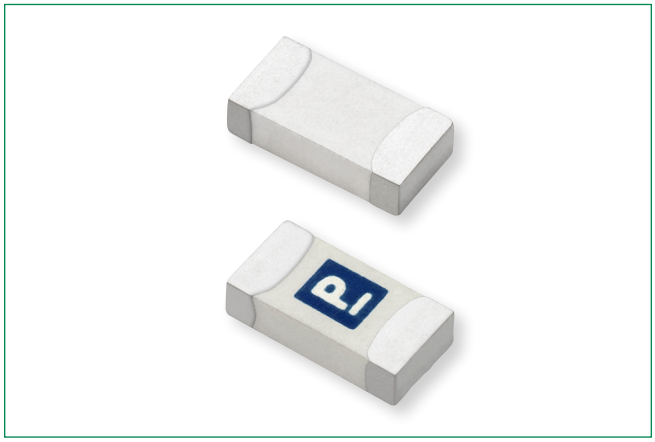
Surface Mount Fuse

Ceramic Fuse > 407A Series



Description

407A Series AEC-Compliant fuse is specifically tested to cater to secondary circuit protection needs of compact auto electronics applications.

The general design ensures excellent temperature stability and performance reliability. This high I^2t fuse series is designed to have ultra high inrush current withstand capability to avoid nuisance fuse open.

Features

- Operating Temperature from -55 °C to +150 °C
- 100% Lead-free, RoHS Compliant and Halogen-free
- Meets Littelfuse's automotive qualifications*
- Suitable for both leaded and lead-free reflow/wave soldering
- UL Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14
- Ultra-high I^2t values

***** Largely based on Littelfuse internal AEC-Q200 test plan

Agency Approvals

Agency	Agency File/Certificate Number	Ampere Range
c UL us	E10480	1 A–8 A

Benefits

- Avoids nuisance opening due to high inrush and surge current inherent in the system
- High current ratings in small size

Applications

- Li-Ion battery
- LED lighting
- Automotive navigation system
- TFT display
- Battery Management System (BMS)
- Infotainment

Electrical Characteristics

% of Ampere Rating	Opening Time
100%	4 Hours, Min.
200%	1 Sec. Min.; 120 Secs. Max.
300%	0.1 Sec. Min.; 3 Secs. Max.
800%	0.002 Sec. Min.; 0.05 Sec. Max.

Electrical Specifications

Ampere Rating (A)	Amp Code	Max. Voltage Rating (V)	Interrupting Rating (AC/DC)[1]	Nominal Resistance (Ohms)[2]	Nominal Melting I^2t ($A^2Sec.$)[3]	Nominal Voltage Drop at Rated Current (V)[4]	Nominal Power Dissipation at Rated Current (W)	Agency Approval c UL us
1.00	001.	63	50A@63VDC	0.360	0.142	0.456	0.456	x
1.25	1.25	63		0.200	0.329	0.404	0.500	x
1.50	01.5	63		0.180	0.567	0.347	0.525	x
2.00	002.	63		0.100	0.870	0.323	0.640	x
2.50	02.5	32	50A@32VDC	0.055	1.000	0.252	0.625	x
3.00	003.	32		0.040	1.300	0.187	0.570	x
3.50	03.5	32		0.030	2.260	0.153	0.525	x
4.00	004.	32		0.025	4.180	0.142	0.560	x
4.50	04.5	32		0.020	5.200	0.134	0.585	x
5.00	005.	32		0.016	7.800	0.133	0.650	x
5.50	05.5	24	50A@24VDC	0.014	8.550	0.130	0.715	x
6.00	006.	24	60A@24VDC	0.012	15.560	0.128	0.780	x
7.00	007.	24		0.010	16.230	0.110	0.770	x
8.00	008.	24		0.009	24.120	0.097	0.800	x

