

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



FEATURES

- System without external radiation
- High power / volume ratio
- Non-inductive
- M4 screw-on outputs (M5 on option)
- Easy assembly, self-calibrated pressure (400 N)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

DESIGN SUPPORT TOOLS AVAILABLE



3D Models

STANDARD ELECTRICAL SPECIFICATIONS

| MODEL | RESISTANCE RANGE Ω | MAX. RATED POWER $P_{BC85^\circ C}$ W | TOLERANCE $\pm \%$ | TEMPERATURE COEFFICIENT $\pm \text{ppm}/^\circ C$ | E-SERIES OHMIC VALUES ⁽³⁾ |
|----------|------------------------------|--|-----------------------|--|--|
| RCEC 750 | 0.15 ⁽²⁾ to 0.49 | 800 | 10, 5 | 700 (typical) | E24 |
| | 0.5 to 3 | 800 | 10, 5 ⁽¹⁾ | 300 (typical) | E24 |
| | 3.3 to 1M | 800 | 10, 5 ⁽¹⁾ | 100 (typical) | E24 |

Notes

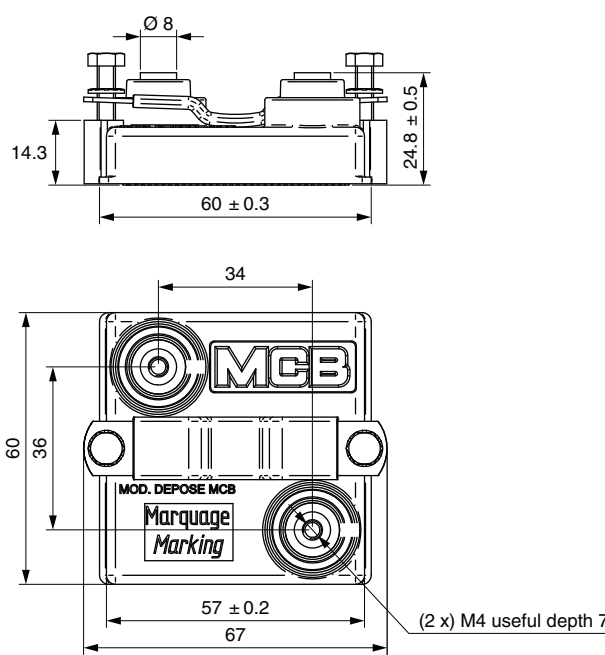
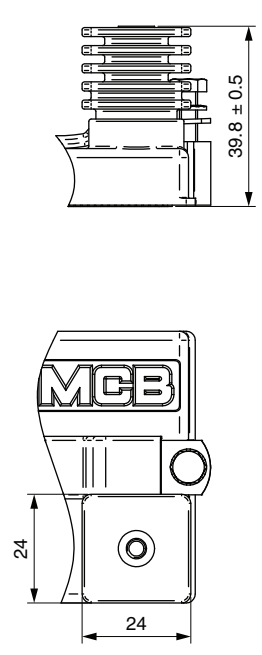
- (1) $\pm 2 \%$ or $\pm 1 \%$ on special request for limited resistance value and with reduction of maximum power and pulse rating (contact us for details)
(2) Current limitation for 0.15 Ω : 30 A_{RMS} max.
(3) Other on request

MECHANICAL SPECIFICATIONS

| | |
|-----------------------------|---|
| UL 94 flame classifications | Material complies with the standard UL 94 V-0 |
| Resistive element | Cermet |
| Substrate | Alumina |
| Encapsulation | Resin filled in case |

