

# Axial Lead & Cartridge Fuses

5×20 mm > Time-Lag > 215 Series

## 215 Series, 5×20 mm, Time-Lag (Slo-Blo®) Fuse



### Agency Approvals

| Agency | Agency File Number                                                                     | Ampere Range                                                              |
|--------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
|        | Cartridge Certificates:<br>NBK080205-E10480A<br>NBK250702-E10480E<br>NBK100408-JP1021A | 1A – 5A<br>6.3A – 15A<br>16A – 20A                                        |
|        | Leaded Certificates:<br>NBK080205-E10480B<br>NBK250702-E10480F<br>NBK100408-JP1021B    | 1A – 5A<br>6.3A – 15A<br>16A – 20A                                        |
|        | Certificates:<br>2005010207145714                                                      | 1A – 6.3A                                                                 |
|        | Certificates:<br>SU05001– 2011<br>SU05001– 2012                                        | 1A – 3.15A<br>4A – 10A                                                    |
|        | Recognised File:<br>E10480                                                             | 125mA – 20A                                                               |
|        | File:<br>029862<br>Acc. Class:<br>LR1422 – 30                                          | 500mA – 12A                                                               |
|        | License:<br>1112132<br>902193<br>1117976<br>1200154<br>1200155                         | 125mA, 160mA<br>200mA – 800mA, 8A, 10A<br>1A - 6.3A<br>12A<br>*15A – *20A |
|        | License:<br>40013521                                                                   | 200mA – 8A<br>*10A                                                        |
|        | License:<br>40016610                                                                   | *12A                                                                      |
|        | License:<br>KM41462                                                                    | 200mA – 10A                                                               |
|        | Certificate:<br>CQC07012021808                                                         | 8A – 10A                                                                  |
|        | Certificate:<br>J50258578                                                              | 16A/20A                                                                   |
|        |                                                                                        | 125mA – 20A                                                               |

\* Approved for cartridge versions only

### Description

5×20mm Time-Lag surge withstand ceramic body cartridge fuse designed to IEC specification

### Features

- Designed to International (IEC) Standards for use globally
- High breaking capacity
- Meet 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%               | 125mA – 800mA | 60 minutes, Minimum             |
|                    | 1A – 3.15A    | 60 minutes, Minimum             |
|                    | 4A – 6.3A     | 60 minutes, Minimum             |
|                    | 8A – 20A      | 30 minutes, Minimum             |
| 210%               | 125mA – 800mA | 30 minutes, Maximum             |
|                    | 1A – 3.15A    | 30 minutes, Maximum             |
|                    | 4A – 6.3A     | 30 minutes, Maximum             |
|                    | 8A – 12A      | 30 minutes, Maximum             |
| 275%               | 125mA – 800mA | .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%               | 125mA – 800mA | .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%              | 125mA – 800mA | .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. |

### 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               | PS E | CCC | K | RU | CS | S  | D'E | VDE | CQC | △ | CE |
| .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  |
| 1.25     | 1.25       | 250                |                     | 0.1074                         | 3.200                                                 | 300                                        | 2.5                                                | x                | x    | x   | x | x  | x  | x  | x   |     |     |   | x  |
| 01.6     | 1.6        | 250                |                     | 0.0707                         | 6.830                                                 | 200                                        | 2.5                                                | 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  |
| 02.5     | 2.5        | 250                |                     | 0.0386                         | 22.290                                                | 180                                        | 2.5                                                | 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  |
| 004.     | 4          | 250                |                     | 0.0185                         | 46.960                                                | 100                                        | 4                                                  | 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  |
| 06.3     | 6.3        | 250                |                     | 0.0108                         | 128.750                                               | 100                                        | 4                                                  | 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  |
| 010.     | 10         | 250                |                     | 0.0066                         | 333.565                                               | 100                                        | 4                                                  | 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                | 500 A               | 0.0033                         | 1237.0                                                | N/A**                                      | N/A**                                              |                  | x    |     |   | x  |    | x* |     |     |     |   |    |
| 016.     | 16         | 250                |                     | 0.0031                         | 1408.0                                                | N/A**                                      | N/A**                                              |                  | x    |     |   | x  |    | x* |     |     |     | x |    |
| 020.     | 20         | 250                | 400 A               | 0.0023                         | 2600.0                                                | N/A**                                      | N/A**                                              |                  | x    |     |   | x  |    | x* |     |     |     | x |    |