Notes

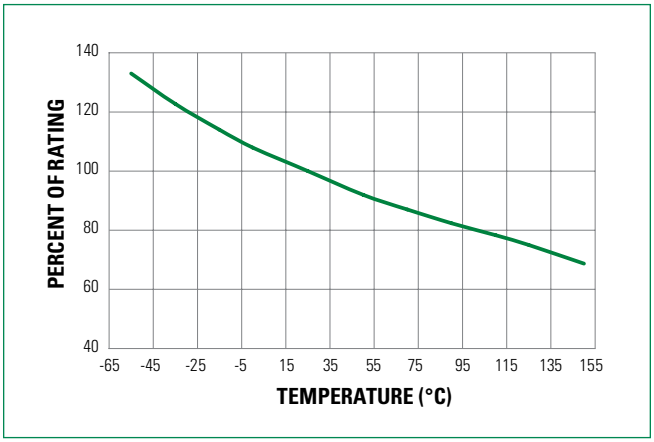
1. AC Interrupting Rating tested at rated voltage with unity power factor. DC Interrupting Rating tested at rated voltage with time constant < 0.8 msec.
2. Nominal Resistance measured with < 10% rated current.
3. Nominal Melting I^2t measured at 1msec. opening time.
4. Nominal Voltage Drop measured at rated current after temperature has stabilized.

- Devices designed to carry rated current for 4 hours minimum. It is recommended that devices be operated continuously at no more than 80% rated current. See Temperature Derating Curve for additional derating information.
- Devices designed to be mounted with marking code facing up.

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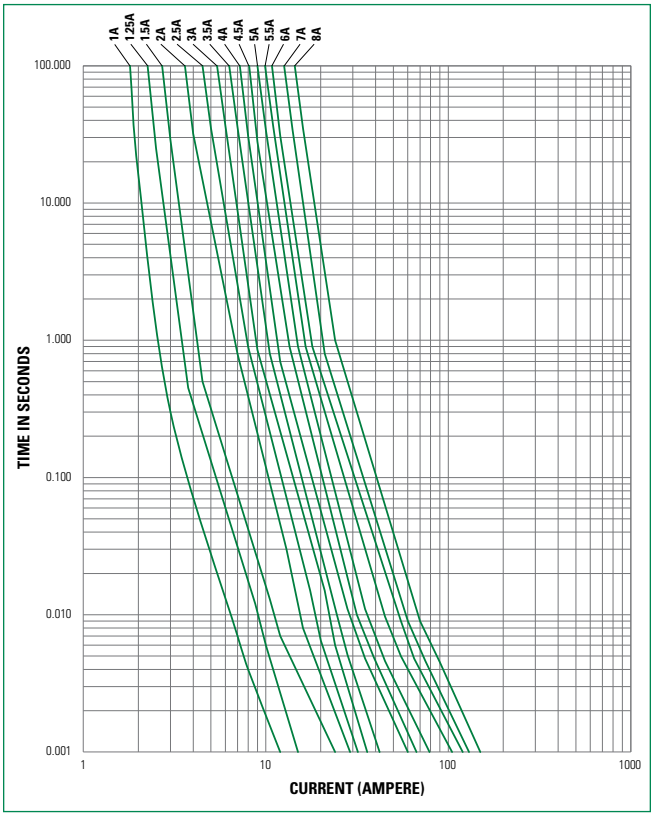
Surface Mount Fuse
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Temperature Re-rating Curve



Note
Re-rating depicted in this curve is in addition to the standard re-rating of 20% for continuous operation.
Example
For continuous operation at 75 °C, the fuse should be rerated as follows: $I = (0.80)(0.85)I_n = (0.68)I_n$.

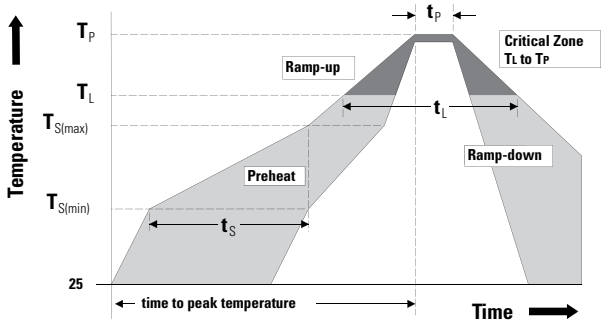
Average Time Current Curves



Soldering Parameters

Reflow Condition		Pb-free assembly
Pre Heat	**- Temperature Min (Ts(min))**	150 °C
	- Temperature Max (Ts(max))	200 °C
	- Time (Min to Max) (ts)	60–180 seconds
Average Ramp-up Rate (Liquidus Temp (TL) to peak)		3 °C/second max.
TS(max) to TL - Ramp-up Rate		5 °C/second max.
Reflow	**- Temperature (TL) (Liquidus)**	217 °C
	- Temperature (tL)	60–150 seconds
Peak Temperature (TP)		260+0/-5 °C
Time within 5°C of actual peak Temperature (tp)		10–30 seconds
Ramp-down Rate		6 °C/second max.
Time 25°C to peak Temperature (TP)		8 minutes max.
Do not exceed		260 °C

Wave soldering	260 °C, 10 seconds max.



