

456SDE Series Fuse



Description

The High Current NANO²® Fuse is a small square surface mount fuse that is designed to support higher current requirements of various applications.

Features

- Available in ratings of 40 A to 60 A
- High interrupting rating of 600 A @ 80 VDC
- Very low cold resistance, temperature rise, and voltage drop
- Surface mountable high current fuse
- UL Recognized UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14


Benefits

- Single fuse solution for high current application
- Suitable for a wide variety of voltage requirements and applications
- Enhances power efficiency
- Avoids nuisance opening due to high inrush and surge current inherent in the system
- Compatible with high volume assembly requirements

Applications

- Voltage regulator Module for PC Server
- Cooling Fan System for PC Server
- Storage System Power
- Basestation Power Supply
- Power Tools

Agency Approvals

Agency	Agency File Number	Ampere Rating
	E10480	40 A –60 A

Electrical Characteristics

% of Ampere Rating	Opening Time
100%	4 hours, Minimum
200%	60 seconds, Maximum

Additional Information



Datasheet




Resources



Samples

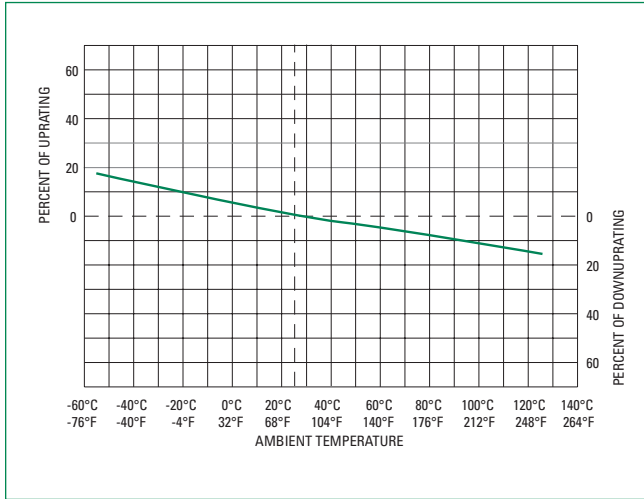
Electrical Specifications

Ampere Rating (A)	Amp Code	Max Voltage Rating (V)	Interrupting Rating	Nominal Cold Resistance (Ohms) ¹	Nominal Melting I ² t (A ² Sec.) ³	Nominal Voltage Drop (mV)	Agency Approvals ²
							
40	040.	250	150A @ 250VAC 600A @ 80VDC	0.00130	1700	110	x
50	050.	250	150A @ 250VAC 600A @ 80VDC	0.00105	2700	115	x
60	060.	250	150A @ 250VAC 600A @ 80VDC	0.00085	4260	106	x

Notes:

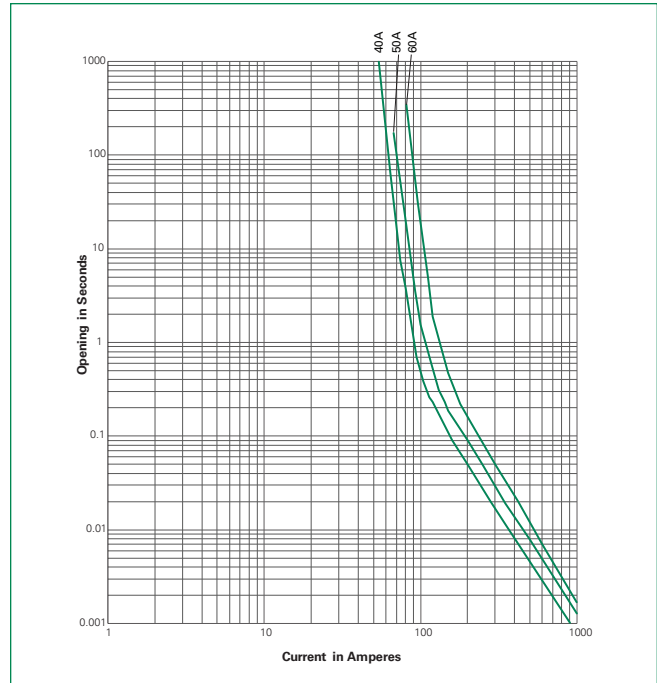
1. Cold resistance measured at less than 10% of rated current at 23° C.
2. Agency Approval Table Key: X = Approved or Certified, P = Pending.
3. I²t values stated for 8msec opening time.

