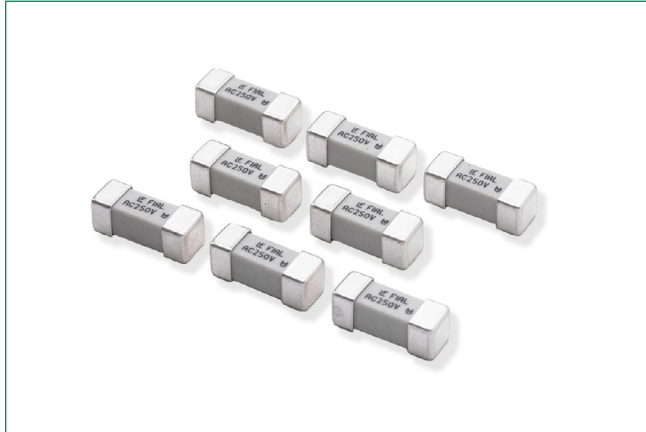


# 464 Series

## NANO<sup>2</sup>® > 250V UMF > Fast-Acting Fuse



### Description

The 464 Series fuse is a surface mount Nano<sup>2</sup> fuse that conforms to IEC 60127-4. This IEC standard addresses Universal Modular Fuse-links (UMF) which are accepted world-wide without any additional country-specific deviations.

### Features & Benefits

- Fast-Acting
- Listed to IEC 60127-4, Universal Modular Fuse-Links (UMF)
- 250VAC Voltage rating
- RoHS compliant and Halogen Free
- Conforms with Low Voltage Directive (LVD) and Electrical Equipment Safety Regulation
- Conforms to DENAN's Appendix 3

### Additional Information



Resources



Accessories



Samples

### Applications

- Power supply
- Lighting system
- White goods
- Industrial equipment

### Agency Approvals

| Agency | Agency File Number | Ampere Range |
|--------|--------------------|--------------|
|        | NBK030205-E10480B  | 1A - 5A      |
|        | NBK101105-E184655  | 6.3A         |
|        | E184655            | 0.25A - 6.3A |
|        | HU-003208          | 0.5A - 6.3A  |
|        | N/A                | 0.5A - 6.3A  |
|        | N/A                | 0.5A - 6.3A  |

### Electrical Characteristics for Series

| % of Ampere Rating | Opening Time                      |
|--------------------|-----------------------------------|
| 125%               | 1 hour, Minimum                   |
| 200%               | 2 minutes, Maximum                |
| 1000%              | 0.001 sec., Min.; 0.01 sec., Max. |

### Electrical Specifications by Item

| 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) | Nominal Voltage Drop (mV) | Agency Approvals |   |   |   |   |
|-------------------|----------|------------------------|---------------------|--------------------------------|-------------------------------------------------------|---------------------------|------------------|---|---|---|---|
|                   |          |                        |                     |                                |                                                       |                           |                  |   |   |   |   |
| 0.500             | .500     | 250                    | 100A@250VAC         | 0.2373                         | 0.22                                                  | 600                       | -                | x | x | x | x |
| 0.800             | .800     | 250                    |                     | 0.1159                         | 0.308                                                 | 400                       | -                | x | x | x | x |
| 1.00              | .001.    | 250                    |                     | 0.0762                         | 0.51                                                  | 300                       | x                | x | x | x | x |
| 1.25              | 1.25     | 250                    |                     | 0.0580                         | 0.98                                                  | 300                       | x                | x | x | x | x |
| 1.60              | 01.6     | 250                    |                     | 0.0448                         | 1.15                                                  | 300                       | x                | x | x | x | x |
| 2.00              | 002.     | 250                    |                     | 0.0354                         | 2.48                                                  | 300                       | x                | x | x | x | x |
| 2.50              | 02.5     | 250                    |                     | 0.0288                         | 3.99                                                  | 300                       | x                | x | x | x | x |
| 3.15              | 3.15     | 250                    |                     | 0.0206                         | 8.05                                                  | 300                       | x                | x | x | x | x |
| 4.00              | 004.     | 250                    |                     | 0.0156                         | 13.85                                                 | 300                       | x                | x | x | x | x |
| 5.00              | 005.     | 250                    |                     | 0.0119                         | 23.6                                                  | 300                       | x                | x | x | x | x |
| 6.30              | 06.3     | 250                    |                     | 0.0093                         | 35.912                                                | 300                       | x                | x | x | x | x |

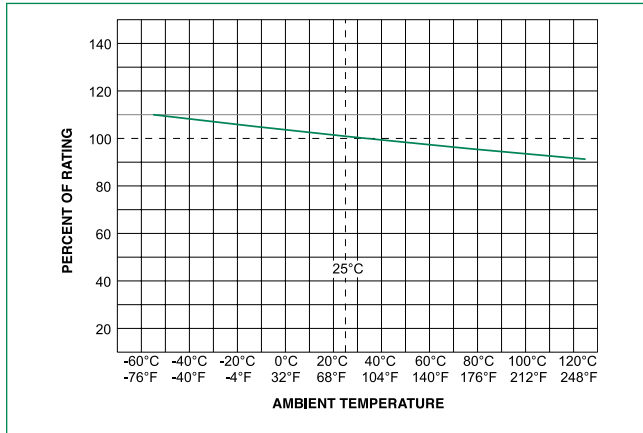
**Notes:**

- I<sup>2</sup>t calculated at 8ms.
- Resistance is measured at 10% of rated current, 25°C
- For information and availability of additional ratings please contact Littelfuse