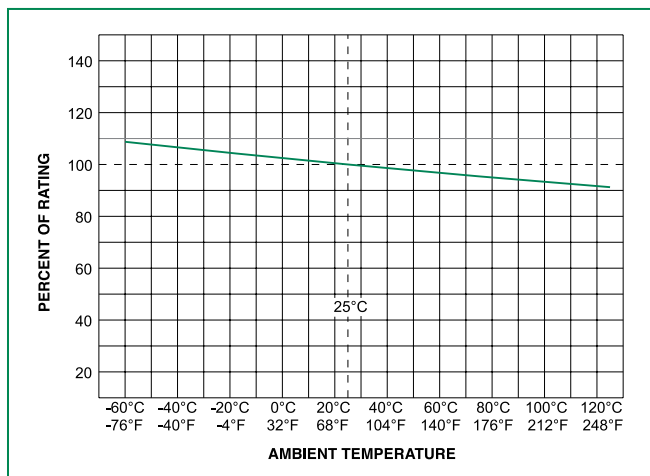
X\* Approval for cartridge versions only

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 Derating Curve

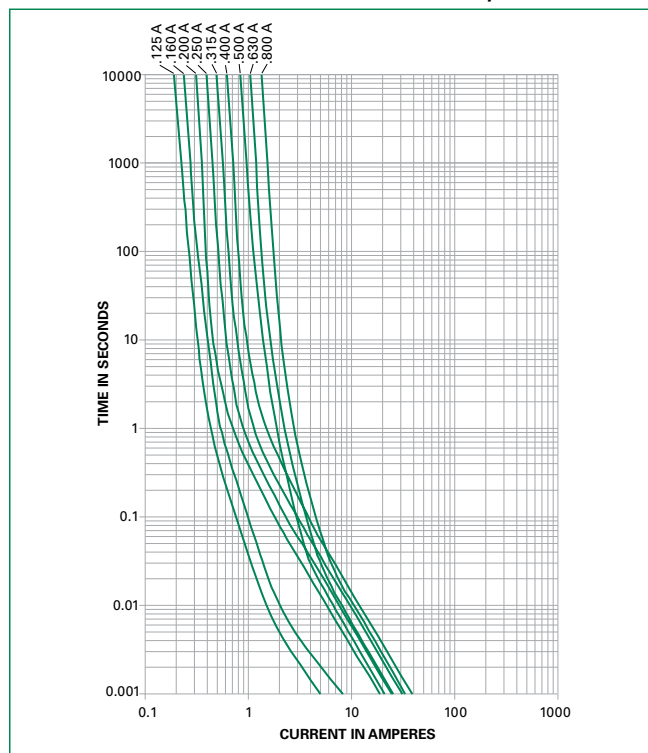


### Product Characteristics

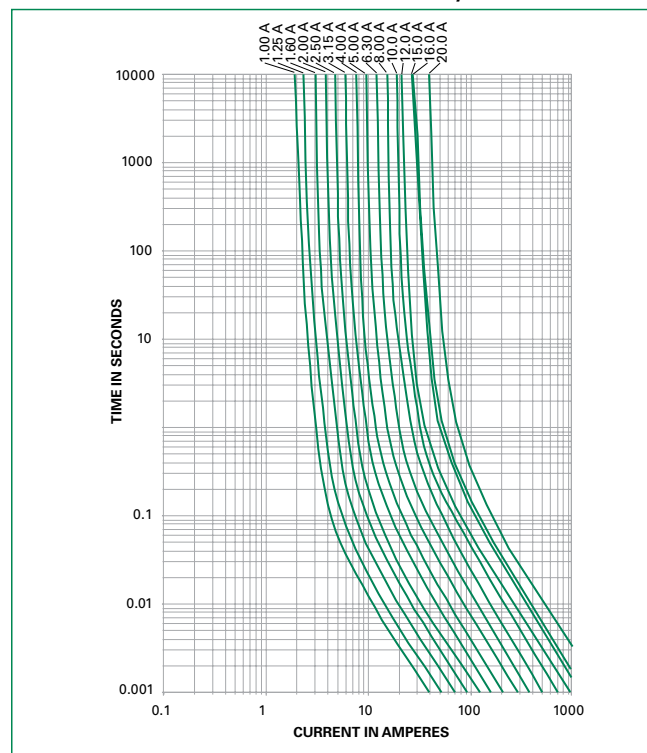
|                              |                                                                                                    |
|------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Materials</b>             | <b>Body:</b> Ceramic<br><b>Cap:</b> Nickel-plated Brass<br><b>Leads:</b> Tin-plated Copper         |
| <b>Terminal Strength</b>     | MIL-STD-202G, Method 211A, Test Condition A                                                        |
| <b>Solderability</b>         | Reference IEC 60127 Second Edition 2003-01 Annex A                                                 |
| <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-202G, Method 107G, Test Condition B (5 cycles, -65°C to +125°C)                            |
| <b>Vibration</b>             | MIL-STD-202G, Method 201A                                                                          |
| <b>Humidity</b>              | MIL-STD-202G, Method 103B, Test Condition A (High RH (95%) and elevated temp (40°C) for 240 hours) |
| <b>Salt Spray</b>            | MIL-STD-202G, Method 101D, Test Condition B                                                        |

