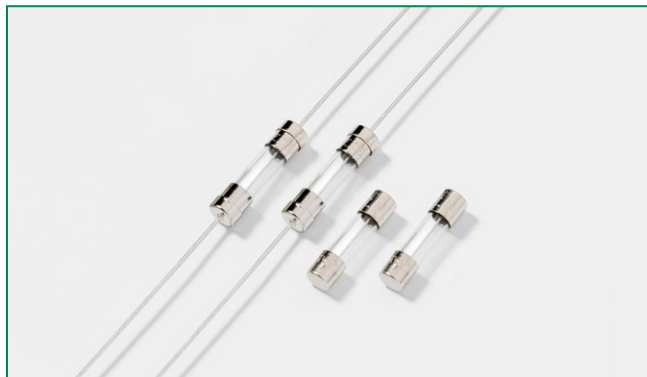


# Axial Lead & Cartridge Fuses

5×20 mm > Fast-Acting > 235 Series

## 235 Series, 5×20 mm, Fast-Acting Fuse



### Agency Approvals

| Agency | Agency File Number              | Ampere Range    |
|--------|---------------------------------|-----------------|
|        | Cartridge:<br>NBK030609-JP1021A | 1A - 3.5A       |
|        | NBK190609-JP1021A               | 4A -5A          |
|        | NBK030609-JP1021B               | 6A -7A          |
|        | Leaded:<br>NBK030609-JP1021C    | 1A - 3.5A       |
|        | NBK190609-JP1021B               | 4A -5A          |
|        | NBK030609-JP1021D               | 6A -7A          |
|        | SU05001 – 3007                  | 0.100A – 0.400A |
|        | SU05001 – 2002                  | 0.500A – 3A     |
|        | SU05001 – 2003                  | 4A – 6A         |
|        | E10480                          | 0.100A - 7A     |
|        | 29862                           | 0.100A - 7A     |
|        | N/A                             | 0.100A – 7A     |

### Description

5×20mm fast-acting glass body cartridge fuse designed to UL specification.

### Features

- Designed to UL/CSA/ ANCE 248 Standard
- RoHS compliant and lead-free
- Available in cartridge and axial lead format

### 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       |
|--------------------|---------------|--------------------|
| 100%               | 0.100A – 7A   | 4 hours, Minimum   |
| 135%               |               | 1 hour, Maximum    |
| 200%               |               | 5 seconds, Maximum |

### Additional Information



**Datasheet**



**Resources**



**Samples**



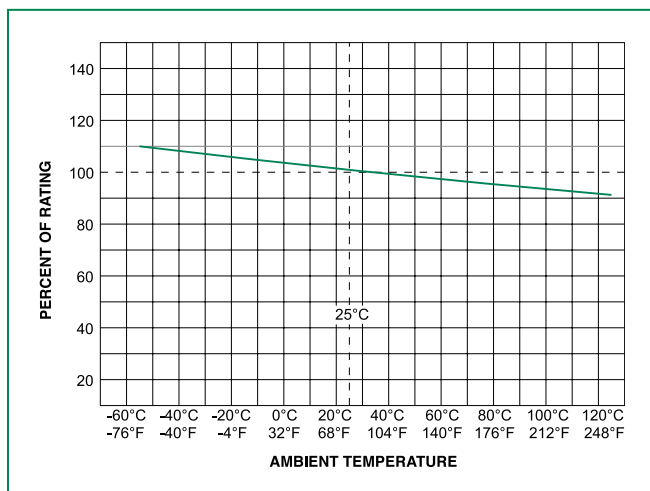
**Accessories**

For recommended fuse accessories for this product series, see '[Recommended Accessories](#)' section.

