

### 160 Series Fuse and Clip Assembly





#### Description

The 160 Series product is a metal fuse clip with pre-installed Littelfuse 443 Series Fuse. This fuse and clip combination can be automatically installed in PC Boards in one efficient manufacturing operation. It permits quick and easy fuse replacement without exposing the PC Boards and other components to risks of rework solder heat as required with direct surface mount fuses.

It is designed to enable compliance with the RoHS directive. This product is fully compatible with lead-free solder alloy and higher temperature profiles associated with lead-free assembly.

#### Agency Approvals

| AGENCY  | AGENCY FILE NUMBER | AMPERE RANGE   |
|---|--------------------|----------------|
|  | NBK290416-JP1021   | 1.00A – 5.00A* |
|  | E14721             | 0.5A - 5A      |

Note \* - PSE/METI Certification is only applicable to the fuse. Clips do not require certification for the Japanese Market.

#### Electrical Characteristics for Series

| % of Ampere Rating | Opening Time         |
|--------------------|----------------------|
| 100%               | 4 hours, Minimum     |
| 250%               | 120 seconds, Maximum |

#### Additional Information



Datashheet



Resources



Samples



#### Features

- Offer low profile easily-replaceable fuse alternative compatible with automated PCB surface mount equipment
- Comes supplied with Littelfuse 443 Series 250V Nano<sup>2</sup>® Fuse
- RoHS compliant and Halogen Free
- Clip fully compatible with RoHS/lead-free solder alloys and higher temperature profiles associated with lead-free assembly
- 0.5A - 5A ampere rating available

#### Applications

- AC/DC power adaptor
- Telecom equipment system power
- Portable system built-in AC/DC converter
- High voltage DC/DC converter
- Lighting System
- LED Lighting

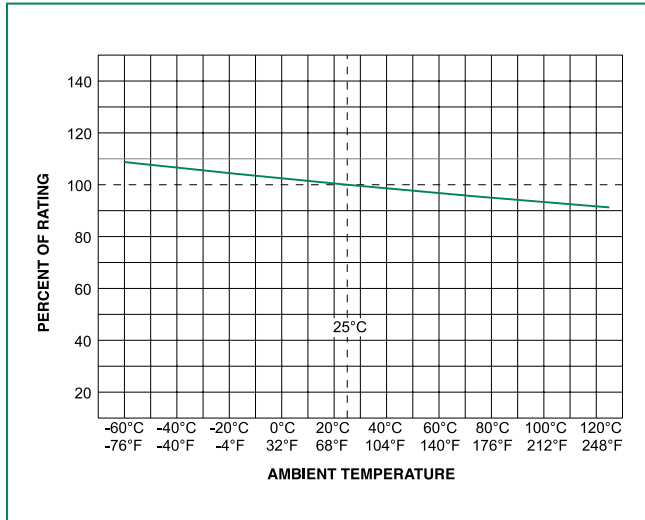
#### Electrical Specifications by Item

| Ampere Rating (A) | Amp Code | Max Voltage Rating (V) | Interrupting Rating | Nominal Cold Resistance (Ohms) | Nominal Melting I <sup>2</sup> t (A <sup>2</sup> sec) | Nominal Voltage Drop (mV) | Agency Approvals  |   |
|-------------------|----------|------------------------|---------------------|--------------------------------|---|---------------------------|---|---|
|                   |          |                        |                     |                                |   |                           |  |  |
| 0.50              | 0.50     | 250                    | 50 A @ 250 VAC      | .5974                          | 1.96  | 334                       |   | X   |
| 0.75              | 0.75     | 250                    |                     | .2729                          | 3.025   | 223                       |   | X   |
| 1.00              | 001.     | 250                    |                     | .1826                          | 9.00  | 207                       | X   | X   |
| 1.50              | 01.5     | 250                    |                     | .1100                          | 15.21   | 210                       | X   | X   |
| 2.00              | 002.     | 250                    |                     | .0511                          | 18.50   | 117                       | X   | X   |
| 2.50              | 02.5     | 250                    |                     | .0392                          | 22.20   | 156                       | X   | X   |
| 3.00              | 003.     | 250                    |                     | .0276                          | 59.29   | 103                       | X   | X   |
| 3.50              | 03.5     | 250                    |                     | .0199                          | 59.34   | 87                        | X   | X   |
| 4.00              | 004.     | 250                    |                     | .0160                          | 122.5   | 83                        | X   | X   |
| 5.00              | 005.     | 250                    |                     | .0115                          | 180.6   | 73                        | X   | X   |

Notes:

1. Cold resistance measured at less than 10% of rated current at 23°C.
2. Agency Approval Table Key: X=Approved or Certified, P=Pending.

