Fuses for Semiconductor Protection

CJE SERIES FUSES

- Fuses for Semiconductor Protection

IEC60269-4/EN60269-4 standard

Size	Rated Voltage	Operating Class	Rated Breaking Capacity
63	1000Vdc	EV	1000V@25kA

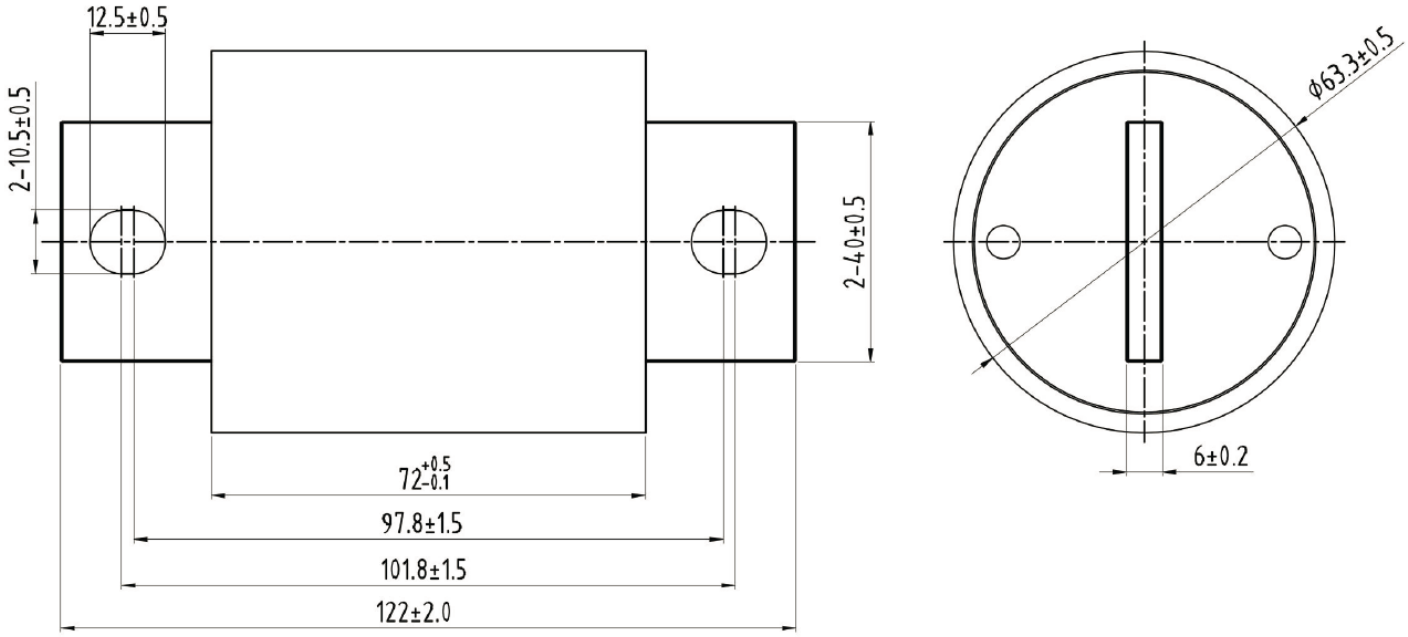
- Product Model

CJE60-(450-800)

Description

- Safe and reliable connecting way of bolt-on.
- Excellent electric performance, quick protection for EV system, cut down the fault current of the system
- Product design conforms to IEC60269 EN60269
- Product Process Conforms to IATF16949
- Product and Package conform to ROHS