## Electrical Characteristic Specifications by Item

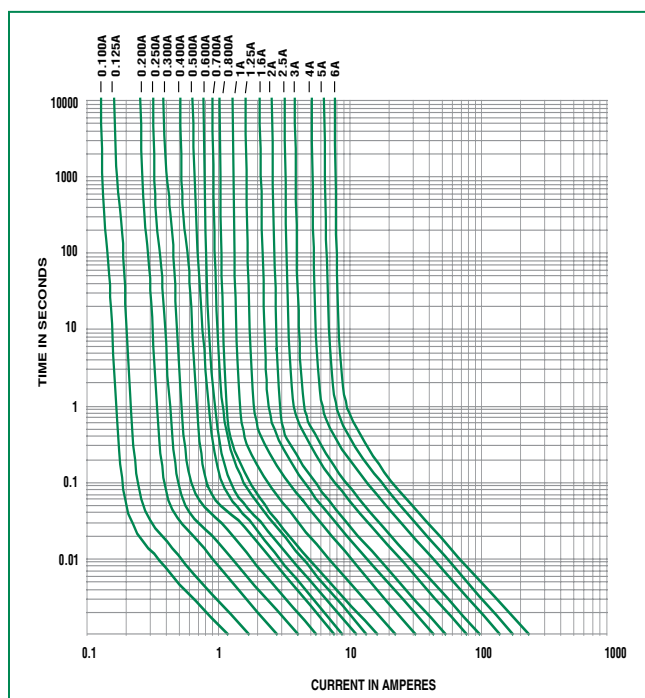
| Amp Code | Amp Rating (A) | Voltage Rating (V) | Interrupting Rating            | Nominal Cold Resistance (Ohms) | Nominal Melting $I^2t$ (A <sup>2</sup> sec) | Agency Approvals |    |    |      |    |
|----------|----------------|--------------------|--------------------------------|--------------------------------|---------------------------------------------|------------------|----|----|------|----|
|          |                |                    |                                |                                |                                             | CE               | UL | SP | PS E | RC |
| .100     | 0.1            | 250                | 35A @ 250VAC<br>10kA @ 125VAC  | 8.4000                         | 0.00127                                     | x                | x  | x  |      | x  |
| .125     | 0.125          | 250                |                                | 5.7500                         | 0.00273                                     | x                | x  | x  |      | x  |
| .200     | 0.2            | 250                |                                | 3.1500                         | 0.00867                                     | x                | x  | x  |      | x  |
| .250     | 0.25           | 250                |                                | 2.2500                         | 0.01660                                     | x                | x  | x  |      | x  |
| .300     | 0.3            | 250                |                                | 1.6000                         | 0.03215                                     | x                | x  | x  |      | x  |
| .400     | 0.4            | 250                |                                | 1.075                          | 0.05845                                     | x                | x  | x  |      | x  |
| .500     | 0.5            | 250                |                                | 0.4265                         | 0.06915                                     | x                | x  | x  |      | x  |
| .600     | 0.6            | 250                |                                | 0.3195                         | 0.11200                                     | x                | x  | x  |      | x  |
| .700     | 0.7            | 250                |                                | 0.2625                         | 0.15600                                     | x                | x  | x  |      | x  |
| .800     | 0.8            | 250                |                                | 0.1920                         | 0.25300                                     | x                | x  | x  |      | x  |
| 001.     | 1              | 250                | 100A @ 250VAC<br>10kA @ 125VAC | 0.1530                         | 0.46750                                     | x                | x  | x  | x    | x  |
| 1.25     | 1.25           | 250                |                                | 0.1055                         | 1.08500                                     | x                | x  | x  | x    | x  |
| 01.6     | 1.6            | 250                |                                | 0.0758                         | 2.02500                                     | x                | x  | x  | x    | x  |
| 002.     | 2              | 250                |                                | 0.0603                         | 2.64500                                     | x                | x  | x  | x    | x  |
| 02.5     | 2.5            | 250                |                                | 0.0437                         | 5.44500                                     | x                | x  | x  | x    | x  |
| 003.     | 3              | 250                |                                | 0.0347                         | 8.39500                                     | x                | x  | x  | x    | x  |
| 03.5     | 3.5            | 250                |                                | 0.0331                         | 17.14000                                    | x                | x  |    | x    |    |
| 004.     | 4              | 125                | 10kA @ 125VAC                  | 0.0246                         | 17.14000                                    | x                | x  | x  | x    | x  |
| 005.     | 5              | 125                |                                | 0.0184                         | 27.41000                                    | x                | x  | x  | x    | x  |
| 006.     | 6              | 125                |                                | 0.0148                         | 47.32500                                    | x                | x  | x  | x    | x  |
| 007.     | 7              | 125                |                                | 0.0157                         | 64.81500                                    | x                | x  |    | x    |    |

