

Thin Film Microwave Resistor

MICROWAVE RESISTORS



Product may not be to scale

The MIC resistor chips on alumina are designed with low shunt capacitance. Most lower value resistor geometrics are compatible with strip lines, making them ideally suited for microwave circuits.

These chips are manufactured using Vishay Electro-Films (EFI) sophisticated Thin Film equipment and manufacturing technology. The MICs are 100 % electrically tested and visually inspected to MIL-STD-883.

FEATURES

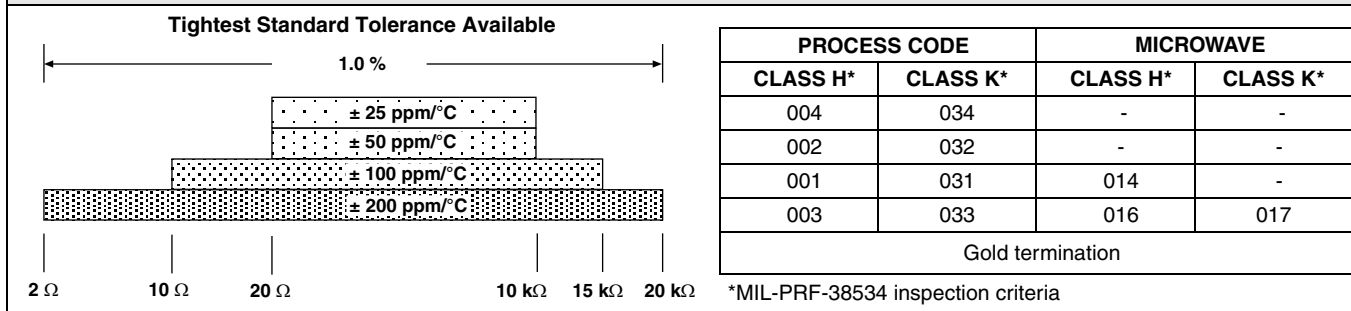
- Wire bondable
- Small chip size: 0.020 x 0.040 inches
- Microwave resistance range: 20 Ω - 1 kΩ
- Overall resistance range: 2 Ω to 20 kΩ
- Alumina substrate
- Low stray capacitance: < 0.2 pF
- Resistor material: Tantalum nitride, self passivating
- Moisture resistant
- High frequency

APPLICATIONS

Vishay EFI MIC chip resistors provide excellent high-frequency response and are ideally suited for prototyping. Typical application areas are:

- Amplifiers
- Oscillators
- Attenuators
- Couplers
- Filters

TEMPERATURE COEFFICIENT OF RESISTANCE, VALUES AND TOLERANCES

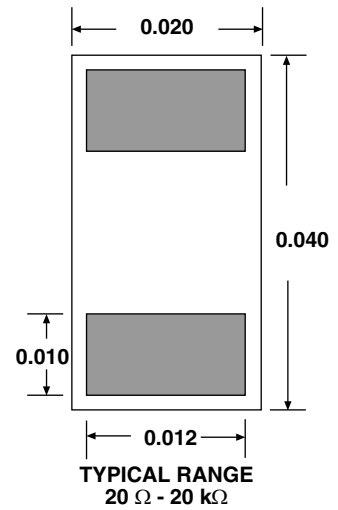
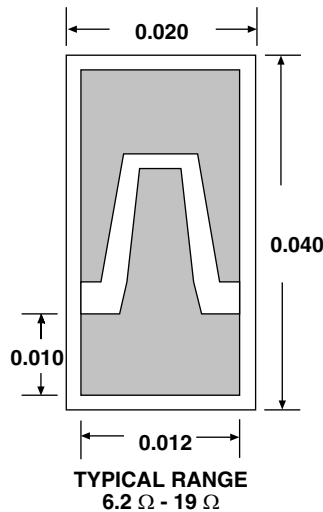
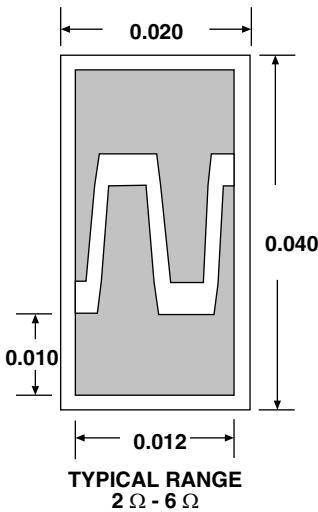


