

# 218 Series

## 5×20 mm, Time-Lag Fuse



### Description

The 218 series fuse is a 5×20mm time-lag glass body cartridge fuse designed to IEC specification.

### Features & Benefits

- Designed to International IEC Standards for use globally
- Meets the IEC 60127-2, Sheet 3 specification for Time-Lag fuses
- Available in cartridge and axial lead form
- RoHS compliant and lead-free
- Low-breaking capacity

### Web Resources



Download ECAD models, order samples, and find technical resources at [www.littelfuse.com](http://www.littelfuse.com)

### Agency Approvals

| Agency | Agency File Number                                   | Ampere Range                |
|--------|------------------------------------------------------|-----------------------------|
|        | Cartridge:<br>NBK090205-E10480A<br>NBK120802-E10480C | 1A – 5A<br>6.3A – 15A       |
|        | Leaded:<br>NBK090205-E10480B<br>NBK120802-E10480D    | 1A – 5A<br>6.3A – 15A       |
|        | 2020970207000065                                     | 0.032A – 6.3A               |
|        | SU05001-3005                                         | 0.032A – 0.040A             |
|        | SU05001-2008<br>SU05001-2009                         | 0.050A – 0.800A<br>1A – 10A |
|        | E10480                                               | 0.032A – 16A                |
|        | 29862                                                | 0.032A - 10A; 15A           |
|        | 2300869                                              | 0.032A – 6.3A               |
|        | 40013496                                             | 0.032A – 10A                |
|        | 40016604                                             | 15A*                        |
|        | KM41462                                              | 0.080A – 6.3A               |
|        | N/A                                                  | 0.032A – 16A                |

\* - Approval 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

| % of Ampere Rating | Ampere Rating   | Opening Time                |
|--------------------|-----------------|-----------------------------|
| 150%               | 0.032A - 0.100A | 60 minutes, Minimum         |
|                    | 0.125A - 6.3A   | 60 minutes, Minimum         |
|                    | 8A - 16A        | 30 minutes, Minimum         |
| 210%               | 0.032A - 0.100A | 120 sec., Maximum           |
|                    | 0.125A - 6.3A   | 120 sec., Maximum           |
|                    | 8A - 16A        | 120 sec., Maximum           |
| 275%               | 0.032A - 0.100A | 200 ms., Min.; 10 sec. Max. |
|                    | 0.125A - 6.3A   | 600 ms., Min.; 10 sec. Max. |
|                    | 8A - 16A        | 600 ms., Min.; 10 sec. Max. |
| 400%               | 0.032A - 0.100A | 40 ms., Min.; 3 sec. Max.   |
|                    | 0.125A - 6.3A   | 150 ms., Min.; 3 sec. Max.  |
|                    | 8A - 16A        | 150 ms., Min.; 3 sec. Max.  |
| 1000%              | 0.032A - 0.100A | 10 ms., Min.; 300 ms. Max.  |
|                    | 0.125A - 6.3A   | 20 ms., Min.; 300 ms. Max.  |
|                    | 8A - 16A        | 20 ms., Min.; 300 ms. Max.  |

