

# Two-Terminal Surface Mount Resistor

## WLTC Series

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


### Description

Littelfuse WLTC 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 & Benefits

- Low TCR
- Optimal linearity in I / V conversion
- Epoxy substrate
- Small size
- High voltage

### Application

- Power management
- Low ESL

### Additional Information


[Resources](#)

[Accessories](#)

[Samples](#)

### Electrical Specifications

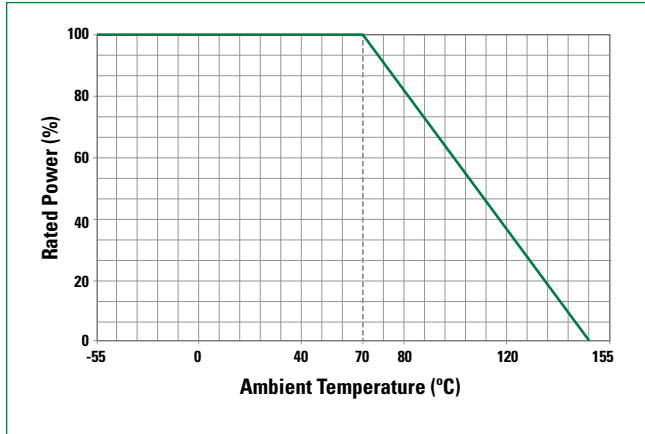
| Part Number       | Size |      | Resistance Value |        | Power Rating (W) | TCR (ppm / °C) | Standard Package Qty |
|-------------------|------|------|------------------|--------|------------------|----------------|----------------------|
|                   | Inch | mm   | Ro (mΩ)          | Rt (%) |                  |                |                      |
| WLTC0508RLR002FNR | 0508 | 1220 | 2                | ±1.0%  | 1                | ±100           | 5000                 |
| WLTC0508QLR003FNR | 0508 | 1220 | 3                | ±1.0%  | 1                | ±50            | 5000                 |
| WLTC0508QLR004FNR | 0508 | 1220 | 4                | ±1.0%  | 1                | ±50            | 5000                 |
| WLTC0508QLR005FNR | 0508 | 1220 | 5                | ±1.0%  | 1                | ±50            | 5000                 |
| WLTC0612QLR001FNR | 0612 | 1632 | 1                | ±1.0%  | 1                | ±50            | 5000                 |
| WLTC0612QLR002FNR | 0612 | 1632 | 2                | ±1.0%  | 1                | ±50            | 5000                 |

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

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### Temperature De-rating Curve



### Storage / Environment Conditions

Products should be stored under the following environmental conditions.

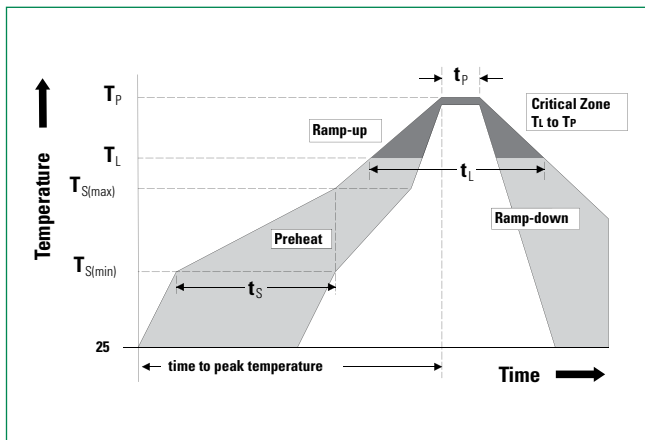
|                                    |                             |
|------------------------------------|-----------------------------|
| <b>Temperature:</b>                | +5 to +35 °C                |
| <b>Humidity:</b>                   | 45 to 85% relative humidity |
| <b>Moisture Sensitivity 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–Wave 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     |

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### Reliability Specifications

