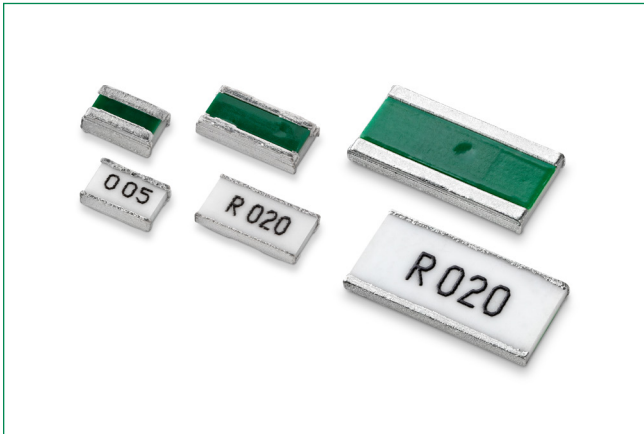


# Two-Terminal Surface Mount Resistor

## WLTM Series

**HF** **RoHS** **Pb**


### Description

Littelfuse WLTM Series low ohm current sense resistor is designed with long term stability in mind. This series is durable, excels at heat dissipation. The small package is optimal for most applications.

### Features and Benefits

- Low TCR
- Optimal linearity in I / V conversion
- Ceramic substrate
- Small size

### Application

- Power management
- Low Equivalent Series Inductance (ESL)

### Additional Information


**Resources**

**Accessories**

**Samples**

# Two-Terminal Surface Mount Resistor

## WLTM Series

### Electrical Specifications

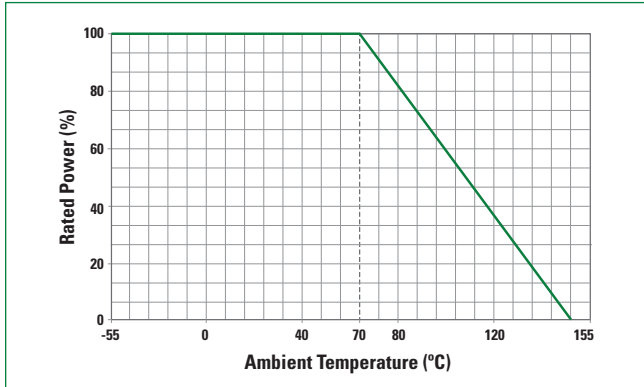
Part Number	Size		Resistance Value		Power Rating (W)	TCR (ppm / °C)	Standard Package Quantity
	Inch	mm	Ro (mΩ)	Rt (%)			
WLTM0508RLR003FNR	0508	1220	3	±1.0%	1	±50	5000
WLTM0508RLR005FNR	0508	1220	5	±1.0%	1	±50	5000
WLTM0508RLR006FNR	0508	1220	6	±1.0%	1	±50	5000
WLTM0508QLR010FNR	0508	1220	10	±1.0%	1	±50	5000
WLTM0508QLR012FNR	0508	1220	12	±1.0%	1	±50	5000
WLTM0508QLR020FNR	0508	1220	20	±1.0%	1	±50	5000
WLTM0612QLR005FNR	0612	1632	5	±1.0%	1.5	±100	5000
WLTM0612QLR006FNR	0612	1632	6	±1.0%	1.5	±100	5000
WLTM0612QLR007FNR	0612	1632	7	±1.0%	1.5	±100	5000
WLTM0612QLR010FNR	0612	1632	10	±1.0%	1.5	±50	5000
WLTM0612QLR012FNR	0612	1632	12	±1.0%	1.5	±50	5000
WLTM0612QLR015FNR	0612	1632	15	±1.0%	1.5	±50	5000
WLTM0612QLR016FNR	0612	1632	16	±1.0%	1.5	±50	5000
WLTM0612QLR020FNR	0612	1632	20	±1.0%	1.5	±50	5000
WLTM0612QLR039FNR	0612	1632	39	±1.0%	1.5	±50	5000
WLTM0612QLR100FNR	0612	1632	100	±1.0%	1.5	±50	5000
WLTM0815QLR010FYR	0815	2238	10	±1.0%	2	±50	4000
WLTM0815RLR005FYR	0815	2238	5	±1.0%	2	±100	4000
WLTM0815RLR006FYR	0815	2238	6	±1.0%	2	±100	4000
WLTM1020QLR010FYR	1020	2550	10	±1.0%	2	±50	4000
WLTM1225QLR010FYR	1225	3264	10	±1.0%	3	±50	4000
WLTM1225QLR015FYR	1225	3264	15	±1.0%	3	±50	4000
WLTM1225QLR020FYR	1225	3264	20	±1.0%	3	±50	4000
WLTM1225QLR022FYR	1225	3264	22	±1.0%	3	±50	4000
WLTM1225QLR030FYR	1225	3264	30	±1.0%	3	±50	4000
WLTM1225QLR039FYR	1225	3264	39	±1.0%	3	±50	4000
WLTM1225QLR100FYR	1225	3264	100	±1.0%	3	±50	4000
WLTM1225RLR002FYR	1225	3264	2	±1.0%	3	±100	4000
WLTM1225RLR004FYR	1225	3264	4	±1.0%	3	±100	4000
WLTM1225RLR006FYR	1225	3264	6	±1.0%	3	±100	4000

