

# 437 Series

## 1206 Fast-Acting Fuse



### Description

This 100% Lead-free, RoHS compliant and Halogen-free fuse series has been designed specifically to provide over current protection to circuits might encounter high working ambient temperatures (up to 150°C). The general design ensures excellent temperature stability and performance reliability. In addition to this, the high I<sup>2</sup>t values typical of the Littelfuse Ceramic Fuse family ensure high inrush current withstand capability.

### Features & Benefits

- Operating Temperature from -55°C to +150°C
- 100% Lead-free, Halogen-Free and RoHS compliant
- Suitable for both leaded and lead-free reflow / wave soldering
- UL Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14
- Conforms to EN60127-1 and EN60127-7 (0.5A-8A only)
- CE Mark indicates suitability for European Market
- UKCA Mark indicates suitability for the UK Market

### Web Resources



Download ECAD models, order samples, and find technical resources at [www.littelfuse.com](http://www.littelfuse.com)

### Electrical Characteristics

% of Ampere Rating	Ampere Rating	Opening Time at 25°C
100%	250mA - 8A	4 hours, Minimum
250%	750mA - 8A	5 seconds, Maximum
350%	250mA -500mA	5 seconds, Maximum
350%	750mA - 8A	1 second, Maximum

### Applications

- LCD Displays
- Servers
- Printers
- Scanners
- Data Modems

### Agency Approvals

Agency	Agency File/Certificate Number	Ampere Range
cRU <sup>us</sup>	E10480	0.250A - 8A
SPC	29862	0.250A - 8A
CE	N/A	0.5A - 8A
UKCA	J50519871	0.5A - 8A
UKCA	N/A	0.5A - 8A

### Electrical Specifications

Ampere Rating (A)	Amp Code	Max. Voltage Rating (V)	Interrupting Rating <sup>1</sup>	Nominal Resistance (Ohms) <sup>2</sup>	Nominal Melting I <sup>2</sup> t (A <sup>2</sup> Sec.) <sup>3</sup>	Nominal Voltage Drop At Rated Current (V) <sup>4</sup>	Nominal Power Dissipation At Rated Current (W)	Agency Approvals				
								cRU <sup>us</sup>	SPC	CE	UKCA	UKCA
0.25	.250	125	50 A @ 125 V AC/DC	2.29	0.003	0.78	0.195	x	x	-	-	-
0.375	.375	125		1.33	0.01	0.6	0.225	x	x	-	-	-
0.5	.500	63	50 A @ 63 V AC/DC	0.908	0.018	0.52	0.26	x	x	x	x	x
0.75	.750	63		0.665	0.080	0.45	0.338	x	x	x	x	x
1.0	001.	63		0.42	0.106	0.41	0.41	x	x	x	x	x
1.25	1.25	63		0.318	0.257	0.4	0.5	x	x	x	x	x
1.5	01.5	63		0.209	0.398	0.39	0.585	x	x	x	x	x
1.75	1.75	63		0.071	0.084	0.27	0.473	x	x	x	x	x
2.0	002.	63	50A @ 45V AC/63V DC	0.058	0.225	0.2	0.4	x	x	x	x	x
2.5	02.5	63		0.043	0.441	0.15	0.375	x	x	x	x	x
3.0	003.	63		0.033	0.506	0.14	0.42	x	x	x	x	x
3.5	03.5	63	50A @ 32V AC/35V DC	0.027	0.777	0.13	0.455	x	x	x	x	x
4.0	004.	63	50A @ 32V DC	0.022	1.024	0.13	0.52	x	x	x	x	x
5.0	005.	63	50A @ 32V AC/35V DC	0.0159	2.3	0.13	0.65	x	x	x	x	x
7.0	007.	35		0.01	5.02	0.13	0.91	x	x	x	x	x
8.0	008.	35		50A @ 32V DC	0.008	7.23	0.13	1.04	x	x	x	x

#### Notes:

1. AC Interrupting Rating tested at rated voltage with unity power factor. DC Interrupting Rating tested at rated voltage with time constant < 0.8 msec.

