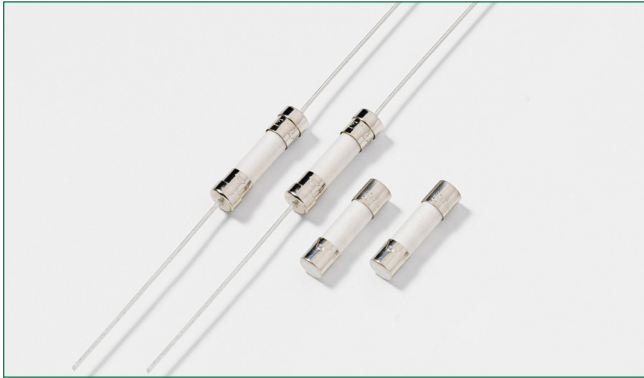


### 215 Series, 5x20 mm, Time-Lag Fuse



#### Additional Information



Datasheet



Resources



Samples

#### Description

The 215 Series is a 5x20mm Time-lag, surge-withstand, ceramic body cartridge fuse that is designed to IEC specifications.

#### Features

- Conforms to EN/IEC/K/J 60127-1 and EN/IEC/K/J 60127-2
- High breaking capacity
- Meets Standard Sheet 5 of IEC 60127-2 as a Time-Lag fuse
- RoHS compliant and lead-free
- Recognized to UL/CSA/ NMX 248-1 and UL/CSA/ NMX 248-14
- Conforms to GB 9364.1 and GB 9364.2
- CE Mark indicates compliance with Low-Voltage and RoHS Directives.

#### Applications

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

#### 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 |
|  | 2020970207000067                                                          | 0.125A-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                         |
|  | SE-S-2101268                                                              | 0.125A-12A                         |
|                                                                                     |                                                                           | 15A*, 16A*, 20A*                   |
|  | 40013521                                                                  | 0.2A – 8A<br>*10A                  |
|  | 40016610                                                                  | *12A                               |
|  | KM41462                                                                   | 0.200A – 10A                       |
|  | J50248091                                                                 | 10A                                |
|                                                                                     | J50258578                                                                 | 16A, 20A                           |
|  | N/A                                                                       | 0.125A – 20A                       |

\* Approved for cartridge versions only

#### 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 | 0.25 sec. Min.; 80 secs. Max.    |
|                    | 1A – 3.15A      | 0.75 sec. Min.; 80 secs. Max.    |
|                    | 4A – 6.3A       | 0.75 sec. Min.; 80 secs. Max.    |
|                    | 8A – 20A        | 0.75 sec. Min.; 80 secs. Max.    |
| 400%               | 0.125A – 0.800A | 0.05 sec., Min.; 5 secs. Max.    |
|                    | 1A – 3.15A      | 0.095 sec., Min.; 5 secs. Max.   |
|                    | 4A – 6.3A       | 0.150 sec., Min.; 5 secs. Max.   |
|                    | 8A – 20A        | 0.150 sec., Min.; 5 secs. Max.   |
| 1000%              | 0.125A – 0.800A | 0.005 sec., Min.; .150 sec. Max. |
|                    | 1A – 3.15A      | 0.010 sec., Min.; .150 sec. Max. |
|                    | 4A – 6.3A       | 0.010 sec., Min.; .150 sec. Max. |
|                    | 8A – 20A        | 0.010 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               | CSA | IEC | 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  | -  | -  | -  | x  |
| .160     | 0.16       | 250                |                      | 7.1000                         | 0.0465                                                | 2400                                       | 1.6                                                | -                | -   | x   | -  | x  | -  | x  | -  | -  | -  | x  |
| .200     | 0.2        | 250                |                      | 1.8400                         | 0.340                                                 | 2100                                       | 1.6                                                | x                | -   | x   | -  | x  | -  | x  | x  | -  | -  | x  |
| .250     | 0.25       | 250                |                      | 1.2400                         | 0.545                                                 | 1500                                       | 1.6                                                | x                | -   | x   | -  | x  | -  | x  | x  | -  | -  | x  |
| .315     | 0.315      | 250                |                      | 0.8800                         | 0.975                                                 | 1100                                       | 1.6                                                | x                | -   | x   | -  | x  | -  | x  | x  | -  | -  | x  |
| .400     | 0.4        | 250                |                      | 0.5825                         | 1.325                                                 | 1000                                       | 1.6                                                | x                | -   | x   | -  | x  | -  | x  | x  | -  | -  | x  |
| .500     | 0.5        | 250                |                      | 1.1675                         | 0.420                                                 | 850                                        | 1.6                                                | x                | -   | x   | -  | x  | x  | x  | x  | -  | -  | x  |
| .630     | 0.63       | 250                |                      | 0.7200                         | 0.635                                                 | 650                                        | 1.6                                                | x                | -   | x   | -  | x  | x  | x  | x  | -  | -  | x  |
| .800     | 0.8        | 250                |                      | 0.4675                         | 0.975                                                 | 500                                        | 1.6                                                | x                | -   | 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* | -  | x  |
| 012.     | 12         | 250                |                      | 0.0061                         | 515.500                                               | 100                                        | 4                                                  | -                | x   | -   | -  | x  | x  | x  | -  | x* | -  | x  |
| 015.     | 15         | 250                | 500 A @ 250Vac       | 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                | 400 A @ 250Vac       | 0.0023                         | 2600.0                                                | N/A**                                      | N/A**                                              | -                | x   | -   | -  | x  | -  | x* | -  | -  | x  | x  |

