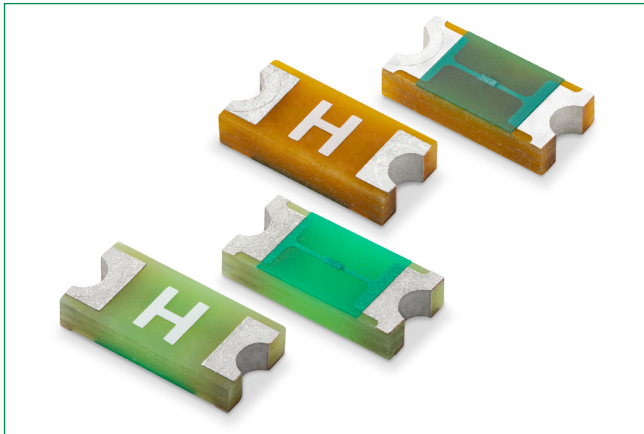


466 Series

1206 Fast-Acting Fuse



Description

The 466 Series Fast-Acting 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. New Halogen-Free 466 Series fuses are available to order using the "HF" suffix. See Part Numbering section for additional information.

Features & Benefits

- Product is compatible with lead-free solders and higher temperature profiles
- Product is marked on top surface with code to allow amperage rating identification without testing
- Low profile for height sensitive applications
- Flat top surface for pick-and-place operations
- Element-covering material is resistant to industry standard cleaning operations
- Lead-free, Halogen-free and RoHS compliant
- Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14
- Conforms to EN 60127-1 and EN 60127-7
- CE Mark indicates suitability for the European Market
- UKCA Mark indicates suitability for the UK Market

Additional Information



Resources



Accessories



Samples

Agency Approvals

| Agency | Agency File Number | Ampere Range |
|--------|--------------------|---------------|
| | E10480 | 0.125 A - 5 A |
| | 29862 | 0.125 A - 5 A |
| | NA | 0.125 A - 2 A |
| | NA | 0.125 A - 2 A |
| | J50518280 | 0.125 A - 5 A |

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% | 5 sec., Maximum |
| 300% | 0.2 sec., Maximum |

Electrical Specifications by Item

| Ampere Rating (A) | Amp Code | Max Voltage Rating (V) | Interrupting Rating | Nominal Cold Resistance (Ohms) | Nominal Melting I ² t (A ² sec) | Nom Voltage Drop (mV) | Nom Power Dissipation (W) | Agency Approvals | | | | |
|-------------------|----------|------------------------|---------------------|--------------------------------|---|-----------------------|---------------------------|------------------|-------|------|----|-----|
| | | | | | | | | CE | UK CA | RoHS | UL | CSA |
| 0.125 | .125 | 125 | 50A @ 125VAC/VDC | 3.925 | 0.00064 | 634.37 | 0.0793 | x | x | x | x | x |
| 0.200 | .200 | 125 | | 1.100 | 0.00055 | 254.28 | 0.0509 | x | x | x | x | x |
| 0.250 | .250 | 125 | | 0.691 | 0.0022 | 207.01 | 0.0518 | x | x | x | x | x |
| 0.375 | .375 | 125 | | 0.351 | 0.0045 | 169.18 | 0.0634 | x | x | x | x | x |
| 0.500 | .500 | 63 | 50A @ 63VAC/VDC | 0.248 | 0.0060 | 158.47 | 0.0792 | x | x | x | x | x |
| 0.750 | .750 | 63 | | 0.106 | 0.0276 | 98.65 | 0.0740 | x | x | x | x | x |
| 1.00 | 001. | 63 | | 0.075 | 0.0423 | 79.97 | 0.0800 | x | x | x | x | x |
| 1.25 | 1.25 | 63 | | 0.057 | 0.0640 | 85.71 | 0.1071 | x | x | x | x | x |
| 1.50 | 01.5 | 63 | | 0.046 | 0.1103 | 82.97 | 0.1244 | x | x | x | x | x |
| 1.75 | 1.75 | 63 | | 0.038 | 0.1835 | 80.73 | 0.1413 | x | x | x | x | x |
| 2.00 | 002. | 63 | 50A @ 32VAC/VDC | 0.030 | 0.2326 | 78.73 | 0.1575 | x | x | x | x | x |
| 2.50 | 02.5 | 32 | | 0.023 | 0.3516 | 76.99 | 0.1925 | - | - | x | x | x |
| 3.00 | 003. | 32 | | 0.019 | 0.5760 | 75.99 | 0.2280 | - | - | x | x | x |
| 4.00 | 004. | 32 | | 0.014 | 1.024 | 74.50 | 0.2980 | - | - | x | x | x |
| 5.00 | 005. | 32 | | 0.011 | 1.600 | 73.75 | 0.3688 | - | - | x | x | x |

