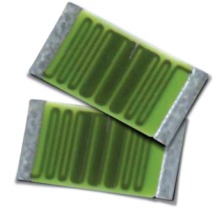


## Advantages

Our patented Micropen® precision printing technology provides ultra precision, thick-film high ohmic value, surface mount resistors. Ohmcraft's Micropenned serpentine patterned resistors produce superior electrical characteristics:

- Voltage Ratings to 600 Volts
- Ultra High Stability
- TCR to 25 ppm/°C
- Resistance Values to 50 Gohms
- Very Low Noise
- VCR to 1 ppm/V
- Tolerances to 0.1%
- Custom Configurations



## Electrical Specifications

| Case Size<br>Ratings  | TCR<br>(±ppm/°C) | Tolerance |           |           |           |           |           |           |           |
|-----------------------|------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                       |                  | 0.10%     | 0.25%     | 0.50%     | 1%        | 2%        | 5%        | 10%       | 20%       |
| 0402<br>40mW<br>50V   | 50               |           |           |           | 10K-100M  | 10K-100M  | 10K-100M  | 10K-100M  | 10K-100M  |
|                       | 100              |           |           |           | 10K-500M  | 10K-500M  | 10K-500M  | 10K-500M  | 10K-500M  |
|                       | 200              |           |           |           | 10K-500M  | 10K-1G    | 10K-1G    | 10K-1G    | 10K-1G    |
| 0603<br>60mW<br>100V  | 50               |           |           | 10K-10M   | 10K-100M  | 10K-500M  | 10K-500M  | 10K-500M  | 10K-500M  |
|                       | 100              |           |           | 10K-10M   | 10K-500M  | 10K-1G    | 10K-1G    | 10K-1G    | 10K-1G    |
|                       | 200              |           |           | 10K-10M   | 10K-500M  | 10K-1G    | 10K-1G    | 10K-10G   | 10K-50G   |
| 0805<br>200mW<br>125V | 50               |           |           | 10K-10M   | 10K-500M  | 10K-500M  | 10K-500M  | 10K-500M  | 10K-500M  |
|                       | 100              |           |           | 10K-10M   | 10K-1G    | 10K-1G    | 10K-1G    | 10K-1G    | 10K-1G    |
|                       | 200              |           |           | 10K-10M   | 10K-1G    | 10K-1G    | 10K-10G   | 10K-10G   | 10K-50G   |
| 1206<br>330mW<br>200V | 25               | 1M-10M    | 1M-100M   | 1M-100M   | 1M-100M   | 1M-100M   | 1M-100M   | 1M-100M   | 1M-100M   |
|                       | 50               | 100K-10M  | 100K-100M | 100K-500M | 100K-500M | 100K-500M | 100K-500M | 100K-500M | 100K-500M |
|                       | 100              | 10K-10M   | 10K-100M  | 10K-500M  | 10K-1G    | 10K-1G    | 10K-1G    | 10K-1G    | 10K-1G    |
|                       | 200              | 10K-10M   | 10K-100M  | 10K-500M  | 10K-1G    | 10K-10G   | 10K-10G   | 10K-10G   | 10K-50G   |
| 2010<br>1W<br>300V    | 25               | 1M-100M   | 1M-100M   | 1M-100M   | 1M-100M   | 1M-100M   | 1M-100M   | 1M-100M   | 1M-100M   |
|                       | 50               | 100K-10M  | 100K-100M | 100K-500M | 100K-500M | 100K-500M | 100K-500M | 100K-500M | 100K-500M |
|                       | 100              | 10K-10M   | 10K-100M  | 10K-500M  | 10K-1G    | 10K-1G    | 10K-1G    | 10K-1G    | 10K-1G    |
|                       | 200              | 10K-10M   | 10K-100M  | 10K-500M  | 10K-1G    | 10K-10G   | 10K-10G   | 10K-10G   | 10K-50G   |
| 2512<br>2W<br>350V    | 25               | 1M-100M   | 1M-500M   | 1M-500M   | 1M-500M   | 1M-500M   | 1M-500M   | 1M-500M   | 1M-500M   |
|                       | 50               | 100K-100M | 100K-500M | 100K-1G   | 100K-1G   | 100K-1G   | 100K-1G   | 100K-1G   | 100K-1G   |
|                       | 100              | 10K-100M  | 10K-500M  | 10K-1G    | 10K-10G   | 10K-10G   | 10K-10G   | 10K-10G   | 10K-10G   |
|                       | 200              | 10K-100M  | 10K-500M  | 10K-1G    | 10K-10G   | 10K-10G   | 10K-10G   | 100K-50G  | 100K-50G  |
| 3512<br>2W<br>600V    | 25               | 1M-100M   | 1M-500M   | 1M-500M   | 1M-500M   | 1M-500M   | 1M-500M   | 1M-500M   | 1M-500M   |
|                       | 50               | 100K-100M | 100K-500M | 100K-1G   | 100K-1G   | 100K-1G   | 100K-1G   | 100K-1G   | 100K-1G   |
|                       | 100              | 10K-100M  | 10K-500M  | 10K-1G    | 10K-10G   | 10K-10G   | 10K-10G   | 100K-10G  | 100K-10G  |
|                       | 200              | 10K-100M  | 10K-500M  | 10K-1G    | 10K-10G   | 10K-10G   | 10K-10G   | 100K-50G  | 100K-50G  |

The continuous maximum applied voltage cannot exceed the maximum power rating and is ohmic value dependent. Value range is case size dependent.

Standard case sizes: 0402, 0403, 0502, 0504, 0603, 0805, 1004, 1005, 1206, 1210, 1505, 2010, 2208, 2510, 2512, 3512, 4020, 5020.

For custom sizes and configurations, consult factory.