# 218 Series

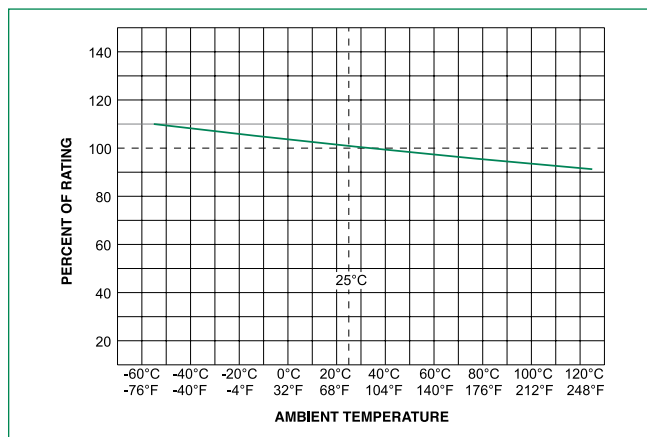
## 5×20 mm, Time-Lag Fuse

### Electrical Characteristics

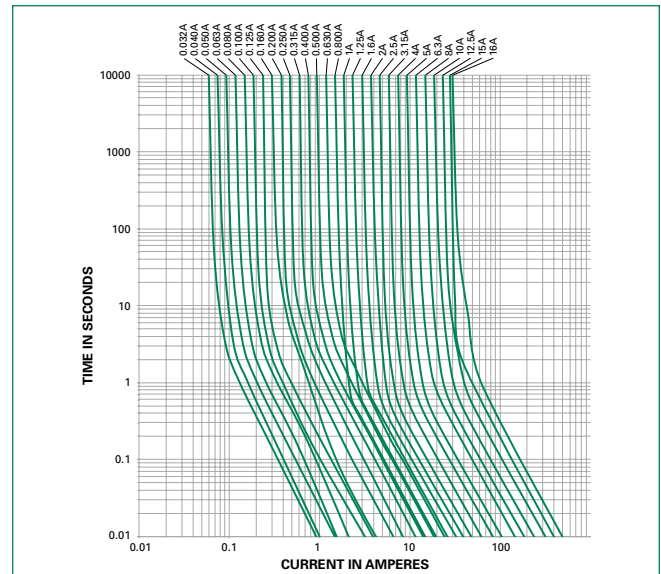
| Amp Code | Amp Rating (A) | Voltage Rating (V) | Interrupting Rating | Nominal Cold Resistance (Ohms) | Nominal Melting I <sup>2</sup> t (A <sup>2</sup> sec) | Maximum Voltage Drop at Rated Current (mV) | Maximum Power Dissipation At 1.5In(W) | Agency Approvals                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|----------|----------------|--------------------|---------------------|--------------------------------|-------------------------------------------------------|--------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|          |                |                    |                     |                                |                                                       |                                            |                                       |  |  |  |  |  |  |  |  |  |
| .032     | 0.032          | 250                | 35 A @ 250 VAC      | 48.258                         | 0.011                                                 | 5000                                       | 1.6                                   | -                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| .040     | 0.04           | 250                |                     | 31.862                         | 0.011                                                 | 4000                                       | 1.6                                   | -                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| .050     | 0.05           | 250                |                     | 21.292                         | 0.027                                                 | 3500                                       | 1.6                                   | -                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| .063     | 0.063          | 250                |                     | 14.268                         | 0.046                                                 | 3000                                       | 1.6                                   | -                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| .080     | 0.08           | 250                |                     | 9.07                           | 0.075                                                 | 2500                                       | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| .100     | 0.1            | 250                |                     | 6.018                          | 0.079                                                 | 2000                                       | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| .125     | 0.125          | 250                |                     | 4.2                            | 0.1465                                                | 1900                                       | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| .160     | 0.16           | 250                |                     | 3.7                            | 0.144                                                 | 1500                                       | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| .200     | 0.2            | 250                |                     | 1.6                            | 0.341                                                 | 1300                                       | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| .250     | 0.25           | 250                |                     | 1.0495                         | 0.5405                                                | 1100                                       | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| .315     | 0.315          | 250                |                     | 0.8475                         | 1.11                                                  | 1000                                       | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| .400     | 0.4            | 250                |                     | 0.535                          | 1.325                                                 | 900                                        | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| .500     | 0.5            | 250                |                     | 0.37                           | 2.825                                                 | 300                                        | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| .630     | 0.63           | 250                |                     | 0.275                          | 4.675                                                 | 250                                        | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| .800     | 0.8            | 250                |                     | 0.0813                         | 3.37                                                  | 150                                        | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| 001.     | 1              | 250                |                     | 0.0613                         | 6.73                                                  | 150                                        | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| 1.25     | 1.25           | 250                |                     | 0.0446                         | 12.65                                                 | 150                                        | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| 01.6     | 1.6            | 250                |                     | 0.0336                         | 23.35                                                 | 150                                        | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| 002.     | 2              | 250                |                     | 0.0293                         | 14.45                                                 | 150                                        | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| 02.5     | 2.5            | 250                |                     | 0.0219                         | 23.25                                                 | 120                                        | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| 3.15     | 3.15           | 250                |                     | 0.0173                         | 38.15                                                 | 100                                        | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| 004.     | 4              | 250                | 40 A @ 250 VAC      | 0.0129                         | 69.1                                                  | 100                                        | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| 005.     | 5              | 250                | 50 A @ 250 VAC      | 0.0104                         | 111.0                                                 | 100                                        | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| 06.3     | 6.3            | 250                | 63 A @ 250 VAC      | 0.0076                         | 198.5                                                 | 100                                        | 1.6                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   |
| 008.     | 8              | 250                | 80 A @ 250 VAC      | 0.0059                         | 341.5                                                 | 100                                        | 4                                     | -                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   |
| 010.     | 10             | 250                | 100 A @ 250 VAC     | 0.0045                         | 568.0                                                 | 100                                        | 4                                     | -                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   |
| 12.5     | 12.5           | 250                | 63 A @ 250 VAC      | 0.0034                         | 889.0                                                 | 100                                        | 4                                     | -                                                                                   | -                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | -                                                                                   | x                                                                                   | -                                                                                   |
| 015.     | 15             | 250                | 100 A @ 250 VAC     | 0.0028                         | 1405.00                                               | 100                                        | 4                                     | -                                                                                   | -                                                                                   | -                                                                                   | x                                                                                   | x                                                                                   | x                                                                                   | -                                                                                   | x                                                                                   | x*                                                                                  |
| 016.     | 16             | 250                | 63 A @ 250 VAC      | 0.0021                         | 1955.00                                               | 100                                        | 4                                     | -                                                                                   | -                                                                                   | -                                                                                   | -                                                                                   | x                                                                                   | -                                                                                   | -                                                                                   | x                                                                                   | -                                                                                   |

