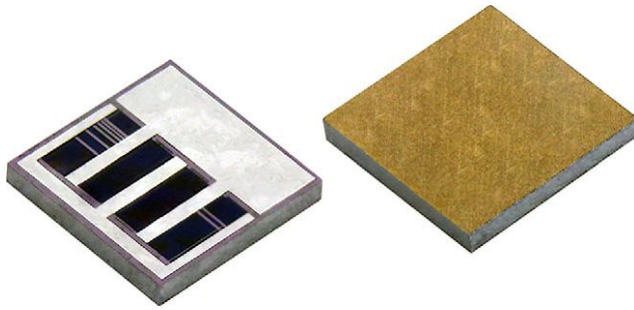


Thin Film, High Power Back-Contact Resistor



FEATURES

- Wire bondable
- Small size
- High power rating
- Single wire bond assembly
- Moisture resistant
- Case size 0202 to 0808
- Material categorization:
for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

The high power back-contact resistor (IGBR) series thin film chip resistor utilizes the excellent thermal properties of silicon to allow ultra high power rating with miniature case size for hybrid (chip and wire) assemblies.

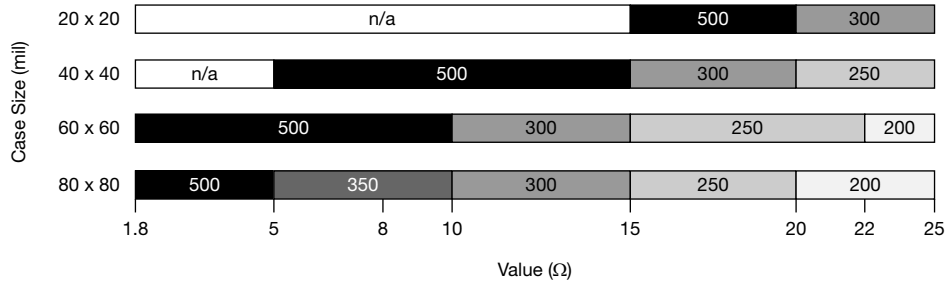
APPLICATIONS

- Gate resistor for IGBT based power converters
- Current limiting for LED lighting applications
- High power applications
- Alternative energy
- Hybrid assemblies

TEMPERATURE COEFFICIENT OF RESISTANCE, VALUES, AND TOLERANCES

| PARAMETER | VALUE | UNIT |
|------------------------|-----------|-------------------------|
| Total Resistance Range | 1.8 to 25 | Ω |
| Standard Tolerances | 5, 10, 25 | % |
| TCR | ± 500 | ppm/ $^{\circ}\text{C}$ |

TCR (ppm/ $^{\circ}\text{C}$) BY CASE SIZE AND VALUE



STANDARD ELECTRICAL SPECIFICATIONS

| PARAMETER | VALUE | UNIT |
|--|-----------------------|--------------------|
| Operating Film Temperature Range | 200 max. | $^{\circ}\text{C}$ |
| Operating Temperature Range | -55 to +125 | $^{\circ}\text{C}$ |
| Working Voltage | 75 max. | V |
| Breakdown Voltage | 400 max. | V |
| Thermal Resistivity ⁽¹⁾ | Down to 2 | K/W |
| DC Power Rating ⁽¹⁾⁽²⁾ | Up to 4 | W |
| Load Life Stability, 1000 h, Film Temperature 200 $^{\circ}\text{C}$ | $\pm 1 \Delta R/R$ | % |
| Short Time Overload, 5 x Rated Power, 25 $^{\circ}\text{C}$, 5 s | $\pm 0.25 \Delta R/R$ | % |
| Thermal Shock, MIL-STD-202, Method 107 F | $\pm 1 \Delta R/R$ | % |
| Moisture Resistance, MIL-STD-202, Method 106 ⁽³⁾ | $\pm 0.25 \Delta R/R$ | % |
| High Temperature Exposure, 100 h, +150 $^{\circ}\text{C}$ | $\pm 0.5 \Delta R/R$ | % |
| Low Temperature Operation, -65 $^{\circ}\text{C}$, 45 min | $\pm 0.5 \Delta R/R$ | % |

