

Power Resistors Cooled by Auxiliary Heatsink (Not Supplied) Thick Film Technology


FEATURES

- Technology: thick film deposited on ceramic
- Cold system without external radiation
- High power 650 W at 85 °C bottom case temperature
- Non-inductive
- Low profile
- Easy assembly, self-calibrated pressure
- Possible configuration with 2 resistors
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

APPLICATIONS

Filter resistor, snubber resistor, divider resistor

STANDARD ELECTRICAL SPECIFICATIONS					
MODEL	RESISTANCE RANGE Ω	MAX. RATED POWER $BC_{85^{\circ}C}$ W	TOLERANCE ⁽¹⁾ \pm %	TEMPERATURE COEFFICIENT \pm ppm/ $^{\circ}C$	E-SERIES OHMIC VALUES
RCMW	0.47 to 3	650	5, 10	300	E24
	3.3 to 1M	650	5, 10	100	

Note
⁽¹⁾ ± 2 % or ± 1 % on special request for limited resistance value and with reduction of maximum power and pulse rating (contact us for details)

MECHANICAL SPECIFICATIONS	
UL 94 flame classifications	Material complies with the standard UL 94 V-0
Resistive element	Cermet
Substrate	Alumina
Encapsulation	Resin filled case
Cables	OMERIN 332- EN 50264-3-1 600 V 1.5 mm ² (other upon request)

TECHNICAL SPECIFICATIONS	
PARAMETER	RCMW 650
Operating temperature range	-55 °C to +155 °C
Nominal power at 85 °C bottom case temperature	650 W (single resistor)
Maximum operating voltage	6000 V
Dielectric strength V_{RMS} (50 Hz / 1 min)	7000 V
Partial discharge	< 10 pC at 4000 Veff Other cases: consult us
Self-inductance (frequency 10 kHz)	≤ 40 nH, typical without cables (consult us for your specific cable length, e. g. < 0.7 μ H with two standard cables of 250 mm)
Insulation	> 10 G Ω at 500 V _{CC}
Weight (max.)	80 g

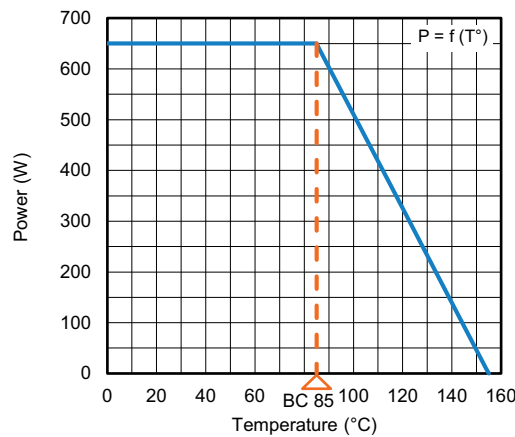


PERFORMANCE			
TESTS	CONDITIONS	REQUIREMENTS	TYPICAL VALUES
Endurance	IEC 60115-1 Heatsink temperature: 85 °C bottom case Number of cycles required: 500 cycles - 1000 h, 90 min ON, 30 min OFF	$\pm (0.5 \% + 0.05 \Omega)$	< 0.5 %
Damp heat	IEC 60068-2-78 56 days, 40 °C, 93 % HR	$\pm 2 \%$ or $\pm (0.5 \% + 0.05 \Omega)$	< 0.25 %
Climatic sequence	IEC 60068-2-14 Nb: Lower category temperature: -40 °C Upper category temperature: 85 °C Exposure time at lower and upper category: 3 hours Rate of change of temperature < 1 °K/min Number of cycles: 21	$\pm (0.5 \% + 0.05 \Omega)$	< 0.1 %
Salt mist test	NF EN ISO 9227: 240 h salt spray test	$\pm (0.5 \% + 0.05 \Omega)$	< 0.1 %
Shock	IEC 60068-2-27: Shock type: half-sine Amplitude: 100 m/s ² Duration: 11 ms Pulse interval: 1.6 s Number of bumps: 18 (3 for each of the 6 directions) Axis tested: 3 (X, Y, and Z)	$\pm (0.1 \% + 0.01 \Omega)$	< 0.1 %
Vibrations	NF EN 60068-2-6 Fc: Frequency range: 5 Hz to 500 Hz Level: 7.5 mm or 40 m/s ² Sweep endurance: 90 min Axis tested: 3 (X, Y, and Z)	$\pm (0.1 \% + 0.01 \Omega)$	< 0.1 %

