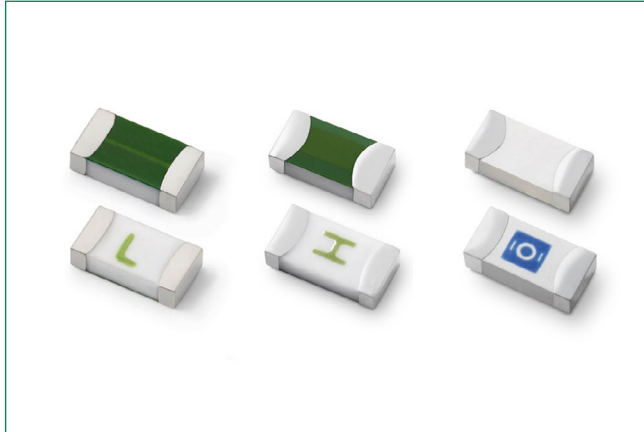


# 437A Series

## AEC-Q200 Qualified > 1206 Fast-Acting Ceramic Fuse



### Additional Information



Resources



Accessories



Samples

### Agency Approvals

Agency	Agency File Number	Ampere Range
UL US	E10480	0.250A – 8.0A
SP	29862	0.250A – 8.0A
CE	N/A	0.250A – 1.75A
UKCA	J50519871	0.500A – 8.0A
UKCA	N/A	0.250A – 1.75A

### Description

The 437A Series AECO-Qualified 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  $I^2t$  values typical of the Littelfuse Ceramic Fuse family ensure high inrush current withstand capability.

### Features & Benefits

- Operating Temperature from -55°C to +150°C
- 100% Lead-free, Halogen-Free and RoHS compliant
- Fast response to faulty current to ensure over-current protection for sensitive electronic components
- AEC-Q200 Qualified
- Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14
- Conforms to EN/IEC 60127-1 and EN/IEC 60127-7
- Conforms to the Low Voltage Directive (LVD)

### Applications

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

### 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

### Electrical Specifications by Item

Ampere Rating (A)	Amp Code	Max. Voltage Rating (V)	Interrupting Rating <sup>1</sup>	Nominal Resistance (Ohms) <sup>2</sup>	Nominal Melting $I^2t$ (A <sup>2</sup> Sec.) <sup>3</sup>	Nominal Voltage Drop At Rated Current (V) <sup>4</sup>	Nominal Power Dissipation At Rated Current (W)	Agency Approvals				
								UL US	SP	CE	UKCA	UKCA
0.250	.250	125	50A @ 125VAC/DC	2.290	0.003	0.78	0.195	x	x	x	-	x
0.375	.375	125		1.330	0.010	0.60	0.225	x	x	x	-	x
0.500	.500	63		0.908	0.018	0.52	0.260	x	x	x	x	x
0.750	.750	63	50A @ 63VAC/DC 100A @ 63VDC	0.600	0.064	0.45	0.338	x	x	x	x	x
1.00	001	63	50A @ 63VAC/DC	0.420	0.100	0.41	0.410	x	x	x	x	x
1.25	1.25	63		0.318	0.256	0.40	0.500	x	x	x	x	x
1.50	01.5	63		0.209	0.324	0.39	0.585	x	x	x	x	x
1.75	1.75	63		0.071	0.075	0.27	0.473	x	x	x	x	x
2.00	002	63		0.062	0.144	0.20	0.400	x	x	x	x	x
2.50	02.5	63	50A @ 45VAC/63VDC 50A @ 32VAC/35VDC	0.043	0.441	0.15	0.375	x	x	x	x	x
3.00	003	63		0.035	0.506	0.14	0.420	x	x	x	x	x
3.50	03.5	63		0.027	0.777	0.13	0.455	x	x	x	x	x
4.00	004	63		0.022	1.024	0.13	0.520	x	x	x	x	x
5.00	005	63		0.0159	2.30	0.13	0.650	x	x	x	x	x
7.00	007	35	50A @ 32VAC/35VDC	0.0100	5.02	0.13	0.910	x	x	x	x	x
8.00	008	35		0.008	7.23	0.13	1.040	x	x	x	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  $I^2t$  measured at 1 msec. opening time.
4. Nominal Voltage Drop measured at rated current after temperature has stabilized.

