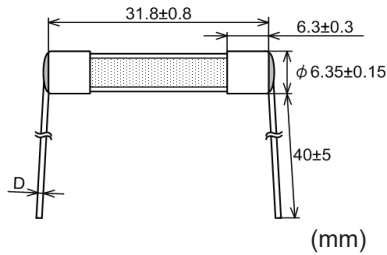




Dimensions and construction:



| | |
|-----------------|-------|
| Rated current | D |
| 10 A: | φ 1.0 |
| Over 10 A–30 A: | φ 1.2 |

| | |
|-----------------------------|-------------------------------------|
| Tube: | Lead-free glass |
| End-cap: | Nickel plated brass |
| Lead wire: | Tin plated copper |
| Solder: | Pb90-Sn* |
| Adhesive: | Epoxy resin |
| Arc extinguishing material: | Confidential |
| Marking: | SOC [rated current] AC500V SHV33 |

* High melting temperature type solders, containing 85 wt% or more lead, that are exempted from the EU RoHS Directive for hazardous substances are used.

Electrical characteristics:

| Rated voltage | Certification | Rated current (I_N) | Rated breaking current | | Temperature rise | Current carrying capacity | Overload operation |
|---------------|---------------|-------------------------|------------------------|-------------------|----------------------------|---|---------------------------|
| AC 500 V | | 10 A–30 A | 500 A | Resistive circuit | 150 K or less at $1.0 I_N$ | Until temperature stabilization occurs at $1.0 I_N$ | Within 2 min at $2.0 I_N$ |

Typical cold resistance:

| Rated current | Cold resistance | Rated current | Cold resistance |
|---------------|-----------------|---------------|-----------------|
| 10 A | 13 mΩ | 20 A | 4.5 mΩ |
| 12 A | 10 mΩ | 30 A | 2.4 mΩ |
| 15 A | 6.4 mΩ | | |

Agency approval information:

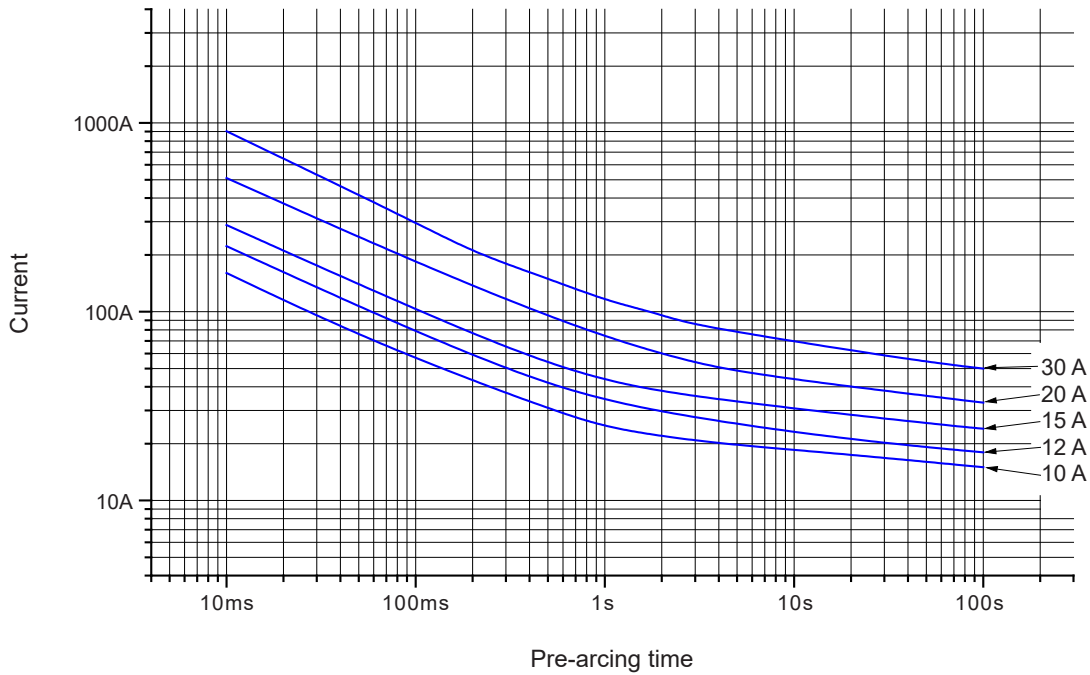
| Agency/Standard | Ratings covered |
|--------------------------------------|-----------------|
| UL248-1, UL248-14 C-UL US Recognized | 10 A–30 A |

Note: These values are for reference only and are not intended to infer any guaranteed values.

Pre-arcing I-t characteristic:

These I-t curve plots are of the average values of the measurements obtained under the conditions specified by our company. These data are for reference only and are not intended to infer any guaranteed values. Characteristics of the fuse may vary depending on the usage conditions. Always test the fuse under the actual circuit conditions.

