













### 215 Series, 5x20 mm, Time-Lag Fuse



#### Agency Approvals

| Agency  | Agency File Number  | Ampere Range                       |
|---|---|------------------------------------|
|    | Cartridge:<br>NBK080205-E10480A<br>NBK250702-E10480E<br>NBK100408-JP1021A | 1A – 5A<br>6.3A – 15A<br>16A – 20A |
|   | Leaded:<br>NBK080205-E10480B<br>NBK250702-E10480F<br>NBK100408-JP1021B    | 1A – 5A<br>6.3A – 15A<br>16A – 20A |
|   | 2005010207145714  | 1A – 6.3A                          |
|  | CQC07012021808  | 8A – 10A                           |
|  | SU05001-2011B   | 1A – 2.5A                          |
|   | SU05001-10001   | 3.15A – 6.3A                       |
|   | SU05001-10002   | 8A                                 |
|   | SU05001-2012B   | 4A – 10A                           |
|   | E10480  | 0.125A - 20A                       |
|  | 29862   | 0.5A – 12A                         |
|  | 1517218   | 0.125A-12A                         |
|   |   | 15A*, 16A*, 20A*                   |
|  | 40013521  | 0.2A – 8A<br>*10A                  |
|  | 40016610  | *12A                               |
|  | KM41462   | 0.200A – 10A                       |
|  | J50258578   | 16A/20A                            |
|  | N/A   | 0.125A – 20A                       |

\* Approved for cartridge versions only

#### Description

5x20mm Time-Lag surge withstand ceramic body cartridge fuse designed to IEC specification

#### Features

- Designed to International (IEC) Standards for use globally
- High breaking capacity
- Meets the IEC 60127-2, Sheet 5 specification for Time-Lag fuses
- RoHS compliant and lead-free

#### Applications

Used as supplementary protection in appliance or utilization equipment to provide individual protection for components or internal circuits.

#### Additional Information



Datasheet



Resources



Samples

#### Electrical Characteristics for Series

| % of Ampere Rating | Ampere Rating   | Opening Time                    |
|--------------------|-----------------|---------------------------------|
| 150%               | 0.125A – 0.800A | 60 minutes, Minimum             |
|                    | 1A – 3.15A      | 60 minutes, Minimum             |
|                    | 4A – 6.3A       | 60 minutes, Minimum             |
|                    | 8A – 20A        | 30 minutes, Minimum             |
| 210%               | 0.125A – 0.800A | 30 minutes, Maximum             |
|                    | 1A – 3.15A      | 30 minutes, Maximum             |
|                    | 4A – 6.3A       | 30 minutes, Maximum             |
|                    | 8A – 20A        | 30 minutes, Maximum             |
| 275%               | 0.125A – 0.800A | .25 sec. Min.; 80 secs. Max.    |
|                    | 1A – 3.15A      | .75 sec. Min.; 80 secs. Max.    |
|                    | 4A – 6.3A       | .75 sec. Min.; 80 secs. Max.    |
|                    | 8A – 20A        | .75 sec. Min.; 80 secs. Max.    |
| 400%               | 0.125A – 0.800A | .05 sec., Min.; 5 secs. Max.    |
|                    | 1A – 3.15A      | .095 sec., Min.; 5 secs. Max.   |
|                    | 4A – 6.3A       | .150 sec., Min.; 5 secs. Max.   |
|                    | 8A – 20A        | .150 sec., Min.; 5 secs. Max.   |
| 1000%              | 0.125A – 0.800A | .005 sec., Min.; .150 sec. Max. |
|                    | 1A – 3.15A      | .010 sec., Min.; .150 sec. Max. |
|                    | 4A – 6.3A       | .010 sec., Min.; .150 sec. Max. |
|                    | 8A – 20A        | .010 sec., Min.; .150 sec. Max. |

