

RoHS  **312/318 Series** Lead-Free 3AG, Fast-Acting Fuse



## Description

The 3AG Fast-Acting Fuse solves a broad range of application requirements while offering reliable performance and cost-effective circuit protection.

## Features

- In accordance with UL Standard 248-14
- Available in cartridge and axial lead format and with various forming dimensions
- RoHS compliant and Lead-free (except 10mA and 31mA rated items)

## Applications

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

## Agency Approvals

| Agency                                                                              | Agency File Number              | Ampere Range                                                            |
|-------------------------------------------------------------------------------------|---------------------------------|-------------------------------------------------------------------------|
|    | E10480<br>AU1410                | 312 Series 10mA - 10A/<br>318 Series 31mA - 10A<br>312 Series 12A - 30A |
|    | LR 29862                        | 312 Series 10mA - 30A<br>318 Series 31mA - 10A                          |
|   | NBK040205-<br>E10480B/F         | 312/318 Series 1A - 10A                                                 |
|  | E10480                          | 318 Series 12A - 30A                                                    |
|  | SU05001-<br>5005/5006/6005/6008 | 312/318 Series<br>1A/ 1.25A / 1.6A/<br>2A - 10A                         |
|  |                                 | 312 Series 10mA - 10A<br>318 Series 31mA - 35A                          |

## Electrical Characteristics for Series

| % of Ampere Rating | Ampere Rating | Opening Time     |
|--------------------|---------------|------------------|
| 100%               | .01 – 35      | 4 hours, Minimum |
| 135%               | .01 – 35      | 1 hour, Maximum  |
| 200%               | .01 – 10      | 5 sec., Maximum  |
|                    | 12 – 30       | 10 sec., Maximum |
|                    | 35            | 20 sec., Maximum |

### Electrical Characteristic Specifications by Item

| Amp Code | Ampere Rating (A) | Max Voltage Rating (V) | Interrupting Rating                      | Nominal Cold Resistance (Ohms) | Nominal Melting I <sup>2</sup> t (A <sup>2</sup> sec) | Agency Approvals |        |   |      |     |     |
|----------|-------------------|------------------------|------------------------------------------|--------------------------------|-------------------------------------------------------|------------------|--------|---|------|-----|-----|
|          |                   |                        |                                          |                                |                                                       | UL               | cUL US | K | PS E | SR  | CE  |
| .10*     | 0.01              | 250                    | 10mA ~ 1A<br>35A@250Vac<br>10KA@125Vac   | 177.4000                       | NA                                                    | x**              |        |   |      | x** | x** |
| .031*    | 0.031             | 250                    |                                          | 23.6500                        | 0.0000300                                             | x                |        |   |      | x   | x   |
| .062     | 0.062             | 250                    |                                          | 24.7000                        | 0.000249                                              | x                |        |   |      | x   | x   |
| .100     | 0.1               | 250                    |                                          | 11.2800                        | 0.00102                                               | x                |        |   |      | x   | x   |
| .125     | 0.125             | 250                    |                                          | 7.1450                         | 0.00289                                               | x                |        |   |      | x   | x   |
| .150     | 0.15              | 250                    |                                          | 5.1300                         | 0.00550                                               | x                |        |   |      | x   | x   |
| .175     | 0.175             | 250                    |                                          | 3.8750                         | 0.00960                                               | x                |        |   |      | x   | x   |
| .187     | 0.187             | 250                    |                                          | 3.4200                         | 0.0128                                                | x                |        |   |      | x   | x   |
| .200     | 0.2               | 250                    |                                          | 3.0200                         | 0.0165                                                | x                |        |   |      | x   | x   |
| .250     | 0.25              | 250                    |                                          | 2.0100                         | 0.0355                                                | x                |        |   |      | x   | x   |
| .300     | 0.3               | 250                    |                                          | 1.4050                         | 0.0689                                                | x                |        |   |      | x   | x   |
| .375     | 0.375             | 250                    |                                          | 0.8250                         | 0.185                                                 | x                |        |   |      | x   | x   |
| .500     | 0.5               | 250                    |                                          | 0.4980                         | 0.483                                                 | x                |        |   |      | x   | x   |
| .600     | .6                | 250                    |                                          | 0.3620                         | 0.880                                                 | x                |        |   |      | x   | x   |
| .750     | 0.75              | 250                    |                                          | 0.2445                         | 1.84                                                  | x                |        |   |      | x   | x   |
| 001      | 1                 | 250                    |                                          | 0.1900                         | 0.760                                                 | x                |        | x | x    | x   | x   |
| 1.25     | 1.25              | 250                    | 1.25A ~ 3A<br>100A@250Vac<br>10KA@125Vac | 0.1385                         | 1.45                                                  | x                |        | x | x    | x   | x   |
| 01.5     | 1.5               | 250                    |                                          | 0.1036                         | 2.35                                                  | x                |        |   | x    | x   | x   |
| 01.6     | 1.6               | 250                    |                                          | 0.0934                         | 2.80                                                  | x                |        | x | x    | x   | x   |
| 1.75     | 1.75              | 250                    |                                          | 0.0856                         | 3.60                                                  | x                |        |   | x    | x   | x   |
| 01.8     | 1.8               | 250                    |                                          | 0.0825                         | 3.85                                                  | x                |        |   | x    | x   | x   |
| 002      | 2                 | 250                    |                                          | 0.0704                         | 5.20                                                  | x                |        | x | x    | x   | x   |
| 2.25     | 2.25              | 250                    |                                          | 0.0594                         | 7.20                                                  | x                |        | x | x    | x   | x   |
| 02.5     | 2.5               | 250                    |                                          | 0.0513                         | 9.54                                                  | x                |        | x | x    | x   | x   |
| 003      | 3                 | 250                    |                                          | 0.0427                         | 14.0                                                  | x                |        | x | x    | x   | x   |
| 004      | 4                 | 250                    | 4A ~ 10A<br>200A@250Vac<br>10KA@125Vac   | 0.0293                         | 28.5                                                  | x                |        | x | x    | x   | x   |
| 005      | 5                 | 250                    |                                          | 0.0224                         | 50.0                                                  | x                |        | x | x    | x   | x   |
| 006      | 6                 | 250                    |                                          | 0.0178                         | 118.0                                                 | x                |        | x | x    | x   | x   |
| 007      | 7                 | 250                    |                                          | 0.0146                         | 118.0                                                 | x                |        | x | x    | x   | x   |
| 008      | 8                 | 250                    |                                          | 0.0122                         | 166.0                                                 | x                |        | x | x    | x   | x   |
| 010      | 10                | 250                    |                                          | 0.0093                         | 298.0                                                 | x                |        | x | x    | x   | x   |
| 012      | 12                | 32                     | 12A ~ 35A<br>300A@32 Vac                 | 0.0072                         | 234.6                                                 | x**              | x***   |   |      | x** |     |
| 015      | 15                | 32                     |                                          | 0.0052                         | 490.5                                                 | x**              | x***   |   |      | x** |     |
| 020      | 20                | 32                     |                                          | 0.0035                         | 1029                                                  | x**              | x***   |   |      | x** |     |
| 025      | 25                | 32                     |                                          | 0.0024                         | 2041                                                  | x**              | x***   |   |      | x** |     |
| 030      | 30                | 32                     |                                          | 0.0019                         | 3717                                                  | x**              | x***   |   |      | x** |     |
| 035      | 35                | 32                     |                                          | 0.0013                         | 7531                                                  |                  |        |   |      |     |     |

