

437 Series – 1206 Fast-Acting Fuse



Agency Approvals

| Agency | Agency File Number | Ampere Range |
|-----------------------------------------------------------------------------------|--------------------|--------------|
|  | E10480 | 0.250A - 8A |
|  | 29862 | 0.250A - 8A |

Electrical Characteristics for Series

| % 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 |

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 I²t 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
- Suitable for both leaded and lead-free reflow / wave soldering
- UL Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14

Applications

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

Additional Information



Datasheet



Resources



Samples

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 | |
|-------------------|----------|-------------------------|----------------------------------|----------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| | | | | | | | |  |  |
| 0.25 | 0.25 | 125 | 50 A @ 125 V AC/DC | 2.29 | 0.003 | 0.78 | 0.195 | x | x |
| 0.375 | 0.375 | 125 | | 1.33 | 0.01 | 0.6 | 0.225 | x | x |
| 0.5 | 0.5 | 63 | | 0.908 | 0.018 | 0.52 | 0.26 | x | x |
| 0.75 | 0.75 | 63 | | 0.665 | 0.064 | 0.45 | 0.338 | x | x |
| 1.0 | 1.0 | 63 | 50 A @ 63 V AC/DC | 0.42 | 0.1 | 0.41 | 0.41 | x | x |
| 1.25 | 1.25 | 63 | | 0.318 | 0.256 | 0.4 | 0.5 | x | x |
| 1.5 | 1.5 | 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 |
| 2.0 | 2.0 | 63 | | 0.058 | 0.225 | 0.2 | 0.4 | x | x |
| 2.5 | 2.5 | 32 | | 0.043 | 0.441 | 0.15 | 0.375 | x | x |
| 3.0 | 3.0 | 32 | 50 A @ 32 V AC/35 V DC | 0.033 | 0.506 | 0.14 | 0.42 | x | x |
| 3.5 | 3.5 | 32 | | 0.027 | 0.777 | 0.13 | 0.455 | x | x |
| 4.0 | 4.0 | 32 | | 0.022 | 1.024 | 0.13 | 0.52 | x | x |
| 5.0 | 5.0 | 32 | | 0.0159 | 2.3 | 0.13 | 0.65 | x | x |
| 7.0 | 7.0 | 32 | | 0.01 | 5.02 | 0.13 | 0.91 | x | x |
| 8.0 | 8.0 | 32 | | 0.008 | 7.23 | 0.13 | 1.04 | 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.

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.

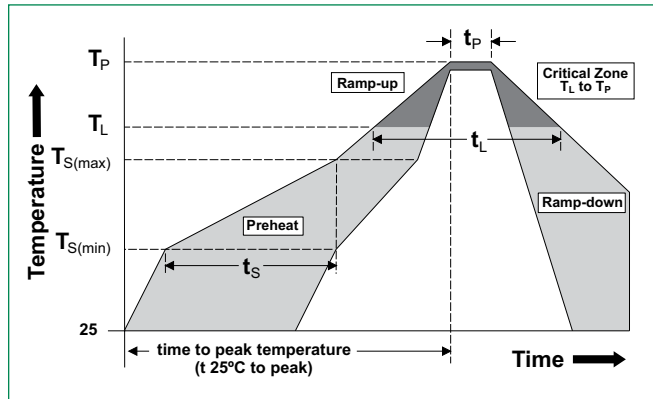
Example:
For continuous operation at 75 degrees celsius, the fuse should be rerated as follows:
 $I = (0.80)(0.85)_{RAT} = (0.68)_{RAT}$

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) | | 3°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_t) | 60 – 150 seconds |
| Peak Temperature (T_p) | | 260 ^{+0/-5} °C |
| Time within 5°C of actual peak Temperature (t_p) | | 10 – 30 seconds |
| Ramp-down Rate | | 6°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. |

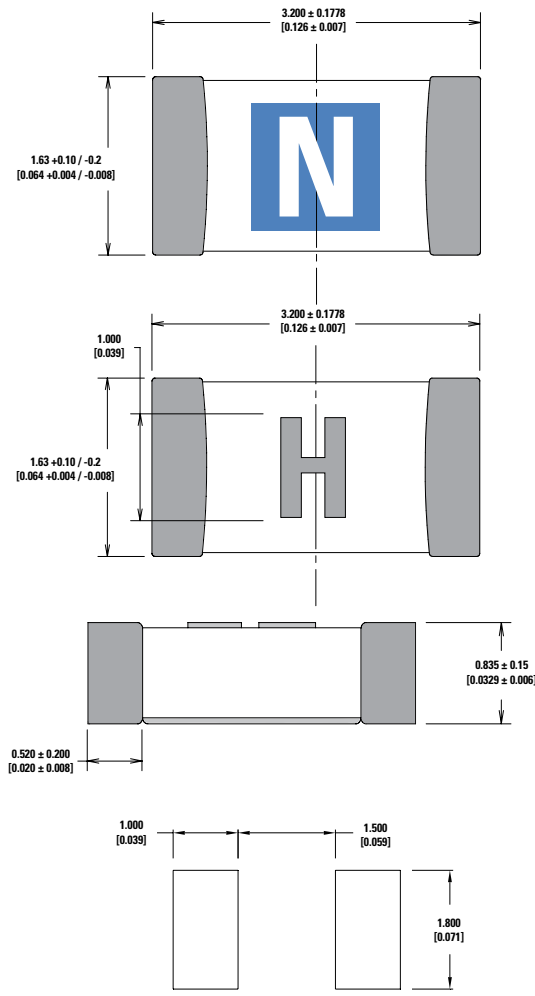


Product Characteristics

| | |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Materials | Body: Advanced Ceramic Terminations: Ag / Ni / Sn (100% Lead-free) Element Cover Coating: Ceramic/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, Condition 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 |

Dimensions



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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Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9