

# Axial Lead and Cartridge Fuses

## Subminiature Glass Body

### 2AG Slo-Blo® Fuse 229/230/290/291 Series



The 2AG Slo-Blo® fuses are available in cartridge form or with axial leads. Axial leaded fuses are board washable. 2AG fuses provide the same performance characteristics as their 3AG counterpart, while occupying one-third the space. Sleeved fuses are available.

#### ELECTRICAL CHARACTERISTICS:

| % of Ampere Rating | Opening Time               |
|--------------------|----------------------------|
| 110%               | 4 hours, <b>Minimum</b>    |
| 135%               | 1 hour, <b>Maximum</b>     |
| 200%               | 3 seconds, <b>Minimum</b>  |
|                    | 20 seconds, <b>Maximum</b> |

**AGENCY APPROVALS:** Listed by Underwriters Laboratories and Certified by CSA through 3.5 amperes. Recognized under the Components Program of Underwriters Laboratories from 4 through 7 amperes. 229 004 and 229 005 approved by MITI. 230 001 through 230 005 approved by METI.

**AGENCY FILE NUMBERS:** UL E10480, CSA LR 29862.

**FUSES TO MIL SPEC:** 229 and 230 Series are available to DSCC Drawing #87108. To order, change 229 to 290 or 230 to 291.

#### INTERRUPTING RATINGS:

|           |                          |
|-----------|--------------------------|
| 0.25–3.5A | 10,000 amperes at 125VAC |
| 4–7A      | 400 amperes at 125VAC    |
| 0.25–1A   | 35 amperes at 250VAC     |
| 1.25–3.5A | 100 amperes at 250VAC    |

**OPTIONS:** 230 Series available on tape and reel.

**PACKAGING SPECIFICATIONS:** Tape and Reel per EIA-296; T1: 52.4mm (2.062") taped spacing; For 1,500 per reel, 10mm (.40") spacing, add packaging suffix, DRT1. For 2,500 per reel, 5mm (.20") spacing, add packaging suffix, ERT1.

#### ENVIRONMENTAL SPECIFICATIONS:

**Operating Temperature:** –55°C to 125°C.

**Shock:** MIL-STD-202, Method 213, Test Condition I (100 G's peak for 6 milliseconds).

**Vibration:** MIL-STD-202, Method 201 (10–55 Hz, 0.06 inches total excursion).

**Salt Spray:** MIL-STD-202 Method 101, Test Condition B (48 hours). Insulation Resistance (After Opening): MIL-STD-202, Method 302, Test Condition B.

**Resistance to Soldering Heat:** (Axial Leaded Fuses):

MIL-STD-202, Method 210A, Test Condition B (260°C, 3 Seconds).

**Thermal Shock:** MIL-STD-202, Method 107, Test Condition B (–65°C to 125°C).

**Moisture Resistance:** MIL-STD-202, Method 106 (90–98% RH, 65°C).

**PEAK WITHSTAND CURRENT (I<sub>p</sub>):** These fuses will withstand 50 repetitions of a double exponential impulse wave having peak currents (I<sub>p</sub>) and peak voltages as listed.

#### PHYSICAL SPECIFICATIONS:

**Materials:** Glass Body, Nickel-Plated Brass Fuse Caps. (Insulating sleeve option available).

#### Soldering parameters:

Wave solder — 500°F (260°C), 3 seconds Max.

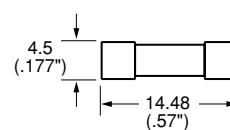
Reflow solder — Not recommended.

**Solderability:** (Axial Leaded Fuses): MIL-STD-202, Method 208.

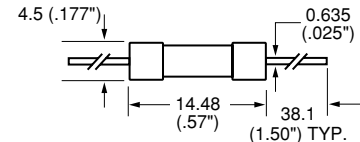
**PACKAGING SPECIFICATIONS:** Tape and Reel pitch per EIA-296; T1: 52.4mm (2.062") taped spacing; For 1,500 per reel, add packaging suffix, DRT1. For 2,500 per reel, 5mm (.20") add packaging pitch suffix, ERT1. Insulating sleeve option available.



