

# 437 Series

## 1206 Fast-Acting Fuse



### Description

This 100% Lead-free, RoHS compliant and Halogen-free fuse series has been designed specifically to provide over current protection to circuits might encounter high working ambient temperatures (up to 150°C). 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 & Benefits

- Operating Temperature from -55°C to +150°C
- 100% Lead-free, Halogen-Free and RoHS compliant
- Suitable for both leaded and lead-free reflow / wave soldering
- UL Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14
- Conforms to EN60127-1 and EN60127-7 (0.5A-8A only)
- CE Mark indicates suitability for European Market
- UKCA Mark indicates suitability for the UK Market

### Web Resources



Download ECAD models, order samples, and find technical resources at [www.littelfuse.com](http://www.littelfuse.com)

### Electrical Characteristics

| % of Ampere Rating | Ampere Rating | Opening Time at 25°C |
|--------------------|---------------|----------------------|
| 100%               | 250mA - 8A    | 4 hours, Minimum     |
| 250%               | 750mA - 8A    | 5 seconds, Maximum   |
| 350%               | 250mA -500mA  | 5 seconds, Maximum   |
| 350%               | 750mA - 8A    | 1 second, Maximum    |

### Applications

- LCD Displays
- Servers
- Printers
- Scanners
- Data Modems

### Agency Approvals

| Agency            | Agency File/Certificate Number | Ampere Range |
|-------------------|--------------------------------|--------------|
| cRU <sup>us</sup> | E10480                         | 0.250A - 8A  |
| SPC               | 29862                          | 0.250A - 8A  |
| CE                | N/A                            | 0.5A - 8A    |
| UKCA              | J50519871                      | 0.5A - 8A    |
| UKCA              | N/A                            | 0.5A - 8A    |

### Electrical Specifications

| 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  |     |    |      |      |
|-------------------|----------|-------------------------|----------------------------------|--|---|--|--|-------------------|-----|----|------|------|
|                   |          |                         |                                  |  |   |  |  | cRU <sup>us</sup> | SPC | CE | UKCA | UKCA |
| 0.25              | .250     | 125                     | 50 A @ 125 V AC/DC               | 2.29                                   | 0.003   | 0.78   | 0.195  | x                 | x   | -  | -    | -    |
| 0.375             | .375     | 125                     |                                  | 1.33                                   | 0.01  | 0.6  | 0.225  | x                 | x   | -  | -    | -    |
| 0.5               | .500     | 63                      | 50 A @ 63 V AC/DC                | 0.908                                  | 0.018   | 0.52   | 0.26   | x                 | x   | x  | x    | x    |
| 0.75              | .750     | 63                      |                                  | 0.665                                  | 0.080   | 0.45   | 0.338  | x                 | x   | x  | x    | x    |
| 1.0               | 001.     | 63                      |                                  | 0.42                                   | 0.106   | 0.41   | 0.41   | x                 | x   | x  | x    | x    |
| 1.25              | 1.25     | 63                      |                                  | 0.318                                  | 0.257   | 0.4  | 0.5  | x                 | x   | x  | x    | x    |
| 1.5               | 01.5     | 63                      |                                  | 0.209                                  | 0.398   | 0.39   | 0.585  | x                 | x   | x  | x    | x    |
| 1.75              | 1.75     | 63                      |                                  | 0.071                                  | 0.084   | 0.27   | 0.473  | x                 | x   | x  | x    | x    |
| 2.0               | 002.     | 63                      |                                  | 0.058                                  | 0.225   | 0.2  | 0.4  | x                 | x   | x  | x    | x    |
| 2.5               | 02.5     | 63                      |                                  | 0.043                                  | 0.441   | 0.15   | 0.375  | x                 | x   | x  | x    | x    |
| 3.0               | 003.     | 63                      | 50A @ 45V AC/63V DC              | 0.033                                  | 0.506   | 0.14   | 0.42   | x                 | x   | x  | x    | x    |
| 3.5               | 03.5     | 63                      |                                  | 50A @ 32V AC/35V DC                    | 0.027   | 0.777  | 0.13   | 0.455             | x   | x  | x    | x    |
| 4.0               | 004.     | 63                      | 50A @ 32V DC                     |  | 0.022   | 1.024  | 0.13   | 0.52              | x   | x  | x    | x    |
| 5.0               | 005.     | 63                      | 50A @ 32V AC/35V DC              | 0.0159                                 | 2.3   | 0.13   | 0.65   | x                 | x   | x  | x    | x    |
| 7.0               | 007.     | 35                      |                                  | 0.01                                   | 5.02  | 0.13   | 0.91   | x                 | x   | x  | x    | x    |
| 8.0               | 008.     | 35                      |                                  | 50A @ 32V DC                           | 0.008   | 7.23   | 0.13   | 1.04              | 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. Contact Littelfuse if application transient surges are less than 1 ms.

