

456 Series Fuse

Very Fast Acting Fuse



Description

The High Current NANO²® Fuse is a small square surface mount fuse that is designed to support higher current requirements of various applications.

Features

- Surface mount high current fuse
- Fully compatible with lead-free solder alloys and higher temperature profiles associated with lead-free assembly
- RoHS compliant and Halogen Free
- Available in ratings of 20 to 40 Amperes
- UL Recognized UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14
- Conforms to IEC/EN 60127-1 and IEC/EN 60127-7
- Conforms to DENAN's Appendix 3

Additional Information



Resources



Accessories



Samples

Applications

- Voltage regulator module for PC server
- Cooling fan system for PC server
- Storage system power
- Basestation power supply

Electrical Characteristics

| % of Ampere Rating | Opening Time |
|--------------------|---------------------|
| 100% | 4 hours, Minimum |
| 200% | 60 seconds, Maximum |

Agency Approvals

| Agency | Agency File/Certificate Number | Ampere Rating |
|--------|--------------------------------|---------------|
| cULus | E10480 | 20A - 40A |
| △ | J50446929 | 20A - 40A |
| PS E | NBK030308-JP1021 | 20A - 30A |
| SP | 29862 | 20A - 40A |

Electrical Specifications

| Ampere Rating (A) | Amp Code | Max Voltage Rating (V) | Interrupting Rating ⁴ | Nominal Cold Resistance (Ohms) | Nominal Melting I ² t (A ² Sec.) | Nom Voltage Drop (mV) | Agency Approvals | | | |
|-------------------|----------|------------------------|--|--------------------------------|--|-----------------------|------------------|---|------|----|
| | | | | | | | cULus | △ | PS E | SP |
| 20 | 020. | 125 | 100A @125VAC 300A @ 65VAC 300A @ 100VDC 1000A @ 32VDC 500A @ 72VDC | 0.00230 | 18 | 64.7 | x | x | x | x |
| 25 | 025. | 125 | 100A @ 125VAC 300A @ 65VAC 500A @ 72VDC 1000A @ 32VDC | 0.00192 | 45 | 68.38 | x | x | x | x |
| 30 | 030. | 125 | 100A @ 125VAC 300A @ 65VAC 1000A @ 32VDC 500A @ 72VDC | 0.00132 | 81 | 69.9 | x | x | x | x |
| 40 | 040. | 72 | 180A @ 72VDC 600A @ 60VDC | 0.00105 | 191 | 55 | x | x | - | x |

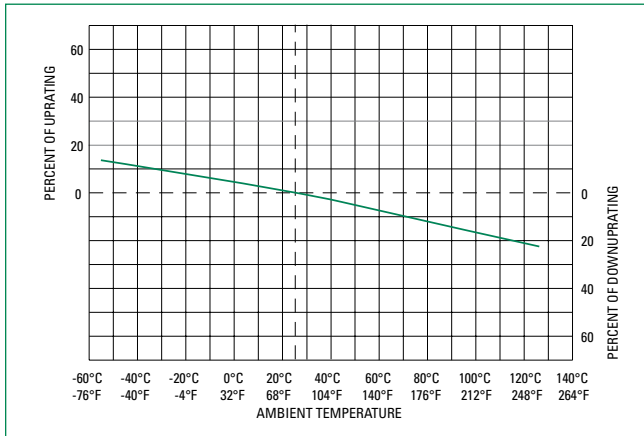
Notes:

1. Cold resistance measured at less than 10% of rated current at 23°C.
2. Agency Approval Table Key: X=Approved or Certified, P=Pending.
3. I²t values stated for 1 msec opening time.
4. Interrupting Rating may differ based on Agency Approval. See Agency Approval certificate for more details.

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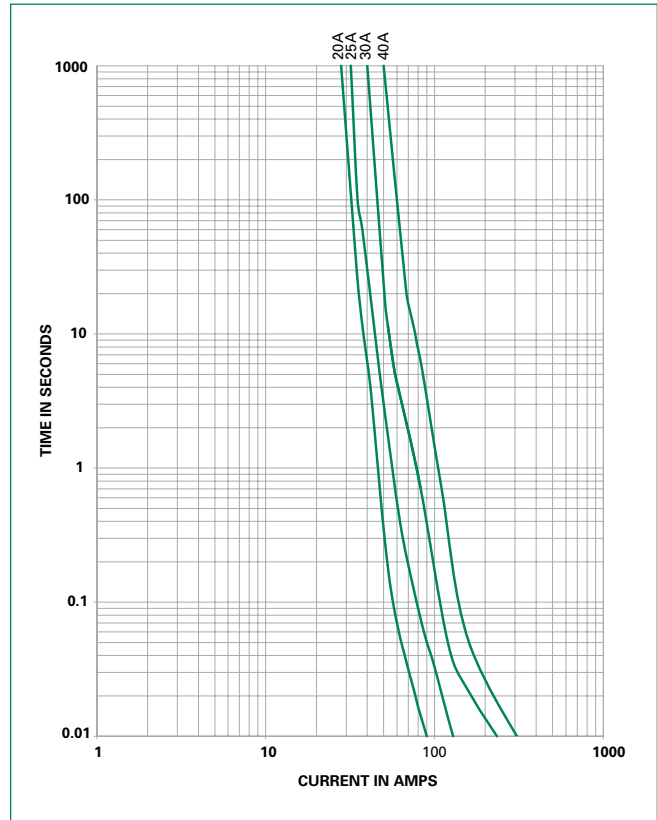
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Temperature Re-rating Curve