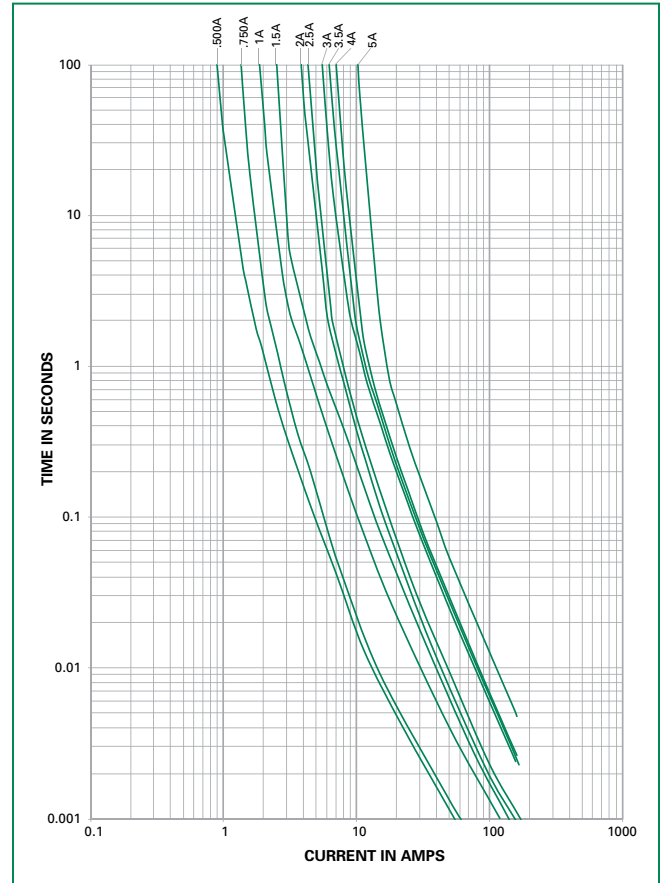
### Temperature Re-rating Curve



Note:

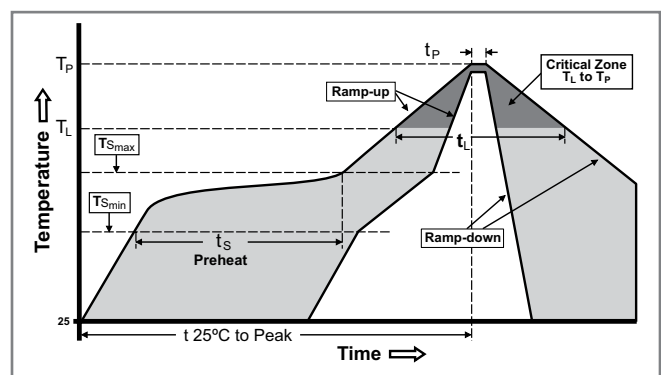
1. Rerating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

### 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 ( $t_L$ )            | 60 – 150 seconds |
| Peak Temperature ( $T_p$ )                             | 260 <sup>+0/-5</sup> °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                              |                  |

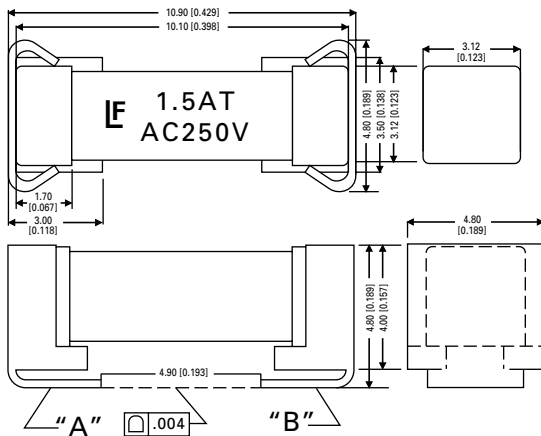


### Product Characteristics

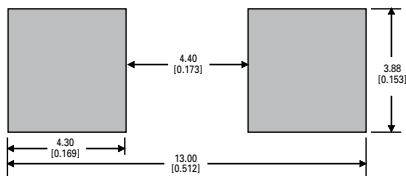
|   |  |
|---|--|
| <b>Materials</b>                                | <b>Body:</b> Ceramic<br><b>Cap:</b> Silver-plated Brass          |
| <b>Product Marking</b>                          | Brand, Ampere Rating, Voltage Rating, UMF Logo                   |
| <b>Insulation Resistance</b><br>(after Opening) | MIL-STD-202, Method 302, Test Condition A (10,000 ohms, Minimum) |
| <b>Solderability</b>                            | MIL-STD-202, Method 208  |
| <b>Resistance to Soldering Heat</b>             | MIL-STD-202, Method 210, Test Condition B (10 seconds at 260°C)  |
| <b>Moisture Sensitivity Level</b>               | Level 1 J-STD-020  |

|                              |   |
|------------------------------|---|
| <b>Operating Temperature</b> | -55°C to 125°C with proper re-rating                                  |
| <b>Thermal Shock</b>         | MIL-STD-202, Method 107, Test Condition B (5 cycles, -65°C to 125°C)  |
| <b>Vibration</b>             | MIL-STD-202, Method 201 (10-55 Hz)                                    |
| <b>Moisture Resistance</b>   | MIL-STD-202, Method 106, High Humidity (90-98% RH), Heat (65°C)       |
| <b>Salt Spray</b>            | MIL-STD-202, Method 101, Test Condition B                             |
| <b>Mechanical Shock</b>      | MIL-STD-202, Method 213, Test Condition I (100 G's peak for 6 msecs.) |

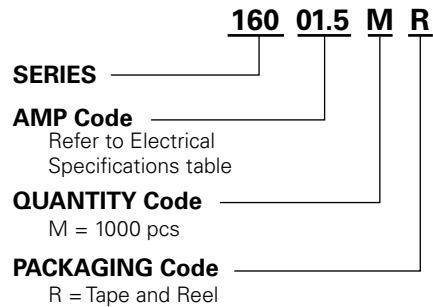
### Dimensions



Recommended Pad Layout



### Part Numbering System



**Example:**  
1.5 amp product is  
016001.5 MR

### Packaging

| Form Factor   | Packaging Option   | Packaging Specification        | Quantity | Quantity & Packaging Code |
|---------------|--------------------|--------------------------------|----------|---------------------------|
| Surface Mount | 24mm Tape and Reel | EIA-RS 481-2 (IEC 286, part 3) | 1000     | MR                        |

**Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at [www.littelfuse.com/disclaimer-electronics](http://www.littelfuse.com/disclaimer-electronics).**

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### 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](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9