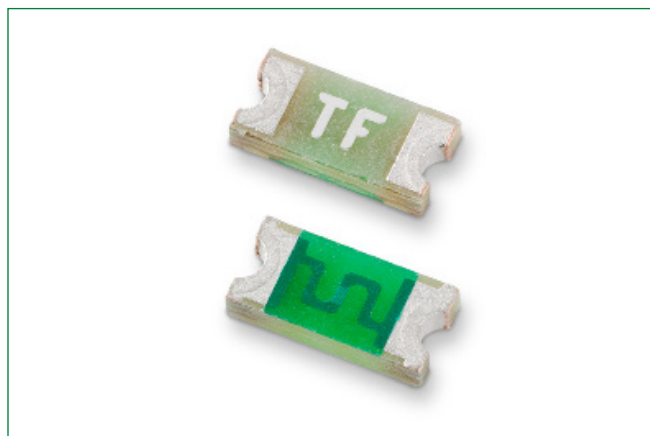


# 468 Series

## 1206 Slo-Blo® Fuse



### Description

The 468 Series Slo-Blo® Surface Mount Fuse (SMF) is a small (1206 size) thin-film device designed for secondary protection of circuits used in space constrained applications such as hand-held portable electronic devices.

This series is 100% lead-free and meets the requirements of the RoHS directive. Halogen-Free 468 Series fuses are available—to order use the “HF” suffix. See Part Numbering section for additional information.

### Features and Benefits

- Complies with electronic industry environmental standards for lead reduction.
- Product is compatible with lead-free solders and higher temperature profiles.
- Time delay feature withstands high inrush currents and prevents nuisance openings.
- Package is visually distinct from fast-acting version for easy identification.
- Top side marking allows visual verification of amperage rating.
- Lead-free, halogen-free and ROHS compliant.

### Additional Information



Resources



Accessories



Samples

### Applications

Secondary protection for space constrained applications:

- Cell phones
- Battery packs
- Digital cameras
- DVD players
- Hard disk drives.

### Electrical Characteristics for Series

| % of Ampere Rating | Opening Time at 25°C               |
|--------------------|------------------------------------|
| 100%               | 4 hours, Minimum                   |
| 200%               | 1 sec., Min.; 120 sec., Max.       |
| 300%               | 0.05 sec., Min.; 1.5 sec., Max     |
| 800%               | 0.0015 sec., Min.; 0.05 sec., Max. |

### Agency Approvals

| Agency | Agency File Number | Ampere Range |
|--------|--------------------|--------------|
| cULus  | E10480             | 0.5 A - 3 A  |
| SP     | 29862              | 0.5 A - 3 A  |
| CE     | NA                 | 0.5 A - 3 A  |
| UKCA   | NA                 | 0.5 A - 3 A  |
| △      | R50555208          | 0.5 A - 3 A  |

### Electrical Specifications by Item

| Ampere Rating (A) | Amp Code | Max Voltage Rating (V) | Interrupting Rating        | Nominal Cold Resistance (Ohms) <sup>1</sup> | Nominal Melting I <sup>2</sup> t (A <sup>2</sup> sec) | Nom Voltage Drop (mV) | Nom Power Dissipation (W) | Agency Approvals |    |      |       |    |
|-------------------|----------|------------------------|----------------------------|---------------------------------------------|-------------------------------------------------------|-----------------------|---------------------------|------------------|----|------|-------|----|
|                   |          |                        |                            |                                             |                                                       |                       |                           | △                | CE | UKCA | cULus | SP |
| 0.50              | .500     | 63                     |                            | 0.27000                                     | 0.0310                                                | 156.77                | 0.0784                    | x                | x  | x    | x     | x  |
| 1.00              | 001.     | 63                     | 50A @63 VAC/VDC            | 0.0790                                      | 0.1270                                                | 94.70                 | 0.0947                    | x                | x  | x    | x     | x  |
| 1.50              | 01.5     | 63                     |                            | 0.0440                                      | 0.2880                                                | 82.32                 | 0.1235                    | x                | x  | x    | x     | x  |
| 2.00              | 002.     | 63                     | 35A @63 VAC<br>50A @63 VDC | 0.0325                                      | 0.5060                                                | 77.27                 | 0.1545                    | x                | x  | x    | x     | x  |
| 2.50              | 02.5     | 63                     |                            | 0.0240                                      | 1.0110                                                | 73.92                 | 0.1848                    | x                | x  | x    | x     | x  |
| 3.00              | 003.     | 32                     | 50A @32 VAC/VDC            | 0.01950                                     | 1.2700                                                | 72.95                 | 0.2189                    | x                | x  | x    | x     | x  |

