

476 Series

NANO2® Fuse > 250V > Fast Acting



Additional Information



Resources



Accessories



Samples

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 |

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)

Applications

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

Agency Approvals

| Agency | Agency File Number | Ampere Range |
|--------|--|----------------------|
| cULus | 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 ² t (A ² sec.) | Agency Approvals | | | |
|-------------------|----------|------------------------|--|--------------------------------|--|------------------|----|-------|------|
| | | | | | | UK CA | CE | cULus | 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 | 100A @ 125VAC 300A @ 125VDC 10kA @ 86VDC | 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 | | 0.0045 | 61.286 | x | x | x | - |

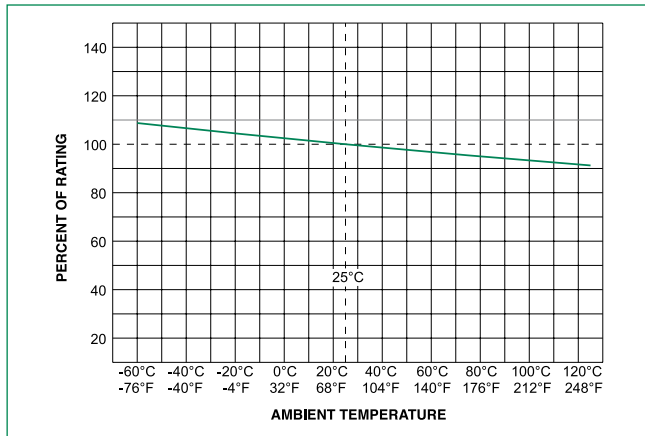
Notes:

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. I²t values stated for 8msec opening time.

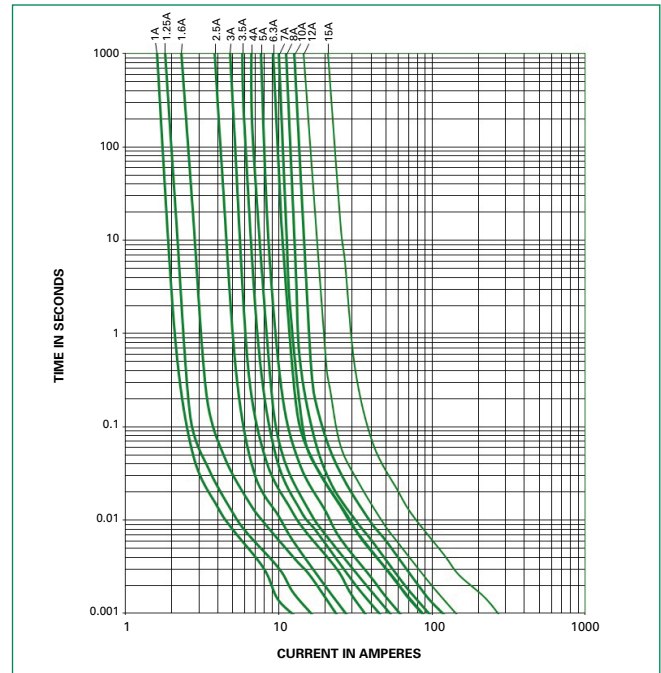
4. For 15A rating with 10kA@86VDC IR, please use suffix "S" for ordering. Refer to Part Numbering System for reference.
5. 15A rating with suffix "MRS" is UL certified with 10kA at 86VDC. This is also reflected on page 3.

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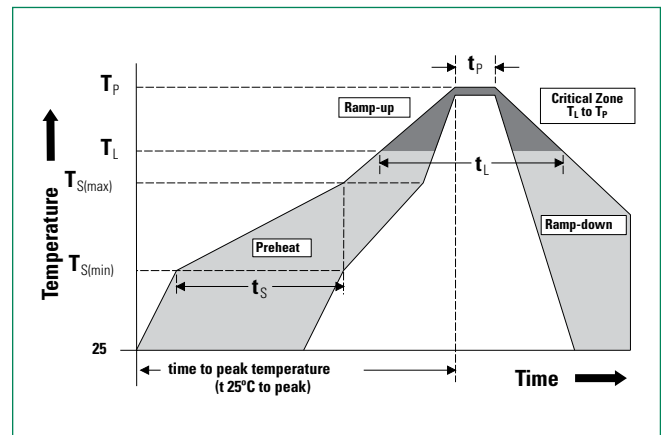
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Temperature Derating Curve

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

Average Time Current Curves**Soldering Parameters**

| | | |
|--|------------------------------------|-------------------------|
| 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 ^{+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 |



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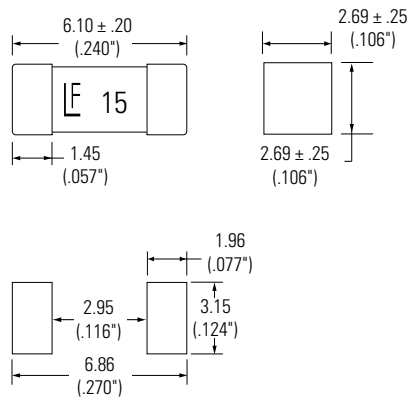
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Product Characteristics

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

| | |
|-------------------------------------|---|
| 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 Condition I: De-energized. 100G's peak 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. 2 hrs. each XYZ = 6hrs (10- 55 Hz) |
| Moisture Resistance | MIL-STD-202, Method 106 10 cycles |
| Salt Spray | MIL-STD-202, Method 101 Test Condition B (48 hrs) |
| Resistance to Soldering Heat | 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

Series

Amp Code*

Refer to Amp Code column of
Electrical Characteristics Table

Quantity Code

M = 1000 pieces

Packaging Code

R = Tape and Reel

SN — Sn-dipped Caps

**S — For 15A only - Gold Plated
Caps with 10kA@86VDC IR**

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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