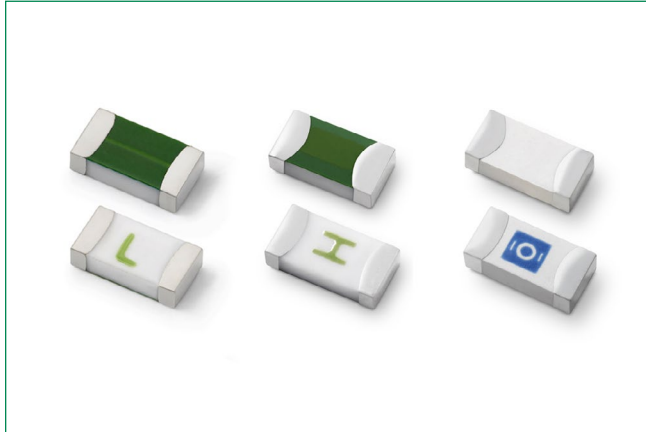


437A Series

AEC-Q200 Qualified > 1206 Fast-Acting Ceramic Fuse



Additional Information



Resources



Accessories



Samples

Agency Approvals

Agency	Agency File Number	Ampere Range
	E10480	0.250A – 8.0A
	29862	0.250A – 8.0A
	N/A	0.250A – 1.75A
	J50519871	0.500A – 8.0A
	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 ¹	Nominal Resistance (Ohms) ²	Nominal Melting I^2t (A ² Sec.) ³	Nominal Voltage Drop At Rated Current (V) ⁴	Nominal Power Dissipation At Rated Current (W)	Agency Approvals				
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.

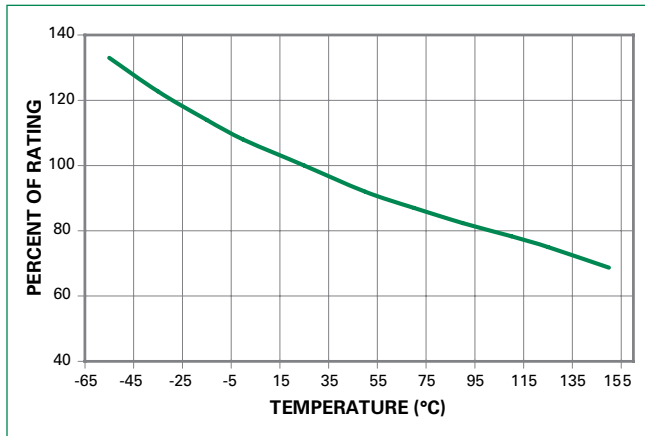
5. 50A @ 32VAC/35VDC is AECQ Tested

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.

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Temperature Re-rating Curve

**Note:**

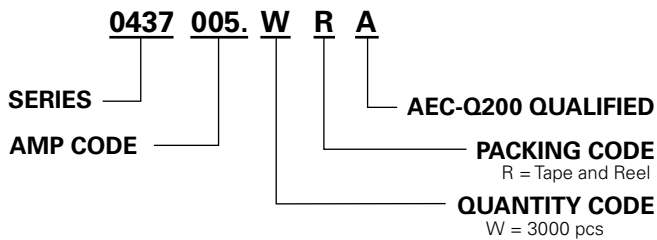
- Re-rating depicted in this curve is in addition to the standard re-rating of 20% for continuous operation.

Example:

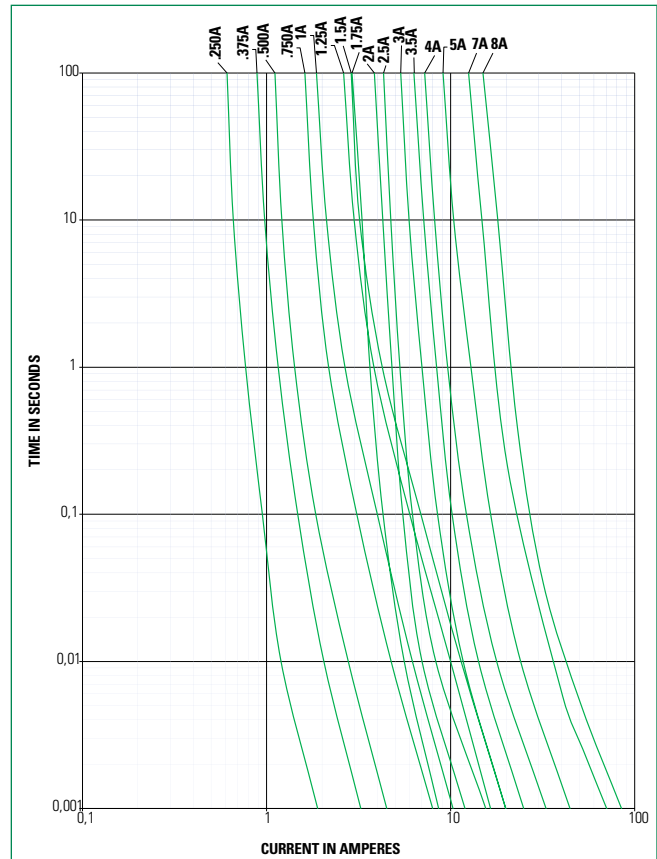
For continuous operation at 75 degrees celsius, the fuse should be rated as follows:

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

Part Numbering System

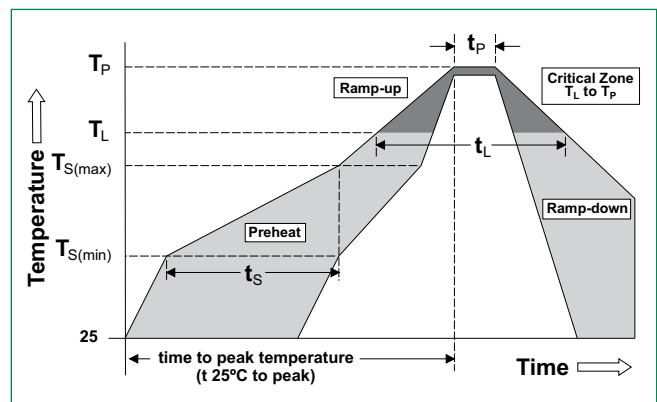


Average Time Current Curves



Soldering Parameters

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 $\pm$ 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.



437A Series

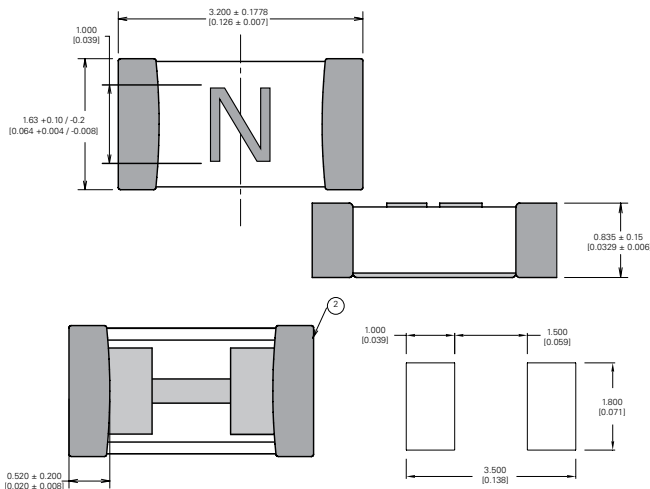
AEC-Q200 Qualified > 1206 Fast-Acting Ceramic Fuse

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	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

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