HINODE Founded in 1955
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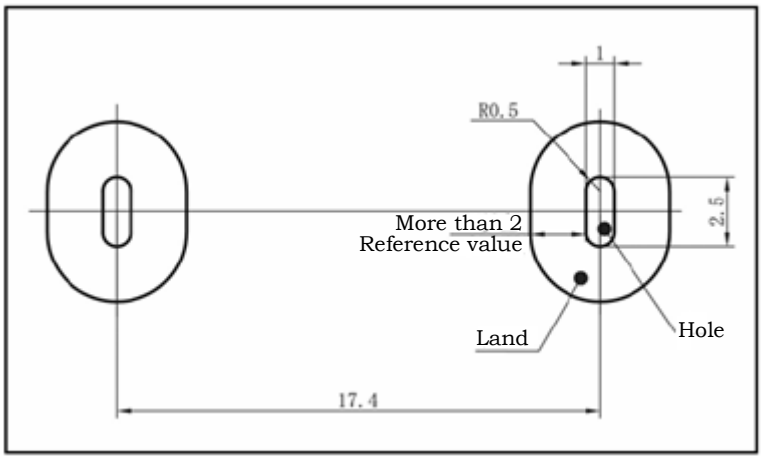
Installation design data for the 500SFK series fuse

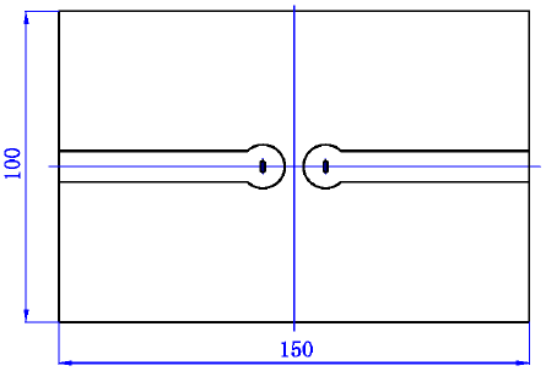
1. Recommended mounting hole pitch



2. Temperature rise

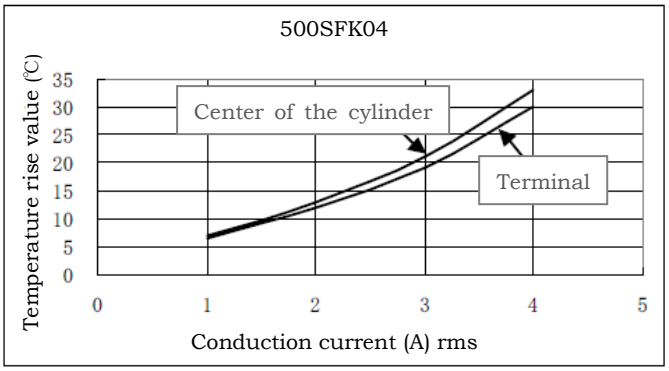
Fuse temperature changes according to the width of the pattern and the conduction current. The temperature rise characteristics, as shown below, follow a pattern that becomes 1A/mm (copper foil thickness:35 μ m) at the time of conducting a current that is 50% of the fuse's rated current. Please refer to the data when designing a pattern.

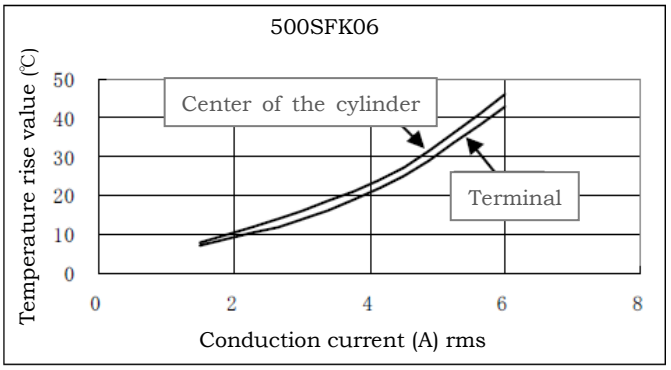
- Conditions
  Board size: 150mm X 100mm
  Board material: FR-4
  Copper foil thickness: 35 μ m

