433 Series Fuse

Description
The 433 series fast-acting surface mount fuse series is a small (1206 size) thin-film device designed for secondary protection of circuits used in space constrained applications such as hand-held portable electronic devices.

For RoHS compliant and lead-free design, please refer to the Littelfuse 466 series thin film fuse. For new designs of 7 amp please refer to Littelfuse 429 series thin film fuse.

Features

- The SlimLine 1206 fuse is an extremely small, low profile design (1206 chip size) utilizing thin-film technology to achieve precise control of electrical characteristics.
- The lower height profile produces a flat surface for improved performance in pick-and-place operations and an alternate solution for height critical application.
- Mounting pad and electrical specification are identical to the popular 429 Series specifications.

Agency Approvals

<table>
<thead>
<tr>
<th>Agency</th>
<th>Agency File Number</th>
<th>Ampere Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>eUL</td>
<td>E10480</td>
<td>125mA - 5A</td>
</tr>
<tr>
<td>UL</td>
<td>LR29862</td>
<td>125mA - 5A</td>
</tr>
</tbody>
</table>

Electrical Characteristics for Series

<table>
<thead>
<tr>
<th>% of Ampere Rating</th>
<th>Opening Time at 25°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>4 hours, Minimum</td>
</tr>
<tr>
<td>200%</td>
<td>5 sec., Maximum</td>
</tr>
<tr>
<td>300%</td>
<td>0.2 sec., Maximum</td>
</tr>
</tbody>
</table>

Electrical Specifications by Item

<table>
<thead>
<tr>
<th>Ampere Rating (A)</th>
<th>Amp Code</th>
<th>Max Voltage Rating (V)</th>
<th>Interrupting Rating</th>
<th>Nominal Cold Resistance (Ohms)</th>
<th>Nominal Melting I^2t (A^2sec)</th>
<th>Agency Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.125</td>
<td>.125</td>
<td>125</td>
<td>50A @125 V AC/DC</td>
<td>3.45000</td>
<td>0.00040</td>
<td>x x</td>
</tr>
<tr>
<td>0.200</td>
<td>.200</td>
<td>125</td>
<td>50A @63 V AC/DC</td>
<td>0.93800</td>
<td>0.00055</td>
<td>x x</td>
</tr>
<tr>
<td>0.250</td>
<td>.250</td>
<td>125</td>
<td>50A @63 V AC/DC</td>
<td>0.62500</td>
<td>0.00100</td>
<td>x x</td>
</tr>
<tr>
<td>0.375</td>
<td>.375</td>
<td>125</td>
<td>50A @63 V AC/DC</td>
<td>0.37500</td>
<td>0.00280</td>
<td>x x</td>
</tr>
<tr>
<td>0.50</td>
<td>.500</td>
<td>63</td>
<td>50A @63 V AC/DC</td>
<td>0.24050</td>
<td>0.00600</td>
<td>x x</td>
</tr>
<tr>
<td>0.60</td>
<td>.600</td>
<td>63</td>
<td>50A @63 V AC/DC</td>
<td>0.21000</td>
<td>0.01310</td>
<td>x x</td>
</tr>
<tr>
<td>0.75</td>
<td>.750</td>
<td>63</td>
<td>50A @63 V AC/DC</td>
<td>0.13700</td>
<td>0.01700</td>
<td>x x</td>
</tr>
<tr>
<td>0.80</td>
<td>.800</td>
<td>63</td>
<td>50A @63 V AC/DC</td>
<td>0.12250</td>
<td>0.03050</td>
<td>x x</td>
</tr>
<tr>
<td>1.00</td>
<td>.001</td>
<td>63</td>
<td>50A @32 V AC/DC</td>
<td>0.09950</td>
<td>0.03500</td>
<td>x x</td>
</tr>
<tr>
<td>1.25</td>
<td>1.25</td>
<td>63</td>
<td>50A @32 V AC/DC</td>
<td>0.07475</td>
<td>0.06500</td>
<td>x x</td>
</tr>
<tr>
<td>1.50</td>
<td>0.15</td>
<td>63</td>
<td>50A @32 V AC/DC</td>
<td>0.06250</td>
<td>0.12500</td>
<td>x x</td>
</tr>
<tr>
<td>1.75</td>
<td>1.75</td>
<td>63</td>
<td>50A @32 V AC/DC</td>
<td>0.05000</td>
<td>0.15000</td>
<td>x x</td>
</tr>
<tr>
<td>2.00</td>
<td>0.20</td>
<td>63</td>
<td>50A @24 V AC/DC</td>
<td>0.03975</td>
<td>0.23000</td>
<td>x x</td>
</tr>
<tr>
<td>2.50</td>
<td>0.25</td>
<td>32</td>
<td>50A @24 V AC/DC</td>
<td>0.03065</td>
<td>0.50000</td>
<td>x x</td>
</tr>
<tr>
<td>3.00</td>
<td>0.30</td>
<td>32</td>
<td>50A @24 V AC/DC</td>
<td>0.02625</td>
<td>0.70000</td>
<td>x x</td>
</tr>
<tr>
<td>4.00</td>
<td>0.40</td>
<td>24</td>
<td>50A @24 V AC/DC</td>
<td>0.01400</td>
<td>1.02400</td>
<td>x x</td>
</tr>
<tr>
<td>5.00</td>
<td>0.50</td>
<td>24</td>
<td>50A @24 V AC/DC</td>
<td>0.01100</td>
<td>1.60000</td>
<td>x x</td>
</tr>
</tbody>
</table>

