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 $BC_{85\ °C}$ W	TOLERANCE (1) ± %	TEMPERATURE COEFFICIENT ± ppm/°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 µH with two standard cables of 250 mm)
Insulation	> 10 GΩ at 500 V_{CC}
Weight (max.)	80 g

For technical questions, contact: mcbfixedresistors@vishay.com

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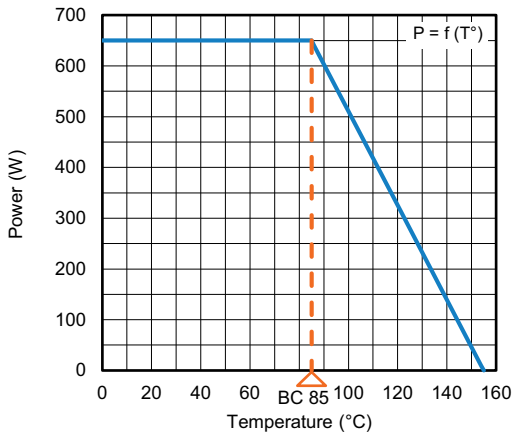
PERFORMANCE			
TESTS	**CONDITIONS**	**REQUIREMENTS**	**TYPICAL VALUES**
Endurance	IEC 60115-1 Heatsink temperature: 85 °C bottom case Number of cycles required: 500 cycles - 1000 h, 90 min ON, 30 min OFF	± (0.5 % + 0.05 Ω)	< 0.5 %
Damp heat	IEC 60068-2-78 56 days, 40 °C, 93 % HR	± 2 % or ± (0.5 % + 0.05 Ω)	< 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	± (0.5 % + 0.05 Ω)	< 0.1 %
Salt mist test	NF EN ISO 9227: 240 h salt spray test	± (0.5 % + 0.05 Ω)	< 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)	± (0.1 % + 0.01 Ω)	< 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)	± (0.1 % + 0.01 Ω)	< 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

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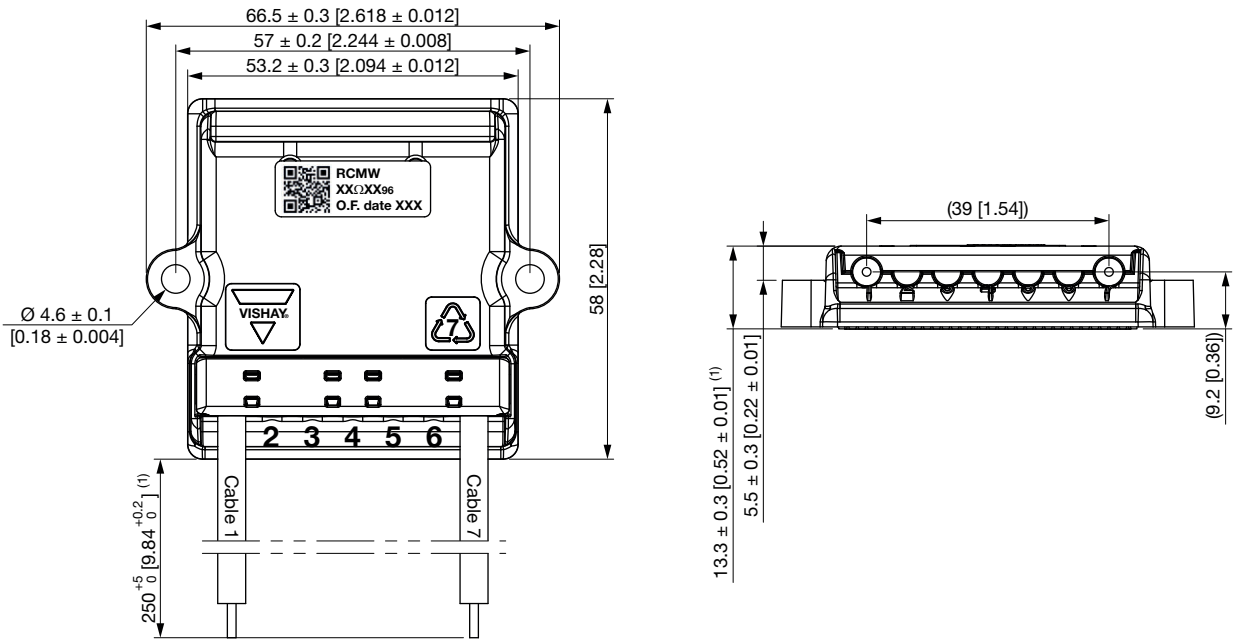
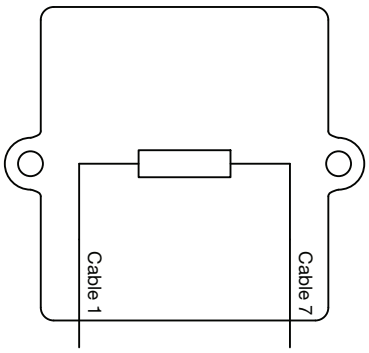
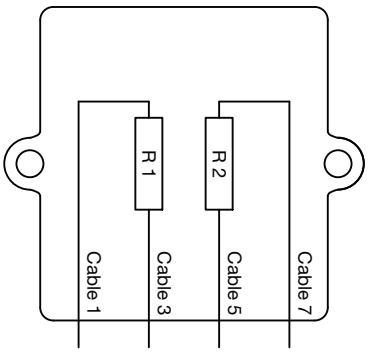
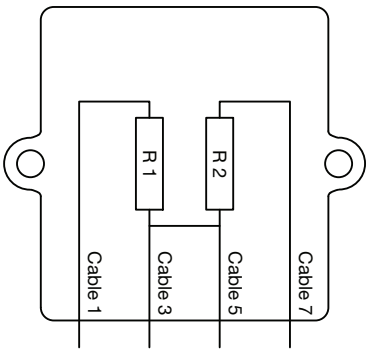
DIMENSIONS in millimeters [inches]



Note

(1) Under alumina

CONFIGURATION

CONFIGURATION 1	CONFIGURATION 2	CONFIGURATION 3
		

OPTION

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

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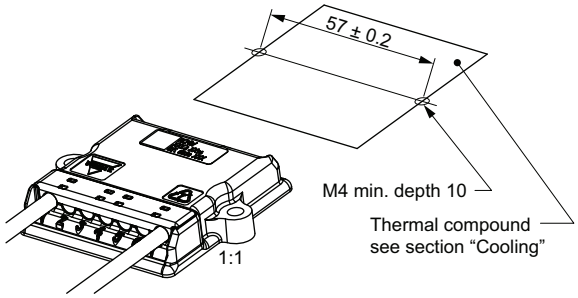
ASSEMBLY



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

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