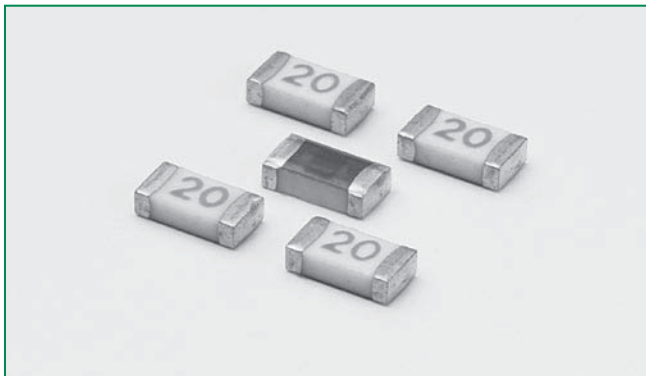


### RoHS HF 501 Series – High Current 1206 Fast-Acting Fuse





#### 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  $i^2t$  values typical of the Littelfuse Ceramic fuse family ensure high inrush current withstand capability.

#### Agency Approvals

AGENCY	AGENCY FILE NUMBER	AMPERE RANGE
	E10480	10A - 20A
	LR29862	10A - 20A

#### Features

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



#### Electrical Characteristics for Series

% of Ampere Rating	Ampere Rating	Opening Time at 25°C
100%	10A ~ 20A	4 hours Minimum
350%	10A ~ 20A	5 secs. Maximum

#### Applications

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

#### Electrical Specifications by Item

Ampere Rating (A)	Amp Code	Max. Voltage Rating (V)	Interrupt Rating (DC) <sup>1</sup>	Nominal Resistance (Ohms) <sup>2</sup>	Nominal Melting I <sup>2</sup> t (A <sup>2</sup> Sec.) <sup>3</sup>	Nominal Voltage Drop At Rated Current (V) <sup>4</sup>	Nominal Power Dissipation At Rated Current (W)	Agency Approvals	
									
10A	010.	24	150 A @ 24 V DC	0.00427	10.385	0.05679	0.5679	x	x
12A	012.	24		0.00321	20.341	0.04891	0.5870	x	x
15A	015.	24		0.00250	36.100	0.04605	0.6908	x	x
20A	020.	24		0.00200	54.760	0.05936	1.1871	x	x

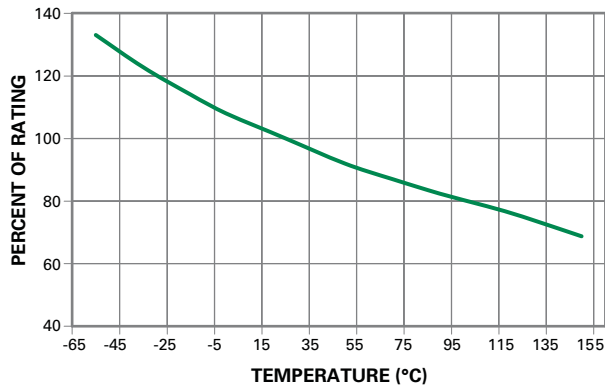
Notes:

- DC Interrupt Rating tested at rated voltage with time constant <0.8 msec.
- Nominal Resistance measured with <10% rated current.
- Nominal Melting I<sup>2</sup>t measured at 1 msec opening time. For other I<sup>2</sup>t data refer to chart.
- 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.

### Temperature Derating Curve



Note:

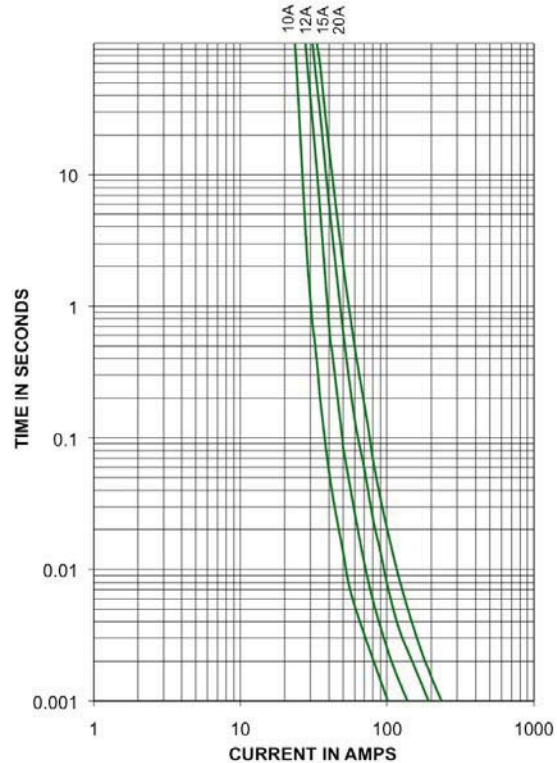
- Derating depicted in this curve is in addition to the standard derating of 20% for continuous operation.

