

Power Current Protector (PCP) - PTA series – Datasheet

Dexerials Corporation

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caution

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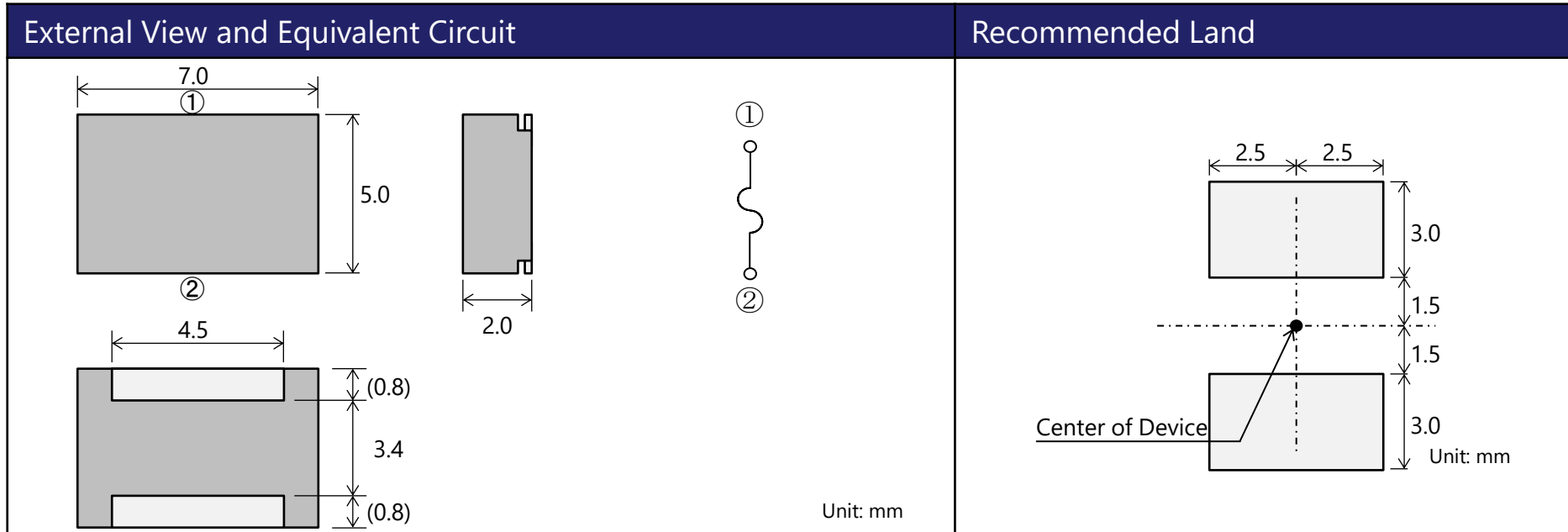


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PTA-036100A

Items	General Specification
Rated Current	100 A
Rated Voltage	36 VDC
Rated Breaking Capacity	300 A
Fuse Resistance (Typ.)	0.4 m-ohm
Size	7.0 \pm 0.3 x 5.0 \pm 0.3 x 2.0 \pm 0.3 mm
Environmental Compliance	Compliant with RoHS
Halogen Free	Bromine (Br)=900 ppm or less, Chlorine (Cl)=900 ppm or less, Br + Cl=1500 ppm or less (By weight)
Re-flow Temp.(MAX)	260 °C

