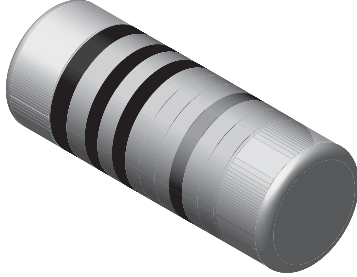


Thin Film Micro-MELF Resistors



FEATURES

- Advanced thin film technology
- Low TCR and tight tolerances
- Excellent stability
- Pure tin termination on nickel barrier, plated on press fit steel caps
- Compliant to RoHS Directive 2002/95/EC



RoHS
COMPLIANT
GREEN
[5-2009]**

STANDARD ELECTRICAL SPECIFICATIONS

| MODEL | POWER RATING ⁽¹⁾ P_{70} W | LIMITING ELEMENT VOLTAGE DC or AC _{RMS} V | TEMPERATURE COEFFICIENT ppm/K | TOLERANCE % | RESISTANCE RANGE Ω | E-SERIES |
|---|--|--|-------------------------------------|----------------|---------------------------------|----------|
| SMM0102 | 0.2 | 150 | ± 15 | ± 0.1 | 100R to 100K | 24; 96 |
| SMM0102 | 0.2 | 150 | ± 25 | ± 0.1 | 100R to 100K | 24; 96 |
| SMM0102 | 0.2 | 150 | ± 50 | ± 1.0 | 10R to 2M21 | 24; 96 |
| Zero-Ohm-Resistor: OMM0102 $R_{max.} = 10 \text{ m}\Omega$ $I_{max.} = 2 \text{ A}$ | | | | | | |

Note

⁽¹⁾ Permissible dissipation depends on the maximum temperature at the solder joint, the component placement density, the substrate material and PCB layout.

TECHNICAL SPECIFICATIONS

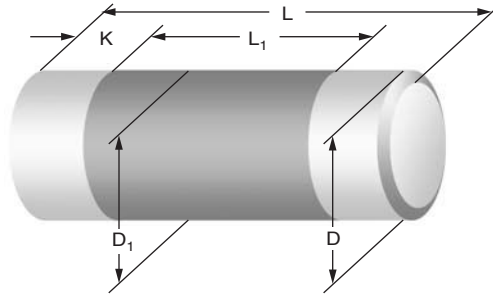
| PARAMETER | UNIT | SMM0102 |
|--|--------------------|------------------------------------|
| Power rating P_{70} | W | 0.2 |
| Limiting element voltage, DC or AC _{RMS} | V | 150 |
| Insulation voltage (1 min), DC or AC _{PEAK} | V | 200 |
| Thermal resistance | K/W | ≤ 250 |
| Insulation resistance | Ω | $\geq 10^9$ |
| Category temperature range | $^{\circ}\text{C}$ | - 55 to + 125 |
| Failure rate: FIT _{observed} | | $\leq 0.1 \times 10^{-9}/\text{h}$ |

Notes

- The power dissipation on the resistor generates a temperature rise against the local ambient, depending on the heat flow support of the printed-circuit board (thermal resistance). The rated dissipation applies only if the permitted film temperature of 125 $^{\circ}\text{C}$ is not exceeded.
- The specification of this product is based on a test board according to EN 140400, providing a thermal resistance of approximately 275 K/W.
- These resistors do not feature a limited lifetime when operated within the permissible limits. However, resistance value drift increasing over operating time may result in exceeding a limit acceptable to the specific application, thereby establishing a functional lifetime.

** Please see document "Vishay Material Category Policy": www.vishay.com/doc?999902

DIMENSIONS

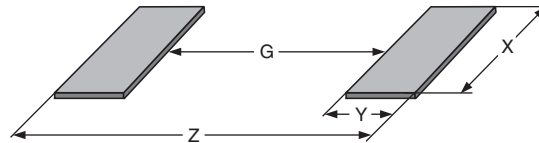


| DIMENSIONS AND MASS | | | | | | |
|---------------------|----------------|---------------|--------------------------|---------------------|------------|-----------|
| TYPE | L (mm) | D (mm) | L ₁ min. (mm) | D ₁ (mm) | K (mm) | MASS (mg) |
| SMM0102 OMM0102 | 2.2 + 0/- 0.15 | 1.1 + 0/- 0.1 | 1.2 | D + 0/- 0.1 | 0.4 ± 0.05 | 7 |

Notes

- Color code marking is applied according to IEC 60062 ⁽¹⁾ in five bands. Each color band appears as a single solid line, voids are permissible if at least 2/3 of the band is visible from each radial angle of view. The last color band for tolerance is approximately 50 % wider than the other bands. An interrupted band between the 4th and 5th full band indicates the temperature coefficient (yellow = TC25, orange = TC15).
- Zero ohm jumper are marked with one centered black band.

PATTERN STYLES FOR MELF RESISTORS



| RECOMMENDED SOLDER PAD DIMENSIONS | | | | | | | | |
|-----------------------------------|----------------|--------|--------|--------|------------------|--------|--------|--------|
| TYPE | WAVE SOLDERING | | | | REFLOW SOLDERING | | | |
| | G (mm) | Y (mm) | X (mm) | Z (mm) | G (mm) | Y (mm) | X (mm) | Z (mm) |
| SMM0102 OMM0102 | 0.7 | 1.2 | 1.5 | 3.1 | 1.1 | 0.8 | 1.3 | 2.7 |

Note

- The given solder pad dimensions reflect the considerations for board design and assembly as outlined e.g. in standards IEC 61188-5-x, or in publication IPC-7351. They do not guarantee any supposed thermal properties, however, they will be found adequate for most general applications.