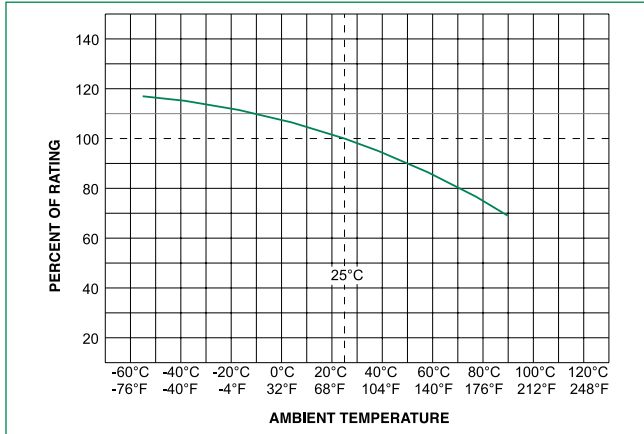
1. Measured at 10% of rated current, 25°C.

2. Measured at rated voltage.

466 Series

1206 Fast-Acting Fuse

Temperature Re-rating Curve



Note:

1. Re-rating depicted in this curve is in addition to the standard re-rating of 25% for continuous operation.

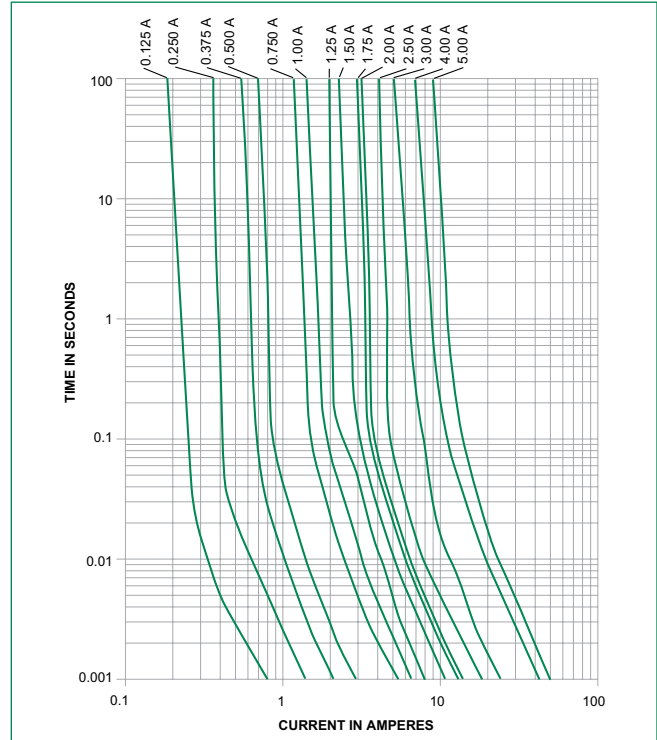
Example:

For continuous operation at 70 degrees celsius, the fuse should be rerated 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.

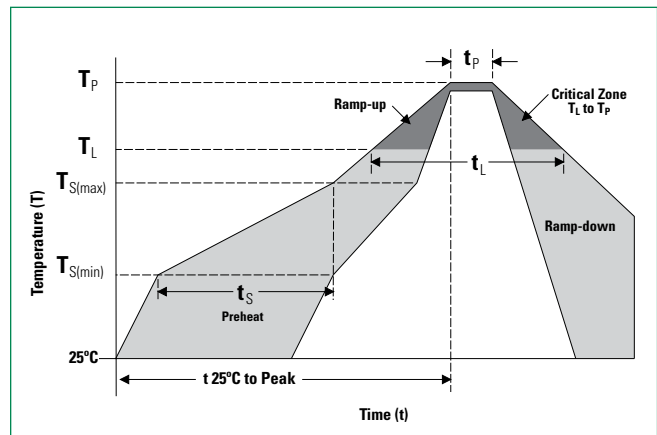
Average Time Current Curves



Soldering Parameters

| | | |
|--|---|-------------------------|
| Reflow Condition | | Pb – free assembly |
| Pre Heat | - Temperature Min ($T_{s(\text{min})}$) | 150°C |
| | - Temperature Max ($T_{s(\text{max})}$) | 200°C |
| | - Time (Min to Max) (t_s) | 60 – 180 seconds |
| Average Ramp-up Rate (Liquidus Temp (T_L) to peak) | | 5°C/second max. |
| $T_{s(\text{max})}$ 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. |
|-----------------------|------------------------|



