

HFE80V-20C

DIRECT CURRENT RELAY



File No.:E133481



File No.:B0532860049



File No.:N8A0532860052



Features

- Pre-charging relay for new energy vehicles.
- 20A continuous carry current capability at 85°C.
- Safety certification comply with IEC 60664-1.

RoHS compliant

CONTACT DATA

Contact arrangement	1 Form A
Contact resistance ¹⁾	≤5mΩ(at 20A)
Contact rating	20A
Mechanical endurance	2x10 ⁵ ops
Max. switching voltage	750 VDC
Max. breaking current	30A(450 VDC) 5 ops
Max. switching power	13.5kW
Electrical endurance ²⁾	Making:7.5x10 ⁴ ops(450VDC,20A)
	Swithing:1x10 ⁴ ops(450VDC,10A)
	Swithing:3x10 ³ ops(450VDC,20A)
	Making:7.5x10 ⁴ ops(750VDC,10A)
	Swithing:100 ops(750VDC,7.5A)
	Swithing:3x10 ³ ops(750VDC,5A)
	Swithing:6x10 ³ ops(600VDC,2A)
	Swithing:2x10 ³ ops(600VDC,10A)
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 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) Load condition for UL certified.

4) Ambient temperature is at 85°C and cross section area of wire is 4mm² 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, PCB terminal
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: 20A 450VDC 6000ops Resistive Swithing: 10A 600VDC 2000ops
TÜV	DC-1: 20A 350VDC 6000ops 40°C Resistive Swithing: 20A 450VDC 6000ops 40°C Resistive Swithing: 10A 600VDC 2000opsops 40°C
CE	DC-1: 20A 350VDC 6000ops 40°C Resistive Swithing: 20A 450VDC 6000ops 40°C Resistive Swithing: 10A 600VDC 2000ops 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.



HONGFA RELAY

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

2024 Rev.1.00

ORDERING INFORMATION

	HFE80	V	-20	C/	450-	12-	H	T	Q	2	A	J	(XXX)
Type													
Application	V: Vehicle												
Contact rating	20: 20A												
Series breakdown	C: C series												
Load voltage	450: 450 VDC												
Coil voltage	12: 12 VDC 24: 24 VDC 48: 48 VDC												
Contact arrangement	H: 1 Form A												
Contact material	T: AgSnO ₂												
Coil terminal structure	Q: QC terminal P: PCB terminal												
Load terminal structure	2: QC terminal Nil: PCB terminal												
Shell structure	Nil: Standard mounting boss A: A type mounting flange B: B type mounting flange L: L type mounting flange												
Base structure	J: Layout base without mounting boss												
Special code ¹⁾	XXX: Customer special requirement												

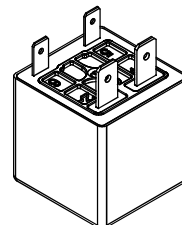
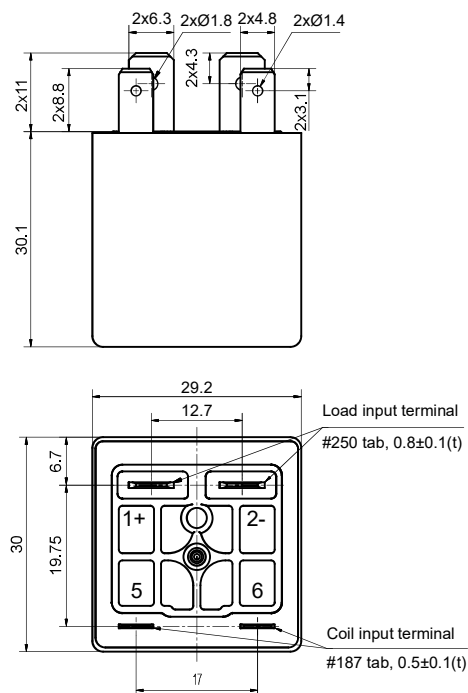
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

