

449 Series

NANO2® > Slo-Blo®



Additional Information



Resources



Accessories



Samples

Agency Approvals

| Agency | Agency File Number | Ampere Range |
|--------|--------------------|--------------|
| | E10480 | 0.375A - 5A |
| | NBK030205-E10480B | 1A - 5A |
| | N/A | 0.375A - 5A |
| | N/A | 0.375A - 5A |

Electrical Characteristics for Series

| % of Ampere Rating | Opening Time |
|--------------------|----------------------------------|
| 100% | 4 hours, Minimum |
| 200% | 1 sec., Min.; 60 sec., Max. |
| 300% | 0.2 sec., Min.; 3 sec., Max |
| 800% | 0.002 sec., Min.; 0.1 sec., Max. |

Electrical Specifications by Item

| 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 | c UL US | PS E |
| 0.375 | .375 | 125 | 50A @125 VAC/VDC PSE: 100A @100 VAC | 1.5130 | 0.088 | x | x | x | - |
| 0.500 | .500 | 125 | | 0.7633 | 0.258 | x | x | x | - |
| 0.750 | .750 | 125 | | 0.4080 | 0.847 | x | x | x | - |
| 1.00 | 001. | 125 | | 0.2516 | 1.76 | x | x | x | x |
| 1.50 | 01.5 | 125 | | 0.1186 | 4.70 | x | x | x | x |
| 2.00 | 002. | 125 | | 0.0708 | 6.76 | x | x | x | x |
| 2.50 | 02.5 | 125 | | 0.0400 | 13.18 | x | x | x | x |
| 3.00 | 003. | 125 | | 0.0352 | 19.55 | x | x | x | x |
| 3.50 | 03.5 | 125 | | 0.0261 | 32.70 | x | x | x | x |
| 4.00 | 004. | 125 | | 0.0227 | 40.80 | x | x | x | x |
| 5.00 | 005. | 125 | 0.0171 | 59.59 | x | x | x | x | |

Notes - I²t calculated at 8ms. Resistance is measured at 10% of rated current, 25°C

Description

The lead free NANO2® Slo-Blo® fuse 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. The Slo-Blo® fuse design has enhanced inrush withstand characteristics over the NANO2® Fast-Acting Fuse. The unique time delay feature of this fuse design helps solve the problem of nuisance “opening” by accommodating inrush currents that normally cause a fast-acting fuse to open.

Features & Benefits

- Lead-free, Halogen free and RoHS compliant
- Small size
- Wide range of current ratings available
- 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

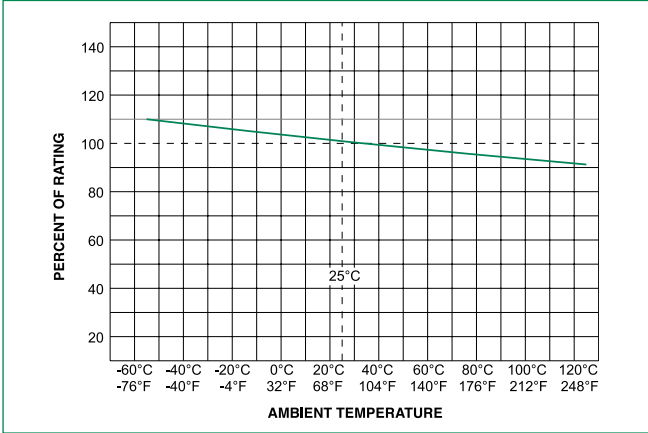
Secondary protection for space constrained applications:

- Notebook PC
- LCD/PDP TV
- 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

