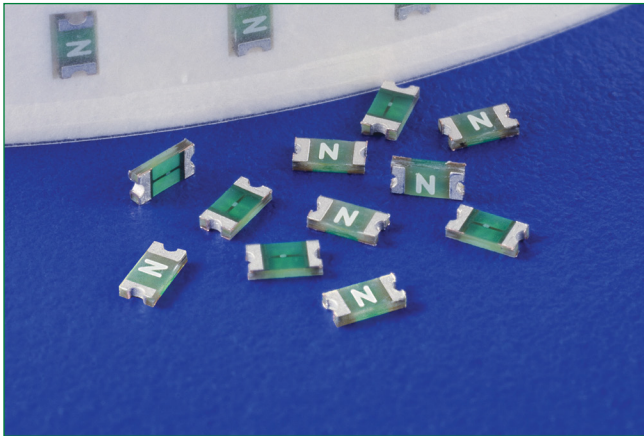


# 467 Series

## 0603 Fast-Acting Fuse



### Description

The 467 Series Fast-Acting Surface Mount Fuse (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 & Benefits

- 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
- Halogen free, Lead-free and RoHS compliant
- Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14

### Applications

Secondary protection for space constrained applications:

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

### Additional Information



Resources



Accessories



Samples

### 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

### Agency Approvals

Agency	Agency File Number	Ampere Range
cULUS	E10480	0.250A - 5A
SF	29862	0.250A - 5A

### Electrical Specifications by Item

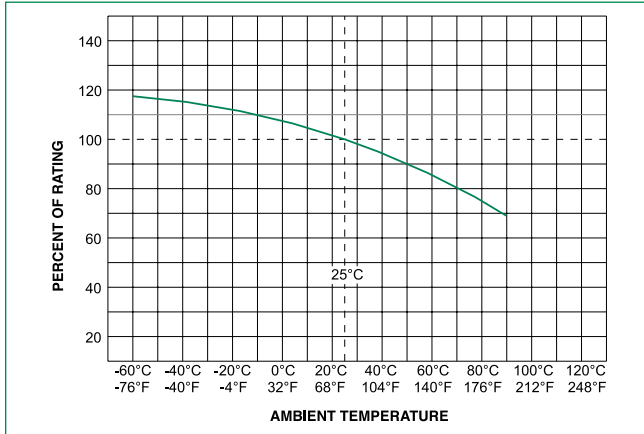
Ampere Rating (A)	Amp Code	Max Voltage Rating (V)	Interrupting Rating	Nominal Cold Resistance (Ohms)	Nominal Melting Pt (A <sup>2</sup> sec)	Nom Voltage Drop (mV)	Nom Power Dissipation (W)	Agency Approvals	
								cULUS	SF
0.250	.250	32	50A @32V AC/DC	0.5650	0.0014	158.56	0.0396	x	x
0.375	.375	32		0.3000	0.0035	128.03	0.0480	x	x
0.500	.500	32		0.1870	0.0087	138.50	0.0693	x	x
0.750	.750	32		0.1170	0.0171	123.30	0.0925	x	x
1.00	001.	32	35A @32V AC/DC 13A @65V DC	0.0700	0.0212	67.40	0.0674	x	x
1.25	1.25	32		0.0510	0.0518	84.32	0.1054	x	x
1.50	01.5	32	35A @32V AC/DC	0.0385	0.0766	71.60	0.1074	x	x
1.75	1.75	32		0.0310	0.0903	78.75	0.1378	x	x
2.00	002.	32		0.0280	0.1891	78.22	0.1564	x	x
2.50	02.5	32		0.0210	0.2066	76.10	0.1903	x	x
3.00	003.	32		0.0170	0.2403	75.04	0.2251	x	x
3.50	03.5	32		0.0139	0.4306	65.30	0.2286	x	x
4.00	004.	32		0.0118	0.8410	63.10	0.2524	x	x
5.00	005.	32		0.0089	0.9000	61.20	0.3060	x	x