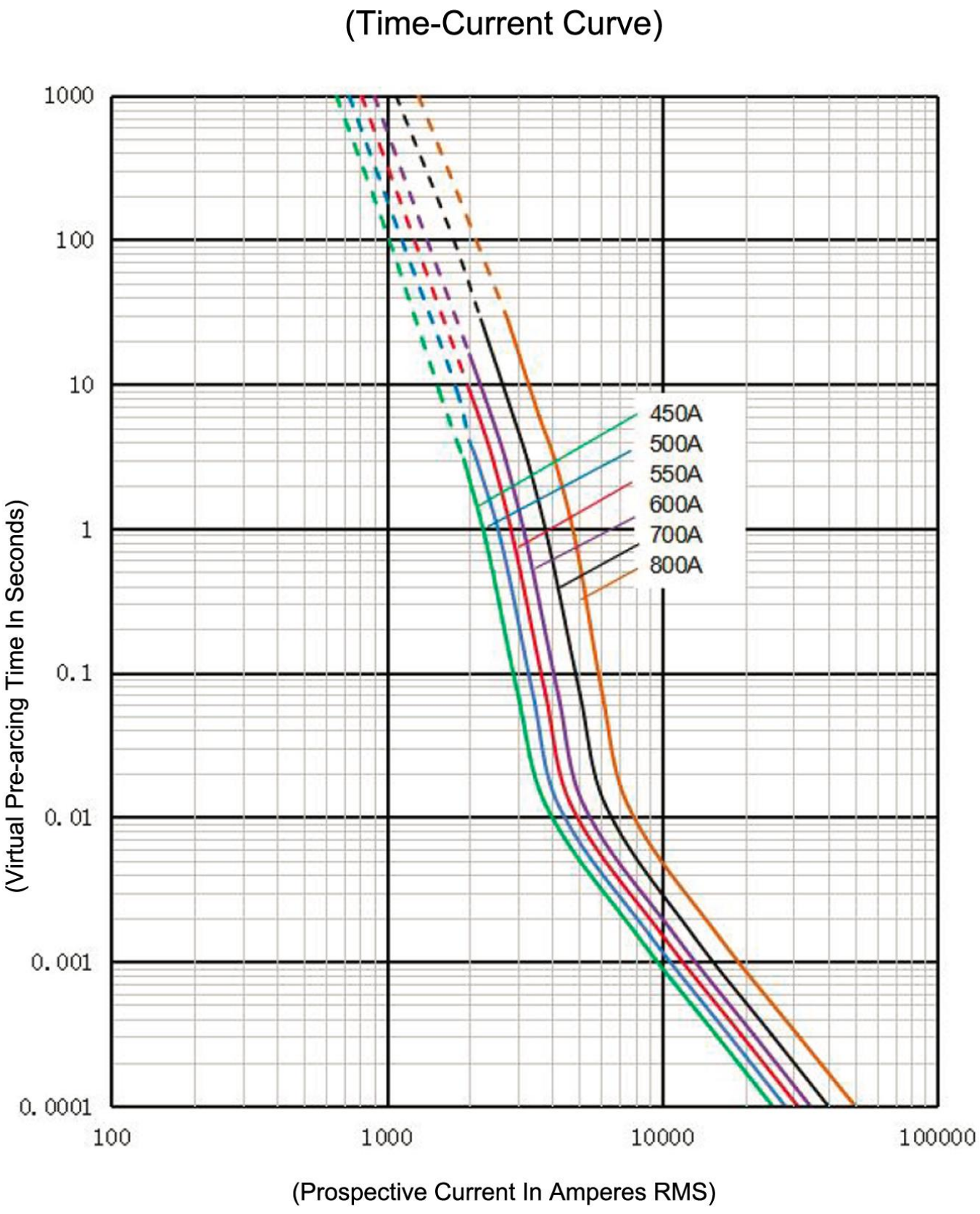
Dimensions



Selection and ordering data

Rated current【A】	Rated voltage【V】	Part Number	Power Loss【W】	Pre-arcing I2t【A2S】	Total@1000V I2t【A2S】	Weight【Kg/1】	Pack
450	1000Vdc	CJE60-450	155	65000	185000	1	1
500	1000Vdc	CJE60-500	165	82000	226000	1	1
550	1000Vdc	CJE60-550	170	110000	298000	1	1
600	1000Vdc	CJE60-600	175	135800	395000	1	1
700	1000Vdc	CJE60-700	205	175500	485000	1	1
800	1000Vdc	CJE60-800	225	305000	891000	1	1