\* Approval for cartridge versions only

\*\* Please contact Littelfuse for details on these parameters

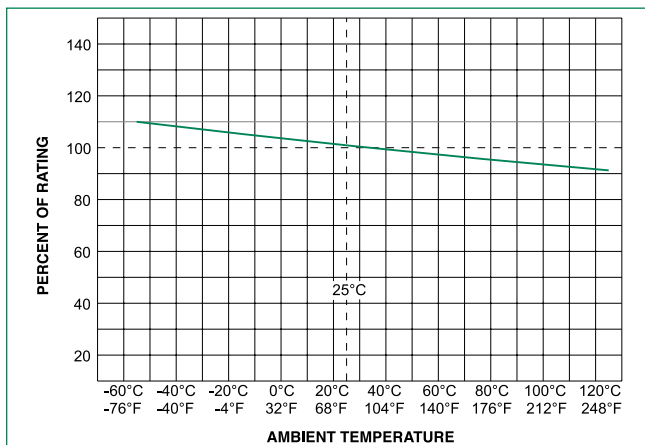
+ Interrupting Rating may differ based on Agency Approval. See Agency Approval certificate for more details.

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

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

10A have an IR:1000A@300Vac for cURus

### Temperature Re-rating Curve

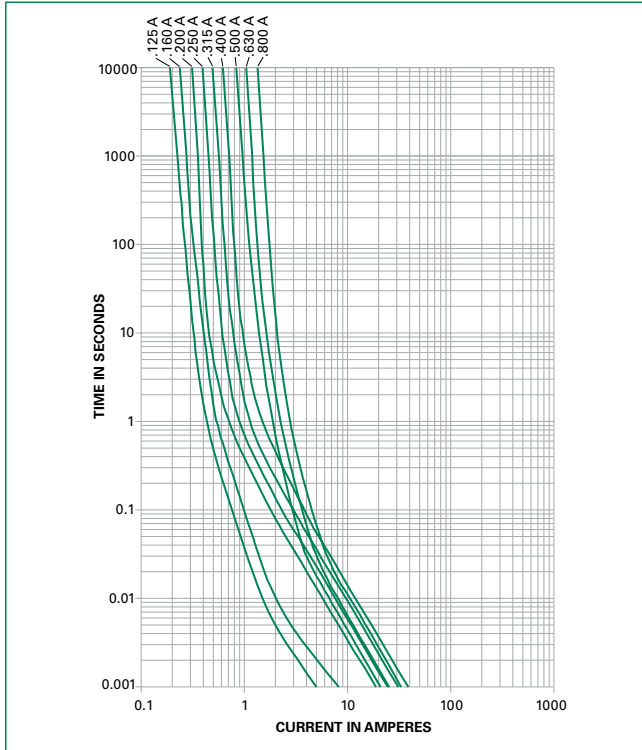


### Product Characteristics

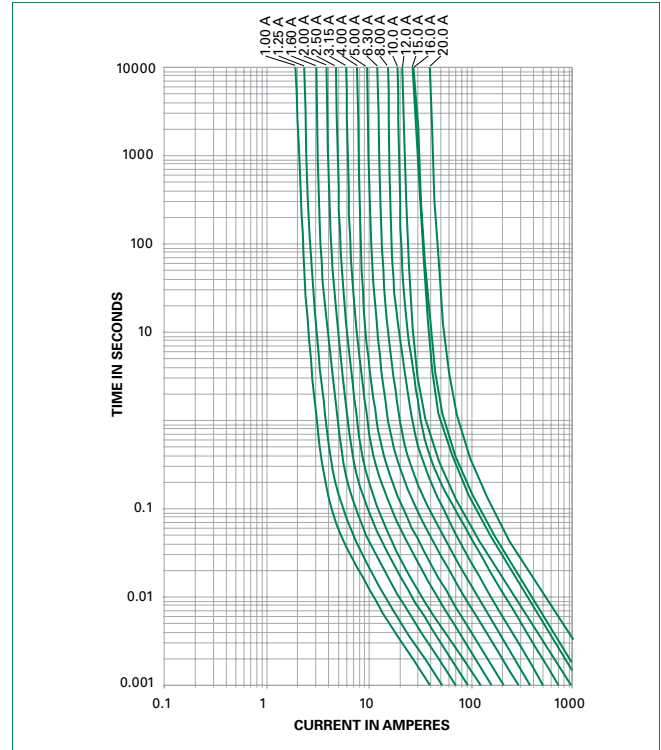
|                              |                                                                                                  |
|------------------------------|--------------------------------------------------------------------------------------------------|
| <b>Materials</b>             | Body: Ceramic<br>Cap: Nickel-plated Brass<br>Leads: 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>       | Cap 1: Brand logo, current and voltage ratings<br>Cap 2: 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