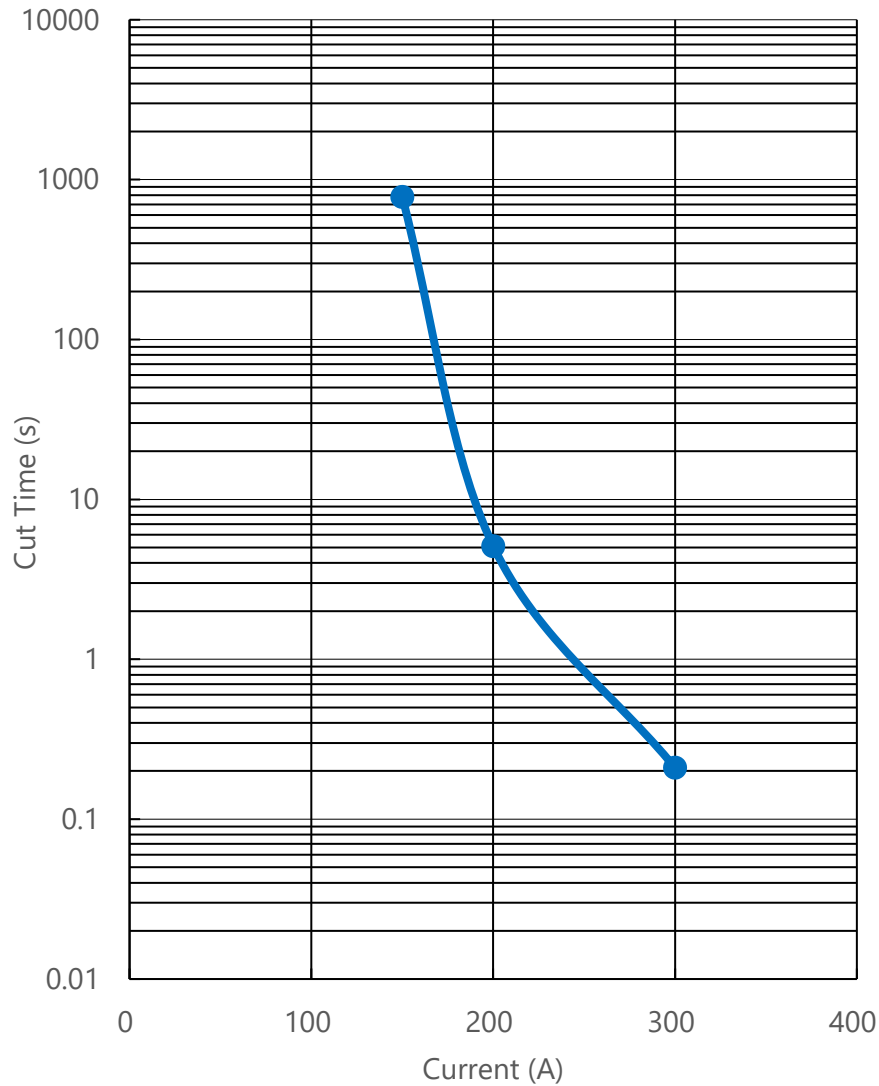


(*Note) The information in this document is subject to change without notice.

