

### RoHS HF 157 Series – Standard Nano Fuse and Clip Assembly



#### Agency Approvals

| AGENCY                                                                            | AGENCY FILE NUMBER                                          | AMPERE RANGE                  |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------|
|  | E14721                                                      | 0.062A ~ 10A                  |
|  | NBK030205-E10480A<br>NBK030205-E10480B<br>NBK101105-E184655 | 1A<br>1.5A - 5A<br>6.3A - 10A |

#### Electrical Characteristics for Series

| % of Ampere Rating | Opening Time at 25°C |
|--------------------|----------------------|
| 100%               | 4 hours Minimum      |
| 200%               | 5 secs. Maximum      |

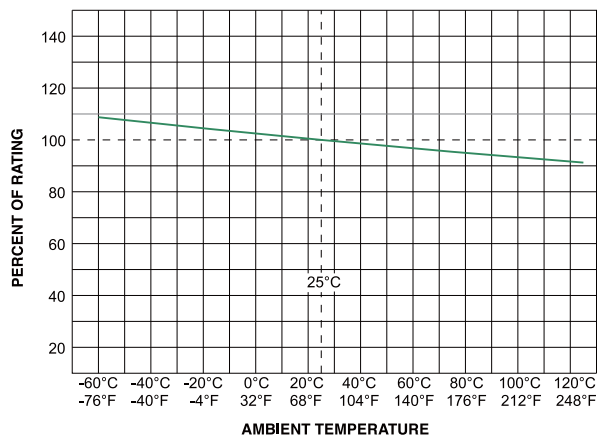
#### Electrical Specifications by Item

| Ampere Rating (A) | Amp Code | Max Voltage Rating (V) | Interrupting Rating (A)                       | Fuse Furnished | Nominal Cold Resistance (Ohms) | Nominal Melting I <sup>2</sup> t (A <sup>2</sup> sec) | Agency Approvals                                                                      |                                                                                       |
|-------------------|----------|------------------------|-----------------------------------------------|----------------|--------------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                   |          |                        |                                               |                |                                |                                                       |  |  |
| 0.062             | .062     | 125                    | 50A @ 125 VAC/VDC<br>300A @ 32 VDC            | 0451.062       | 5.5372                         | 0.00019                                               | X                                                                                     |                                                                                       |
| 0.080             | .080     | 125                    |                                               | 0451.080       | 4.0500                         | 0.00033                                               | X                                                                                     |                                                                                       |
| 0.100             | .100     | 125                    |                                               | 0451.100       | 3.1000                         | 0.00138                                               | X                                                                                     |                                                                                       |
| 0.125             | .125     | 125                    |                                               | 0451.125       | 1.7059                         | 0.00286                                               | X                                                                                     |                                                                                       |
| 0.160             | .160     | 125                    |                                               | 0453.160       | 1.2157                         | 0.0048                                                | X                                                                                     |                                                                                       |
| 0.200             | .200     | 125                    |                                               | 0453.200       | 1.3971                         | 0.00652                                               | X                                                                                     |                                                                                       |
| 0.250             | .250     | 125                    |                                               | 0453.250       | 1.0496                         | 0.01126                                               | X                                                                                     |                                                                                       |
| 0.315             | .315     | 125                    |                                               | 0453.315       | 0.3881                         | 0.0311                                                | X                                                                                     |                                                                                       |
| 0.375             | .375     | 125                    |                                               | 0453.375       | 0.6083                         | 0.0425                                                | X                                                                                     |                                                                                       |
| 0.400             | .400     | 125                    |                                               | 0453.400       | 0.5600                         | 0.0484                                                | X                                                                                     |                                                                                       |
| 0.500             | .500     | 125                    |                                               | 0453.500       | 0.4181                         | 0.0795                                                | X                                                                                     |                                                                                       |
| 0.630             | .630     | 125                    |                                               | 0453.630       | 0.3050                         | 0.143                                                 | X                                                                                     |                                                                                       |
| 0.750             | .750     | 125                    |                                               | 0453.750       | 0.2458                         | 0.185                                                 | X                                                                                     |                                                                                       |
| 0.800             | .800     | 125                    |                                               | 0453.800       | 0.2120                         | 0.271                                                 | X                                                                                     |                                                                                       |
| 1.0               | .001     | 125                    |                                               | 0453001.       | 0.1537                         | 0.459                                                 | X                                                                                     | X                                                                                     |
| 1.25              | 1.25     | 125                    |                                               | 04531.25       | 0.078                          | 0.664                                                 | X                                                                                     | X                                                                                     |
| 1.5               | 01.5     | 125                    |                                               | 045301.5       | 0.0634                         | 0.853                                                 | X                                                                                     | X                                                                                     |
| 1.6               | 01.6     | 125                    |                                               | 045301.6       | 0.0580                         | 1.060                                                 | X                                                                                     | X                                                                                     |
| 2.0               | 002.     | 125                    |                                               | 0453002.       | 0.0373                         | 0.530                                                 | X                                                                                     | X                                                                                     |
| 2.5               | 02.5     | 125                    |                                               | 045302.5       | 0.0288                         | 1.029                                                 | X                                                                                     | X                                                                                     |
| 3.0               | 003.     | 125                    |                                               | 0453003.       | 0.0229                         | 1.650                                                 | X                                                                                     | X                                                                                     |
| 3.15              | 3.15     | 125                    |                                               | 04533.15       | 0.0215                         | 1.920                                                 | X                                                                                     | X                                                                                     |
| 3.5               | 03.5     | 125                    |                                               | 045303.5       | 0.0203                         | 2.469                                                 | X                                                                                     | X                                                                                     |
| 4.0               | 004.     | 125                    |                                               | 0453004.       | 0.0163                         | 3.152                                                 | X                                                                                     | X                                                                                     |
| 5.0               | 005.     | 125                    |                                               | 0453005.       | 0.0127                         | 5.566                                                 | X                                                                                     | X                                                                                     |
| 6.3               | 06.3     | 125                    |                                               | 045306.3       | 0.0098                         | 9.17                                                  | X                                                                                     | X                                                                                     |
| 7.0               | 007.     | 125                    |                                               | 0453007.       | 0.0092                         | 10.32                                                 | X                                                                                     | X                                                                                     |
| 8.0               | 008.     | 125                    |                                               | 0453008.       | 0.0079                         | 20.23                                                 | X                                                                                     | X                                                                                     |
| 10.0              | 010.     | 125                    | 35A @ 125 VAC / 50A @ 125 VDC<br>300A @ 32VDC | 0453010.       | 0.0058                         | 26.46                                                 | X                                                                                     | X                                                                                     |

