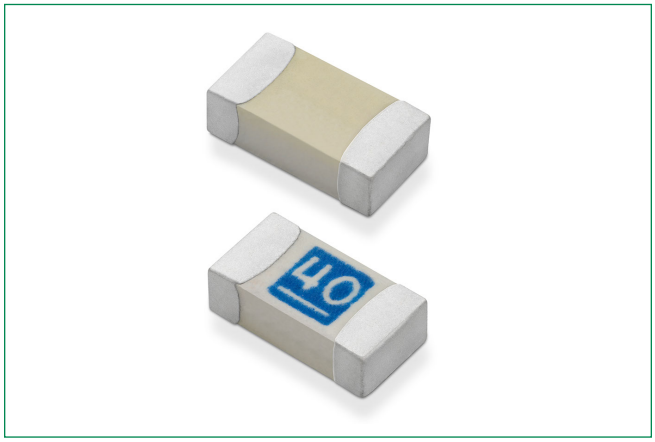
# Surface Mount Fuses

## Ceramic Fuse > 806 Series




## Description

The 806 Series fuse is designed specifically to provide overcurrent protection to circuits that operate under high working ambient temperature up to 150 °C.

Its design ensures excellent temperature stability and performance reliability. The high $I^2t$ values which is typical in the Littelfuse Ceramic Fuse family ensure high inrush current withstand capability.

## Features & Benefits

- Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14
- Operating Temperature from -55 °C to +150 °C
- Designed to provide over-current protection in high current Voltage Regulator Module (VRM) applications
- 100% Lead-free, RoHS compliant, and Halogen-free
- Suitable for both leaded and lead-free reflow/wave soldering
- High current ratings in small size
- High performance materials provide improved performance in elevated ambient temperature application
- Avoids nuisance opening due to high inrush and surge current inherent in the system

## Additional Information

Resources | Accessories | Samples

## Applications

- Voltage Regulator Module (VRM) equipment
- Notebook PC
- DC-DC converter
- Power tool

## Agency Approvals

| Agency | Agency File Number | Ampere Range |
|---|---|---|
| c UL us | E10480 | 20 A – 40 A |

## Electrical Characteristics

| % of Ampere Rating | Ampere Rating | Opening Time at 25 °C |
|---|---|---|
| 100% | 20 A – 40 A | 4 hours, Minimum |
| 250% | 20 A – 30 A | 5 seconds, Maximum |
| 350% | 40A | 5 seconds, Maximum |

## Electrical Specifications

| Ampere Rating (A) | Amp Code | Max Voltage Rating (V) | Interrupting Rating (AC/DC)[1] | Nominal Resistance (Ohms)[2] | Nominal Melting $I^2t$ ($A^2sec$)[3] | Nominal Voltage Drop At Rated Current (V)[4] | Nominal Power Dissipation At Rated Current (W) | Agency Approvals |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | c UL us |
| 20 | 020. | 36 | 250 A @ 24 VDC<br>200 A @ 36 VDC | 0.00290 | 65 | 0.0938 | 1.8760 | x |
| 25 | 025. | | | 0.00219 | 110 | 0.0877 | 2.1925 | x |
| 30 | 030. | | 300 A @ 24 VDC<br>200 A @ 36 VDC | 0.00174 | 170 | 0.0948 | 2.8440 | x |
| 40 | 040. | 36 | 200 A @ 36 VDC | 0.00130 | 240 | 0.09400 | 3.750 | x |

**Notes:**

**1.** DC Interrupting Rating tested at rated voltage with time constant < 0.1 msec.
**2.** Nominal Resistance measured with <10% rated current.
**3.** Nominal Melting $I^2t$ measured at 1 msec. opening time. For other $I^2t$ data refer to chart.
**4.** Nominal Voltage Drop measured at rated current after temperature has stabilized and with fuse mounted on board with 3 oz Cu trace.
▪ Devices are 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 are designed to be mounted with marking code facing up.

