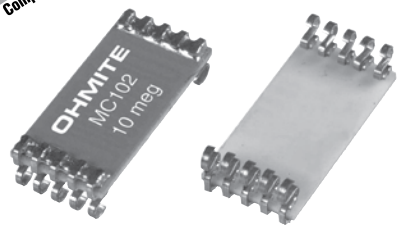
# Macrochip Series

## High Voltage/High Resistance Precision Thick Film Surface Mount

RoHS Compliant




Ohmite's MacroChip resistors bring precision high voltage capabilities to surface mount applications. Designed with thick film on alumina substrate technology, the resistors can be provided in precision tolerances, high voltage ratings, and high resistance values. The planar package design is low profile for easy use with instrumentation, medical equipment, voltage regulators, and power supplies.

### FEATURES

- Non-inductive design (less than 50 nanohenries)
- Low voltage coefficient
- Surface mount
- Pd Ag terminations
- J-bend terminals for applications involving shock and vibration

### APPLICATIONS

- Medical instrumentation
- Power Supplies
- Avionics
- Light Magnification Systems

### SERIES SPECIFICATIONS

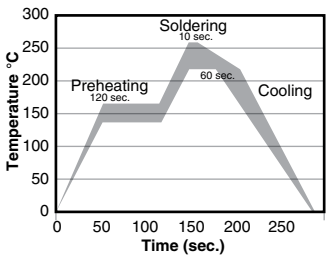
| Series | Resistance Range (Ohms) | Power @25°C | Voltage Rating | Standard Temp. Coefficient 85°-125°C 50PPM/°C | 100PPM/°C |
|---|---|---|---|---|---|
| MC101 | 100Ω to 1,000M | 0.75W | 2.0KV | 100Ω-100M | 101M-1,000M |
| MC102 | 200Ω to 5,000M | 1.50W | 5.0KV | 200Ω-250M | 251M-5,000M |
| MC103 | 250Ω to 5,000M | 2.00W | 7.5KV | 250Ω-100M | 101M-5,000M |
| MC104 | 1K to 5,000M | 2.50W | 10.0KV | 500Ω-450M | 451M-5,000M |
| MC202 | 500Ω to 5,000M | 2.50W | 5.0KV | 500Ω-200M | 201M-5,000M |
| MC204 | 1K to 5,000M | 3.25W | 10.0KV | 1K-375M | 376M-5,000M |

Contact Ohmite for custom configurations.

### CHARACTERISTICS

| | |
|---|---|
| **Resistor** | Thick film on Alumina |
| **Resistance Range** | 100 Ohms to 5,000M |
| **Power Rating** | 0.75W to 3.25W |
| **Voltage Rating** | 2.0KV to 10.0KV |
| **Tolerance** | 0.5% to 20% |
| **Operating Temperature** | -55°C to +180°C |
| **TCR and VCR** | See chart below |
| **Solder** | Silver solder is recommended for Macrochip resistors. Leaching of the silver in the termination will occur if non-silver solder is used. 60/40 tin-lead solders are not recommended for use with the Macrochip product. |

### Recommended Solder Profile




**Preheating:** 145°C ±15°, max. 120 sec.

**Soldering:** min. 220°C, max. 60 sec.

**Max. Temp.:** 260°C ±5°, 10 sec.

### PERFORMANCE DATA

| Characteristic | Test Method | Specification |
|---|---|---|
| **Humidity** | MIL-STD-202, Method 103B, Condition B | ±0.25% |
| **Dielectric Withstanding Voltage** | MIL-STD-202, Method 301, 750V | ±0.25% |
| **Insulation Resistance** | MIL-STD-202, Method 302, Condition A or B | >10,000M or greater dry |
| **Thermal Shock** | MIL-STD-202, Method 107G, Condition B, B-1, or F | ±0.20% |
| **Load Life** | MIL-STD-202, Method 108A, Condition D | ±1.0% |
| **Resistance to Solvents** | MIL-STD-202, Method 215G | No degradation of coating or marking |
| **Shock (Specified Pulse)** | MIL-STD-202, Method 213B, Condition I | ±0.25% |
| **Vibration, High Frequency** | MIL-STD-202, Method 204D, Condition D | ±.020% |
| **Power Conditioning** | MIL-R-49462A, Par 4.8 | ±0.50% |

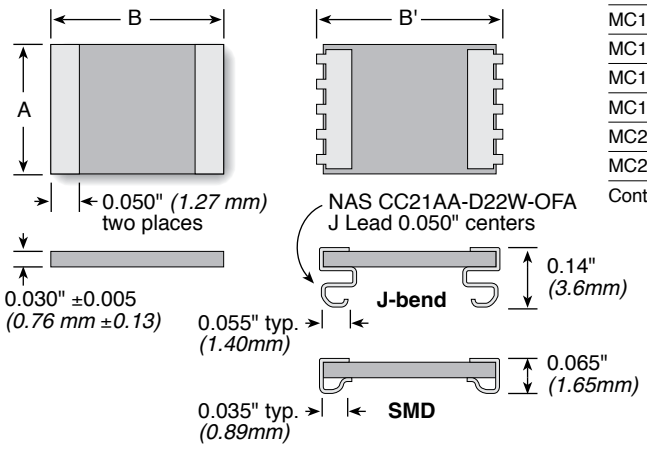
# Macrochip Series

## High Voltage/High Resistance
## Precision Thick Film Surface Mount

## DIMENSIONS

(in./mm)

