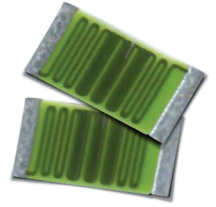


### Advantages

Our patented Micropen® precision printing technology provides ultra precision, thick-film high voltage, military grade, surface mount resistors. Our military SMT chips have extended TCR temperature range and are stringently inspected. Ohmcraft's Micropenned serpentine patterned resistors produce superior electrical characteristics:

- Voltage Ratings to 5000 Volts
- Ultra High Stability
- TCR to 25 ppm/°C
- Resistance Values to 50 Gigohms
- Very Low Noise
- VCR to 1 ppm/V
- Extended TCR Range
- Tolerances to 0.1%
- Custom Configurations



### Electrical Specifications

Case Size Ratings	TCR (±ppm/°C)	Tolerance							
		0.10%	0.25%	0.50%	1%	2%	5%	10%	20%
0402 40mW 150V	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 60mW 400V	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 200mW 600V	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 330mW 1500V	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 1W 2000V	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
2512 2W 3000V	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
3512 2W 3500V	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
4020 2W 4000V	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
5020 2W 5000V	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.  
 For parts below 10K and custom case sizes, consult factory.  
 Other available case sizes: 0403, 0502, 0504, 1004, 1005, 1210, 1505, 2208, 2510.

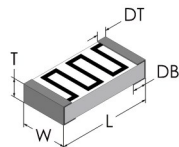
### How to Order

MCH	+		+		+		+		+		
<b>Type</b>		<b>Case Size</b>		<b>TCR</b>		<b>Value</b>		<b>Tolerance</b>		<b>Termination</b>	<b>Packaging</b>
Military Grade High Voltage Chips		See dimension table.  Custom case sizes are available. Please consult factory.		E ±25ppm/°C H ±50ppm/°C K ±100ppm/°C 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% C ±0.25% D ±0.5% F ±1.0% G ±2.0% J ±5.0% K ±10% L ±20%		T Solderable wraparound matte tin Sn99.9 on nickel barrier, RoHS B Solderable wraparound Sn63Pb37 solder over nickel barrier Z Solderable single surface tin Sn99.9 on nickel barrier, RoHS S Solderable single surface Sn63Pb37, flip-chip G Wire bondable gold, Au, RoHS	BU Bulk TR Tape & Reel FP Flat Pack

## Chip Dimensions

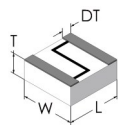
### Wrap-around

B and T Terminations



### Bondable

G, Z, and S Terminations



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
4020	0.400 +0.01/-0.005	0.200 ±0.005	0.030	0.025 ±0.010	0.030 ±0.010	inches
	10.16 +0.25/-0.13	5.08 ±0.13	0.76	0.64 ±0.25	0.76 ±0.25	mm
5020	0.500 +0.01/-0.005	0.200 ±0.005	0.030	0.030 ±0.010	0.030 ±0.010	inches
	12.70 +0.25/-0.13	5.08 ±0.13	0.76	0.76 ±0.25	0.76 ±0.25	mm

Other available case sizes: 0403, 0502, 0504, 1004, 1005, 1210, 1505, 2208, 2510, and custom. Please consult factory.

## 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 -55°C to 125°C
Pulse Capability	10X rated wattage for custom pulse applications consult factory
Resistance Value	Measured at 100V for custom test voltages consult factory

## Tape and Reel Specifications

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

## Material Construction

<b>Resistive Element</b>	Thick Film
<b>Substrate</b>	96% Alumina
<b>Encapsulation</b>	Epoxy
<b>Termination</b>	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:

Ph: 585.624.2610  
 www.ohmcraft.com  
 93 Paper Mill St.  
 Honeoye Falls, NY 14472  
 ocsales@micropen.com

## Power Derating Curve