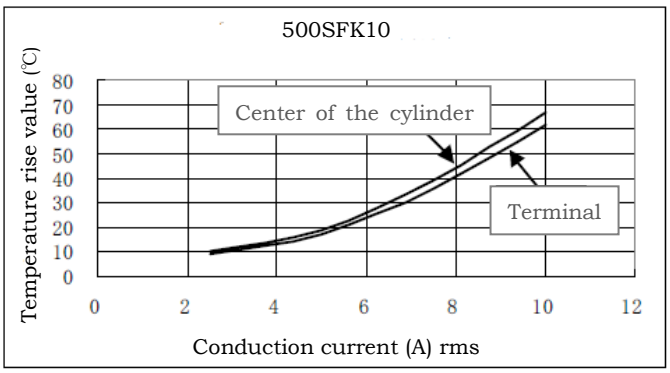


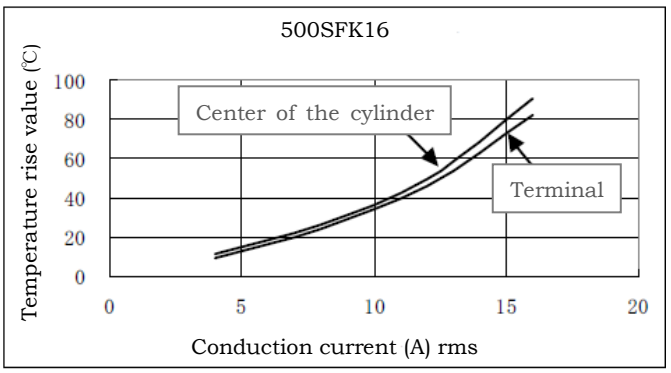
Unit: mm

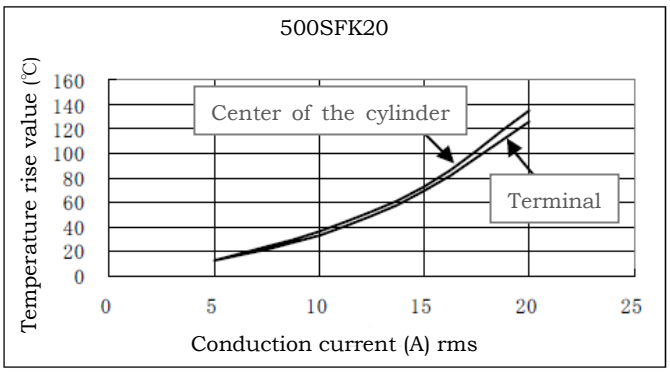
- Temperature rise characteristics





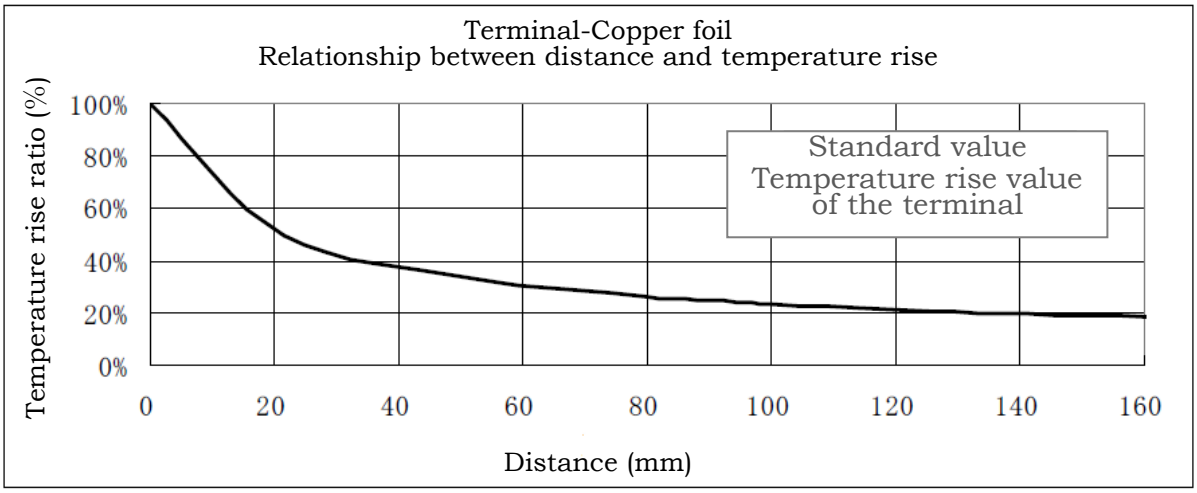


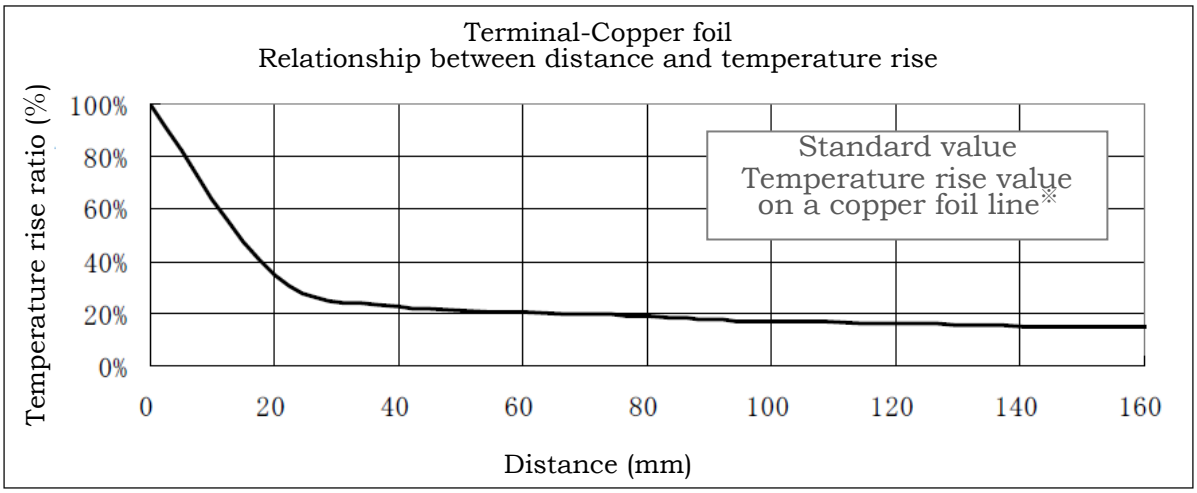




3. Temperature rise value of the board

Due to the heating of the fuse and/or from the pattern, the board temperature around the fuse increases. Please consider this when designing the placement of devices. The curves below show the relationship of the surrounding temperature distribution on the board at each amperage. Please refer to the data when designing.

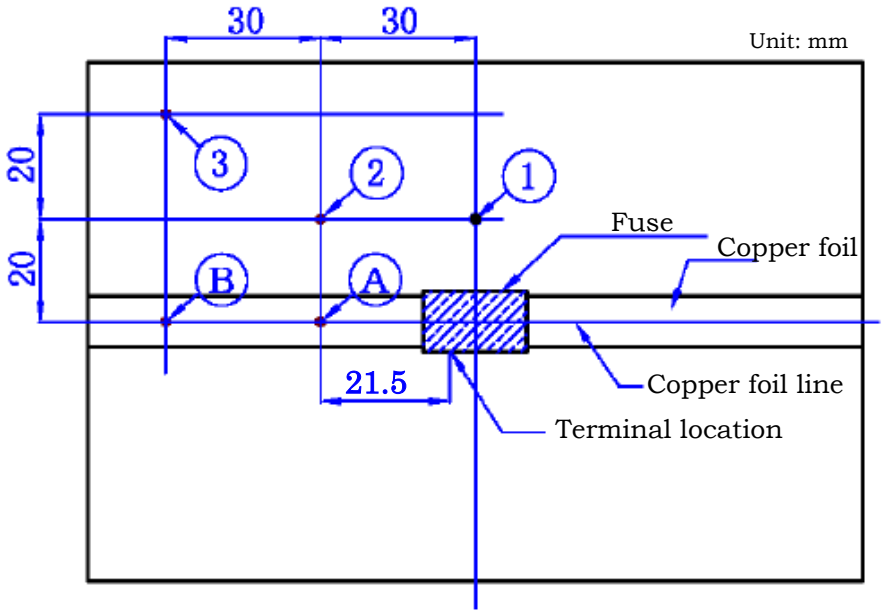




※ "ON COPPER FOIL LINE" means a centerline that connects the copper foil at the both ends. This includes the fuse on the same line.

※ If the conduction current value is lower than the fuse rated value (lower than 25%), temperature rise ratio may decrease by about 20%.

● Calculation of the temperature rise value at a random point



※ Terminal location is about 8.5mm apart from the center of the fuse.

From the 500SFK20 Temperature Rise Characteristics graph, when 15A current is conducted to the fuse, the temperature rise value of the fuse and fuse terminal are read as follows;

・Temperature rise value at the center of the cylinder: About 73℃
・Temperature rise value at the terminal: About 69℃

a) Plot point A:
From the graph, Terminal-Copper foil Relationship between distance and temperature rise, the temperature rise ratio at the distance of 21.5mm is about 50%.
