

# 157 Series

## Standard Nano<sup>2</sup>® Fuse and Clip Assembly



### Description

The 157 Series – Standard Nano Fuse/Clip assembly is a small, square, very fast-acting surface mount fuse that is assembled in surface mountable fuse clips. The fuse clip and pre-installed fuse combination can be automatically placed in PC Board in one efficient manufacturing operation. It permits quick and easy replacement of fuses without performing desoldering process, even in the field and without exposing the PC Board to detrimental effects of rework solder heat.

### Features & Benefits

- Surface Mountable
- Very Fast-Acting Fuse
- Fully compatible with RoHS/ Pb-Free solder alloys and higher temperature profiles associated with leadfree assembly.
- Easily replaceable on PC Board (Field Replaceable)
- RoHS compliant and Halogen Free
- Available in ratings of 0.062 ~ 10 Amperes.

### Additional Information



Resources



Accessories



Samples

### Applications

- Instrumentation
- Base Stations
- Telecommunications

### 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 P <sub>t</sub> (A <sup>2</sup> sec)	Agency Approvals		
							cRU <sup>®</sup> US	PS E	
0.062	0.062	125	50A @ 125 VAC/VDC  300A @ 32 VDC	451.062	5.5372	0.00019	X	-	
0.08	0.08	125		451.08	4.0500	0.00033	X	-	
0.1	0.1	125		451.1	3.1000	0.00138	X	-	
0.125	0.125	125		451.125	1.7059	0.00286	X	-	
0.16	0.16	125		453.16	1.2157	0.0048	X	-	
0.2	0.2	125		453.2	1.3971	0.00652	X	-	
0.25	0.25	125		453.25	1.0496	0.01126	X	-	
0.315	0.315	125		453.315	0.3881	0.0311	X	-	
0.375	0.375	125		453.375	0.4518	0.0442	X	-	
0.4	0.4	125		453.4	0.4212	0.0551	X	-	
0.5	0.5	125		453.5	0.3031	0.0824	X	-	
0.63	0.63	125		453.63	0.2012	0.1381	X	-	
0.75	0.75	125		453.75	0.1437	0.2143	X	-	
0.8	0.8	125		453.8	0.1348	0.2654	X	-	
1.0	1.0	125		453001.0	0.0776	0.6029	X	X	
1.25	1.25	125		4531.25	0.078	0.664	X	X	
1.5	1.5	125		45301.5	0.0634	0.853	X	X	
1.6	1.6	125		45301.6	0.0580	1.06	X	X	
2.0	2.0	125		453002.0	0.0373	0.53	X	X	
2.5	2.5	125		45302.5	0.0288	1.029	X	X	
3.0	3.0	125		453003.0	0.0229	1.65	X	X	
3.15	3.15	125		4533.15	0.0215	1.92	X	X	
3.5	3.5	125		45303.5	0.0203	2.469	X	X	
4.0	4.0	125		453004.0	0.0163	3.152	X	X	
5.0	5.0	125		453005.0	0.0127	5.566	X	X	
6.3	6.3	125		45306.3	0.0098	9.17	X	X	
7.0	7.0	125		453007.0	0.0092	10.32	X	X	
8.0	8.0	125		453008.0	0.0079	20.23	X	X	
10.0	10.0	125		35A @ 125 VAC / 50A @125 VDC 300A @ 32VDC	453010.0	0.0058	26.46	X	X



1. Cold resistance measured at less than 10% of rated current at 23°C.  
 2. P<sub>t</sub> 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.

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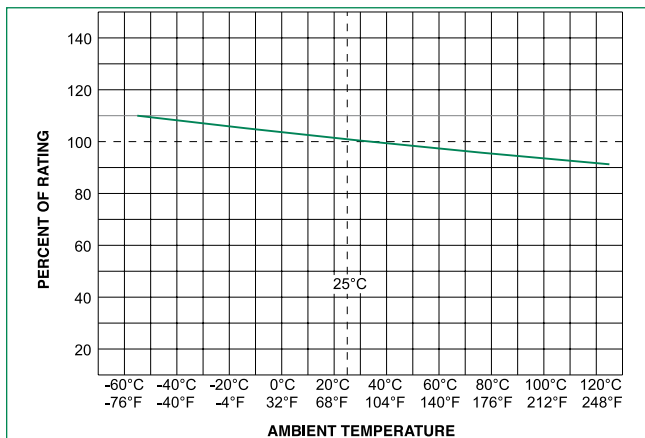
## Standard Nano<sup>2</sup>® Fuse and Clip Assembly

### Agency Approvals

Agency	Agency File Number	Ampere Range
 US	E14721	0.062A - 10A
	NBK030205-E10480A NBK030205-E10480B NBK101105-E184655	1A - 1.6A 2A - 5A 6.3A - 10A

