Dexerials

Self Control Protector (SCP)
- SFR 12A Series Datasheet -

Dexerials Corporation

2024/09/13

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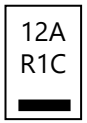
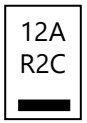
SFR-12Ampere series Specification

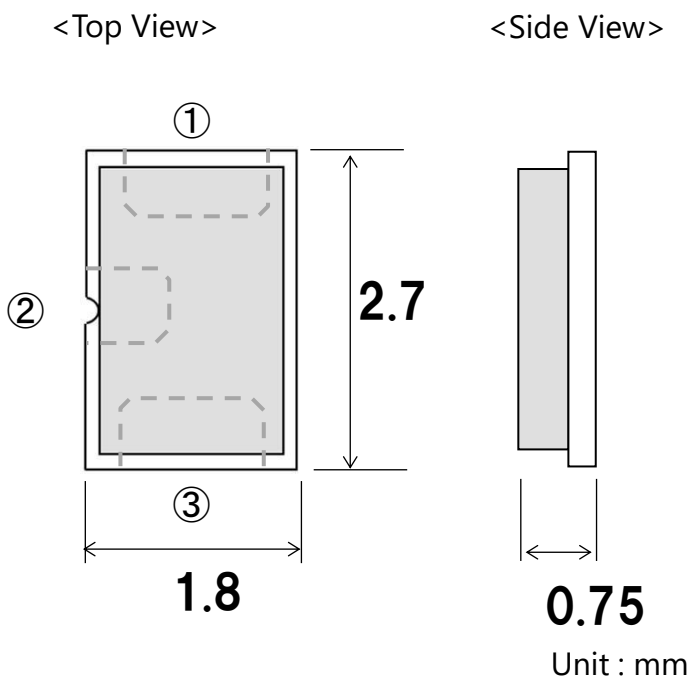
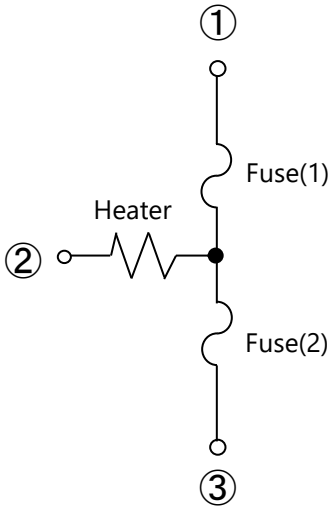
●Products Lineup

Applicable Cells in series	1 cell	2 cells
Product	SFR-0412C	SFR-0812C
Rated Current	12 A	
Size	$2.7^{\pm 0.2}$ x $1.8^{\pm 0.2}$ x $0.75^{\pm 0.1}$ mm	
Fuse Resistance (Typical)	2.6 m-ohm	
Operating Voltage	3.5 – 4.7 V	6.0-9.2 V
Heater Resistance	1.01 - 1.53 ohm	3.4 – 4.8 ohm
Marking		

Items		General Specification
Environmental Compliance		Compliance with RoHS
Halogen Free		Bromine (Br)=900 ppm or less, Chlorine (Cl)=900 ppm or less, Br + Cl=1500 ppm or less (By weight)
Antimony Free		700 ppm or less
Lead Free		1000 ppm or less
Qualification		UL248-14 (File No. E167588), TUV (Certificate No. J9650637)
Rated Breaking Capacity Rated Voltage	UL	50 A at 36 VDC This value is the maximum voltage can be cut off by fuse. It doesn't represent the operational voltage of the heater.
	TUV	50 A at 36 VDC This value is the maximum voltage can be cut off by fuse. It doesn't represent the operational voltage of the heater.
Re-flow Temp.(MAX)		260 °C

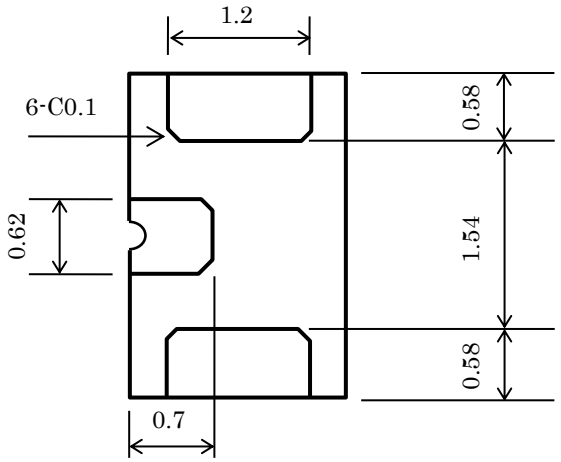
*Caution: The specification may be subject to change without prior notice in the future.

