# Littelfuse® Expertise Applied | Answers Delivered

## 456SD Series Fuse





#### **Agency Approvals**

AGENCY AGENCY FILE NUMBER		AMPERE RATING	
c <b>AU</b> °us	E10480	40A – 50A	

#### **Electrical Characteristics**

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

#### **Additional Information**



Datasheet



Resources



Samples

## **Description**

The High Current NANO<sup>2®</sup> 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

#### **Applications**

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

#### **Electrical Specifications**

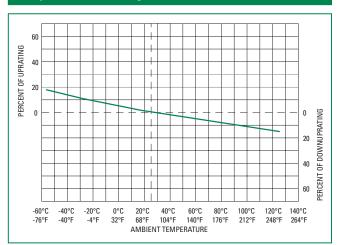
Ampere	Amp Code	Max Voltage Rating (V)	Interrupting Rating	Nominal Cold Resistance (Ohms)	Nominal Melting I²t (A² Sec.)	Nom Voltage Drop (mV)	Agency Approvals
Rating (A)							c <b>'71</b> 2 us
40	040.	125	100A @ 125VAC 600A @ 75VDC	0.00130	1700	110	X
50	050.	125	100A @ 125VAC 600A @ 75VDC	0.00105	2700	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. I<sup>2</sup>t values stated for 1 msec opening time.

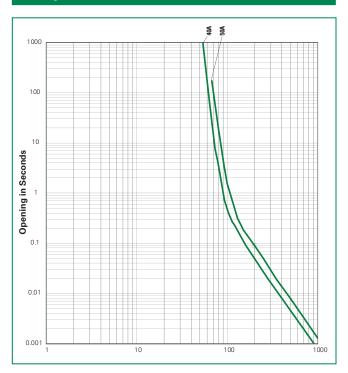


## **Temperature Re-rating Curve**



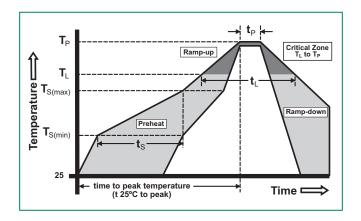
Note: Rerating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

### **Average Time Current Curves**



## Soldering Parameters – Reflow Soldering

Reflow Co	ndition	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 ramp up rate (Liquidus Temp (T <sub>L</sub> ) to peak		5°C/second max.	
T <sub>S(max)</sub> to T <sub>L</sub> - Ramp-up Rate		5°C/second max.	
Reflow	-Temperature (T <sub>L</sub> ) (Liquidus)	217°C	
nellow	-Temperature (t <sub>L</sub> )	60 – 150 seconds	
PeakTemperature (T <sub>P</sub> )		260 <sup>+0/-5</sup> °C	
Time with Temperatu	in 5°C of actual peak ure (t <sub>p</sub> )	20 – 40 seconds	
Ramp-down Rate		5°C/second max.	
Time 25°C to peakTemperature (T <sub>P</sub> )		8 minutes max.	
Do not exceed		260°C	



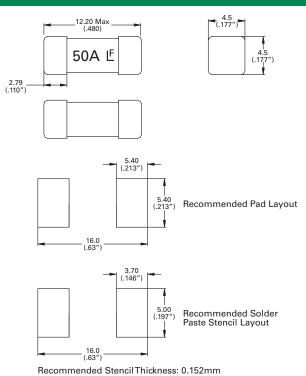


#### **Product Characteristics**

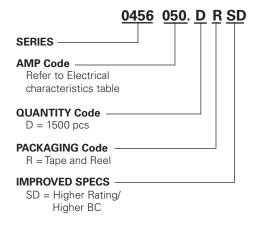
Materials	Body: Ceramic Cap: Silver Plated Brass		
Product Marking	Body: Current Rating, Brand Logo		
Insulation Resistance	MIL-STD-202, method 302, Test Condition A (10,000ohms, Minimum)		
Solderability	MIL-STD-202, Method 208		
Resistance to Soldering Heat	MIL-STD-202, Method 210, Test Condition B (10 sec at 260°C)		
PCB Recommendation for	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		
Thermal Management	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**



#### **Part Numbering System**



Packag	ging			
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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