- Time- Current Characteristics Curve



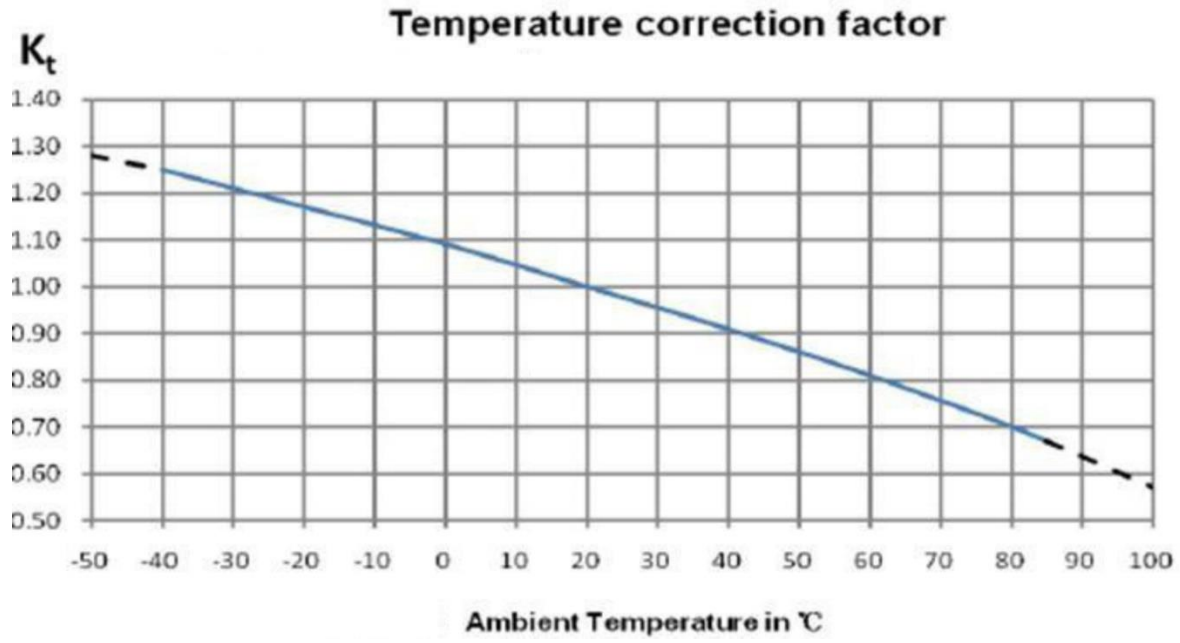
Selection For The Fuse Amperage

Formula for rated amperage of the fuse

$$I_n \geq \frac{I_{RMS} \times G}{K_t \times K_e \times K_v \times K_f \times K_a \times K_b}$$

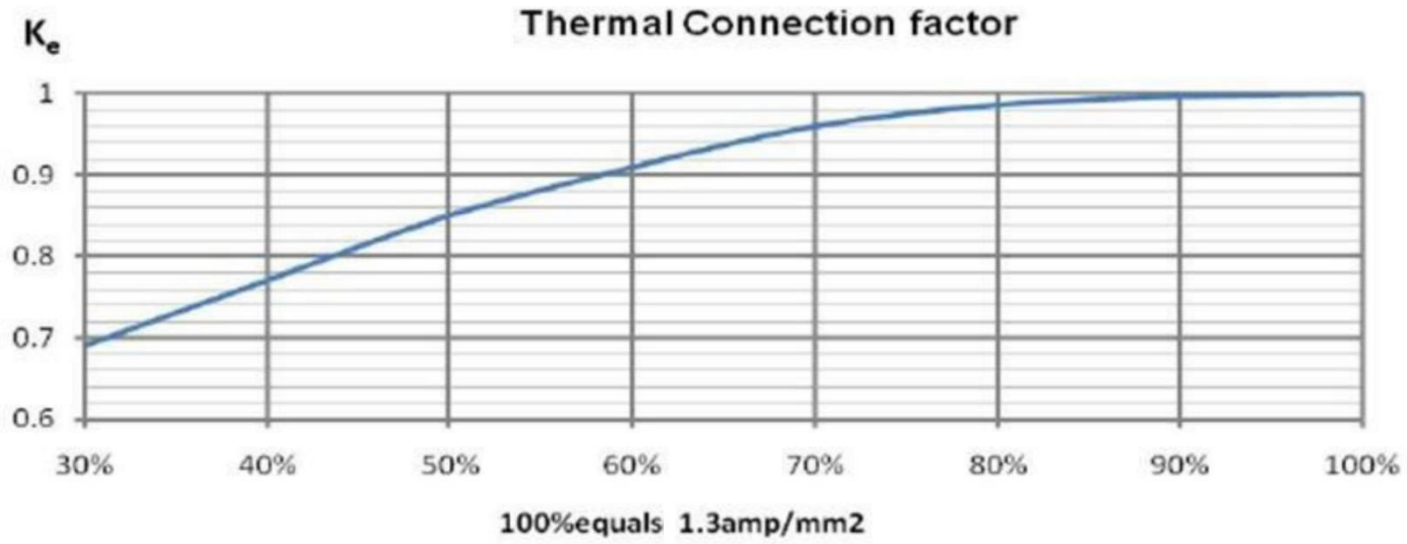
Temperature Correction Factor K_t

Fuses under different ambient temperatures will affect the thermal radiation effect of the fuse's heat. The correction factor Kt values for different ambient temperatures are shown in the following curves:



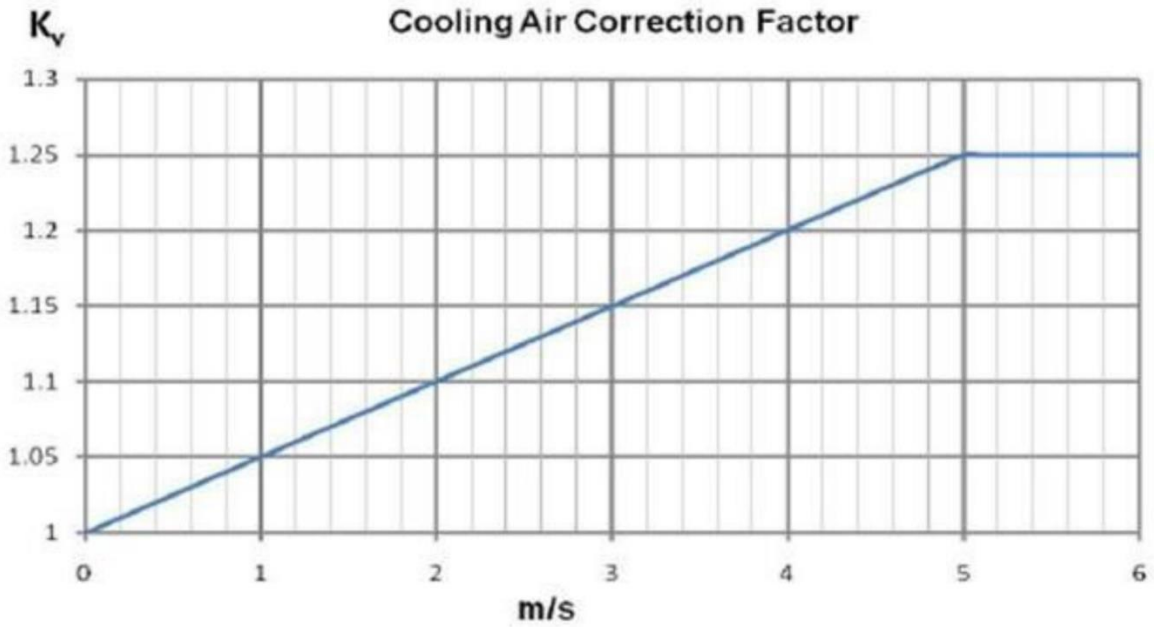
Thermal Connection Correction Factor K_e

When fuses are installed, the specifications of the copper bars or wires (wire harnesses) directly connected to the fuses will affect the heat conduction effect of the fuses. For different connection copper bars (or wires) selected, the thermal connection correction factor Ke value is shown in the following curve:



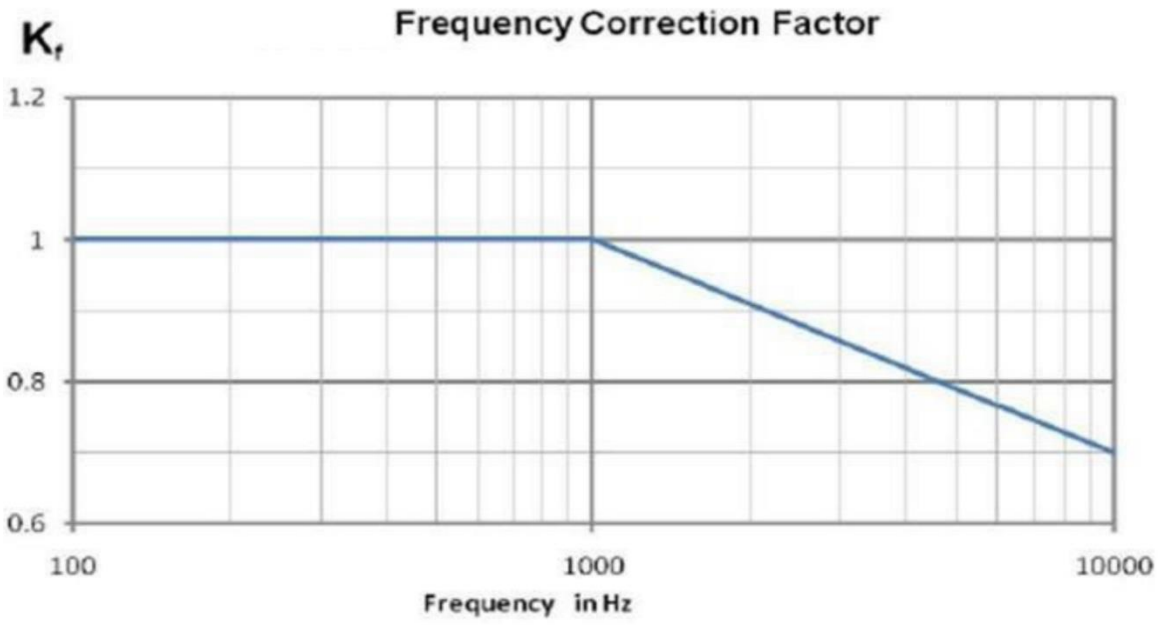
Forced Cooling Correction Factor K_v

For fuses, forcibly increasing air cooling (or liquid cooling) will enhance the thermal convection effect of the fuse's heat, which can increase the fuse's flow rate. The forced cooling correction factor Kv value is shown in the following curve:



Frequency Correction Factor K_f

When there are high-frequency harmonics in the power grid and the frequency reaches above 1000Hz, due to the influence of high-frequency distortion on the resistance, the capacity of the fuse needs to be reduced. The coefficients are as follows:



Altitude Correction Factor K_a

- The normal operating altitude for the fuse is 2000 meters. When the altitude increases, the air becomes thinner, which adversely affects the occurrence of thermal radiation. The impact on heat dissipation can be considered as a derating of 3% to 5% for every 1000 meters of elevation. At the same time, due to geographical conditions, the ambient temperature typically decreases by approximately 6°C for every 1000-meter increase in altitude. To avoid double-counting with the temperature correction factor (Ke), this effect can be considered as offsetting.
- For the fuse used in enclosed environments, if the ambient air temperature inside the sealed enclosure does not significantly decrease with increasing altitude, and can still reach above 40°C, then derating the rated current is required. The rated current should be derated by 3% to 5% for every 1000 meters increase in altitude.
- Regarding the impact of high altitude on insulation strength, since the fuse itself is a conductor during normal operation, only the insulation level of the live parts of the fuse relative to the casing (ground) needs to be considered. Therefore, the impact of high altitude on this aspect can be integrated as part of the overall system's electrical components and does not need to be treated separately for the fuse.

Installation Environment Correction Factor K_b

Fuses installed in open-type enclosures: G = 1
Fuses installed in sealed enclosures: G = 0.9–0.95
Fuses installed in MSD with bolt fastening: G = 0.8
Fuses installed in MSD with plug-in connection: G = 0.7

Load Constant G

Different types of load conditions can generate varying levels of inrush current, and the following considerations need to be taken into account:

Principle:
Purely resistive load, no inrush current,
G = 1. Resistive load with peak current:
G = 1.1–1.2

Highly capacitive load with high peak inrush current: G = 1.5–1.7

Operating Condition

No	Item	Requirements
1	Operating Voltage	≤1000Vdc
2	Operating Environment	
	Normal Applied Temperatures	-5℃～40℃
	Allowed Operation Temperature	-40℃～125℃
	Relative Humidity	5%～95%
3	Altitude	
	Normal Altitude Location	≤2000m
	Allowed Mounted Altitude	≤5500m
	Atmospheric Pressure	61.6kPa～106.2kPa
	Storage Environment	

4	Normal Storage Condition	-5℃～85℃ RH＜75%
	Allowed Storage Condition	-40℃～120℃
5	Install Torque	M10 22±1N.m
6	Pollution level	III
Note:	If exceeding the normal usage conditions, some parameters may need to be corrected within the allowed usage conditions, please contact with Component Basics.	

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