# Axial Lead & Cartridge Fuses

5x20 mm > Time-Lag > 215 Series

## Electrical Characteristic Specifications by Item

| Amp Code | Amp Rating | Voltage Rating (V) | Interrupting Rating | Nominal Cold Resistance (Ohms) | Nominal Melting I <sup>2</sup> t (A <sup>2</sup> sec) | Maximum Voltage Drop at Rated Current (mV) | Maximum Power Dissipation at 1.5I <sub>n</sub> (W) | Agency Approvals |     |    |    |    |    |    |    |    |    |    |    |    |   |   |   |   |
|----------|------------|--------------------|---------------------|--------------------------------|---|--|--|------------------|-----|----|----|----|----|----|----|----|----|----|----|----|---|---|---|---|
|          |            |                    |                     |                                |   |  |  | UL               | CSA | UL | UL | UL | UL | UL | UL | UL | UL | UL | UL |    |   |   |   |   |
| .125     | 0.125      | 250                | 1500 A @ 250 VAC    | 11.4455                        | 0.0330  | 2600                                       | 1.6  |                  |     |    |    |    | X  | X  |    |    |    |    |    |    |   |   | X |   |
| .160     | 0.16       | 250                |                     | 7.1000                         | 0.0465  | 2400                                       | 1.6  |                  |     |    |    |    |    | X  | X  |    |    |    |    |    |   |   |   | X |
| .200     | 0.2        | 250                |                     | 1.8400                         | 0.340   | 2100                                       | 1.6  | X                |     |    |    |    |    | X  | X  | X  |    |    |    |    |   |   |   | X |
| .250     | 0.25       | 250                |                     | 1.2400                         | 0.545   | 1500                                       | 1.6  | X                |     |    |    |    |    | X  | X  | X  |    |    |    |    |   |   |   | X |
| .315     | 0.315      | 250                |                     | 0.8800                         | 0.975   | 1100                                       | 1.6  | X                |     |    |    |    |    | X  | X  | X  |    |    |    |    |   |   |   | X |
| .400     | 0.4        | 250                |                     | 0.5825                         | 1.325   | 1000                                       | 1.6  | X                |     |    |    |    |    | X  | X  | X  |    |    |    |    |   |   |   | X |
| .500     | 0.5        | 250                |                     | 1.1675                         | 0.420   | 850  | 1.6  | X                |     |    |    |    |    | X  | X  | X  | X  |    |    |    |   |   |   | X |
| .630     | 0.63       | 250                |                     | 0.7200                         | 0.635   | 650  | 1.6  | X                |     |    |    |    |    | X  | X  | X  | X  |    |    |    |   |   |   | X |
| .800     | 0.8        | 250                |                     | 0.4675                         | 0.975   | 500  | 1.6  | X                |     |    |    |    |    | X  | X  | X  | X  |    |    |    |   |   |   | X |
| 001.     | 1          | 250                |                     | 0.1515                         | 1.520   | 350  | 2.5  | X                | X   | X  | X  | X  | X  | X  | X  | X  | X  |    |    |    |   |   |   | X |
