# 708 Series
## High-Current High IR SMD Fuse


## Description

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

## Features & Benefits

- High Reliability Solderless Fuse
- High pulse resistance
- High-Current High Interrupting Rating SMD Fuse
- Compatible with lead-free solders and higher temperature profiles
- RoHS compliant
- UL Recognized to UL/CSA/NMX 248-1
- Conforms to IEC/EN 60127-1 and IEC/EN 60127-7

## Web Resources

Download ECAD models, order samples, and find technical recources at www.littelfuse.com

## Application

- High-power Battery Systems
- Power Factor Correction (PFC) in high wattage power supplies
- Power Distribution Units (PDUs)
- Data center
- Blade server
- Router

### Agency Approvals

| Agency | Agency File Number | Ampere Range |
|---|---|---|
| c UL us | E71611 | 60 A – 200A |
| | J 50716850 | 60 A – 200A |
| CE | N/A | 60 A – 200A |
| UK CA | N/A | 60 A – 200A |

### Electrical Characteristics

| % of Ampere Rating | Opening Time |
|---|---|
| 100% | 4 Hour, Min. |
| 250% | 60 Seconds, Max. |

### Electrical Specifications

| Ampere Rating (A) | Amp Code | Max Voltage Rating (V) | Interrupting Rating | Nominal Cold Resistance (mOhms) | Nominal Voltage Drop* (mV) | Nominal Melting** I²t (A²sec) | Agency Approvals | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | c UL us | | CE | UK CA |
| 60 | 060. | 125 VDC | 14KA@80Vdc 3KA@125Vdc 6KA@100VDC | 0.930 | 70.0 | 1350 | X | X | X | X |
| 70 | 070. | | | 0.725 | 68.0 | 2400 | X | X | X | X |
| 80 | 080. | | | 0.640 | 72.5 | 3000 | X | X | X | X |
| 90 | 090. | | | 0.585 | 78.0 | 4200 | X | X | X | X |
| 100 | 100. | | | 0.430 | 60.0 | 7000 | X | X | X | X |
| 125 | 125. | | | 0.375 | 63.0 | 13500 | X | X | X | X |
| 150 | 150. | | | 0.330 | 67.0 | 18350 | X | X | X | X |
| 175 | 175. | | | 0.290 | 74.5 | 21000 | X | X | X | X |
| 200 | 200. | | | 0.250 | 84.0 | 22830 | X | X | X | X |

**Notes:**
***** Nominal Voltage Drop measured at 100% rated Current.
****** Nominal Melting I2t measured at 14000A.




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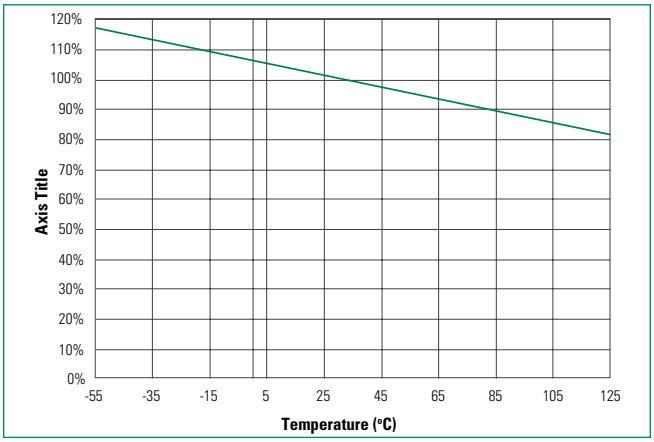
### Thermal Characteristics

| Ampere Rating $I_n$ (A) | Typical Case Temperature Rise (°C) | | |
|---|---|---|---|
| | @ 50%$I_n$ | @ 75%$I_n$ | @100%$I_n$ |
| 60 | 16 | 34 | 56 |
| 70 | 16 | 36 | 63 |
| 80 | 20 | 46 | 80 |
| 90 | 25 | 56 | 100 |
| *100 | 22 | 45 | 72 |
| *125 | 25 | 54 | 90 |
| **150 | 22 | 53 | 90 |
| **175 | 28 | 61 | 110 |
| **200 | 30 | 70 | 130 |