#### 229 000 Series



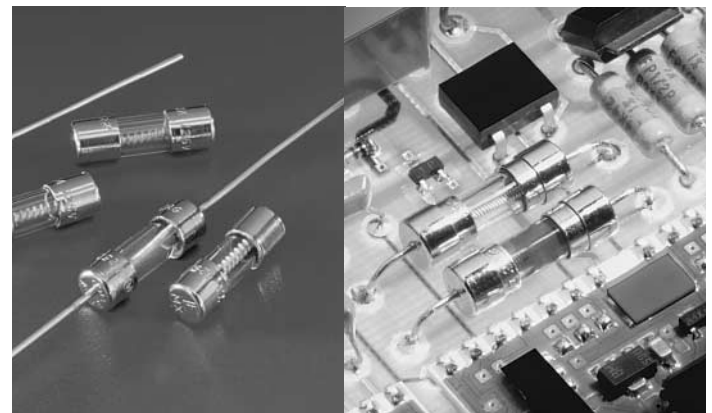
#### 230 000 Series



Axial Lead Material: Solder coated copper.

### 2AG Indicating Slo-Blo® Type Fuse

The 2AG Indicating Slo-Blo® fuse instantly identifies itself upon opening by showing a discoloration of its glass body. Guesswork and time consuming circuit testing are eliminated. This unique design offers the same quality performance characteristics as the standard 2AG fuse design.



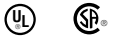
\* When ordering the 2AG Indicating Slo-Blo Fuse, an 'S' is required after the catalog number.

#### Example:

–1A Indicating Slo-Blo® Fuse = 230 001S

NOTE: LF logo, series number, amperage rating, voltage rating, and UL and CSA logos are stamped on the fuse caps.

### 2AG Slo-Blo® Type



#### PATENTED

#### ORDERING INFORMATION:

| Cartridge Catalog Number | Axial Lead Catalog Number | Ampere Rating | Voltage Rating | Nominal Resistance Cold Ohms | Nominal Melting I <sup>2</sup> t A <sup>2</sup> Sec. |
|--------------------------|---------------------------|---------------|----------------|------------------------------|------------------------------------------------------|
| 229.250                  | 230.250                   | 1/4           | 250            | 2.41                         | 0.216                                                |
| 229.350                  | 230.350                   | .350          | 250            | 1.30                         | 0.490                                                |
| 229.375                  | 230.375                   | 3/8           | 250            | 1.16                         | 0.580                                                |
| 229.500                  | 230.500                   | 1/2           | 250            | 0.688                        | 1.16                                                 |
| 229.600                  | 230.600                   | 6/10          | 250            | 0.477                        | 1.75                                                 |
| 229.750                  | 230.750                   | 3/4           | 250            | 0.340                        | 2.95                                                 |
| 229.800                  | 230.800                   | 8/10          | 250            | 0.304                        | 3.45                                                 |
| 229.001                  | 230.001                   | 1             | 250            | 0.210                        | 5.64                                                 |
| 229.1.25                 | 230.1.25                  | 1 1/4         | 250            | 0.145                        | 9.80                                                 |
| 229.01.5                 | 230.01.5                  | 1 1/2         | 250            | 0.107                        | 15.0                                                 |
| 229.002                  | 230.002                   | 2             | 250            | 0.0692                       | 30.0                                                 |
| 229.2.25                 | 230.2.25                  | 2 1/4         | 250            | 0.0562                       | 39.0                                                 |
| 229.02.5                 | 230.02.5                  | 2 1/2         | 250            | 0.0498                       | 50.0                                                 |
| 229.003                  | 230.003                   | 3             | 250            | 0.0380                       | 77.0                                                 |
| 229.03.5                 | 230.03.5                  | 3 1/2         | 250            | 0.0310                       | 110.0                                                |
| 229.004                  | 230.004                   | 4             | 125            | 0.0256                       | 148.0                                                |
| 229.005                  | 230.005                   | 5             | 125            | 0.0185                       | 267.0                                                |
| 229.006                  | 230.006                   | 6             | 125            | 0.0140                       | 380.0                                                |
| 229.007                  | 230.007                   | 7             | 125            | 0.0115                       | 464.0                                                |

### 2AG Surge Withstand Specifications

2AG Surge Withstand Fuse combines conventional overcurrent protection with the ability to withstand high current, short duration pulses. These fuses comply with the short circuit requirements of UL 1459 for telephone equipment. Insulating Sleeve Option available.