External View & Equivalent Circuit

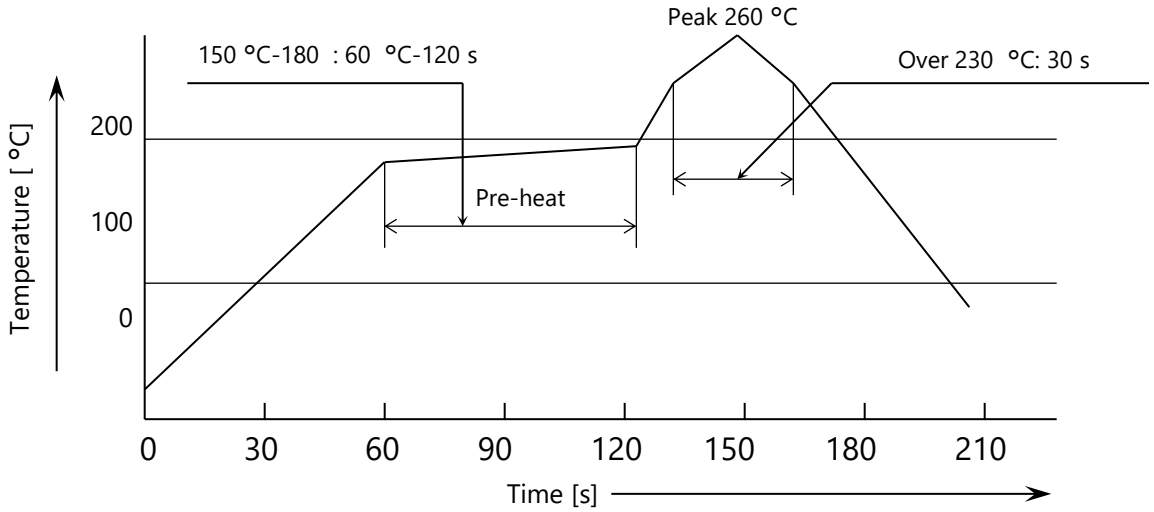
Product Name	External View	Equivalent Circuit
SFR-xx12C		