466 Series

1206 Fast-Acting Fuse

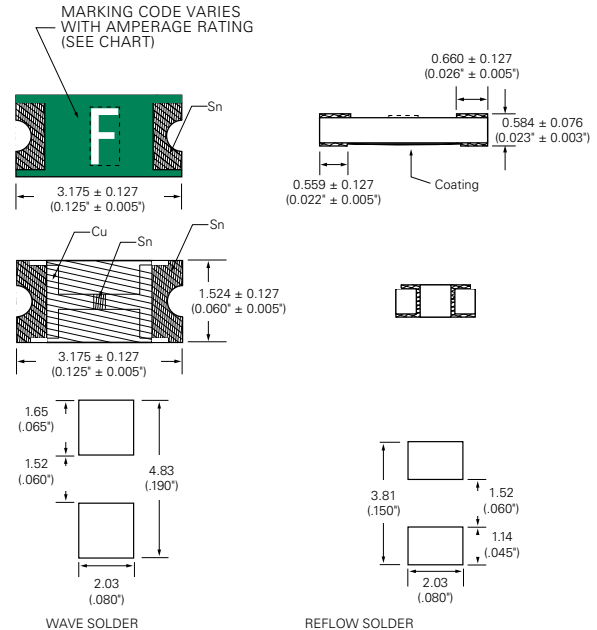
Product Characteristics

| | |
|--|---|
| Materials | Body: Advanced High Temperature Substrate Terminations: 100% Tin over Nickel over Copper Element Cover Coat: Conformal Coating |
| Operating Temperature | - 55°C to 90°C. Consult temperature re-rating curve chart. |
| Thermal Shock | Withstands 5 cycles of -55°C to 125°C |
| Humidity | MIL-STD-202, Method 103, Condition D |
| Vibration | MIL-STD-202, Method 201 |
| Insulation Resistance (After Opening) | Greater than 10,000 ohms |
| Resistance to Soldering Heat | MIL-STD-202, Method 210, Condition D |

Part Marking System

| Amp Code | Marking Code |
|----------|--------------|
| .125 | B |
| .200 | C |
| .250 | D |
| .375 | E |
| .500 | F |
| .750 | G |
| 001. | H |
| 1.25 | J |
| 01.5 | K |
| 1.75 | L |
| 002. | N |
| 02.5 | O |
| 003. | P |
| 004. | S |
| 005. | T |

Dimensions mm (in)



Part Numbering System

0466002.NRHF

SERIES

AMP Code

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

QUANTITY CODE

N = 5000 pcs

PACKAGING Code

R = Tape and Reel

'HF' SUFFIX

Halogen-free

Example

0.125 amp product is 0466.125NRHF (2 amp product shown above).

Packaging

| Packaging Option | Packaging Specification | Quantity | Quantity & Packaging Code |
|-------------------|-------------------------|----------|---------------------------|
| 8mm Tape and Reel | EIA-481, IEC 60286-3 | 5000 | NR |

Disclaimer Notice - Littelfuse products are not designed for, and shall not be used for, any purpose (including, without limitation, automotive, military, aerospace, medical, life-saving, life-sustaining or nuclear facility applications, devices intended for surgical implant into the body, or any other application in which the failure or lack of desired operation of the product may result in personal injury, death, or property damage) other than those expressly set forth in applicable Littelfuse product documentation. Warranties granted by Littelfuse shall be deemed void for products used for any purpose not expressly set forth in applicable Littelfuse documentation. Littelfuse shall not be liable for any claims or damages arising out of products used in applications not expressly intended by Littelfuse as set forth in applicable Littelfuse documentation. The sale and use of Littelfuse products is subject to Littelfuse Terms and Conditions of Sale, unless otherwise agreed by Littelfuse. Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.