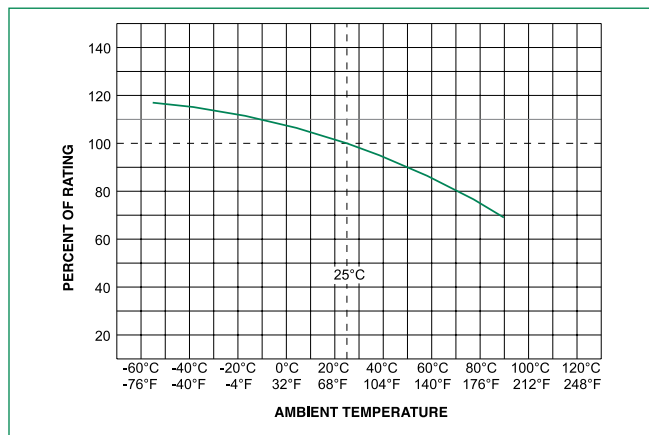
1. Measured at 10% of rated current, 25°C.

2. Measured at rated voltage.

# 468 Series

## 1206 Slo-Blo® Fuse

### Temperature Re-rating Curve



#### Note:

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

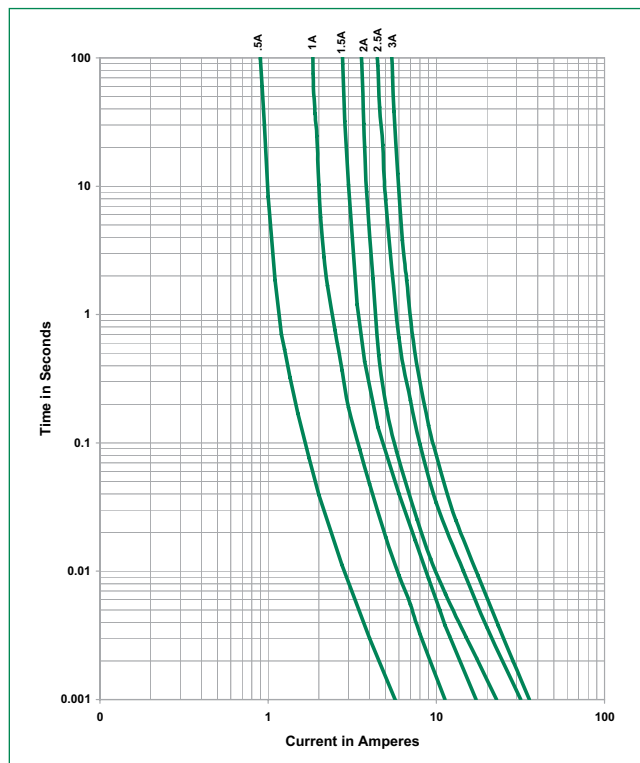
#### Example:

For continuous operation at 70 degrees celsius, the fuse should be derated as follows:

$$I = (0.75)(0.80)I_{\text{RAT}} = (0.60)I_{\text{RAT}}$$

2. The temperature derating curve represents the nominal conditions. For questions about temperature derating curve, please consult Littelfuse technical support for assistance.

