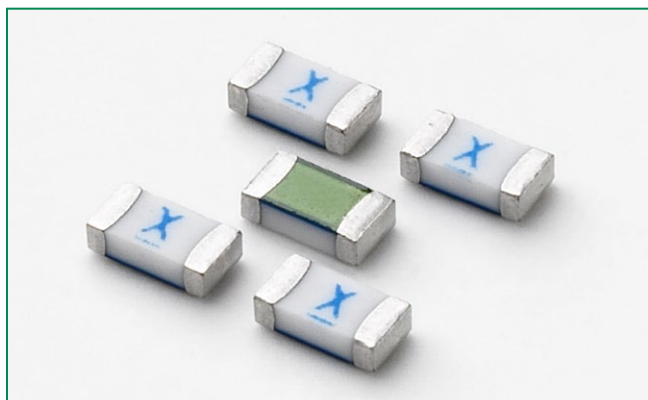






**THE DATASHEET OF  
0469004.WR**



### 469 Series – 1206 Slo-Blo® Fuse



#### Agency Approvals

AGENCY	AGENCY FILE NUMBER	AMPERE RANGE
	E10480	2A – 8A
	29862	2A – 8A

#### Electrical Characteristics for Series

% of Ampere Rating	Ampere Rating	Opening Time at 25°C
100%	2A – 8A	4 hours, Minimum
200%	2A – 8A	1 sec., Min.; 120 secs., Max.
300%	2A – 8A	0.1 sec., Min.; 3 secs., Max.
800%	2A – 8A	0.002 sec., Min.; 0.05 sec., Max.

#### Description

The 469 Series is a 100% Lead-free, RoHS compliant and Halogen-free fuse series designed specifically to provide over-current protection to circuits that operate under high working ambient temperature up to 150°C.

The general design ensures excellent temperature stability and performance reliability.

The high I<sup>2</sup>t values, typical in the Littelfuse Ceramic fuse family, ensure high inrush current withstand capability.

#### Features

- Operating Temperature from -55°C to +150°C
- 100% Lead-free, RoHS compliant and Halogen-free
- Suitable for both leaded and lead-free reflow / wave soldering

#### Applications

- LCD Displays
- Servers
- Notebook Computers
- Printers
- Scanners
- Data Modems
- Gaming Consoles

#### Additional Information



Datasheet





Resources



Samples

#### Electrical Specifications by Item

Ampere Rating (A)	Amp Code	Max. Voltage Rating (V)	Interrupting Rating	Nominal Resistance (Ohms) <sup>2</sup>	Nominal Melting I <sup>2</sup> t (A <sup>2</sup> Sec.) <sup>3</sup>	Nominal Voltage Drop At Rated Current (V) <sup>4</sup>	Nominal Power Dissipation At Rated Current (W)	Agency Approvals	
									
2.00	002.	63	60 A @ 63 VDC	0.166	0.2250	0.455	0.91	x	x
4.00	004.	32	60 A @ 32 VDC	0.052	3.560	0.236	0.944	x	x
5.00	005.	32		0.033	5.620	0.216	1.080	x	x
6.00	006.	24	60 A @ 24 VDC	0.026	9.410	0.274	1.644	x	x
7.00	007.	24		0.020	14.400	0.216	1.512	x	x
8.00	008.	24		0.016	23.720	0.233	1.864	x	x

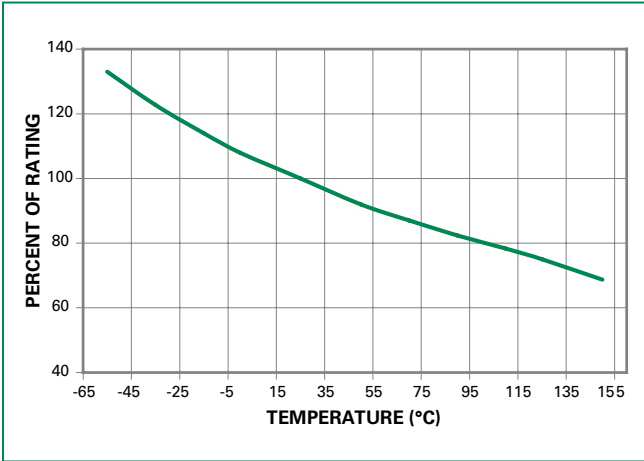
Notes:

1. AC Interrupting Rating tested at rated voltage with unity power factor. DC Interrupting Rating tested at rated voltage with time constant < 0.8 msec.
2. Nominal Resistance measured with < 10% rated current.
3. Nominal Melting I<sup>2</sup>t measured at 1 msec opening time.
4. Nominal Voltage Drop measured at rated current after temperature has stabilized.

Devices designed to carry rated current for 4 hours minimum. It is recommended that devices be operated continuously at no more than 80% rated current. See "Temperature Re-rating Curve" for additional re-rating information.

Devices designed to be mounted with marking code facing up.

**Temperature Re-rating Curve**



Note:

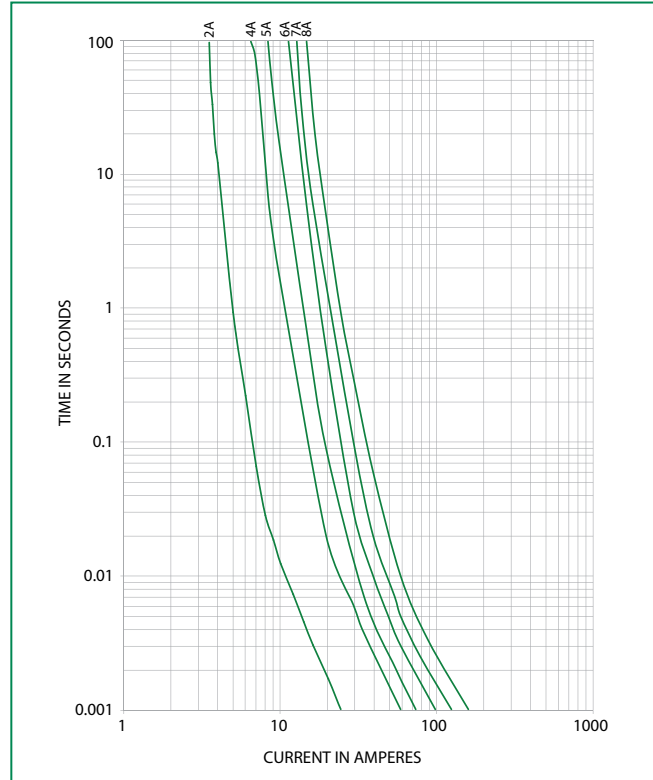
1. Re-rating depicted in this curve is in addition to the standard re-rating of 20% for continuous operation.

Example:

For continuous operation at 75 degrees celsius, the fuse should be rerated as follows:

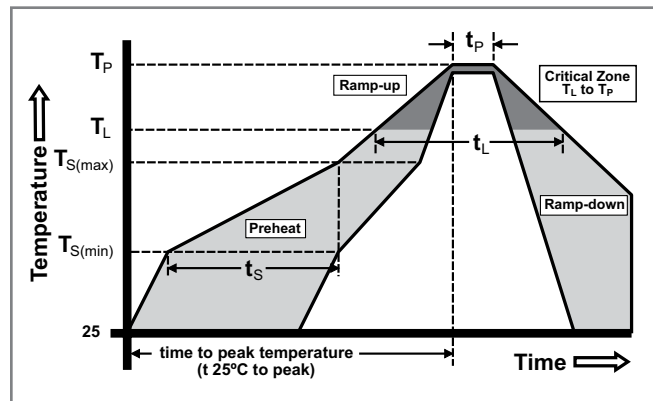
$$I = (0.80)(0.85)I_{RAT} = (0.68)I_{RAT}$$