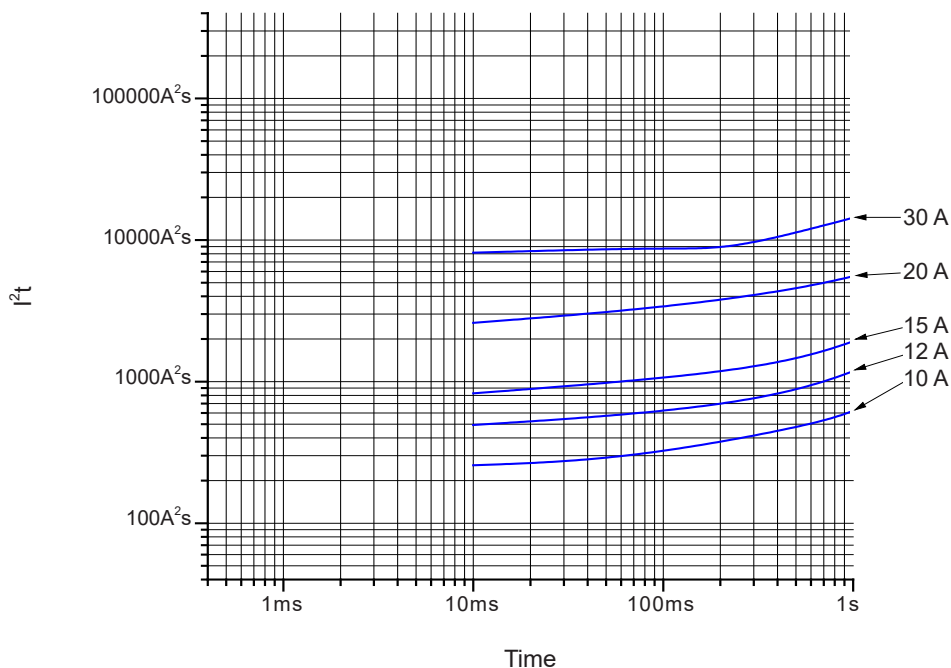
Control No.: 150209



Pre-arcing I²t-t characteristic:

These I²t-t curve plots are of the average values of the measurements obtained under the conditions specified by our company. These data are for reference only and are not intended to infer any guaranteed values. Characteristics of the fuse may vary depending on the usage conditions. Always test the fuse under the actual circuit conditions.

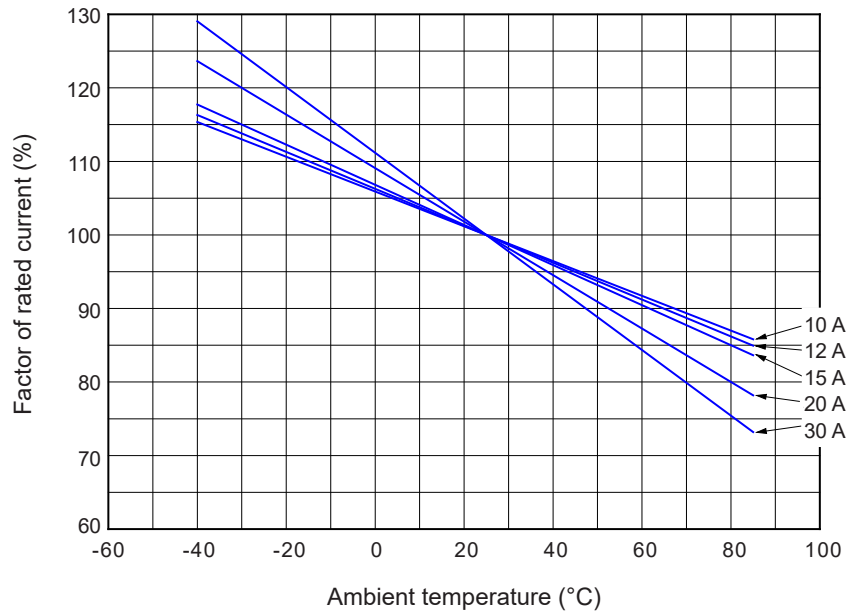
Control No.: 150209



Influence of ambient temperature-the re-rating of the rated current:

This chart is a plot of the measurements obtained at the ambient temperatures of $-40\text{ }^{\circ}\text{C}$, $25\text{ }^{\circ}\text{C}$, and $85\text{ }^{\circ}\text{C}$ under conditions specified by our company. The conditions of your actual application are not considered in this chart. These data are for reference purposes only and are not intended to infer any guaranteed values. Fuse characteristics may vary depending on the usage conditions. Always test the fuse under the actual circuit conditions.

Control No.: 170401



Mounting:

Wave soldering:

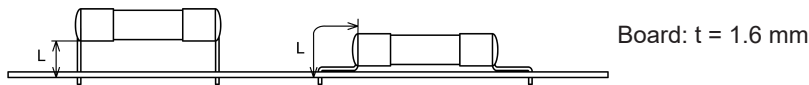
The soldering conditions stated below may be influenced by the material/shape and dimensions of the board, size of the copper foil, and/or heat capacity of the respective components on the board, besides such factors as temperature/duration of preheating, material of solder, temperature of the solder bath, and/or the duration of dipping.

