

# 881 Series

## High-Current SMD Fuse



### Description

This high-current SMD fuse is a small, square, surface mount fuse that is designed as supplemental overcurrent protection for high-current circuits in various applications.

### Features & Benefits

- Heat resistant plastic body, UL 94 V-0
- Meets Littelfuse Automotive qualifications\*
- Low voltage drop
- High Reliability Solderless Fuse
- High pulse resistance
- Compatible with lead-free solders and higher temperature profiles
- Halogen-free and RoHS compliant
- UL Recognized to UL/CSA/NMX 248-1
- CE Mark indicates compliance with Low-Voltage and RoHS Directives
- Conforms to IEC/EN 60127-1 and IEC/EN 60127-7

\* Largely based on Littelfuse internal AEC-Q200 test plan.

### Additional Information



Resources



Accessories



Samples

### Agency Approvals

| Agency | Agency File Number | Ampere Range |
|--------|--------------------|--------------|
| cULus  | E71611             | 60 A – 100 A |
| △      | J50501628          | 60 A – 100 A |

### Applications

- Blade Servers
- Routers
- High-power Battery Systems
- Power Factor Correction (PFC) in high wattage power supplies
- Power Distribution Units (PDUs)

### Electrical Characteristics for Series

| % of Ampere Rating | Opening Time     |
|--------------------|------------------|
| 100%               | 1 Hour, Min.     |
| 200%               | 60 Seconds, Max. |

### Electrical Specifications by Item

| Ampere Rating (A) | Amp Code | Max Voltage Rating (V) | Interrupting Rating***                                                             | Nominal Cold Resistance (mOhms) | Nominal Voltage Drop * (mV) | Nominal Melting ** I <sup>2</sup> t (A <sup>2</sup> sec) | Agency Approvals |   |
|-------------------|----------|------------------------|------------------------------------------------------------------------------------|---------------------------------|-----------------------------|----------------------------------------------------------|------------------|---|
|                   |          |                        |                                                                                    |                                 |                             |                                                          | cULus            | △ |
| 60                | 060.     | 115VDC                 | 1500 A@75 VDC<br>1000 A@100 VDC<br>500 A@115 VDC<br>6000 A@24 VDC<br>350 A@125 VDC | 0.8                             | 75                          | 1050                                                     | X                | X |
| 70                | 070.     | 100VDC                 | 1500 A@75 VDC<br>1000 A@100 VDC<br>6000 A@24 VDC<br>350 A@125 VDC                  | 0.74                            | 85                          | 1250                                                     | X                | X |
| 80                | 080.     |                        |                                                                                    | 0.56                            | 80                          | 3300                                                     | X                | X |
| 90                | 090.     |                        | 1500 A@75 VDC<br>1000 A@100 VDC<br>6000 A@24 VDC                                   | 0.54                            | 85                          | 4300                                                     | X                | X |
| 100               | 100.     |                        |                                                                                    | 0.45                            | 80                          | 6900                                                     | X                | X |
| 125               | 125.     | 75 VDC                 | 1500 A @75 VDC                                                                     | 0.43                            | 85                          | 7450                                                     | X                | X |

\* Nominal Voltage Drop measured at 100% rated Current.

\*\* Nominal Melting I<sup>2</sup>t measured at 1500A.

\*\*\* Interrupting Rating may differ based on Agency Approval. See Agency Approval certificate for more details.

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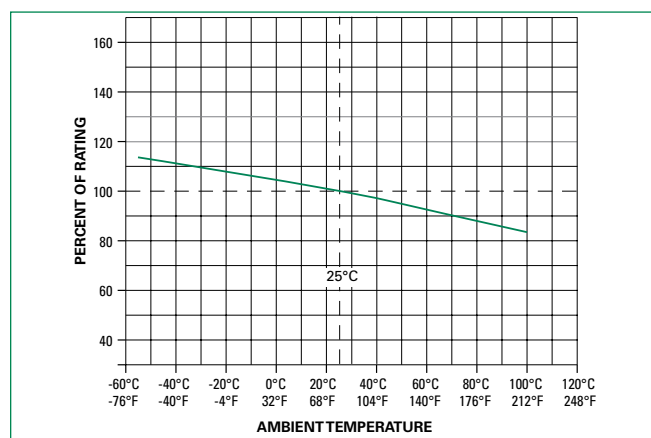
### Thermal Characteristics

