456SDE Series Fuse

NANO2® > Fast Acting 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 & Benefits

- 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
- 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

Web Resources

Download ECAD models, order samples, and find technical recources at www.littelfuse.com

Applications

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

Electrical Characteristics

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

Agency Approvals

Agency	Agency File/Certificate Number	Ampere Rating
c UL us	E10480	40 A –60 A

Electrical Specifications

Ampere Rating (A)	Amp Code	Max Voltage Rating (V)	Interrupting Rating[4]	Nominal Cold Resistance (Ohms)	Nominal Melting I^2t (A^2 Sec.)	Nom Voltage Drop (mV)	Agency Approvals c UL us
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.

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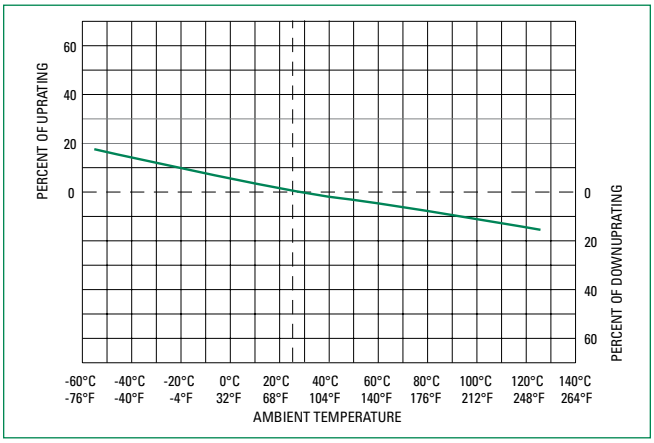
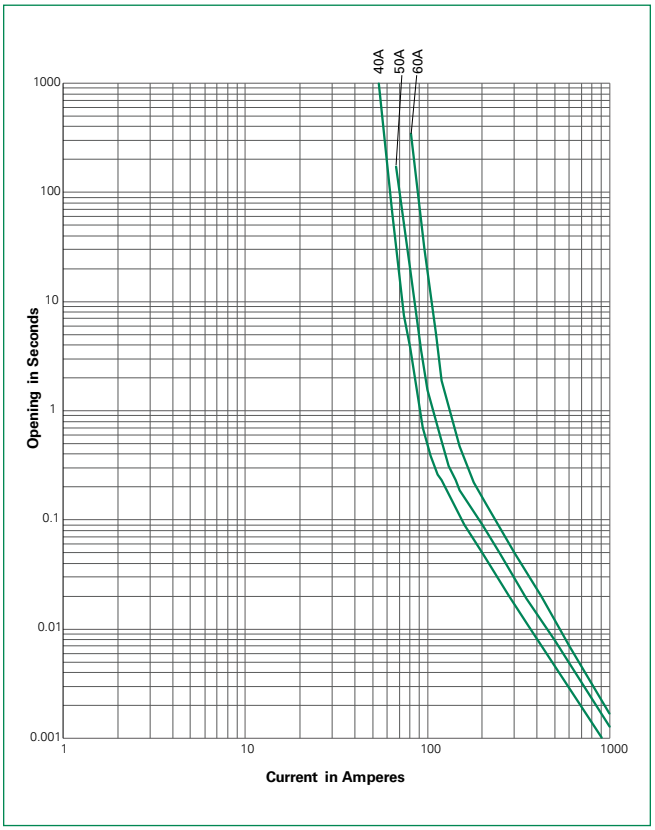
Temperature Re-rating Curve



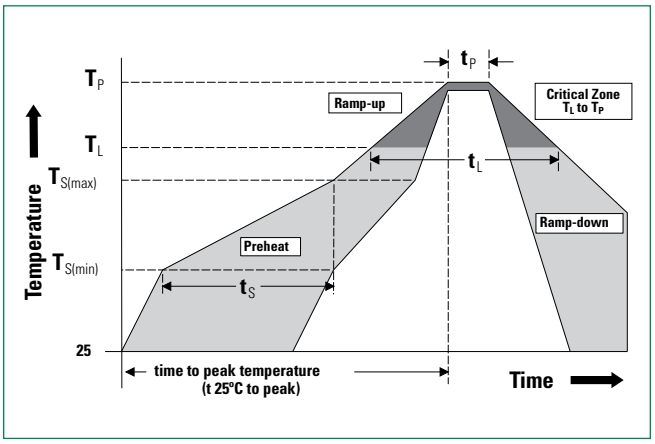
Note:
1. Rerating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

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



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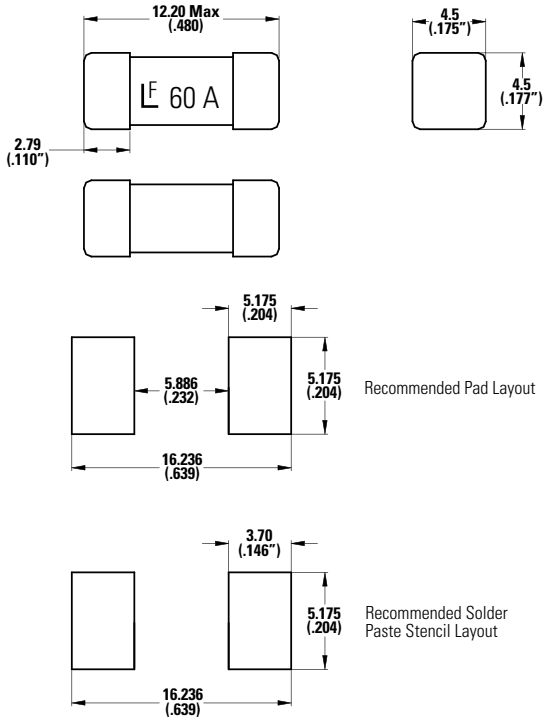
Product Characteristics

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 90OC in a 25OC environment.

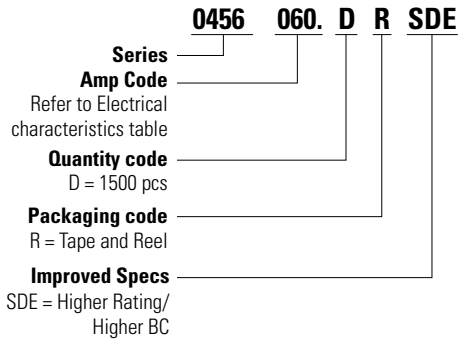
Operating Temperature	-55°C to 125°C with proper derating
Thermal Shock	MIL-STD-202, Method 107, Test Condition B (5 cycles -65°C to 125°C)
Vibration	MIL-STD-202, Method 201 (10-55 Hz)
Moisture Sensitivity Level	J-STD-020, Level 1
Moisture Resistance	MIL-STD-202 Method 106, High Humidity (90-98%RH), 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: 0.152mm
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

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