

Additional Information



Resources





Accessories

Samples

Description

The 469 Series is a 100% lead-free, halogen-free and RoHS compliant fuse series designed specifically to provide over-current 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, typical in the Littelfuse Ceramic fuse family, ensure high inrush current withstand capability.

Features and 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
- Recognized to UL/CSA/NMX 248-1 and UL/CSA/NMX 248-

Applications

- LCD Displays
- Servers
- Notebook Computers
- Printers

- Scanners
- Data Modems
- Gaming Consoles

Electrical Characteristics for Series

% of Ampere Rating	Ampere Rating	Opening Time at 25°C	
100%	2A – 8A	4 hours, Minimum	
200%	2A – 8A	1 sec., Min.; 120 secs., Max.	
300%	2A – 8A	0.1 sec., Min.; 3 secs., Max.	
800%	2A – 8A	0.002 sec., Min.; 0.05 sec., Max.	

Agency Approvals

Agency	Agency File Number	Ampere Range
c FL °us	E10480	2A – 8A
® .	29862	2A – 8A

Electrical Specifications by Item

Ampere A Man Vale				Nominal	Nominal	Nominal Voltage	Nominal Power	Agency Approvals	
Rating (A)	Amp Code	Max. Voltage Rating (V)	Interrupting Rating ¹	Resistance (Ohms) ²	Melting I ² t (A ² Sec.) ³	Drop At Rated Current (V) ⁴	Dissipation At Rated Current (W)	c 91 0° us	© ;
2.00	002.	63	60 A @ 63 VDC	0.166	0.2250	0.455	0.91	х	×
4.00	004.	32	60 A @ 32 VDC	0.052	3.560	0.236	0.944	Х	Х
5.00	005.	32		0.033	5.620	0.216	1.080	X	Х
6.00	006.	24	60 A @ 24 VDC	0.026	9.410	0.274	1.644	Х	Х
7.00	007.	24		0.020	14.400	0.216	1.512	X	Х
8.00	008.	24		0.016	23.720	0.233	1.864	Х	Х

- 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.

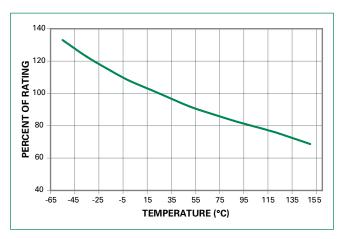
 2. Nominal Resistance measured with < 10% rated current.
- Nominal Melting I2t measured at 1 msec opening time.
- 4. Nominal Voltage Drop measured at rated current after temperature has stabilized.

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.



Temperature Re-rating Curve



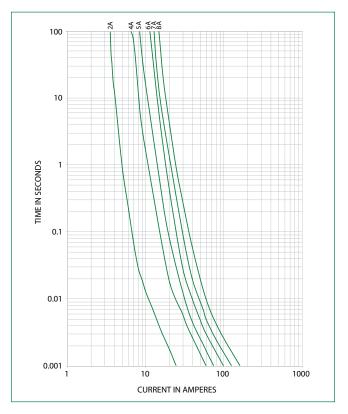
Note:

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: $I = (0.80)(0.85)I_N = (0.68)I_N$

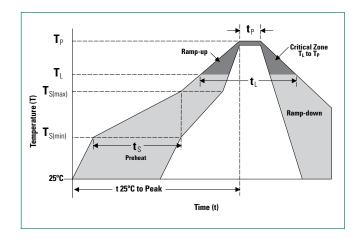
Average Time Current Curves



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.		
D 4	- Temperature (T _L)	(Liquidus)	217°C	
Reflow	- Temperature (t _L)		60 - 150 seconds	
Peak Temperature (T _p)			260+0/-5 °C	
Time within 5°C of actual peak Temperature (t _n)		Temperature	10 – 30 seconds	
Ramp-down Rate		6°C/second max.		
Time 25°C to peak Temperature (T _p)		(T _P)	8 minutes max.	
Do not exceed			260°C	
W 0.11			1	



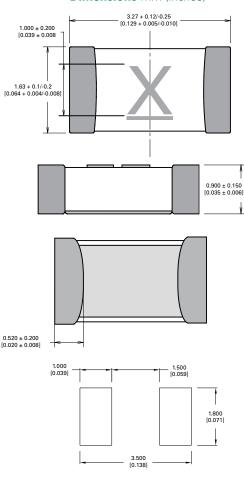


Product Characteristics

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

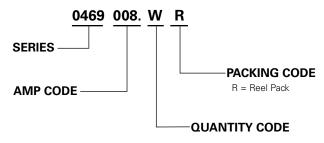
Dimensions mm (inches)



Part Marking System

Amp Code	Marking Code	
002.	<u>N</u>	
004.	<u>s</u>	
005.	Ī	
006.	<u>U</u>	
007.	<u>w</u>	
008.	<u>X</u>	

Part Numbering System



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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