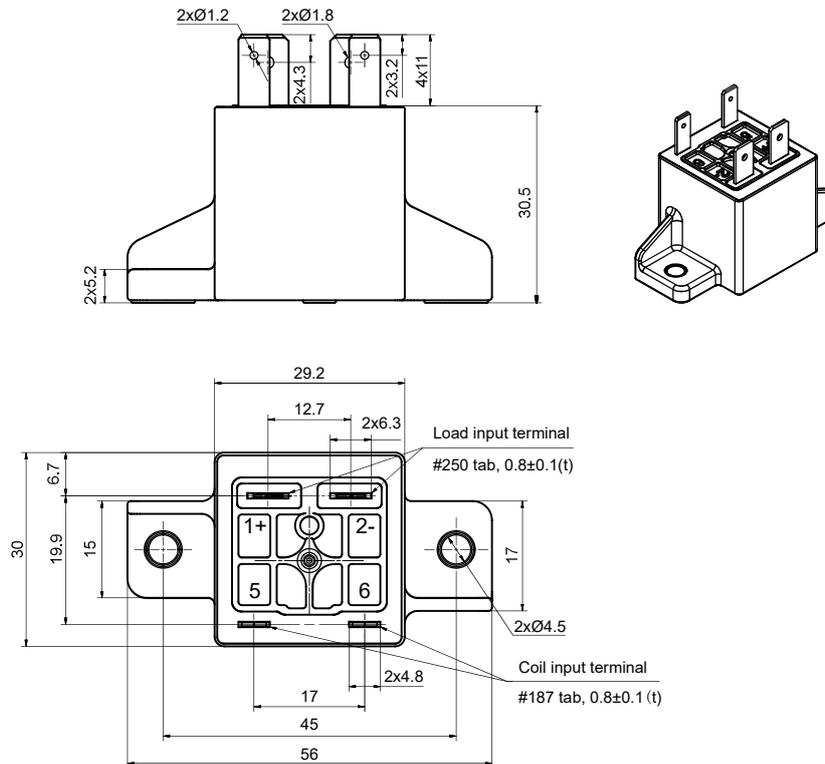
Unit: mm

Outline Dimensions

HFE80V-40/450-XX-HTPAJ



HFE80V-40/450-XX-HTQ2BJ

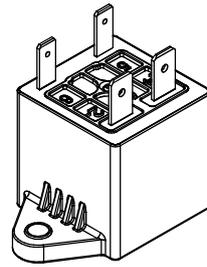
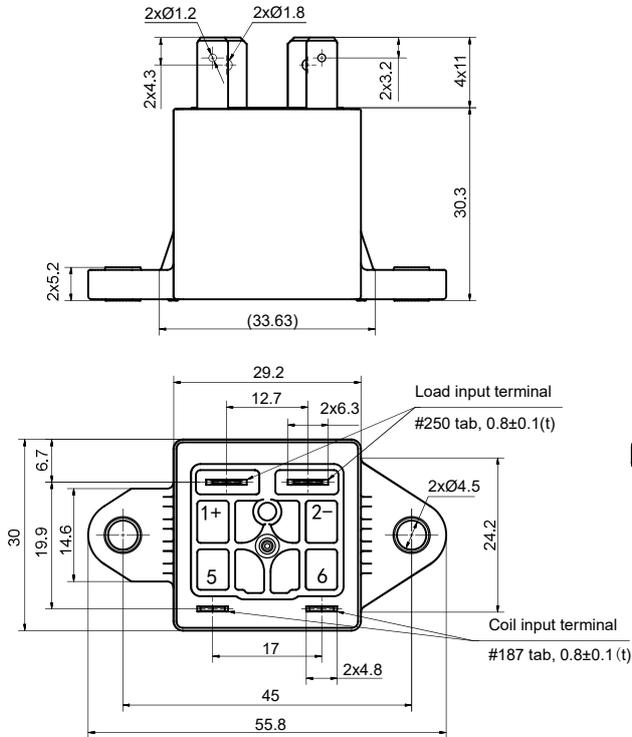


