



### 437A Series – 1206 Fast-Acting Ceramic Fuse



#### Agency Approvals

| Agency                                                                            | Agency File Number | Ampere Range |
|-----------------------------------------------------------------------------------|--------------------|--------------|
|  | E10480             | 0.500A – 8A  |
|  | 29862              | 0.500A – 8A  |

#### Electrical Characteristics for Series

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

#### 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 I<sup>2</sup>t 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



Datasheet





Resources



Samples

#### 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 <sup>2</sup> t (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                                                                      |                                                                                       |
|-------------------|----------|-------------------------|----------------------------------|----------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                   |          |                         |                                  |                                        |                                                                     |                                                        |                                                |  |  |
| 0.500             | .500     | 63                      | 50A @ 63VAC/DC                   | 0.908                                  | 0.018                                                               | 0.52                                                   | 0.260                                          | x                                                                                     | x                                                                                     |
| 0.750             | .750     | 63                      | 50A @ 63VAC/DC<br>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     | 32                      |                                  | 50A @ 32VAC/35VDC                      | 0.043                                                               | 0.441                                                  | 0.15                                           | 0.375                                                                                 | x                                                                                     |
| 3.00              | 003.     | 32                      | 0.035                            |                                        | 0.506                                                               | 0.14                                                   | 0.420                                          | x                                                                                     | x                                                                                     |
| 3.50              | 03.5     | 32                      | 0.027                            |                                        | 0.777                                                               | 0.13                                                   | 0.455                                          | x                                                                                     | x                                                                                     |
| 4.00              | 004.     | 32                      | 0.022                            |                                        | 1.024                                                               | 0.13                                                   | 0.520                                          | x                                                                                     | x                                                                                     |
| 5.00              | 005.     | 32                      | 0.0159                           |                                        | 2.30                                                                | 0.13                                                   | 0.650                                          | x                                                                                     | x                                                                                     |
| 7.00              | 007.     | 32                      | 0.0100                           |                                        | 5.02                                                                | 0.13                                                   | 0.910                                          | x                                                                                     | x                                                                                     |
| 8.00              | 008.     | 32                      | 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 I<sup>2</sup>t 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.

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

**Part Numbering System**

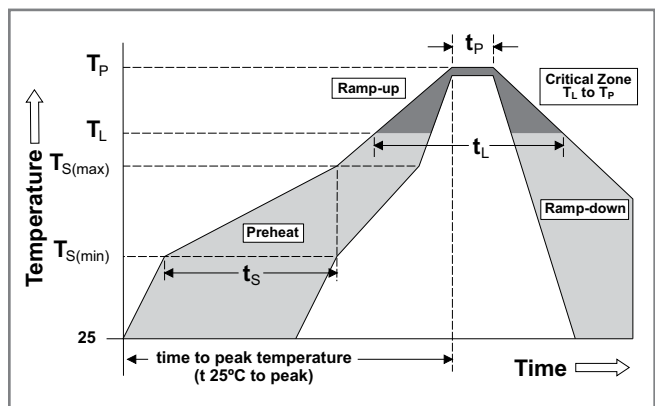


**Average Time Current Curves**



**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 <sup>+0/-5</sup> °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.  |

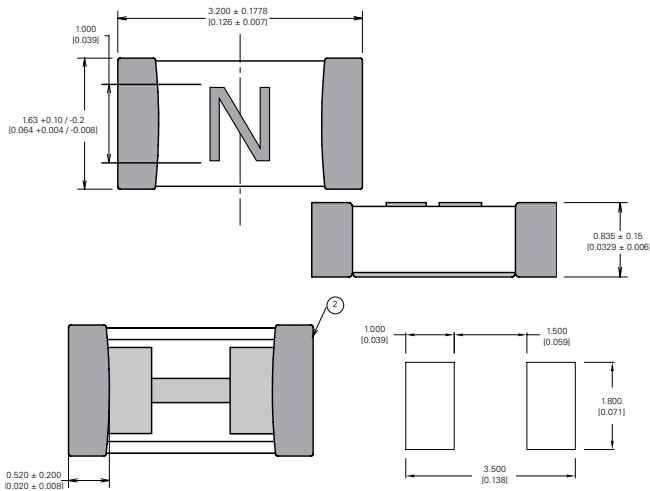


### Product Characteristics

|                                     |                                                                                                                                  |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Materials</b>                    | <b>Body:</b> Advanced Ceramic<br><b>Terminations:</b> Ag/Ni/Sn (100% Lead-free)<br><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>  | 3 Temperature Electrical Characterization                                 |

### Dimensions



### Part Marking System

| Amp Code | Marking Code |
|----------|--------------|
| .500     | <b>F</b>     |
| .750     | <b>G</b>     |
| 001.     | <b>H</b>     |
| 1.25     | <b>J</b>     |
| 01.5     | <b>K</b>     |
| 1.75     | <b>L</b>     |
| 002.     | <b>N</b>     |
| 02.5     | <b>Q</b>     |
| 003.     | <b>P</b>     |
| 3.500    | <b>R</b>     |
| 004.     | <b>S</b>     |
| 005.     | <b>T</b>     |
| 007.     | <b>W</b>     |
| 008.     | <b> X </b>   |

### Packaging

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

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- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
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Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
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