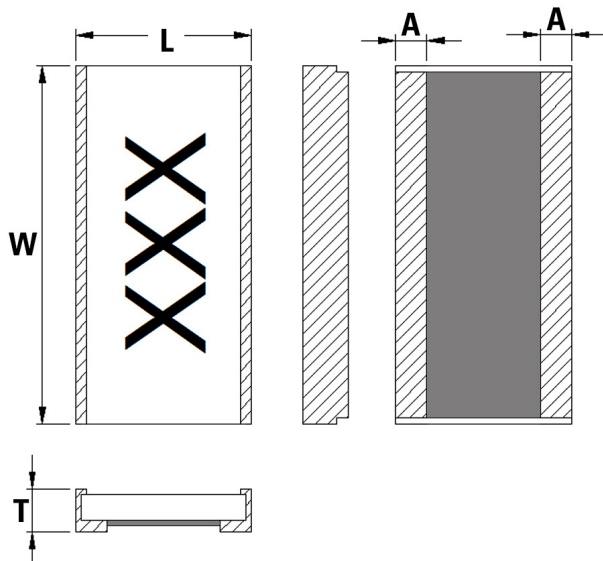
| Test                                 | Procedure  | Specifications   |
|--------------------------------------|--|--|
| <b>Short Term Overload</b>           | 2.5 times the rated voltage shall be applied for 5 sec.  | ±1.0% Appearance: Without distinct damage, and the marking shall be legible. |
| <b>Load Life (Operational Life)</b>  | At temperature 70°C, rated power shall be repeatedly applied for 1.5hrs followed by a pause of 30 min. 1,000 Hours         | ±1.0% Appearance: Without distinct damage, and the marking shall be legible. |
| <b>Low Temp. Exposure</b>            | Test Temp -55°C<br>Test Period: 1,000 hours No Electrical Load   | ±1.0% Appearance: Without distinct damage, and the marking shall be legible. |
| <b>Temp. Cycling (Thermal Shock)</b> | Repeat 100 cycles as follows:<br>-55°C for 30 minutes 155°C for 30 minutes<br>Transition time of 1 minute max              | ±1.0% Appearance: Without distinct damage, and the marking shall be legible. |
| <b>High Temp. Exposure</b>           | Test Temp 155°C<br>Test Period: 1,000 hours No Electrical Load   | ±1.0% Appearance: Without distinct damage, and the marking shall be legible. |
| <b>Moisture Load Life</b>            | At temperature 60°C / 95%RH, rated power shall be repeatedly applied for 1.5hrs followed by a pause of 30 min. 1,000 Hours | ±1.0% Appearance: Without distinct damage, and the marking shall be legible. |
| <b>Resistance to soldering heat</b>  | Reflow soldering as per JEDEC-J-STD-020. Repeat for a total of 3 cycles.   | ±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: 3 seconds at 245°C  | A new solder shall cover minimum of 95%                                      |

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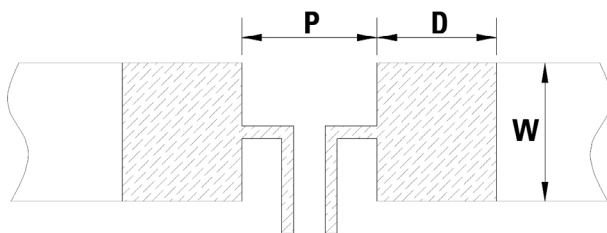
### Dimensions

All dimensions in mm



| Part Number        | W         | L         | T         | A         |
|--------------------|-----------|-----------|-----------|-----------|
| WLTC0508 R001      | 2.00±0.25 | 1.25±0.25 | 0.40±0.15 | 0.38±0.20 |
| WLTC0508 1M50~R005 | 2.00±0.25 | 1.25±0.25 | 0.40±0.15 | 0.32±0.20 |
| WLTC0612 R001      | 3.20±0.25 | 1.60±0.25 | Max 0.45  | 0.35±0.15 |
| WLTC0612 1M50~R005 | 3.20±0.25 | 1.60±0.25 | Max 0.40  | 0.35±0.15 |

