

# 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 resources at [www.littelfuse.com](http://www.littelfuse.com)

### Agency Approvals

Agency	Agency File Number	Ampere Range
	E71611	60 A – 200A
	J 50716850	60 A – 200A
	N/A	60 A – 200A
	N/A	60 A – 200A

### Application

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

### 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** I <sup>2</sup> t (A <sup>2</sup> sec)	Agency Approvals			
60	060.	125 VDC	14KA@80Vdc 3KA@125Vdc	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 I<sup>2</sup>t 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

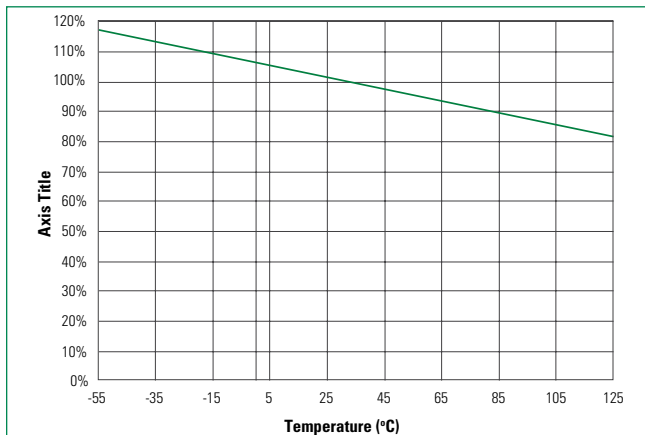
**Notes:**

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

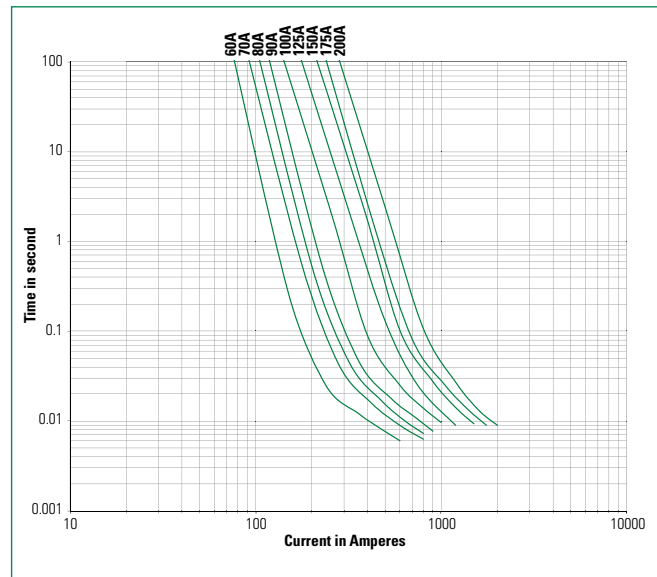
Example:

For continuous operation at 85°C, the fuse should be re-rated as follows:

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

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

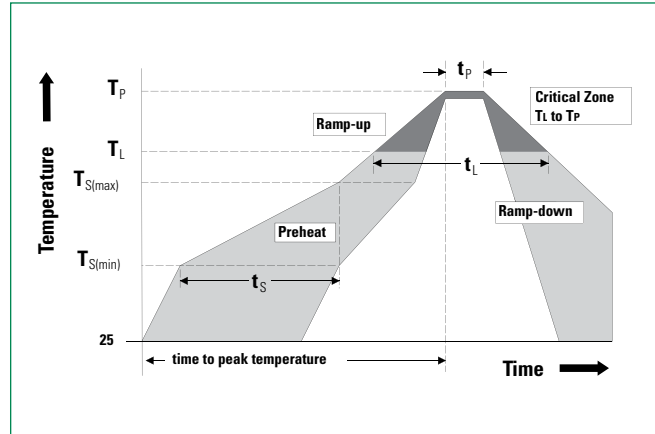


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## High-Current High IR SMD Fuse

### Soldering Parameters

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



### Product Characteristics

<b>Materials</b>	Body: Ceramic Body 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 +125 °C with proper derating

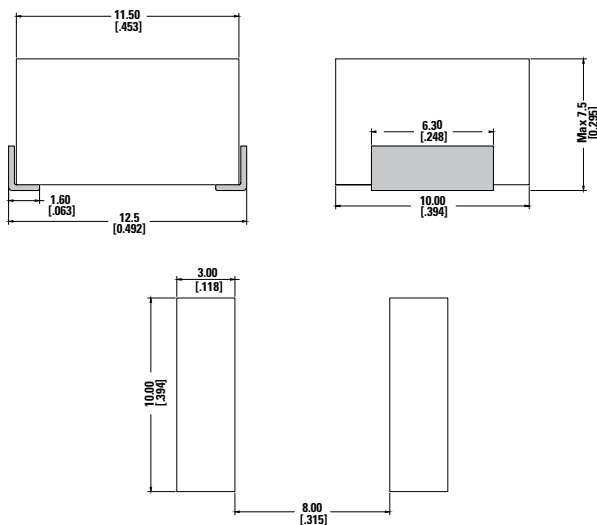
**Notes:**

- 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.

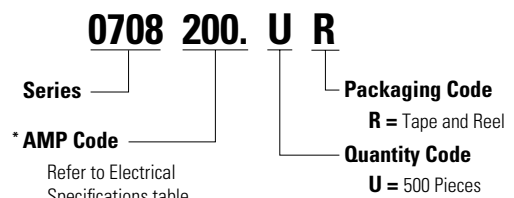
<b>Thermal Shock</b>	MIL-STD-202 Method 107 Test Condition B (-55°C to 125° C, 5 cycles).
<b>Moisture Resistance</b>	MIL-STD-202 method 106 High Humidity (90-98%RH), Heat (65°C)
<b>Vibration</b>	MIL-STD-202, Method 201 (10-55 Hz)
<b>Mechanical Shock</b>	MIL-STD-202, Method 213, Test Condition I (100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

### Dimensions

Units: mm (in.)



### Part Numbering System



**\*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

**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>.