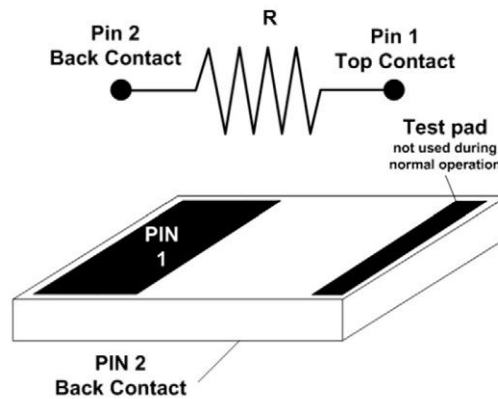
Notes

- (1) See table "Power Rating by Case Size"
- (2) Power rating determined by application specific heat sink properties. Film temperature should not exceed 200 $^{\circ}\text{C}$. See table "Power Rating by Case Size" for more details
- (3) Aluminum pads and aluminum wire bonds are sensitive to high moisture environments. Adequate application level packaging is required to protect the components and wire bonds from moisture related damage

| POWER RATING BY CASE SIZE | | | | | | |
|----------------------------------|--------------------------------------|---------------------------|--|---|--------------------|--------------------|
| CASE SIZE | CHIP SIZE mil (mm) ⁽²⁾ | BOND PAD SIZE mil (mm) | DIE THICKNESS mil (mm) ⁽²⁾ | TYPICAL <i>R</i> THERMAL ⁽¹⁾ K/W | <i>R</i> MIN. Ω | <i>R</i> MAX. Ω |
| 0202 | 20 x 20 (0.5 x 0.5) | 10 x 16 (0.25 x 0.41) | 10 (0.25) | 10 | 15 | 25 |
| 0404 | 40 x 40 (1 x 1) | 15 x 36 (0.38 x 0.91) | 10 (0.25) | 7 | 5 | 25 |
| 0606 | 60 x 60 (1.5 x 1.5) | 20 x 56 (0.51 x 1.42) | 10 (0.25) | 5 | 1.8 | 25 |
| 0808 | 80 x 80 (2 x 2) | 27 x 76 (0.69 x 1.93) | 10 (0.25) | 2 | 1.8 | 25 |

Notes

- (1) Typical *R* thermal between film and back contact. Does not include die attach joint (epoxy or solder)
 (2) Dimension tolerances are ± 0.05 mm (± 2 mil)

SCHEMATIC


| MATERIAL SPECIFICATIONS | |
|---|--|
| PARAMETER | |
| Chip Substrate Material | Oxidized silicon, 10 kÅ minimum SiO ₂ |
| Film Material | Tantalum Nitride |
| Case Size | See table "Power Rating by Case Size" |
| Passivation | None |
| Number of Pads | 1 |
| Top Terminations Suitable for Heavy Gage Aluminum Wire-Bonding | Al (2.5 μm min.) |
| Back Termination (for epoxy, lead (Pb)-free solder or silver compression assembly) | P = TiW (500 Å to 1000 Å) Pd (2000 Å to 3000 Å) Au (3000 Å to 5000 Å) |
| | N = TiW (500 Å to 1000 Å) Ni (6000 Å to 7000 Å) Au (3000 Å to 5000 Å) |
| | T = TiW (500 Å to 1000 Å) Au (1000 Å to 3000 Å) Ni (40 μ" minimum) Au (40 μ" minimum) |



| GLOBAL PART NUMBER INFORMATION | | | | | | | | | | | | | | | |
|---|--|--|---|---|--|--|---|--|---|---|---|---|---|---|---|
| Global Part Number: IGBRB3000CJOPCST | | | | | | | | | | | | | | | |
| Global Part Number Description: IGBR 1 mm 3 Ω 5 % 300 ppm/°C PD Commercial Tape | | | | | | | | | | | | | | | |
| I | G | B | R | B | 3 | 0 | 0 | 0 | C | J | O | P | C | S | T |
| MODEL | SIZE | RESISTANCE (Ω) | RESISTANCE MULTIPLIER CODE | TOL. CODE (%) | TCR (ppm/°C) | BACKSIDE TERMINATION | VISUAL CLASS | PACKAGING CODE | | | | | | | |
| IGBR High power back-contact resistor | A = 20 x 20 B = 40 x 40 C = 60 x 60 D = 80 x 80 | First 4 digits are significant figures of resistance | C = 0.001 B = 0.01 A = 0.1 | J = 5 K = 10 M = 20 L = 25 | J = ± 500 W = ± 350 O = ± 300 M = ± 250 | P = TiW/Pd/Au N = TiW/Ni/Au T = TiW/Au/Ni/Au ⁽¹⁾ | C = commercial H = class H K = class K | WS = waffle pack 100 min., 1 mult FW = full wafer (3") ST = diced on tape | | | | | | | |

Note

⁽¹⁾ See Material Specifications table for metal thickness



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