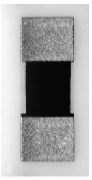
Thin Film Microwave Resistor



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

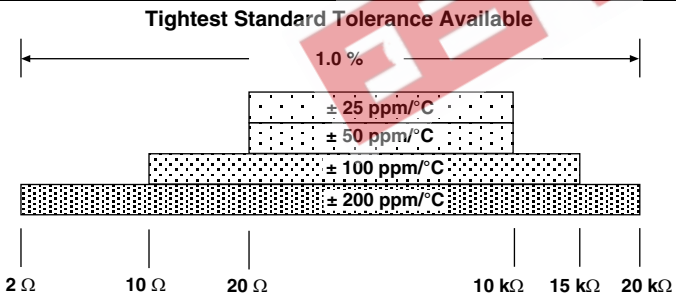
- Wire bondable
- Small chip size: 0.020 x 0.040 inches
- Microwave resistance range: 20 Ω - 1 kΩ
- Overall resistance range: 2 Ω to 20 kΩ
- Alumina substrate
- Low stray capacitance: < 0.2 pF
- Resistor material: Tantalum nitride, self passivating
- Moisture resistant
- High frequency

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



PROCESS CODE		MICROWAVE	
CLASS H*	CLASS K*	CLASS H*	CLASS K*
004	034	-	-
002	032	-	-
001	031	014	-
003	033	016	017
Gold termination			

*MIL-PRF-38534 inspection criteria

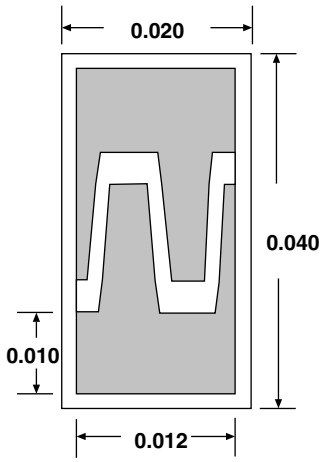
Note

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

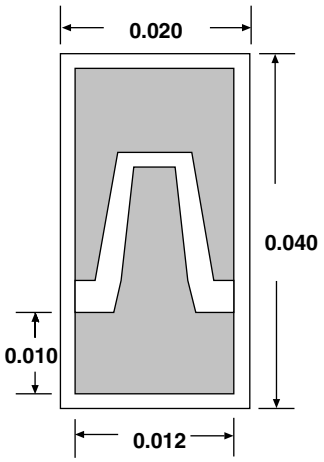
STANDARD ELECTRICAL SPECIFICATIONS

PARAMETER	
Noise, MIL-STD-202, Method 308	- 20 dB typ.
Moisture Resistance, MIL-STD-202, Method 106	± 0.1 % max. Δ*R*/*R*
Stability, 1000 h, + 125 °C, 62 mW	± 0.2 % max. Δ*R*/*R*
Operating Temperature Range	- 55 °C to + 125 °C
Thermal Shock, MIL-STD-202, Method 107, Test Condition F	± 0.1 % max. Δ*R*/*R*
High Temperature Exposure, + 150 °C, 1000 h	± 0.2 % max. Δ*R*/*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. Δ*R*/*R*

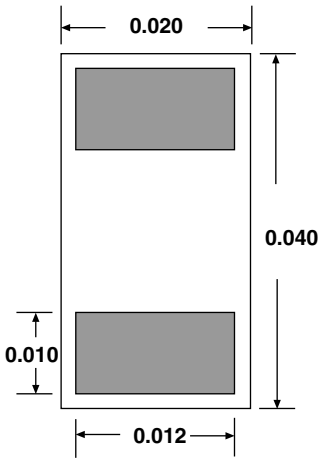
DIMENSIONS in inches



TYPICAL RANGE
2 Ω - 6 Ω



TYPICAL RANGE
6.2 Ω - 19 Ω

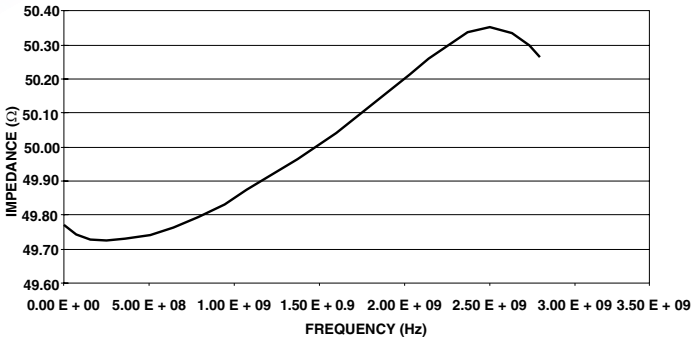


TYPICAL RANGE
20 Ω - 20 kΩ

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

Disclaimer

All product specifications and data are subject to change without notice.

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