1. Measured at 10% of rated current, 25°C.
2. Measured at rated voltage.
**Temperature Rating Curve**

<table>
<thead>
<tr>
<th>AMBIENT TEMPERATURE</th>
<th>PERCENT OF RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>28°F (−2°C)</td>
<td>20%</td>
</tr>
<tr>
<td>0°F (−18°C)</td>
<td>40%</td>
</tr>
<tr>
<td>32°F (0°C)</td>
<td>60%</td>
</tr>
<tr>
<td>68°F (20°C)</td>
<td>80%</td>
</tr>
<tr>
<td>104°F (40°C)</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Average Time Current Curves**

- **Current Levels:** 0.001A to 100A
- **Time in Seconds:** 0.001 to 100

**Soldering Parameters - Wave Soldering**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflow Condition</td>
<td>Pb – Free assembly</td>
</tr>
<tr>
<td>Pre Heat</td>
<td>- Temperature Min (T_{s(min)}) 150°C</td>
</tr>
<tr>
<td></td>
<td>- Temperature Max (T_{s(max)}) 200°C</td>
</tr>
<tr>
<td></td>
<td>- Time (Min to Max) (t_s) 60 – 180 secs</td>
</tr>
<tr>
<td>Average ramp up rate (Liquidus Temp (T_L) to peak)</td>
<td>5°C/second max</td>
</tr>
<tr>
<td>T_{s(max)} to T_L - Ramp-up Rate</td>
<td>5°C/second max</td>
</tr>
<tr>
<td>Reflow</td>
<td>- Temperature (T_L) (Liquidus) 217°C</td>
</tr>
<tr>
<td></td>
<td>- Temperature (t_L) 60 – 150 seconds</td>
</tr>
<tr>
<td>Peak Temperature (T_p)</td>
<td>250°C/6 °C</td>
</tr>
<tr>
<td>Time within 5°C of actual peak Temperature (t_t)</td>
<td>20 – 40 seconds</td>
</tr>
<tr>
<td>Ramp-down Rate</td>
<td>5°C/second max</td>
</tr>
<tr>
<td>Time 25°C to peak Temperature (T_p)</td>
<td>8 minutes Max.</td>
</tr>
<tr>
<td>Do not exceed</td>
<td>260°C</td>
</tr>
</tbody>
</table>
Product Characteristics

| Materials | Body: Epoxy Substrate  
| Terminations: 95% Tin / 5% Lead over Nickel  
| over Copper  
| Element Cover Coat: Conformal Coating |
| Operating Temperature | – 55°C to 90°C. Consult temperature rerating curve chart. |
| Thermal Shock | Withstands 5 cycles of –55°C to 125°C |

Specifications are subject to change without notice. Please refer to www.littelfuse.com for the most current information.

| Dimensions |
| Marking Code Varies with Amperage Rating (See Chart) |

| Part Marking System |
| Amp Code | Marking Code |
| .125 | B |
| .200 | C |
| .250 | D |
| .375 | E |
| .500 | F |
| .600 | .6 |
| .750 | G |
| .800 | .8 |
| 001 | H |
| 1.25 | J |
| 015 | K |
| 1.75 | L |
| 002 | N |
| 025 | O |
| 003 | P |
| 035 | R |
| 004 | S |
| 005 | T |

| Part Numbering System |
| 0433 | .125 | NR |

Packaging

| Packaging Option | Packaging Specification | Quantity | Quantity & Packaging Code |
| Tape & Reel – 8mm tape | EIA RS-481-1 (IEC 286, part 3) | 5000 | NR |

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