\* - Approval for cartridge versions only

### Temperature Re-rating Curve



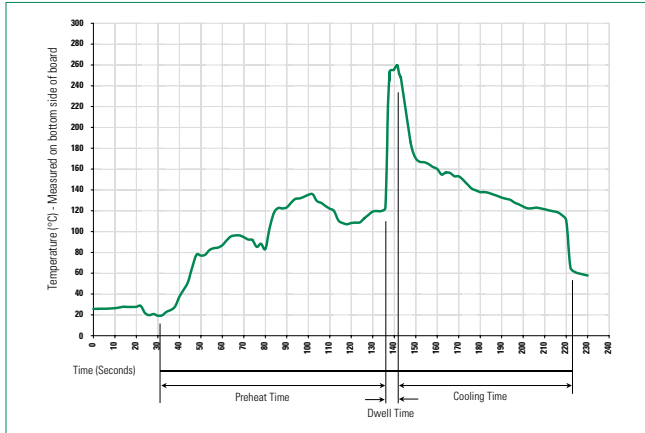
### Average Time Current Curves



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## 5×20 mm, Time-Lag Fuse

### Soldering Parameters - Wave Soldering



### 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.

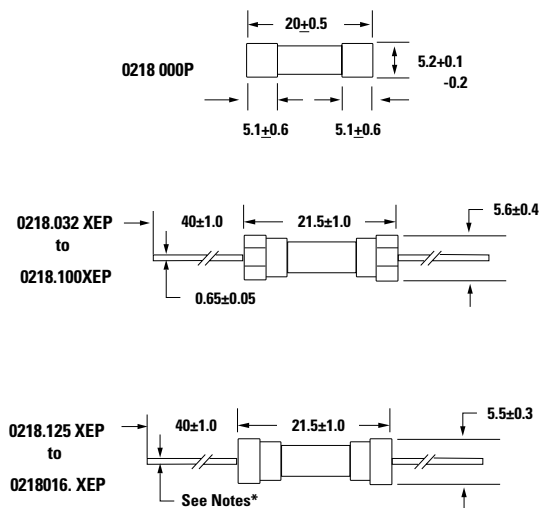
**Note:** These devices are not recommended for IR or Convection Reflow process.