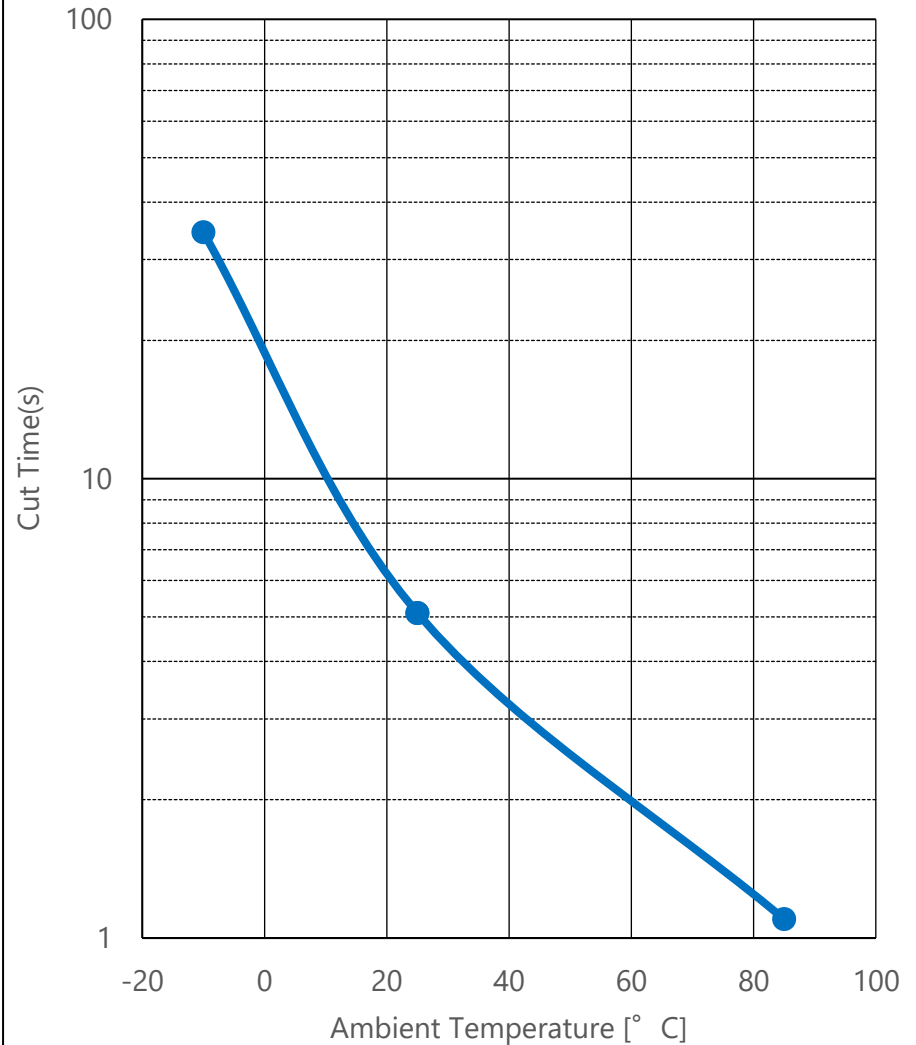
PTA-036100A

Current Characteristics

Current vs Cut Time (at 25° C)



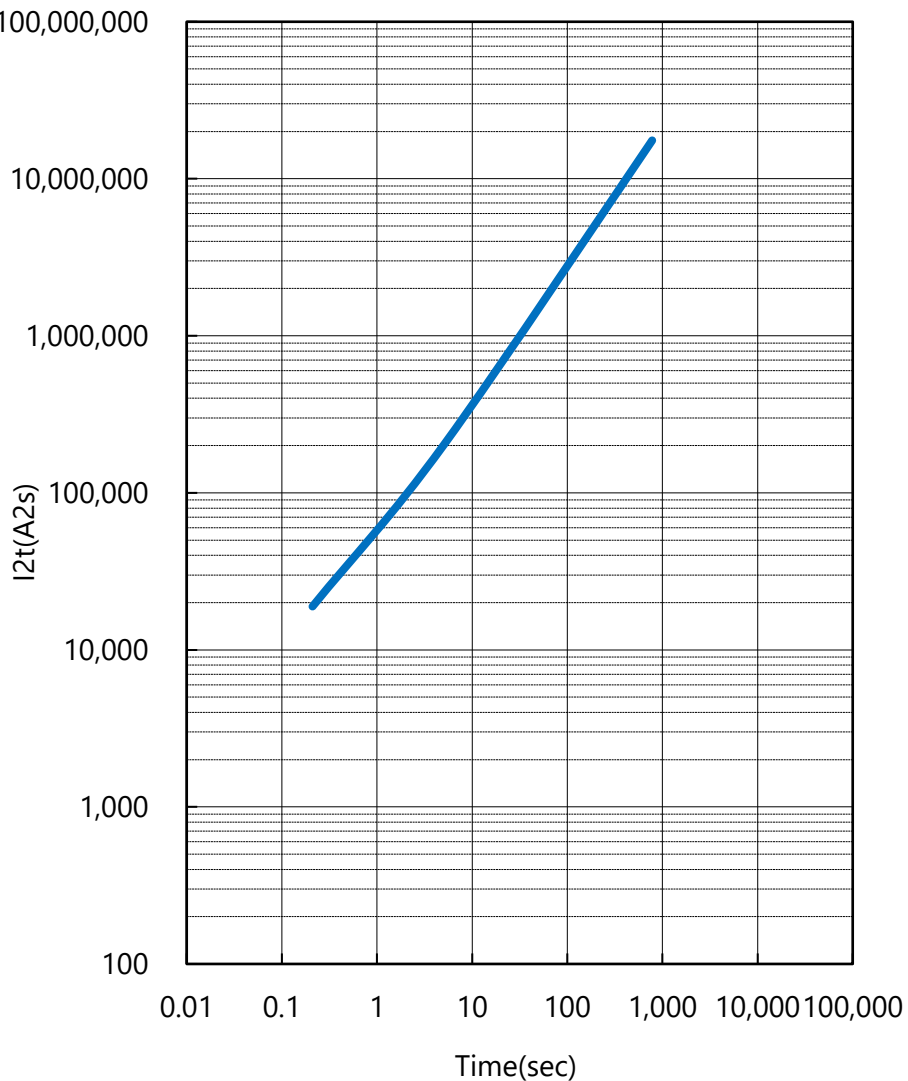
Cut time by 2*Rated-Current vs Ambient temperature