2. Nominal Resistance measured with < 10% rated current.

3. Contact Littelfuse if application transient surges are less than 1 ms.

4. Nominal Voltage Drop measured at rated current after temperature has stabilized.

Devices designed to carry rated current for 4 hours minimum. It is recommended that devices be operated continuously at no more than 80% rated current. See "Temperature Re-rating Curve" for additional re-rating information.

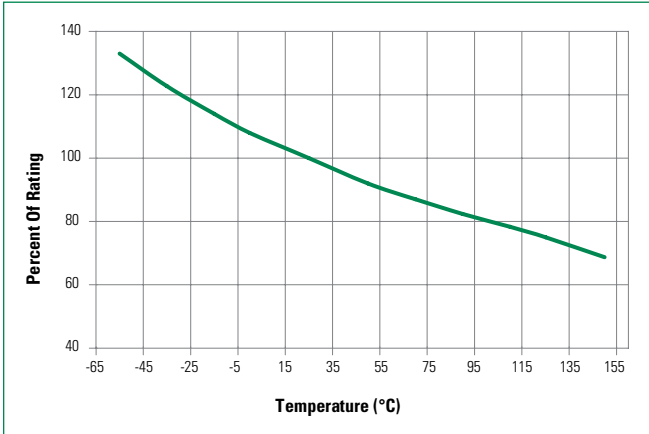
Devices designed to be mounted with marking code facing up.

2.5A-5A, (50A @ 45V AC/63V DC- For cURus only, 50A @ 32 V DC-for CSA only, 50A @ 32 V AC both cURus and CSA

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## 1206 Fast-Acting Fuse

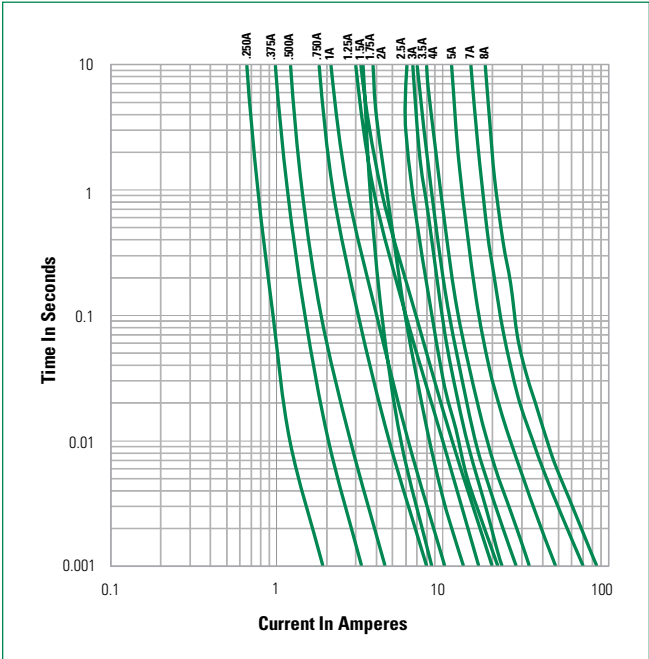
Temperature Re-rating Curve



**Note:**  
 1. Re-rating depicted in this curve is in addition to the standard re-rating of 20% for continuous operation.

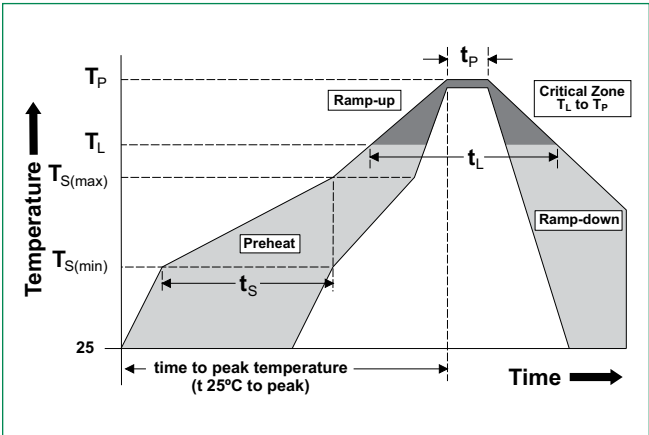
**Example:**  
 For continuous operation at 75 degrees celsius, the fuse should be rerated as follows:  
 $I = (0.80)(0.85)_{\text{RAT}} = (0.68)_{\text{RAT}}$

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 seconds
<b>Average Ramp-up Rate (Liquidus Temp (<math>T_L</math>) to peak)</b>		3°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>		10 – 30 seconds
<b>Ramp-down Rate</b>		6°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
<b>Wave Soldering</b>		260°C, 10 seconds max.



