

HFE80V-20D

DIRECT CURRENT RELAY



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(at 2A) |
| Max. breaking current | 20A(450 VDC) 5 ops |
| Max. switching power | 9kW |
| Electrical endurance 2) | Making:7.5×10 ⁴ ops(450 VDC 20A) |
| | Switching:1000 ops(450 VDC 15A) |
| Current carrying 3) capacity | 15A:Cont. |
| | 20A:1h |
| | 30A:20min |
| | 60A:10s |
| | 90A:3s |
| | 150A: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 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 | 1.8 |
| 24 | ≤18 | ≥2 | 1.8 |

CHARACTERISTICS

| | | |
|-------------------------------|-------------------------|---------------------------------|
| Insulation resistance | | 1000MΩ(500 VDC) |
| Dielectric strength | Between coil & contacts | 3000 VAC 1min |
| | Between open contacts | 2500 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 |
| Unit weight | | Approx.45g |
| Outline Dimensions | | 29.0 x 25.0 x 28.9mm |

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



HONGFA RELAY

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

2024 Rev.1.00

ORDERING INFORMATION

| | | | | | | | | | | | | | |
|----------------------------------|---|----------|------------|-----------|-------------|------------|----------|-----------|----------|----------|----------|----------|--------------|
| | HFE80 | V | -20 | D/ | 450- | 12- | H | T- | Q | 2 | D | J | (XXX) |
| Type | | | | | | | | | | | | | |
| Application | V: Vehicle | | | | | | | | | | | | |
| Contact rating | 20: 20A | | | | | | | | | | | | |
| Series breakdown | D: D series | | | | | | | | | | | | |
| Load voltage | 450: 450 VDC | | | | | | | | | | | | |
| Coil voltage | 12: 12 VDC 24: 24 VDC | | | | | | | | | | | | |
| Contact arrangement | H: 1 Form A | | | | | | | | | | | | |
| Contact material | T: AgSnO ₂ | | | | | | | | | | | | |
| Coil terminal structure | Q: QC terminal | | | | | | | | | | | | |
| Load terminal structure | 2: QC terminal | | | | | | | | | | | | |
| Shell structure | A: Without mounting flange D: D type mounting flange | | | | | | | | | | | | |
| Base structure | J: Layout base without mounting boss | | | | | | | | | | | | |
| Special code¹⁾ | XXX: Customer special requirement Nil: Standard | | | | | | | | | | | | |

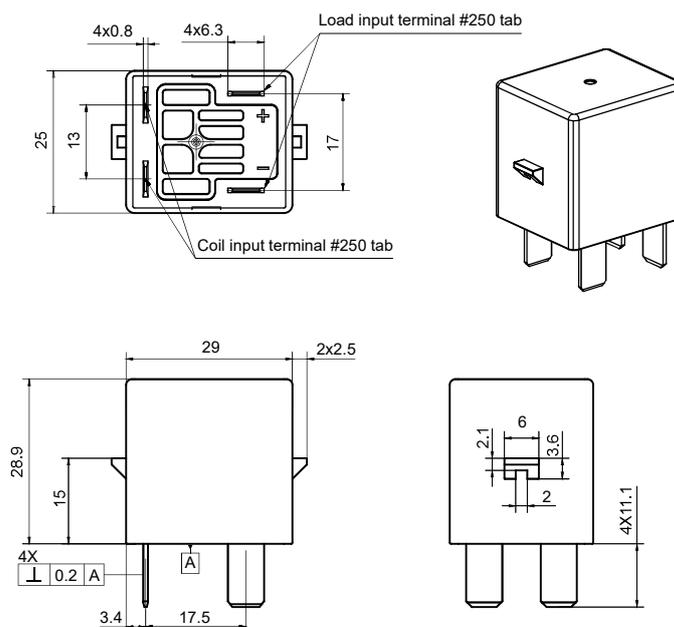
Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