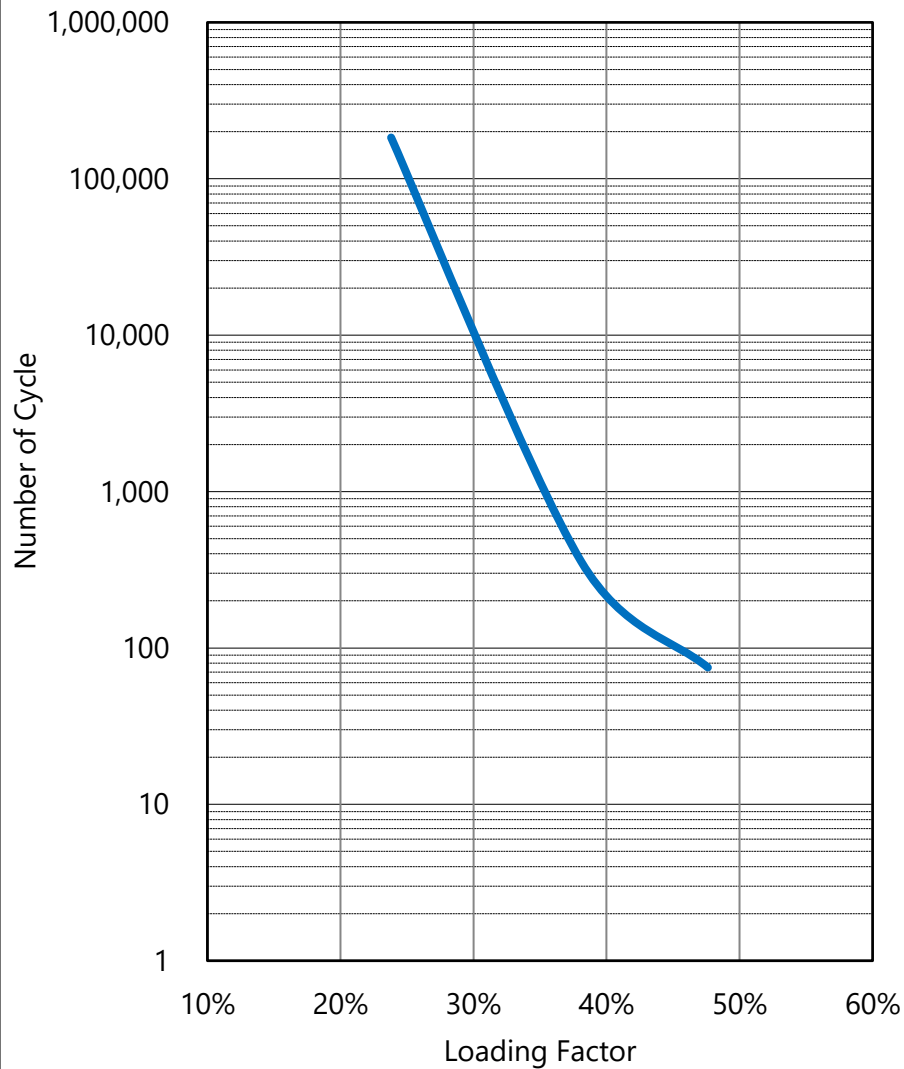
(*Note) This is the typical value with our company's standard PCB (0.6t Glass Epoxy single-sided copper-clad laminates). The thermal capacity of the PCB can affect it, so we recommend verifying it with your specific PCB.

