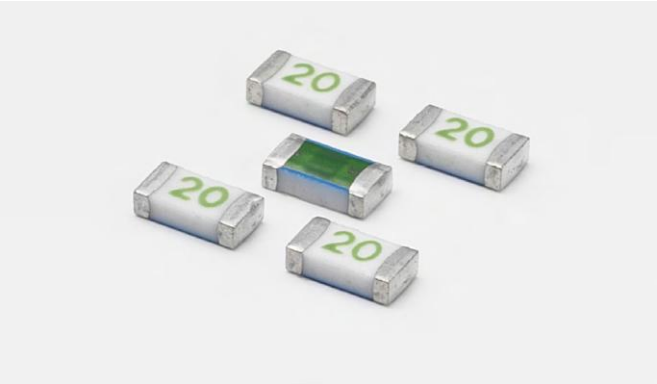
501 Suffix 1 Series – High Current 1206 Fast-Acting Fuse



Description

The 501 Series is a 100% Lead-free, RoHS compliant and Halogen-free 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 which is typical in the Littelfuse Ceramic Fuse family, ensure high inrush current withstand capability.

Features

- Operating Temperature from -55ºC to +150ºC
- Designed to provide over-current protection in high current voltage regulator module (VRM) applications
- 100% Lead-free, RoHS compliant and Halogenfree
- Suitable for both leaded and lead-free reflow /wave soldering

Agency Approvals

AGENCY	AGENCY FILE NUMBER	AMPERE RANGE
	E10480	10A - 20A
	29862	10A - 20A

Applications

- Voltage Regulator Module (VRM) Equipment
- Notebook PC
- DC-DC Converter

Electrical Characteristics

% of Ampere Rating(A)	Ampere Rating	Opening Time at 25ºC
100%	10A - 20A	4 hours, Minimum
350%	10A - 20A	5 seconds, Maximum

Additional Information

Datasheet | Resources | Samples

Electrical Specifications by Item

Ampere Rating (A)	Amp Code	Max. Voltage Rating (V)	Interrupting Rating(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	
10	010.	32	150 A @ 32 VDC	0.00427	10.385	0.05679	0.5679	X	X
12	012.	32		0.00321	20.341	0.04891	0.5870	X	X
15	015.	32		0.00250	36.100	0.04605	0.6908	X	X
20	020.	32		0.00200	54.760	0.05936	1.1871	X	X

Notes:
1. DC Interrupting Rating tested at rated voltage with time constant < 0.5 msec.
2. Nominal Resistance measured with < 10% rated current.
3. Nominal Melting I²t measured at 1 msec. opening time. For other I²t data refer to chart.
4. Nominal Voltage Drop measured at rated current after temperature has stabilized and with fuse mounted on board with 3-oz Cu trace.

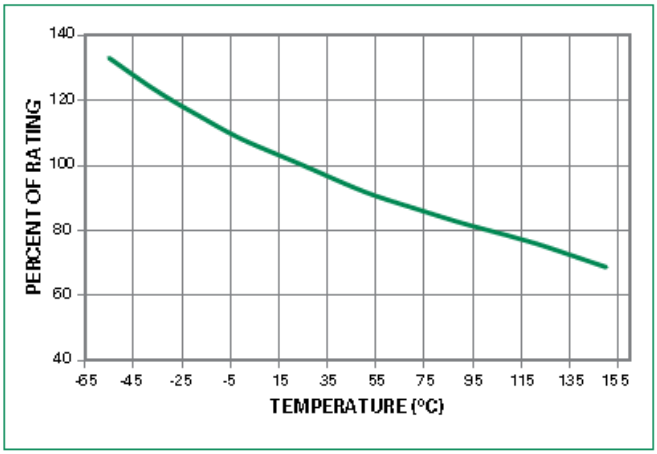
Devices designed to carry rated current for 4 hours minimum. It is recommended that devices be operated continuously at no more than 80% rated current. See "Temperature Re-rating Curve" for additional re-rating information.

Devices designed to be mounted with marking code facing up.