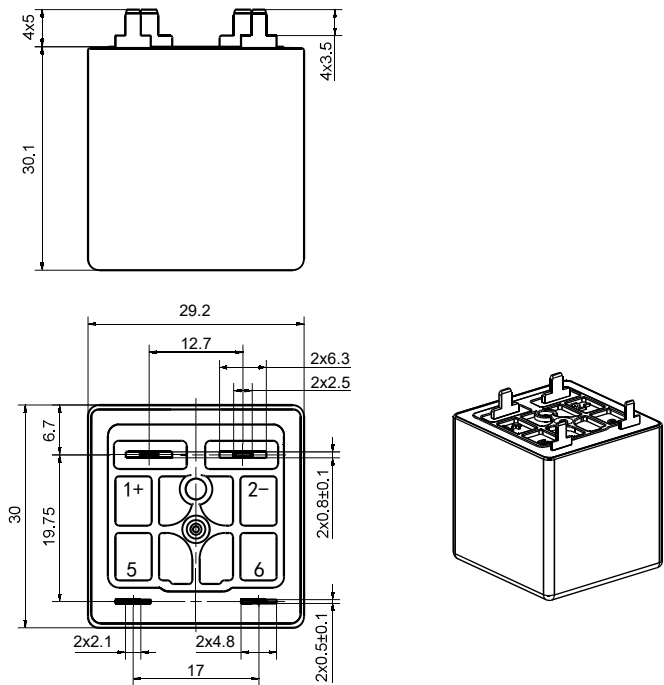
Outline Dimensions

HFE80V-20C/450-XX-HTQ2AJ

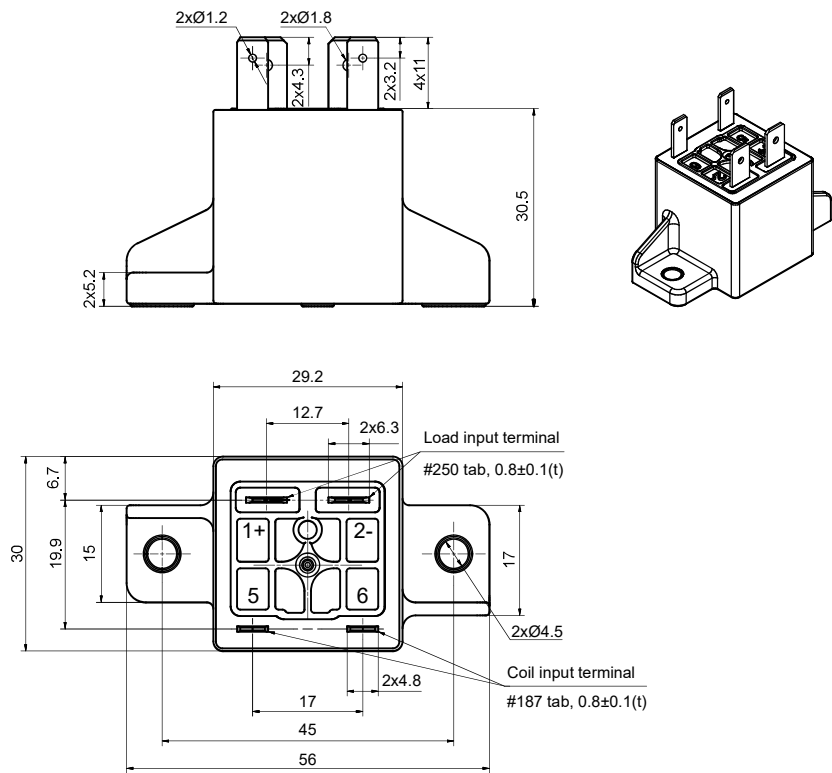


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT
Unit: mm

Outline Dimensions
HFE80V-20C/450-XX-HTPAJ



HFE80V-20C/450-XX-HTQ2BJ

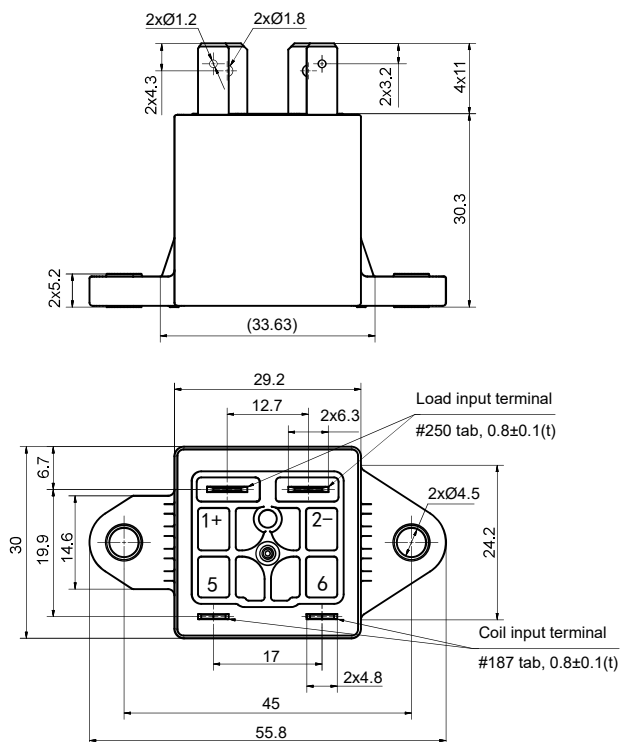


OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

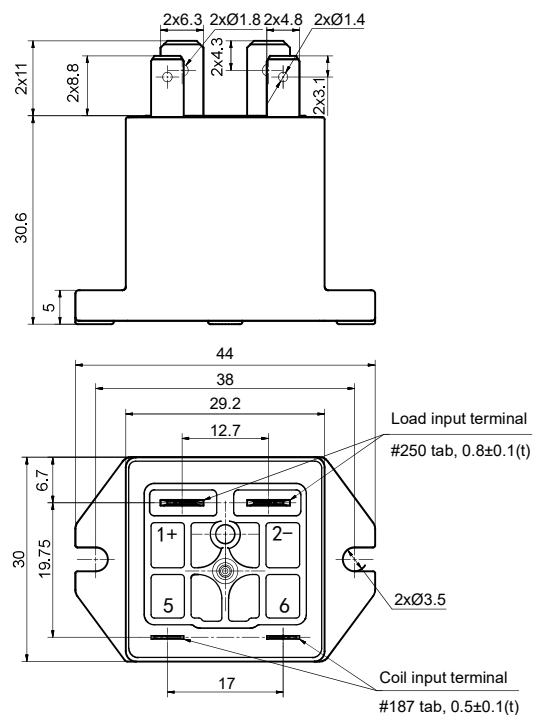
Unit: mm

Outline Dimensions

HFE80V-20C/450-XX-HTQ2LJ



HFE80V-20C/450-XX-HTQ2J