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

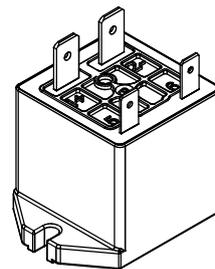
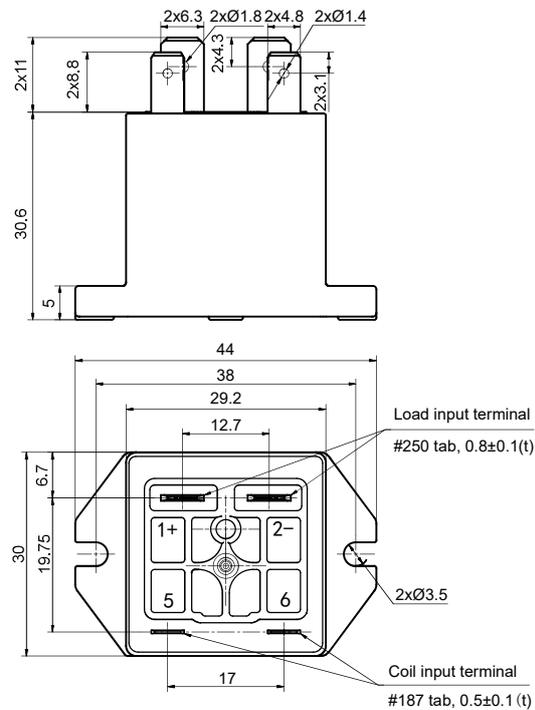
Unit: mm

Outline Dimensions

HFE80V-40/450-XX-HTQ2LJ



HFE80V-40/450-XX-HTQ2J

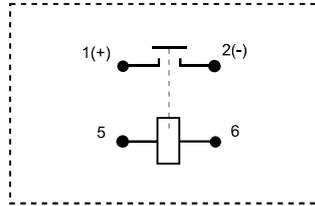


Notes: In case of no tolerance shown in outline dimension: outline dimension $\leq 10\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 10\text{mm}$ and $\leq 50\text{mm}$, tolerance should be $\pm 0.5\text{mm}$; outline dimension $> 50\text{mm}$, tolerance should be $\pm 0.8\text{mm}$.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

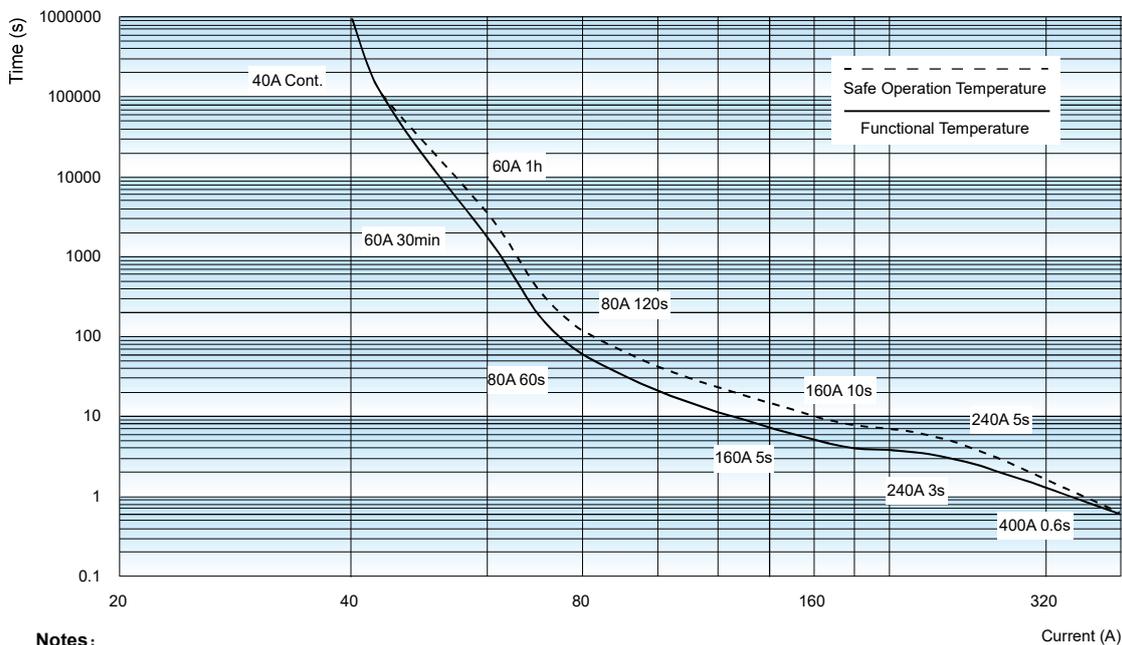
Terminal Arrangement



Notes: The load side has polarity.
No polarity on the coil side.

