

# 828 Series

## High Voltage Cartridge Fuses



### Description

The 828 Series fuses are specifically designed and tested to the circuit protection needs of compact auto-electronics applications. Fuse rated for 1000 VDC with a high interrupt rating of 10 kA.

### Features and Benefits

- Available in Through-hole (TH) and Bolt Down versions (ISO)
- RoHS-compliant and lead-free
- AEC-Q200 Qualified
- Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14

### Applications

- On-Board Charger
- Power Distribution Unit

### Web Resources



Download ECAD models, order samples, and find technical resources at [www.littelfuse.com](http://www.littelfuse.com)

### Agency Approvals

| Agency | Agency File Number | Ampere Range |
|--------|--------------------|--------------|
|        | E10480             | 5A - 60A     |

### Electrical Characteristics

| Current Rating | % of Ampere Rating | Opening Time       |
|----------------|--------------------|--------------------|
| 5A - 60A       | 100%               | 4hrs, Min.         |
| 5A - 60A       | 135%               | 3600 seconds, Max. |

### Electrical Characteristics by Item

| Amp Code | Amp Rating (A) | Voltage Rating (Vdc) | Interrupting Rating | Nominal Cold Resistance (mOhm) | Nominal Melting I <sup>2</sup> t (A <sup>2</sup> sec) | Agency Approvals |
|----------|----------------|----------------------|---------------------|--------------------------------|-------------------------------------------------------|------------------|
| 005.     | 5              | 1000                 | 20KA@1000Vdc        | 40.5                           | 39                                                    | x                |
| 010.     | 10             |                      |                     | 14.9                           | 243                                                   | x                |
| 015.     | 15             |                      | 10KA@1000Vdc        | 7.65                           | 190                                                   | x                |
| 020.     | 20             |                      |                     | 4.90                           | 536                                                   | x                |
| 025.     | 25             |                      |                     | 3.73                           | 1190                                                  | x                |
| 030.     | 30             |                      |                     | 2.90                           | 1500                                                  | x                |
| 040.     | 40             |                      |                     | 2.55                           | 1950                                                  | x                |
| 050.     | 50             |                      |                     | 1.90                           | 3100                                                  | x                |
| 060.     | 60             |                      |                     | 1.57                           | 4800                                                  | x                |

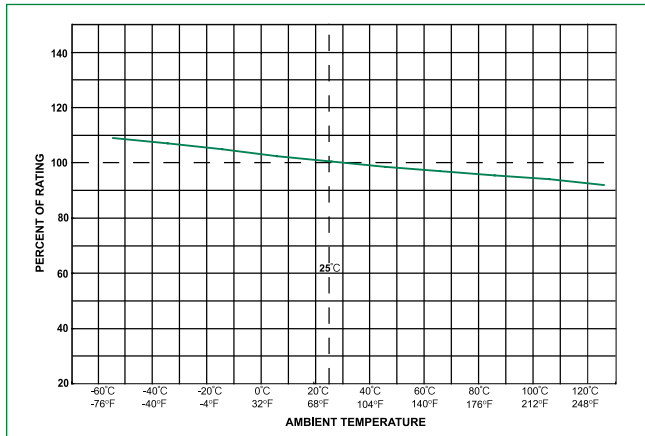
#### Note:

1. Unless otherwise stated, all specifications are referenced at room ambient temperature.
2. Nominal Cold Resistance: Resistance is measured at 10% of rated current, 25°C.

