

# 308 Series 30V Intrinsically Safe Fuse



| Agency Approvals            |   |               |  |  |
|-----------------------------|---|---------------|--|--|
| Agency                      | Agency File Number                          | Ampere Rating |  |  |
| (Ex)                        | DEMKO 15 ATEX 1439U<br>🚱 (II 1 G Ex ia IIC) | 0.250A – 1.5A |  |  |
| c <b>FN</b> <sup>®</sup> us | E358130                                     | 0.250A – 1.5A |  |  |
| IEC, IECEx                  | IECEx UL 15.0011U<br>(Ex ia IIC)            | 0.250A – 1.5A |  |  |

| Reference | Ctone | o rdo |
|-----------|-------|-------|
| neierence | Stanu | larus |

| Certification | Standards  |  |  |
|---------------|--|--|--|
| ATEX          | EN 60079-0, EN 60079-11  |  |  |
| IECEx         | IEC 60079-0, IEC 60079-11  |  |  |
| UL            | UL 913, UL 60079-0,<br>UL 60079-11   |  |  |
| cUL           | CAN/CSA C22.2 No. 157,<br>CAN/CSA C22.2 No. 60079-0,<br>CAN/CSA C22.2 No. 60079-11 |  |  |

# **Electrical Characteristics for Series**

| % of Ampere Rating | Opening Time         |
|--------------------|----------------------|
| 100%               | 4 Hours, Minimum     |
| 250%*              | 120 Seconds, Maximum |
| 350%**             | 60 Seconds, Maximum  |

## Description

The 308 Series offers a range of surface mountable encapsulated fuses certified as intrinsically safe components that can be used in hazardous locations. Ideal for use in oil, gas, mine, chemical, pharmaceutical and process industries, the 308 Series surface mountable fuse was designed to limit the energy and temperature generated during its operation. The fuse design and its encapsulant are suitable for use in intrinsically safe apparatus and associated apparatus for peak voltage not exceeding 30V.

### Features

- Surface Mountable
- Encapsulated and sealed (0.7mm minimum)
- Designed for operation in a range of hazardous area applications requiring 30V peak
- RoHS-compliant and leadfree
- Fully compatible with lead-free solder alloys and higher temperature profiles associated with lead-free assembly
- Suitable for use in Class I, Groups A, B, C and D; Class II, Groups E, F and G; Class III and Class I, Zone O, AEx ia IIC Hazardous Locations.

RoHS C WIN (Ex) IEC IEC

• Suitable for use in Gas, Zone 0 Hazardous Locations per IEC and EN 60079 Series

### Applications

- Testing, measuring or processing electronic and electrical equipment
- Motor controllers
- Communication handsets/ two-way radios
- Process control and automation
- Sensors
- Lighting
- Flow/gas meters

\* Applicable to 750mA - 1.5A \*\* Applicable to 250mA - 1.5A

# **Electrical Specifications by Items**

| Catalan           | Ampere        | 1.1.1.1.1 | Nominal                | Minimum Cold             | Minimum Cold                  | Nominal Cold                  | Agency Approvals             |      |                             |           |
|-------------------|---------------|-----------|------------------------|--------------------------|-------------------------------|-------------------------------|------------------------------|------|-----------------------------|-----------|
| Catalog<br>Number | Rating<br>(A) | Amp Code  | Interrupting<br>Rating | Melting<br>I²t (A² Sec.) | Resistance at<br>-20°C (Ohms) | Resistance at<br>-40°C (Ohms) | Resistance at<br>25°C (Ohms) | (Ex) | c <b>FL</b> <sup>°</sup> us | IEC TECEX |
| 308.25            | 0.25          | 0.25      |                        | 0.004                    | 1.856                         | 1.821                         | 2.29                         | Х    | Х                           | Х         |
| 308.375           | 0.375         | 0.375     |                        | 0.01                     | 1.022                         | 1.006                         | 1.33                         | Х    | Х                           | Х         |
| 308.5             | 0.5           | 0.5       |                        | 0.022                    | 0.712                         | 0.676                         | 0.908                        | Х    | Х                           | Х         |
| 308.75            | 0.75          | 0.75      | 50A@24VAC<br>50A@30VDC | 0.048                    | 0.52                          | 0.511                         | 0.665                        | Х    | Х                           | Х         |
| 308001.0          | 1.0           | 1.0       | JUAGJUVDC              | 0.1                      | 0.226                         | 0.216                         | 0.42                         | Х    | Х                           | Х         |
| 3081.25           | 1.25          | 1.25      |                        | 0.22                     | 0.24                          | 0.236                         | 0.318                        | Х    | Х                           | Х         |
| 30801.5           | 1.5           | 1.5       |                        | 0.333                    | 0.182                         | 0.144                         | 0.209                        | Х    | Х                           | Х         |

### Notes:

1. The fuse must be mounted so that creepage and clearance distances aren't impaired in any way.

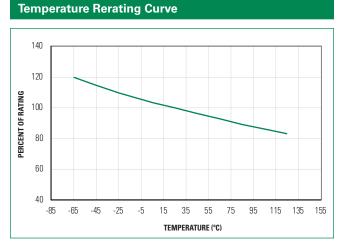
2. The fuse is suitable for use in intrinsically safe equipment and associated apparatus for voltage not exceeding 30V peak.