**Note:** Resistors are available in steps of 1mΩ. Ratings not indicated in the above table may be available on request.

# Two-Terminal Surface Mount Resistor

## WLTM Series

### Temperature De-rating Curve



### Storage / Environment Conditions

Products should be stored under the following environmental conditions.

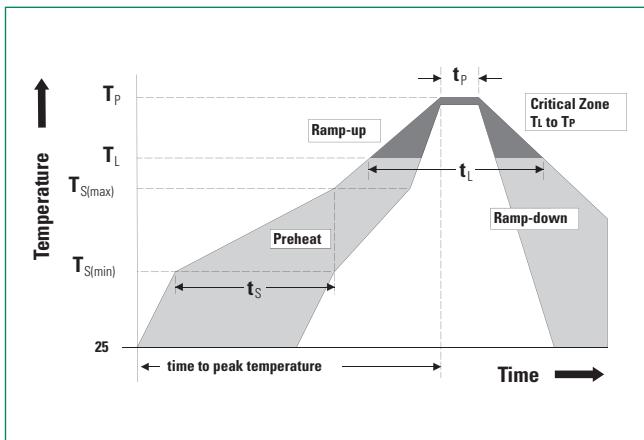
<b>Temperature:</b>	+5 to +35 °C
<b>Humidity:</b>	45 to 85% relative humidity
<b>Moisture Sensitivity Level:</b>	1, J-STD-020

Do not keep products in environments where they may be subject to particulate contamination or harmful gases such as sulfuric acid or hydrogen chloride as it may cause oxidization on electrodes, resulting poor solderability.

Products should be stored in a space that does not expose to high temperatures, vibration, or direct sunlight.

Products should be stored in the original airtight packaging until use.

### Soldering Parameters—Reflow Soldering



Profile Feature	Pb-Free Assembly
<b>Average Ramp-Up Rate (<math>T_{S(max)}</math> to <math>T_p</math>)</b>	3 °C / second max
<b>Preheat</b>	
Temperature Minimum ( $T_{S(min)}$ )	150 °C
Temperature Maximum ( $T_{S(max)}$ )	200 °C
Time ( $T_{S(min)}$ to $T_{S(max)}$ )	60–180 seconds
<b>Time maintained above</b>	
Temperature Minimum ( $T_l$ )	217 °C
Time ( $t_l$ )	60–150 seconds
<b>Peak Temperature (<math>T_p</math>)</b>	260 +0 °C
<b>Time within 5 °C of Actual Peak Temperature (<math>t_p</math>)</b>	20–40 seconds
<b>Ramp-Down Rate</b>	6 °C / second Maximum
<b>Time 25 °C to Peak Temperature</b>	8 minutes Maximum