## How to Order

|                                      |   |  |   |  |   |  |   |   |   |  |
|--------------------------------------|---|--|---|--|---|--|---|---|---|--|
| <b>SM</b>                            | + |  | + |  | + |  | + |   | + |  |
| <b>Type</b>                          |   | <b>Case Size</b>   |   | <b>TCR</b>   |   | <b>Value</b>   |   | <b>Tolerance</b>  |   | <b>Termination</b>   |
| Surface Mount, High Resistance Chips |   | See dimension table.<br><br>Custom case sizes are available. Please consult factory. |   | E ±25ppm/°C<br>H ±50ppm/°C<br>K ±100ppm/°C<br>L ±200ppm/°C |   | Resistance value expressed as a four digit number, where the first three numbers are the significant value, and the fourth number is the number of zeroes. |   | B ±0.1%<br>C ±0.25%<br>D ±0.5%<br>F ±1.0%<br>G ±2.0%<br>J ±5.0%<br>K ±10%<br>L ±20% |   | T Solderable wraparound matte tin Sn99.9 on nickel barrier, RoHS<br>B Solderable wraparound Sn63Pb37 solder over nickel barrier<br>Z Solderable single surface tin Sn99.9 on nickel barrier, RoHS<br>S Solderable single surface Sn63Pb37, flip-chip<br>G Wire bondable gold, Au, RoHS |

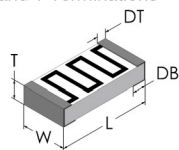
Packaging options: Bulk, Tape & Reel or Flat Pack



## Chip Dimensions

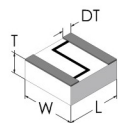
### Wrap-around

B and T Terminations



### Bondable

G Termination



| Case Size | Length             | Width        | Thickness (Max.) | DT           | DB                  | Units  |
|-----------|--------------------|--------------|------------------|--------------|---------------------|--------|
| 0402      | 0.040 ±0.005       | 0.020 ±0.003 | 0.020            | 0.008 ±0.004 | 0.010 +0.002/-0.004 | inches |
|           | 1.02 ±0.13         | 0.51 ±0.08   | 0.51             | 0.20 ±0.10   | 0.25 +0.05/-0.10    | mm     |
| 0603      | 0.063 +0.01/-0.005 | 0.031 ±0.005 | 0.020            | 0.010 ±0.005 | 0.012 ±0.008        | inches |
|           | 1.60 +0.25/-0.13   | 0.79 ±0.13   | 0.51             | 0.25 ±0.13   | 0.30 ±0.20          | mm     |
| 0805      | 0.079 +0.01/-0.005 | 0.050 ±0.005 | 0.025            | 0.010 ±0.005 | 0.013 ±0.008        | inches |
|           | 2.01 +0.25/-0.13   | 1.27 ±0.13   | 0.64             | 0.25 ±0.13   | 0.33 ±0.20          | mm     |
| 1206      | 0.126 +0.01/-0.005 | 0.063 ±0.005 | 0.030            | 0.010 ±0.005 | 0.020 ±0.010        | inches |
|           | 3.20 +0.25/-0.13   | 1.60 ±0.13   | 0.76             | 0.25 ±0.13   | 0.51 ±0.25          | mm     |
| 2010      | 0.200 +0.01/-0.005 | 0.100 ±0.005 | 0.030            | 0.018 ±0.010 | 0.020 ±0.010        | inches |
|           | 5.08 +0.25/-0.13   | 2.54 ±0.13   | 0.76             | 0.46 ±0.25   | 0.51 ±0.25          | mm     |
| 2512      | 0.250 +0.01/-0.005 | 0.125 ±0.005 | 0.030            | 0.020 ±0.010 | 0.024 ±0.010        | inches |
|           | 6.35 +0.25/-0.13   | 3.18 ±0.13   | 0.76             | 0.51 ±0.25   | 0.61 ±0.25          | mm     |
| 3512      | 0.350 +0.01/-0.005 | 0.125 ±0.005 | 0.030            | 0.020 ±0.010 | 0.024 ±0.010        | inches |
|           | 8.89 +0.25/-0.13   | 3.18 ±0.13   | 0.76             | 0.51 ±0.25   | 0.61 ±0.25          | mm     |

Other available case sizes: 0403, 0502, 0503, 0504, 1004, 1005, 1210, 1505, 2208, 2510, 4020, 5020. Please consult

## Typical Performance Characteristics

| Test                            | Maximum ΔR |
|---------------------------------|------------|
| Short Time Overload             | 0.1%       |
| Load Life                       | 0.1%       |
| Temperature Cycle               | 0.1%       |
| Moisture Resistance             | 0.1%       |
| Shock                           | 0.05%      |
| Vibration                       | 0.05%      |
| Dielectric Withstanding Voltage | 0.05%      |
| Resistance to Soldering Heat    | 0.05%      |

| Parameter             | Typical  |
|-----------------------|--|
| Operating Temperature | -55°C to 150°C   |
| TCR                   | Measured from 25°C to 75°C   |
| Resistance Value      | Values > 10M are measured at 100 VDC<br>For custom test voltages consult factory |

## Tape and Reel Specifications

Parts are packaged in accordance with EIA-481 tape and reel specifications.

## Material Construction

|                   |   |
|-------------------|---|
| Resistive Element | Thick Film  |
| Substrate         | 96% Alumina   |
| Encapsulation     | Epoxy   |
| Termination       | Tin over nickel barrier, lead solder over nickel barrier, or gold |

## Custom Configurations Available Upon Request

Please consult with our knowledgeable sales staff for help specifying custom parts to meet your needs:

E: sales@ohmcraft.com

P: 585.624.2610

www.ohmcraft.com

93 Paper Mill St.

Honeoye Falls, NY 14472

## Power Derating Curve

