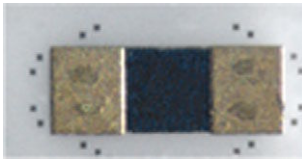


## Thin Film Microwave Resistor



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 1 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)



### APPLICATIONS

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

Typical application areas are:

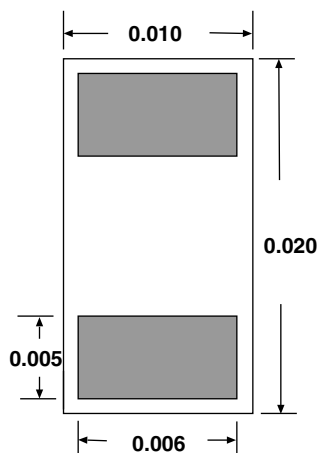
- Amplifiers
- Oscillators
- Attenuators
- Couplers
- Filters

### 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/ $^{\circ}$ 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 $^{\circ}$ C, 12 mW                               | $\pm 0.5$ max. $\Delta R/R$  | %            |
| Operating Temperature Range  | -55 to +125                  | $^{\circ}$ C |
| Thermal Shock, MIL-STD-202, Method 107, Test Condition F                   | $\pm 0.25$ max. $\Delta R/R$ | %            |
| High Temperature Exposure, + 150 $^{\circ}$ 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 $^{\circ}$ C (Derated to Zero at 150 $^{\circ}$ C) | 0.025 max.                   | W            |
| 5 x Rated Power Short-Time Overload, + 25 $^{\circ}$ 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" ± 0.002" (0.25 mm x 0.5 mm ± 0.08 mm) |
| Chip Thickness            | 0.010" ± 0.002" (0.25 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          | 0.005" x 0.006" (0.127 mm x 0.152 mm)                 |
| Number of Pads            | 2   |
| Pad Material              | 25 kÅ minimum gold standard                           |
| Backing                   | None  |

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

| GLOBAL PART NUMBER INFORMATION   |  |   |  |                                      |   |   |                                  |  |   |          |          |          |          |          |          |
|--|--|---|--|--------------------------------------|---|---|----------------------------------|--|---|----------|----------|----------|----------|----------|----------|
| Global Part Number: <b>MIB5000BKKMGNHWS</b>  |  |   |  |                                      |   |   |                                  |  |   |          |          |          |          |          |          |
| Global Part Number Description: <b>MIB 50 10 %, 100 ppm/°C, MIC trim, Au termination, no back metal, class H, WS</b> |  |   |  |                                      |   |   |                                  |  |   |          |          |          |          |          |          |
| <b>M</b>   | <b>I</b>   | <b>B</b>  | <b>5</b>   | <b>0</b>                             | <b>0</b>                                    | <b>0</b>  | <b>B</b>                         | <b>K</b>                                 | <b>K</b>  | <b>M</b> | <b>G</b> | <b>N</b> | <b>H</b> | <b>W</b> | <b>S</b> |
| MODEL  | RESISTANCE   | RESISTANCE MULTIPLIER CODE                        | TOL. CODE (%)  | TCR (ppm/°C)                         | TRIM STYLE                                  | TERMINATION   | BACK METAL                       | VISUAL CLASS                             | PACKAGING CODE                                  |          |          |          |          |          |          |
| <b>MIB</b><br>10 x 20 size microwave resistor<br>TaN on alumina  | First 4 digits are significant figures of resistance | <b>B</b> = 0.01<br><b>A</b> = 0.1<br><b>0</b> = 1 | <b>F</b> = 1.0<br><b>G</b> = 2.0<br><b>J</b> = 5.0<br><b>K</b> = 10<br><b>M</b> = 20 | <b>K</b> = ± 100<br><b>L</b> = ± 200 | <b>M</b> = microwave<br><b>S</b> = standard | <b>G</b> = Au<br><b>S</b> = SnPb<br><b>A</b> = Al<br><b>T</b> = lead (Pb)-free (e1) | <b>G</b> = Au<br><b>N</b> = none | <b>H</b> = class H<br><b>K</b> = class K | <b>WS</b> = waffle pack<br>100 min.,<br>1 mult. |          |          |          |          |          |          |



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