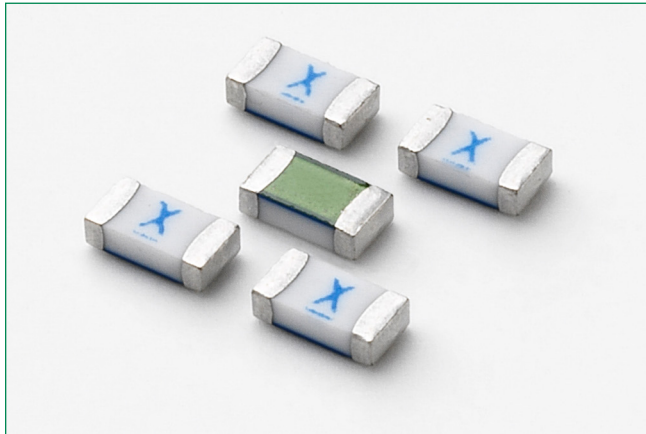


469 Series

1206 Slo-Blo® Fuse



Additional Information



Resources



Accessories



Samples

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 sec., Max. |
| 300% | 2A – 8A | 0.1 sec., Min.; 3 sec., Max. |
| 800% | 2A – 8A | 0.002 sec., Min.; 0.05 sec., Max. |

Description

The 469 Series is a 100% lead-free, halogen-free and RoHS compliant 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 I²t values, typical in the Littelfuse Ceramic fuse family, ensure high inrush current withstand capability.

Features and Benefits

- 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
- Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14

Applications

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

Agency Approvals

| Agency | Agency File Number | Ampere Range |
|--------|--------------------|--------------|
| cULus | E10480 | 2A – 8A |
| SP | 29862 | 2A – 8A |

Electrical Specifications by Item

| Ampere Rating (A) | Amp Code | Max. Voltage Rating (V) | Interrupting Rating ¹ | Nominal Resistance (Ohms) ² | Nominal Melting I ² t (A ² Sec.) ³ | Nominal Voltage Drop At Rated Current (V) ⁴ | Nominal Power Dissipation At Rated Current (W) | Agency Approvals | |
|-------------------|----------|-------------------------|----------------------------------|--|---|--|--|------------------|----|
| | | | | | | | | cULus | SP |
| 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:

- AC Interrupting Rating tested at rated voltage with unity power factor. DC Interrupting Rating tested at rated voltage with time constant < 0.8 msec.
- Nominal Resistance measured with < 10% rated current.
- Nominal Melting I²t measured at 1 msec opening time.
- Nominal Voltage Drop measured at rated current after temperature has stabilized.

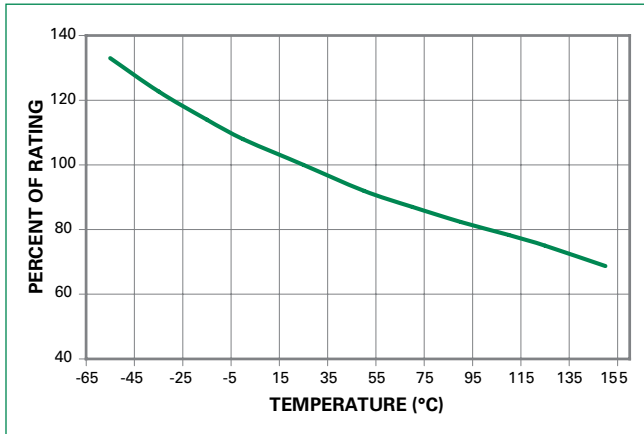
Devices designed to carry rated current for 4 hours minimum. It is recommended that devices be operated continuously at no more than 80% rated current. See "Temperature Re-rating Curve" for additional re-rating information.

Devices designed to be mounted with marking code facing up.