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.

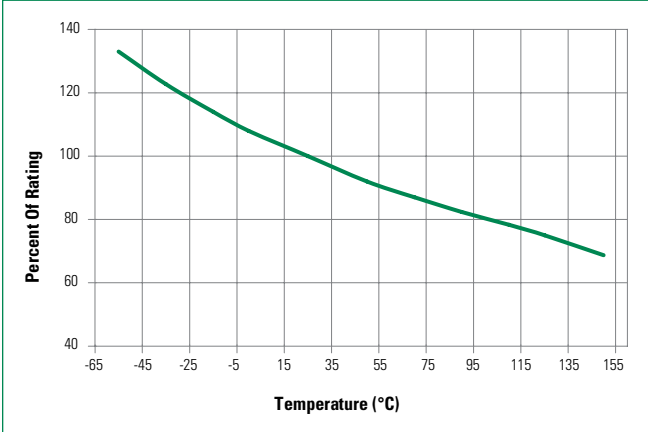
Devices designed to be mounted with marking code facing up.

2.5A-5A, (50A @ 45V AC/63V DC- For cURus only, 50A @ 32 V DC-for CSA only, 50A @ 32 V AC both cURus and CSA

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## 1206 Fast-Acting Fuse

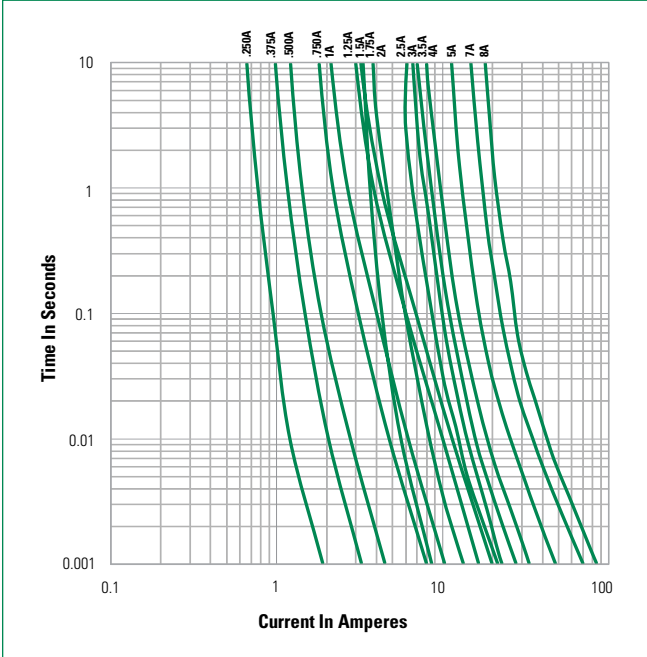
Temperature Re-rating Curve



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

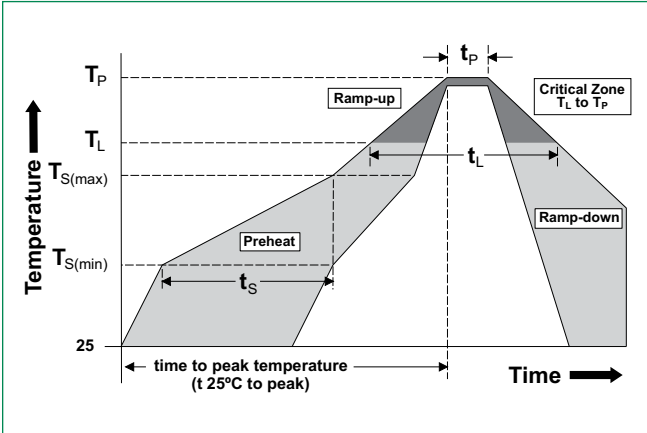
**Example:**  
 For continuous operation at 75 degrees celsius, the fuse should be rerated as follows:  
 $I = (0.80)(0.85)_{\text{RAT}} = (0.68)_{\text{RAT}}$

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> |                                     | 3°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>   |                                     | 10 – 30 seconds         |
| <b>Ramp-down Rate</b>  |                                     | 6°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.  |



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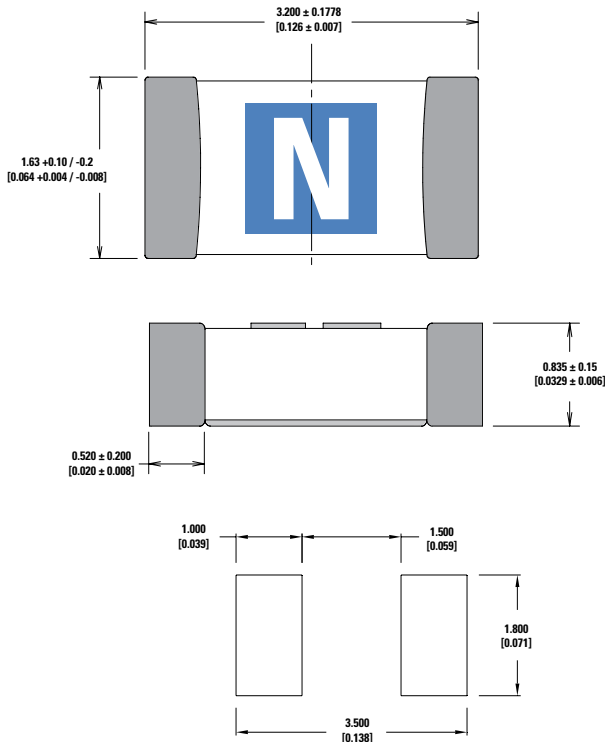