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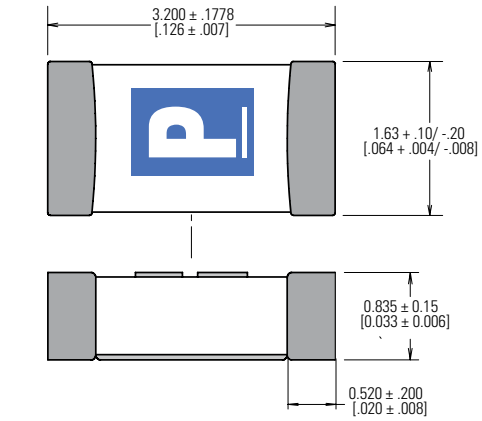
Product Characteristics

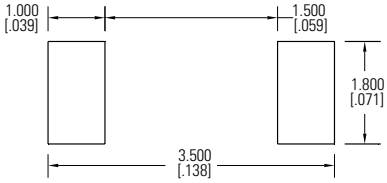
Materials	**Body:** Advanced Ceramic **Terminations:** Ag / Ni / Sn (100% Lead-free) **Element Cover Coating:** Lead-free Glass
Moisture Sensitivity Level	IPC/JEDEC J-STD-020, Level 1
Solderability	IPC/ECA/JEDEC J-STD-002, Condition C
Humidity Test	MIL-STD-202, Method 103, Conditions D
Resistance to Solder Heat	MIL-STD-202, Method 210, Condition B
Moisture Resistance	MIL-STD-202, Method 106
Thermal Shock	MIL-STD-202, Method 107, Condition B
Mechanical Shock	MIL-STD-202, Method 213, Condition A
Vibration	MIL-STD-202, Method 201
Vibration, High Frequency	MIL-STD-202, Method 204, Condition D
Dissolution of Metallization	IPC/ECA/JEDEC J-STD-002, Condition D
Terminal Strength	IEC 60127-4

High Temperature Storage	MIL-STD-202, Method 108 with exemptions
Thermal Shock Test	JESD22 Method JA-104, Test Conditions B and N
Biased Humidity	MIL-STD-202, Method 103, 85 °C/85% RH with 10% operating power for 1,000 hrs
Operational Life	MIL-STD-202, Method 108, Test Condition D
Resistance to Solvents	MIL-STD-202, Method 215
Mechanical Shock	MIL-STD-202, Method 213, Test Condition C
High Frequency Vibration	MIL-STD-202, Method 204
Resistance to Soldering Heat	MIL-STD-202, Method 210, Test Condition B
Solderability	JESD22-B102E Method 1
Terminal Strength for SMD	AEC Q200-006
Board Flex	AEC Q200-005
Electrical Characterization	3 Temperature Electrical

Dimensions

All dimentions in mm (in)





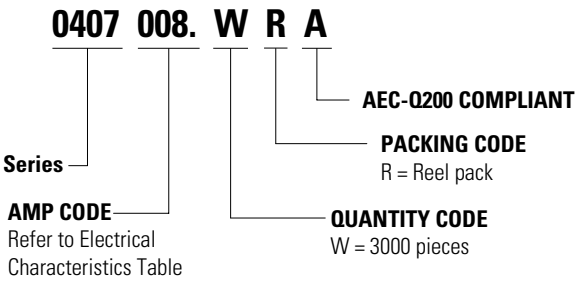
Part Marking System

Amp Code	Marking Code
001.	H
1.25	J
01.5	K
002.	N
02.5	O
003.	P
03.5	R
004.	S
04.5	S.
005.	T
05.5	U
006.	V
007.	W
008.	X

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Part Numbering System



Packaging

Packaging Option	Form Factor	Packaging Specification	Quantity	Quantity & Packaging Code
8mm Tape and Reel	Surface Mount	EIA-481, IEC 60286, Part 3	3000	WR

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