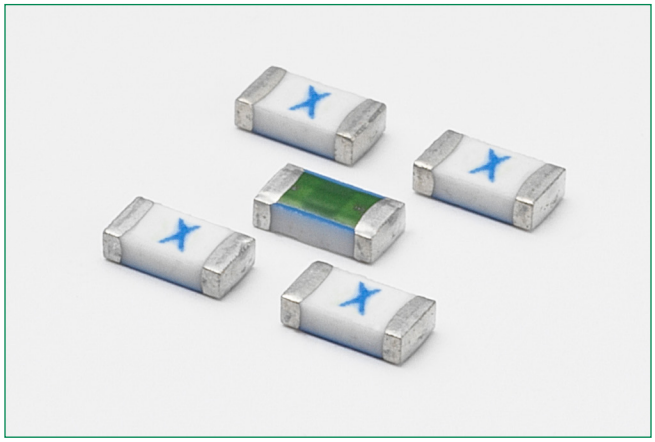
440 Series

1206 High I²t 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 I2t 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
- RoHS compliant, lead-free and halogen-free
- Suitable for both leaded and lead-free reflow / wave soldering
- Ultra high I2t values
- Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14

Additional Information

Resources | Accessories | Samples

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
c UL us	E10480	0.25A - 8A
CSA	29862	0.25A - 8A

Electrical Specifications by Item

Ampere Rating (A)	Amp Code	Max. Voltage Rating (V)	Interrupting Rating (AC/DC)[1]	Nominal Resistance (Ohms)[2]	Nominal Melting I²t (A²Sec.)[3]	Nominal Voltage Drop At Rated Current (V)[4]	Nominal Power Dissipation At Rated Current (W)	Agency Approvals	
								c UL us	CSA
0.250	.250	125	50 A @ 125 V AC/DC	2.140	0.00649	0.5260	0.132	X	X
0.375	.375	125		1.216	0.01455	0.4993	0.187	X	X
0.500	.500	63	50 A @ 63 V AC/DC	0.8140	0.02642	0.4831	0.242	X	X
0.750	.750	63	50 A @ 63 V AC/DC	0.4624	0.09312	0.3983	0.299	X	X
1.00	001.	50	50 A @ 50 V DC 50 A @ 50 V AC	0.3096	0.21054	0.3457	0.346	X	X
1.25	1.25	50		0.2265	0.379	0.3240	0.405	X	X
1.50	01.5	50		0.1759	0.50652	0.3215	0.482	X	X
1.75	1.75	32	50 A @ 32 V AC/DC	0.0450	0.3312	0.0777	0.136	X	X
2.00	002.	32		0.0385	0.4326	0.0792	0.158	X	X
2.50	02.5	32		0.02850	0.8191	0.0747	0.187	X	X
3.00	003.	32		0.02252	1.232	0.0742	0.223	X	X
3.50	03.5	32		0.01845	1.789	0.0757	0.265	X	X
4.00	004.	32		0.01553	2.601	0.0709	0.284	X	X
5.00	005.	32		0.0120	4.761	0.0654	0.327	X	X
7.00	007.	32		0.00753	8.464	0.0696	0.487	X	X
8.00	008.	32		0.00634	12.95	0.0655	0.524	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 Derating Curve" for additional derating information.

Devices designed to be mounted with marking code facing up.

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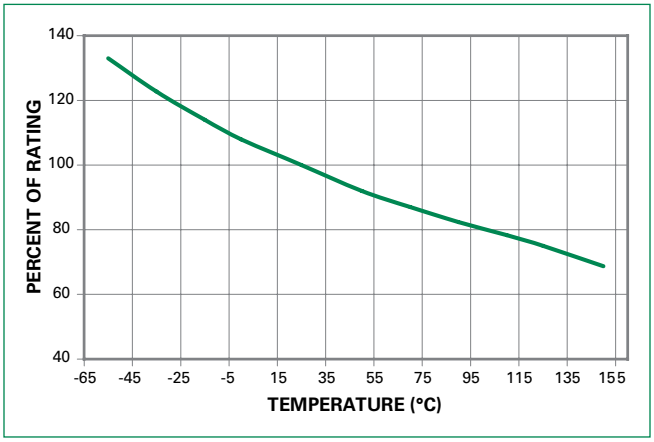
Temperature Rerating Curve



