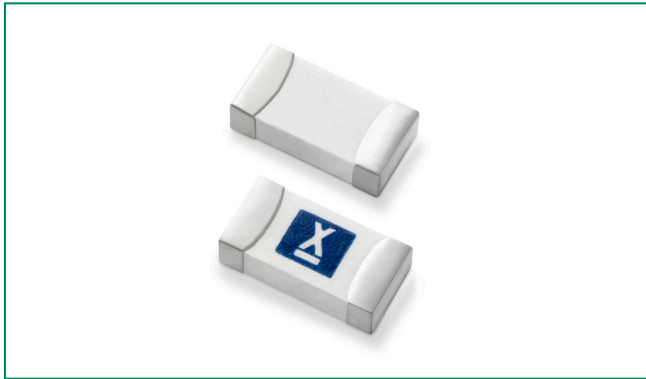





**THE DATASHEET OF
0407002.WR**



407 Series – 1206 Time-Lag Fuse



Agency Approvals

| AGENCY | AGENCY FILE NUMBER | AMPERE RANGE |
|---|--------------------|--------------|
|  | E10480 | 1A – 8A |

Electrical Characteristics

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

Additional Information



[Datasheet](#)



[Samples](#)

Description

Littelfuse 407 Series is a 100% lead-free, RoHS compliant and halogen-free fuse designed specifically to provide overcurrent protection to circuits that operate under high working ambient temperatures up to 150° C and high in-rush currents. The general design ensures excellent temperature stability and performance reliability. This high I²t time lag fuse is designed to have ultra-high in-rush current withstand capability to avoid nuisance fuse open.

Features

- Operating Temperature from -55° C to +150° C compliant and Halogen-free
- UL Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14
- 100% Lead-free, RoHS
- Suitable for both leaded and lead-free reflow/wave soldering
- Ultra high I²t values

Benefits

- Avoids nuisance opening due to high inrush and surge current inherent in the system
- High current ratings in small size

Applications

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

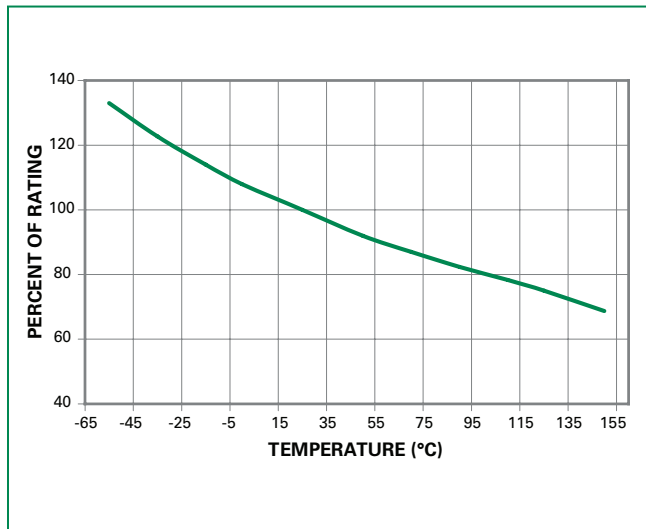
Electrical Specifications by Item

| Ampere Rating (A) | Amp Code | Max. Voltage Rating (V) | Interrupting Rating (AC/DC) 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 Approval |
|-------------------|----------|-------------------------|--|--|---|--|--|-----------------|
| | | | | | | | | UL US |
| 1.00 | 001. | 63 | 50A@63VDC | 0.360 | 0.142 | 0.456 | 0.456 | x |
| 1.25 | 1.25 | 63 | | 0.200 | 0.329 | 0.404 | 0.500 | x |
| 1.50 | 01.5 | 63 | | 0.180 | 0.567 | 0.347 | 0.525 | x |
| 2.00 | 002. | 63 | | 0.100 | 0.870 | 0.323 | 0.640 | x |
| 2.50 | 02.5 | 32 | 50A@32VDC | 0.055 | 1.000 | 0.252 | 0.625 | x |
| 3.00 | 003. | 32 | | 0.040 | 1.300 | 0.187 | 0.570 | x |
| 3.50 | 03.5 | 32 | | 0.030 | 2.260 | 0.153 | 0.525 | x |
| 4.00 | 004. | 32 | | 0.025 | 4.180 | 0.142 | 0.560 | x |
| 4.50 | 04.5 | 32 | | 0.020 | 5.200 | 0.134 | 0.585 | x |
| 5.00 | 005. | 32 | | 0.016 | 7.800 | 0.133 | 0.650 | x |
| 5.50 | 05.5 | 24 | 50A@24VDC | 0.014 | 8.550 | 0.130 | 0.715 | x |
| 6.00 | 006. | 24 | 60A@24VDC | 0.012 | 15.560 | 0.128 | 0.780 | x |
| 7.00 | 007. | 24 | | 0.010 | 16.230 | 0.110 | 0.770 | x |
| 8.00 | 008. | 24 | | 0.009 | 24.120 | 0.097 | 0.800 | x |

Note:

- 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 derating information.
 - Devices designed to be mounted with marking code facing up.

