

# 476 Series

## NANO2® Fuse > 250V > Fast Acting



### Description

The 476 Series is a family of 250V rated fuses with a very small 2410 footprint. It is the smallest SMD fuse with this high voltage rating and is designed to mainly serve as primary side circuit protection for compact devices with high voltage requirements.

### Features & Benefits

- Small 2410 Footprint
- 250V Voltage Rating (1A to 5A)
- High Interrupting Ratings
- Fast-Acting
- RoHS Compliant and Halogen-Free
- Wide Operating temperature range of -55°C to 125°C
- Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14
- IEC 61547 Surge Compliant (tested per IEC 61000-4-5 with a combination wave of 500V, 1.2/50us and 250A, 8/20us for ≤25W Luminaires) – only for 3A and above
- Conforms to DENAN's Appendix 3
- Conforms to EN 60127-1 and EN 60127-7 (3.5A only)

### Additional Information



Resources



Accessories



Samples

### Applications

- LED Lighting
- LCD/LED TVs
- Power Supply Units
- White Goods

### Electrical Characteristics for Series

% of Ampere Rating	Ampere Rating	Opening Time
100%	1A - 15A	4 Hour, Minimum
125%	1A - 5A	1 Hour, Minimum
200%	1A - 15A	120 Sec., Maximum
1000%	1A - 5A	0.001 Sec., Min; 0.01 Sec., Max

### Agency Approvals

Agency	Agency File Number	Ampere Range
UL US	E10480	1A - 15A
PS E	NBK240818-JP1021A NBK240818-JP1021B	1A - 1.6A 2A - 5A
UK CA	N/A	1A - 15A
CE	N/A	1A - 15A

### Electrical Characteristic

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.)	Agency Approvals			
						UK CA	CE	UL US	PS E
1.00	001	250V	100A @ 250VAC 300A @ 125VDC 10kA @ 86VDC	0.1575	0.193	x	x	x	x
1.25	1.25	250V		0.122	0.276	x	x	x	x
1.60	01.6	250V		0.0825	0.620	x	x	x	x
2.00	002	250V		0.0448	0.530	x	x	x	x
2.50	02.5	250V		0.0363	0.910	x	x	x	x
3.00	003	250V		0.0277	1.660	x	x	x	x
3.50	03.5	250V		0.0234	2.356	x	x	x	x
4.00	004	250V		0.01839	2.820	x	x	x	x
5.00	005	250V		0.0157	4.000	x	x	x	x
6.30	06.3	125V		0.0126	7.500	x	x	x	-
7.00	007	125V	0.0116	7.800	x	x	x	-	
8.00	008	125V	0.0112	9.757	x	x	x	-	
10.0	010	125V	0.0096	14.879	x	x	x	-	
12.0	012	125V	0.006	20.635	x	x	x	-	
15.0	015	125V	300A @ 125Vdc 100A @ 125Vac	0.0045	61.286	x	x	x	-

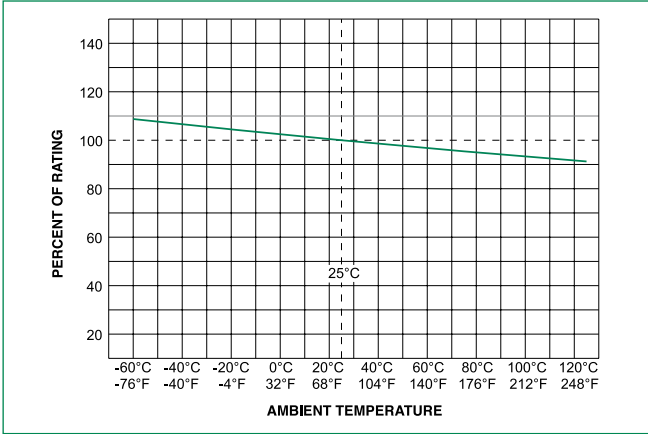
**Notes:**  
 1. Cold resistance measured at less than 10% of rated current at 25°C  
 2. Agency Approval Table Key: X = Approved or Certified, P=Pending and Blank=Not Approved.  
 3. I<sup>2</sup>t values stated for 8msec opening time.

4. For 15A rating with 10kA@86VDC IR, please use suffix "S" for ordering. Refer to Part Numbering System for reference.  
 5. 15A rating with suffix "MRS" is UL certified with 10kA at 86VDC. This is also reflected on page 3.