# Two-Terminal Surface Mount Resistor

## WLTM Series

### Reliability Specifications

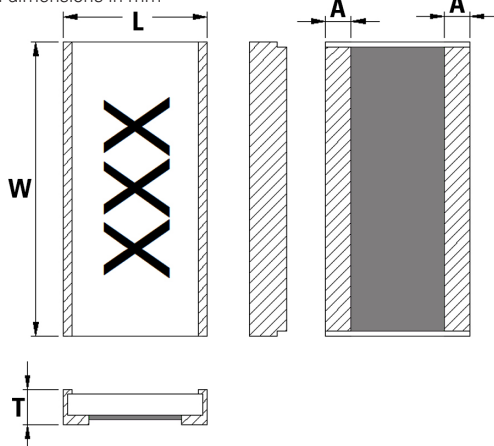
Test	Procedure	Specifications
<b>ESD</b>	HBM, 100 pF, 1.5 k ohms Repetition: 5 times Component Classification: 5 C (25 kV)	±1.0% Appearance: Without distinct damage, and the marking shall be legible.
<b>Load Life (Operational Life)</b>	Test Temperature: 125 °C Applied voltage: rated power (derated Power will be required if temp exceeds the derating point of part) Test Period: 1,000 hours (condition D)	±1.0% Appearance: Without distinct damage, and the marking shall be legible.
<b>Biased Humidity</b>	Test conditions: 85 °C and 85% RH 10% of rated power Test Period 1,000 hours	±1.0% Appearance: Without distinct damage, and the marking shall be legible.
<b>Temp. Cycling (Thermal Shock)</b>	Repeat 1,000 cycles as follows: -55 °C for 30 minutes 125 °C for 30 minutes Transition time of 1 minute max	±1.0% Appearance: Without distinct damage, and the marking shall be legible.
<b>High Temp. Exposure (Storage)</b>	Test Temp 125 °C Test Period: 1,000 hours No Electrical Load	±1.0% Appearance: Without distinct damage, and the marking shall be legible.
<b>Resistance to soldering heat</b>	Condition B (Solder dip, no pre-heat) 260 °C	±1.0% Parts must meet initial electrical specs.
<b>Resistance to Solvents</b>	3 minute soak 2–3 ounce force 10 strokes/repetition 3 repetitions	Appearance: Without distinct damage, and the marking shall be legible.
<b>Terminal Strength (SMD)</b>	Applied force based on part size	±1.0% Appearance: Without distinct damage, and the marking shall be legible.
<b>Flammability</b>	UL-94 V-0 or V-1 are acceptable Electrical test not required	V-0 burning less than 10 seconds V-1 burning less than 30 seconds
<b>Flame Retardance</b>	Mounted parts subjected to voltages from 9.0 to 32 VDC (current clamped up to 500 A)	No flame when full automotive battery potential is applied.
<b>Vibration</b>	Frequency: 10–2,000 Hz Acceleration: 5G Test duration: 20 minutes, 12 cycles	±1.0% Appearance: Without distinct damage, and the marking shall be legible.
<b>Mechanical Shock</b>	Force: 100G peak Test duration: 6 ms Half-sine waveform Velocity: 12.3 ft/sec	±1.0% Appearance: Without distinct damage, and the marking shall be legible.
<b>Board Flex</b>	90 mm span between fulcrums 2 mm bend 60 seconds minimum holding time	±1.0% Appearance: Without distinct damage, and the marking shall be legible.
<b>Solderability</b>	Non-activated flux dip: 5–10 seconds SAC solder dip: 5 seconds at 245 °C	A new solder shall cover minimum of 95%.

# Two-Terminal Surface Mount Resistor

## WLTM Series

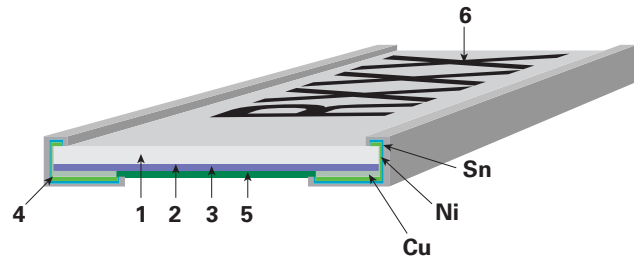
### Dimensions

All dimensions in mm



Part Number	W	L	T	A
WLTM0508 R001~R100	2.10±0.20	1.35±0.20	0.65±0.20	0.43±0.20
WLTM0612 R001	3.30±0.20	1.70±0.20	0.65±0.20	0.55±0.30
WLTM0612 R002~R100	3.30±0.20	1.70±0.20	0.65±0.20	0.40±0.20
WLTM0815 R001~R100	3.80±0.20	2.20±0.20	0.65±0.20	0.61±0.20
WLTM1020 0M50	5.10±0.20	2.60±0.20	0.65±0.20	0.95±0.20
WLTM1020 R001~R100	5.10±0.20	2.60±0.20	0.65±0.20	0.65±0.20
WLTM1225 R001~R100	6.40±0.30	3.20±0.30	0.65±0.20	0.60±0.20

