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


## FEATURES

- Technology: thick film metal on ceramic
- Cold system without external radiation
- High power / volume ratio
- Non-inductive
- Easy assembly, self-calibrated pressure (400 N)

## LINKS TO ADDITIONAL RESOURCES

3D Models

| STANDARD ELECTRICAL SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| MODEL | RESISTANCE RANGE Ω | MAX. RATED POWER $P_{25\ °C}$ W | TOLERANCE ± % | TEMPERATURE COEFFICIENT ± ppm/°C | E-SERIES OHMIC VALUES |
| RCMC | 0.27 to 18 | 750 | 10 | 150 | E 12 |

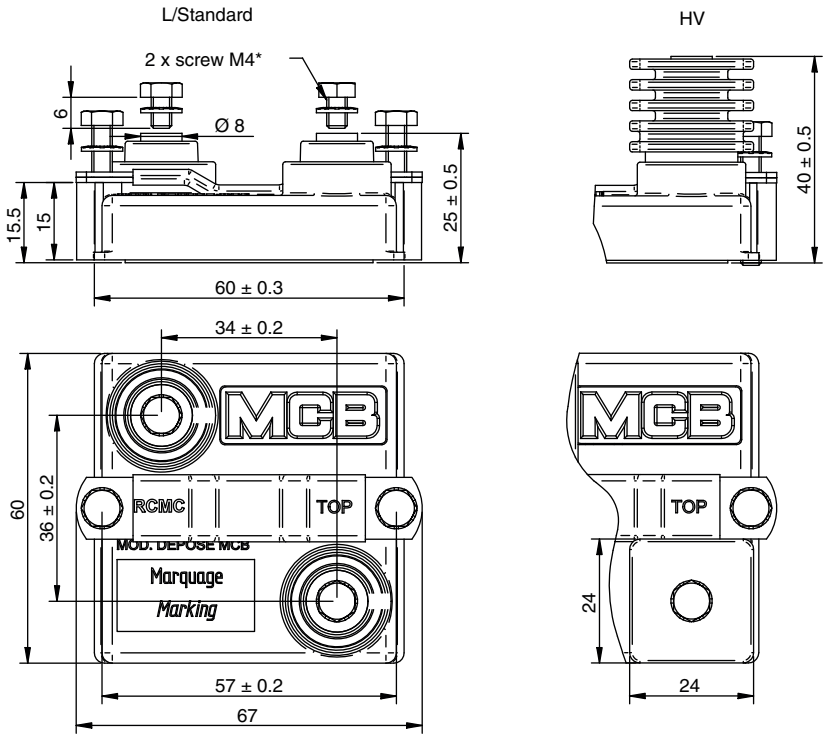
| MECHANICAL SPECIFICATIONS | |
|---|---|
| UL 94 flame classifications | Material comply with the standard UL 94 V-0 |
| Resistive element | NiCr alloy |
| Substrate | Alumina |
| Encapsulation | Resin filled case |

| TECHNICAL SPECIFICATIONS | | | |
|---|---|---|---|
| PARAMETER | 500L | 500 | 500HV |
| Nominal power rating at 70 °C | 500 W | | |
| Operating temperature range | -55 °C to +125 °C | | |
| Maximum operating voltage | 5000 V | | |
| Dielectric strength $V_{RMS}$ (50 Hz / 1 min) | 5000 V | 7000 V | 12 000 V |
| Creepage distance | 42 mm | 42 mm | 75 mm |
| Clearance distance | 12 mm | 12 mm | 30 mm |
| Capacitance: ground | 120 pF | | |
| Capacitance: parallel | 40 pF | | |
| Partial discharge | On request | | |
| Inductance | ≤ 40 nH | | |
| Insulation resistance | $10^5$ MΩ at 500 $V_{CC}$ | | |
| Weight (max.) | 120 g | | |



For technical questions, contact: mcbfixedresistors@vishay.com

## DIMENSIONS in millimeters




## PERFORMANCE

| TESTS | CONDITIONS | REQUIREMENTS | TYPICAL VALUES |
|---|---|---|---|
| Momentary overload | 1000 W / 10 s | 2 % | 0.2 % |
| Humidity (steady state) | 56 days, 40 °C, 95 % HR | 2 % or 0.05 Ω (1) | 0.2 % |
| Mechanical shock | CEI 61373 cat 1 class B half sinus<br>50 m/s² / 30 ms<br>6 per axis (3 negative and 3 positive) | insul. > $10^3$ MΩ | 0.25 % |
| Vibration | CEI 61373 cat 1 class B random<br>5 Hz to 150 Hz 7.9 m/s²<br>5 h per axis | 0.5 % or 0.05 Ω (1) | 0.25 % |
| Terminals strength | 200 Ncm / 200 N | 0.5 % or 0.05 Ω (1) | 0.1 % |
| Endurance | 2000 cycles $P_n$ 30 min / 30 min | 1 % or 0.05 Ω (1) | 0.2 % |