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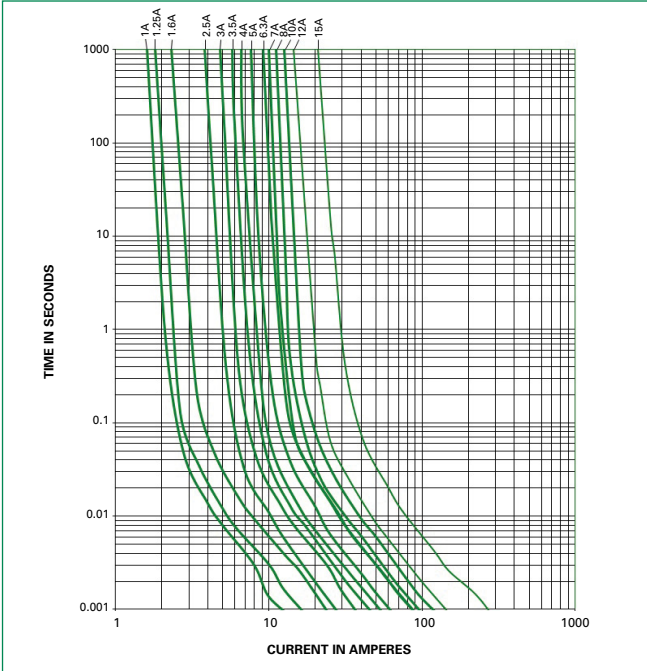
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Temperature Derating Curve



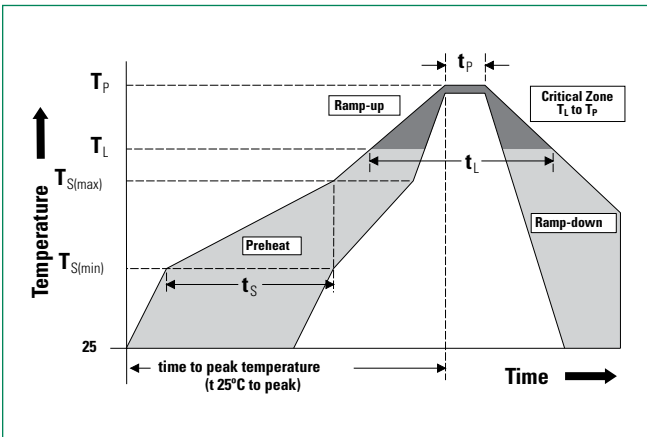
Note: Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Average Time Current Curves



Soldering Parameters

<b>Reflow Condition</b>		Pb – free assembly
<b>Pre Heat</b>	- Temperature Min ( $T_{s(min)}$ )	150°C
	- Temperature Max ( $T_{s(max)}$ )	200°C
	- Time (Min to Max) ( $t_s$ )	60 – 180 seconds
<b>Average Ramp-up Rate (Liquidus Temp (<math>T_L</math>) to peak)</b>		5°C/second max.
<b><math>T_{s(max)}</math> to <math>T_L</math> - Ramp-up Rate</b>		5°C/second max.
<b>Reflow</b>	- Temperature ( $T_L$ ) (Liquidus)	217°C
	- Temperature ( $t_L$ )	60 – 150 seconds
<b>Peak Temperature (<math>T_p</math>)</b>		260 <sup>+0/-5</sup> °C
<b>Time within 5°C of actual peak Temperature (<math>t_p</math>)</b>		20 – 40 seconds
<b>Ramp-down Rate</b>		5°C/second max.
<b>Time 25°C to peak Temperature (<math>T_p</math>)</b>		8 minutes max.
<b>Do not exceed</b>		260°C



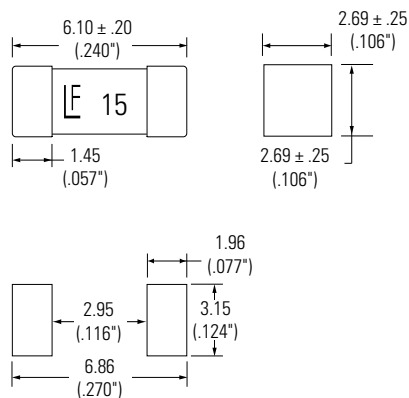
**476 Series**

NANO2® Fuse &gt; 250V &gt; Fast Acting

**Product Characteristics**

<b>Materials</b>	Body: Ceramic Cap: Silver Plated Brass/Sn Dipped Silver Plated Brass/Gold Plated Brass
<b>Product Marking</b>	Body: Brand Logo, Current Rating
<b>Operating Temperature</b>	-55°C to +125°C
<b>Moisture Sensitivity Level</b>	Level 1
<b>Solderability</b>	MIL-STD-202, Method 208
<b>Insulation Resistance (after opening)</b>	IEC 60127-4 (0.1Mohm Min)

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

**Dimensions**  
mm(inches)**Recommended Pad Layout****Part Numbering System****0476 015. M R SN**

<b>Series</b>	0476
<b>Amp Code*</b>	015
Refer to Amp Code column of Electrical Characteristics Table	
<b>Quantity Code</b>	M
M = 1000 pieces	
<b>Packaging Code</b>	R
R = Tape and Reel	
<b>SN — Sn-dipped Caps</b>	SN
<b>S — For 15A only - Gold Plated Caps with 10kA@86VDC IR</b>	

**Packaging**

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code	Reel Size
12mm Tape and Reel	EIA-RS-481-2 IEC 60286-3	1000	MR	N/A

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