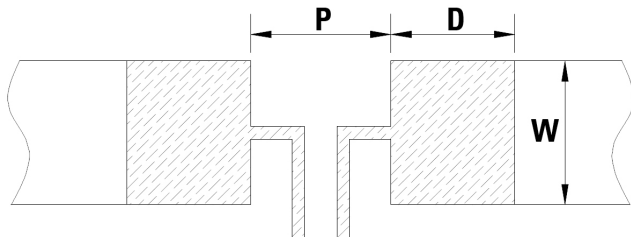
### Product Construction



Number	Description
1	Substrate (Alumina Ceramic)
2	Adhesion Layer (Epoxy)
3	Resistive Element (Cu Alloy Foil)
4	Terminal Electrode (Cu, Ni, Sn)
5	Protective Coating (Flame-retardant epoxy, UL-94-V0)
6	Marking* (Flame-retardant epoxy, UL-94-V0)

Note: \* Marking is three digits (XXX) 0508 case size, and four digits (RXXX) for all other case sizes.

### Recommended Land Pattern

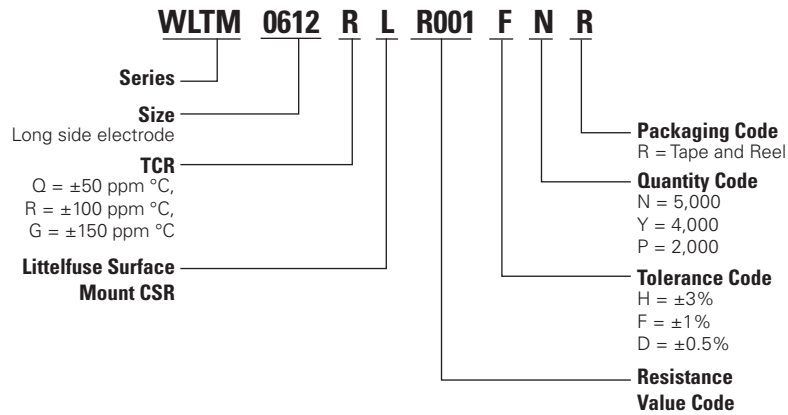


Part Number	P	W	D	Loading
WLTM0508 R001~R100	0.60 mm	2.30 mm	1.10 mm	1.0 W
WLTM0612 R001	0.50 mm	3.68 mm	1.35 mm	1.5 W
WLTM0612 R002~R100	0.60 mm	3.68 mm	1.30 mm	1.5 W
WLTM0815 R001~R100	0.70 mm	4.26 mm	1.45 mm	2.0 W
WLTM1020 0M50	0.55 mm	5.75 mm	2.48 mm	2.0 W
WLTM1020 R001~R100	1.00 mm	5.75 mm	2.25 mm	2.0 W
WLTM1225 R001~R100	1.40 mm	7.25 mm	2.35 mm	3.0 W

# Two-Terminal Surface Mount Resistor

## WLTM Series

### Part Numbering System



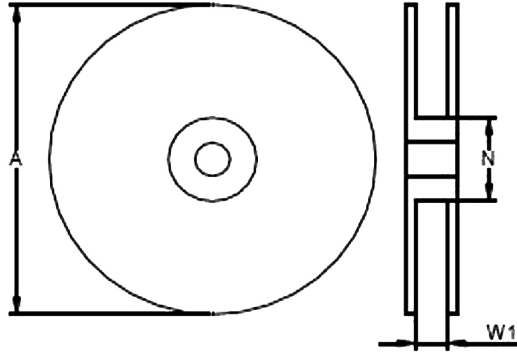
### Packaging

Part Number	Halogen Free	Packaging Option	Quantity	Quantity & Packaging Codes
WLTM0508	Yes	Tape and Reel	5000	NR
WLTM0612	Yes	Tape and Reel	5000	NR
WLTM0815	Yes	Tape and Reel	4000	YR
WLTM1020	Yes	Tape and Reel	4000	YR
WLTM1225	Yes	Tape and Reel	4000	YR