Temperature Re-rating Curve



Note:

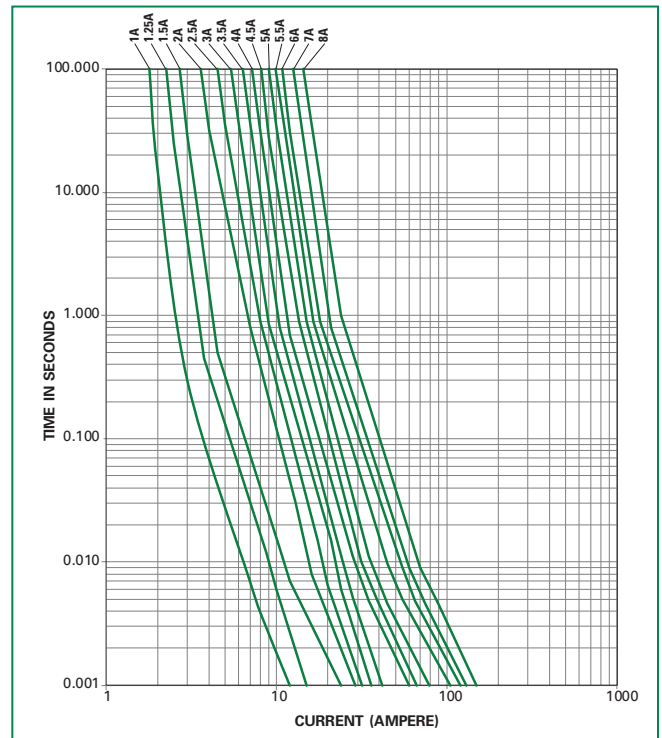
Re-rating depicted in this curve is in addition to the standard re-rating of 20% for continuous operation.

Example:

For continuous operation at 75° C, the fuse should be re-rated as follows:

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

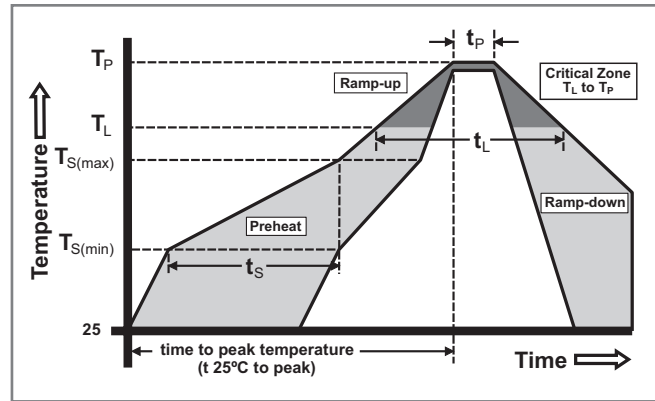
Average Time Current Curves



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 ^{+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. |
|----------------|------------------------|

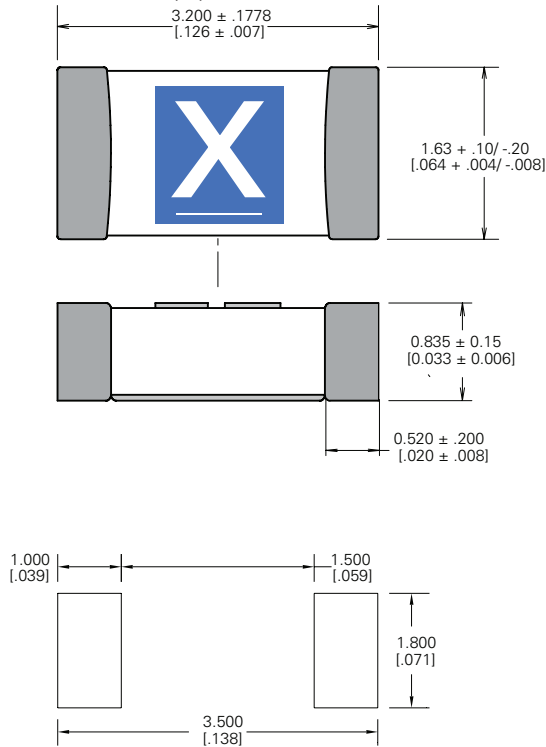


Product Characteristics

| | |
|-------------------------------------|--|
| 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/ECA/JEDEC J-STD-002, Condition C |
| Humidity Test | MIL-STD-202, Method 103, Conditions D |
| Resistance to Solder 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/ECA/JEDEC J-STD-002, Condition D |
| Terminal Strength | IEC 60127-4 |

Dimensions

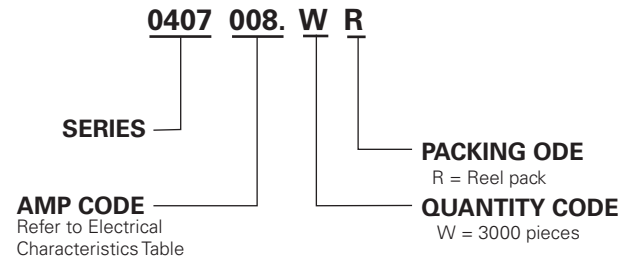
All dimensions in mm (in)



Part Marking System

| Amp Code | Marking Code | Amp Code | Marking Code |
|----------|--------------|----------|--------------|
| 001. | H | 004. | S |
| 1.25 | J | 04.5 | S. |
| 01.5 | K | 005. | T |
| 002. | N | 05.5 | U |
| 02.5 | Q | 006. | V |
| 003. | P | 007. | W |
| 03.5 | R | 008. | X |

Part Numbering System



Packaging

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

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