| PART NUMBER AND PRODUCT DESCRIPTION | | | | | | | | | | | | | | | | | | |
|---|--|---|---|--|---|---|--|---|---|--|---|---|----------------------|---|---|---|---|---|
| Part Number: SMM01020D5620BB300 | | | | | | | | | | | | | | | | | | |
| Part Number: OMM01020000000B300 | | | | | | | | | | | | | | | | | | |
| S | M | M | 0 | 1 | 0 | 2 | 0 | D | 5 | 6 | 2 | 0 | B | B | 3 | 0 | 0 | |
| O | M | M | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B | 3 | 0 | 0 |
| MODEL | VERSION | | | TCR | | | RESISTANCE | | | TOLERANCE | | | PACKAGING | | | | | |
| SMM0102 OMM0102 | 0 = Neutral | | | E = ± 15 ppm/K D = ± 25 ppm/K C = ± 50 ppm/K 0 = Jumper | | | 3 digit value 1 digit multiplier 0000 = Jumper MULTIPLIER 9 = *10 ⁻¹ 2 = *10 ² 0 = *10 ⁰ 3 = *10 ³ 1 = *10 ¹ 4 = *10 ⁴ | | | B = ± 0.1 % F = ± 1 % 0 = Jumper | | | B1 B3 B0 M8 | | | | | |
| Product Description: SMM0102 25 562R 0.1 % B3 | | | | | | | | | | | | | | | | | | |
| Product Description: OMM0102 0R0 B3 | | | | | | | | | | | | | | | | | | |
| SMM0102 | 25 | | | 562R | | | 0.1 % | | | B3 | | | | | | | | |
| OMM0102 | - | | | 0R0 | | | - | | | B3 | | | | | | | | |
| MODEL | TCR | | | RESISTANCE | | | TOLERANCE | | | PACKAGING | | | | | | | | |
| SMM0102 OMM0102 | ± 15 ppm/K ± 25 ppm/K ± 50 ppm/K | | | 100 = 100 Ω 2M21 = 2.21 MΩ 0R0 = Jumper | | | ± 0.1 % ± 1 % | | | B1 B3 B0 M8 | | | | | | | | |

Note

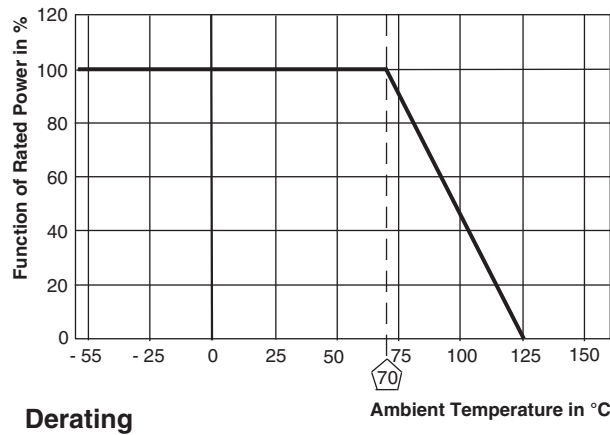
- Products can be ordered using either the PART NUMBER or the PRODUCT DESCRIPTION.

| PACKAGING | | | | | | |
|--------------------|-------------------|---------------------|---|-------|-------|---------------|
| TYPE | CODE | QUANTITY | CARRIER TAPE | WIDTH | PITCH | REEL DIAMETER |
| SMM0102 OMM0102 | B1 ⁽¹⁾ | 1000 ⁽¹⁾ | Blister tape acc. IEC 60286-3 Type II | 8 mm | 4 mm | 180 mm/7" |
| | B3 | 3000 | | | | 330 mm/13" |
| | B0 | 10 000 | | | | |

Note

⁽¹⁾ Package of 1000 pieces, code B1, is available only for products with tolerance ± 0.1 %.

FUNCTIONAL PERFORMANCE



| TEST PROCEDURES AND REQUIREMENTS | | | |
|--|--|--|--------------------------------|
| TEST | CONDITIONS OF TEST | REQUIREMENTS PERMISSIBLE CHANGE (ΔR) | |
| | | < 221 k Ω | > 221 k Ω |
| Endurance test at 70 °C IEC 60115-1, 4.25.1 | 1000 h at 70 °C, 1.5 h "on", 0.5 h "off" 8000 h at 70 °C, 1.5 h "on", 0.5 h "off" | $\pm 0.25 \% R$ $\pm 0.5 \% R$ | $\pm 0.5 \% R$ $\pm 1 \% R$ |
| Endurance at UCT IEC 60115-1, 4.25.3 | 1000 h at 125 °C without load | $\pm 0.25 \% R$ | $\pm 1 \% R$ |
| Overload test IEC 60115-1, 4.13 | Short time overload for 2 s at 6.25 x rated power | $\pm 0.1 \% R$ | $\pm 0.15 \% R$ |
| Thermal shock IEC 60115-1, 4.19 and IEC 60068-2-14 | Rapid change between LCT = - 55 °C and UCT = 125 °C, 5 cycles | $\pm 0.1 \% R$ | $\pm 0.15 \% R$ |
| Damp heat steady state IEC 60115-1, 4.24 and IEC 60068-2-78 | 56 days at 40 °C and 93 % relative humidity | $\pm 0.5 \% R$ | $\pm 1 \% R$ |
| Resistance to soldering heat IEC 60115-1, 4.18 and IEC 60068-2-58 | 10 s at 260 °C solder bath temperature | $\pm 0.1 \% R$ | $\pm 0.25 \% R$ |

| APPLICABLE SPECIFICATIONS | |
|----------------------------------|--|
| • EN 60115-1 | Generic specification |
| • EN 140400 | Sectional specification |
| • EN 140401-803 | Detail specification |
| • IEC 60068-2-x | Variety of environmental test procedures |
| • IEC 60286-3 | Packaging of SMD components |



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