**Note**

(1) The higher of either value

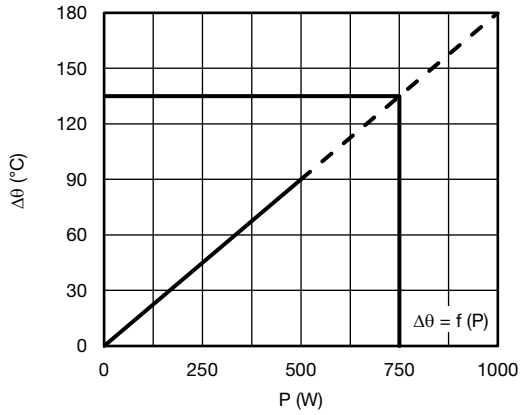
## ENERGY ABSORPTION

Repetitive operation: 25 J/t = 50 µs

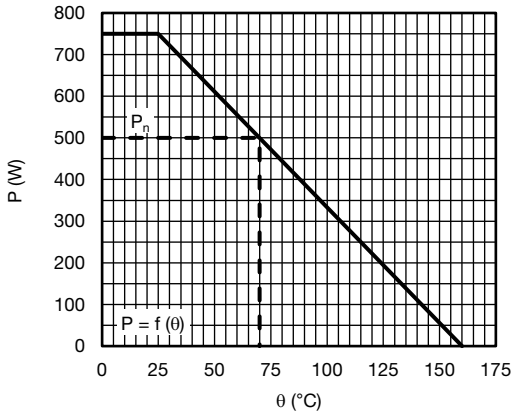
Accidental operation: 100 J/t = 50 µs / 100 impulsions max.

Other t values: contact us

## DISSIPATION

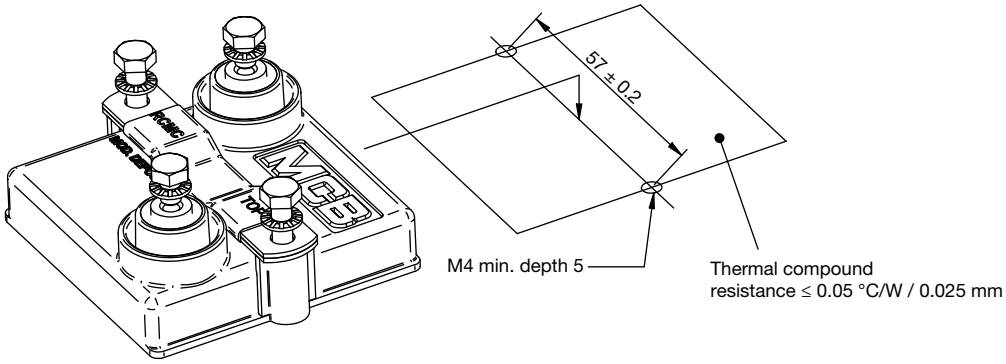



Temperature Rise as a Function of the Power Applied
Overall Thermal Resistance 0.18 °C/W (See Assembly)




Permanent Applicate Power as a Function
of Heatsink Temperature

## ASSEMBLY




Screws and bolts are supplied with each product.

Max. tightening torque:
200 Ncm, mechanical mounting
200 Ncm, electrical connection

2 screws TH M4 x 6/6 and 2 M4 contact lock washers for connections. 2 off CHC M4 x 16/16 class 8.

## COOLING

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

- Forced air ventilation
- Internal circulation of a liquid cooling
- Heatsink contact surface: Ra 6.3 µm
- 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)

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

## OPTIONS

- Electrical terminals: M5
- Other terminal size
- Output cable

## ORDERING INFORMATION

| RCMC | 500 | HV | 10 Ω | 10 % | XXX | BO15 |
|---|---|---|---|---|---|---|
| MODEL | STYLE | TERMINALS | RESISTANCE VALUE | TOLERANCE | CUSTOM DESIGN | PACKAGING |
| | | | | ± 10 % | Optional<br>On request:<br>special value,<br>shape, M5<br>terminals, etc. | |

## GLOBAL PART NUMBER INFORMATION

| R | C | M | C | 5 | 0 | 0 | H | V | 1 | 5 | R | 0 | K | B | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | 2 | | 3 | | | | 4 | 5 | 6 | | |

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| GLOBAL MODEL | LEADS (if applicable) | OHMIC VALUE | TOLERANCE | PACKAGING | INDUSTRIALIZATION NUMBER |
| **RCMC 500** | **Standard (no digit)**<br>**HV**<br>**L** | **The first three digits are significant figures and the last specifies the number of zeros to follow, R designates decimal point.**<br>**10R0 = 10 Ω** | **K = 10 %** | **B = box**<br>(24 pcs for standard, and L<br>15 pcs for HV) | **3 specific digits (if applicable)** |

## EXAMPLES

| MODEL | DESCRIPTION | PART NUMBER |
|---|---|---|
| RCMC 500 | RCMC 500 HV 15U 10 % BO15 | RCMC500HV15R0KB |
| RCMC 500 | RCMC 500 18U 10 % 983 BO15 | RCMC50018R0KB983 |

# 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.

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.