PTA-036100A Loading Factor

I²t Curve



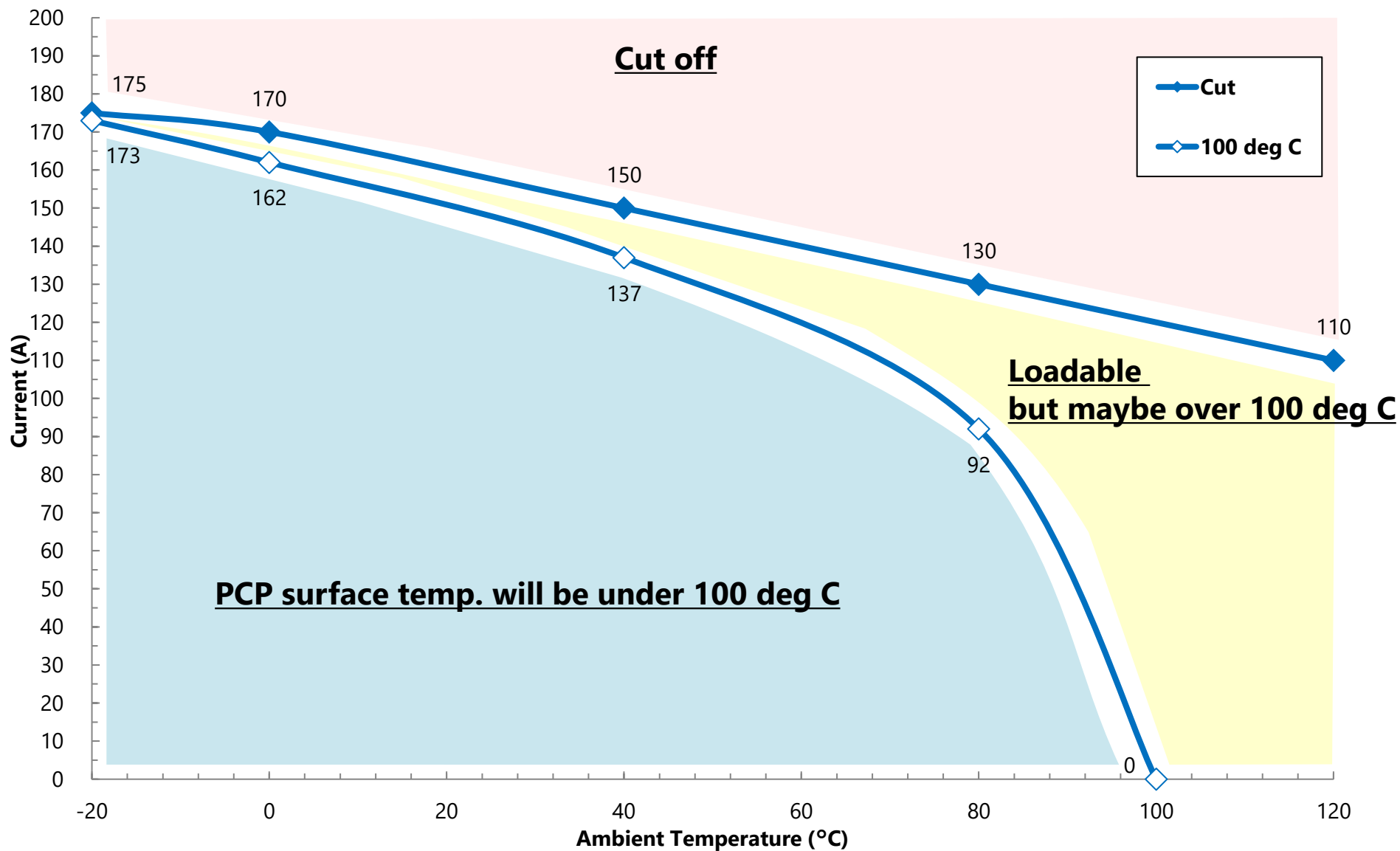
Loading Factor



(*Note) This is the typical value with 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.

PTA-036100A

Current Carrying Capacity



(*Note) This is the typical value with our company's standard PCB (0.6mm Glass Epoxy single-sided 0.5mm copper-clad laminates). The thermal capacity of the PCB can affect it, so we recommend verifying it with your specific PCB.

Handling Instructions for these data

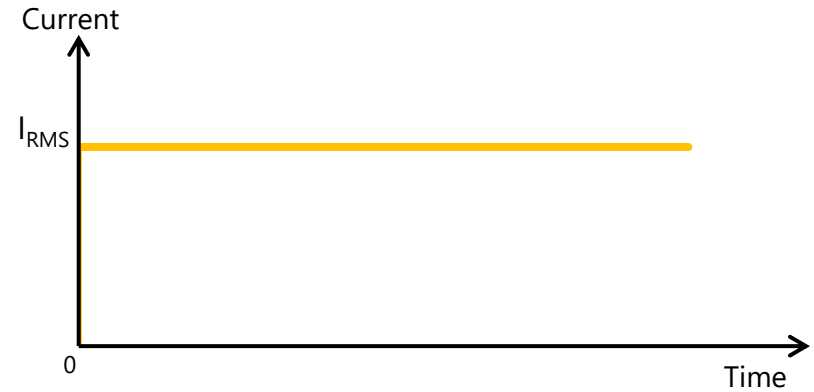
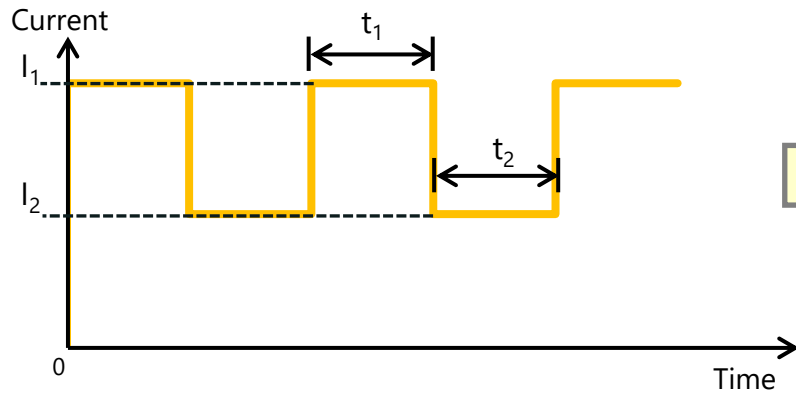
- 1. Please confirm the latest product information before a design.
 - You can confirm the latest information about PCP on the following homepage.
 - <http://www.dexerials.jp/en/products/c3/>
- 2. PCP complies with following environmental regulation.
 - 1) RoHS.
 - 2) General requirement for Halogen Free.
- 3. These data are typical value.
 - 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].
 - 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] 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 PCP 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 PCP. For instance, if PCP's temperature exceeds this, it does not immediately fuse off like a typical thermal fuse. PCP'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 PCP 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 PCP 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 PCP that removed by the solder correction.
 - 5) PCP should be stored in a shaded, low-dust area with a temperature of 40°C 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.

