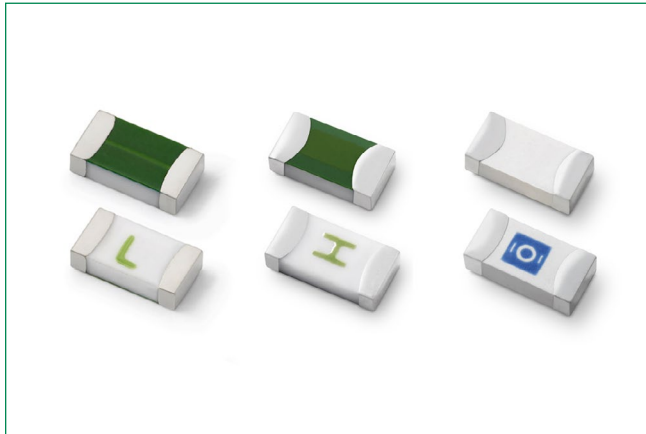


437A Series

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 I²t 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 ² t (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 | 50A @ 63VAC/DC | 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 | 50A @ 45VAC/63VDC 50A @ 32VAC/35VDC | 0.062 | 0.144 | 0.20 | 0.400 | x | x | x | x | x |
| 2.50 | 02.5 | 63 | | 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 | | 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:

- AC Interrupting Rating tested at rated voltage with unity power factor. DC Interrupting Rating tested at rated voltage with time constant < 0.8 msec.
- Nominal Resistance measured with < 10% rated current.
- Nominal Melting I²t measured at 1 msec. opening time.
- Nominal Voltage Drop measured at rated current after temperature has stabilized.

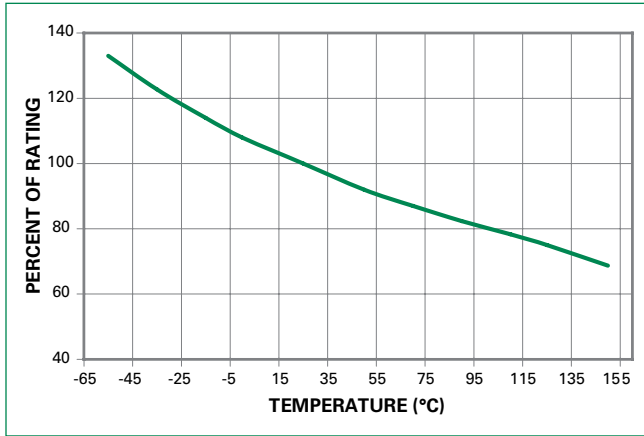
- 50A @ 32VAC/35VDC is AECO Tested

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

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Temperature Re-rating Curve



Note:

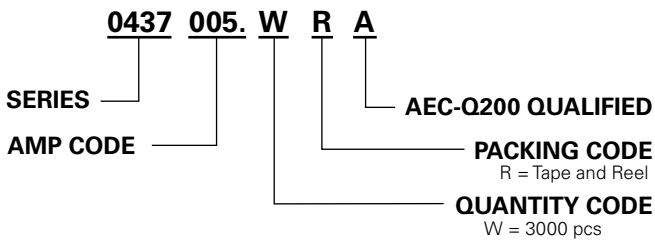
1. Re-rating depicted in this curve is in addition to the standard re-rating of 20% for continuous operation.

