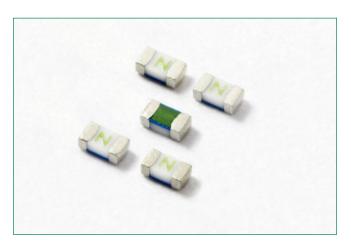
Surface Mount Fuses Datasheet

RoHS 🖗 HF с 🔊 из 🕀: С С ЦК 🛆



Additional Information



Agency Approvals

Agency	Agency File Number	Ampere Range
c 🔊 us	E10480	0.250A – 6A
۵£.	29862	0.250A - 6A
\triangle	J50489122	0.250A - 6A
UK	N/A	0.250A - 6A
Œ	N/A	0.250A - 6A

Description

The 438 Series is a 100% Lead-free, RoHS compliant and Halogen-free fuse series designed specifically to provide overcurrent protection to circuits that operate under high working ambient temperature up to 150°C.

The general design ensures excellent temperature stability and performance reliability.

The high I²t values which is typical in the Littelfuse Ceramic Fuse family ensure high inrush current withstand capability.

Features & Benefits

- Operating Temperature from -55°C to +150°C
- 100% Lead-free, RoHS compliant and Halogen-free
- Suitable for both leaded and lead-free reflow / wave soldering
- Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-14

Applications

- Handheld Electronics
- LCD Displays
- Battery Packs

- Conforms to EN 60127-1 and EN 60127-7
- CE Mark indicates suitability for the European Market
- UKCA Mark indicates suitability for the UK Market
- Hard Disk Drives
- SD Memory Cards

Electrical Characteristics for Series

% of Ampere Rating	Ampere Rating	Opening Time at 25°C		
100%	0.25A – 6A	4 Hours, Minimum		
250%	0.25A – 6A	5 Seconds, Maximum		

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

Devices designed to be mounted with marking code facing up.

Electrical Specifications by Item

Ampere	Ampere Amp Max. Voltage					Nominal Voltage Nominal Power		Agency Approvals				
Rating (A)	Code	•	Interrupting Rating	Resistance (Ohms) ²	Melting I ² t (A ² Sec.) ³	Drop At Rated Current (V)⁴	Dissipation At Rated Current (W)	\triangle	UK CA	Œ	c 🔊 us	۹£
0.250	.250	63VDC		2.218	0.0017	0.550	0.138	х	Х	х	х	х
0.375	.375	63VDC		1.247	0.0041	0.488	0.183	х	х	х	х	х
0.500	.500	63VDC		0.829	0.0100	0.486	0.243	х	Х	х	Х	х
0.750	.750	63VDC	50A @ 63VDC	0.466	0.0281	0.378	0.284	х	Х	х	х	х
1.00	001.	63VDC	50A @ 32VAC	0.310	0.0593	0.351	0.351	х	Х	х	х	х
1.25	1.25	63VDC		0.200	0.0510	0.365	0.456	х	х	х	х	х
1.50	01.5	63VDC		0.174	0.0902	0.368	0.552	х	Х	х	х	х
1.75	1.75	63VDC		0.1405	0.1440	0.360	0.540	х	Х	х	х	х
2.00	002.	32		0.051	0.1490	0.107	0.214	х	Х	х	х	х
2.50	02.5	32		0.0324	0.1977	0.095	0.238	х	Х	Х	х	х
3.00	003.	32	50A @ 32VDC/12VAC	0.0255	0.2922	0.093	0.279	х	Х	х	х	х
3.50	03.5	32	SUA @ 32VDC/12VAC	0.0205	0.4752	0.082	0.287	х	х	х	х	х
4.00	004.	32		0.0170	0.6920	0.079	0.316	х	х	х	х	х
5.00	005.	32		0.0115	0.7398	0.074	0.370	х	х	х	х	х
6.00	006.	24	50A @ 24VDC/12VAC	0.0085	1.3838	0.072	0.432	х	х	х	х	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.

Nominal Resistance measured with < 10% rated current.
Nominal Melting I²t measured at 1 msec. opening time.

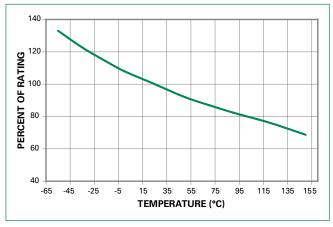
Nominal Voltage Drop measured at rated current after temperature has stabilized

Littelfuse

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information

438 Series 0603 Fast-Acting Fuse



Temperature Re-rating Curve

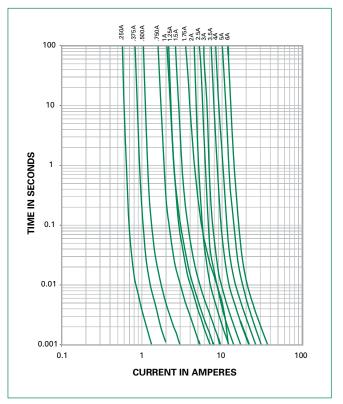
Note:

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

Example:

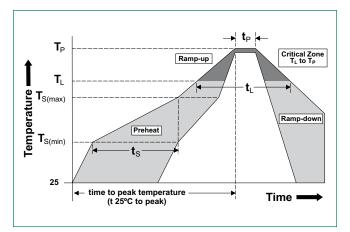
For continuous operation at 75 degrees celsius, the fuse should be rerated as follows: I = (0.80)I_{BAT} = (0.60)I_{BAT}

Average Time Current Curves



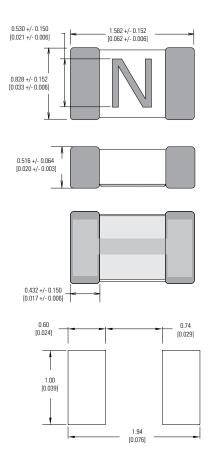
Reflow Condition			Pb – free assembly		
	- Temperature Min	150°C			
Pre Heat	- Temperature Max	x (T _{s(max)})	200°C		
	-Time (Min to Ma	60 – 180 seconds			
Average Ran	3°C/second max.				
T _{S(max)} to T _L - Ramp-up Rate			5°C/second max.		
Reflow	- Temperature (T _L)	217°C			
nellow	- Temperature (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 second			s max.		

Soldering Parameters



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/EIC/JEDEC J-STD-002, Condition B
Humidity	MIL-STD-202, Method 103, Conditions D
Resistance to Solder Heat	MIL-STD-202, Method 210, Condition B

Dimensions mm [in]

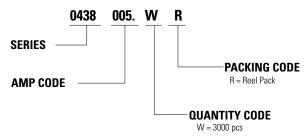


Moisture Resistance	MIL-STD-202, Method 106
Thermal Shock	MIL-STD-202, Method 107, Condition B-3
Mechanical Shock	MIL-STD-202, Method 213, Condition A
Vibration	MIL-STD-202, Method 201
Vibration, High Frequency	MIL-STD-202, Method 204, Condition D
Dissolution of Metallization	IPC/EIC/JEDEC J-STD-002, Condition D
Terminal Strength	IEC 60127-4

Part Marking System

Amp Code	Marking Code	Amp Code	Marking Code
.250	D	002.	N
.375	E	02.5	0
.500	F	003.	Р
.750	G	03.5	R
001.	н	004.	S
1.25	J	005.	т
01.5	К	006.	U
1.75	L		

Part Numbering System



Packaging

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

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