

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



#### 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
- Meet the IEC 60127-2, Sheet 5 specification for Time-Lag fuses
- RoHS compliant and lead-free

#### Agency Approvals

| Agency                                                                              | Agency File Number                                                                                                                                                            | Ampere Range                                                                            |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|    | Cartridge Certificates:<br>NBK080205-E10480A<br>NBK250702-E10480E<br>NBK100408-JP1021A<br>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 – 160mA<br>500mA – 20A                                                            |
|  | File:<br>029862<br>Acc. Class:<br>LR1422 – 30                                                                                                                                 | 500mA – 12A                                                                             |
|  | License:<br>KM41462                                                                                                                                                           | 200mA – 10A                                                                             |
|  | License:<br>606726<br>902193<br>915511<br>0147100<br>709071<br>709302                                                                                                         | 125mA, 160mA<br>200mA – 800mA, 8A, 10A<br>1A – 3.15A<br>4A – 6.3A<br>12A<br>*15A – *20A |
|  | License:<br>40013521                                                                                                                                                          | 200mA – 8A<br>*10A                                                                      |
|  | License:<br>40016610                                                                                                                                                          | *12A                                                                                    |
|  |                                                                                                                                                                               | 125mA – 20A                                                                             |

\* Approved for cartridge versions only

#### Applications

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

#### 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

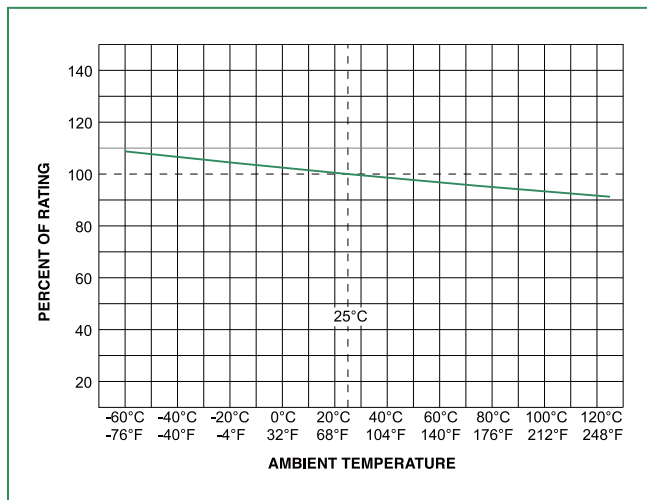
| Amp Code | Amp Rating | Voltage Rating (V) | Interrupting Rating | Nominal Cold Resistance (Ohms) | Nominal Melting I²t (A² sec) | Maximum Voltage Drop at Rated Current (mV) | Maximum Power Dissipation at Rated Current (W) | Agency Approvals                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|----------|------------|--------------------|---------------------|--------------------------------|------------------------------|--------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|          |            |                    |                     |                                |                              |                                            |                                                |  |  |  |  |  |  |  |  |  |  |
| .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                                                                                   |
| .250     | 0.25       | 250                |                     | 1.2400                         | 0.545                        | 1500                                       | 1.6                                            |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | x                                                                                   | x                                                                                   | x                                                                                   |                                                                                     | x                                                                                   |
| .315     | 0.315      | 250                |                     | 0.8800                         | 0.975                        | 1100                                       | 1.6                                            |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | x                                                                                   | x                                                                                   | x                                                                                   |                                                                                     | x                                                                                   |
| .400     | 0.4        | 250                |                     | 0.5825                         | 1.325                        | 1000                                       | 1.6                                            |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 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                                                                                   |
| 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                       | TBA**                                      | TBA**                                          | x                                                                                   |                                                                                     |                                                                                     | x                                                                                   |                                                                                     |                                                                                     | x*                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| 016.     | 16         | 250                |                     | 0.0031                         | 1408.0                       | TBA**                                      | TBA**                                          | x                                                                                   |                                                                                     |                                                                                     | x                                                                                   |                                                                                     |                                                                                     | x*                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| 020.     | 20         | 250                | 400 A               | 0.0023                         | 2600.0                       | TBA**                                      | TBA**                                          | x                                                                                   |                                                                                     |                                                                                     | x                                                                                   |                                                                                     |                                                                                     | x*                                                                                  |                                                                                     |                                                                                     |                                                                                     |

X\* Approval for cartridge versions only

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

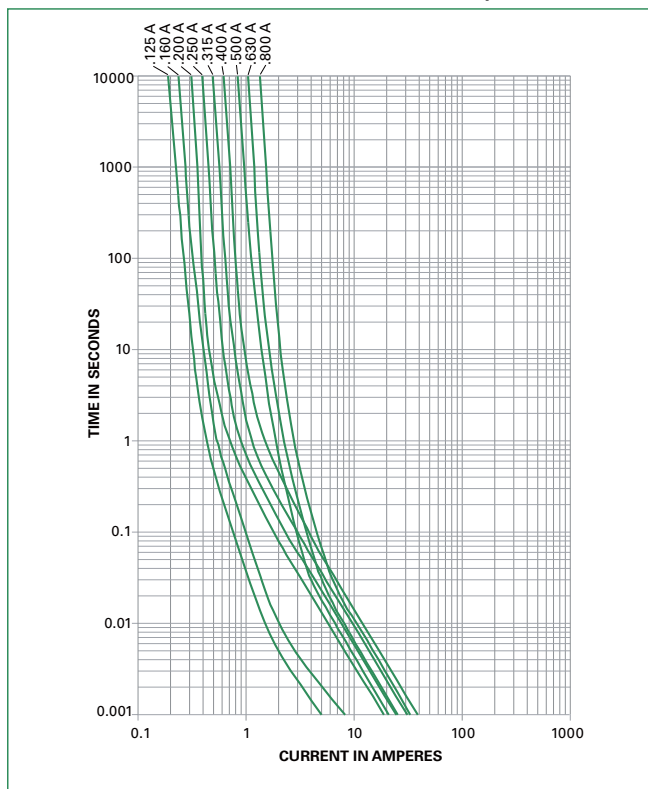
1A to 2A have an IR : 100A@500VAC, 4A to 6-3A have the IR : 100A@305 VAC and 1000A@72VDC