### Recommended Land Pattern



| Part Number        | P       | W       | D       | Loading |
|--------------------|---------|---------|---------|---------|
| WLTC0508 R001      | 0.40 mm | 2.30 mm | 0.90 mm | 1.0 W   |
| WLTC0508 1M50~R005 | 0.50 mm | 2.30 mm | 0.85 mm | 1.0 W   |
| WLTC0612 R001~R005 | 0.60 mm | 3.68 mm | 1.30 mm | 1.0 W   |

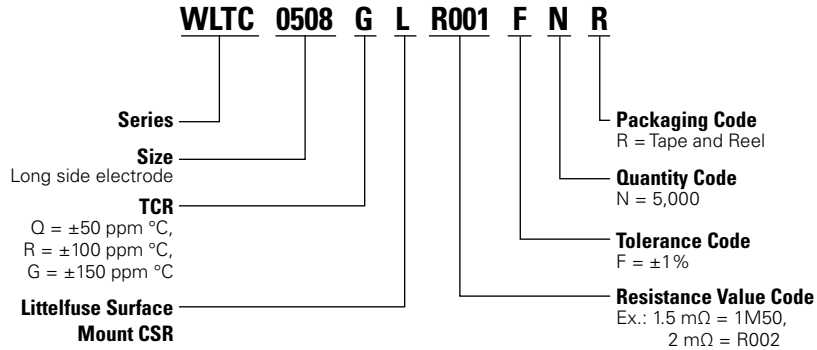
### Packaging

| Part Number | Halogen Free | Packaging Option | Quantity | Quantity & Packaging Codes |
|-------------|--------------|------------------|----------|----------------------------|
| WLTC0508    | Yes          | Tape and Reel    | 5000     | NR                         |
| WLTC0612    | Yes          | Tape and Reel    | 5000     | NR                         |

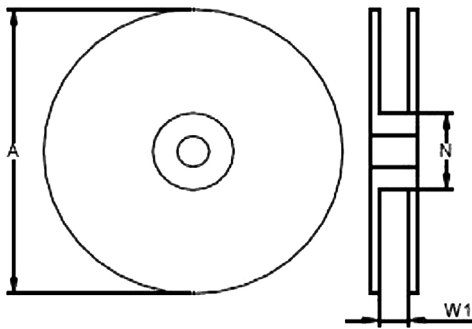
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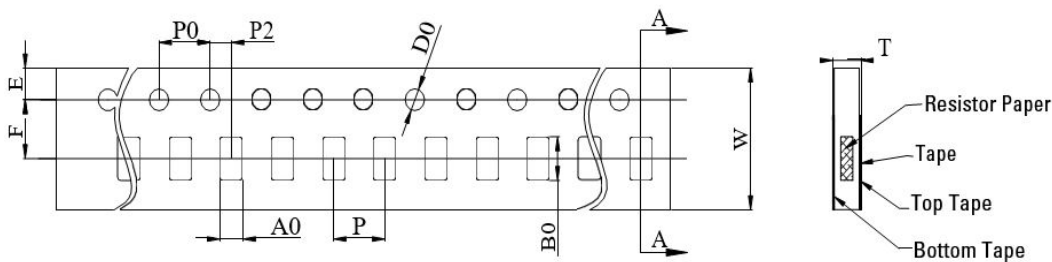
### Part Numbering System



### Tape and Reel Specifications



| Part Number | A±5 (mm) | N±2 (mm) | W1±1 (mm) |
|-------------|----------|----------|-----------|
| WLTC0508    | 178      | 60       | 9.0       |
| WLTC0612    | 178      | 60       | 9.0       |



| Part Number | W         | P0        | P         | P2        | A0        | B0        | D0        | F         | E         | T         | T1 | K0 |
|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----|----|
| WLTC0508    | 8.00±0.30 | 4.00±0.10 | 4.00±0.10 | 2.00±0.10 | 1.45±0.10 | 2.20±0.10 | 1.50±0.10 | 3.50±0.10 | 1.75±0.10 | 0.60±0.10 | /  | /  |
| WLTC0612    | 8.00±0.30 | 4.00±0.10 | 4.00±0.10 | 2.00±0.10 | 1.90±0.20 | 3.50±0.20 | 1.50±0.10 | 3.50±0.10 | 1.75±0.10 | 0.60±0.10 | /  | /  |

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