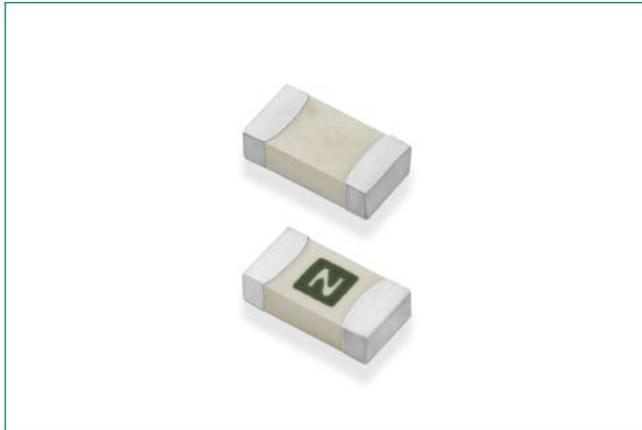


# 440 Series

## 1206 High I<sup>2</sup>t Fuse



### Description

The 440 Series is a 100% RoHS Compliant, lead-free and halogen-free fuse series designed specifically to provide over-current protection to circuits that operate under high working ambient temperatures up to 150°C and high inrush currents. The general design ensures excellent temperature stability and performance reliability. This high I<sup>2</sup>t fuse series is designed to have ultra high inrush current withstand capability to avoid nuisance fuse open.

### Features and Benefits

- Operating Temperature from -55°C to +150°C
- Ultra high I<sup>2</sup>t values
- RoHS compliant, lead-free and halogen-free
- Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14
- Suitable for both leaded and lead-free reflow / wave soldering

### Web Resources



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

### Applications

- LCD Displays
- Servers
- Notebook Computers
- Printers
- Scanners
- Data Modems
- Hard Disk Drives

### Electrical Characteristics for Series

% of Ampere Rating	Ampere Rating	Opening Time at 25°C
100%	0.25A - 8A	4 hours, Minimum
350%	0.25A - 8A	5 secs., Maximum

### Agency Approvals

Agency	Agency File Number	Ampere Range
cUL <sup>®</sup> US	E10480	0.25A - 8A
SP	29862	0.25A - 8A

### Electrical Specifications by Item

Ampere Rating (A)	Amp Code	Max. Voltage Rating (V)	Interrupting Rating (AC/DC)	Nominal Resistance (Ohms) <sup>1</sup>	Nominal Melting I <sup>2</sup> t (A <sup>2</sup> Sec.) <sup>2</sup>	Nominal Voltage Drop At Rated Current (V) <sup>3</sup>	Nominal Power Dissipation At Rated Current (W)	Agency Approvals	
								cUL <sup>®</sup> US	SP
0.250	.250	125	50 A @ 125 V AC/DC	2.140	0.00649	0.5260	0.132	X	X
0.375	.375	125		0.1216	0.01455	0.4993	0.187	X	X
0.500	.500	63	50 A @ 63 V AC/DC	0.8384	0.0399	0.4831	0.242	X	X
0.750	.750	63		0.4624	0.1162	0.3983	0.299	X	X
1.00	001.	50	50 A @ 50 VAC/DC	0.3096	0.2200	0.3457	0.346	X	X
1.25	1.25	50		0.2265	0.3900	0.3240	0.405	X	X
1.50	015	50		0.1759	0.5080	0.3215	0.482	X	X
1.75	1.75	32		0.0450	0.4000	0.0777	0.136	X	X
2.00	002.	32		0.0385	0.4700	0.0792	0.158	X	X
2.50	02.5	32		0.02850	0.8200	0.0747	0.187	X	X
3.00	003.	32	50 A @ 32 V AC/DC	0.02252	1.2470	0.0742	0.223	X	X
3.50	03.5	32		0.01845	2.3800	0.0757	0.265	X	X
4.00	004.	32		0.01553	3.136	0.0709	0.284	X	X
5.00	005.	32		0.0120	5.949	0.0654	0.327	X	X
7.00	007.	32		0.00753	10.38	0.0696	0.487	X	X
8.00	008.	32		0.00634	13.03	0.0655	0.524	X	X

**Notes:**

1. Nominal Resistance measured with < 10% rated current.
2. Contact Littelfuse if application transient surges are less than 1 ms.
3. Nominal Voltage Drop measured at rated current after temperature has stabilized.