| 1.25     | 1.25       | 250                |                     | 0.1074                         | 3.200   | 300  | 2.5  | X                | X   | X  | X  | X  | X  | X  | X  | X  | X  |    |    |    |   |   |   | X |
| 016      | 1.6        | 250                |                     | 0.0707                         | 6.830   | 200  | 2.5  | X                | X   | X  | X  | X  | X  | X  | X  | X  | X  |    |    |    |   |   |   | X |
| 002.     | 2          | 250                |                     | 0.0566                         | 11.680  | 190  | 2.5  | X                | X   | X  | X  | X  | X  | X  | X  | X  | X  |    |    |    |   |   |   | X |
| 02.5     | 2.5        | 250                |                     | 0.0386                         | 22.290  | 180  | 2.5  | X                | X   | X  | X  | X  | X  | X  | X  | X  | X  |    |    |    |   |   |   | X |
| 3.15     | 3.15       | 250                |                     | 0.0283                         | 43.255  | 140  | 4  | X                | X   | X  | X  | X  | X  | X  | X  | X  | X  |    |    |    |   |   |   | X |
| 004.     | 4          | 250                |                     | 0.0185                         | 46.960  | 100  | 4  | X                | X   | X  | X  | X  | X  | X  | X  | X  | X  |    |    |    |   |   |   | X |
| 005.     | 5          | 250                |                     | 0.0153                         | 66.095  | 100  | 4  | X                | X   | X  | X  | X  | X  | X  | X  | X  | X  |    |    |    |   |   |   | X |
| 06.3     | 6.3        | 250                |                     | 0.0108                         | 128.750   | 100  | 4  | X                | X   | X  | X  | X  | X  | X  | X  | X  | X  |    |    |    |   |   |   | X |
| 008.     | 8          | 250                |                     | 0.0092                         | 209.880   | 100  | 4  | X                | X   |    | X  | X  | X  | X  | X  | X  | X  |    |    | X  |   |   |   | X |
| 010.     | 10         | 250                |                     | 0.0066                         | 333.565   | 100  | 4  | X                | X   |    | X  | X  | X  | X  | X  | X  | X  |    |    | X* |   | X |   | X |
| 012.     | 12         | 250                | 0.0061              | 515.500                        | 100   | 4  |  | X                |     |    | X  | X  | X  |    | X* |    |    |    |    |    |   |   | X |   |
| 015.     | 15         | 250                | 0.0033              | 1237.0                         | N/A**   | N/A**                                      |  | X                |     |    | X  |    | X* |    |    |    |    |    |    |    |   |   | X |   |
| 016.     | 16         | 250                | 0.0031              | 1408.0                         | N/A**   | N/A**                                      |  | X                |     |    | X  |    | X* |    |    |    |    |    |    |    | X | X |   |   |
| 020.     | 20         | 250                | 0.0023              | 2600.0                         | N/A**   | N/A**                                      |  | X                |     |    | X  |    | X* |    |    |    |    |    |    | X  | X |   |   |   |

