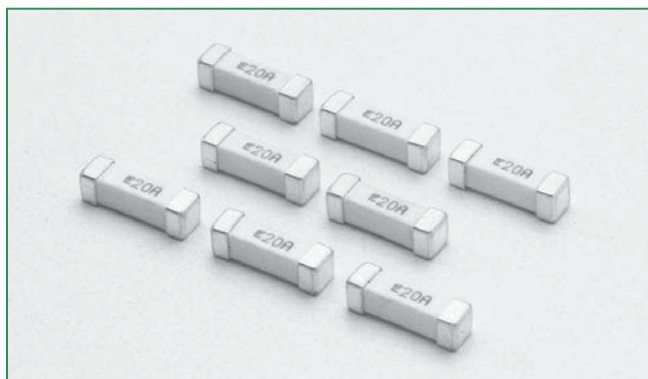


### RoHS HF 456 Series Fuse



#### 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

- Surface mount high current fuse
- Fully compatible with lead-free solder alloys and higher temperature profiles associated with lead-free assembly
- RoHS compliant and Halogen Free
- Available in ratings of 20 to 40 Amperes

#### Applications

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

#### Agency Approvals

AGENCY	AGENCY FILE NUMBER	AMPERE RATING
	E10480	20A, 30A, 40A
	NBK030308-JP1021	20A, 30A

#### Electrical Characteristics

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

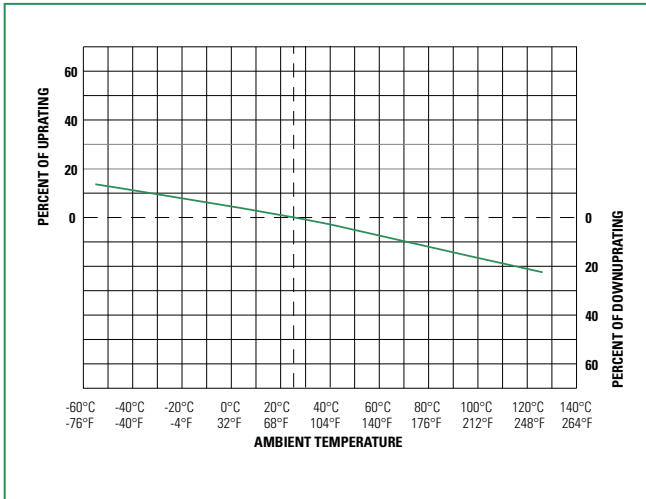
#### Electrical Specifications

Ampere Rating (A)	Amp Code	Max Voltage Rating (V)	Interrupting Rating	Nominal Cold Resistance (Ohms)	Nominal Melting I <sup>2</sup> t (A <sup>2</sup> Sec.)	Nom Voltage Drop (mV)	Agency Approvals	
20	020.	125	100A @125V AC 300A @ 65V AC 300A @ 100V DC 1000A @ 32V DC 500A @ 72VDC	0.00230	18	64.7	x	x
30	030.	125	100A @ 125V AC 300A @ 65V AC 1000A @ 32V DC 500A @ 72VDC	0.00132	81	69.9	x	x
40	040.	60	600A @ 60V DC	0.00105	454	55	x	

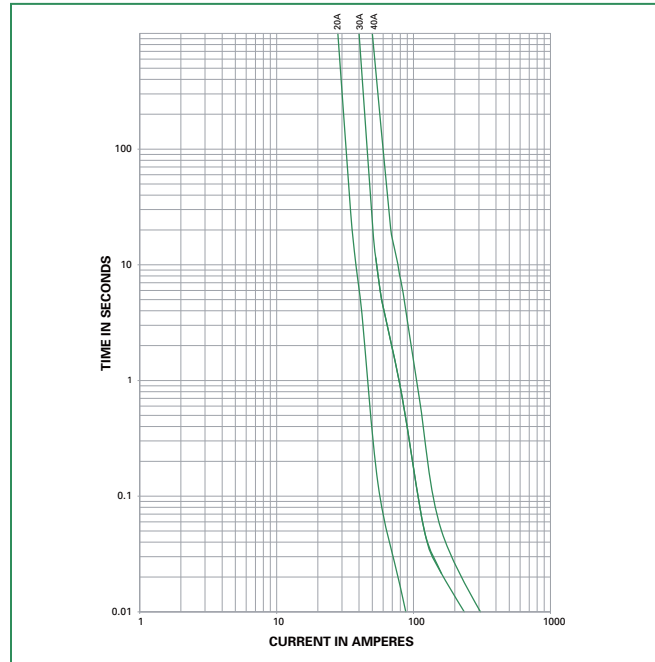
**Notes:**

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 10 msec opening time.

