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## **Surface Mount Fuses**

Ceramic Fuse > 437 Series



ROHS 🔞 HF . 🔊 us 🛞

# 437 Series – 1206 Fast-Acting Fuse



Agency Approvals				
AGENCY	AGENCY FILE NUMBER	AMPERE RANGE		
c <b>FL</b> <sup>®</sup> us	E10480	0.250A ~ 8A		
<u>ج</u>	29862	0.250A ~ 8A		

#### Electrical Characteristics for Series

**Electrical Specifications by Item** 

% 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

#### Description

This 100% Lead-free, RoHS compliant and Halogen-free fuse series has been designed specifically to provide over current protection to circuits that see high working ambient temperatures (up to 150°C).

The general design ensures excellent temperature stability and performance reliability.

In addition to this, the high l<sup>2</sup>t values typical of the Littelfuse Ceramic Fuse family ensure high inrush current withstand capability.

#### Features

 Suitable for both leaded and lead-free reflow / wave soldering

Scanners

Data Modems

• 100% Lead-free, Halogen-Free and RoHS compliant

#### Applications

- LCD Displays
- Servers
- Printers

#### **Additional Information**







Samples

Ampere Max.		Max.		Nominal Nominal	Nominal Voltage	Nominal Power	Agency Approvals		
Rating (A)		Resistance (Ohms)²		Melting I <sup>2</sup> t (A <sup>2</sup> Sec.) <sup>3</sup>	Drop At Rated Current (V) <sup>4</sup>	Dissipation At Rated Current (W)	c 🔁 us	<u>ج</u>	
250mA	.250	125	50 A @ 125 V AC/DC	2.290	0.003	0.78	0.195	X	х
375mA	.375	125	50 A @ 125 V AC/DC	1.330	0.010	0.60	0.225	X	х
500mA	.500	63		0.908	0.018	0.52	0.260	X	х
750mA	.750	63		0.665	0.064	0.45	0.338	X	х
1A	001.	63		0.420	0.100	0.41	0.410	X	х
1.25A	1.25	63	50 A @ 63 V AC/DC	0.318	0.1117	0.40	0.500	X	х
1.5A	01.5	63		0.209	0.1580	0.39	0.585	X	х
1.75A	1.75	63		0.071	0.2469	0.27	0.473	X	х
2A	002.	63		0.058	0.197	0.20	0.400	X	х
2.5A	02.5	32		0.043	0.457	0.15	0.375	X	х
ЗA	003.	32		0.033	0.506	0.14	0.420	X	х
3.5A	03.5	32		0.027	0.777	0.13	0.455	x	х
4A	004.	32	50 A @ 32 V AC/35 V DC	0.022	1.024	0.13	0.520	X	х
5A	005.	32		0.0159	2.30	0.13	0.650	X	х
7A	007.	32		0.0100	5.02	0.13	0.910	X	х
8A	008.	32		0.008	7.23	0.13	1.040	X	х

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.

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Specifications are subject to change without notice. Application testing is strongly recommended. Revised: 10/25/16

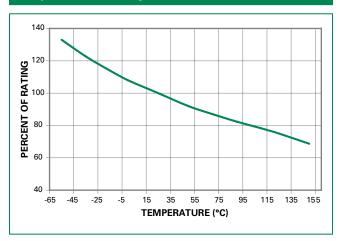
Devices designed to carry rated current for 4 hours minimum. It is recommended that devices be operated continuously at no more than 80% rated current. See "Temperature Re-rating Curve" for additional re-rating information.

Devices designed to be mounted with marking code facing up.

 Operating Temperature from -55°C to +150°C



### **Temperature Re-rating Curve**



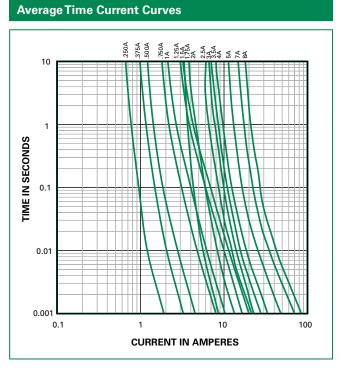
#### Note:

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:

 $I = (0.80)(0.85)I_{RAT} = (0.68)I_{RAT}$ 

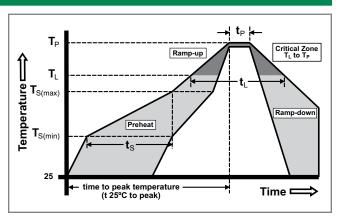


## **Soldering Parameters**

Reflow Condition		Pb – free assembly	
	-Temperature Min (T <sub>s(min)</sub> )	150°C	
Pre Heat	-Temperature Max (T <sub>s(max)</sub> )	200°C	
	-Time (Min to Max) (t <sub>s</sub> )	60 – 180 seconds	
Average R (T <sub>L</sub> ) to pea	amp-up Rate (LiquidusTemp k)	3°C/second max.	
T <sub>S(max)</sub> to T <sub>L</sub> - Ramp-up Rate		5°C/second max.	
Reflow	-Temperature (T <sub>L</sub> ) (Liquidus)	217°C	
Reflow	-Temperature (t <sub>L</sub> )	60 – 150 seconds	
PeakTemp	erature (T <sub>P</sub> )	260 <sup>+0/-5</sup> °C	
Time with Temperatu	in 5°C of actual peak ıre (t <sub>p</sub> )	10 – 30 seconds	
Ramp-dov	vn Rate	6°C/second max.	
Time 25°C	to peakTemperature (T <sub>P</sub> )	8 minutes max.	
Do not exc	ceed	260°C	

Wave Soldering

260°C, 10 seconds max.



## **Surface Mount Fuses**

Ceramic Fuse > 437 Series

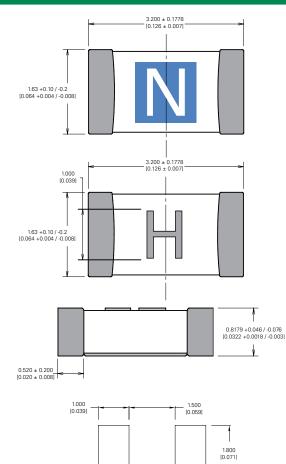


#### **Product Characteristics**

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

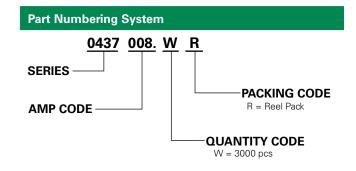
Thermal Shock	MIL-STD-202, Method 107, Condition B		
Mechanical Shock	MIL-STD-202, Method 213, Condition A		
Vibration	MIL-STD-202, Method 201		
Vibration, High Frequency	MIL-STD-202, Method 204, Condition D		
Dissolution of Metallization	IPC/EIC/JEDEC J-STD-002, Condition D		
Terminal Strength	IEC 60127-4		

#### Dimensions



- 3.500 [0.138]

Amp Code   Marking Code     .250   D     .375   E     .500   F     .500   G     .750   G     001.   H     1.25   J     01.5   K     1.75   L     002.   N     003.5   P     004.   S     005.   T     007.   W     008.   X	Part Marking System				
.375 E   .500 F   .750 G   001. H   1.25 J   01.5 K   1.75 L   002. N   02.5 O   003. P   03.5 R   004. S   007. W	Amp Code Marking Code				
.500   F     .750   G     001.   H     1.25   J     01.5   K     1.75   L     002.   N     02.5   O     003.   P     03.5   R     005.   T     007.   W	.250	D			
.750 G   001. H   1.25 J   01.5 K   1.75 L   002. N   02.5 O   003. P   03.5 R   004. S   005. T   007. W	.375	E			
O01.   H     1.25   J     01.5   K     1.75   L     002.   N     02.5   O     003.   P     004.   S     005.   T     007.   W	.500	F			
1.25 J   01.5 K   1.75 L   002. N   02.5 O   003. P   03.5 R   004. S   005. T   007. W	.750	G			
01.5   K     1.75   L     002.   N     02.5   O     003.   P     03.5   R     004.   S     005.   T     007.   W	001.	н			
1.75   L     002.   N     02.5   O     003.   P     03.5   R     004.   S     005.   T     007.   W	1.25	J			
002.   N     02.5   O     003.   P     03.5   R     004.   S     005.   T     007.   W	01.5	К			
02.5   O     003.   P     03.5   R     004.   S     005.   T     007.   W	1.75	L			
003.   P     03.5   R     004.   S     005.   T     007.   W	002.	Ν			
03.5   R     004.   S     005.   T     007.   W	02.5	0			
004.   S     005.   T     007.   W	003.	Р			
005. T 007. W	03.5	R			
007. W	004.	S			
	005.	T			
008. X	007.	W			
	008.	X			



### Packaging

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

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