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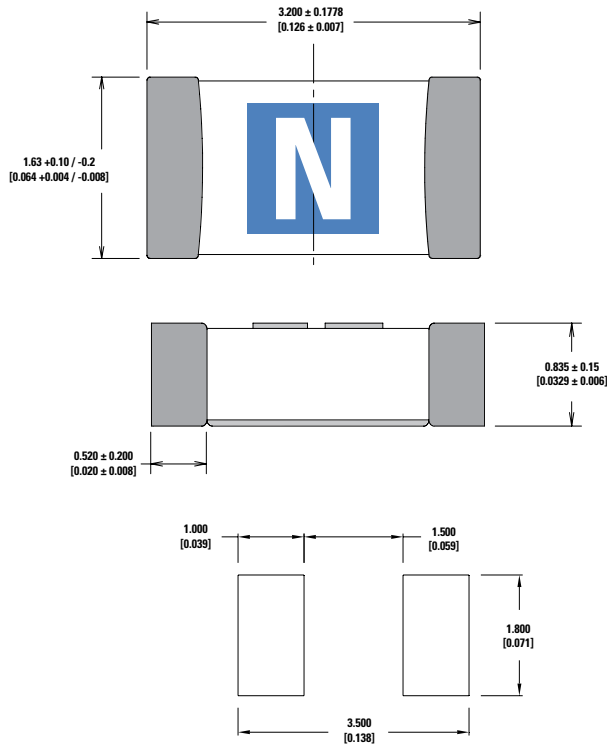
## 1206 Fast-Acting Fuse

### Product Characteristics

<b>Materials</b>	<b>Body:</b> Advanced Ceramic <b>Terminations:</b> Ag / Ni / Sn (100% Lead-free) <b>Element Cover Coating:</b> Ceramic/Lead-free Glass
<b>Moisture Sensitivity Level</b>	IPC/JEDEC J-STD-020, Level 1
<b>Solderability</b>	IPC/EIC/JEDEC J-STD-002, Condition B
<b>Humidity Test</b>	MIL-STD-202, Method 103, Condition D
<b>Resistance to Solder Heat</b>	MIL-STD-202, Method 210, Condition B
<b>Moisture Resistance</b>	MIL-STD-202, Method 106

<b>Thermal Shock</b>	MIL-STD-202, Method 107, Condition B
<b>Mechanical Shock</b>	MIL-STD-202, Method 213, Condition A
<b>Vibration</b>	MIL-STD-202, Method 201
<b>Vibration, High Frequency</b>	MIL-STD-202, Method 204, Condition D
<b>Dissolution of Metallization</b>	IPC/EIC/JEDEC J-STD-002, Condition D
<b>Terminal Strength</b>	IEC 60127-4

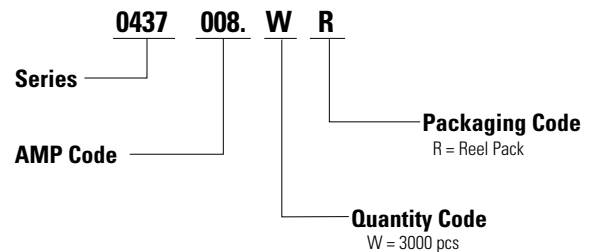
### Dimensions mm (inches)



### Part Marking System

Amp Code	Marking Code	Amp Code	Marking Code
0.25	D	2.0	N
0.375	E	2.5	O
0.5	F	3.0	P
0.75	G	3.5	R
1.0	H	4.0	S
1.25	J	5.0	T
1.5	K	7.0	W
1.75	L	8.0	X

### Part Numbering System



### Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code
8mm Tape & Reel	EIA-481, IEC 60286-3	3000	WR

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