**Average Time Current Curves**



**Soldering Parameters**

Reflow Condition	Pb – free assembly	
Pre Heat	- Temperature Min ( $T_{s(min)}$ )	150°C
	- Temperature Max ( $T_{s(max)}$ )	200°C
	- Time (Min to Max) ( $t_s$ )	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp ( $T_L$ ) to peak)	3°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 <sup>+0/-5</sup> °C	
Time within 5°C of actual peak Temperature ( $t_p$ )	10 – 30 seconds	
Ramp-down Rate	6°C/second max.	
Time 25°C to peak Temperature ( $T_p$ )	8 minutes max.	
Do not exceed	260°C	



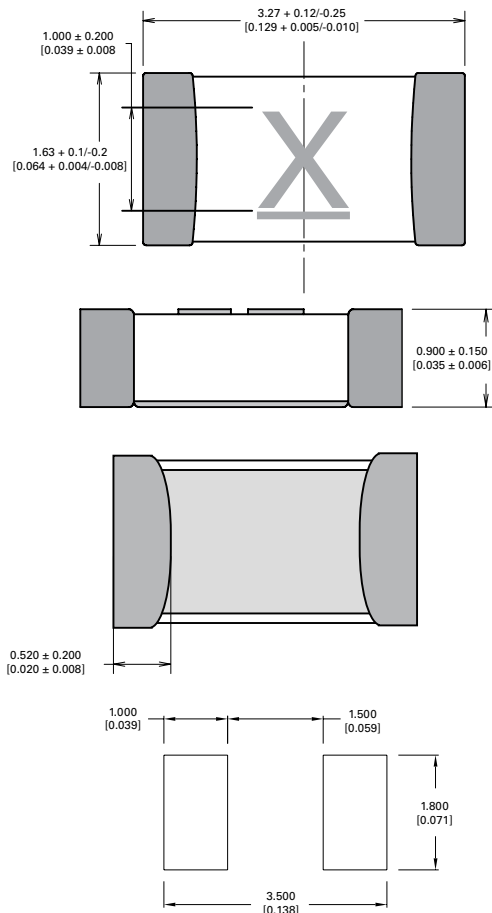
Wave Soldering	260°C, 10 seconds max.
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### Product Characteristics

<b>Materials</b>	<b>Body:</b> Advanced Ceramic <b>Terminations:</b> Ag / Ni / Sn (100% Lead-free) <b>Element Cover Coating:</b> Lead-free Glass
<b>Moisture Sensitivity Level</b>	IPC/JEDEC J-STD-020, Level 1
<b>Solderability</b>	IPC/EIC/JEDEC J-STD-002, Condition B
<b>Humidity</b>	MIL-STD-202, Method 103, Conditions D
<b>Resistance to Soldering Heat</b>	MIL-STD-202, Method 210, Condition B

<b>Moisture Resistance</b>	MIL-STD-202, Method 106
<b>Thermal Shock</b>	MIL-STD-202, Method 107, Condition B
<b>Mechanical Shock</b>	MIL-STD-202, Method 213, Condition A
<b>Vibration</b>	MIL-STD-202, Method 201
<b>Vibration, High Frequency</b>	MIL-STD-202, Method 204, Condition D
<b>Dissolution of Metallization</b>	IPC/EIC/JEDEC J-STD-002, Condition D
<b>Terminal Strength</b>	IEC 60127-4

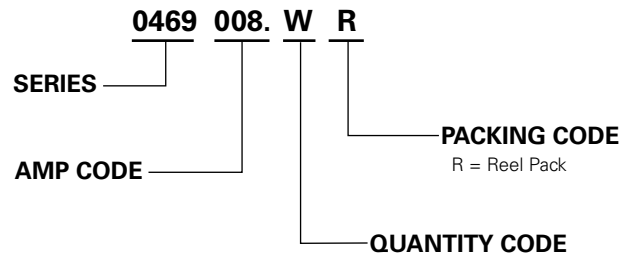
### Dimensions



### Part Marking System

Amp Code	Marking Code
002.	<u>N</u>
004.	<u>S</u>
005.	<u>I</u>
006.	<u>U</u>
007.	<u>W</u>
008.	<u>X</u>

### Part Numbering System



### Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code
8mm Tape and Reel	EIA-481, IEC 60286, Part 3	3000	WR

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