| Ampere Rating<br>$I_n$ (A) | Typical Case Temperature Rise (°C) * |             |              |
|----------------------------|--------------------------------------|-------------|--------------|
|                            | @ 50% $I_n$                          | @ 75% $I_n$ | @ 100% $I_n$ |
| 60                         | 14                                   | 35          | 60           |
| 70                         | 15                                   | 37          | 70           |
| 80                         | 16                                   | 39          | 85           |
| 90                         | 19                                   | 49          | 105          |
| 100                        | 23                                   | 53          | 120          |
| 125. **                    | 34                                   | 58          | 90           |

\* Typical values based on tests conducted with fuse mounted on FR-4 circuit board of 0.062" (1.6 mm) thickness with 6 oz. (210 µm) Cu.

\*\* 125 A based on tests conducted with fuse mounted on FR4 circuit board of 0.062" (1.6 mm) thickness with 10 oz. (350 µm) Cu @ rated current.

### Temperature Re-rating Curve



#### Note:

1. Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

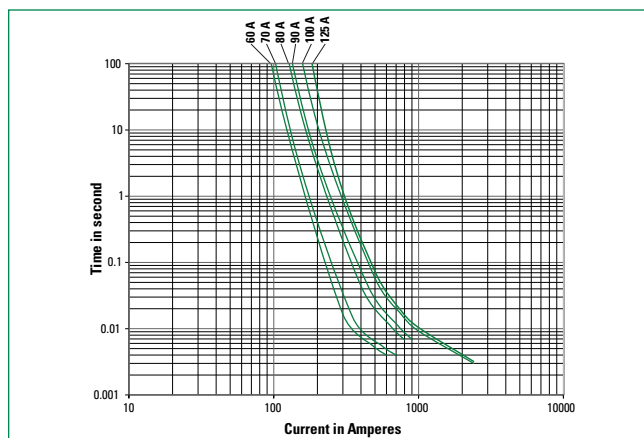
Example:

For continuous operation at 70°C, the fuse should be re-rated as follows:

$$I = (0.75)(0.90)I_n = (0.675)I_n$$

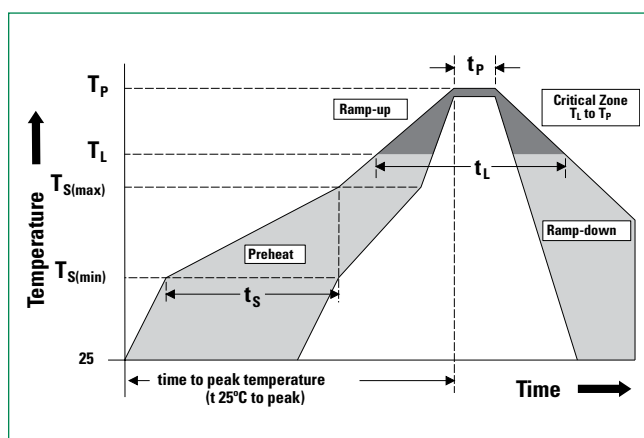
2. The temperature re-rating curve represents nominal conditions. For questions about the temperature re-rating curve, please consult Littelfuse technical support assistance.