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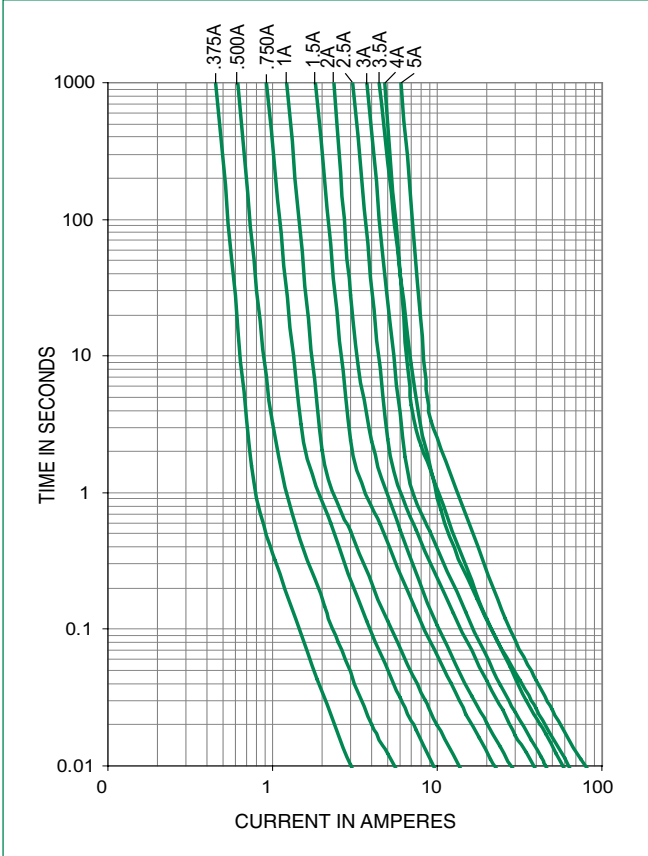
NANO2® > Slo-Blo®

Temperature Re-rating Curve



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

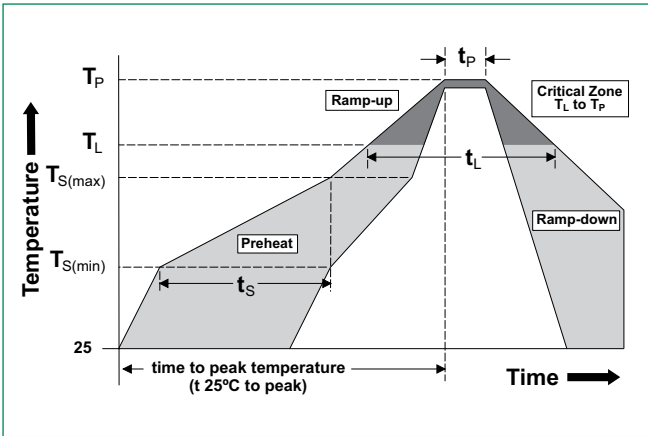
Average Time Current Curves



Soldering Parameters

| | | |
|--|------------------------------------|-------------------------|
| Reflow 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 secs |
| Average ramp up rate (Liquidus Temp (T_L) to peak) | | 3°C/second max. |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3°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 |

| | |
|----------------------------------|---|
| Wave Soldering Parameters | 260°C Peak Temperature, 3 seconds max. |
|----------------------------------|---|



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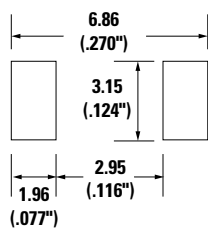
Product Characteristics

| | |
|--|---|
| 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) |

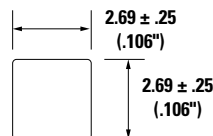
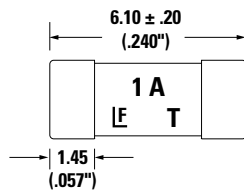
| | |
|-------------------------------------|---|
| Thermal Shock | MIL-STD-202, Method 107, Test Condition B, 5 cycles, -65°C to 125°C, 15 minutes @ each extreme |
| Mechanical Shock | MIL-STD-202, Method 213, Test I: Deenergized. 100G's pk amplitude, sawtooth wave 6ms duration, 3 cycles XYZ+xyz = 18 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

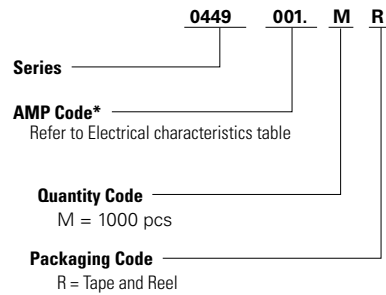
mm (inches)



Recommended pad layout



Part Numbering System



***Example:**
0.375 Amp product is 0449.375MR (1 amp product shown above).

Packaging

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

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