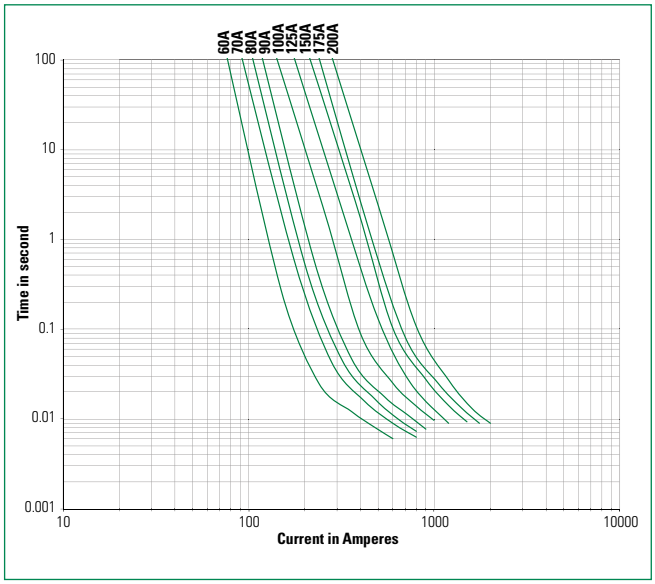
**Notes:**
**60A - 90A:** Typical values based on tests conducted with fuse mounted on FR-4 circuit board of 0.062" (1.6mm) thickness with 6 oz. (210 µm) Cu.at rated current
**100A - 125A:** *Typical values based on tests conducted with fuse mounted on FR-4 circuit board of 0.093" (2.4mm) thickness with 10 oz. (350 µm) Cu.at rated current
**150A - 200A:** **Typical values based on tests conducted with fuse mounted on FR-4 circuit board of 0.156" (4mm) thickness with 15 oz. (525 µm) Cu.at rated current

### Temperature Re-rating Curve




**Notes:**
**1.** Rerating depicted in this curve is in addition to the standard derating of 25% for continuous operation.
Example:
For continuous operation at 85°C, the fuse should be re-rated as follows:
I = (0.75)(0.90)In = (0.675)In
**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



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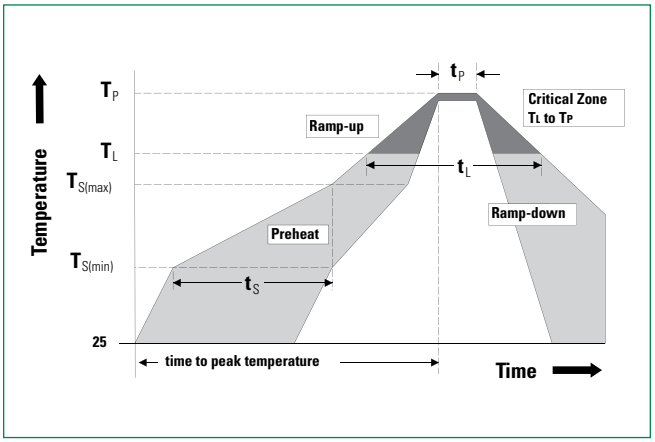
### Soldering Parameters

| | | |
|---|---|---|
| **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 secs |
| **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 |



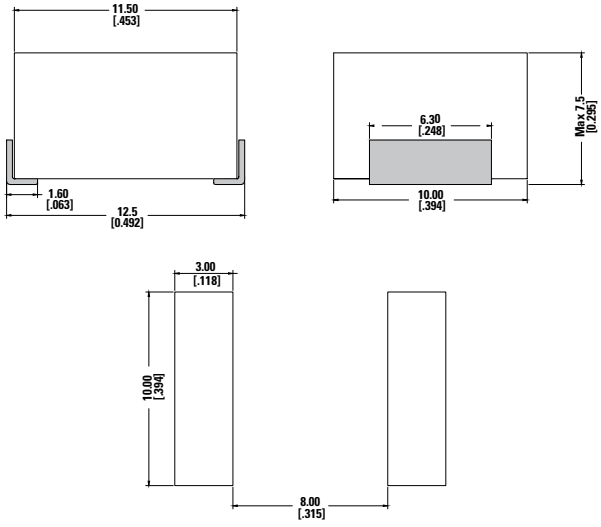

### Product Characteristics

| | |
|---|---|
| **Materials** | Body: Ceramic Body<br>Terminations: Tin-plated Copper |
| **Product Marking** | Brand Logo, Voltage Rating, and Ampere Rating |
| **Operating Temperature** [1,2] | -55 °C to +125 °C with proper derating |

| | |
|---|---|
| **Thermal Shock** | MIL-STD-202 Method 107<br>Test Condition B (-55°C to 125° C, 5 cycles). |
| **Moisture Resistance** | MIL-STD-202 method 106<br>High Humidity (90-98% RH), Heat (65°C) |
| **Vibration** | MIL-STD-202, Method 201 (10-55 Hz) |
| **Mechanical Shock** | MIL-STD-202, Method 213,<br>Test Condition I<br>(100 G's peak for 6 milliseconds) |
| **Resistance to Solder Heat** | MIL-STD-202 Method 210<br>Test Condition B (10sec at 260°C) |
| **Solderability** | MIL-STD-202 Method 208 |
| **MSL Test** | Level 1 J-STD-020 |
| **Salt Fog** | MIL-STD-202 Method 101<br>Test Condition B (5% NaCL solution, 48 hours exposure) |

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

### Dimensions
Units: mm (in.)




### Part Numbering System

**0708 200. U R**

- **Series**
- *** AMP Code** — Refer to Electrical Specifications table
- **Packaging Code** — **R =** Tape and Reel
- **Quantity Code** — **U =** 500 Pieces

***Example:**
200 amp product is 0708200.UR
(200 amp product shown above).

### Packaging

| Packaging Option | Packaging Specification | Quantity | Quantity and Packaging Code |
|---|---|---|---|
| 24mm Tape and Reel | EIA-481 | 500 | UR |



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