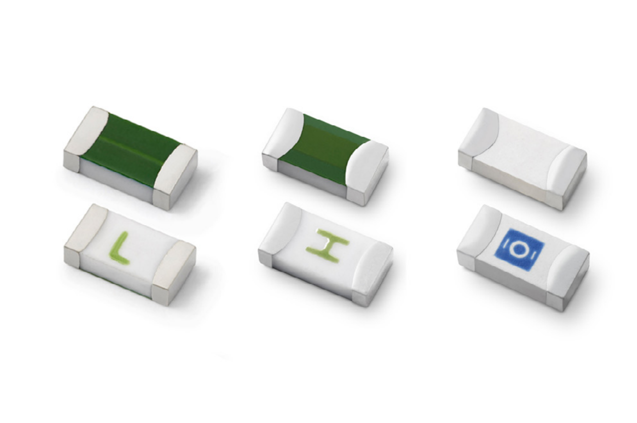
437A Series
1206 Fast-Acting Ceramic Fuse

RoHS Pb HF cULus CSA



Description

The 437A Series AECQ-Compliant fuses are specifically tested to cater to secondary circuit protection needs of compact auto-electronics applications.

The general design ensures excellent temperature stability and performance reliability. In addition to this, the high I²t values typical of the Littelfuse Ceramic Fuse family ensure high inrush current withstand capability.

Features

- Operating Temperature from -55°C to +150°C
- 100% Lead-free, Halogen-Free and RoHS compliant
- Meets Littelfuse's automotive qualifications*
- Fast response to faulty current to ensure over-current protection for sensitive electronic components

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

Applications

- Li-ion Battery
- LED Lighting
- Automotive Navigation System
- TFT Display
- Battery Management System (BMS)
- Clusters

Additional Information

Resources | Accessories | Samples

Electrical Characteristics for Series

% of Ampere Rating	Ampere Rating	Opening Time at 25°C
100%	0.250A – 8A	4 hours, Minimum
250%	0.750A – 8A	5 seconds, Maximum
350%	0.750A – 8A	1 second, Maximum
	0.250A - 0.500A	5 seconds, Maximum

Agency Approvals

Agency	Agency File Number	Ampere Range
cULus	E10480	0.250A – 8A
CSA	29862	0.250A – 8A

Electrical Specifications by Item

Ampere Rating (A)	Amp Code	Max. Voltage Rating (V)	Interrupting Rating [1]	Nominal Resistance (Ohms) [2]	Nominal Melting I²t (A²Sec.) [3]	Nominal Voltage Drop At Rated Current (V) [4]	Nominal Power Dissipation At Rated Current (W)	Agency Approvals cULus	Agency Approvals CSA
0.250	.250	125	50A @ 125VAC/DC	2.290	0.003	0.78	0.195	x	x
0.375	.375	125		1.330	0.010	0.60	0.225	x	x
0.500	.500	63	50A @ 63VAC/DC	0.908	0.018	0.52	0.260	x	x
0.750	.750	63	50A @ 63VAC/DC 100A @ 63VDC	0.600	0.064	0.45	0.338	x	x
1.00	001.	63	50A @ 63VAC/DC	0.420	0.100	0.41	0.410	x	x
1.25	1.25	63		0.318	0.256	0.40	0.500	x	x
1.50	01.5	63		0.209	0.324	0.39	0.585	x	x
1.75	1.75	63		0.071	0.075	0.27	0.473	x	x
2.00	002.	63		0.062	0.144	0.20	0.400	x	x
2.50	02.5	63	50A @ 45VAC/63VDC	0.043	0.441	0.15	0.375	x	x
3.00	003.	63		0.035	0.506	0.14	0.420	x	x
3.50	03.5	63		0.027	0.777	0.13	0.455	x	x
4.00	004.	63		0.022	1.024	0.13	0.520	x	x
5.00	005.	63		0.0159	2.30	0.13	0.650	x	x
7.00	007.	35	50A @ 32VAC/35VDC	0.0100	5.02	0.13	0.910	x	x
8.00	008.	35		0.008	7.23	0.13	1.040	x	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 I²t measured at 1 msec. 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 Re-rating Curve" for additional re-rating information. Devices designed to be mounted with marking code facing up.

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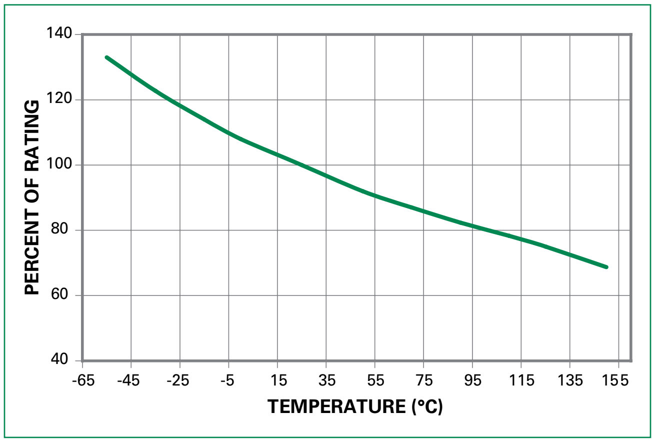
Temperature Re-rating Curve



Note:

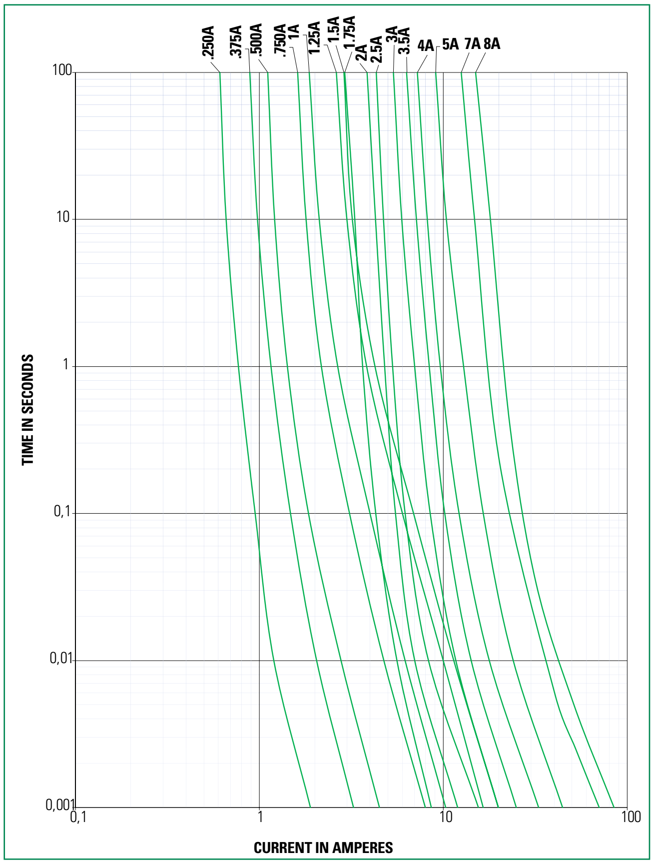
1. Re-rating depicted in this curve is in addition to the standard re-rating of 20% for continuous operation.

Example:

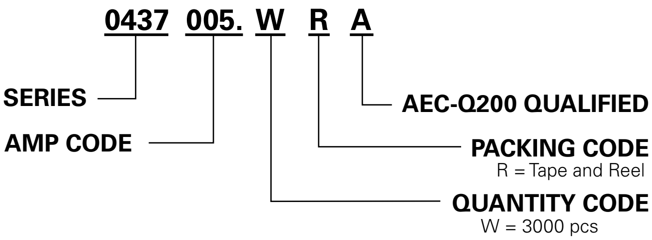
For continuous operation at 75 degrees celsius, the fuse should be rerated as follows:

$I = (0.80)(0.85)I_{RAT} = (0.68)I_{RAT}$

Average Time Current Curves

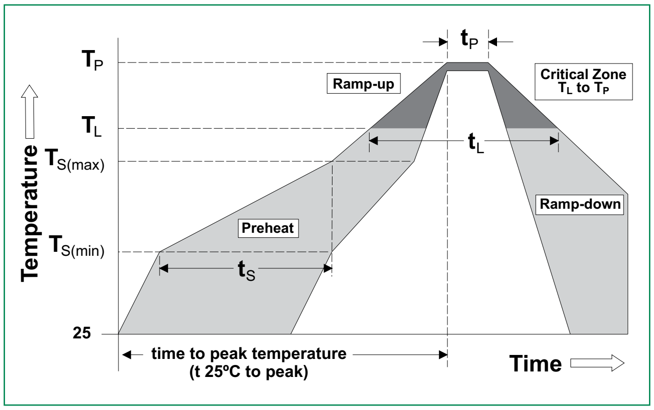


Part Numbering System



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 seconds
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)		$260^{+0/-5}$ °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.



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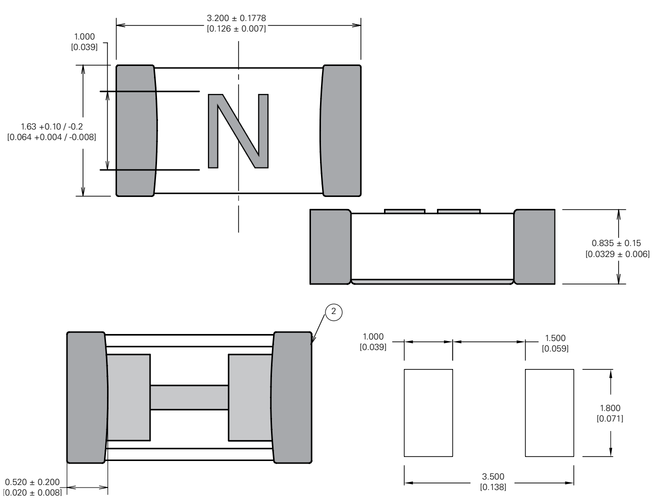
Product Characteristics

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/EIC/JEDEC J-STD-002, Condition B
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/EIC/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 1000 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 Characterization

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	**$\overline{\text{O}}$**
003.	**P**
3.500	**R**
004.	**S**
005.	**T**
007.	**W**
008.	**|X|**

Packaging

Packaging Option	Packaging Specification	Quantity	Quantity and Packaging Code
8mm Tape and Reel	EIA-481, IEC 60286, Part 3	3000	WRA