Note

- All tests were done in Vishay MCB laboratory conditions

DISSIPATION

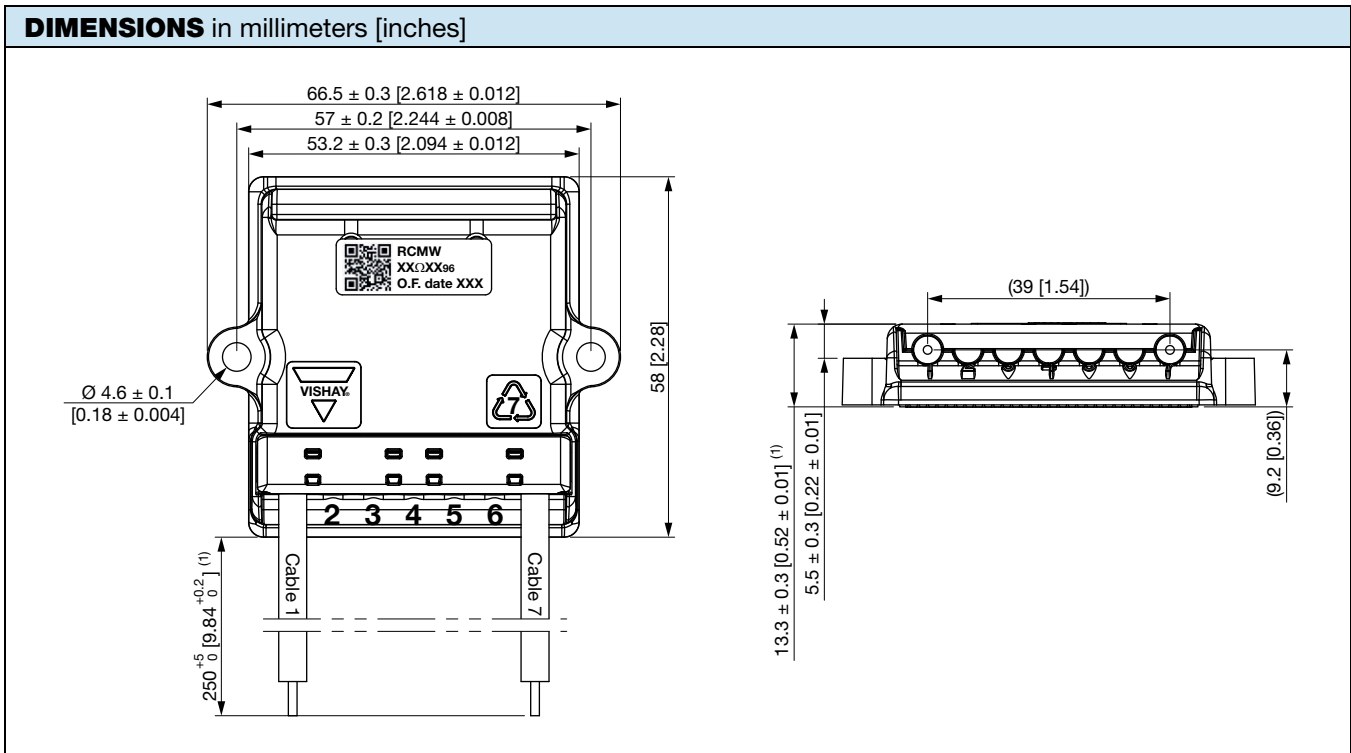


Permanent Applicable Power (W) as a Function of Bottom Case Temperature (°C)