TECHNICAL SPECIFICATIONS

| PARAMETER | 750 | 750HV |
|--|---|----------------------------------|
| Operating temperature range | -55 $^\circ C$ to +155 $^\circ C$ | |
| Maximum operating voltage between terminals | 5000 V _{DC} | |
| Dielectric strength V _{RMS} (50 Hz / 1 min) | 7000 V (other case contact us) | 12 000 V (other case contact us) |
| Creeping distance | > 42 mm | > 75 mm |
| Clearance distance | > 12 mm | > 30 mm |
| CTI index | > 600 | |
| Partial discharge | < 10 pC at 5000 V _{eff} (≤ 10 pC at 7000 V _{eff} on request) Other cases: contact us | |
| Capacitance / ground (frequency 10 kHz) | 120 pF (typical) | |
| Self-inductance (frequency 10 kHz) | < 40 nH (typical) | |
| Insulation resistance | > 100 G Ω at 1000 V _{DC} | |
| Weight | 120 g (maximum) | |

| DIMENSIONS in millimeters | |
|---|---|
| STANDARD | HV |
|  |  |

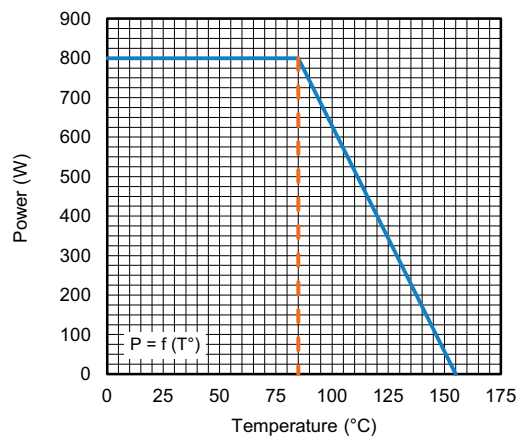
| PERFORMANCES | | | |
|-----------------------------|--|---|----------------|
| TESTS | CONDITIONS | REQUIREMENTS | TYPICAL VALUES |
| Damp heat | 56 days, 40 °C, 93 % RH (IEC 60068-2-78) | ± (1 % + 0.05 Ω) Insul. > 10 ³ MΩ | < 0.2 % |
| Climatic sequence | Low temperature: -55 °C High temperature 150 °C Number of cycles: 21 Exposure time: 3 hours for high temperature and 2 hours for low temperature (IEC 60068-2-14 Nb) | ± (1 % + 0.05 Ω) | < 0.2 % |
| Rapid change of temperature | Low temperature: -55 °C High temperature: 125 °C Number of cycles: 5 Exposure time: 30 min Manual transition time: 2 min. (IEC 60068-2-14 Na) | ± (0.25 % + 0.05 Ω) | < 0.1 % |
| Shock | Shock type: half-sine Amplitude: 100 m/s ² Duration: 6 ms Frequency: 1 bump per second Number of bumps: 3000 Directions tested: 6 (500 bumps in each direction) (IEC 60068-2-29 test Eb) | ± (0.25 % + 0.05 Ω) | < 0.2 % |

| PERFORMANCES | | | |
|-------------------|---|------------------------------|----------------|
| TESTS | CONDITIONS | REQUIREMENTS | TYPICAL VALUES |
| Vibrations | Random frequency range: from 10 Hz to 200 Hz / ASD: 0.0104 g ² /Hz from 200 Hz to 500 Hz / ASD: 0.00312 g ² /Hz Overall acceleration level: 1.87 G _{RMS} Axis tested: 3 (X, Y, and Z) / 150 min per axis (IEC 60068-2-64) | $\pm (0.25\% + 0.05 \Omega)$ | < 0.2 % |
| Terminal strength | 2 Nm / 200 N | $\pm (1 \% + 0.05 \Omega)$ | < 0.1 % |
| Endurance | 1000 h Pn 90 min on / 30 min off with $\theta_{\text{bottom case}} = 85^\circ\text{C}$ (IEC 60115-1) | $\pm (1 \% + 0.05 \Omega)$ | < 0.5 % |