Terminal Size & Reflow Soldering

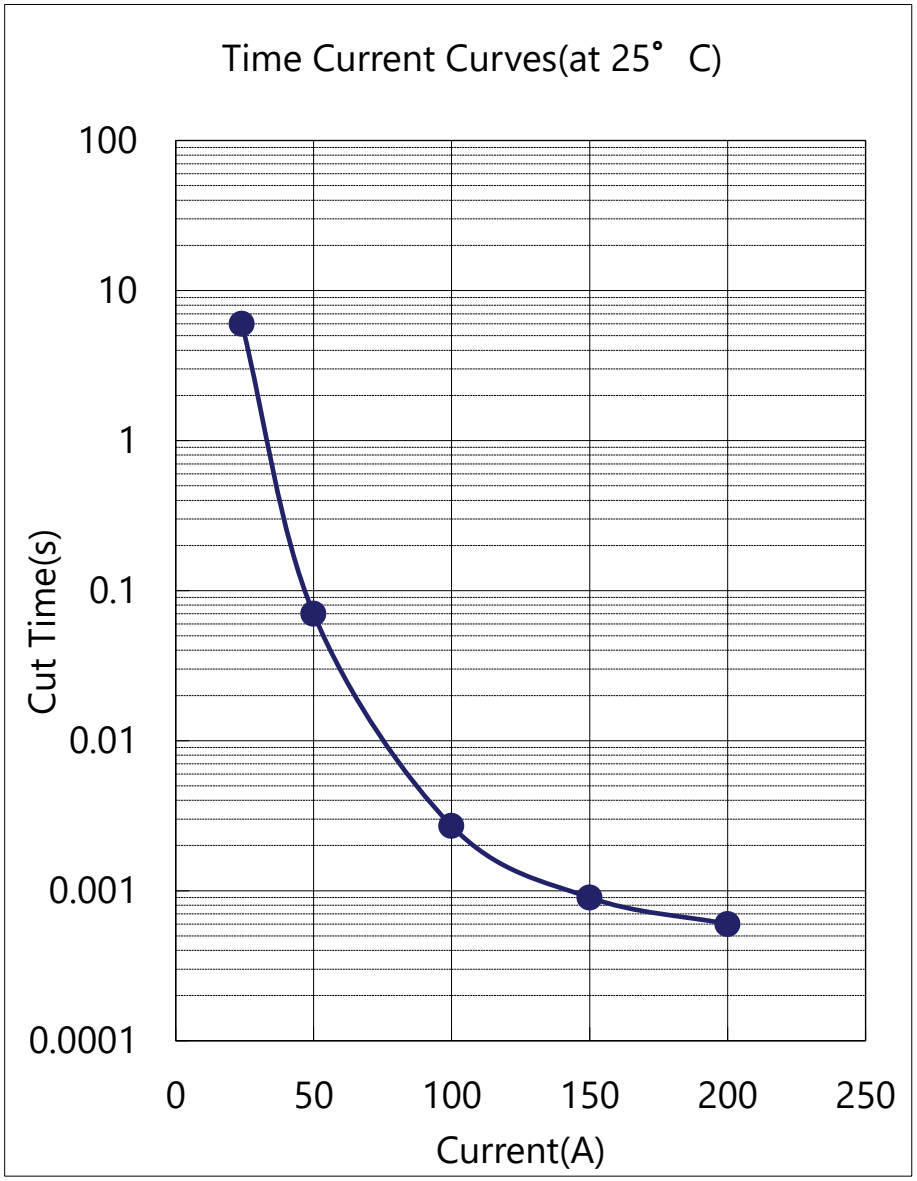
●Terminal Size (unit: mm. Not in scale)

