



RoHS  **HF 467 Series Fuse**



### Agency Approvals

AGENCY	AGENCY FILE NUMBER	AMPERE RANGE
	E10480	250MA - 5A
	LR29862	250MA - 5A

### 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

### Description

The 467 Series Fast-Acting SMF is an ultra small (0603 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 467 Series fuses are available—to order use the “HF” suffix. See Part Numbering section for additional information..

### Features



- Compatible with lead-free solders and higher temperature profiles.
- High performance materials provide improved performance in elevated ambient temperature applications.
- Marked on top surface with code to allow amp 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.
- Mounting pad and electrical performance is identical to Littelfuse 431 and 434 Series products.
- Alloy based element construction provides superior inrush withstand characteristics (I2t) over ceramic or glass based 0603 fuse products.

### Applications

Secondary protection for space constrained applications:

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

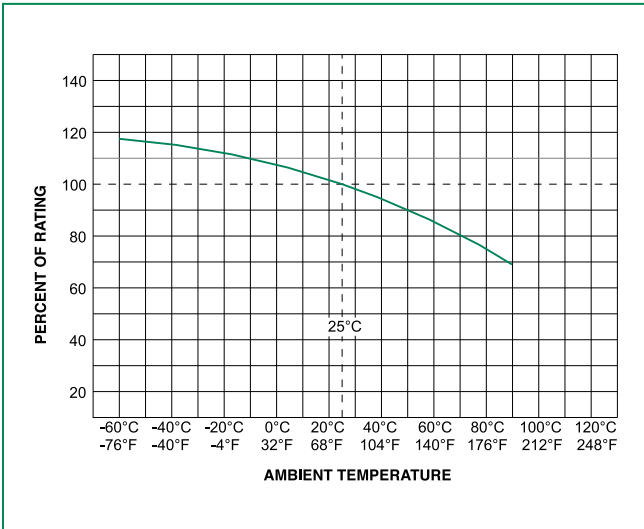
### Electrical Specifications by Item

Ampere Rating (A)	Amp Code	Max Voltage Rating (V)	Interrupting Rating	Nominal Cold Resistance (Ohms)	Nominal Melting I²t (A²sec)	Nom Voltage Drop (mV)	Nom Power Dissipation (W)	Agency Approvals	
									
0.250	.250	32	50A @32V AC/DC	0.5450	0.0030	158.56	0.0396	x	x
0.375	.375	32		0.2900	0.0053	128.03	0.0480	x	x
0.500	.500	32		0.1870	0.0087	115.71	0.0579	x	x
0.750	.750	32		0.1170	0.0171	107.33	0.0805	x	x
1.00	001.	32		0.0710	0.0212	89.10	0.0891	x	x
1.25	1.25	32	35A @32V AC/DC	0.0530	0.0518	84.32	0.1054	x	x
1.50	01.5	32		0.0410	0.0766	81.14	0.1217	x	x
1.75	1.75	32		0.0320	0.0903	78.75	0.1378	x	x
2.00	002.	32		0.0300	0.1103	78.22	0.1564	x	x
2.50	02.5	32		0.0220	0.1440	76.10	0.1903	x	x
3.00	003.	32		0.0180	0.2403	75.04	0.2251	x	x
3.50	03.5	32		0.0150	0.4306	74.25	0.2599	x	x
4.00	004.	32		0.0130	0.5760	73.72	0.2949	x	x
5.00	005.	32		0.0090	0.9000	72.71	0.3635	x	x

1. Measured at 10% of rated current, 25°C. 2. Measured at rated voltage.  
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Specifications are subject to change without notice.  
 Please refer to [www.littelfuse.com/series/467.html](http://www.littelfuse.com/series/467.html) for current information.

### Temperature Derating Curve



Note:

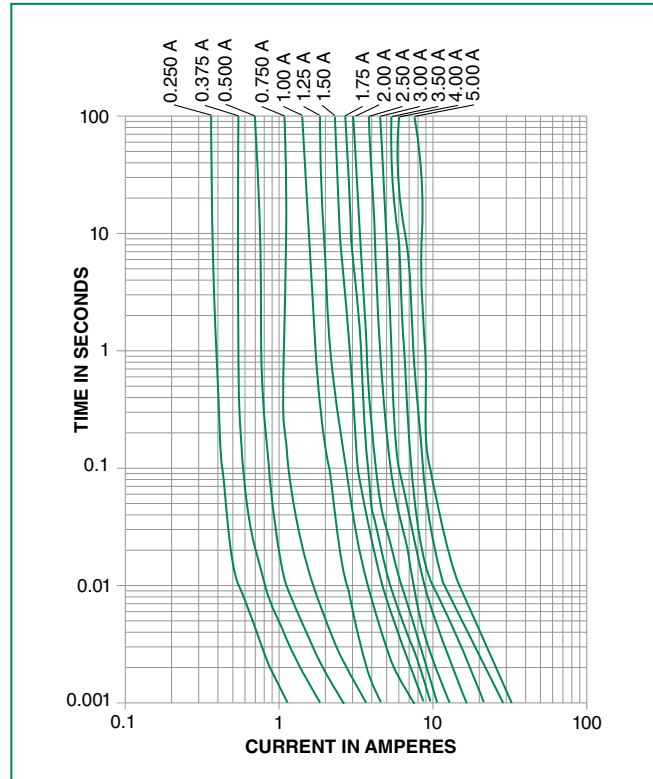
- Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Example:

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

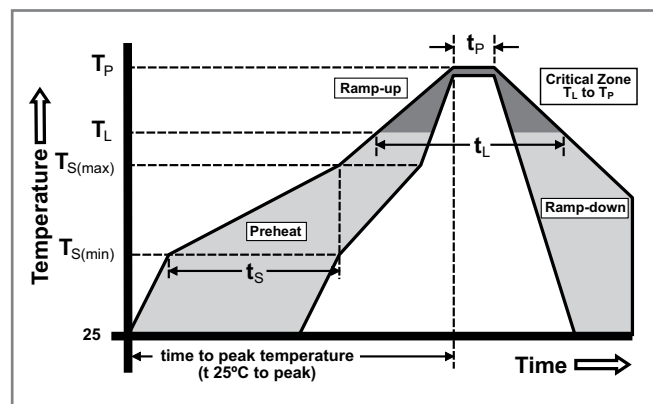
$$I = (0.75)(0.80)I_{RAT} = (0.60)I_{RAT}$$

### 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 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 ( $T_p$ )		250 <sup>+0/-5</sup> °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



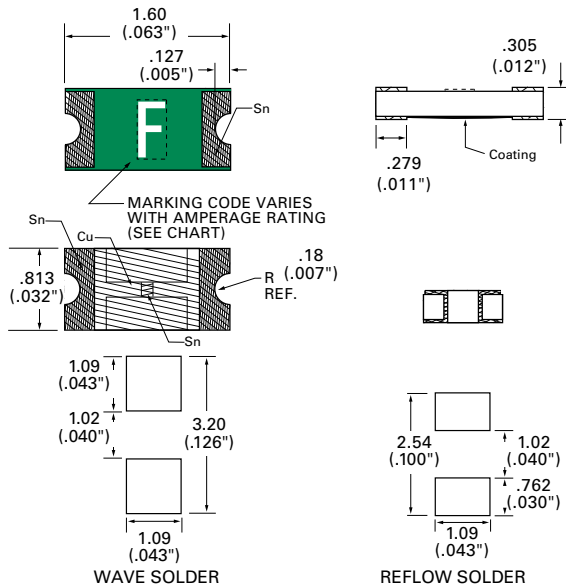
Wave Soldering	260°C, 10 seconds max.
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## Product Characteristics

<b>Materials</b>	<b>Body:</b> Advanced High Temperature Substrate <b>Terminations:</b> 100% Tin over Nickel over Copper <b>Element Cover Coat:</b> Conformal Coating
<b>Operating Temperature</b>	- 55°C to 90°C. Consult temperature derating curve chart. For operation above 90°C contact Littelfuse.
<b>Humidity</b>	MIL-STD-202F, Method 103B, Condition D

<b>Thermal Shock</b>	Withstands 5 cycles of - 55°C to 125°C
<b>Vibration</b>	Per MIL-STD-202F
<b>Insulation Resistance (After Opening)</b>	Greater than 10,000 ohms.
<b>Resistance to Soldering Heat</b>	MIL-STD-202G, Method 210F, Condition D

## Dimensions



## Part Marking System

Amp Code	Marking Code
.250	<b>D</b>
.375	<b>E</b>
.500	<b>F</b>
.750	<b>G</b>
001.	<b>H</b>
1.25	<b>J</b>
01.5	<b>K</b>
1.75	<b>L</b>
002.	<b>N</b>
02.5	<b>O</b>
003.	<b>P</b>
03.5	<b>R</b>
004.	<b>S</b>
005.	<b>T</b>

## Part Numbering System

**0467002.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 04671.5NRHF (2 amp product shown above).

## Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code
8mm Tape and Reel	EIA RS-481-2 (IEC 286, part 3)	5000	NR