CHARACTERISTIC CURVES

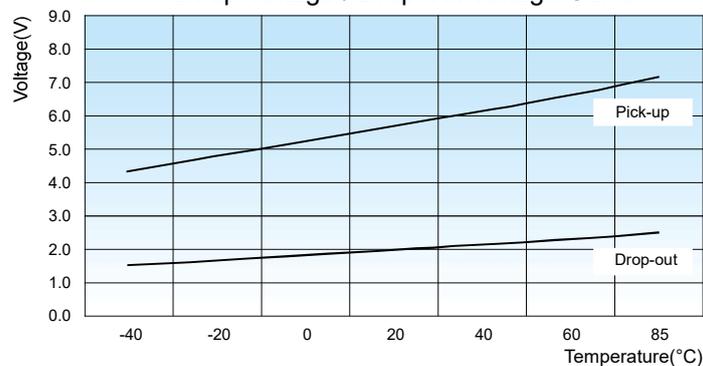
Endurance Capacity Curve



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 limit of safe operation temperature and functional temperature are 180°C and 130°C respectively.
- 3) If the product needs to be operated for a long time, the upper temperature limit should not exceed 130°C.
- 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, and the cross-sectional area of the wire is $\geq 10\text{mm}^2$.

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.

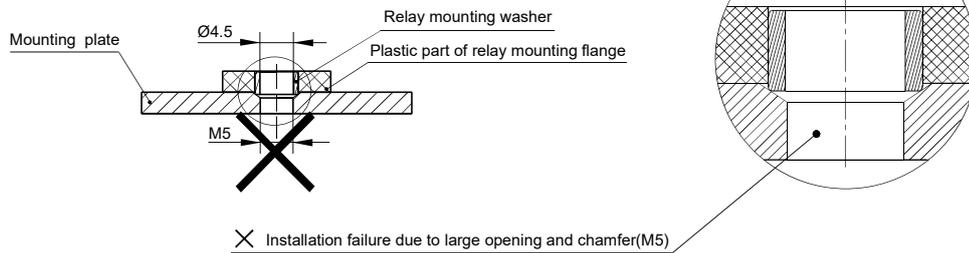
CAUTIONS

1. Please use the collar when installing the relay to prevent looseness. Please use M3 screws for HTQ2J type of relay body with fastening torque within 0.8N.m ~ 1.1N.m. For HTQ2BJ, HTQ2LJ type, please use M4 screws within 2N.m ~ 3N.m. The allowable insertion and drawing force for both load terminal and coil terminal are 49N. Otherwise, it may cause damage.
2. The soldering conditions for PCB: For manual soldering with temperature at $(380\pm 20)^{\circ}\text{C}$ within (3 ~ 5)s, for wave-soldering with temperature at $(265\pm 5)^{\circ}\text{C}$ within (3 ~ 8)s.
3. After welding, water washing is not allowed.
4. 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^2 , otherwise it may cause the abnormal heating of the terminal part.
5. Do not use the relay when it is dropped.
6. Cautions of mounting for relay body:

Unrecommended method

Large opening of mounting plate at customer-side.

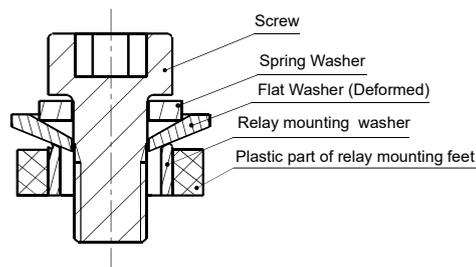
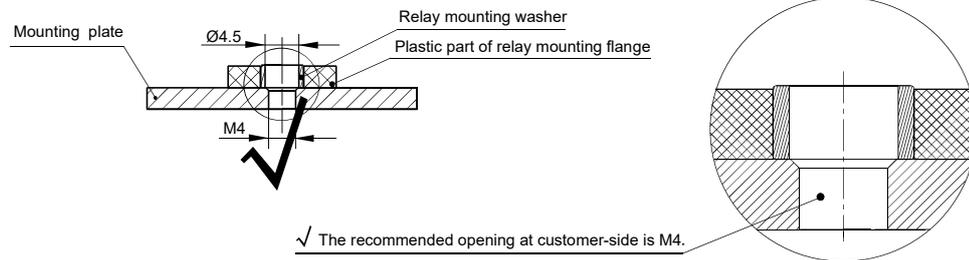
Enlarged Schematic Diagram:



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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