### Product Characteristics

|                          |                                                                                            |
|--------------------------|--------------------------------------------------------------------------------------------|
| <b>Material</b>          | <b>Body:</b> Glass<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>Cap1:</b> Brand logo, current and voltage ratings<br><b>Cap2:</b> Agency approval marks |
| <b>Packaging</b>         | Available in Bulk (M=1000 pcs/pkg) or on Tape/Reel (MRET1=1000 pcs/reel)                   |

|                              |                                                                                                         |
|------------------------------|---------------------------------------------------------------------------------------------------------|
| <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 temperature (40°C) for 240 hours) |
| <b>Salt Spray</b>            | MIL-STD-202, Method 101, Test Condition B                                                               |

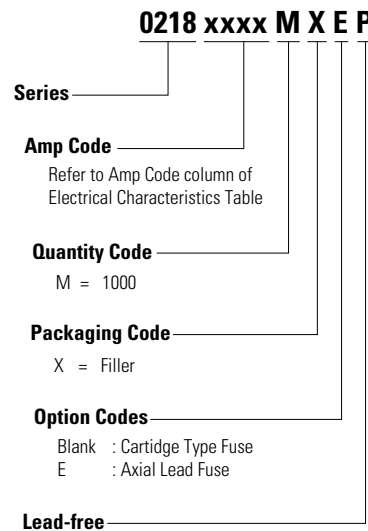
### Dimensions



**Notes:**  
\* 0.032A-6.3A have 0.65±0.05 diameter lead.  
8A-16A have 0.8±0.05 diameter lead.

All dimensions in mm

### Part Numbering System



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### Packaging

| Packaging Option  | Packaging Specification | Quantity | Quantity & Packaging Code | Taping Width     |
|-------------------|-------------------------|----------|---------------------------|------------------|
| <b>218 Series</b> |                         |          |                           |                  |
| Bulk              | N/A                     | 1000     | MX                        | N/A              |
| Bulk              | N/A                     | 1000     | MXE                       | N/A              |
| Reel and Tape     | EIA 296-E               | 1000     | MRET1                     | T1=53mm (2.087") |
| Bulk              | N/A                     | 1000     | MXG                       | N/A              |
| Bulk              | N/A                     | 1000     | MXB                       | N/A              |
| Bulk              | N/A                     | 100      | HX                        | N/A              |

### Recommended Accessories

| Accessory Type | Series                  | Description                                                               | Max Application Voltage | Max Application Amperage |
|----------------|-------------------------|---------------------------------------------------------------------------|-------------------------|--------------------------|
| Holder         | <a href="#">345_ISF</a> | Panel Mount Shock-Safe Fuseholder                                         | 250                     | 20                       |
|                | <a href="#">345</a>     | Shock-Safe Fuseholder with PC Mount, Solder Mount and Panel Mount options |                         | 20                       |
|                | <a href="#">830</a>     | PC Mount Shock-Safe Miniature Fuseholder                                  |                         | 16                       |
| Block          | <a href="#">520</a>     | Metric OMNI-BLOK® Fuse Block                                              |                         | 10                       |
|                | <a href="#">646</a>     | PC Mount Miniature Fuse Block                                             |                         | 6.3                      |
|                | <a href="#">658</a>     | Surface Mount Miniature Fuse Block                                        |                         | 10                       |
| Clip           | <a href="#">520_VV</a>  | PC Mount Miniature Fuse Clip                                              |                         | 6.3                      |
|                | <a href="#">111</a>     | PC Board Mount Fuse Clip                                                  |                         | 10                       |
|                | <a href="#">445</a>     | PC Board Mount Fuse Clip                                                  |                         | 10                       |

#### Notes:

1. Do not use in applications above rating.
2. Please refer to fuseholder data sheet for specific re-rating information.
3. Please contact factory for applications greater than the max voltage and amperage shown.