Example:

For continuous operation at 75 degrees celsius, the fuse should be derated as follows:

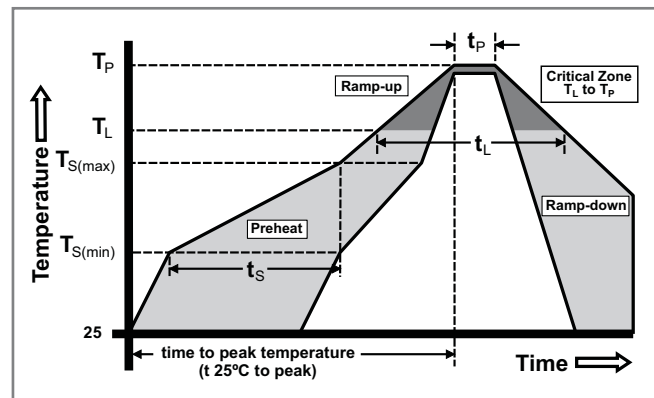
$$I = (0.80)(0.85)I_{RAT} = (0.68)I_{RAT}$$

### 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 secs
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 <sup>+0/-5</sup> °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



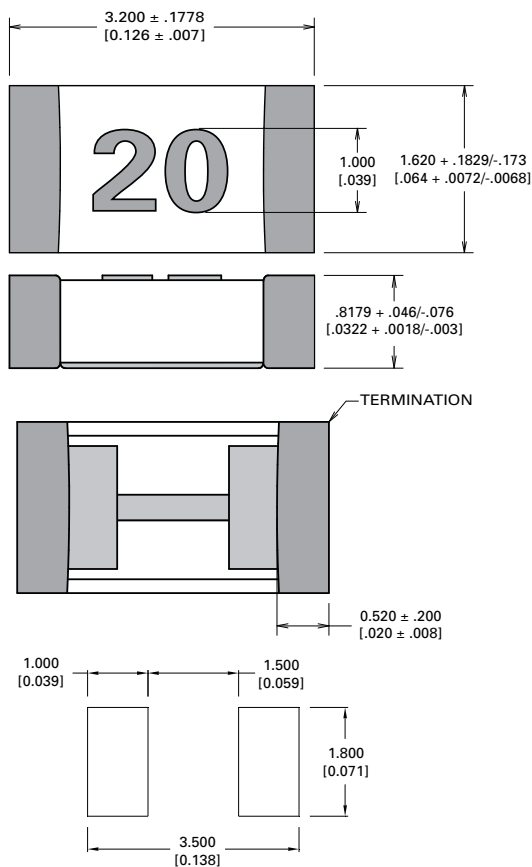
Wave Soldering	260°C, 10 seconds max.
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### Product Characteristics

<b>Materials</b>	<b>Body:</b> Advanced Ceramic <b>Terminations:</b> Ag / Ni / Sn (100% Lead-Free) <b>Element Cover Coating:</b> Lead-Free Glass
<b>Moisture Sensitivity Level</b>	IPC/JEDEC J-STD-020C, Level 1
<b>Solderability</b>	IPC/ECA/JEDEC J-STD-002C, Condition B
<b>Humidity Test</b>	MIL-STD-202, Method 103B, Conditions D
<b>ESD Immunity</b>	IEC 61000-4-2, 8KV Direct
<b>Resistance to Solvents</b>	MIL-STD-202, Method 210F, Condition B

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

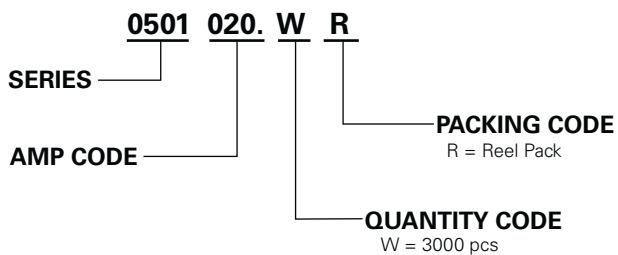
### Dimensions



### Part Marking System

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

### Part Numbering System



### Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code
8mm Tape and Reel	EIA-481-1 (IEC 286, part 3)	3000	WR