Appendix

RMS of Pulse Current

[RMS=Root Mean Square value]

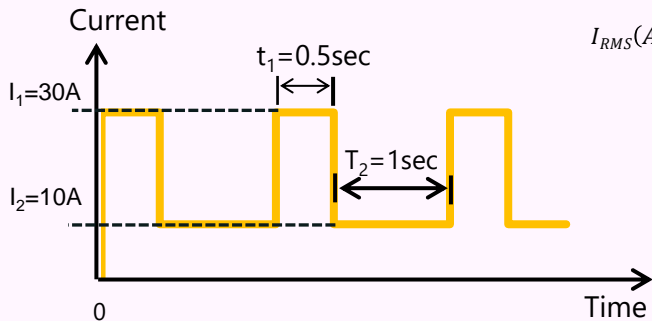
[Pulse Current]



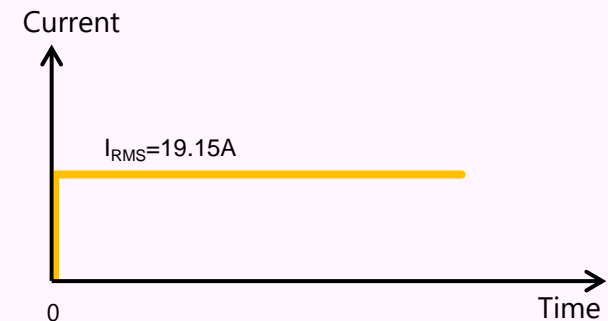
[Formula]

$$I_{RMS}(A) = \sqrt{\left(\frac{I_1^2 \times t_1 + I_2^2 \times t_2}{t_1 + t_2} \right)}$$

※Example



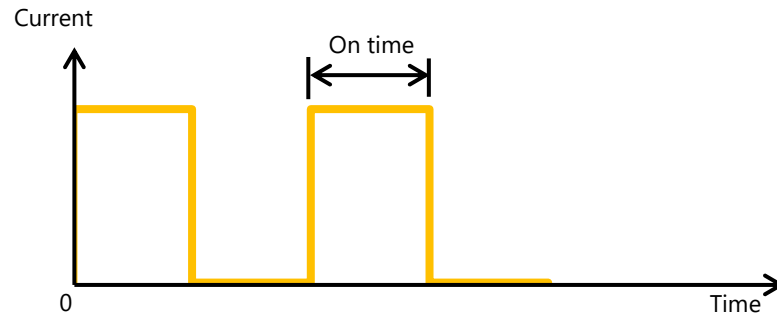
$$I_{RMS}(A) = \sqrt{\left(\frac{30A^2 \times 0.5sec + 10A^2 \times 1sec}{0.5sec + 1sec} \right)} \\ = 19.15A$$



Calculation Method

[Loading factor]

$$\text{Loading Factor} = \frac{\text{On time}}{\text{Cut time}}$$



[I^2t at various wave forms]

Wave form	Formula	Wave form	Formula
	$\frac{1}{2} I^2 t$		$\cong \frac{1}{2} I^2 t$
	$I^2 t$		$\frac{1}{3} I^2 t_1 + I^2 (t_2 - t_1) + \frac{1}{3} I^2 (t_3 - t_2)$
	$\frac{1}{3} I^2 t$		$\frac{1}{3} (I_1 - I_2)^2 t + I_1 I_2 t$
	$\frac{1}{3} I_1^2 t_1 + \left\{ I_1 I_2 + \frac{1}{3} (I_1 - I_2)^2 \right\} (t_2 - t_1) + \frac{1}{3} I_2^2 (t_3 - t_2)$		

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