

448 Series Fuse



Agency Approvals

AGENCY	AGENCY FILE NUMBER	AMPERE RANGE
	E10480	0.062A - 15A
	29862	0.062A - 15A
	NBK030205-E10480A NBK030205-E10480B	1A - 1.6A 2A - 5A

Electrical Characteristics for Series

% of Ampere Rating	Ampere Rating	Opening Time
100%	1/16 – 15	4 hours, Minimum
200%	1/16 – 10	5 sec., Maximum
	12 – 15	20 sec., Maximum

Description

The lead-free Nano² SMF Fuse is a very small, square surface mount fuse that is RoHS compliant, Halogen Free and 100% lead-free. This product is fully compatible with lead-free solder alloys and higher temperature profiles associated with lead-free assembly.

Features

- RoHS compliant, Lead-free and Halogen Free
- Very fast-acting
- Small size
- Wide range of current rating available (0.062A to 15A)
- Wide operating temperature range
- Low temperature de-rating

Applications

- Notebook PC
- LCD/PDP TV
- LCD monitor
- LCD/PDP panel
- LCD backlight inverter
- Portable DVD player
- Power supply
- Networking
- PC server
- Cooling fan system
- Storage system
- Telecom system
- Wireless basestation
- White goods
- Game console
- Office Automation equipment
- Battery charging circuit protection
- Industrial equipment

Additional Information



Datasheet



Resources



Samples

Electrical Specifications by Item

Ampere Rating (A)	Amp Code	Max Voltage Rating (V)	Interrupting Rating	Nominal Cold Resistance (Ohms)	Nominal Melting I ² t (A ² sec)	Agency Approvals		
								
0.062	.062	125	50A @125VAC/VDC 300A @32 VDC PSE: 100A @100VAC	5.50	0.00023	x	x	
0.080	.080	125		4.42	0.00043	x	x	
0.100	.100	125		2.90	0.00082	x	x	
0.125	.125	125		2.58	0.00130	x	x	
0.160	.160	125		1.76	0.00280	x	x	
0.200	.200	125		1.65	0.00380	x	x	
0.250	.250	125		0.95	0.01520	x	x	
0.315	.315	125		0.7015	0.02650	x	x	
0.375	.375	125		0.6155	0.02400	x	x	
0.400	.400	125		0.4895	0.04160	x	x	
0.500	.500	125		0.3800	0.10000	x	x	
0.630	.630	125		0.3125	0.121	x	x	
0.750	.750	125		0.2290	0.206	x	x	
0.800	.800	125		0.1907	0.272	x	x	
1.00	001.	125		0.08630	0.441	x	x	x
1.25	1.25	125		0.06619	0.900	x	x	x
1.50	01.5	125		0.06514	0.900	x	x	x
1.60	01.6	125		0.06261	1.122	x	x	x
2.00	002.	125		0.03529	0.812	x	x	x
2.50	02.5	125		0.02934	1.156	x	x	x
3.00	003.	125		0.02445	1.720	x	x	x
3.15	3.15	125		0.02300	1.810	x	x	x
3.50	03.5	125		0.02100	2.300	x	x	x
4.00	004.	125		0.01577	3.970	x	x	x
5.00	005.	125		0.01531	4.490	x	x	x
6.30	06.3	125		0.01044	12.10	x	x	x
7.00	007.	125		0.00900	13.92	x	x	x
8.00	008.	125		0.00780	18.33	x	x	x
10.00	010.	125	35A @125 VAC 50A @125 VDC 300A @32 VDC PSE: 100A @100VAC	0.00700	28.00	x	x	x
12.00	012.	85	50A @65 VAC/VDC 300A @24 VDC 200A @85 VDC	0.00533	47.59	x	x	
15.00	015.	85		0.00394	78.4	x	x	

Notes:
 - I²t calculated at 8ms.
 - Resistance is measured at 10% of rated current, 25°C