Revised: 08/20/15

Surface Mount Fuses
Ceramic Fuse > 501 Series

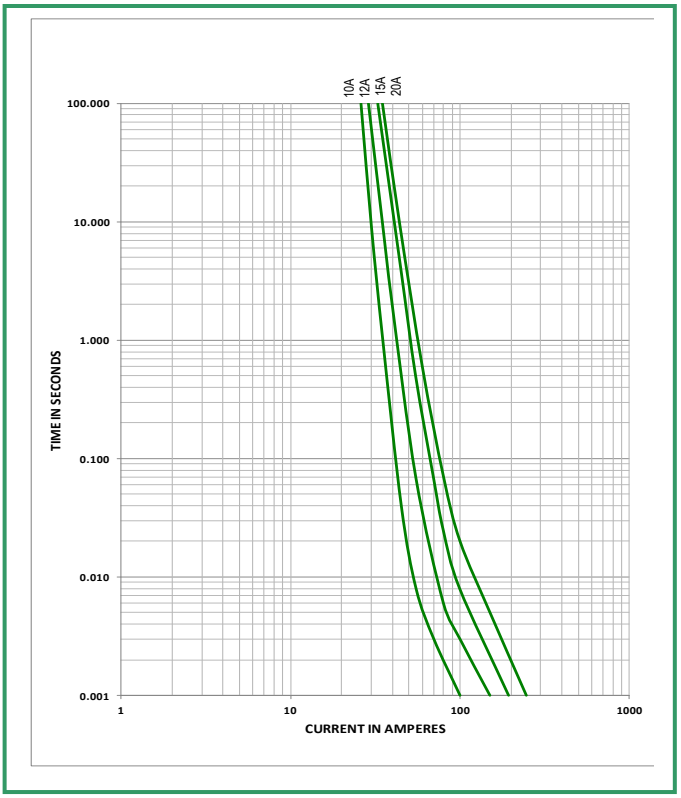
Temperature Rerating Curve



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

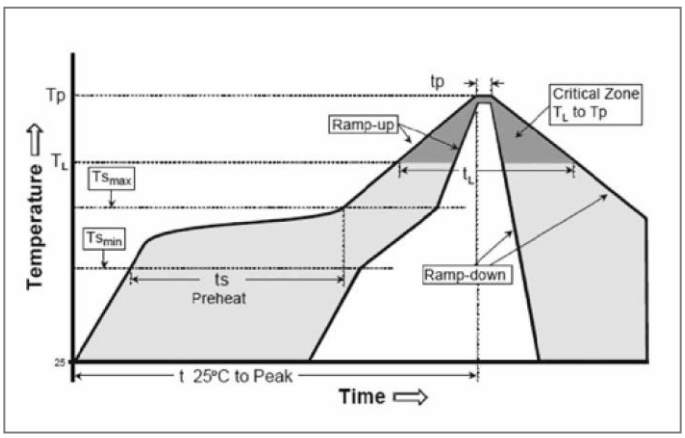
Average Time Current Curves



Soldering Parameters – Reflow Solderingz

Reflow Condition		Pb – Free Assembly
Pre Heat	- Temperature Min (Ts(min))	150°C
	- Temperature Max (Ts(max))	200°C
	- Time (min to max) (ts)	60 – 180 secs
Average ramp up rate (Liquidus Temp (TL) to peak		5°C/second max
TS(max) to TL - Ramp-up Rate		5°C/second max
Reflow	- Temperature (TL) (Liquidus)	217°C
	- Temperature (tL)	60 – 150 seconds
Peak Temperature (TP)		$260^{+0/-5}$ °C
Time within 5°C of actual peak Temperature (tp)		20 – 40 seconds
Ramp-down Rate		5°C/second Max
Time 25°C to peak Temperature (TP)		8 minutes Max
Do not exceed		260°C

Wave Soldering	260°C, 10 seconds max.



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Surface Mount Fuses
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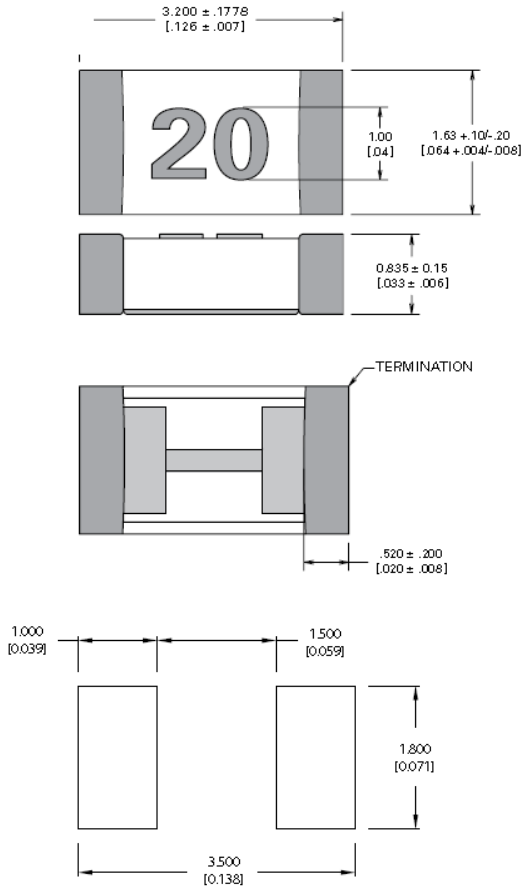
Product Characteristics

Material	**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 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/EIC/JEDEC J-STD-002, Condition D
Terminal Strength	IEC 60127-4

Dimensions



Part Marking System

Amp Code	Marking Code
010.	**10**
012.	**12**
015.	**15**
020.	**20**

Part Numbering System

0501 020. W R1

- **0501** — **SERIES**
- **020.** — **AMP CODE**
- **R1** — **PACKAGING CODE**
  R = Tape and Reel
- **W** — **QUANTITY CODE**
  W = 3000 pcs

Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code
8mm Tape and Reel	EIA-481, IEC 60286, Part 3	3000	WR1

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