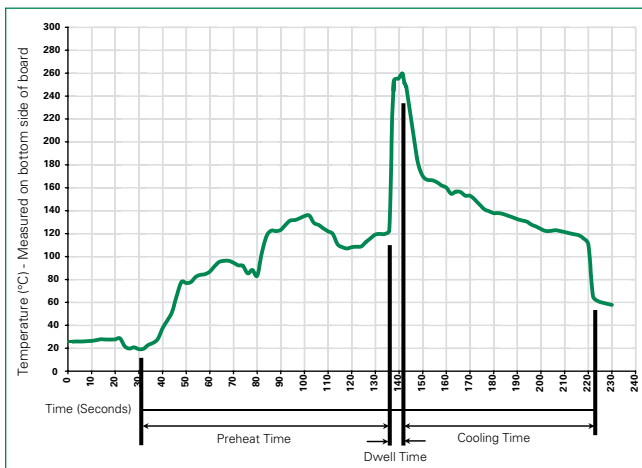
T-C Curves for 125mA to 800mA only



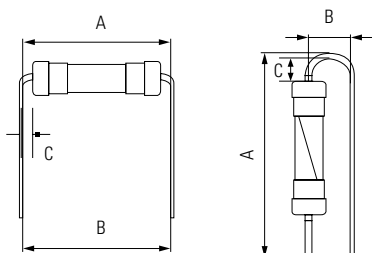
T-C Curves for 1A to 20A only



### Soldering Parameters - Wave Soldering



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



### Recommended Process Parameters:

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

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

#### Lead forming:

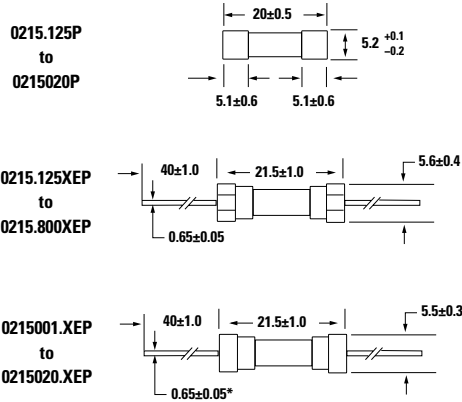
The distance C between cap flat surface and axial lead shall be greater than 1.0 mm.

#### PCB mounting:

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

### Dimensions

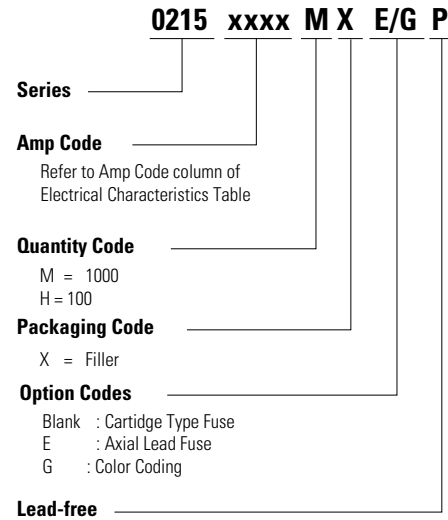
All dimensions in mm



Notes:

- \* Ratings above 6.3 A have  $0.8 \pm 0.05$  diameter lead;
- \* Ratings above 12 A have  $1.2 \pm 0.05$  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              |