

## Thin Film Microwave Resistor



The MIB resistor chips on alumina are designed with low shunt capacitance. 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 MIBs are 100 % electrically tested and visually inspected to MIL-STD-883.

### FEATURES

- Wire bondable
- High frequency
- Small single chip size: 0.010" x 0.020"
- Case: 0201
- Microwave resistance range: 20  $\Omega$  to 100  $\Omega$
- Overall resistance range: 20  $\Omega$  to 2 k $\Omega$
- 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](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

### APPLICATIONS

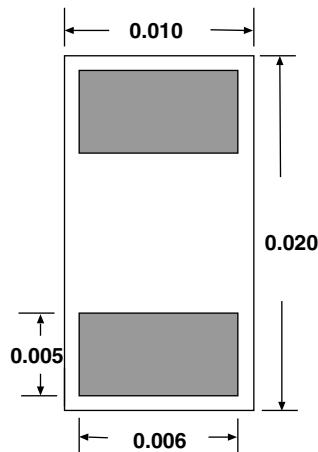
Vishay EFI MIB chip resistors provide excellent high-frequency response and are ideally suited for prototyping.

Typical application areas are:

- Amplifiers
- Oscillators
- Attenuators
- Couplers
- Filters

TEMPERATURE COEFFICIENT OF RESISTANCE, VALUES, AND TOLERANCES		
PARAMETER	VALUE	UNIT
Resistance Range	20 to 100	$\Omega$
Tolerance	$\pm 5, \pm 10, \pm 20$ standard	%
TCR	$\pm 100$	ppm/ $^{\circ}\text{C}$

STANDARD ELECTRICAL SPECIFICATIONS		
PARAMETER	VALUE	UNIT
Noise, MIL-STD-202, Method 308	- 20 typ.	dB
Moisture Resistance, MIL-STD-202, Method 106	$\pm 0.5$ max. $\Delta R/R$	%
Stability, 1000 h, + 125 $^{\circ}\text{C}$ , 12 mW	$\pm 0.5$ max. $\Delta R/R$	%
Operating Temperature Range	- 55 to + 125	$^{\circ}\text{C}$
Thermal Shock, MIL-STD-202, Method 107, Test Condition F	$\pm 0.25$ max. $\Delta R/R$	%
High Temperature Exposure, + 150 $^{\circ}\text{C}$ , 1000 h	$\pm 0.5$ max. $\Delta R/R$	%
Dielectric Voltage Breakdown	400	V
Insulation Resistance	$10^{12}$ min.	$\Omega$
Operating Voltage	100 max.	V
DC Power Rating at + 70 $^{\circ}\text{C}$ (Derated to Zero at 150 $^{\circ}\text{C}$ )	0.025 max.	W
5 x Rated Power Short-Time Overload, + 25 $^{\circ}\text{C}$ , 5 s	$\pm 0.25$ max. $\Delta R/R$	%

**DIMENSIONS** in inches

**SCHEMATIC**

**MECHANICAL SPECIFICATIONS**

PARAMETER	VALUE
Chip Size	0.010" x 0.020" $\pm$ 0.002" (0.25 mm x 0.5 mm $\pm$ 0.08 mm)
Chip Thickness	0.010" $\pm$ 0.002" (0.25 mm $\pm$ 0.05 mm)
Chip Substrate Material	99.6 % alumina, 2 $\mu$ " to 4 $\mu$ " finish
Resistor Material	Tantalum nitride, self passivating
Bonding Pad Size	0.005" x 0.006" (0.12 mm x 0.24 mm)
Number of Pads	2
Pad Material	25 k $\text{\AA}$ minimum gold standard
Backing	None

**Options:** Terminations: aluminum, gold back for solder die attach, contact applications engineer

**GLOBAL PART NUMBER INFORMATION**
**Global Part Number: MIB5000BKKMGNHWS**
**Global Part Number Description: MIB 50 10 %, 100 ppm/ $^{\circ}\text{C}$ , MIC trim, Au termination, no back metal, class H, WS**

M	I	B	5	0	0	B	K	K	M	G	N	H	W	S
MODEL	RESISTANCE	RESISTANCE Multiplier Code	TOL. CODE (%)	TCR (ppm/ $^{\circ}\text{C}$ )	TRIM Style	TERMINATION	Back Metal	Visual CLASS	PACKAGING CODE					
<b>MIB</b> 10 x 20 size Microwave resistor TaN on alumina	First 4 digits are significant figures of resistance	<b>B</b> = 0.01 <b>A</b> = 0.1 <b>0</b> = 1	<b>F</b> = 1.0 <b>G</b> = 2.0 <b>J</b> = 5.0 <b>K</b> = 10 <b>M</b> = 20	<b>K</b> = $\pm$ 100 <b>L</b> = $\pm$ 200	<b>M</b> = Microwave <b>S</b> = Standard	<b>G</b> = Au <b>S</b> = SnPb <b>A</b> = Al <b>T</b> = Lead (Pb)-free (e1)	<b>G</b> = Au <b>N</b> = None	<b>H</b> = Class H <b>K</b> = Class K	<b>WS</b> = Waffle pack 100 min., 1 mult					

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