Temperature Re-rating Curve



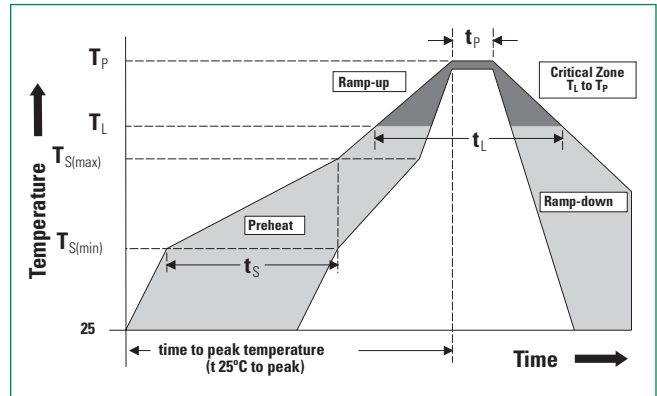
Note:
1. Rerating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Average Time Current Curves



Soldering Parameters – Reflow Soldering

Reflow Condition		Pb – Free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (Min to Max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		5°C/second max.
$T_{s(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max.
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

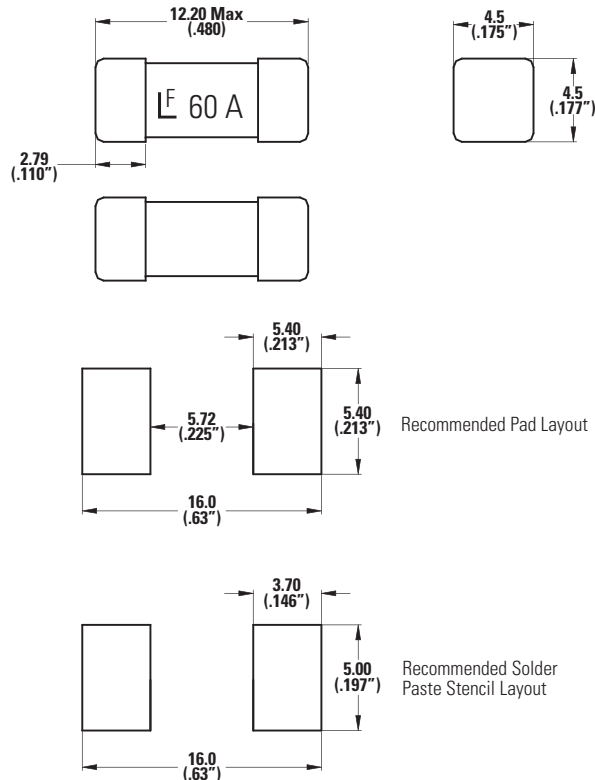


Product Characteristics

Materials	Body: Ceramic Cap: Silver Plated Brass
Product Marking	Body: Brand Logo, Current Rating
Insulation Resistance	MIL-STD-202, Method 302, Test Condition A (10,000 ohms, Minimum)
Solderability	MIL-STD-202, Method 208
Resistance to Soldering Heat	MIL-STD-202, Method 210, Test Condition B (10 sec at 260°C)
PCB Recommendation for Thermal Management	Minimum copper trace width = 15 mm (40 A)/25 mm (50 A/60 A) Recommended copper trace weight = 3oz (40A) / 6oz (50 A/60 A) For PSE requirements: Minimum Copper trace width = 35mm Recommended Copper trace weight = 6oz Alternate methods of thermal management may be used. In such cases, under normal operations, the maximum temperature of the fuse body should not exceed 90°C in a 25°C environment.

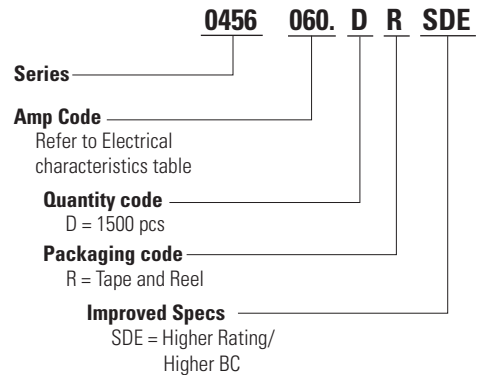
Operating Temperature	-55°C to 125°C with proper derating
Thermal Shock	MIL-STD-202, Method 107, Test Condition B (5 cycles -65°C to 125°C)
Vibration	MIL-STD-202, Method 201 (10-55 Hz)
Moisture Sensitivity Level	J-STD-020, Level 1
Moisture Resistance	MIL-STD-202 Method 106, High Humidity (90-98%RH), Heat (65°C)
Salt Spray	MIL-STD-202, Method 101, Test Condition B
Mechanical Shock	MIL-STD-202, Method 213, Test Condition I (100 G's peak for 6 milliseconds)

Dimensions



Note: Recommended Stencil Thickness: 0.152 mm
Dimensions are in millimeters (inches)

Part Numbering System



Packaging

Rating	Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code
40 A–60 A	24 mm Tape and Reel	EIA RS-481-2 (IEC 286, Part 3)	1500	DR

Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at <https://www.littelfuse.com/legal/disclaimers/product-disclaimer.aspx>.