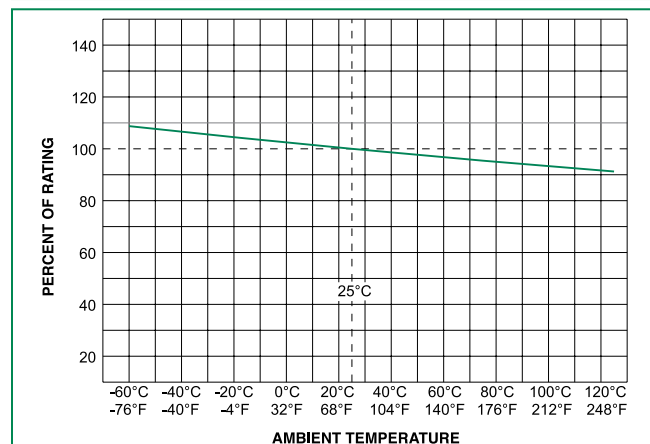
X\* Approval for cartridge versions only

N/A\*\* - Please contact Littelfuse for details on these parameters

1A to 2A have an IR : 100A@500VAC, 4A to 6-3A have the IR : 100A@305 VAC and 1000A@72VDC

I<sup>2</sup>t test at 10x rated current.

## Temperature Re-rating Curve

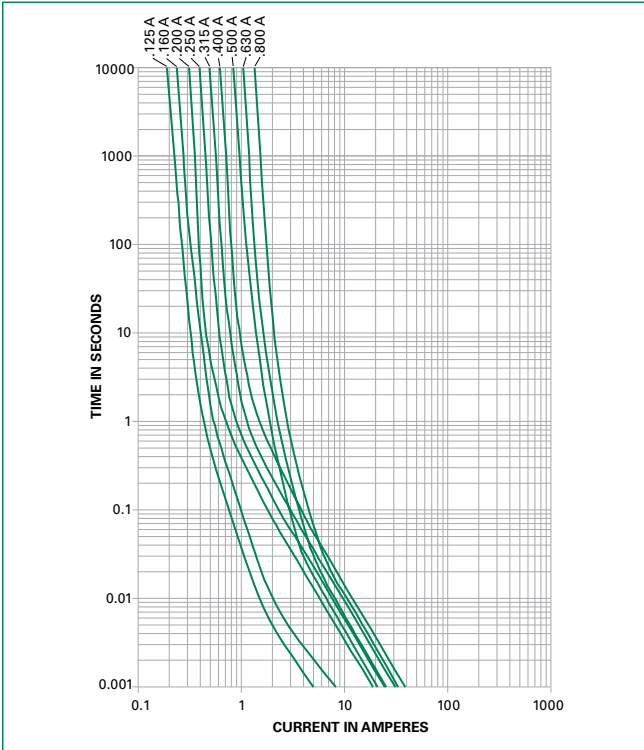


## Product Characteristics

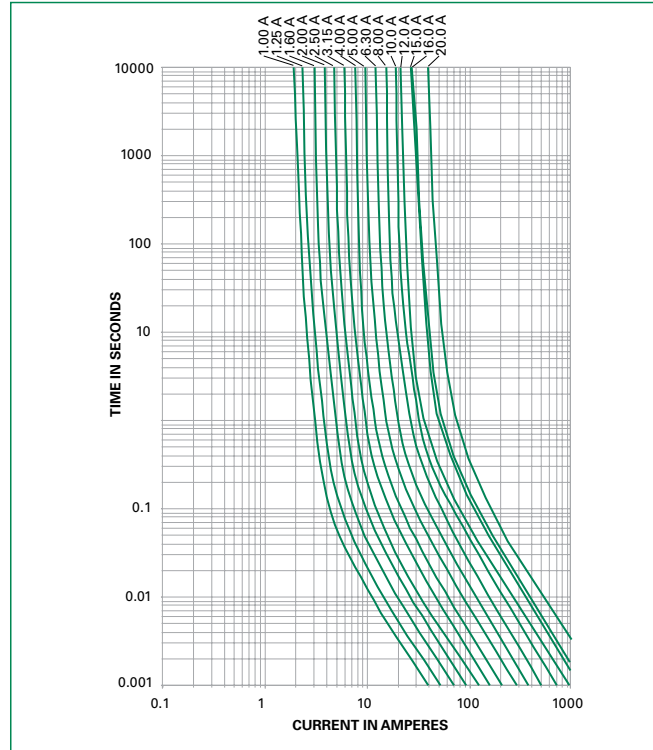
|                              |  |
|------------------------------|--|
| <b>Materials</b>             | <b>Body:</b> Ceramic<br><b>Cap:</b> Nickel-plated Brass<br><b>Leads:</b> Tin-plated Copper       |
| <b>Terminal Strength</b>     | MIL-STD-202, Method 211, Test Condition A  |
| <b>Solderability</b>         | MIL-STD-202 Method 208   |
| <b>Product Marking</b>       | <b>Cap 1:</b> Brand logo, current and voltage ratings<br><b>Cap 2:</b> Agency approval markings  |
| <b>Operating Temperature</b> | -55°C to +125°C  |
| <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  |
| <b>Humidity</b>              | MIL-STD-202, Method 103, Test Condition A (High RH (95%) and elevated temp (40°C) for 240 hours) |
| <b>Salt Spray</b>            | MIL-STD-202, Method 101, Test Condition B  |