# 464 Series

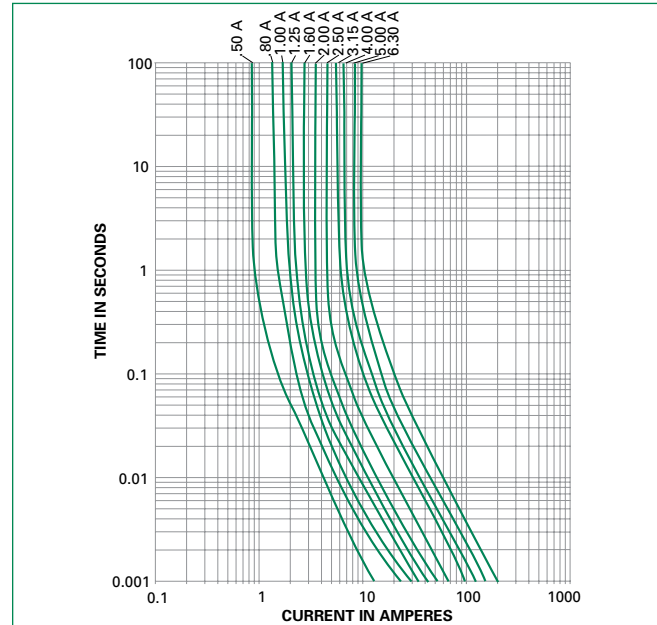
## NANO<sup>2</sup>® > 250V UMF > Fast-Acting Fuse

### Temperature Re-rating Curve

**Note:**

1. Rerating depicted in this curve is in addition to the standard derating of 15% for continuous operation.

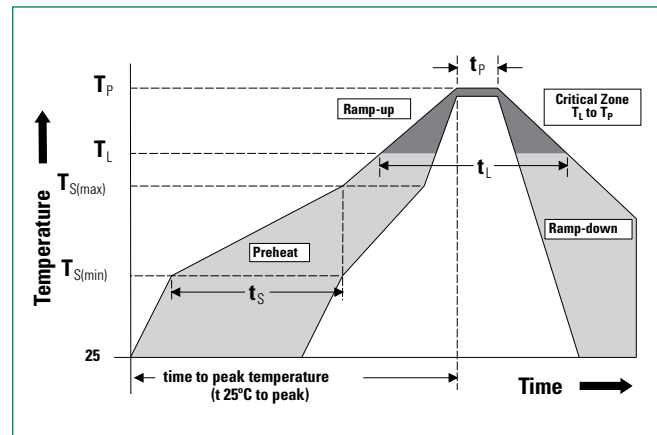
### Average Time Current Curves



### 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 secs           |
| <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                   |

**Wave Soldering Parameters** 260°C Peak Temperature,  
10 seconds max.



# 464 Series

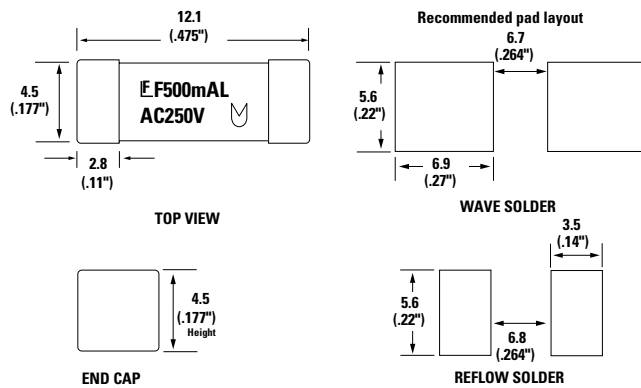
## NANO<sup>2</sup>® > 250V UMF > Fast-Acting Fuse

### Product Characteristics

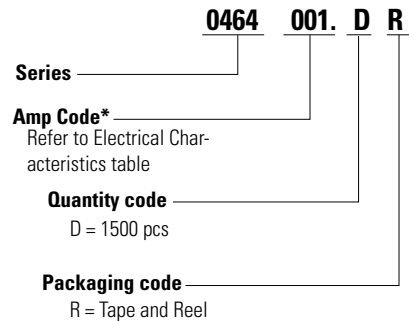
|                                              |                                                   |
|----------------------------------------------|---------------------------------------------------|
| <b>Materials</b>                             | Body: Ceramic<br>Terminations: Silver-plated Caps |
| <b>Product Marking</b>                       | Brand, Ampere Rating, Voltage Rating, UMF Logo    |
| <b>Operating Temperature</b>                 | -55°C to 125°C                                    |
| <b>Moisture Sensitivity Level</b>            | Level 1, J-STD-020                                |
| <b>Solderability</b>                         | IEC 60127-4                                       |
| <b>Insulation Resistance (after Opening)</b> | IEC 60127-4 (0.1Mohm min @ 500VDC)                |

|                                     |                                                                     |
|-------------------------------------|---------------------------------------------------------------------|
| <b>Thermal Shock</b>                | MIL-STD-202, Method 107, Test Condition B, 5 cycles, -65°C / +125°C |
| <b>Mechanical Shock</b>             | MIL-STD-202, Method 213, Test Condition A                           |
| <b>Vibration</b>                    | MIL-STD-202, Method 201 (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 (48hrs)                   |
| <b>Resistance to Soldering Heat</b> | IEC 60127-4                                                         |

### Dimensions mm(inches)



### Part Numbering System



**\*Example:**  
2.5 amp product is 046402.5 DR (1 amp product shown above).

### Packaging

| Packaging Option   | Packaging Specification        | Quantity | Quantity & Packaging Code |
|--------------------|--------------------------------|----------|---------------------------|
| 24mm Tape and Reel | EIA RS-481-1 (IEC 286, part 3) | 1500     | DR                        |

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