Note

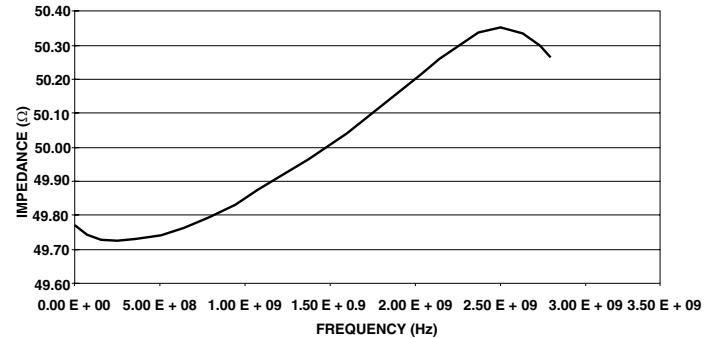
- Only 20 W to 1 kW are standard strip line designs for microwave applications

STANDARD ELECTRICAL SPECIFICATIONS

| PARAMETER | |
|--|-----------------------|
| Noise, MIL-STD-202, Method 308 | - 20 dB typ. |
| Moisture Resistance, MIL-STD-202, Method 106 | ± 0.1 % max. ΔR/R |
| Stability, 1000 h, + 125 °C, 62 mW | ± 0.2 % max. ΔR/R |
| Operating Temperature Range | - 55 °C to + 125 °C |
| Thermal Shock, MIL-STD-202, Method 107, Test Condition F | ± 0.1 % max. ΔR/R |
| High Temperature Exposure, + 150 °C, 1000 h | ± 0.2 % max. ΔR/R |
| Dielectric Voltage Breakdown | 400 V |
| Insulation Resistance | 10 ¹² min. |
| Operating Voltage | 100 V max. |
| DC Power Rating at + 70 °C (Derated to Zero at 150 °C) | 125 mW max. |
| 5 x Rated Power Short-Time Overload, + 25 °C, 5 s | ± 0.1 % max. ΔR/R |

DIMENSIONS in inches

**MICROWAVE
RESISTORS**
SCHEMATIC


| MECHANICAL SPECIFICATIONS in inches | |
|--|---|
| PARAMETER | |
| Chip Size | 0.020 x 0.040 ± 0.003 (0.5 x 1.0 ± 0.076 mm) |
| Chip Thickness | 0.010 ± 0.002 (0.254 ± 0.05 mm) |
| Chip Substrate Material | 99.6 % alumina, 2 - 4 microinch finish |
| Resistor Material | Tantalum nitride, self passivating |
| Bonding Pad Size | 0.010 x 0.012 (0.254 x 0.30 mm) minimum |
| Number of Pads | 2 |
| Pad Material | 25 kÅ minimum gold standard |
| Backing | None |

IMPEDANCE VS FREQUENCY
50 Ω, 20 x 40 MIL SIZE


Options: Terminations: Aluminum, nickel solder (62/32/2)
 Gold back for solder die attach
 Contact Applications Engineer

ORDERING INFORMATION

Example: 100 % visualled, 50 Ω, ± 10 %, ± 100 ppm/°C TCR, gold pads, class H visual inspection

| W INSPECTION/ PACKAGING | MIC PRODUCT FAMILY | 001 PROCESS CODE | 5000 RESISTANCE VALUE Use first 4 digits significant digits of the resistance | B MULTIPLIER CODE B = 0.01 A = 0.1 0 = 1 1 = 10 2 = 100 | K TOLERANCE CODE F = 1.0 % G = 2.0 % H = 2.5 % J = 5.0 % K = 10 % |
|---|---------------------------------|-------------------------------|---|--|--|
| W = 100 % visually inspected parts in matrix trays per MIL-STD-883 X = Sample, visually inspected parts loaded in matrix trays (4 % AQL) | | | | | |



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