469 Series

1206 Slo-Blo® Fuse

Temperature Re-rating Curve



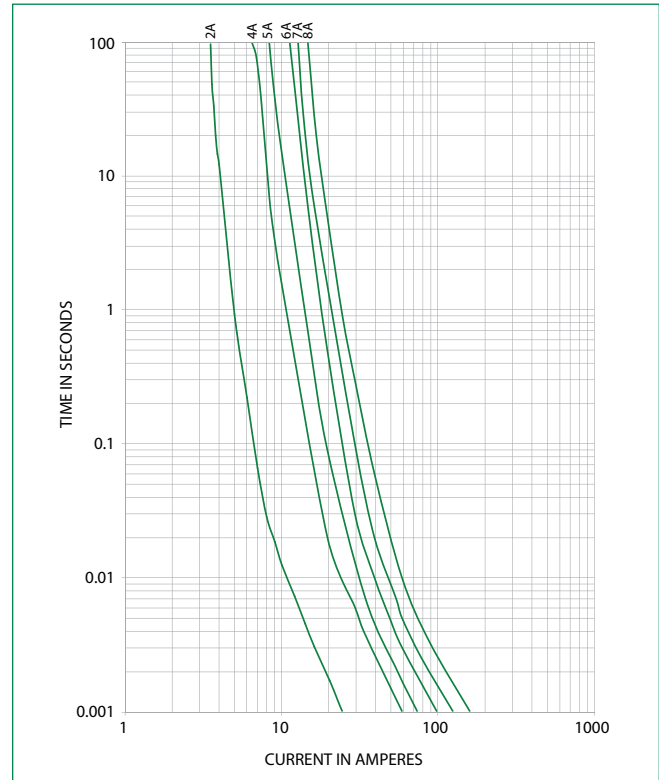
Note:

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

Example:

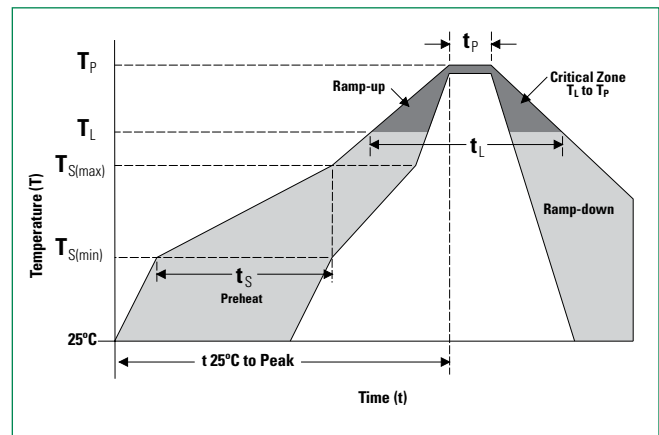
For continuous operation at 75 degrees celsius, the fuse should be rerated as follows:
 $I = (0.80)(0.85)_{N} = (0.68)_{N}$

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 ^{+0/-5} °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. |



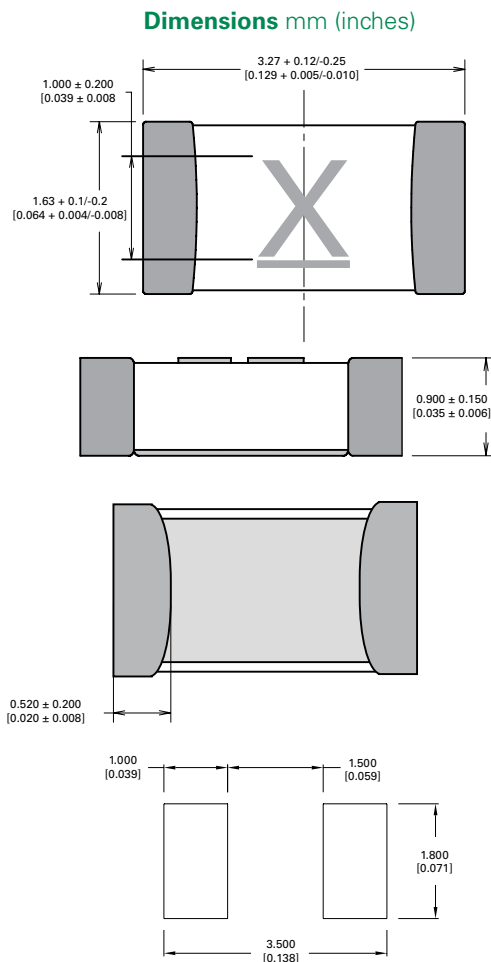
469 Series

1206 Slo-Blo® Fuse

Product Characteristics

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

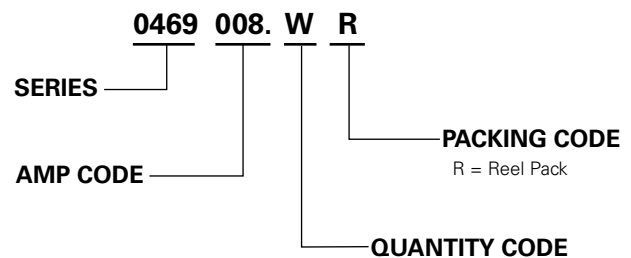
| | |
|-------------------------------------|--------------------------------------|
| Moisture Resistance | MIL-STD-202, Method 106 |
| Thermal Shock | MIL-STD-202, Method 107, Condition B |
| Mechanical Shock | MIL-STD-202, Method 213, Condition A |
| Vibration | MIL-STD-202, Method 201 |
| Vibration,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



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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