ENERGY

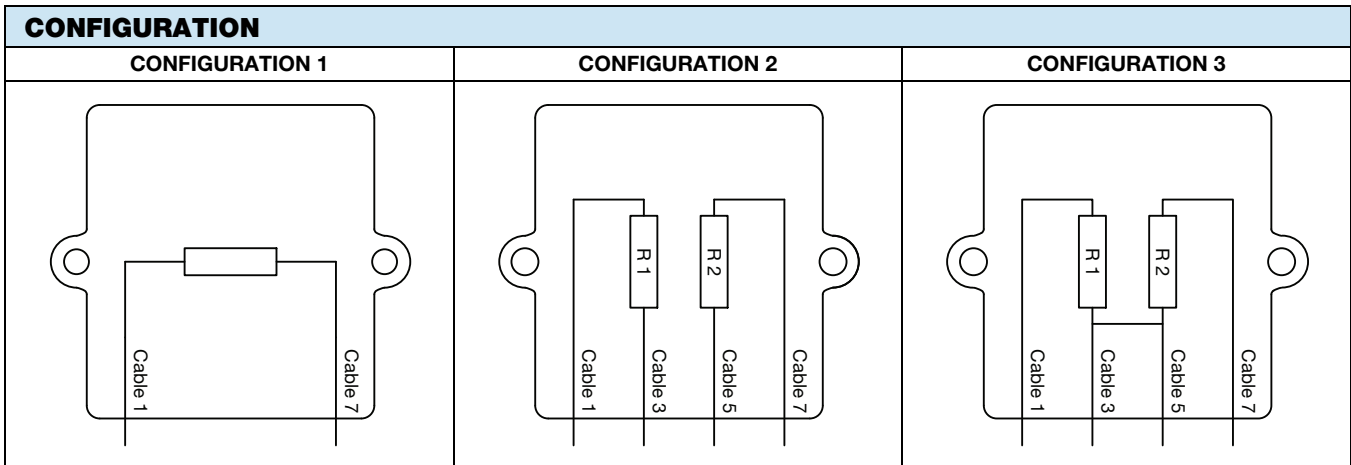
Repetitive operation: 3.5 J / pulse t = 50 μs

Other t values: contact us



Note

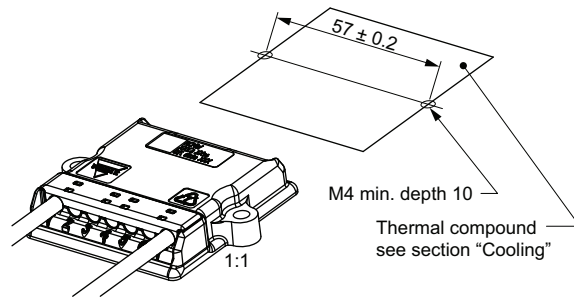
⁽¹⁾ Under alumina



OPTION

- Other configuration upon request
- Up to 5 resistive elements (7 cables)
- Thermal sensor

ASSEMBLY



Tightening torque for mechanical mounting:
1.8 Nm ± 0.2 Nm

COOLING

The temperature of the heatsink may be maintained at the specified values with:

- Forced air ventilation or internal circulation of a liquid cooling
- Heatsink contact surface: < Ra 6.3 μ
- Evenness defect: 0.05 mm max.
- Surface temperature gradient (isotherm): 20 °C max.
- Thermal compound not supplied (resistance < 0.025 °C/W / 0.05 mm preconized)
- Mounting recommendation: www.vishay.com/doc?32586

The user must select the thermal resistance of the heatsink according to the power applied

ORDERING INFORMATION						
RCMW	650	C1	18K	5 %	XXX	BO10
MODEL	STYLE	CONFIGURATION	RESISTANCE VALUE	TOLERANCE	CUSTOM DESIGN (optional on request)	PACKAGING

GLOBAL PART NUMBER INFORMATION																	
R	C	M	W	6	5	0	C	1	1	8	0	2	J	B	X	X	X
1						2		3				4	5	6			
1		2				3				4		5		6			
GLOBAL MODEL		CONFIGURATION				OHMIC VALUE				TOLERANCE		PACKAGING		INDUSTRIALIZATION NUMBER			
RCMW 650		C1: single resistor C2: double resistor C3: double resistor with mid-point				The first three digits are significant figures and the last specifies the number of zeros to follow, R designates decimal point. 1802 = 18 kΩ				J = 5 % K = 10 %		B = box 10 pcs for standard		3 specific digits (cable length)			

EXAMPLE		
MODEL	DESCRIPTION	PART NUMBER
RCMW 650	RCMW 650 C1 18K 5 % BO10	RCMW650C11802JB



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.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. 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.