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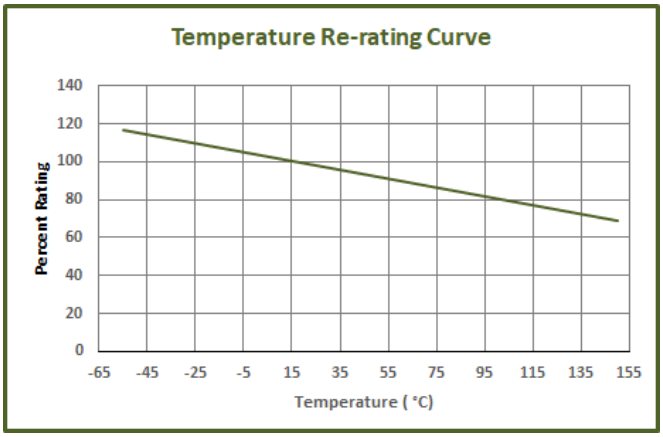
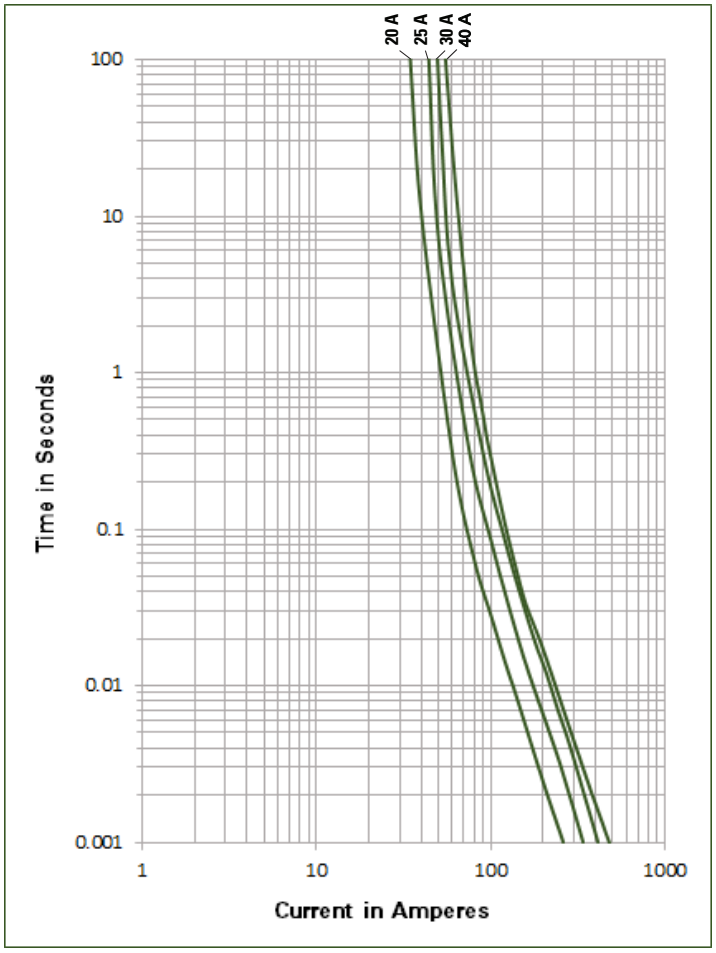
## Temperature Re-rating Curve




**Notes:**
**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 °C, the fuse should be rerated as follows: $I = (0.80)(0.85)I_{RAT} = (0.68)I_{RAT}$