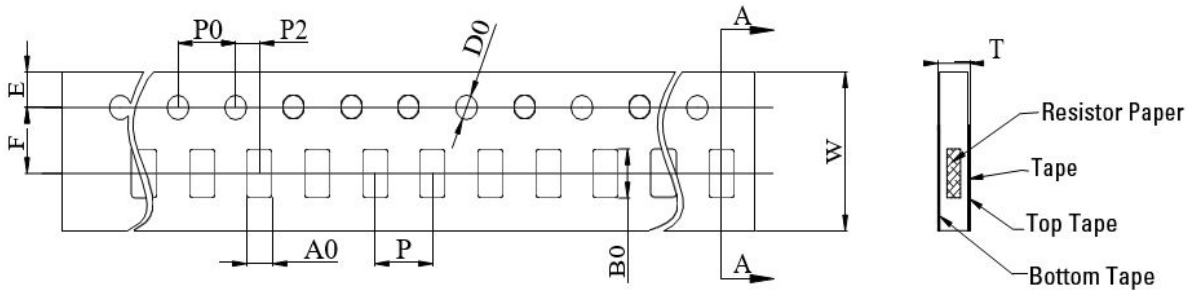
# Two-Terminal Surface Mount Resistor

## WLTM Series

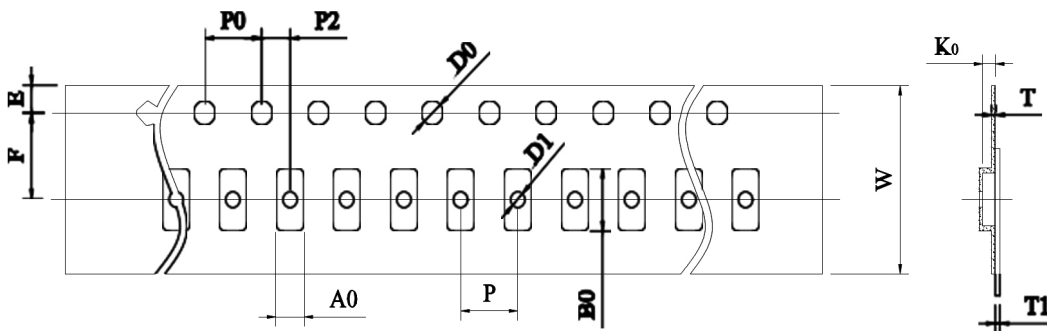
### Tape and Reel Specifications



Part Number	A±5 (mm)	N±2 (mm)	W1±1 (mm)
WLTM0508	178	60	9.0
WLTM0612	178	60	9.0
WLTM0815	178	60	13
WLTM1020	178	60	13
WLTM1225	178	60	13



Part Number	W	P0	P	P2	A0	B0	D0	F	E	T	T1	K0
WLTM0508	8.00±0.30	4.00±0.10	4.00±0.10	2.00±0.10	1.55±0.10	2.30±0.10	1.50±0.10	3.50±0.10	1.75±0.10	0.87±0.10	/	/
WLTM0612	8.00±0.30	4.00±0.10	4.00±0.10	2.00±0.10	2.05±0.20	3.65±0.20	1.50±0.10	3.50±0.10	1.75±0.10	0.87±0.10	/	/



Part Number	W	P0	P	P2	A0	B0	D0	F	E	T	T1	K0
WLTM0815	12.00±0.40	4.00±0.10	4.00±0.10	2.00±0.10	2.30±0.20	4.10±0.20	1.50±0.10	5.50±0.10	1.75±0.10	0.25±0.10	Max. 0.1	0.30±0.05
WLTM1020	12.00±0.30	4.00±0.10	4.00±0.10	2.00±0.10	2.85±0.20	5.45±0.20	1.50±0.10	5.50±0.10	1.75±0.10	0.25±0.10	Max 0.10	0.75±0.20
WLTM1225	12.00±0.30	4.00±0.10	4.00±0.10	2.00±0.10	3.40±0.20	6.75±0.20	1.50±0.10	5.50±0.10	1.75±0.10	0.25±0.10	Max 0.10	0.80±0.20

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