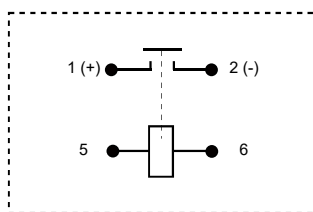


Notes: In case of no tolerance shown in outline dimension: outline dimension ≤ 10mm, tolerance should be ±0.3mm; outline dimension > 10mm and ≤ 50mm, tolerance should be ±0.5mm; outline dimension > 50mm, tolerance should be ±0.8mm.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

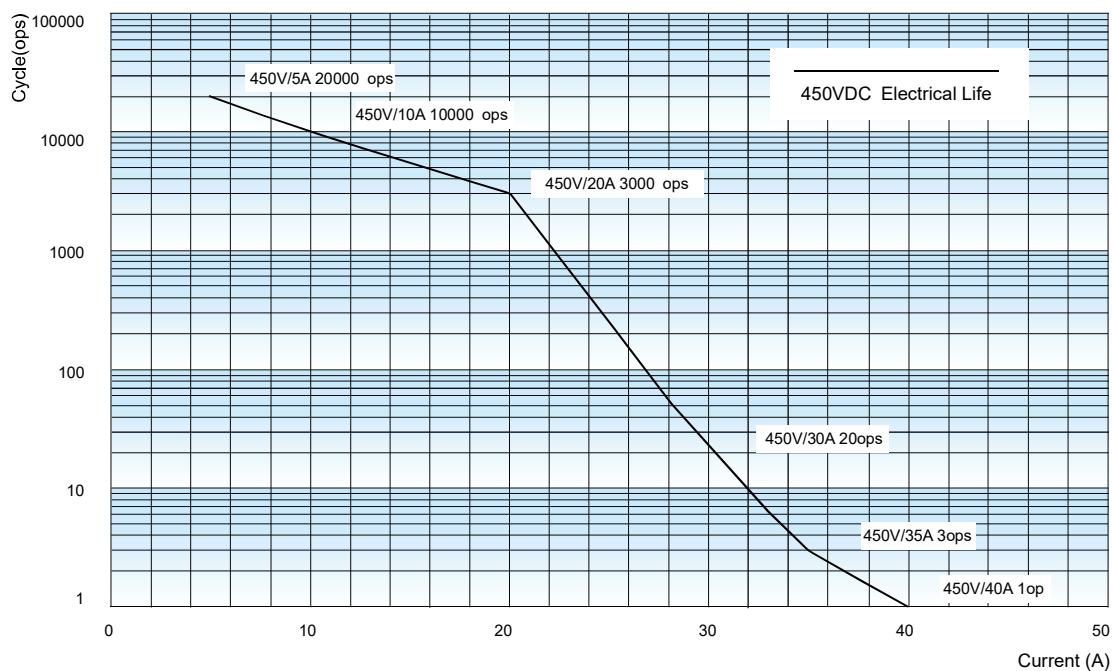
Terminal Arrangement



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

CHARACTERISTIC CURVES

Breaking Capability Curve (Resistive Load)

