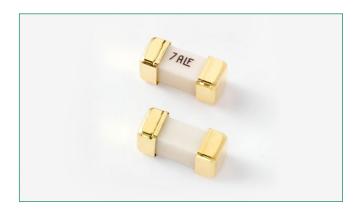


## 448 Series Fuse





## **Agency Approvals**

Agency	Agency File Number	Ampere Range
<i>71</i>	E10480	0.062A - 15A
<b>(</b>	29862	0.062A - 15A
PS	NBK030205-E10480A NBK030205-E10480B	1A - 1.6A 2A - 5A
E	NBK101105-E184655	6.3A - 10A

### **Electrical Characteristics for Series**

% of Ampere Rating	Ampere Rating	Opening Time
100%	0.062A -15	4 hours, Minimum
200%	0.062A -10	5 sec., Maximum
	12 –15	20 sec., Maximum

## **Description**

The lead-free Nano<sup>2®</sup> 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, Leadfree and Halogen Free
- Very fast-acting
- Small size
- Wide range of current rating available (0.062A to 15A)
- Wide operating temperature range
- UL Recognized to UL/ CSA/NMX UL 248-1 and UL/CSA/NMX UL 248-14
- Conforms to DENAN's Appendix 3

## **Applications**

- Notebook PC
- LCD/PDPTV
- 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



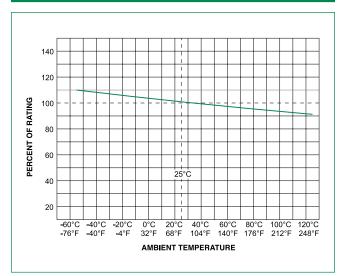
## **Electrical Specifications by Item**

		Max		Nominal Cold	Nominal Melting l²t (A²sec)	Agency Approvals		
Ampere Rating (A)	Amp Code	Voltage Rating (V)	Interrupting Rating	Resistance (Ohms)		<b>7</b> 12	<b>(3)</b>	PS E
0.062	.062	125		5.50	0.00023	х	Х	
0.080	.080	125		4.42	0.00043	Х	X	
0.100	.100	125		2.90	0.00082	Х	X	
0.125	.125	125		2.58	0.00130	Х	X	
0.160	.160	125		1.76	0.00280	Х	x	
0.200	.200	125		1.65	0.00380	Х	x	
0.250	.250	125		0.95	0.01520	Х	X	
0.315	.315	125		0.7015	0.02650	Х	×	
0.375	.375	125		0.6155	0.02400	Х	X	
0.400	.400	125		0.4895	0.04160	Х	x	
0.500	.500	125		0.3800	0.10000	Х	X	
0.630	.630	125		0.3125	0.121	Х	X	
0.750	.750	125	50A @125VAC/	0.2290	0.206	Х	X	
0.800	.800	125	VDC	0.1907	0.272	Х	X	
1.00	001.	125	300A @32 VDC PSE: 100A	0.08630	0.441	Х	Х	×
1.25	1.25	125	@100VAC	0.06619	0.900	Х	Х	×
1.50	01.5	125		0.06514	0.900	Х	Х	X
1.60	01.6	125		0.06261	1.122	Х	Х	×
2.00	002.	125		0.03529	0.812	Х	Х	X
2.50	02.5	125		0.02934	1.156	Х	Х	×
3.00	003.	125	-	0.02445	1.720	Х	Х	X
3.15	3.15	125		0.02300	1.810	X	×	×
3.50	03.5	125		0.02100	2.300	Х	Х	×
4.00	004.	125		0.01577	3.970	X	X	×
5.00	005.	125		0.01531	4.490	X	X	х
6.30	06.3	125		0.01044	12.10	X	X	×
7.00	007.	125		0.00900	13.92	X	X	x
8.00	008.	125		0.00780	18.33	Х	Х	×
10.00	010.	125	35A @125 VAC 50A @125 VDC 300A @32 VDC PSE: 100A @100VAC	0.00700	28.00	×	х	×
12.00	012.	85	50A @65 VAC/	0.00533	47.59	X	X	
15.00	015.	85	VDC 300A @24 VDC 200A @85 VDC	0.00394	78.4	х	х	

## Notes:

<sup>-</sup> I<sup>2</sup>t calculated at 8ms. - Resistance is measured at 10% of rated current, 25°C

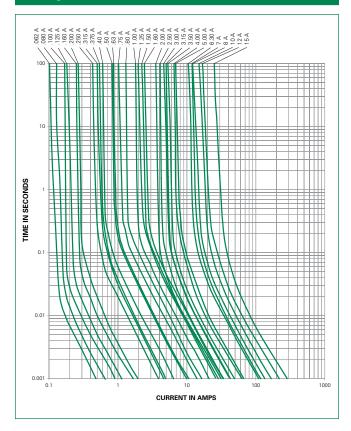
## **Temperature Re-rating Curve**



#### Note:

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

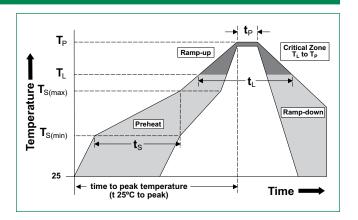
## **Average Time Current Curves**



## **Soldering Parameters**

Reflow Cond	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 ram	5°C/second max.	
T <sub>S(max)</sub> to T <sub>L</sub> -	5°C/second max.	
Reflow	-Temperature (T <sub>L</sub> ) (Liquidus)	217°C
nellow	- Temperature (t <sub>L</sub> )	60 – 150 seconds
Peak Temper	260 <sup>+0/–5</sup> °C	
Time within	20 - 40 seconds	
Ramp-down	5°C/second max.	
Time 25°C to	8 minutes max.	
Do not exce	260°C	

Wave Soldering Parameters 260°C Peak Temperature, 10 seconds max.

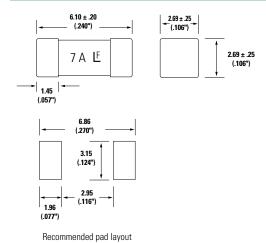


### **Product Characteristics**

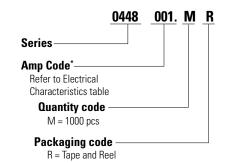
Materials	Body: Ceramic	
iviateriais	Terminations: Gold-plated Caps	
Product Marking	Brand, Amperage Rating	
Operating Temperature	-55°C to 125°C	
Moisture Sensitivity Level	Level 1, J-STD-020	
Solderability	MIL-STD-202, Method 208	
Insulation Resistance (after	MIL-STD-202, Method 302, Test Condition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



## $\pmb{^*Example:}$

1.5 amp product is 0448<u>01.5</u>MR (1 amp product shown above).

## **Packaging**

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code
12mm Tape and Reel	EIA RS-481-1 (IEC 600286-3)	1000	MR

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