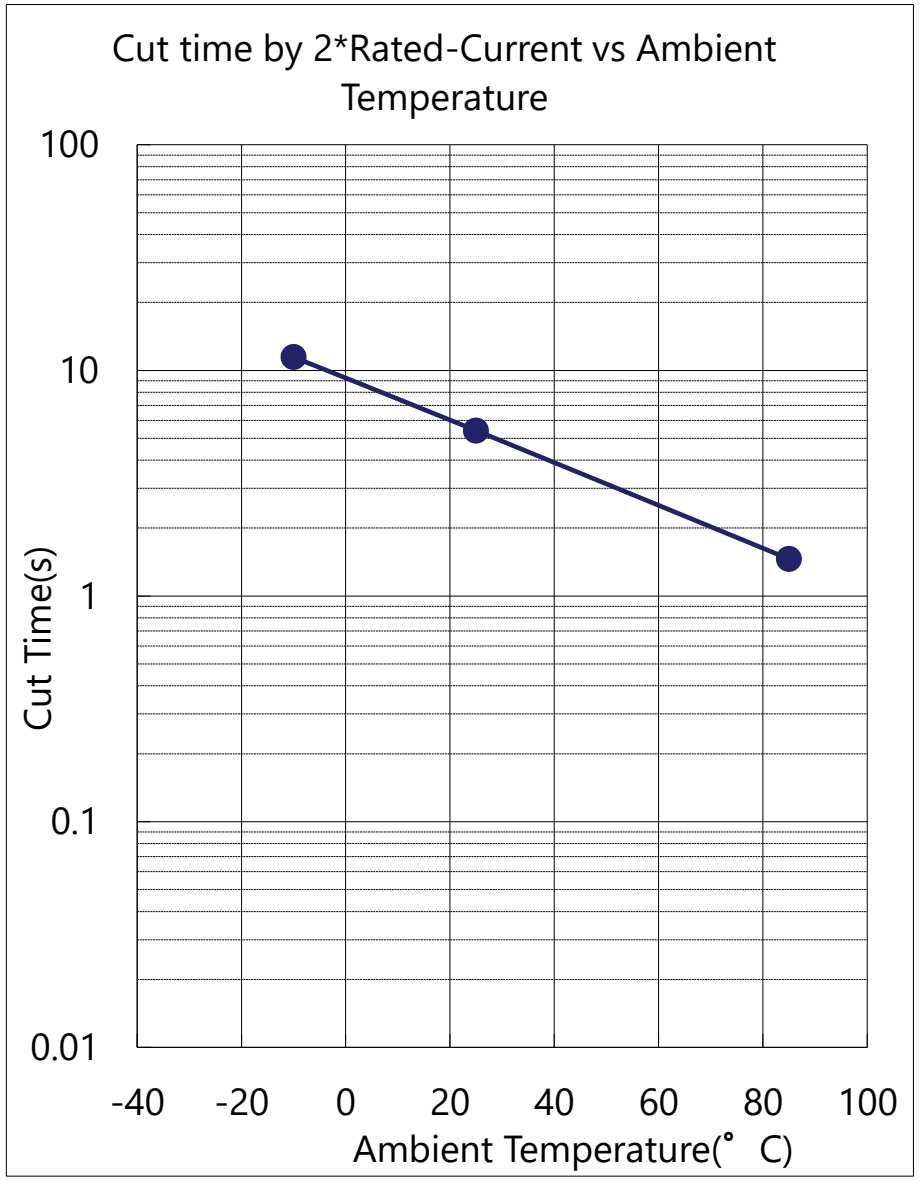


●Reflow Soldering Profile(Temperature shown below is measured at the electrode portion of SCP.)