## Average Time Current Curves




## Product Characteristics

| | |
|---|---|
| **Materials** | **Body:** Advanced Ceramic<br>**Terminations:** Ag/Ni/Sn (100% Lead-free) |
| **Moisture Sensitivity Level** | IPC/JEDEC J-STD-020, Level 1 |
| **Solderability** | IPC/ECA/JEDEC J-STD-002D |
| **Biased Humidity Test** | JESD22-A110-B |
| **Resistance to Solvents** | MIL-STD-202, Method 215 |
| **Moisture Resistance** | MIL-STD-202, Method 106G |
| **Thermal Shock** | MIL-STD-202, Method 107G |
| **Mechanical Shock** | MIL-STD-202, Method 213B |
| **Vibration Low Frequency** | MIL-STD-202, Method 201A |
| **Vibration High Frequency** | MIL-STD-202, Method 204, Condition D |
| **Dissolution of Metallization** | IPC/EIC/JEDEC J-STD-002B, Condition D |
| **Terminal Strength** | IEC 60127-4 |

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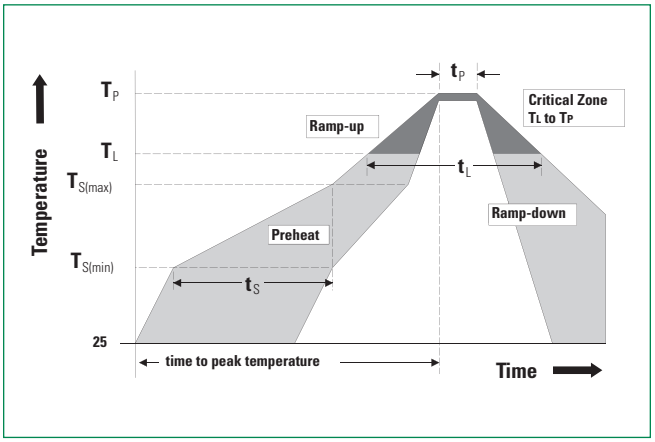
## Soldering Parameters

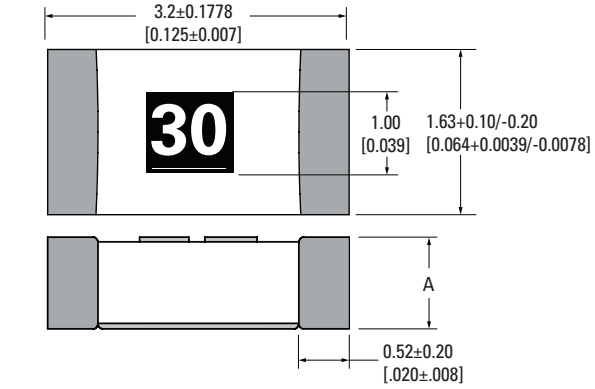
| | | |
|---|---|---|
| **Reflow Condition** | | Pb – Free assembly |
| **Pre Heat** | **- Temperature Min ($T_{s(min)}$)** | 150 °C |
| | **- Temperature Max ($T_{s(max)}$)** | 200 °C |
| | **- Time (Min to Max) ($t_s$)** | 60–180 secs |
| **Average ramp up rate (Liquidus Temp ($T_L$) to peak** | | 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 ($t_p$)** | | 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 |

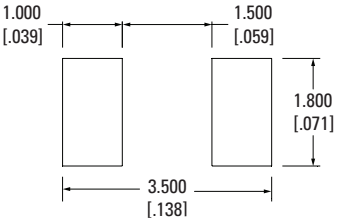
| | |
|---|---|
| **Wave Soldering Parameters** | 260 °C Peak Temperature, 10 seconds max. |




## Dimensions

Measurements are in mm [inch]




| Ampere Rating | A (mm) |
|---|---|
| 20 A | 1.01± 0.101 |
| 25 A | 1.11±0.111 |
| 30 A | 1.21±0.121 |
| 40 A | 0.95±0.15 |

## Part Marking System

| Ampere Rating | Marking Code |
|---|---|
| 020 | 20 |
| 025 | 25 |
| 030 | 30 |
| 040 | 40 |

## Part Numbering System

**0806 040. W R**

- **Series**
- **Amp Code**
- **Quantity Code** W = 3000 pcs.
- **Packing Code** R = Reel Pack

## Packaging

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