1. Measured at 10% of rated current, 25°C. 2. Measured at rated voltage.

# 467 Series

## 0603 Fast-Acting Fuse

### Temperature Derating Curve

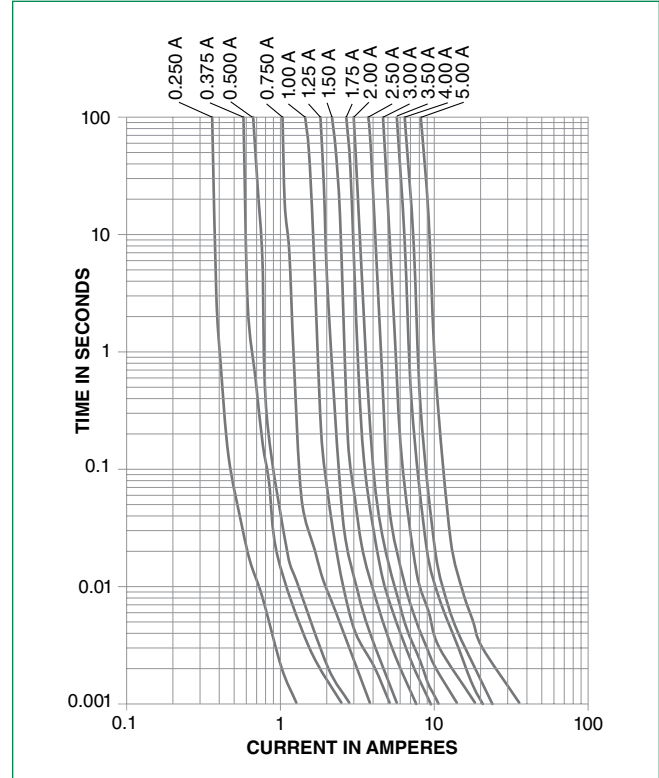


**Note:**  
1. Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

**Example:**  
For continuous operation at 70 degrees celsius, the fuse should be derated as follows:  
 $I = (0.75)(0.80)_{\text{RAT}} = (0.60)_{\text{RAT}}$

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

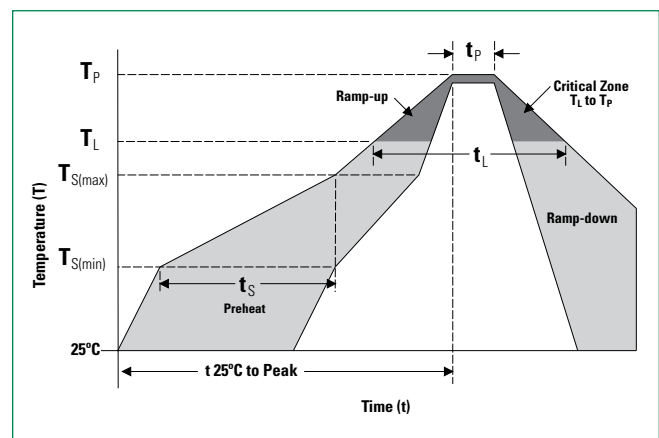
### Average Time Current Curves



### Soldering Parameters

<b>Reflow Condition</b>		Pb – Free assembly
<b>Pre Heat</b>	- Temperature Min ( $T_{s(\text{min})}$ )	150°C
	- Temperature Max ( $T_{s(\text{max})}$ )	200°C
	- Time (Min to Max) ( $t_s$ )	60 – 180 secs
<b>Average ramp up rate (Liquidus Temp (<math>T_L</math>) to peak)</b>		5°C/second max
<b><math>T_{s(\text{max})}</math> to <math>T_L</math> - Ramp-up Rate</b>		5°C/second max
<b>Reflow</b>	- Temperature ( $T_L$ ) (Liquidus)	217°C
	- Temperature ( $t_L$ )	60 – 150 seconds
<b>Peak Temperature (<math>T_p</math>)</b>		250 <sup>+0/-5</sup> °C
<b>Time within 5°C of actual peak Temperature (<math>t_p</math>)</b>		20 – 40 seconds
<b>Ramp-down Rate</b>		5°C/second max
<b>Time 25°C to peak Temperature (<math>T_p</math>)</b>		8 minutes Max.
<b>Do not exceed</b>		260°C

<b>Wave Soldering</b>	260°C, 10 seconds max.
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# 467 Series

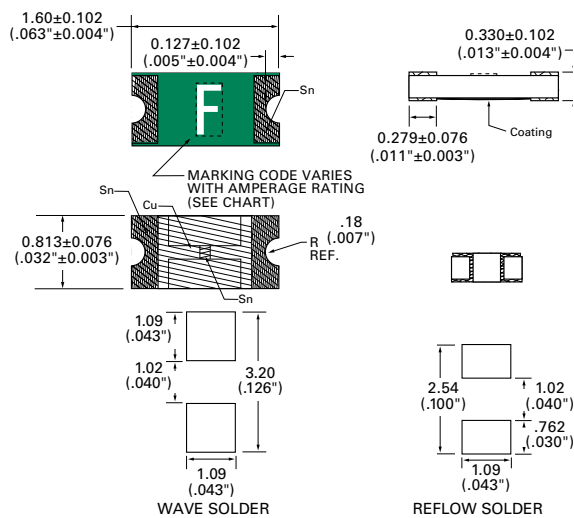
## 0603 Fast-Acting Fuse

### 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 re-rating curve chart. For operation above 90°C contact Littelfuse.
<b>Humidity</b>	MIL-STD-202, Method 103, Condition D

<b>Thermal Shock</b>	Withstands 5 cycles of - 55°C to 125°C
<b>Vibration</b>	Per MIL-STD-202
<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	Amp Code	Marking Code
.250	D	002.	N
.375	E	02.5	O
.500	F	003.	P
.750	G	03.5	R
001.	H	004.	S
1.25	J	005.	T
01.5	K		
1.75	L		

### 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 0467**01.5**NRHF (2 amp product shown above).

### Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code
8mm Tape and Reel	EIA-481 Rev. D (IEC 60286, part 3)	5000	NR

**Disclaimer Notice** - 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](http://www.littelfuse.com/disclaimer-electronics)