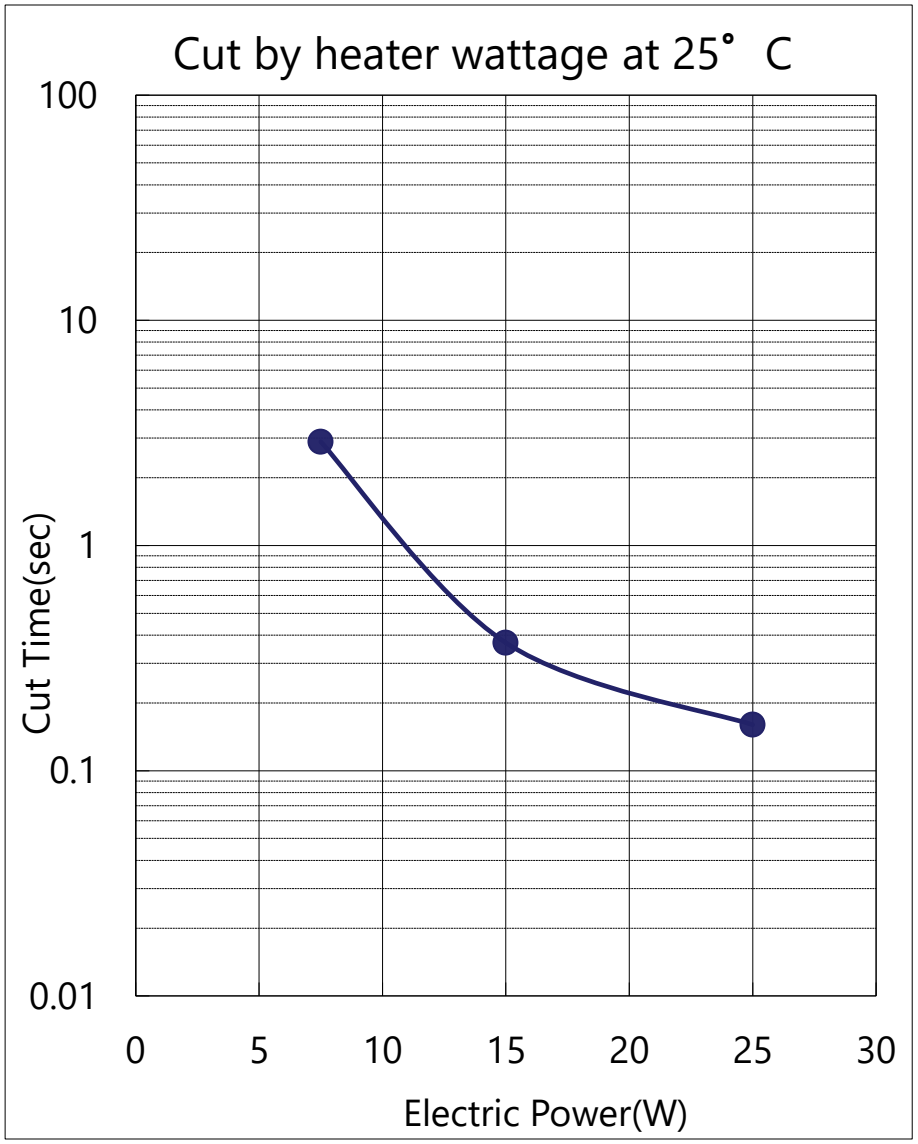
Current Operation

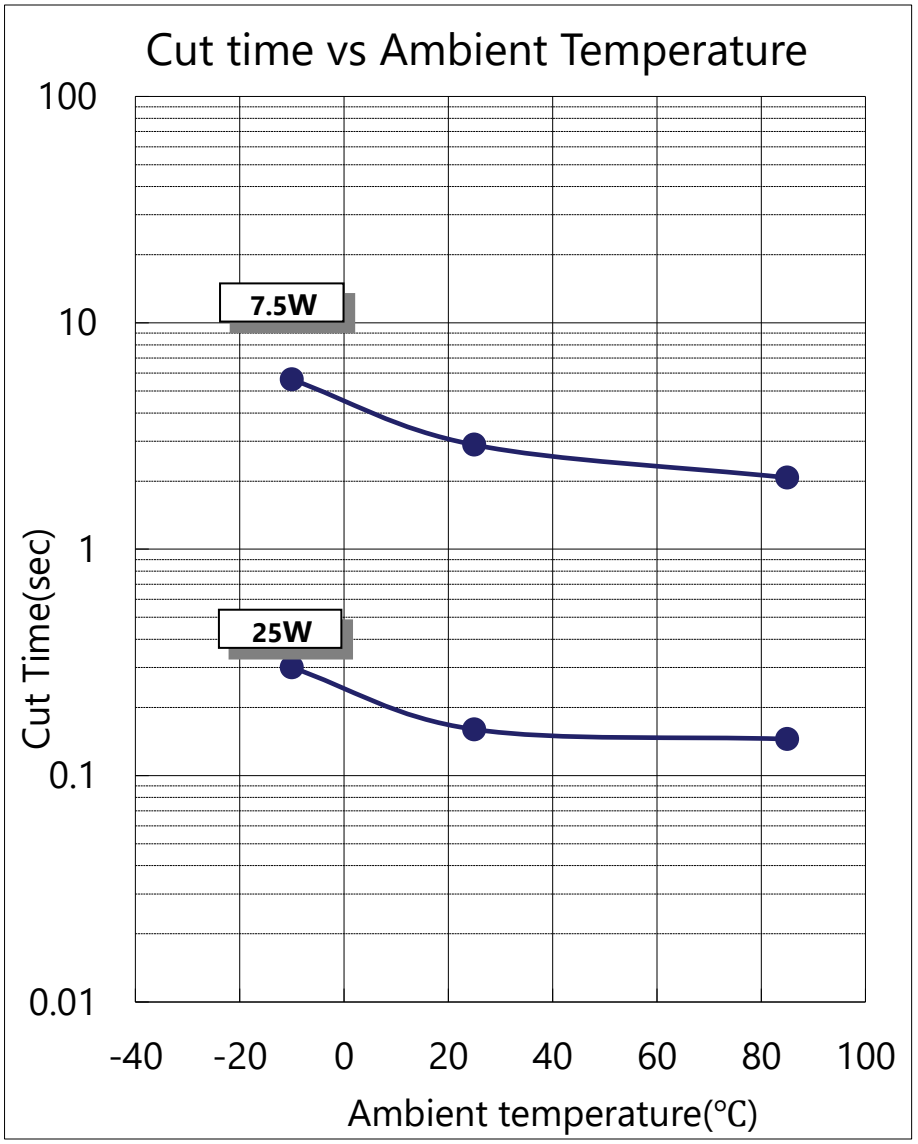




*Caution: These are standard values, and they may be subject to change without prior notice in the future.