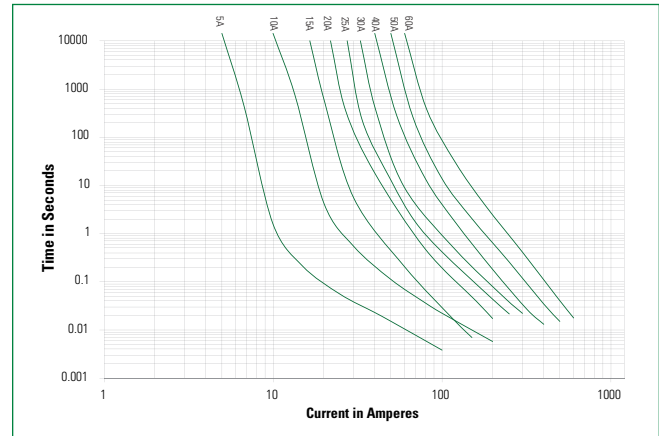
# 828 Series

## High Voltage Cartridge Fuses

### Temperature Re-rating curve



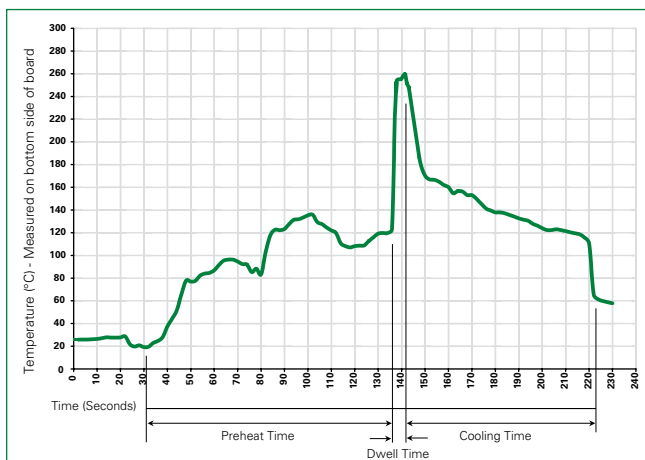
### Average Time Current Curves



### Product Characteristics

|                                  |                                                                          |
|----------------------------------|--------------------------------------------------------------------------|
| <b>Materials</b>                 | Body: Glass fiber<br>Cap: Tin plated copper alloy/Ni plated copper alloy |
| <b>Mechanical Shock</b>          | MIL-STD-202 Method 213                                                   |
| <b>Vibration</b>                 | MIL-STD-202 Method 204                                                   |
| <b>Thermal Shock</b>             | JESD22-A104                                                              |
| <b>Solderability</b>             | JESD22-B102E Method 1                                                    |
| <b>Resistance to Solder Heat</b> | MIL-STD-202 Method 210                                                   |
| <b>Operating Temperature</b>     | -55°C to 125°C                                                           |
| <b>Product Marking</b>           | Brand logo, current and voltage ratings                                  |

## Soldering Parameters–Wave Soldering



| Wave Parameter                                              | Lead-Free Recommendation          |
|-------------------------------------------------------------|-----------------------------------|
| <b>Preheat:</b><br>(Depends on Flex 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.

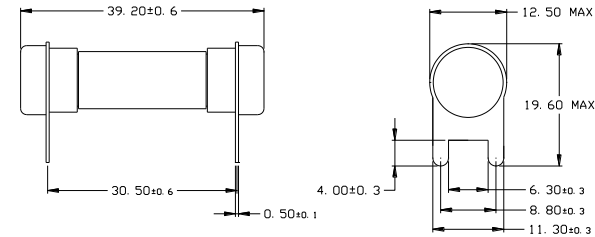
# 828 Series

## High Voltage Cartridge Fuses

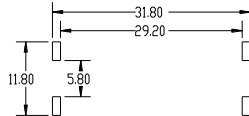
### Dimensions (mm)