### Average Time Current Curves



## Soldering Parameters

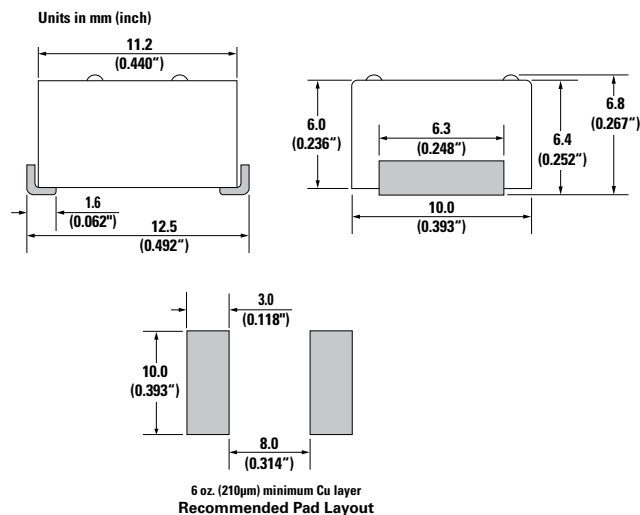
|                                                       |                                    |                    |
|-------------------------------------------------------|------------------------------------|--------------------|
| Reflow Condition                                      |                                    | Pb - Free assembly |
| Number of allowed reflow cycles                       |                                    | 3                  |
| Pre Heat                                              | - Temperature Min ( $T_{s(min)}$ ) | 150 °C             |
|                                                       | - Temperature Max ( $T_{s(max)}$ ) | 200 °C             |
|                                                       | - Time (Min to Max) ( $t_s$ )      | 60 – 180 secs      |
| Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak |                                    | 5 °C/second max.   |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                  |                                    | 5 °C/second max.   |
| Reflow                                                | - Temperature ( $T_L$ ) (Liquidus) | 217 °C             |
|                                                       | - Temperature ( $t_L$ )            | 60 – 150 seconds   |
| Peak Temperature ( $T_p$ )                            |                                    | 260 $^{+0/-5}$ °C  |
| Time within 5°C of actual peak Temperature ( $t_p$ )  |                                    | 20 – 40 seconds    |
| Ramp-down Rate                                        |                                    | 5 °C/second max.   |
| Time 25°C to peak Temperature ( $T_p$ )               |                                    | 8 minutes max.     |
| Do not exceed                                         |                                    | 260 °C             |



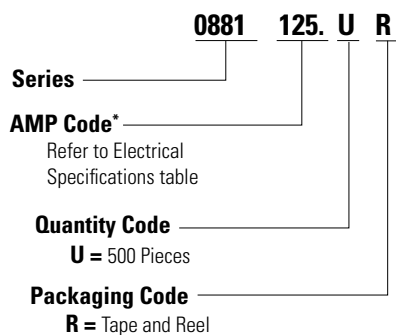
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## High-Current SMD Fuse

### Dimensions



### Part Numbering System



**\*Example:**  
60 amp product is 0881060.UR  
(100 amp product shown above).

### Product Characteristics

|                                              |                                                                    |
|----------------------------------------------|--------------------------------------------------------------------|
| <b>Materials</b>                             | Body: Thermoplastic, RTI 150 °C<br>Terminations: Tin-plated Copper |
| <b>Product Marking</b>                       | Brand logo, Voltage Rating, and Ampere Rating                      |
| <b>Operating Temperature</b> <sup>1, 2</sup> | -55 °C to +100 °C with proper derating                             |

#### Notes:

- Based on loading at 75% of ampere rating when mounted using recommended pad layout.
- Usage outside of stated operating temperature range requires testing in application.  
Maintain case temperature below 150°C in application.

|                                  |                                                                                     |
|----------------------------------|-------------------------------------------------------------------------------------|
| <b>Thermal Shock</b>             | MIL-STD-202 Method 107<br>Test Condition B (-65°C to 125°C,<br>5 cycles).           |
| <b>Moisture Resistance</b>       | MIL-STD-202 method 106<br>High Humidity (90-98%RH), Heat (65°C)                     |
| <b>Vibration</b>                 | MIL-STD-202, Method 201 (10-55 Hz)                                                  |
| <b>Mechanical Shock</b>          | MIL-STD-202, Method 213,<br>Test Condition I<br>(100 G's peak for 6 milliseconds)   |
| <b>Resistance to Solder Heat</b> | MIL-STD-202 Method 210<br>Test Condition B (10sec at 260°C)                         |
| <b>Solderability</b>             | MIL-STD-202 Method 208                                                              |
| <b>MSL Test</b>                  | Level 2a J-STD-020                                                                  |
| <b>Salt Fog</b>                  | MIL-STD-202 Method 101<br>Test Condition B (5% NaCL solution,<br>48 hours exposure) |

### Packaging

| Packaging Option    | Packaging Specification      | Quantity | Quantity & Packaging Code |
|---------------------|------------------------------|----------|---------------------------|
| 24 mm Tape and Reel | EIA-481 Rev. D (IEC 60286-3) | 500      | UR                        |

**Disclaimer Notice** - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at <http://www.littelfuse.com/disclaimer-electronics>.