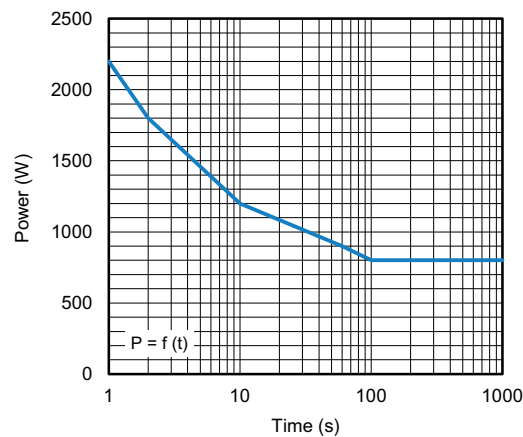
Note

(1) All tests were done in Vishay MCB laboratory conditions

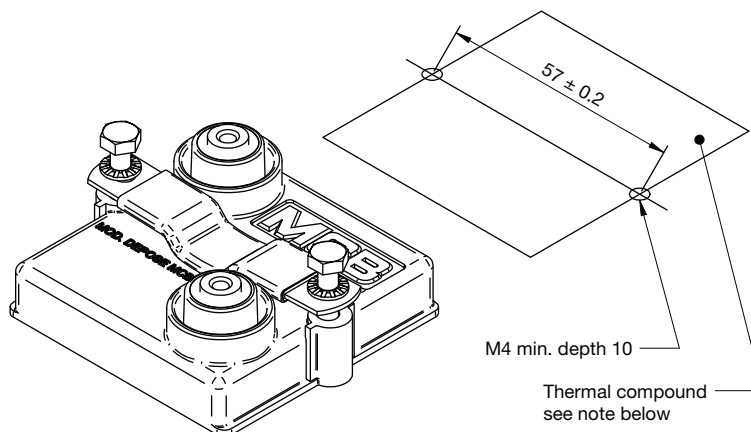
| ENERGY | |
|--|---|
| $R \leq 390 \Omega$ | $R > 390 \Omega$ |
| Repetitive operation = 8 J Pulse $\tau = 50 \mu\text{s}$ | Repetitive operation = 4 J Pulse $\tau = 50 \mu\text{s}$ |
| Accidental operation = 20 J Pulse $\tau = 50 \mu\text{s}$ 120 pulses | Other τ values: consult us |

DISSIPATION


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

OVERLOAD


Intermittent Overload (Exceptional Operation)
Bottom Case Temperature +85 °C

ASSEMBLY


| | |
|--|----------------|
| Tightening torque for mechanical fixation | 1.8 Nm to 2 Nm |
| Tightening torque for electrical connections | 1.8 Nm to 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?32558

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

TERMINAL OPTIONS

- Electrical terminals M5
- Other terminal size
- Output cable

ORDERING INFORMATION

| RCEC | 750 | HV | 100K | 5 % | XXX | BO15 |
|-------|-------|-----------|------------------|-------------------------------------|---|-----------|
| MODEL | STYLE | TERMINALS | RESISTANCE VALUE | TOLERANCE | CUSTOM DESIGN | PACKAGING |
| | | | | ± 5 % ± 10 % Other on request | Optional On request: special value, tolerance shape, M5 terminals, etc. | |



GLOBAL PART NUMBER INFORMATION

| | | | | | | | | | | | | | | | | | |
|-----------------|--|--------------|---|--------------|---------------------|--------------|--|--------------|--------------------------------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|-------------|
| <div>R</div> | <div>C</div> | <div>E</div> | <div>C</div> | <div>7</div> | <div>5</div> | <div>0</div> | <div>H</div> | <div>V</div> | <div>5</div> | <div>R</div> | <div>6</div> | <div>0</div> | <div>K</div> | <div>B</div> | <div></div> | <div></div> | <div></div> |
| 1 | | | | | | | 2 | | 3 | | | 4 | 5 | 6 | | | |
| 1 | 2 | | 3 | | 4 | | 5 | | 6 | | | | | | | | |
| GLOBAL MODEL | TERMINAL | | OHMIC VALUE | | TOLERANCE | | PACKAGING | | INDUSTRIALIZATION NUMBER | | | | | | | | |
| RCEC 750 | (if applicable) Standard (no digit) = dielectric strength 7 kV + partial discharge HV = dielectric strength 12 kV + partial discharge | | The first three digits are significant figures and the last specifies the number of zeros to follow, R designates decimal point. 4702 = 47 kΩ 1000 = 100 Ω 47R0 = 47 Ω 4R70 = 4.7 Ω | | J = 5 % K = 10 % | | B = box (24 pcs for standard, 15 pcs for HV) | | 3 specific digits (if applicable) | | | | | | | | |



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.