- * Length of the lead between the fuse body and the soldered surface of the board: $L = 8$ mm or more
- * Pre-heating: $80\text{ }^{\circ}\text{C}$ – $140\text{ }^{\circ}\text{C}$, 30 s–60 s
- * Temperature of molten solder: $260\text{ }^{\circ}\text{C}$ or less
- * Duration: 7 s or less

Hand soldering with soldering iron:

Depending on the components to which the fuse is attached (e.g., copper foil on the board) and/or heat capacity of the soldering iron tip, the soldering conditions may vary from those specified below.

- * Length of the lead between the fuse body and the soldered surface of the board: $L = 5$ mm or more
- * Soldering iron tip temp.: $380\text{ }^{\circ}\text{C}$
- * Duration: 3 s or less



- * Care must be taken not to apply any stress such as bending, twisting, rotating, or tension to the lead wire and the end-cap during heating of the fuse body by soldering and while it is kept at a high temperature of $40\text{ }^{\circ}\text{C}$ or more.
- * Do not apply any stress to the lead wire while the fuse body is being held, otherwise it may cause degradation of the end-cap portion. The part of the lead wire closest to the fuse should be held firmly when the wire is formed.



Specifications described above are examples when facilities in our company are used. Please make sufficient evaluations under the actual conditions in your company because the conditions may vary depending on facilities, solder type, solder quantity, board size, and board material.

Ordering specifications:

SOC product name: SHV33 [rated current]

Contact information:

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Safety Precautions for Fuse Selection and Use: **WARNING**

Read and follow these precautions before selecting and using fuses and protectors (hereafter “fuses”). Failure to properly select, install, and use fuses can result in not only property damage, but also serious injury or death.

Use fuses within their specification requirements. Exposing fuses to conditions that exceed or are outside specifications can lead to, for example, non-operation, nuisance operations, disconnection of the fuse-element, or explosions, and may cause injuries and/or property damage. Please note that breaking conditions for currents below the minimum breaking current and which exceed the rated breaking current are outside the range of the specification conditions. Please use this product after ensuring that the actual breaking conditions in the application are not included in this range.

Fuse performance can vary greatly due to the actual conditions fuses are operated under (ambient temperature, pulse currents, heat shock, mechanical stress, etc.). Please consider all conditions a fuse will be exposed to when making a selection. Depending on the conditions, non-operation, nuisance operations, disconnection of the fuse-element, explosions, or other accidents may occur, and these may cause injuries and/or property damage.

The breaking ability of a fuse will differ between AC and DC circuits. Use fuses with AC voltage ratings in AC circuits and fuses with DC voltage ratings in DC circuits. When using fuses with both AC and DC voltage ratings, attention should be given to any differences in breaking ability. A fuse’s breaking ability indicates the fuse’s ability in an AC or DC circuit. For example, if a fuse with an AC voltage rating is used in a DC circuit, the fuse’s breaking ability will decrease, and injuries and/or property damage may occur.

Check if the circuit voltage is large enough for the fuse’s operation. When the circuit voltage is too small, the decrease in current caused by an increase in the fuse’s resistance may prevent the fuse from operating even for abnormal currents.

Do not use fuses in environments with high humidity or corrosive or flammable gases. Doing so may result in nuisance operations, disconnection of the fuse-element, or an explosion.

Do not use ultrasonic waves to clean fuses. Ultrasonic cleaning may cause disconnection of the fuse-element.

Do not form a fuse’s leads when the fuse is at a temperature of 40 °C or greater. Doing so may result in disconnection of the fuse-element because of the applied stress.

Do not apply coating or potting to any fuses except sealed fuses, such as the MCFA, or their equivalents, including the MCF3. Doing so may cause disconnection of the fuse-element or a change in the fuse’s characteristics. Please be aware that even sealed fuses or the equivalent are not hermetically sealed, and therefore make sure to confirm no coating or potting material has penetrated the interior or any other location of the fuse before use. As coating or potting a fuse will change its characteristics, make sure to confirm that a coated or potted fuse still satisfies all requirements under actual usage conditions.

Avoid applying excessive force when inserting a fuse into a fuse holder. Doing so may result in the fuse cracking or in contact failure, and this may significantly reduce its ability to work properly or may shorten its life.

When a fuse is used in equipment that directly affects human life or that requires a high degree of reliability, more closely examine and evaluate the fuse in actual circuit conditions than is necessary for use in other general electronic equipment.

Do not touch fuses when they are carrying a current. Doing so may result in electrocution or serious burns.

Fuses obtained as samples should only be used for evaluation. Do not reuse fuses, but instead properly dispose of them.

For final fuse selection, make sure to install the fuse in the actual application in order to confirm the selected fuse satisfies all requirements.