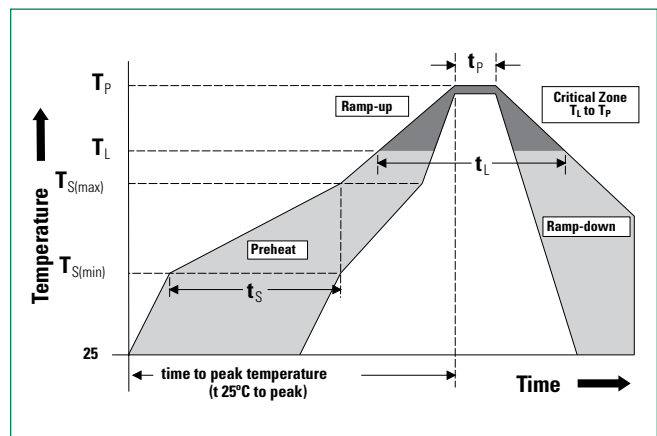
Note:
1. Rerating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

Average Time Current Curves



Soldering Parameters – Reflow Soldering

| | | |
|--|------------------------------------|-------------------------|
| 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) | | 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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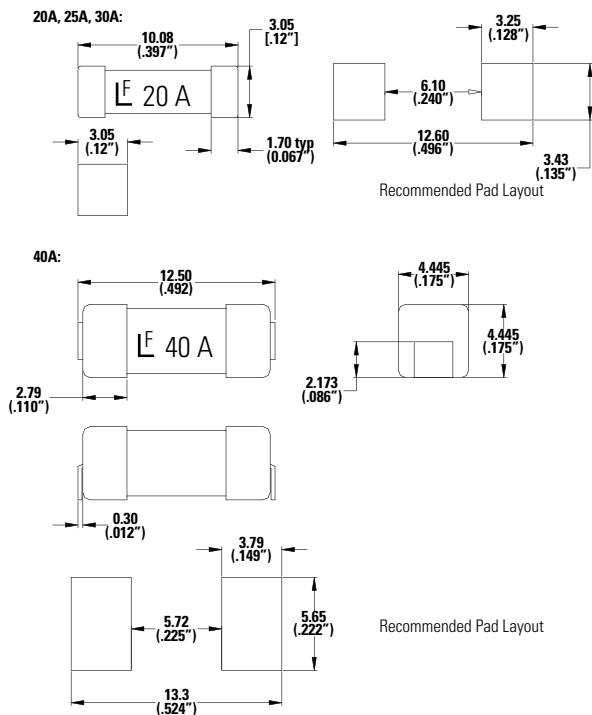
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Product Characteristics

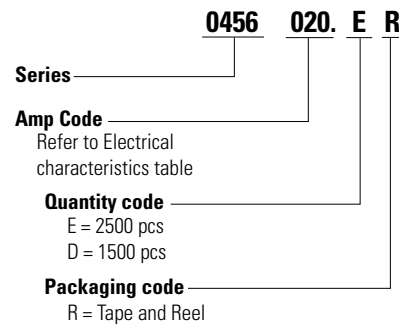
| | |
|--|---|
| Materials | Body: Ceramic Cap: Silver Plated Brass |
| Product Marking | Body: Brand Logo, Current Rating |
| Insulation Resistance | MIL-STD-202, method 302, Test Condition A (10,000 ohms, Minimum) |
| Solderability | MIL-STD-202, Method 208 |
| Resistance to Soldering Heat | MIL-STD-202, Method 210, Test Condition B (10 sec at 260°C) Min. copper layer thickness = 100µm Min. copper trace width = 20A, 30 10mm (20A, 30A) / 15mm (40A) |
| PCB Recommendation for Thermal Management | Alternate methods of thermal management may be used. In such cases, under normal operations, the maximum temperature of the fuse body should not exceed 90°C in a 25°C environment. |

| | |
|-----------------------------------|---|
| Operating Temperature | -55°C to 125°C with proper derating |
| Thermal Shock | MIL-STD-202, Method 107, Test Condition B (5 cycles -65°C to 125°C) |
| Vibration | MIL-STD-202, Method 201 (10-55 Hz) |
| Moisture Sensitivity Level | J-STD-020, Level 1 |
| Moisture Resistance | MIL-STD-202 Method 106, High Humidity (90-98%RH), Heat (65°C) |
| Salt Spray | MIL-STD-202, Method 101, Test Condition B |
| Mechanical Shock | MIL-STD-202, Method 213, Test Condition I (100 G's peak for 6 milliseconds) |

Dimensions



Part Numbering System



Packaging

| Rating | Packaging Option | Packaging Specification | Quantity | Quantity & Packaging Code |
|---------------|---------------------|--------------------------------|----------|---------------------------|
| 20A, 25A, 30A | 24 mm Tape and Reel | EIA RS-481-2 | 2500 | ER |
| 40A | 24 mm Tape and Reel | EIA RS-481-2 (IEC 286, part 3) | 1500 | DR |

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