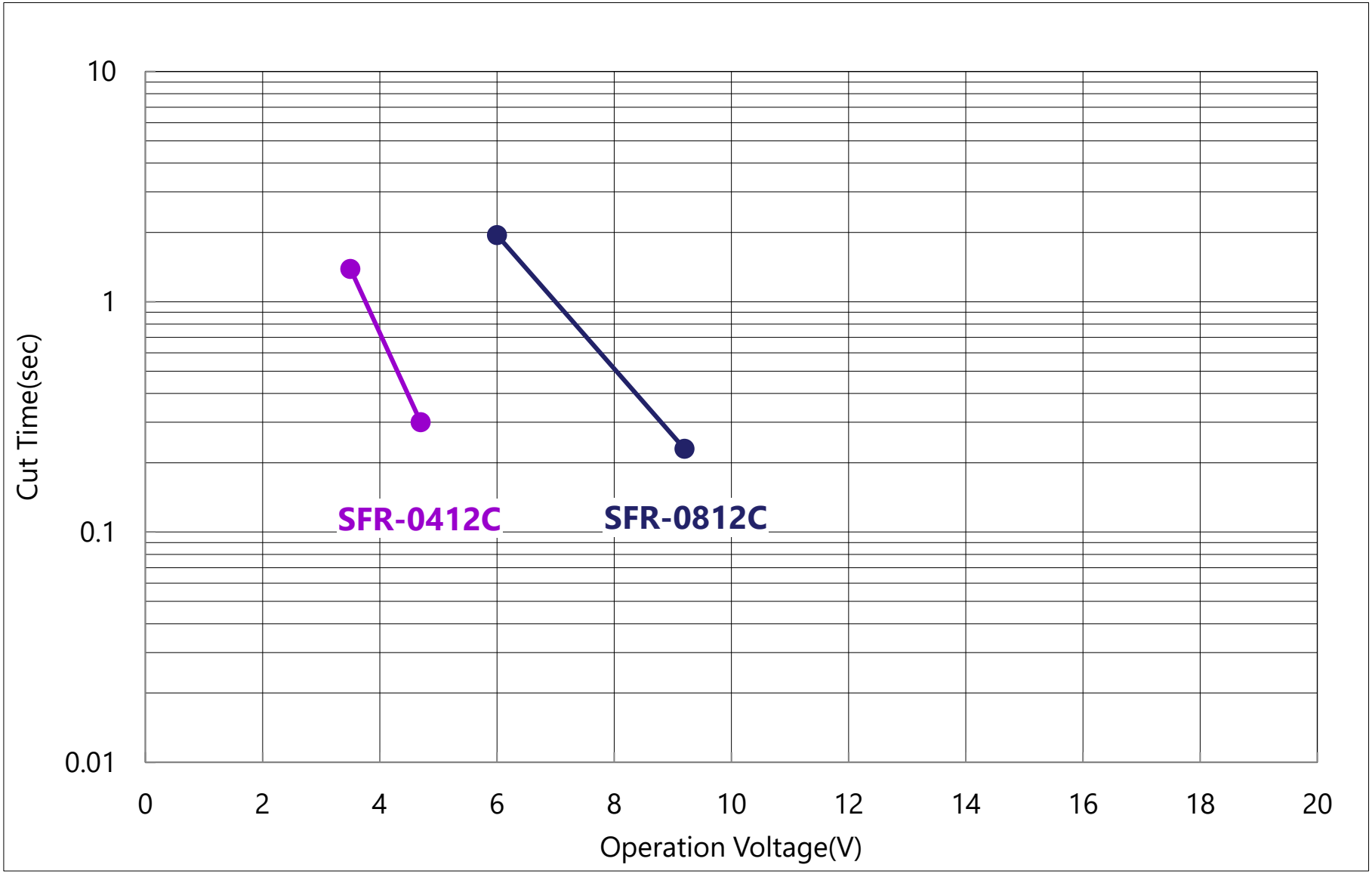
Heater Operation





(*Note) This is the typical evaluation value with our PCB (0.6 mm thickness glass-epoxy single-sided copper-clad laminates).
(*Caution)The specification may be subject to change without prior notice in the future.

Cut By Heater Voltage at 25°C



(*Note) This is the typical evaluation value with our PCB (0.6 mm thickness glass-epoxy single-sided copper-clad laminates).
(*Caution)The specification may be subject to change without prior notice in the future.