### Average Time Current Curves

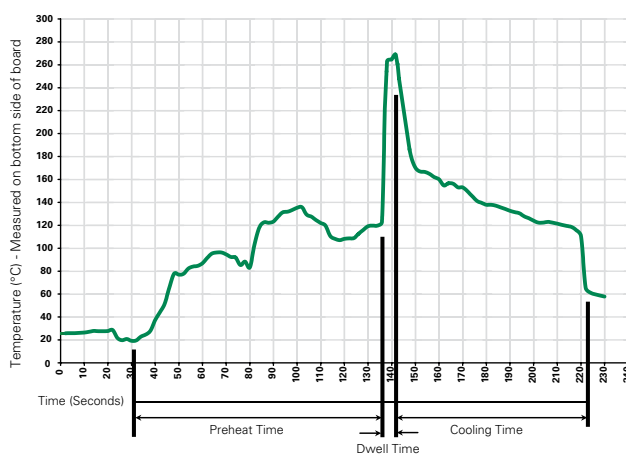
T-C Curves for 125mA to 800mA only



T-C Curves for 1A to 20A only



### Soldering Parameters - Wave Soldering



### Recommended Process Parameters:

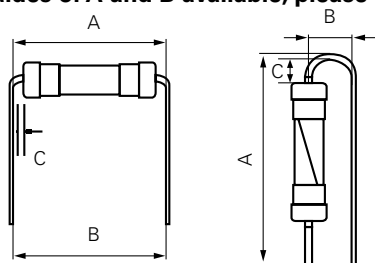
| Wave Parameter                           | Lead-Free Recommendation          |
|------------------------------------------|-----------------------------------|
| <b>Preheat:</b>                          |                                   |
| (Depends on Flux Activation Temperature) | (Typical Industry 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:

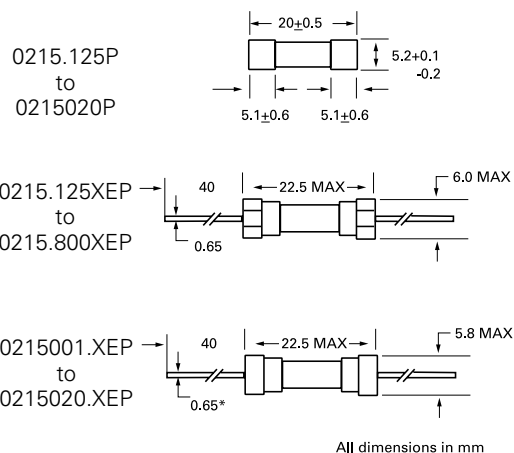
### Lead forming:

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

### PCB mounting:

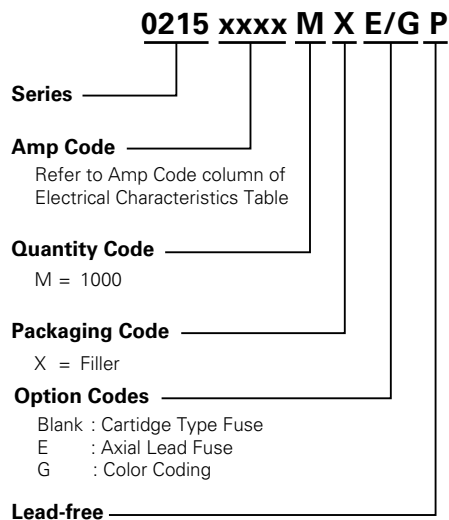
The distance between PCB and fuse cap is recommended to be a minimum of 1.5 mm.

### Dimensions



\* Ratings above 6.3 A have 0.8 mm diameter lead;  
ratings above 12 A have 1.2 mm 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              |