**With Terminal Options:**

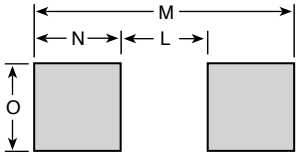



| Series | Power | A ±.01" | B ±.01" | B' max. (J-bend) | Qty./Reel w/J-bend | Qty./Reel w/o J-bend |
|---|---|---|---|---|---|---|
| MC101 | 0.75W | 0.25" (6.35) | 0.25" (6.35) | 0.29" (7.37) | 1000 | 2500 |
| MC102 | 1.50W | 0.25" (6.35) | 0.50" (12.70) | 0.54" (13.72) | 1000 | 2500 |
| MC103 | 2.00W | 0.25" (6.35) | 0.75" (19.05) | 0.79" (20.07) | 1000 | 2500 |
| MC104 | 2.50W | 0.25" (6.35) | 1.00" (25.40) | 1.04" (26.42) | | |
| MC202 | 2.50W | 0.50" (12.70) | 0.50" (12.70) | | | |
| MC204 | 3.25W | 0.50" (12.70) | 1.00" (25.40) | | | |

Contact Ohmite for custom configurations.

### Land Pattern

Land pattern dimensions are for reference only.



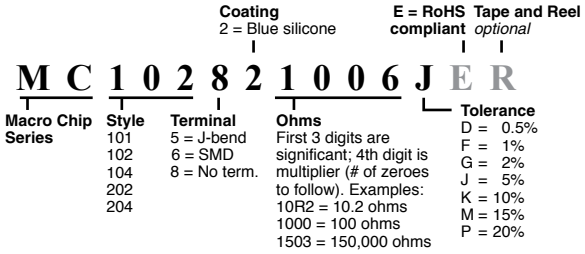

| Size | M | N | O | L |
|---|---|---|---|---|
| MC101 | 0.280 | 0.080 | 0.278 | 0.120 |
| MC102 | 0.530 | 0.080 | 0.278 | 0.370 |
| MC103 | 0.780 | 0.080 | 0.278 | 0.620 |
| MC104 | 1.030 | 0.080 | 0.278 | 0.870 |
| MC202 | 0.530 | 0.080 | 0.556 | 0.370 |
| MC204 | 1.030 | 0.080 | 0.556 | 0.870 |

## TEMP./VOLTAGE COEFFICIENTS OF RESISTANCE

| Resistor Series | Temp. Coeff. of Resistance* 0°C-85°C 25 PPM/°C | 85°C-125°C 50 PPM/°C | 85°C-125°C 100 PPM/°C | Voltage Coeff. of Resistance** < 2PPM/Volt | Voltage Coeff. of Resistance** < 5PPM/Volt |
|---|---|---|---|---|---|
| MC101 | 100 to 800M | 100Ω to 100M | 101M to 1,000M | 100Ω to 270M | 271M to 1,000M |
| MC102 | 200 to 1,500M | 200Ω to 250M | 251M to 5,000M | 200Ω to 640M | 641M to 5,000M |
| MC103 | 250 to 800M | 250Ω to 440M | 441M to 5,000M | 250Ω to 1,100M | 1,101M to 5,000M |
| MC104 | 500 to 2,500M | 500Ω to 450M | 451M to 5,000M | 500Ω to 1,100M | 1,101M to 5,000M |
| MC202 | 500 to 1,500M | 500Ω to 200M | 201M to 5,000M | 500Ω to 520M | 521M to 5,000M |
| MC204 | 1K to 1,750M | 1K to 375M | 376M to 5,000M | 1K to 950M | 951M to 5,000M |

*TCR of 25ppm for temperature range of 0°C-85°C. TCR of 50ppm and 100ppm for -55°C to 125°C. Consult factory for TCR values operating higher than 125°C
**VC's of <2PPM/Volt are available. Contact Ohmite with your requirement.

## ORDERING INFORMATION




### Standard Part Numbers

**Series:** MC10282 **Tolerance:** 5% **Watts:** 1.5W

| Ohms | Part Number | Ohms | Part Number | Ohms | Part Number |
|---|---|---|---|---|---|
| 1K | MC102821001JE | 50K | MC102825002JE | 1.25M | MC102821254JE |
| 2.5K | MC102822501JE | 75K | MC102827502JE | 1.5M | MC102821504JE |
| 5K | MC102825001JE | 100K | MC102821003JE | 1.75M | MC102821754JE |
| 7.5K | MC102827501JE | 125K | MC102821253JE | 2M | MC102822004JE |
| 10K | MC102821002JE | 150K | MC102821503JE | 2.5M | MC102822504JE |
| 12.5K | MC102821252JE | 200K | MC102822003JE | 5M | MC102825004JE |
| 15K | MC102821502JE | 250K | MC102822503JE | 10M | MC102821005JE |
| 17.5K | MC102821752JE | 500K | MC102825003JE | 25M | MC102822505JE |
| 20K | MC102822002JE | 750K | MC102827503JE | 50M | MC102825005JE |
| 25K | MC102822502JE | 1M | MC102821004JE | | |

rev 12/19-1