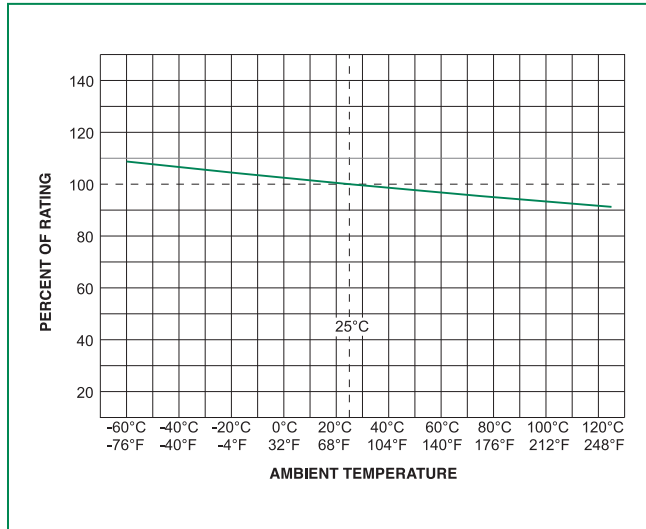
#### NOTES:

\* 10mA and 31mA are not RoHS compliant as the glass bead contains Pb.

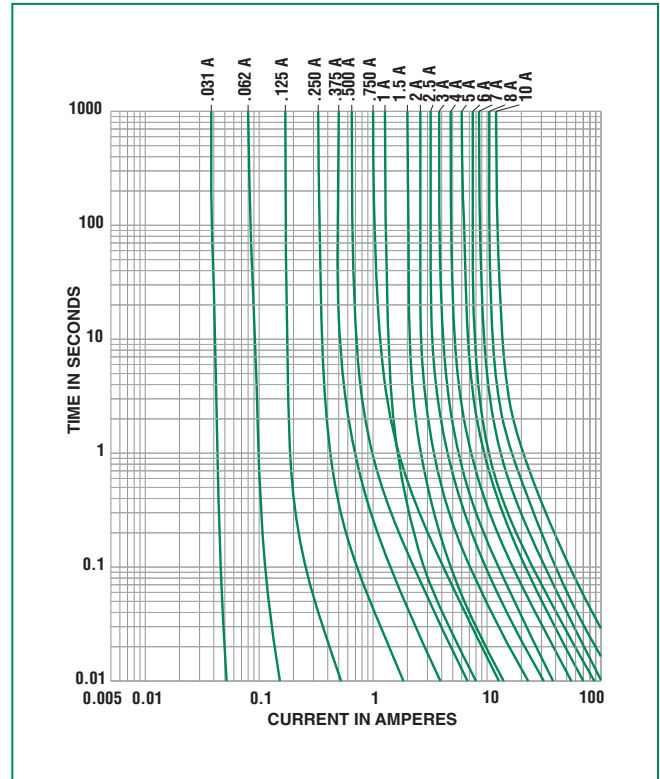
\*\* 312 Series only. Refer to Agency Approvals section of this document.