## Average Time Current Curves

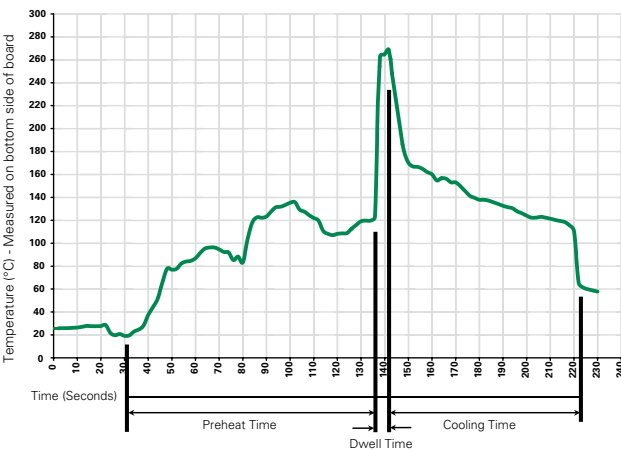
T-C Curves for 125mA to 800mA only



T-C Curves for 1A to 20A only



## Soldering Parameters - Wave Soldering



### Recommended Process Parameters:

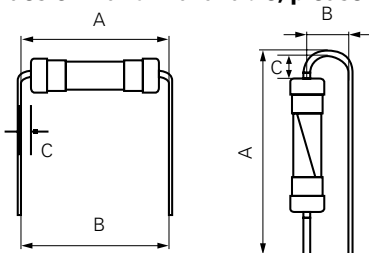
| Wave Parameter  | Lead-Free Recommendation |
|---|--------------------------|
| <b>Preheat:</b><br>(Depends on Flux Activation Temperature) (Typical Industry Recommendation) |                          |
| Temperature Minimum:  | 100° C                   |
| Temperature Maximum:  | 150° C                   |
| Preheat Time:   | 60-180 seconds           |
| <b>Solder Pot Temperature:</b>  | 260° C Maximum           |
| <b>Solder Dwell Time:</b>   | 2-5 seconds              |

### Recommended Hand-Solder Parameters:

Solder Iron Temperature: 350° C +/- 5° C  
Heating Time: 5 seconds max.

**Note: These devices are not recommended for IR or Convection Reflow process.**

Different values of A and B available, please contact the Littelfuse sales representative in your region:



For the pigtailed fuse, please follow the recommendations below for axial lead forming and mounting into PCB:

### Lead forming:

The distance C between cap flat surface and axial lead shall be greater than 1.0 mm.

### PCB mounting:

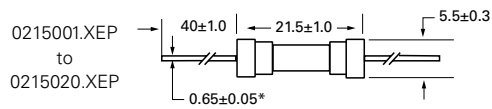
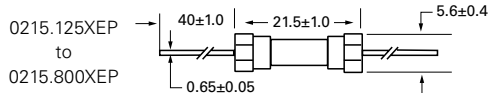
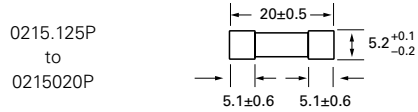
The distance between PCB and fuse cap is recommended to be a minimum of 1.5 mm.

# Axial Lead & Cartridge Fuses

5x20 mm > Time-Lag > 215 Series

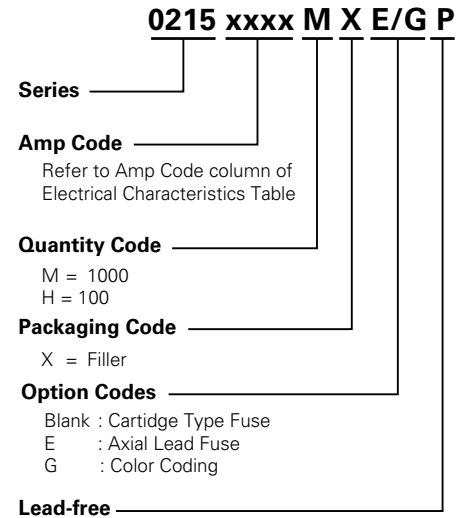
## Dimensions

All dimensions in mm



Notes:  
\* Ratings above 6.3 A have 0.8 ± 0.05 diameter lead;  
\* Ratings above 12 A have 1.2 ± 0.05 diameter lead.

## Part Numbering System



## Packaging

| Packaging Option      | Packaging Specification | Quantity | Quantity & Packaging Code | Taping Width     |
|-----------------------|-------------------------|----------|---------------------------|------------------|
| <b>215 Series</b>     |                         |          |                           |                  |
| Bulk                  | N/A                     | 1000     | MX                        | N/A              |
| Bulk                  | N/A                     | 1000     | MXE                       | N/A              |
| Reel and Tape         | N/A                     | 1000     | MRET1                     | T1=53mm (2.087") |
| Bulk and Color Coding | N/A                     | 1000     | MXG                       | N/A              |
| Bulk                  | N/A                     | 1000     | MXB                       | N/A              |
| Bulk                  | N/A                     | 100      | HX                        | N/A              |