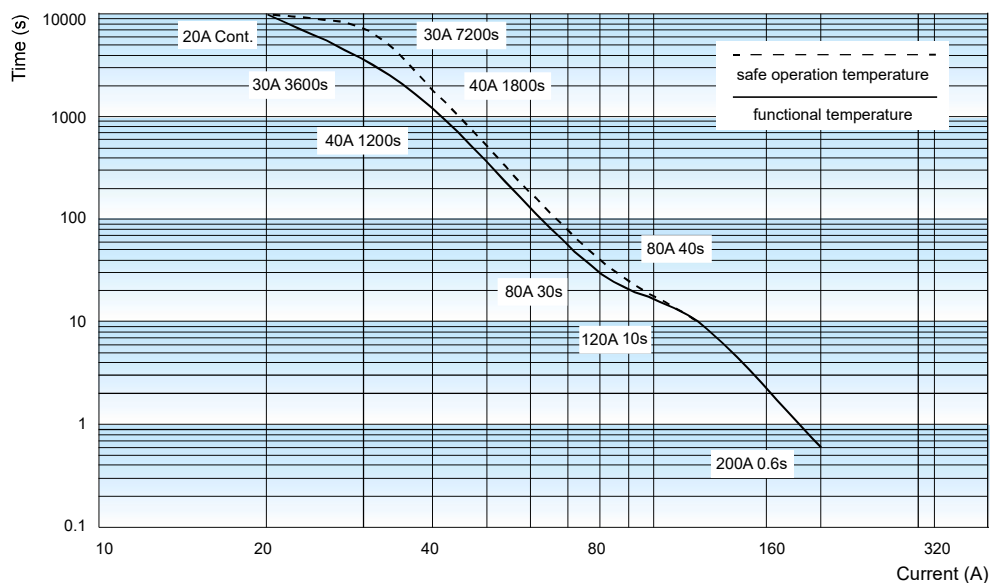


Notes:

- 1) The data is for reference only.
- 2) Cable cross section: $\geq 4\text{mm}^2$.
- 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.

CHARACTERISTIC CURVES

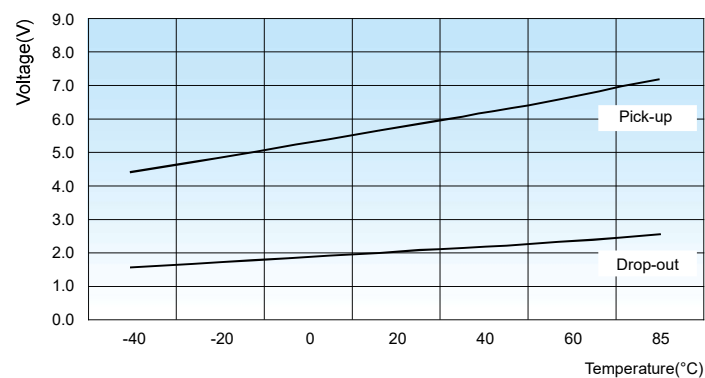
Endurance Capacity Curve



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, 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.

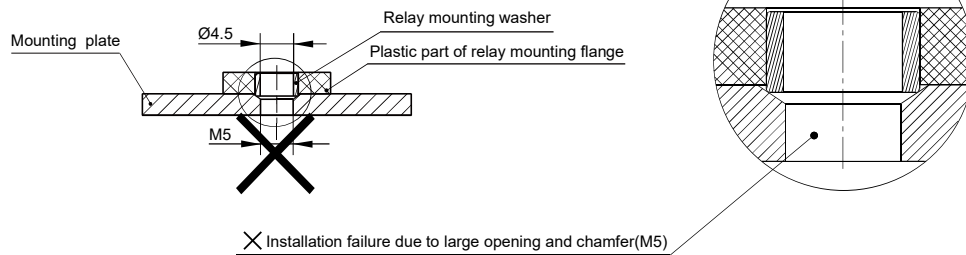
CAUTIONS

1. 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 4mm^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.

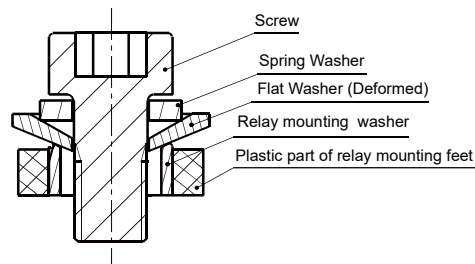
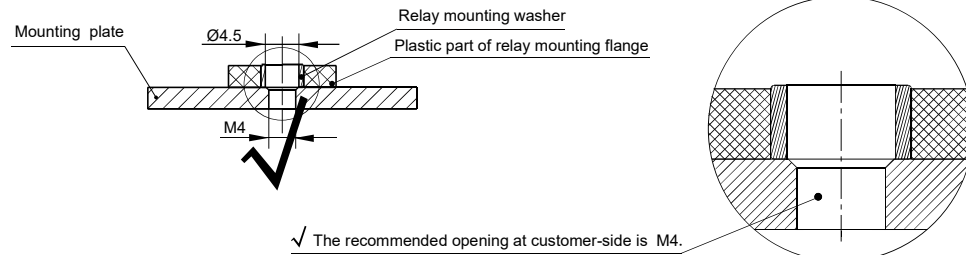
Enlarged Schematic Diagram:



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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