## 1206 Fast-Acting Fuse

### 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> Ceramic/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, Condition 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                          |

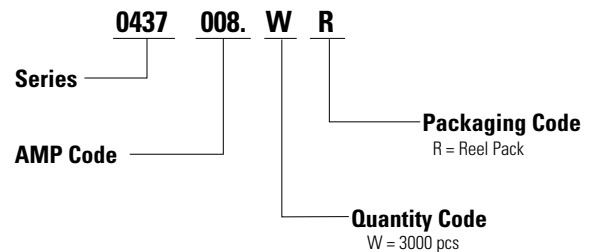
### Dimensions mm (inches)



### Part Marking System

| Amp Code | Marking Code | Amp Code | Marking Code |
|----------|--------------|----------|--------------|
| 0.25     | D            | 2.0      | N            |
| 0.375    | E            | 2.5      | O            |
| 0.5      | F            | 3.0      | P            |
| 0.75     | G            | 3.5      | R            |
| 1.0      | H            | 4.0      | S            |
| 1.25     | J            | 5.0      | T            |
| 1.5      | K            | 7.0      | W            |
| 1.75     | L            | 8.0      | X            |

### Part Numbering System



### Packaging

| Packaging Option | Packaging Specification | Quantity | Quantity & Packaging Code |
|------------------|-------------------------|----------|---------------------------|
| 8mm Tape & Reel  | EIA-481, IEC 60286-3    | 3000     | WR                        |

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