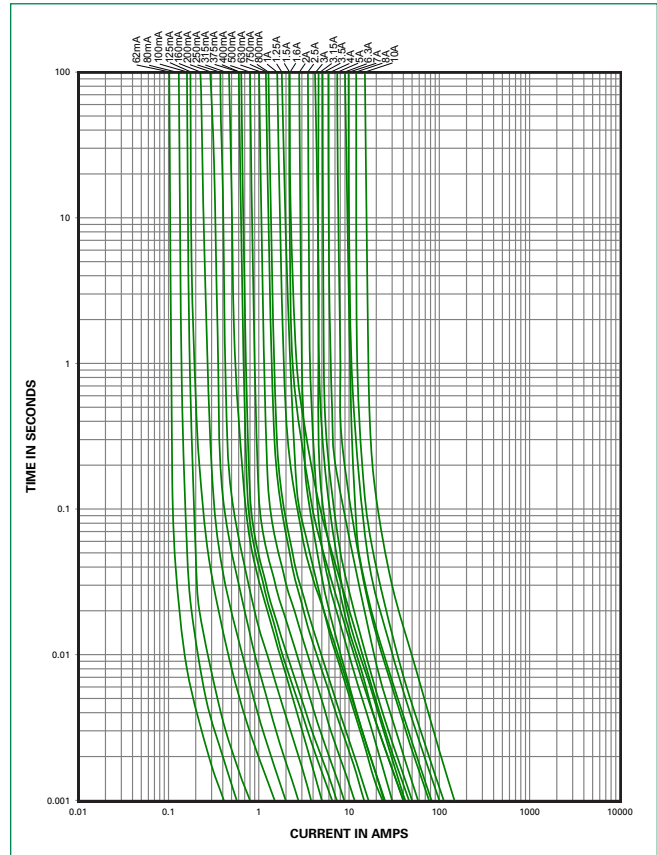
**Note:** PSE/METI Certification is only applicable to the fuse. Clips do not require certification for the Japanese Market.

### Temperature Re-rating Curve



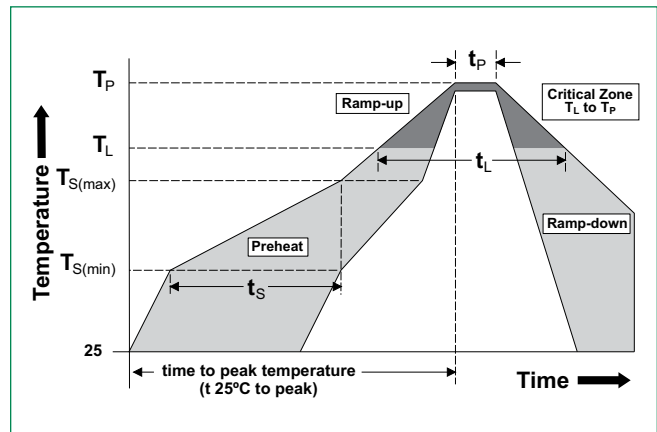
**Note:**  
1. Rerating depicted in this curve is in addition to the standard derating of 25% for continuous operation.

### Average Time Current Curves



### Soldering Parameters

<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



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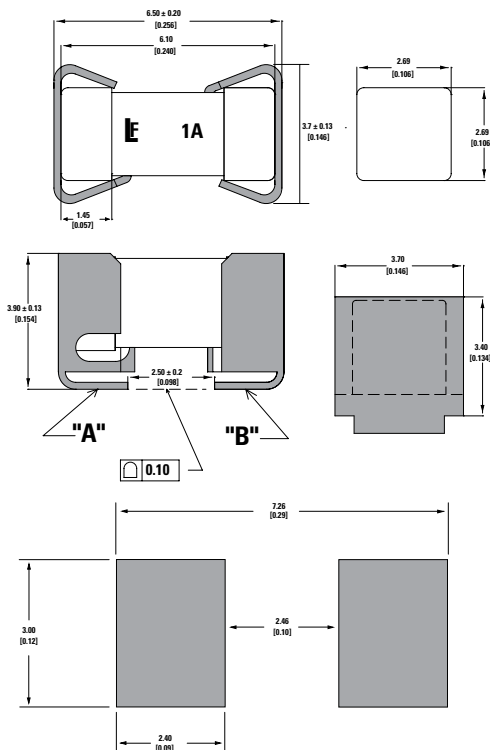
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### Product Characteristics

<b>Materials</b>	<b>Body:</b> Ceramic <b>Cap:</b> For 0.062A ~ 0.125A – Au plated Brass For 0.200A ~ 10A – Silver plated Brass <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-STD-002, 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



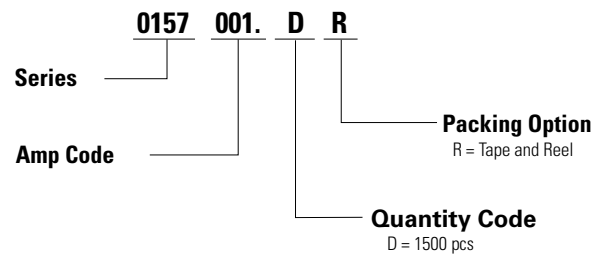
### PCB Recommendation for Thermal Management

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

### 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

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