Expertise Applied | Answers Delivered

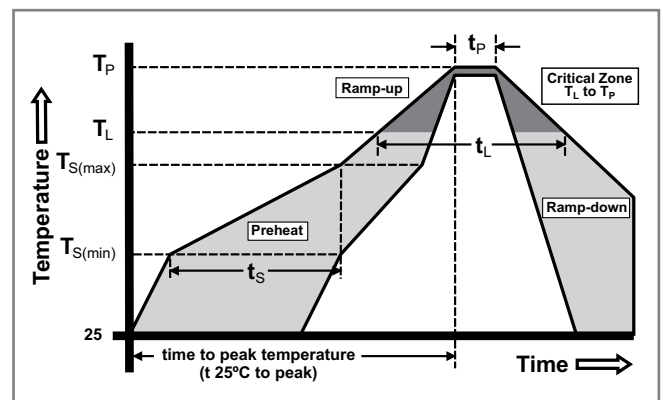
A line graph showing the relationship between Ambient Temperature and Percent of Rating. The Y-axis is labeled 'PERCENT OF RATING' and ranges from 20 to 140 in increments of 20. The X-axis is labeled 'AMBIENT TEMPERATURE' and has two scales: Celsius (from -60°C to 120°C) and Fahrenheit (from -76°F to 248°F). A solid green line represents the performance curve, which starts at approximately 108% rating at -60°C and decreases to approximately 92% rating at 120°C. A horizontal dashed line is drawn at 100% rating. A vertical dashed line is drawn at 25°C (77°F), with the label '25°C' placed near the bottom of this line.

Ambient Temperature (°C)	Ambient Temperature (°F)	Percent of Rating
-60	-76	108
-40	-40	105
-20	-4	103
0	32	101
20	68	100
40	104	99
60	140	97
80	176	95
100	212	93
120	248	92

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

A log-log graph showing the relationship between Time in Seconds (Y-axis) and Current in Amps (X-axis) for various current ratings. The Y-axis ranges from 0.001 to 100 seconds, and the X-axis ranges from 0.1 to 1000 amps. The graph displays multiple curves, each representing a specific current rating. The curves generally show that the time to reach a certain current rating decreases as the current rating increases. The curves are labeled with their respective current ratings: 0.062 A, 0.080 A, 100 A, 125 A, 150 A, 200 A, 250 A, 315 A, 375 A, 40 A, 50 A, 63 A, 80 A, 100 A, 125 A, 150 A, 160 A, 200 A, 250 A, 300 A, 315 A, 350 A, 400 A, 500 A, 630 A, 7 A, 8 A, 10 A, 12 A, and 15 A.

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 – 120 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 – 90 seconds
Peak Temperature (T_p)		260 $\pm$ 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
Wave Soldering Parameters		260°C Peak Temperature, 10 seconds max.

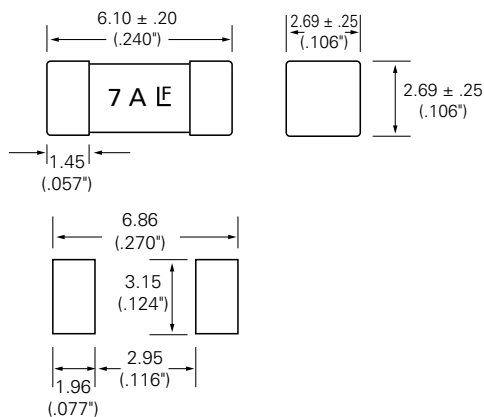


Product Characteristics

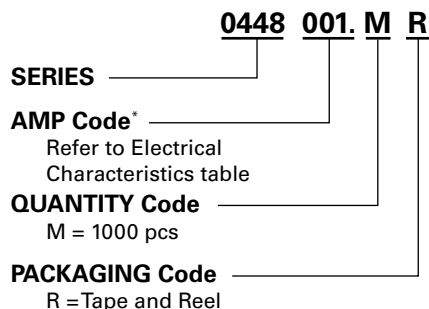
Materials	Body: Ceramic Terminations: Gold-plated Caps
Product Marking	Brand, Amperage Rating
Operating Temperature	-55°C to 125°C
Moisture Sensitivity Level	Level 1, J-STD-020
Solderability	MIL-STD-202, Method 208
Insulation Resistance (after Opening)	MIL-STD-202, Method 302, Test Condition A (10,000 ohms minimum)

Thermal Shock	MIL-STD-202, Method 107, Test Condition B, 5 cycles, -65°C to 125°C, 15 minutes @ each extreme
Mechanical Shock	MIL-STD-202, Method 213, Test I: Deenergized. 100G's pk amplitude, sawtooth wave 6ms duration, 3 cycles XYZ+xyz = 18 shocks
Vibration	MIL-STD-202, Method 201: 0.03" amplitude, 10-55 Hz in 1 min. 2hrs each XYZ=6hrs
Moisture Resistance	MIL-STD-202, Method 106, 10 cycles
Salt Spray	MIL-STD-202, Method 101, Test Condition B (48hrs)
Resistance to Soldering Heat	MIL-STD-202, Method 210, Test condition B (10 sec at 260°C)

Dimensions



Part Numbering System



***Example:**
1.5 amp product is 044801.5MR
(1 amp product shown above).

Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code
12mm Tape and Reel	EIA RS-481-1 (IEC 286, part 3)	1000	MR

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