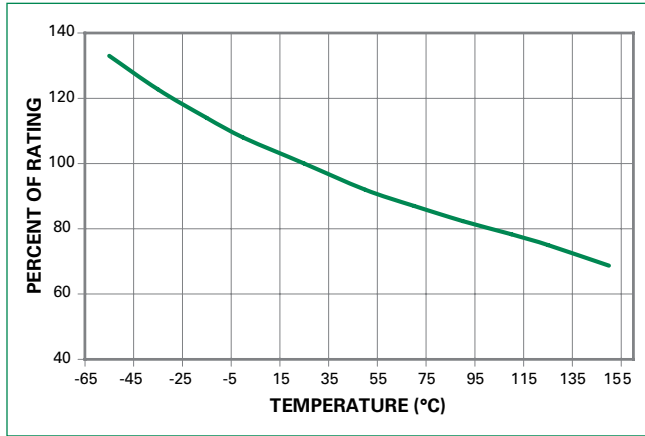
5. 50A @ 32VAC/35VDC is AECQ Tested

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.

# 437A Series

## AEC-Q200 Qualified > 1206 Fast-Acting Ceramic Fuse

### Temperature Re-rating Curve

**Note:**

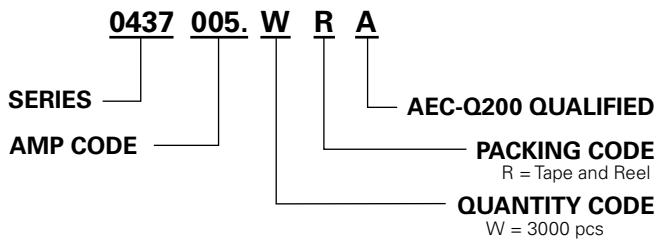
- Re-rating depicted in this curve is in addition to the standard re-rating of 20% for continuous operation.

**Example:**

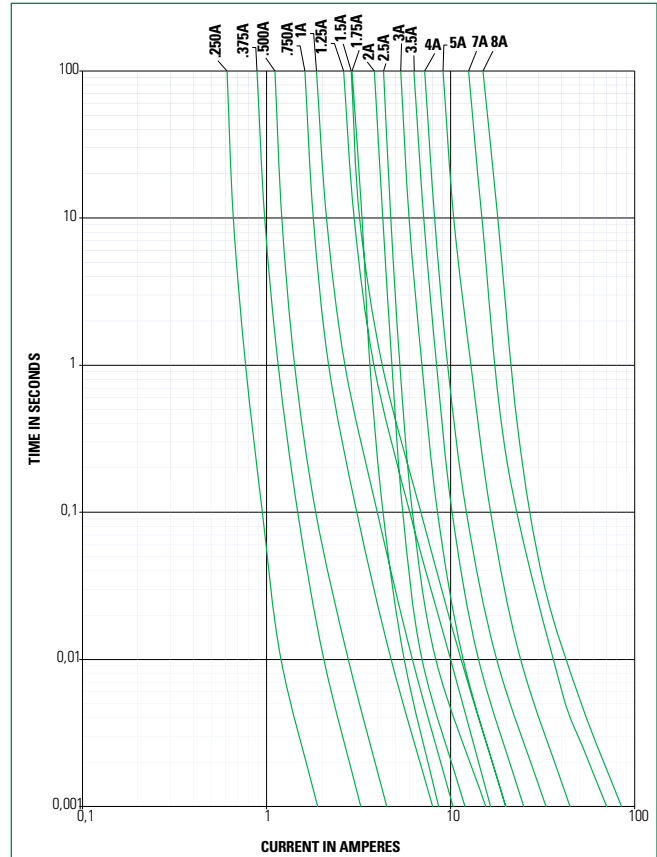
For continuous operation at 75 degrees celsius, the fuse should be rated as follows:

$$I = (0.80)(0.85)_{75} = (0.68)_{75}$$

### Part Numbering System

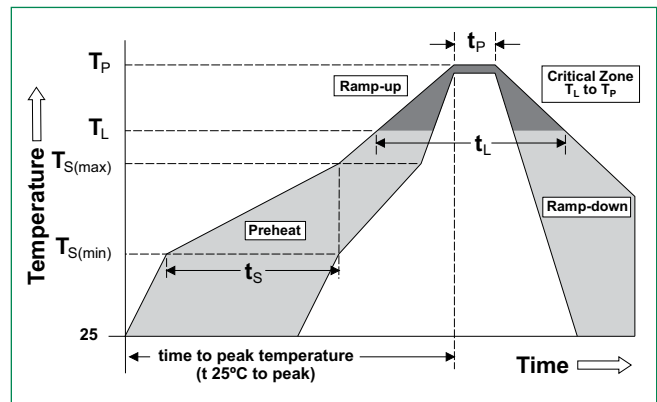


### Average Time Current Curves



### Soldering Parameters

<b>Reflow Condition</b>		Pb-free assembly
<b>Pre Heat</b>	- Temperature Min ( $T_{s(min)}$ )	150°C
	- Temperature Max ( $T_{s(max)}$ )	200°C
	- Time (Min to Max) ( $t_s$ )	60 – 180 seconds
<b>Average Ramp-up Rate (Liquidus Temp (<math>T_L</math>) to peak)</b>		5°C/second max.
<b><math>T_{s(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>		260 $\pm$ 0/5 °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.



# 437A Series

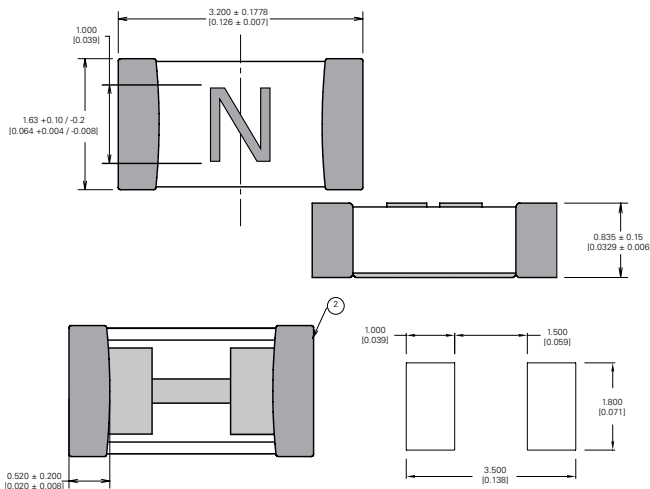
## AEC-Q200 Qualified > 1206 Fast-Acting Ceramic Fuse

### Product Characteristics

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

<b>High Temperature Storage</b>	MIL-STD-202 Method 108 with exemptions
<b>Thermal Shock Test</b>	JESD22 Method JA-104, Test Conditions B and N
<b>Biased Humidity</b>	MIL-STD-202 Method 103, 85°C/85% RH with 10% operating power for 1000 hrs
<b>Operational Life</b>	MIL-STD-202 Method 108, Test Condition D
<b>Resistance To Solvents</b>	MIL-STD-202 Method 215
<b>Mechanical Shock</b>	MIL-STD-202 Method 213, Test Condition C
<b>High Frequency Vibration</b>	MIL-STD-202, Method 204
<b>Resistance To Soldering Heat</b>	MIL-STD-202 Method 210, Test Condition B
<b>Solderability</b>	JESD22-B102E Method 1
<b>Terminal Strength For SMD</b>	AEC-Q200-006
<b>Board Flex</b>	AEC-Q200-005
<b>Electrical Characterization</b>	Conducted at minimum, ambient and maximum temperatures.

### Dimensions mm(inches)



### 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	<u>O</u>
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 60286-3	3000	WRA

**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).