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
- High frequency
- Small single chip size: 0.020" x 0.040"
- Case: 0402
- Microwave resistance range: 20 Ω to 500 Ω
- Overall resistance range: 2 Ω to 20 kΩ
- Alumina substrate
- Low stray capacitance: < 0.2 pF
- Resistor material: tantalum nitride, self passivating
- Moisture resistant
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

APPLICATIONS

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

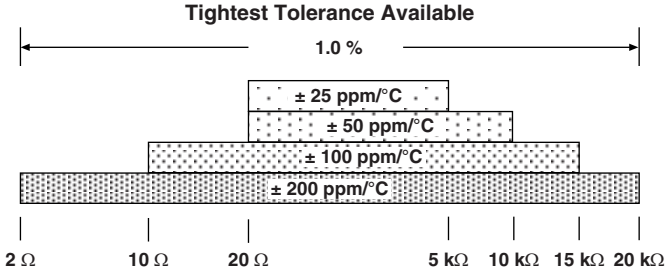
Typical application areas are:

- Amplifiers
- Oscillators
- Attenuators
- Couplers
- Filters

TEMPERATURE COEFFICIENT OF RESISTANCE, VALUES, AND TOLERANCES		
PARAMETER	**VALUE**	**UNIT**
Resistance Range	2 to 20K	Ω
Tolerances	± 1	%
TCR	± 25, ± 50, ± 100, ± 200	ppm/°C

Note

- Only 20 Ω to 500 Ω are standard strip line designs for microwave applications

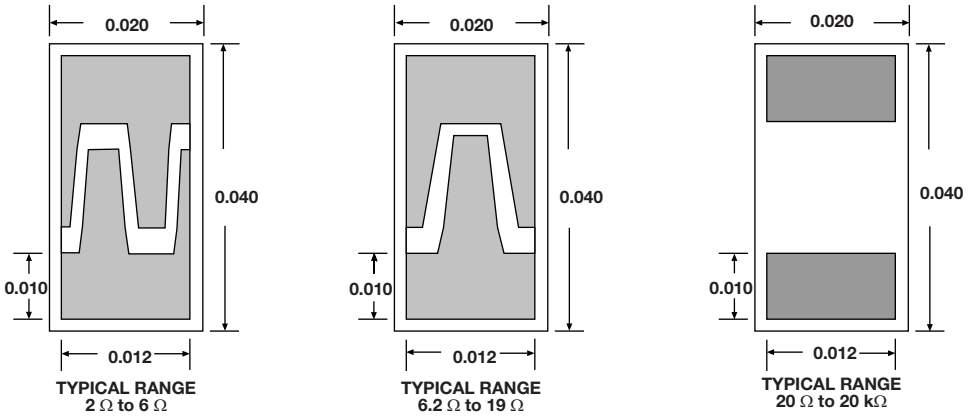


STANDARD ELECTRICAL SPECIFICATIONS		
PARAMETER	**VALUE**	**UNIT**
Noise, MIL-STD-202, Method 308	-20 typ.	dB
Moisture Resistance, MIL-STD-202, Method 106	± 0.1 max. $\Delta R/R$	%
Stability, 1000 h, +125 °C, 62 mW	± 0.2 max. $\Delta R/R$	%
Operating Temperature Range	-55 to +125	°C
Thermal Shock, MIL-STD-202, Method 107, Test Condition F	± 0.1 max. $\Delta R/R$	%
High Temperature Exposure +150 °C, 1000 h	± 0.2 max. $\Delta R/R$	%
Dielectric Voltage Breakdown	400	V
Insulation Resistance	10^{12} min.	Ω
Operating Voltage	100 max.	V
DC Power Rating at +70 °C (Derated to Zero at 150 °C)	0.125 max.	W
5x Rated Power Short-Time Overload, +25 °C, 5 s	± 0.1 max. $\Delta R/R$	%

For technical questions, contact: efi@vishay.com

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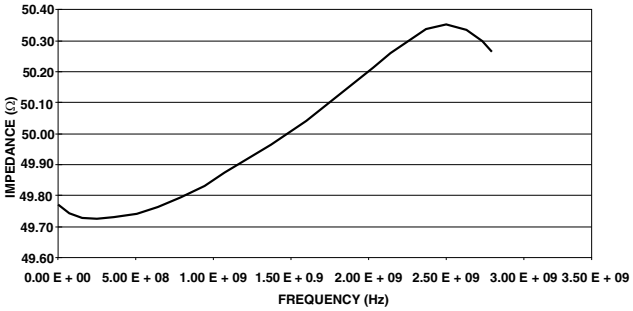
DIMENSIONS in inches



SCHEMATIC



IMPEDANCE VS. FREQUENCY
50 Ω, 20 mil x 40 mil SIZE

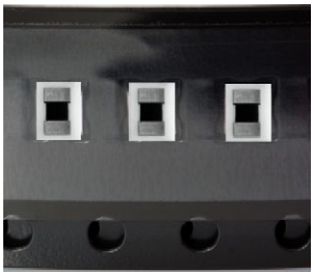


MECHANICAL SPECIFICATIONS	
PARAMETER	
Chip Size	0.020" x 0.040" ± 0.003" (0.5 mm x 1.0 mm ± 0.076 mm)
Chip Thickness	0.010" ± 0.002" (0.254 mm ± 0.05 mm)
Chip Substrate Material	99.6 % alumina, 2 µ" to 4 µ" finish
Resistor Material	Tantalum nitride, self-passivating
Bonding Pad Size	0.010" x 0.012" (0.254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

TAPE AND REEL STANDARD LOAD ORIENTATION

Note

- VEFI will load die pattern side up in tape unless otherwise specified



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GLOBAL PART NUMBER INFORMATION

Global Part Number: MIC5000BKKMSNHWS

Global Part Number Description: MIC 50 10 %, 100 ppm/°C, MIC trim, SnPb termination, no back metal, class H, WS

M	I	C	5	0	0	0	B	K	K	M	S	N	H	W	S

MODEL	RESISTANCE	RESISTANCE MULTIPLIER CODE	TOL. CODE (%)	TCR (ppm/°C)	TRIM STYLE	TERMINATION	BACK METAL	VISUAL CLASS	PACKAGING CODE
MIC 20 x 40 size microwave resistor TaN on alumina	First 4 digits are significant figures of resistance	**C** = 0.001 **B** = 0.01 **A** = 0.1 **0** = 1 **1** = 10	**F** = 1.0 **G** = 2.0 **H** = 2.5 **J** = 5.0 **K** = 10 **M** = 20	**E** = ± 25 **C** = ± 50 **K** = ± 100 **L** = ± 200 **R** = 0 / -250	**M** = microwave **S** = standard	**G** = Au **S** = SnPb **A** = Al **T** = lead (Pb)-free (e1)	**G** = Au **N** = none	**H** = class H **K** = class K	**WS** = waffle pack 100 min., 1 mult. **TS** = tape and reel 100 min., 1 mult. **TF** = tape and reel 5000 min., 1 mult.

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