# Rohs 🔞 HF 🔊 🏵 🐑 (EĽK



# **Additional Information**





Resources

Accessories

Samples

#### **Agency Approvals**

Agency	Agency File Number	Ampere Range		
<b>91</b>	E10480	0.062A - 15A		
(F)	29862	0.062A - 15A		
PS E	NBK030205-E10480A NBK030205-E10480B NBK101105-E184655	1A - 1.6A 2A - 5A 6.3A - 10A		
UK CA	N/A	0.062A - 15A		
(€	N/A	0.062A - 15A		

#### **Electrical Characteristics for Series**

% of Ampere Rating	Ampere Rating	<b>Opening Time</b>		
100%	0.062A -15	4 hours, Minimum		
200%	0.062A -10	5 sec., Maximum		
200 %	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% leadfree. This product is fully compatible with lead-free solder alloys and higher temperature profiles associated with lead-free assembly.

### **Features & Benefits**

- 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

# **Applications**

- Notebook PC
- LCD/PDPTV
- LCD monitor
- LCD/PDP panel
- LCD backlight inverter
- Portable DVD player
- Power supply
- Networking
- PC server
- Cooling fan system

- UL Recognized to UL/CSA/ NMX UL 248-1 and UL/CSA/ NMX UL 248-14
- Conforms to DENAN's Appendix 3
- Storage system
- Telecom system
- Wireless basestation
- White goods
- Game console
- Office Automation equipment
- Battery charging circuit protection
- Industrial equipment

# **448 Series** NANO<sup>2®</sup> Fuse > Very Fast-Acting

Ampere	•		Max Interrupting	Nominal Cold Nominal Melting		Agency Approvals				
Rating (A)	Amp Code	Voltage Rating (V)	Rating	Resistance (Ohms)	I <sup>2</sup> t (A <sup>2</sup> sec)	UK CA	Œ	<b>91</b>	() ()	PS
0.062	.062	125		5.50	0.00023	х	х	х	х	-
0.080	.080	125		4.42	0.00043	х	х	х	х	-
0.100	.100	125		2.90	0.00082	х	х	х	х	-
0.125	.125	125		2.58	0.00130	х	х	х	х	-
0.160	.160	125		1.76	0.00280	х	х	х	х	-
0.200	.200	125		1.65	0.00380	х	х	х	х	-
0.250	.250	125		0.95	0.01520	х	х	х	х	-
0.315	.315	125		0.7015	0.02650	х	х	х	х	-
0.375	.375	125		0.6155	0.02400	х	х	х	х	-
0.400	.400	125		0.4895	0.04160	х	х	х	х	-
0.500	.500	125		0.3800	0.10000	х	х	х	х	-
0.630	.630	125		0.3125	0.121	х	х	х	х	-
0.750	.750	125		0.2290	0.206	х	х	х	х	-
0.800	.800	125	50A @125VAC/VDC 300A @32 VDC	0.1907	0.272	х	х	х	х	-
1.00	001.	125	PSE: 100A @100VAC	0.08630	0.441	х	х	х	х	х
1.25	1.25	125		0.06619	0.900	х	х	х	х	х
1.50	01.5	125		0.06514	0.900	х	х	х	х	х
1.60	01.6	125		0.06261	1.122	х	х	х	х	х
2.00	002.	125		0.03529	0.812	х	х	х	х	х
2.50	02.5	125		0.02934	1.156	х	х	х	х	х
3.00	003.	125		0.02445	1.720	х	х	х	х	х
3.15	3.15	125		0.02300	1.810	х	х	х	х	х
3.50	03.5	125		0.02100	2.300	х	х	х	х	х
4.00	004.	125		0.01577	3.970	х	х	х	х	х
5.00	005.	125		0.01531	4.490	х	х	х	х	х
6.30	06.3	125		0.01044	12.10	х	х	х	х	х
7.00	007.	125		0.00900	13.92	х	х	х	х	х
8.00	008.	125		0.00780	18.33	х	х	х	х	х
10.00	010.	125	35A @125 VAC 50A @125 VDC 300A @32 VDC PSE: 100A @100VAC	0.00700	28.00	х	х	х	х	x
12.00	012.	85	50A @65 VAC/VDC	0.00533	47.59	х	х	х	х	-
15.00	015.	85	300A @24 VDC 200A @85 VDC	0.00394	78.4	х	х	x	х	-
Nataa			200,1000,000							

#### **Electrical Specifications by Item**

Notes:

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





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





Reflow Condition			Pb – Free assembly		
Pre Heat	- Temperature Min (T <sub>s(min)</sub> )		150°C		
	- Temperature M	200°C			
	-Time (Min to N	60 - 180 secs			
Average ramp up rate (Liquidus Temp (T_L) 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	217°C			
	- Temperature (t	60 – 150 seconds			
Peak Temperature (T <sub>P</sub> )			260 <sup>+0/-5</sup> °C		
Time within 5°C of actual peak Temperature ( $t_{\rm p}$ )			20 – 40 seconds		
Ramp-down Rate			5°C/second max.		
Time 25°C to peak Temperature (T <sub>p</sub> )			8 minutes max.		
Do not exceed			260°C		
Wave Soldering Parameters260°C Peak Temperature, 10 seconds max.			erature,		

#### **Soldering Parameters**



#### Surface Mount Fuses Datasheet

#### **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** mm(inches)



#### Part Numbering System



\*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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