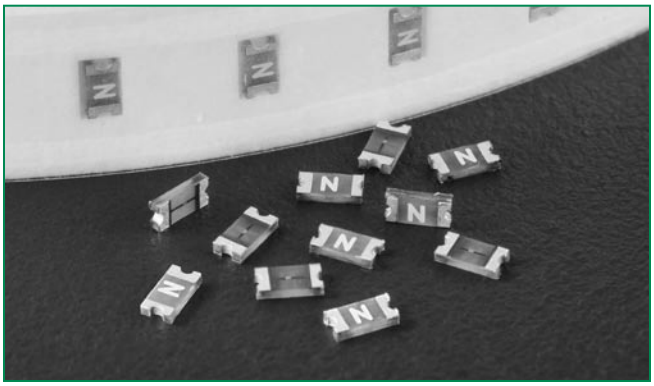
RoHS Pb HF 467 Series Fuse



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:

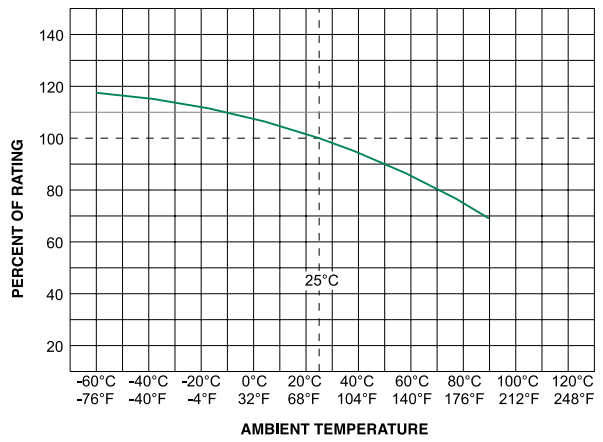
- Cell phones
- Battery packs
- Digital cameras
- DVD players
- Hard disk drives.

Electrical Specifications by Item

Ampere Rating (A)	Amp Code	Max Voltage Rating (V)	Interrupting Rating	Nominal Cold Resistance (Ohms)	Nominal Melting I^2t (A^2sec)	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.

Temperature Rerating Curve



Note:

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

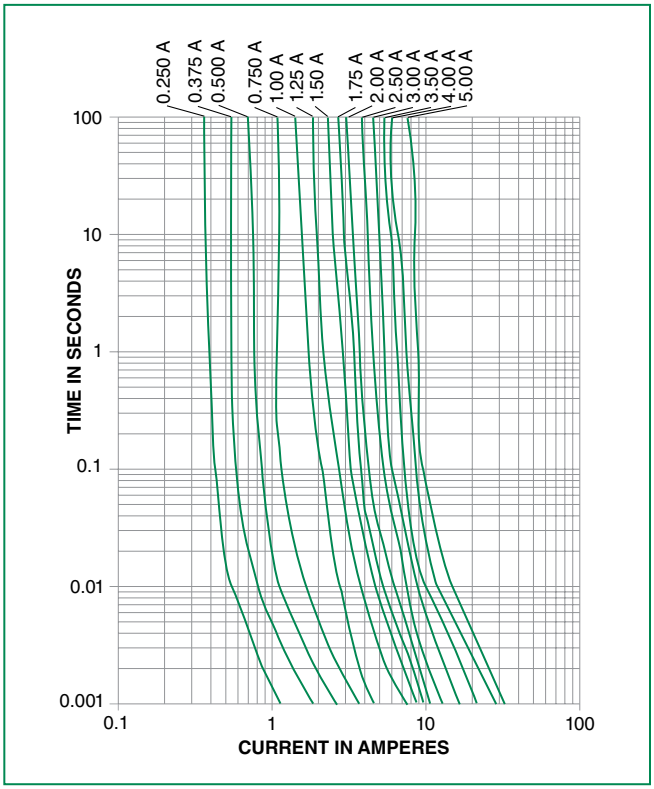
Example:

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

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

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

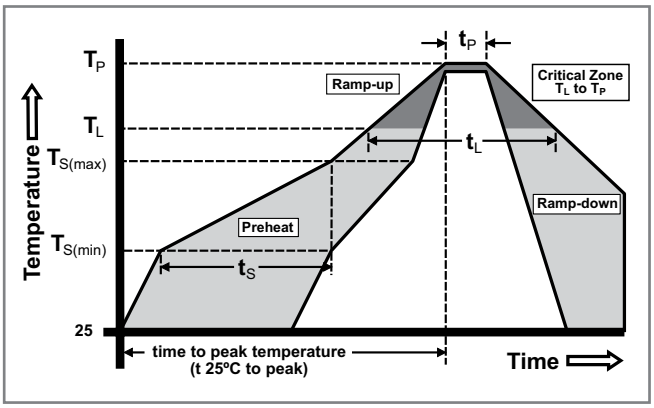
Average Time Current Curves



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)		$250^{+0/-5}$ °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.



Surface Mount Fuses

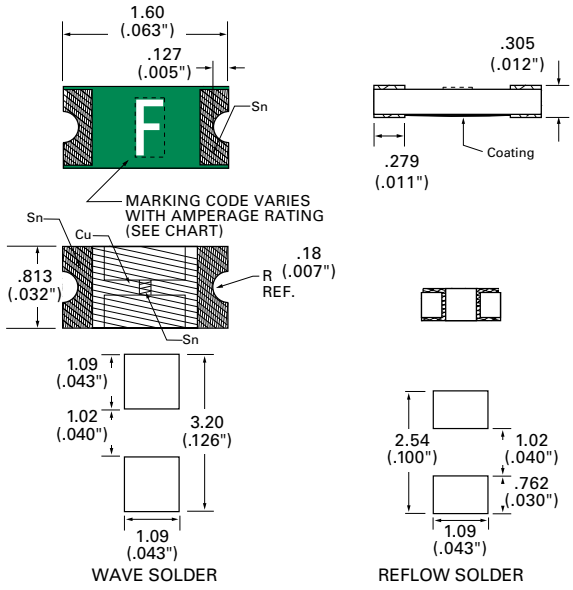
Thin Film > 0603 Size > Very Fast-Acting > 467 Series

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 rerating curve chart. For operation above 90°C contact Littelfuse.
Humidity	MIL-STD-202F, Method 103B, Condition D

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

Dimensions



Part Marking System

Amp Code	Marking Code
.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
03.5	R
004.	S
005.	T

Part Numbering System

0467002.NRHF

SERIES

AMP Code
The dot is poisitioned 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**1.5**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