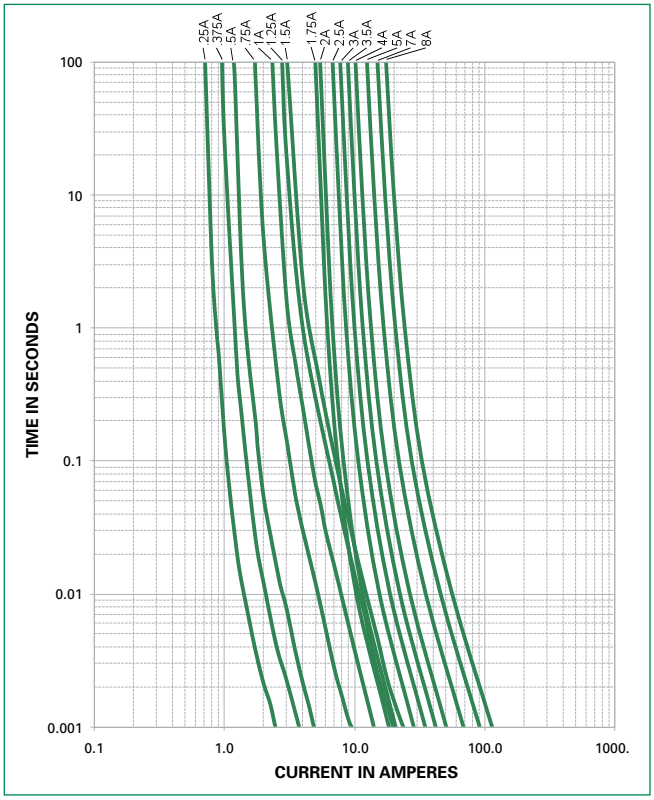
Note:

1. Rerating 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:
$I = (0.80)(0.85)I_n = (0.68)I_n$

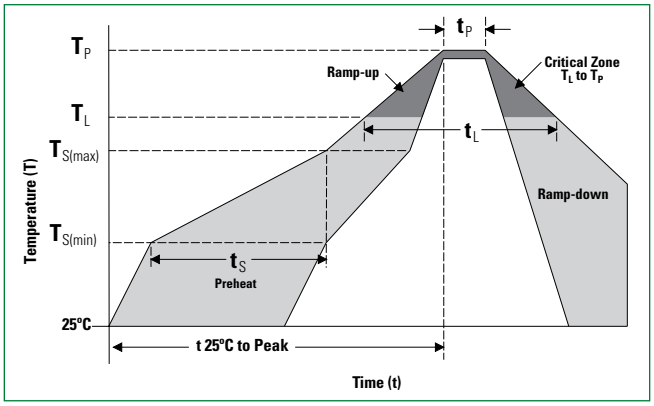
Average Time Current Curves



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 – 180 seconds
Average Ramp-Up Rate (Liquidus Temp (T_L) to peak)		3°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 – 150 seconds
Peak Temperature (T_P)		$260^{+0/-5}$ °C
Time within 5°C of actual peak Temperature (t_p)		10 – 30 seconds
Ramp-down Rate		6°C/second max.
Time 25°C to peak Temperature (T_P)		8 minutes max.
Do not exceed		260°C

Wave Soldering	260°C, 10 seconds max.



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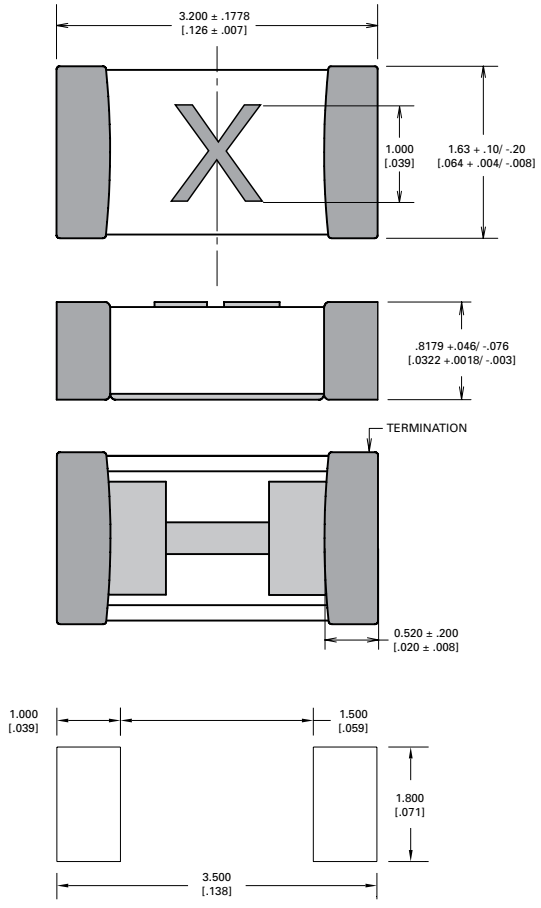
Product Characteristics

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

Moisture Resistance	MIL-STD-202, Method 106
Thermal Shock	MIL-STD-202, Method 107, Condition B
Mechanical Shock	MIL-STD-202, Method 213, Condition A
Vibration	MIL-STD-202, Method 201
Vibration, High Frequency	MIL-STD-202, Method 204, Condition D
Dissolution of Metallization	IPC/ECA/JEDEC J-STD-002, Condition D
Terminal Strength	IEC 60127-4

Dimensions mm (inches)



Part Marking System

Amp Code	Marking Code
.250	**D**
.375	**E**
.500	**F**
.750	**G**
001.	**H**
1.25	**J**
01.5	**K**
1.75	**L**

Amp Code	Marking Code
002.	**N**
02.5	**O**
003.	**P**
03.5	**R**
004.	**S**
005.	**T**
007.	**W**
008.	**X**

Part Numbering System

0440 008. W R

SERIES

AMP CODE

QUANTITY CODE
W = 3000 pcs

PACKING CODE
R = Reel Pack

Packaging

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

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