

# 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 Certificates:<br>NBK290502-E10480 G<br>NBK290502-E10480 I<br>Leaded Certificates:<br>NBK290502-E10480 H<br>NBK290502-E10480 J | 1A – 5A<br>6A & 7A<br><br>1A – 5A<br>6A & 7A |
|    | Certificates:<br>SU05001 – 3007<br>SU05001 – 2002<br>SU05001 – 2003                                                                     | 100mA – 400mA<br>500mA – 3A<br>4A – 6A       |
|  | Listed File:<br>E10480<br>Guide No:<br>JDYX                                                                                             | 100mA – 7A                                   |
|  | File No:<br>029862<br>Certificate Class No:<br>LR1422-01                                                                                | 100mA – 3A<br>4A – 6A                        |
|  |                                                                                                                                         | 100mA – 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%               | 100mA – 7A    | 4 hours, Minimum   |
| 135%               |               | 1 hour, Maximum    |
| 200%               |               | 5 seconds, Maximum |

### Additional Information



**Datasheet**



**Resources**

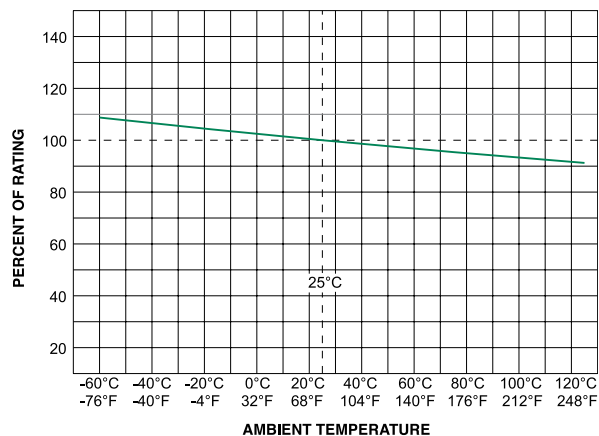


**Samples**

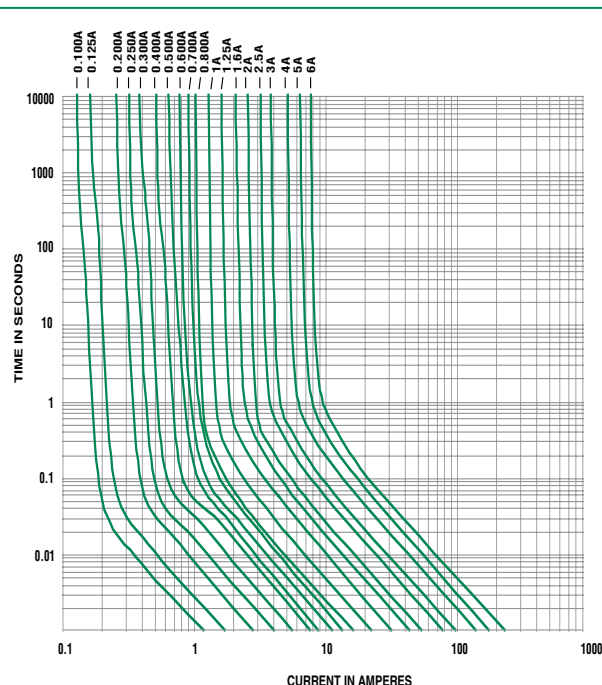
## Electrical Characteristic Specifications by Item

| 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>10000A@125Vac  | 8.4000                         | 0.00312                                     | 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                |                               | 1.750                          | 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>10000A@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                | 10000@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 Derating Curve



## Average Time Current Curves

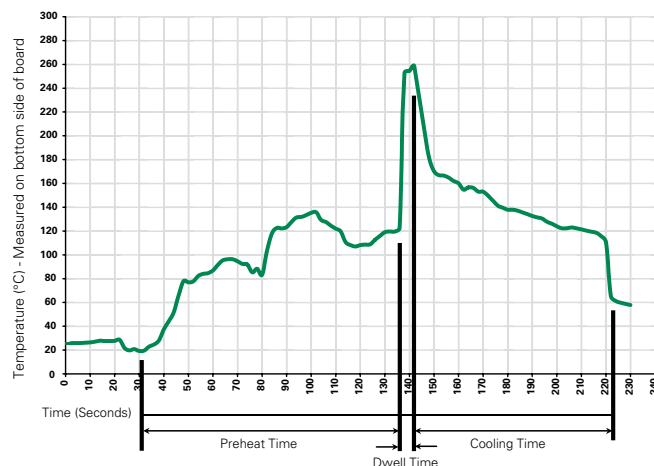


Please contact Littelfuse for details on T-C curve for 7A rating

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## 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.**

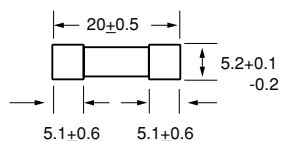
## Product Characteristics

|                          |                                                                                                   |
|--------------------------|---------------------------------------------------------------------------------------------------|
| <b>Materials</b>         | Body: Glass<br>Cap: Nickel-plated brass<br>Leads: Tin-plated Copper                               |
| <b>Terminal Strength</b> | MIL-STD-202G, Method 211A.<br>Test Condition A                                                    |
| <b>Solderability</b>     | Reference IEC 60127 Second Edition<br>2003-01 Annex A                                             |
| <b>Product Marking</b>   | Cap 1: Brand logo, current and voltage<br>rating<br>Cap 2: Series and agency approval<br>markings |
| <b>Packaging</b>         | Available in Bulk (M=1000 pcs/pkg) or on<br>Tape/Reel (MRET1=1000 pcs/reel)                       |

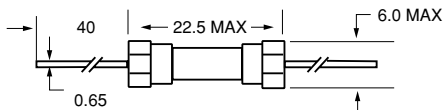
|                              |                                                                                                                  |
|------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Operating Temperature</b> | -55°C to +125°C                                                                                                  |
| <b>Thermal Shock</b>         | MIL-STD-202G, Method 107G, Test<br>Condition B: (5 cycles -65°C +<br>125°C)                                      |
| <b>Vibration</b>             | MIL-STD-202G, Method 201A                                                                                        |
| <b>Humidity</b>              | MIL-STD-202G, Method 103B, Test<br>Condition A high RH (95%) and<br>elevated temperature (40°C) for 240<br>hours |
| <b>Salt Spray</b>            | MIL-STD-202G, Method 101D, Test<br>Condition B                                                                   |

## Dimensions

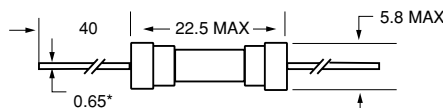
**0235000P**



**0235.100 XEP  
to  
0235.400 XEP**



**0235.500 XEP  
to  
0235006.XEP**

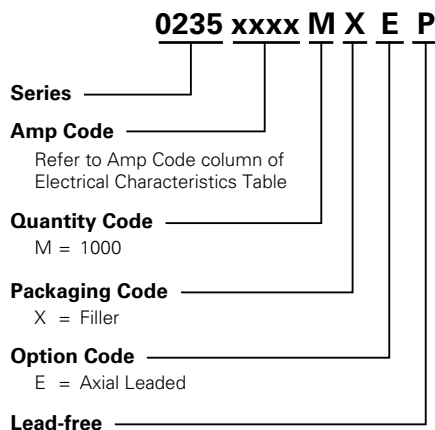


All dimensions in mm

Notes:

\* Ratings above 6.3A  
ø0.8 mm dia 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") |