Surface Mount Fuses

NANO²® > Fast Acting Fuse > 456SD Series

Littelfuse
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456SD Series Fuse

RoHS HF c UL us



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 to 50A
- High interrupting rating - 600A@75VDC
- Very low cold resistance, temperature rise, and voltage drop
- High inrush/surge current withstand capability
- Surface mountable high current fuse
- UL 248-1 and UL 248-14 recognized

Benefits

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

Agency Approvals

AGENCY	AGENCY FILE NUMBER	AMPERE RATING
c UL us	E10480	40A – 50A

Electrical Characteristics

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

Additional Information

Datasheet | Resources | Samples

Applications

- Voltage regulator module for PC server
- Cooling fan system for PC server
- Storage system power
- Basestation power supply
- Power tools

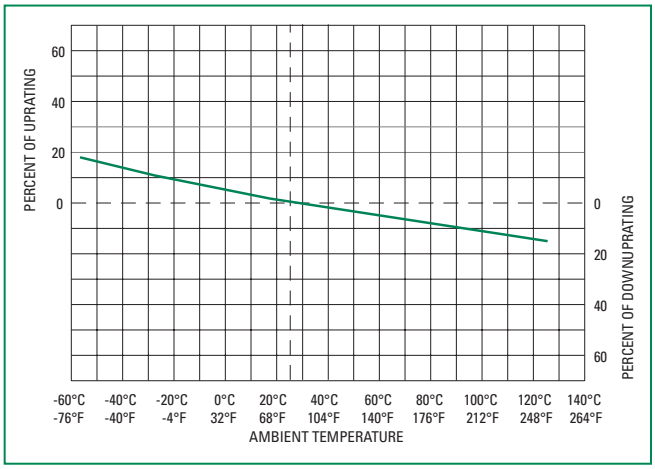
Electrical Specifications

Ampere Rating (A)	Amp Code	Max Voltage Rating (V)	Interrupting Rating	Nominal Cold Resistance (Ohms)	Nominal Melting I²t (A² Sec.)	Nom Voltage Drop (mV)	Agency Approvals c UL us
40	040.	125	100A @ 125VAC 600A @ 75VDC	0.00130	1700	110	x
50	050.	125	100A @ 125VAC 600A @ 75VDC	0.00105	2700	115	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 1 msec opening time.

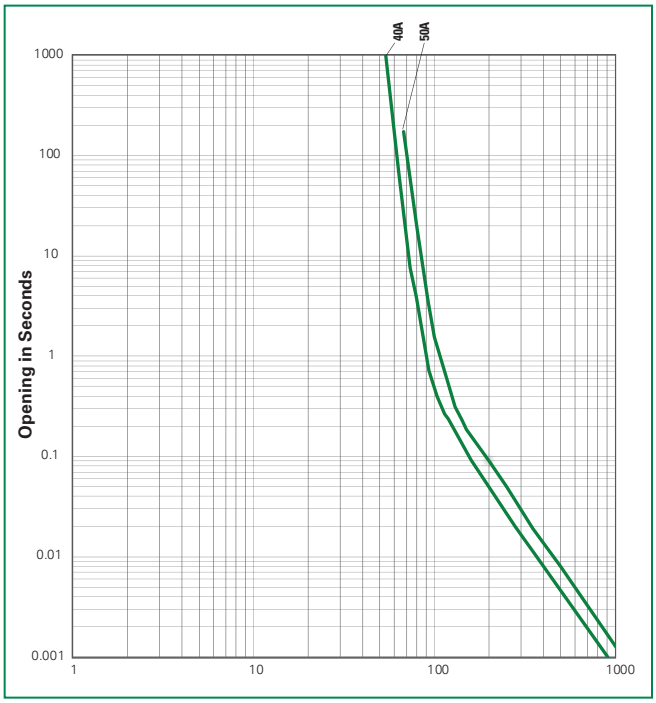
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Temperature Re-rating Curve



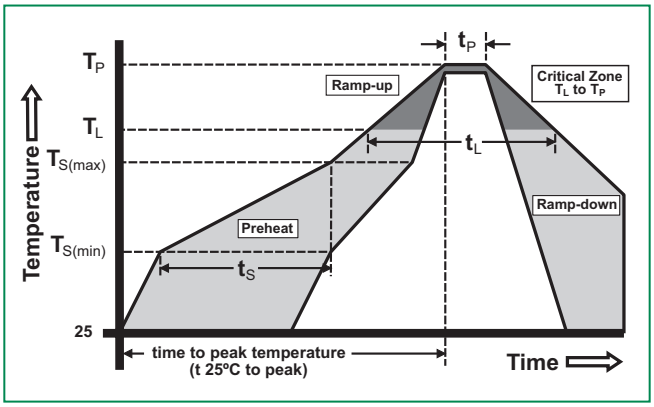
Note: Rerating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

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



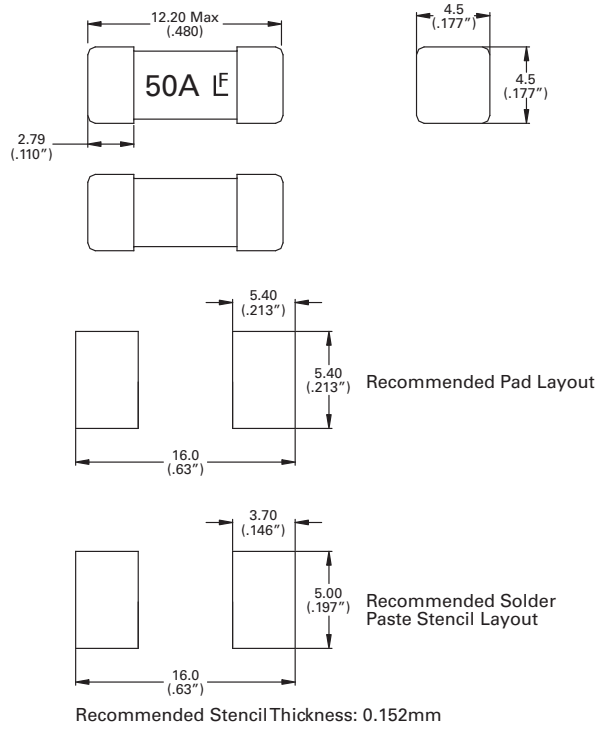
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Product Characteristics

Materials	Body: Ceramic Cap: Silver Plated Brass
Product Marking	Body: Current Rating, Brand Logo
Insulation Resistance	MIL-STD-202, method 302, Test Condition A (10,000ohms, 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 = 15mm (40A) / 25mm (50A) Recommended copper trace weight = 3oz (40A) / 6oz (50A) 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 – 55Hz)
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



Recommended Stencil Thickness: 0.152mm

Part Numbering System

0456 050. D R SD

SERIES

AMP Code
Refer to Electrical characteristics table

QUANTITY Code
D = 1500 pcs

PACKAGING Code
R = Tape and Reel

IMPROVED SPECS
SD = Higher Rating/ Higher BC

Packaging

Rating	Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code
40A 50A	24mm Tape and Reel	EIA RS-481-2 (IEC 286, Part 3)	1500	DR

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