Current Carrying Capacity

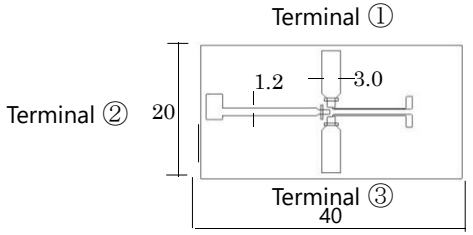
Product Name	Nominal Rated Current	Current-Carrying Capacity (*1)			Current Rush Withstand (*2)
		25 °C	40 °C	60 °C	
SFR-xx12C	12 A	15 A	13.5 A	11 A	48 A-10 ms

(*Note)

1. This is the standard value derived from a temperature of 100 degrees Celsius, a temperature at which we have verified the reliability using our company's standard PCB (0.6t Glass Epoxy single-sided copper-clad laminates). The thermal capacity of the PCB can affect it, so we recommend verifying it with your specific PCB.
   -> 25 °C, 40 °C and 60 °C are ambient temperature.
   -> The temperature at which we verified reliability is not a critical condition. SCP fusing-off temperature is 200 °C or more.
   -> The current-carrying capacity is measured under thermal equilibrium conditions. Therefore, if the duration of current-carrying is short, the current-carrying capacity will increase.
2. Reliability was confirmed under the test conditions (10ms-On, 9990ms-Off, 500cycle). However, this does not mean critical conditions for SCP.

Handling of data in this document

- 1. Please confirm the latest product information before a design.
  - You can confirm the latest information about SCP on the following website.
  - http:// www.dexerials.jp/en/products/c3/
- 2. SCP complies with following environmental regulation.
  - 1) RoHS.
  - 2) General requirement for Halogen Free.
- 3. These data are typical values.
  - 1) These data is not a guaranteed value.
  - 2) These data is measured with our company's standard PCB (0.6t Glass Epoxy single-sided copper-clad laminates). The characteristics are influenced by thermal capacity of PCB. Generally, as the thermal capacity of the PCB increases, the current-carrying capacity will also increase, and the clearing time will be longer.
- 4. Please select the product based on[Current-carrying capacity] and [Heater operation characteristics].
  - 1) Nominal rated current is provided based on UL standard (The maximum temperature rise on body or contact that is passed the current shall not exceed 75°C) and so it is not Current-carrying capacity. Therefore, please select a product based on Current- carrying capacity instead of Nominal rated current.
  - 2) [Current-carrying capacity] and [Heater operation characteristics] are influenced by thermal capacity of PCB and so on. Therefore, we recommend checking it on your PCB.
  - 3) We can perform tests using your printed circuit boards (current-carrying characteristics, clearing characteristics, etc.).Please feel free to contact us.
- 5. Current-carrying capacity
  - 1) The current-carrying capacity is the value at which SCP reaches the temperature that we have verified for reliability within our company.
  - 2) The temperature at which we have confirmed reliability is 100 degrees Celsius. However, this is not a critical condition for SCP. For instance, if SCP's temperature exceeds this, it does not immediately fuse off like a typical thermal fuse. SCP's fusing-off temperature is 200 degrees Celsius or higher, indicating that it has a significant capacity to withstand temperature increases.
  - 3) The current-carrying capacity is measured under thermal equilibrium conditions. Therefore, if the duration of current-carrying is short, the current-carrying capacity will increase.
- 6. Precautions regarding handling
  - 1) Make sure that the terminals of this product are connected on the lands of the circuit board, and that the heater resistance is rated value.
  - 2) Ultrasonic cleaning, immersion cleaning, and similar methods should not be applied to SCP either before or after mounting. If cleaning is performed, the flux on the element could flow, potentially causing it to fail to meet its specifications. Additionally, similar influence can occur when the product comes into contact with a cleaning solution. Any products cleaned in this manner will not be guaranteed.
  - 3) Please avoid contacting SCP and resin-mold. The resin might infiltrate into the product, and it doesn't meet the specification when the resin-mold is done to this product. These products after resin-mold will not be guaranteed.
  - 4) Please do not re-use of the SCP that removed by the solder correction.
  - 5) SCP should be stored in a shaded, low-dust area with a temperature of 40℃ or lower, without sudden temperature changes. The relative humidity should be 60% or less, and the air should be free of corrosive gases. Under these conditions, the maximum storage period is 1 year from the delivery date.



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