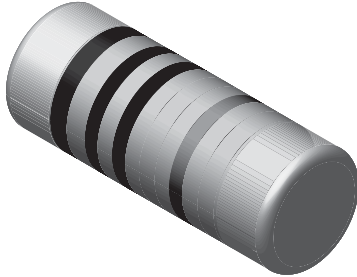


## Thin Film Micro-MELF Resistors



## 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 <sup>(1)</sup> $P_{70}$ W	LIMITING ELEMENT VOLTAGE DC or AC <sub>RMS</sub> V	TEMPERATURE COEFFICIENT ppm/K	TOLERANCE %	RESISTANCE RANGE $\Omega$	E-SERIES
SMM0102	0.2	150	$\pm 15$	$\pm 0.1$	100R to 100K	24; 96
SMM0102	0.2	150	$\pm 25$	$\pm 0.1$	100R to 100K	24; 96
SMM0102	0.2	150	$\pm 50$	$\pm 1.0$	10R to 2M21	24; 96

Zero-Ohm-Resistor: OMM0102       $R_{max.} = 10 \text{ m}\Omega$        $I_{max.} = 2 \text{ A}$

## Note

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

## TECHNICAL SPECIFICATIONS

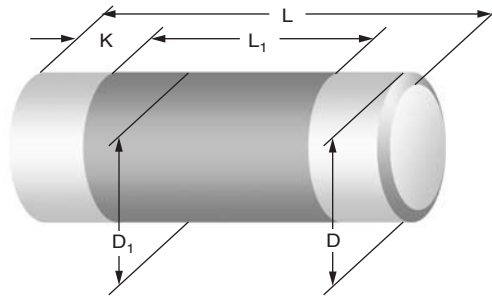
PARAMETER	UNIT	SMM0102
Power rating $P_{70}$	W	0.2
Limiting element voltage, DC or AC <sub>RMS</sub>	V	150
Insulation voltage (1 min), DC or AC <sub>PEAK</sub>	V	200
Thermal resistance	K/W	$\leq 250$
Insulation resistance	$\Omega$	$\geq 10^9$
Category temperature range	$^{\circ}\text{C}$	- 55 to + 125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

## 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](http://www.vishay.com/doc?999902)

**DIMENSIONS**

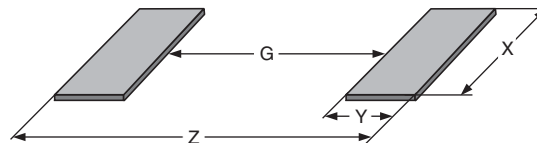


DIMENSIONS AND MASS						
TYPE	L (mm)	D (mm)	L <sub>1</sub> min. (mm)	D <sub>1</sub> (mm)	K (mm)	MASS (mg)
SMM0102 OMM0102	2.2 + 0/- 0.15	1.1 + 0/- 0.1	1.2	D + 0/- 0.1	0.4 ± 0.05	7

**Notes**

- Color code marking is applied according to IEC 60062 <sup>(1)</sup> 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 4<sup>th</sup> and 5<sup>th</sup> 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	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 <sup>-1</sup> 2 = *10 <sup>2</sup> 0 = *10 <sup>0</sup> 3 = *10 <sup>3</sup> 1 = *10 <sup>1</sup> 4 = *10 <sup>4</sup>	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

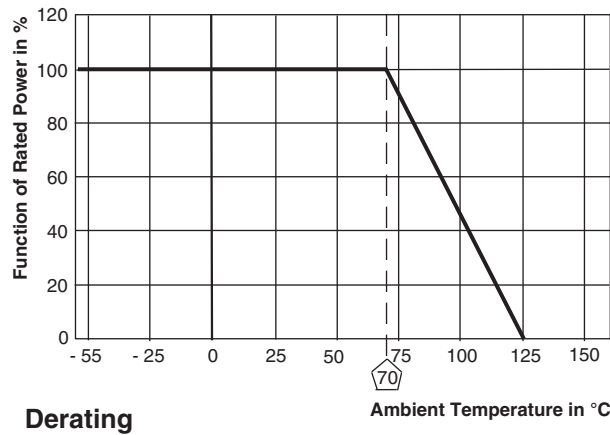
- Products can be ordered using either the PART NUMBER or the PRODUCT DESCRIPTION.

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

Note

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

**FUNCTIONAL PERFORMANCE**



<b>TEST PROCEDURES AND REQUIREMENTS</b>			
TEST	CONDITIONS OF TEST	REQUIREMENTS PERMISSIBLE CHANGE ( $\Delta R$ )	
		< 221 k $\Omega$	> 221 k $\Omega$
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	$\pm 0.1 \% R$	$\pm 0.25 \% R$

<b>APPLICABLE SPECIFICATIONS</b>	
• 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



## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**