### Temperature Derating Curve

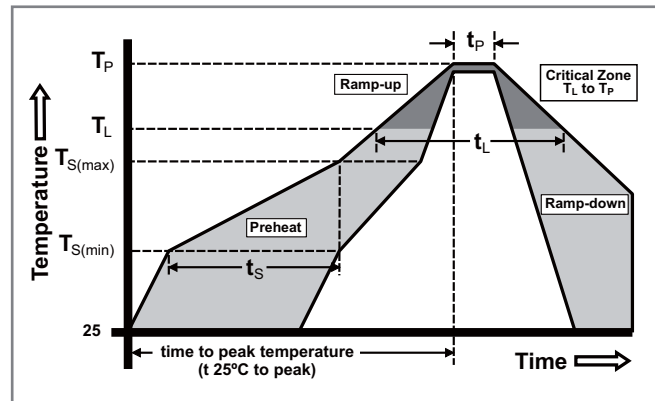


### Average Time Current Curves



### 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 ( $T_p$ )	250 <sup>+0/-5</sup> °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	



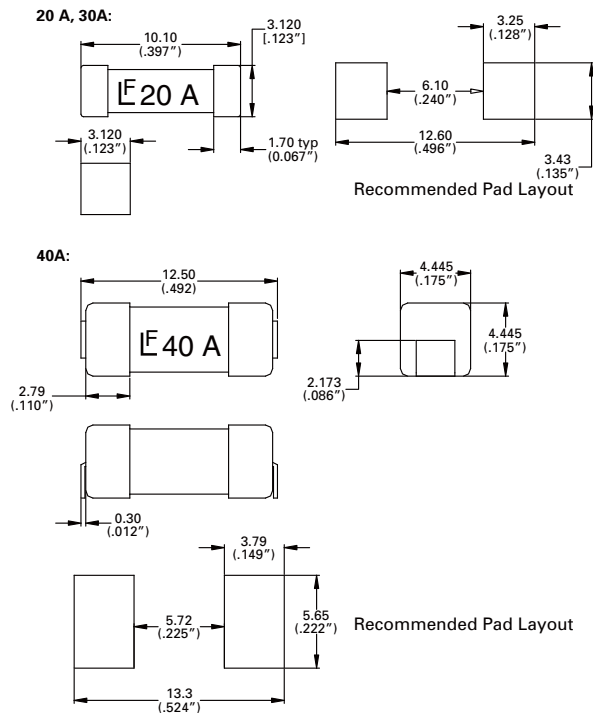
### Product Characteristics

<b>Materials</b>	Body: Ceramic Cap: Silver Plated Brass
<b>Product Marking</b>	Body: Brand Logo, Current Rating
<b>Insulation Resistance</b>	MIL-STD-202, method 302, Test Condition A (10,000 ohms, Minimum)
<b>Solderability</b>	MIL-STD-202, Method 208
<b>Resistance to Soldering Heat</b>	MIL-STD-202, Method 210, Test Condition B (10 sec at 260°C)
<b>PCB Recommendation for Thermal Management</b>	Min. copper layer thickness = 100µm Min. copper trace width = 20A, 30 10mm (20A, 30A) / 15mm (40A) Alternate methods of thermal management may be used. In such cases, under normal operations, the maximum temperature of the fuse body should not exceed 80°C in a 25°C environment.

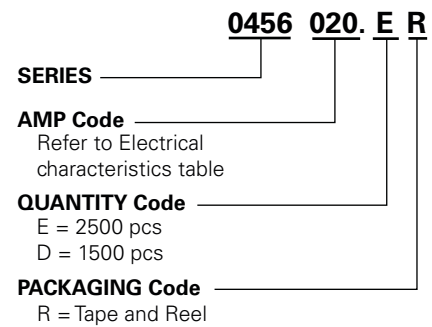
<b>Operating Temperature</b>	-55°C to 125°C with proper derating
<b>Thermal Shock</b>	MIL-STD-202F, Method 107G, Test Condition B (5 cycles -65°C to 125°C)
<b>Vibration</b>	MIL-STD-202F, Method 201A (10-55 Hz)
<b>Moisture Sensitivity Level</b>	Level 1 J-STD-020C
<b>Moisture Resistance</b>	MIL-STD-202F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

456 Series

### Dimensions



### Part Numbering System



### Packaging

Rating	Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code
20A, 30A	24 mm Tape and Reel	EIA RS-481-2	2500	ER
40A	24 mm Tape and Reel	EIA RS-481-2 (IEC 286, part 3)	1500	DR



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