Outline Dimensions

HFE80V-20D/450-XX-HT-Q2AJ



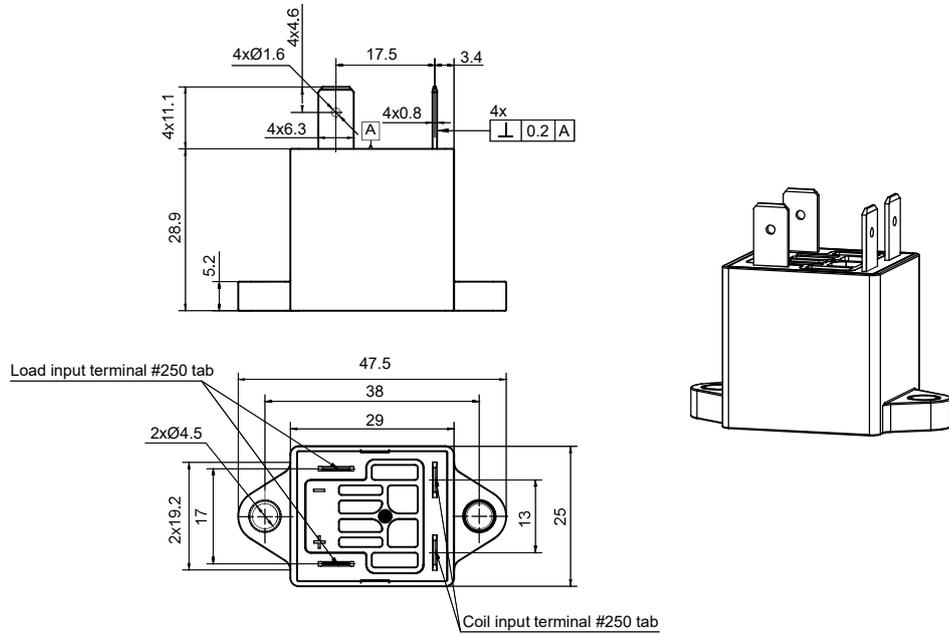
Notes: Outline dimension: outline dimension ≤ 10 mm, tolerance should be ± 0.3 mm; outline dimension > 10 mm and ≤ 50 mm, tolerance should be ± 0.5 mm; outline dimension > 50 mm, tolerance should be ± 0.8 mm.

OUTLINE DIMENSIONS, MOUNTING HOLE, TERMINAL ARRANGEMENT

Unit: mm

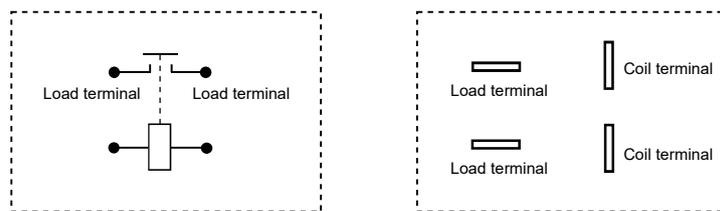
Outline Dimensions

HFE80V-20D/450-XX-HT-Q2DJ



Notes: Outline dimension: outline dimension ≤ 10 mm, tolerance should be ± 0.3 mm; outline dimension > 10 mm and ≤ 50 mm, tolerance should be ± 0.5 mm; outline dimension > 50 mm, tolerance should be ± 0.8 mm.