#### ELECTRICAL CHARACTERISTICS:

##### Short Circuit Capabilities:

|                              |       |        |
|------------------------------|-------|--------|
| UL 60950 (UL 1459 Included): | 60A,  | 600VAC |
|                              | 40A,  | 600VAC |
|                              | 7A,   | 600VAC |
|                              | 2.2A, | 600VAC |

- Meets UL 497 Specifications

| % of Ampere Rating | Opening Time                                           |
|--------------------|--------------------------------------------------------|
| 110%               | 4 hours, <b>Minimum</b>                                |
| 135%               | 1 hour, <b>Maximum</b>                                 |
| 200%               | 3 seconds, <b>Minimum</b> ; 20 seconds, <b>Maximum</b> |

**AGENCY APPROVALS:** Listed by Underwriters Laboratories and Certified by CSA.

**AGENCY FILE NUMBERS:** UL E10480, CSA LR 29862.

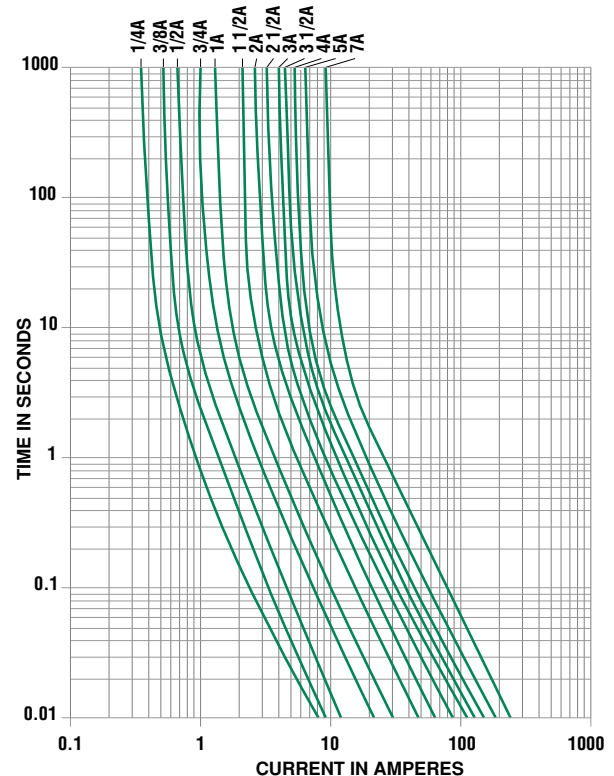
#### INTERRUPTING RATINGS:

|           |                          |
|-----------|--------------------------|
| 1/4–11/4A | 10,000 amperes at 125VAC |
| 1/4–1A    | 35 amperes at 250VAC     |
| 11/4A     | 100 amperes at 250VAC    |

| Ampere Rating | 10 x 160 microsec. 1500V | 10 x 560 microsec. 800V | 10 x 1000 microsec. 1000V |
|---------------|--------------------------|-------------------------|---------------------------|
| 1/4           | 23.0A                    | 16.6A                   | 12.4A                     |
| 35/100        | 34.0A                    | 25.8A                   | 19.3A                     |
| 3/8           | 40.0A                    | 25.4A                   | 19.0A                     |
| 1/2           | 60.0A                    | 37.7A                   | 28.2A                     |
| 6/10          | 71.0A                    | 47.2A                   | 35.3A                     |
| 3/4           | 91.0A                    | 65.5A                   | 49.0A                     |
| 8/10          | 104.0A                   | 68.9A                   | 51.6A                     |
| 1             | 130.0A                   | 88.6A                   | 66.3A                     |
| 1 1/4         | 162.0A                   | 118.1A                  | 100.0A                    |

<sup>1</sup> 500A peak, 2500V, 2 x 10 microseconds, 20 repetitions.

#### Average Time Current Curves



### 2AG Special Surge Withstand

Slo-Blo® Type



**AXIAL LEAD PART NUMBER:** 220 003 (0.35A)

#### ELECTRICAL CHARACTERISTICS:

| Amperes | Opening Time               |
|---------|----------------------------|
| 0.35A   | 4 hours, <b>Minimum</b>    |
| 0.6A    | 90 seconds, <b>Maximum</b> |
| 2.0A    | 2 seconds, <b>Maximum</b>  |
| 6.0A    | 0.5 second, <b>Maximum</b> |

**INTERRUPTING RATINGS:** Same as 230 Series.

**LIGHTNING SURGE WITHSTAND CAPABILITY:** 25 amperes peak, 800V, 10 x 560 microseconds.

#### PATENTED