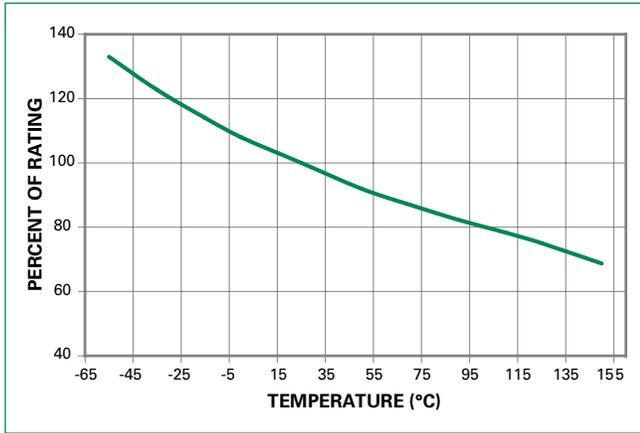
Devices designed to carry rated current for 4 hours minimum. It is recommended that devices be operated continuously at no more than 80% rated current. See "Temperature Derating Curve" for additional derating information.

Devices designed to be mounted with marking code facing up.

# 440 Series

## 1206 High I<sup>2</sup>t Fuse

Temperature Derating Curve



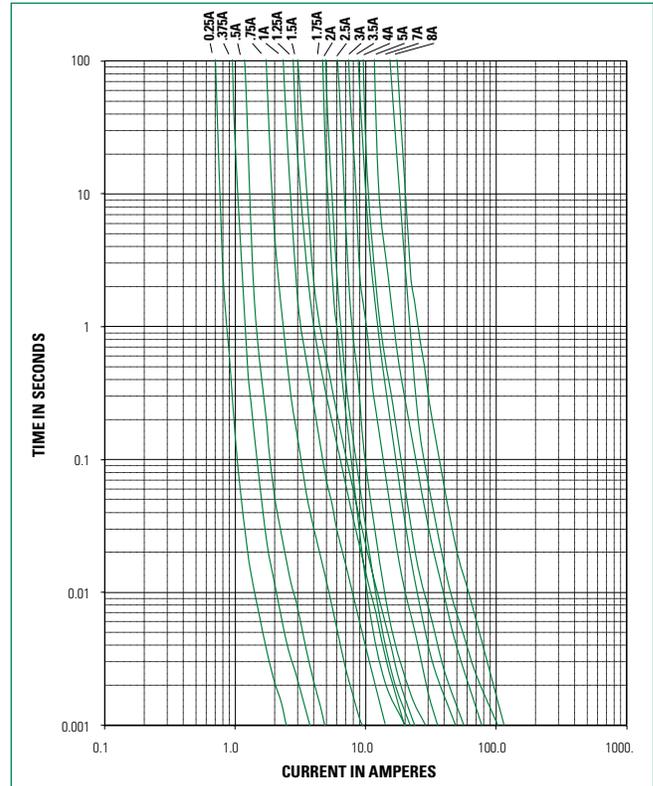
**Note:**

1. Derating depicted in this curve is in addition to the standard derating of 20% for continuous operation.

**Example:**

For continuous operation at 75 degrees celsius, the fuse should be derated as follows:  
 $I = (0.80)(0.85)_{75} = (0.68)_{75}$