3. Maximum surface temperature rise at 170% rated current: 250-375mA = 23°C, 500mA = 35°C, 750mA = 53°C, 1A = 38°C, 1.25-1.50A = 96°C.

4. Minimum Cold Resistance at -30°C is available upon request.



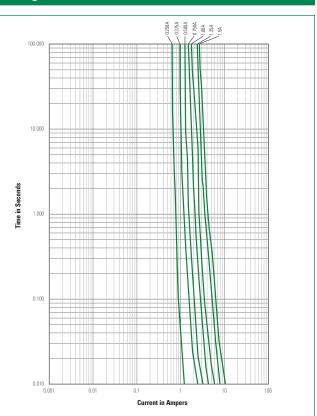
### **Average Time Current Curves**



Notes: 1. Re-rating depicted in this curve is in addition to the standard re-rating of 20% for continuous operation.

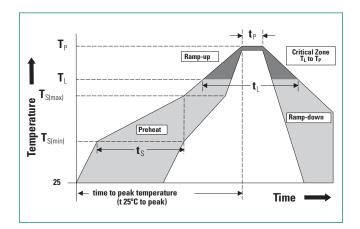
**Example:** For continuous operation at 55°C, the fuse should be rerated as follows:

2. The temperature rerating curve represents the nominal conditions. For questions about temperature rerating curve, please consult Littelfuse technical support for assistance.



# **Soldering Parameters**

| Reflow Cond  | lition                                    | Pb – Free assembly |  |  |
|--|---|--------------------|--|--|
|  | - Temperature Min (T <sub>s(min)</sub> )  | 150°C              |  |  |
| Pre Heat   | - Temperature Max (T <sub>s(max)</sub> )  | 200°C              |  |  |
|  | - Time (Min to Max) (t <sub>s</sub> )     | 60 – 180 secs      |  |  |
| Average ram  | up up rate (Liquidus Temp $(T_L)$ to peak | 3°C/second max.    |  |  |
| T <sub>S(max)</sub> to T <sub>L</sub> - Ramp-up Rate         |   | 3°C/second max.    |  |  |
| Reflow   | - Temperature ( $T_L$ ) (Liquidus)        | 217°C              |  |  |
|  | - Temperature (t <sub>L</sub> )           | 60 – 150 seconds   |  |  |
| Peak Temperature (T <sub>P</sub> )                           |   | 260+0/-5 °C        |  |  |
| Time within 5°C of actual peak Temperature (t <sub>p</sub> ) |   | 30 Sec Max         |  |  |
| Ramp-down Rate   |   | 6°C/second max.    |  |  |
| Time 25°C to peak Temperature (T <sub>P</sub> )              |   | 8 minutes max.     |  |  |
| Do not exceed  |   | -                  |  |  |





# **Special Application Fuses**

Intrinsically Safe > Surface Mount > 308 Series

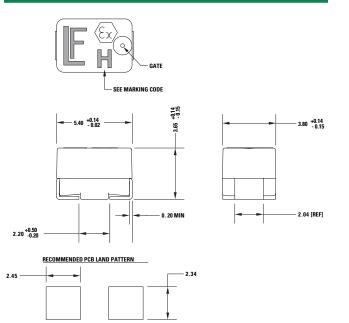
# **Dimensions (mm)**

2.0

**Part Numbering System** 

Series

Amp Code Refer to Electrical Specifications table Quantity Code U = 500 pcsPackaging code R = Tape and Reel



0308 001. U R

# **Part Marking System**

| Marking Cada | Amm Code |
|--------------|----------|
| Marking Code | Amp Code |
| D            | 0.250    |
| E            | 0.375    |
| F            | 0.500    |
| G            | 0.750    |
| н            | 001.0    |
| J            | 1.25     |
| К            | 01.5     |

### **Product Characteristics**

| Molding Material                | Polyamide 6T/66<br>CTI 100 volts minimum<br><b>Continuous Operating Temperature:</b> 140°C |  |  |
|---------------------------------|--|--|--|
| Ambient Temperature 12          | -40°C to +70°C   |  |  |
| Terminations                    | Tin-Plated Silver-Plated Copper  |  |  |
| Thermal Shock                   | Withstands 100 cycles of -55°C to 125°C  |  |  |
| Vibration                       | MIL-STD-202, Method 201  |  |  |
| Mechanical Shock                | MIL-STD-202, Method 213, Condition A   |  |  |
| Moisture Resistance             | MIL-STD-202, Method 106  |  |  |
| Salt Spray                      | MIL-STD-202, Method 101, Condition B   |  |  |
| Resistance to Soldering<br>Heat | MIL-STD-202, Method 210, Condition K   |  |  |

Notes:

1. Any use of the 308 Series fuse outside of the ambient temperature range specified in the table is subject to

additional investigation. 2. Specified ambient temperature range is for intrinsic safety certification

| Packaging          |                            |          |                                |  |  |
|--------------------|----------------------------|----------|--------------------------------|--|--|
| Packaging Option   | Packaging<br>Specification | Quantity | Quantity and<br>Packaging Code |  |  |
| 12mm Tape and Reel | EIA 481-1                  | 500      | UR                             |  |  |

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