## Temperature Re-rating Curve



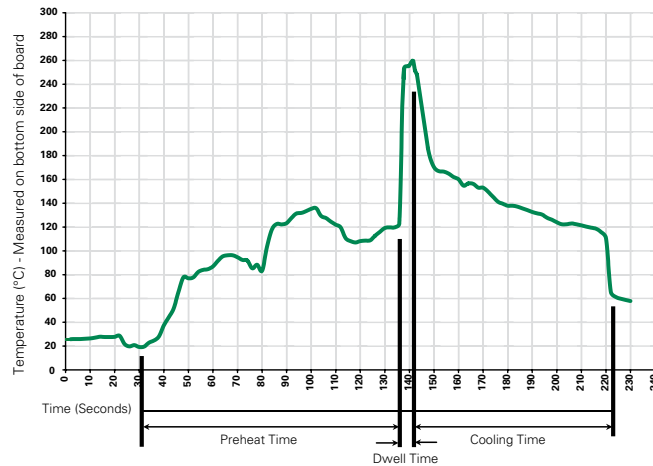
Note:  
Rerating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

## Average Time Current Curves



Please contact Littelfuse for details on T-C curve for 7A rating

### Soldering Parameters - Wave Soldering



### Recommended Process Parameters:

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

### Recommended Hand-Solder Parameters:

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

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

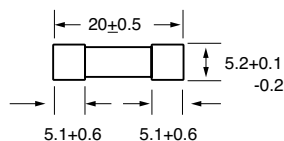
### Product Characteristics

|                          |                                                                                             |
|--------------------------|---------------------------------------------------------------------------------------------|
| <b>Materials</b>         | Body: Glass<br>Cap: Nickel-plated brass<br>Leads: Tin-plated Copper                         |
| <b>Terminal Strength</b> | MIL-STD-202, Method 211 .<br>Test Condition A                                               |
| <b>Solderability</b>     | MIL-STD-202 Method 208                                                                      |
| <b>Product Marking</b>   | Cap 1: Brand logo, current and voltage rating<br>Cap 2: Series and agency approval markings |
| <b>Packaging</b>         | Available in Bulk (M=1000 pcs/pkg) or on Tape/Reel (MRET1=1000 pcs/reel)                    |

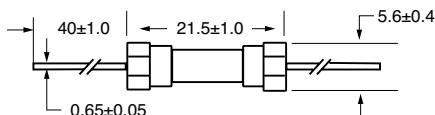
|                              |                                                                                                       |
|------------------------------|-------------------------------------------------------------------------------------------------------|
| <b>Operating Temperature</b> | -55°C to +125°C                                                                                       |
| <b>Thermal Shock</b>         | MIL-STD-202, Method 107, Test Condition B: (5 cycles -65°C + 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

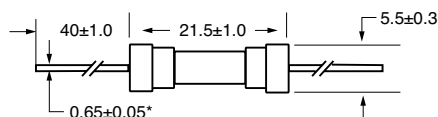
**0235000P**



**0235.100 XEP  
to  
0235.400 XEP**



**0235.500 XEP  
to  
0235006.XEP**

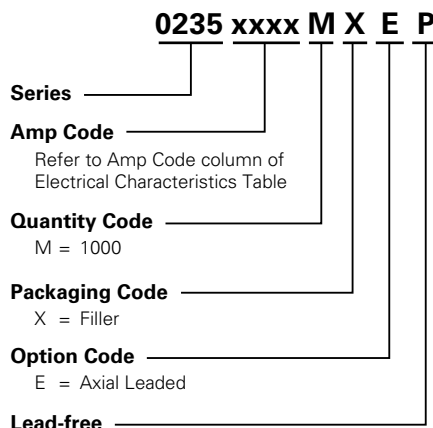


All dimensions in mm

Notes:

\* Ratings above 6.3A have 0.8±0.05 diameter lead.

## Part Numbering System



## Packaging

| Packaging Option  | Packaging Specification | Quantity | Quantity & Packaging Code | Taping Width     |
|-------------------|-------------------------|----------|---------------------------|------------------|
| <b>235 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") |

## Recommended Accessories

| Accessory Type | Series                  | Description                                                               | Max Application Voltage | Max Application Amperage |
|----------------|-------------------------|---------------------------------------------------------------------------|-------------------------|--------------------------|
| Holder         | <a href="#">345_ISF</a> | Panel Mount Shock-Safe Fuseholder                                         | 250                     | 10                       |
|                | <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_W</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:

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

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