

# Surface Mount Fuses

NANO<sup>2</sup>® Fuse > 250V > Fast Acting > 476 Series

## 476 Series Fuse



### Agency Approvals

Agency	Agency File Number	Ampere Range
	E10480	1A - 15A
	Pending	1A - 5A
	Pending	1A - 5A

### Applications

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

### 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

- Small 2410 Footprint
- 250V Voltage Rating (1A to 5A)
- High Interrupting Ratings
- Fast-Acting
- RoHS Compliant and Halogen-Free
- Designed in accordance with IEC 60127-4 Universal Modular Fuse requirement
- Wide Operating temperature range of -55°C to 125°C
- IEC 61000-4-5 2 ed. Surge Immunity Test Compliant (1.2 x 50us/8x20us combination wave 500V/250A for <25W Lamp Category) – 3A and above ampere rating only

### 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

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

**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**

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 seconds
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 ( $T_p$ )		260 <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>	<b>Body:</b> Ceramic <b>Cap:</b> Silver Plated Brass/Sn Dipped Silver Plated Brass/Gold Plated Brass
<b>Product Marking</b>	<b>Body:</b> 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



Recommended Pad Layout

### Part Numbering System



### Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code	Reel Size
12mm Tape and Reel	EIA-RS-481-2 (IEC 286 part 3)	1000	MR	N/A

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