1. Cold resistance measured at less than 10% of rated current at 23°C.  
 2. I<sup>2</sup>t values stated for 8ms opening time.

3. Agency Approval Table Key: X=Approved or Certified, P=Pending and Blank=Not Approved  
 4. Have special electrical characteristic needs? Contact Littelfuse to learn more about application specific options.

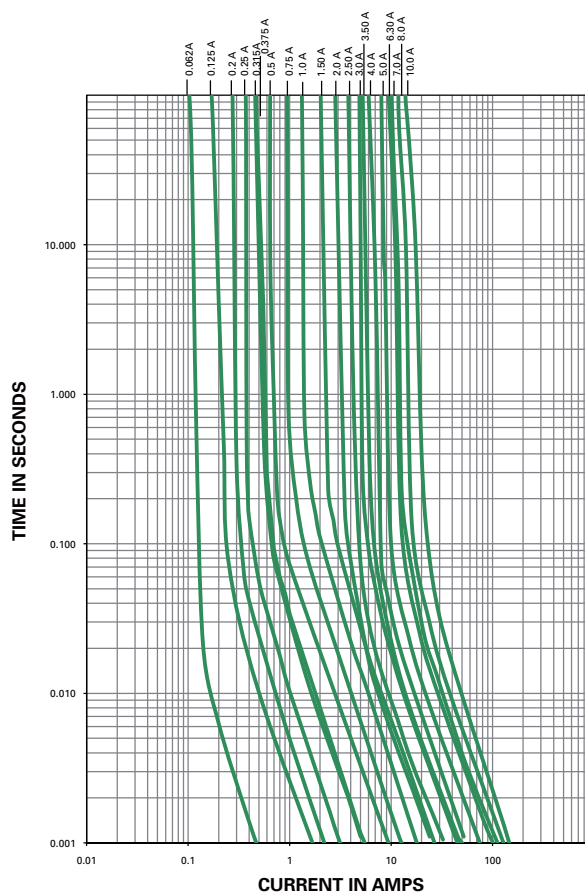
### Temperature Derating Curve



Note:

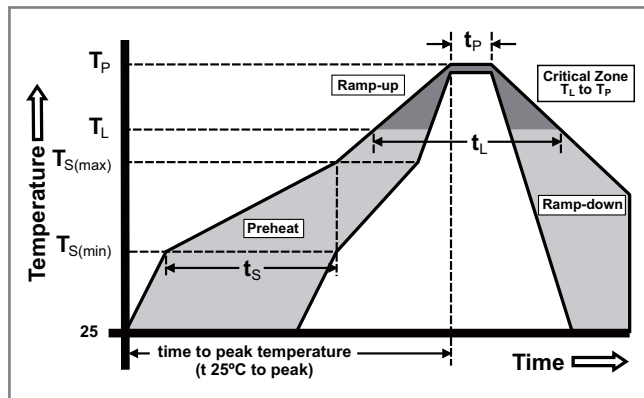
1. Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

### 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 – 120 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 – 90 seconds         |
| Peak Temperature ( $T_p$ )                             |                                    | 250 <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                   |

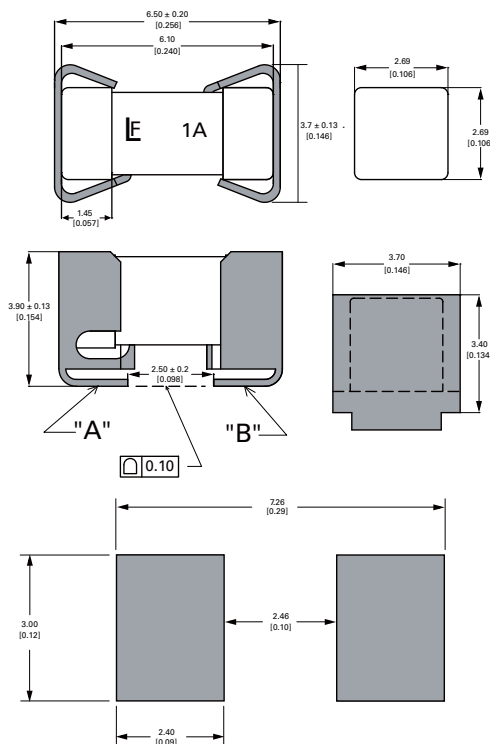


### Product Characteristics

|                               |                                                                                                                                                       |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Materials</b>              | <b>Body:</b> Ceramic<br><b>Cap:</b> For 0.062A ~ 0.125A – Au plated Brass<br>For 0.200A ~ 10A – Silver plated Brass<br><b>Clip Plating:</b> Matte Tin |
| <b>Product Marking</b>        | <b>Body:</b> Brand Logo, Current Rating                                                                                                               |
| <b>Clip Retention</b>         | Force applied at fuse center, perpendicular to the long axis (@ 0.75 lbs. MIN)                                                                        |
| <b>Solderability</b>          | MIL-STD-202, Method 208 / IPC/ EIA / JEDEC J-STD002B, Test Condition A                                                                                |
| <b>Humidity Test</b>          | MIL –STD-202, Method 103 @ 85°C / 85%RH, 1000 hours                                                                                                   |
| <b>Resistance to Solvents</b> | MIL-STD-202, Method 215 (3 solvent types)                                                                                                             |

|                               |                                                                                  |
|-------------------------------|----------------------------------------------------------------------------------|
| <b>Operating Temperature</b>  | -55°C to 125°C with proper derating                                              |
| <b>Thermal Shock</b>          | MIL-STD-202, Method 107, Test Condition B (5 cycles -65°C to +125°C)             |
| <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/ Atmosphere</b> | MIL-STD-202, Method 101, Test Condition B (48 hrs.), 5% NaCl in De-ionized Water |
| <b>Shock</b>                  | MIL-STD-202, Method 213, Test Condition I (100 G's peak for 6 milliseconds)      |

### Dimensions



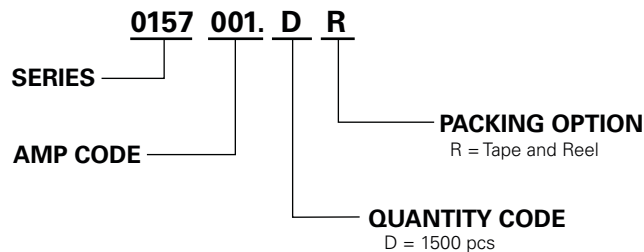
#### PCB Recommendation for Thermal Management

1. Minimum Copper Layer Thickness = 100µm
2. Minimum Copper Trace Width = 10mm

#### Note:

Alternate methods of thermal management may be used. In such cases, under normal operations, the maximum temperature of the fuse body should not exceed 80°C in a 25°C ambient environment.

### Part Numbering System



### Packaging

| Packaging Option | Packaging Specification | Quantity | Quantity & Packaging Code |
|------------------|-------------------------|----------|---------------------------|
| Tape and Reel    | Surface Mount           | 1500     | DR                        |