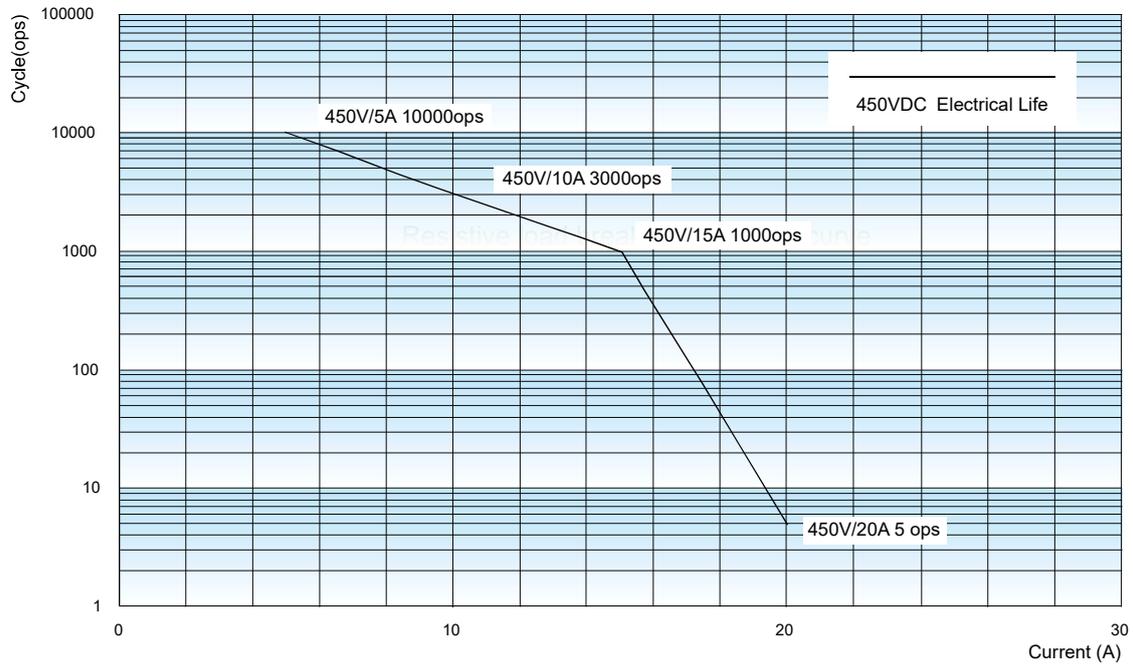
Terminal Arrangement



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

CHARACTERISTIC CURVES

Breaking Capability Curve (Resistive Load)

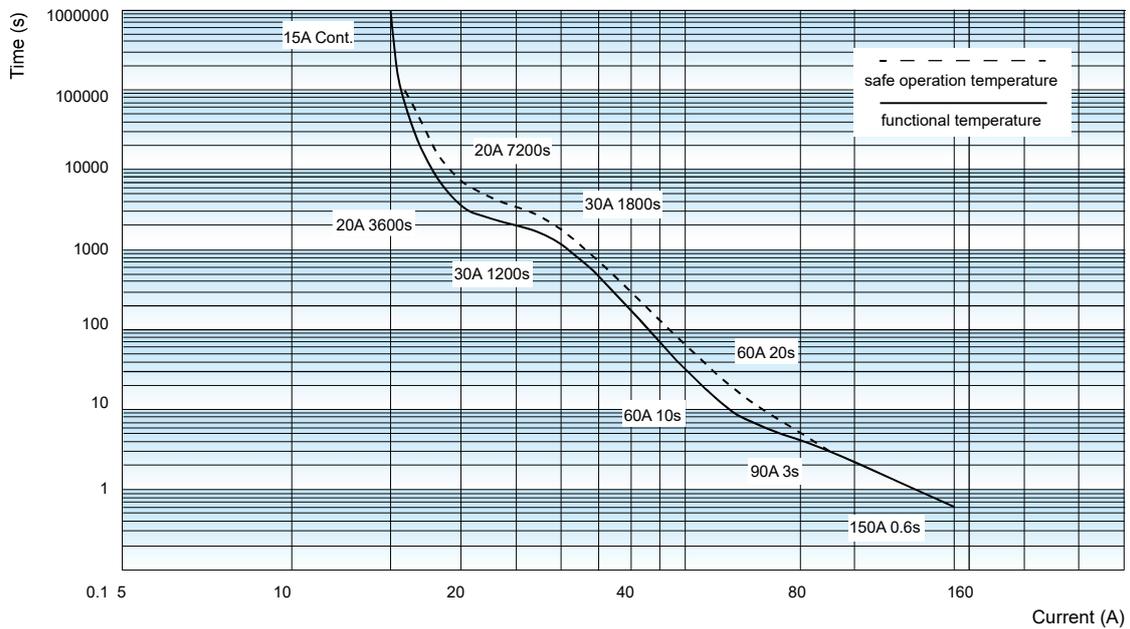


Notes:

- 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

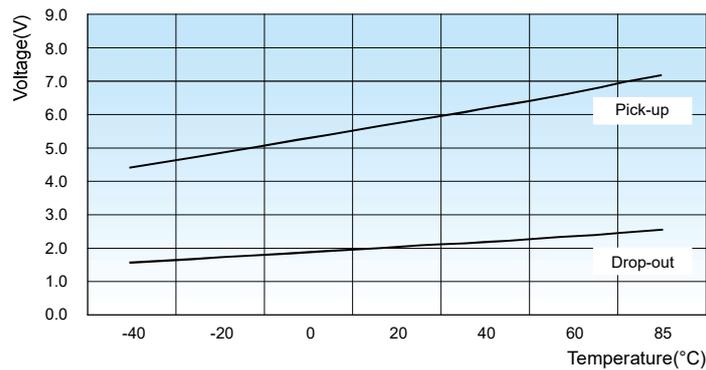
Endurance Capacity Curve



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 $\geq 4\text{mm}^2$.
- 6) If any breaking beyond the definition in the specification, it may cause fire or explosion.

Pick-up Voltage / Drop-out Voltage Curve



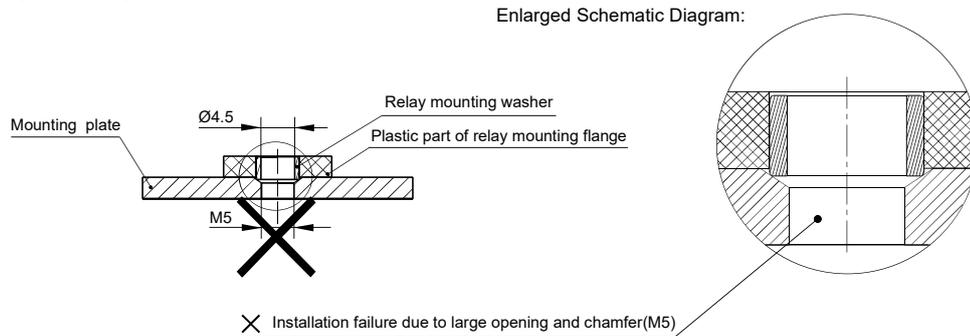
- Notes:
- 1) The above values are sampling values for reference only;
 - 2) The rated voltage of the sample coil is 12VDC;
 - 3) The sampling ambient temperature is -40°C ~ 85°C.

CAUTIONS

1. In case of loosening, please use M4 screw for HT-Q2DJ terminal mounting, and the screw tightening torque shall be within 2N.m to 3N.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. 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 4mm², otherwise it may cause the abnormal heating of the terminal part.
3. Do not use the relay when it is dropped.
4. Cautions of mounting for relay body:

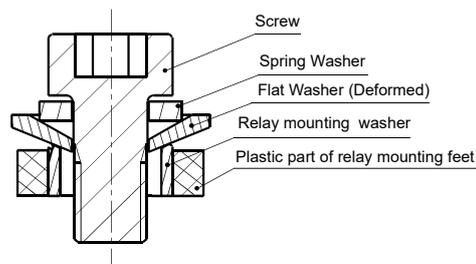
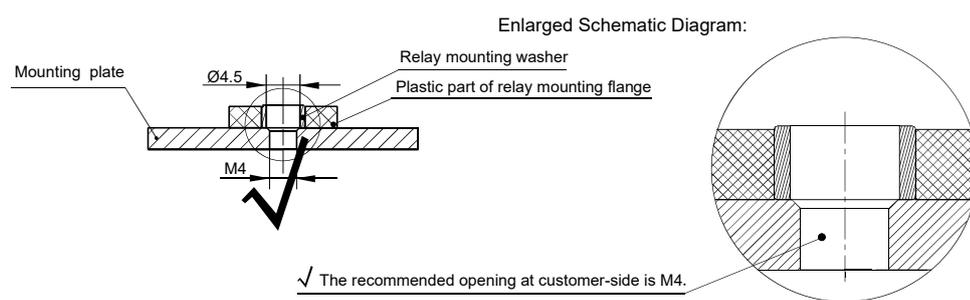
Unrecommended method

Large opening of mounting plate at customer-side.



Recommended method

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



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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