### Temperature Derating Curve

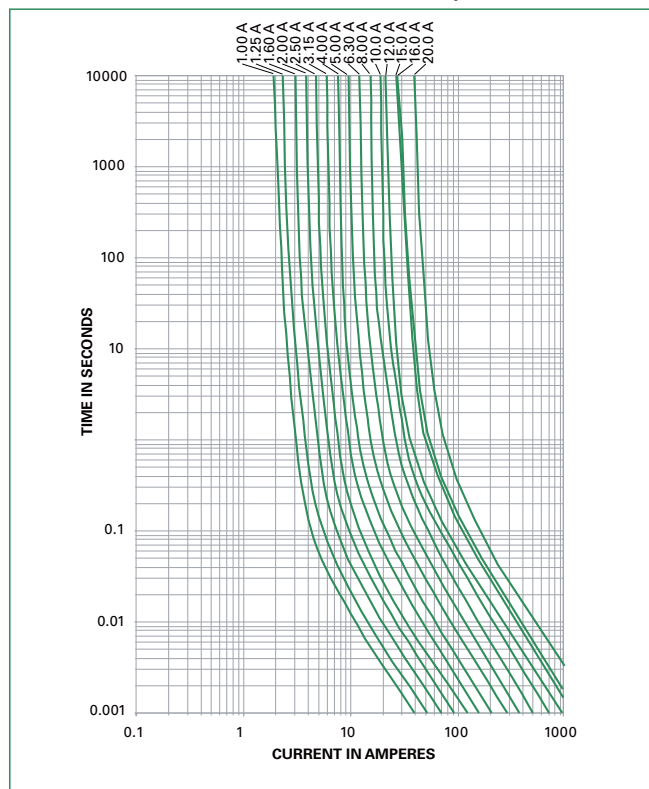


## Average Time Current Curves

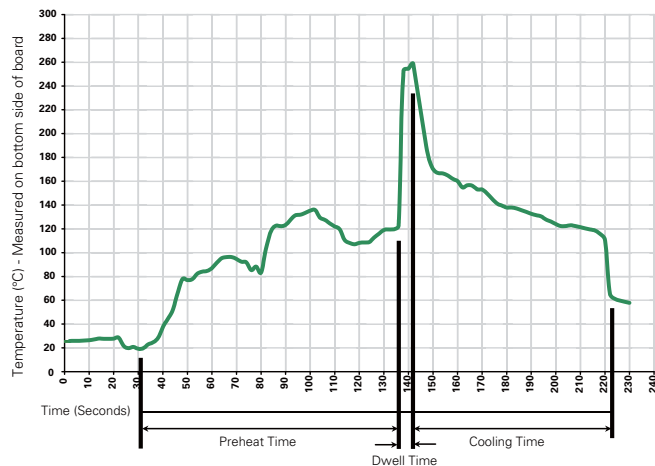
T-C Curves for 125mA to 800mA only



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.

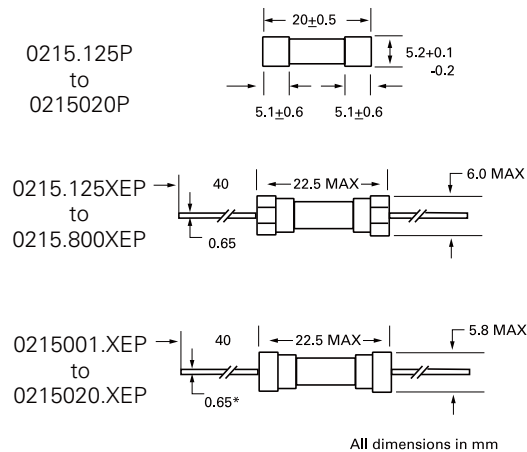
**Note:** These devices are not recommended for IR or Convection Reflow process.

### 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 |

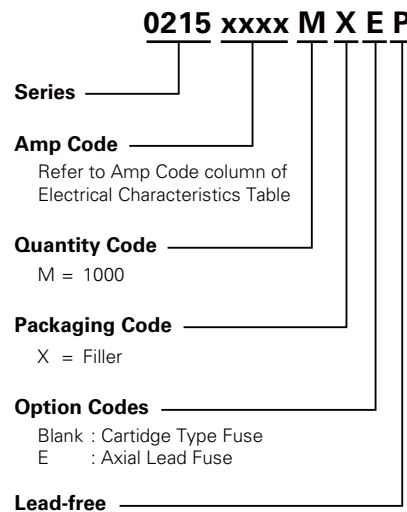
|                              |                                                                                                    |
|------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Operating Temperature</b> | –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                                                        |

### 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=52mm (2.062") |
| Bulk              | N/A                     | 1000     | MXG                       | N/A              |
| Bulk              | N/A                     | 1000     | MXB                       | N/A              |
| Bulk              | N/A                     | 100      | HX                        | N/A              |