#### Through-hole (Option Code TH)

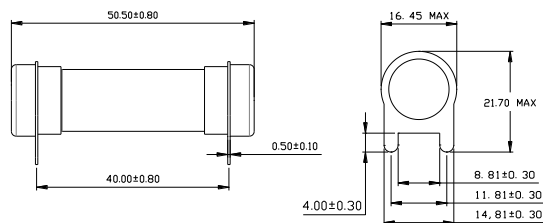
##### 5A - 30A



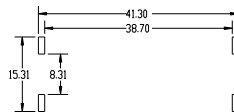
#### Recommended PCB layout



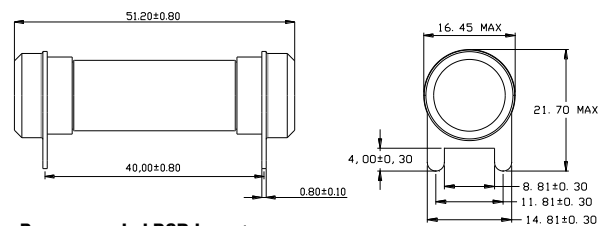
##### 40A - 50A



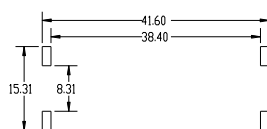
#### Recommended PCB layout



##### 60A

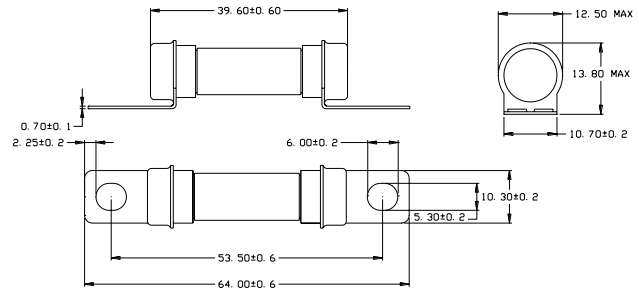


#### Recommended PCB layout

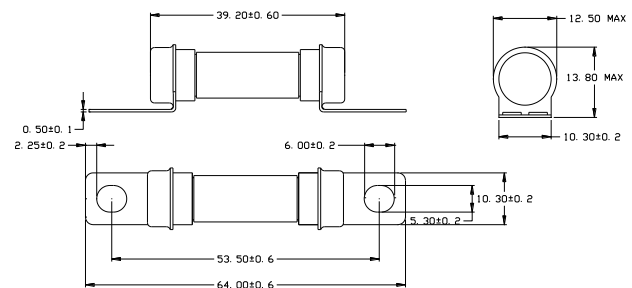


#### Bolt Down (Option Code ISO)

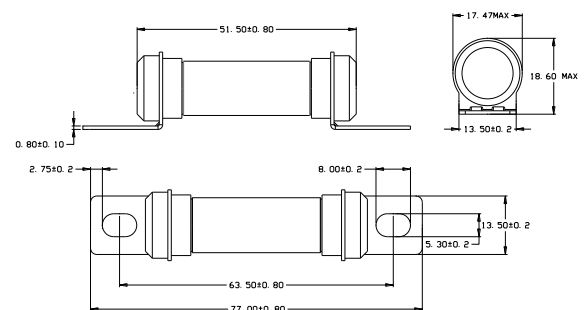
##### 5A - 10A



##### 15A - 30A



##### 40A - 60A

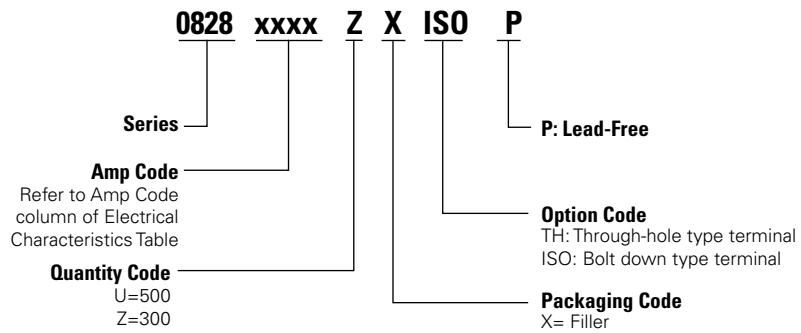


All dimensions in mm

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### Part Numbering System



### Packaging

| Packaging Option                 | Packaging Specification | Quantity | Quantity & Packaging Code | Reel Size |
|----------------------------------|-------------------------|----------|---------------------------|-----------|
| 828 5A-30A Through Hole Version  | NA                      | 500      | UXTH                      | N/A       |
| 828 40A-60A Through Hole Version | NA                      | 300      | ZXTH                      | N/A       |
| 828 5A-60A Bolt Down Version     | NA                      | 300      | ZXISO                     | N/A       |

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