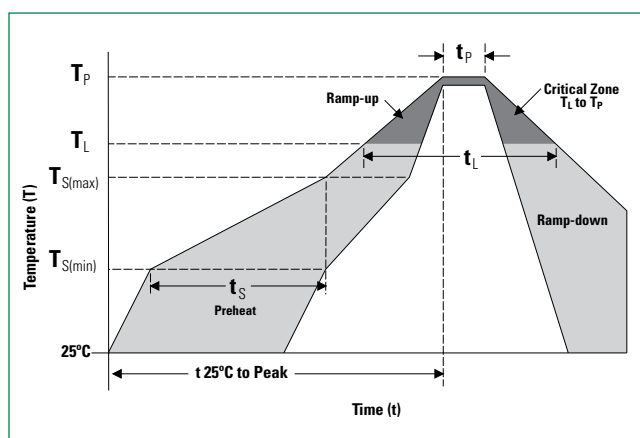
### Average Time Current Curves



### 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 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 seconds   |
| Peak Temperature ( $T_p$ )                            |                                     | 260 $^{+0/-5}$ °C  |
| Time within 5°C of actual peak Temperature ( $t_p$ )  |                                     | 20 – 40 seconds    |
| Ramp-down Rate                                        |                                     | 5°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. |
|----------------|------------------------|



# 468 Series

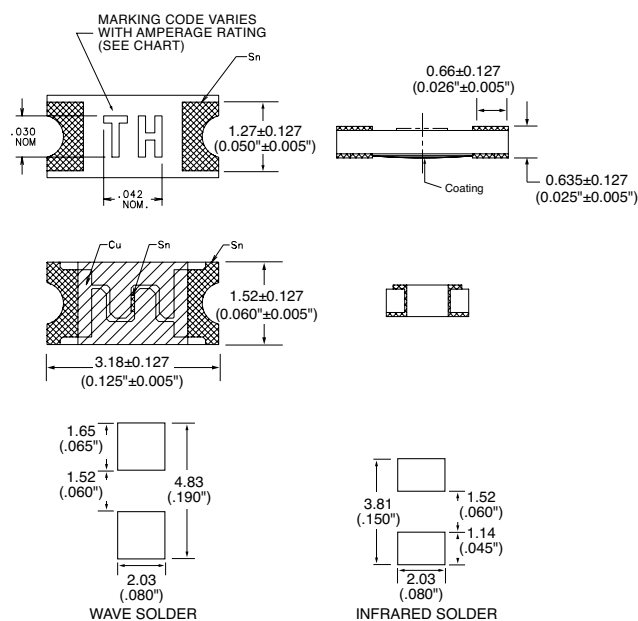
## 1206 Slo-Blo® Fuse

### Product Characteristics

|                              |                                                                                                                                       |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>Materials</b>             | <b>Body:</b> Epoxy Substrate<br><b>Terminations:</b> 100% Tin over Nickel over Copper<br><b>Element Cover Coat:</b> Conformal Coating |
| <b>Operating Temperature</b> | -55°C to 90°C. Consult temperature re-rating curve chart. For operation above 90°C please contact Littelfuse                          |
| <b>Thermal Shock</b>         | Withstands 5 cycles of - 55°C to 125°C                                                                                                |
| <b>Humidity</b>              | MIL-STD-202, Method 103, Condition D                                                                                                  |

|                                              |                                                 |
|----------------------------------------------|-------------------------------------------------|
| <b>Vibration</b>                             | Withstands 10-55 Hz per MIL-STD-202, Method 201 |
| <b>Insulation Resistance (After Opening)</b> | Greater than 10,000 ohms.                       |
| <b>Resistance to Soldering Heat</b>          | MIL-STD-202, Method 210, Condition D            |

### Dimensions



### Part Marking System

| Amp Code | Marking Code |
|----------|--------------|
| .500     | TF           |
| 001.     | TH           |
| 01.5     | TK           |
| 002.     | TN           |
| 02.5     | TO           |
| 003.     | TP           |

### Part Numbering System

**0468002.NRHF**

**SERIES**

**AMP Code**

The dot is positioned before the Packaging Suffix with whole ratings and within the numbering sequence for fractional ratings. Refer to Amp Code column in the Electrical Specifications table.

**PACKAGING Code**

NR = Tape and Reel, 5000 pcs

**'HF' SUFFIX**

**HALOGEN FREE ITEM**

**Example:**  
1.5 amp product is 0468001.5NRHF (2 amp product shown above).

### Packaging

| Packaging Option       | Packaging Specification      | Quantity | Quantity & Packaging Code |
|------------------------|------------------------------|----------|---------------------------|
| Tape & Reel – 8mm tape | EIA-481 Rev. D (IEC 60286-3) | 5000     | NR                        |

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