Example:

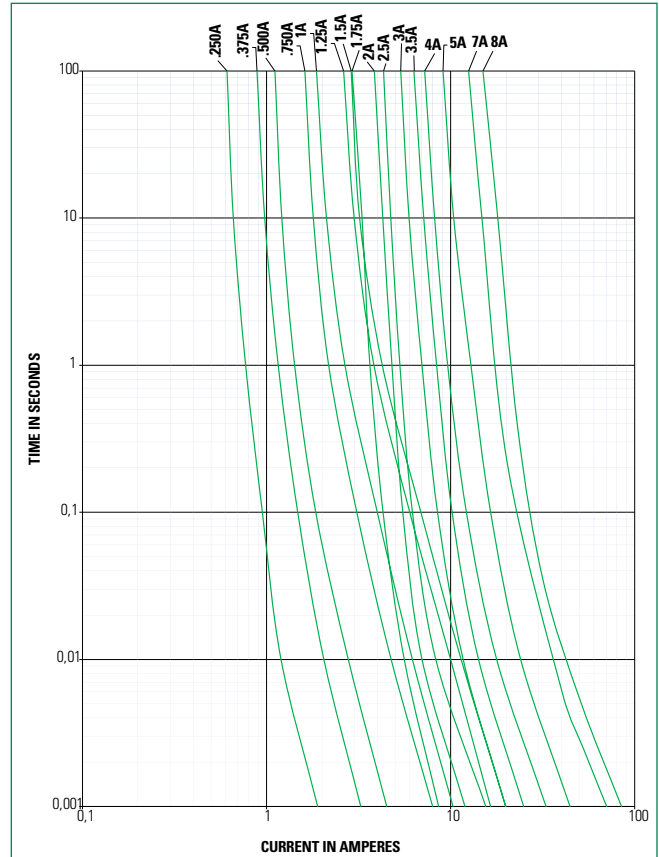
For continuous operation at 75 degrees celsius, the fuse should be rerated as follows:

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

Part Numbering System

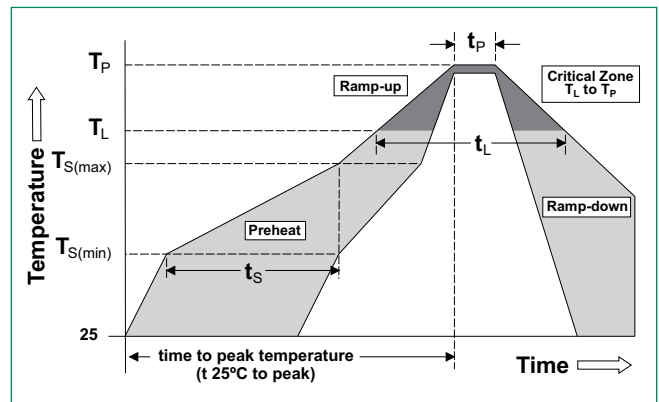


Average Time Current Curves



Soldering Parameters

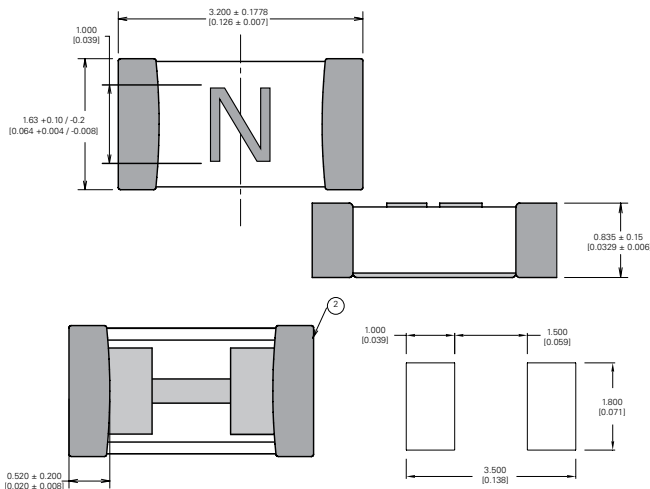
| | | |
|--|------------------------------------|------------------------|
| Reflow Condition | | Pb-free assembly |
| Pre Heat | - Temperature Min ($T_{s(min)}$) | 150°C |
| | - Temperature Max ($T_{s(max)}$) | 200°C |
| | - Time (Min to Max) (t_s) | 60 – 180 seconds |
| Average Ramp-up Rate (Liquidus 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_r) | 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 | Q |
| 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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