\*\*\* 318 Series only. Refer to Agency Approvals section of this document.

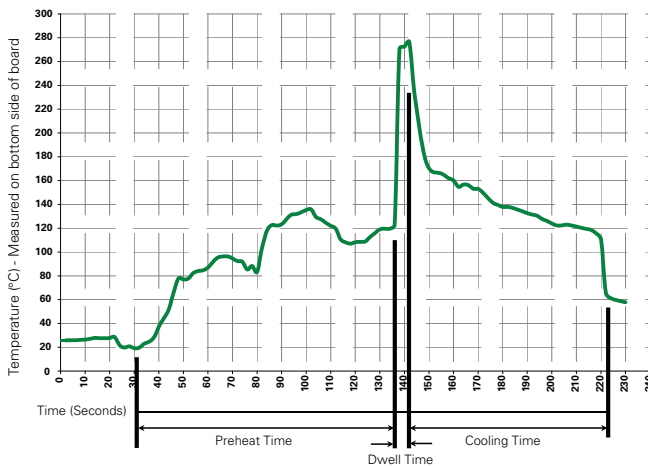
## Temperature Derating Curve



## Average Time Current Curves



## 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>           | 280° 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.

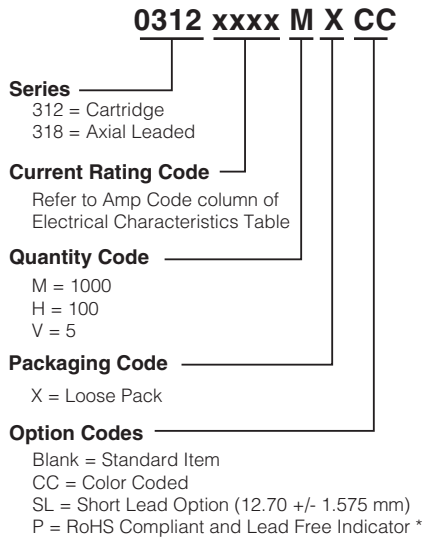
**Note:** These devices are not recommended for IR or Convection Reflow process.

## 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, Test Condition A                                             |
| <b>Solderability</b>     | Reference IEC 60127 Second Edition 2003-01 Annex A                                      |
| <b>Product Marking</b>   | Cap1: Brand logo, current and voltage ratings<br>Cap2: Series and agency approval marks |

|                              |                                                                                                           |
|------------------------------|-----------------------------------------------------------------------------------------------------------|
| <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 201 A                                                                                |
| <b>Humidity</b>              | MIL-STD-202G, Method 103B, Test Condition A: High RH (95%), and Elevated temperature (40°C) for 240 hours |
| <b>Salt Spray</b>            | MIL-STD-202G, Method 101D, Test Condition B                                                               |

## Part Numbering System

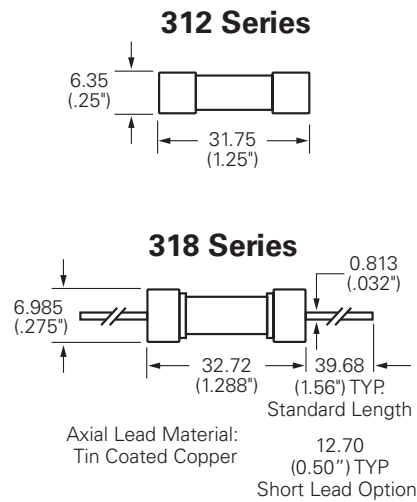


For additional information or information about other available options, please contact Littelfuse.

\*Note: All 312 / 318 series fuses are now sold as RoHS compliant and Lead Free by default, with or without the "P" indicator.

## Dimensions

Measurements displayed in millimeters (inches)



## Packaging

| Packaging Option                   | Quantity | Quantity & Packaging Code |
|------------------------------------|----------|---------------------------|
| <b>312 Series (Cartridge Type)</b> |          |                           |
| Bulk                               | 5        | VX                        |
| Bulk                               | 100      | HX                        |
| Bulk                               | 1000     | MX                        |
| Bulk                               | 1000     | MXCC                      |
| Bulk                               | 100      | HXCC                      |
| <b>318 Series (Axial Leaded)</b>   |          |                           |
| Bulk                               | 5        | VX                        |
| Bulk                               | 100      | HX                        |
| Bulk                               | 1000     | MX                        |
| Bulk                               | 1000     | MXSL                      |