69℃ (the terminal temperature rise) X 50% (temperature rise ratio) = 35℃
The temperature rise value at plot point A is around 35℃.

b) Plot point B:
From the graph, Terminal-Copper foil Relationship between distance and temperature rise, the temperature rise ratio at the distance of 51.5mm is about 33%.
69℃ (the terminal temperature rise) X 33% (temperature rise ratio) = 23℃
The temperature rise value at plot point B is around 23℃.

c) Plot point ①:
From the graph, Copper foil line-board Relationship between distance and temperature rise, the temperature rise ratio at the distance of 20mm is about 35%.
73℃ (the temperature rise at the center of the cylinder) X 35% (temperature rise ratio) = 26℃
The temperature rise value at plot point ① is around 26℃.

d) Plot point ②:

From the graph, Copper foil line-board Relationship between distance and temperature rise, the temperature rise ratio at the distance of 20mm is about 35%.

35℃ (the temperature rise value at plot point A) X 35% (temperature rise ratio) = 13℃

The temperature rise value at plot point ② is around 13℃.

e) Plot point ③:

From the graph, Copper foil line-board Relationship between distance and temperature rise, the temperature rise ratio at the distance of 40mm is about 22%.

23℃ (the temperature rise value at plot point B) X 22% (temperature rise ratio) = 5℃

The temperature rise value at plot point ③ is around 5℃.

※ To calculate the temperature rise value at a random point, it is necessary at first to measure the temperature rise value on the copper foil line that is vertical to the random point.