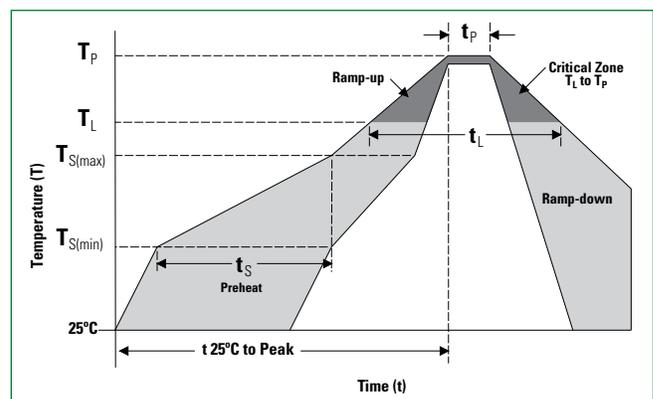
Average Time Current Curves



## 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.
-----------------------	------------------------



# 440 Series

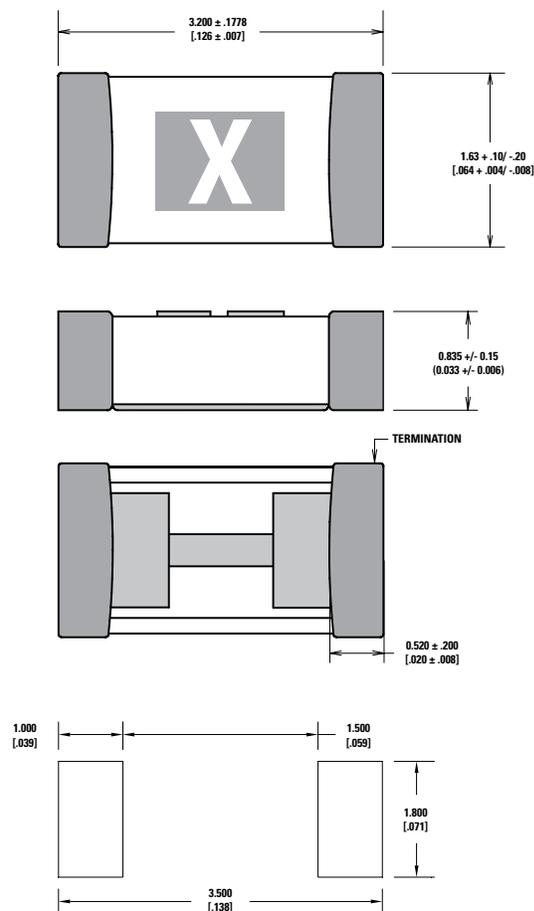
## 1206 High I<sup>2</sup>t Fuse

### Product Characteristics

<b>Materials</b>	<b>Body:</b> Advanced Ceramic <b>Terminations:</b> Ag / Ni / Sn (100% Lead-free) <b>Element Cover Coating:</b> Lead-free Glass
<b>Moisture Sensitivity Level</b>	IPC/JEDEC J-STD-020, Level 1
<b>Solderability</b>	IPC/ECA/JEDEC J-STD-002, Condition C
<b>Humidity Test</b>	MIL-STD-202, Method 103, Conditions 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/ECA/JEDEC J-STD-002, Condition D
<b>Terminal Strength</b>	IEC 60127-4

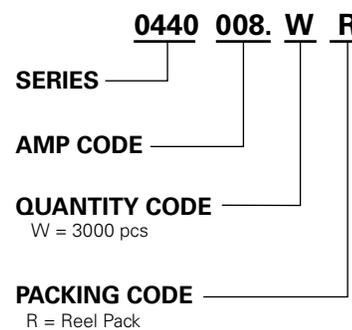
### Dimensions mm (inches)



### Part Marking System

Amp Code	Marking Code	Amp Code	Marking Code
.250	D	002.	N
.375	E	02.5	O
.500	F	003.	P
.750	G	03.5	R
001.	H	004.	S
1.25	J	005.	T
01.5	K	007.	W
1.75	L	008.	X

### Part Numbering System



### Packaging

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

**Disclaimer Notice** - Littelfuse products are not designed for, and shall not be used for, any purpose (including, without limitation, automotive, military, aerospace, medical, life-saving, life-sustaining or nuclear facility applications, devices intended for surgical implant into the body, or any other application in which the failure or lack of desired operation of the product may result in personal injury, death, or property damage) other than those expressly set forth in applicable Littelfuse product documentation. Warranties granted by Littelfuse shall be deemed void for products used for any purpose not expressly set forth in applicable Littelfuse documentation. Littelfuse shall not be liable for any claims or damages arising out of products used in applications not expressly intended by Littelfuse as set forth in applicable Littelfuse documentation. The sale and use of Littelfuse products is subject to Littelfuse Terms and Conditions of Sale, unless otherwise agreed by Littelfuse. Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at [www.littelfuse.com/disclaimer-electronics](http://www.littelfuse.com/disclaimer-electronics).