

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

LINKS TO ADDITIONAL RESOURCES



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

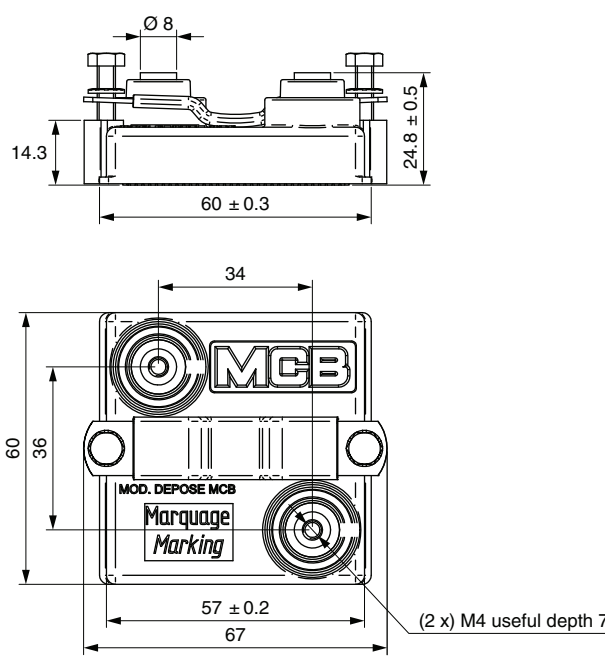
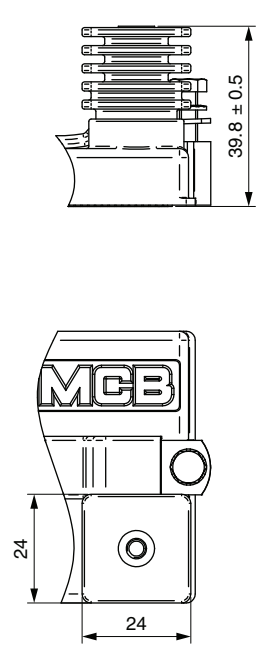
MECHANICAL SPECIFICATIONS

| | |
|-----------------------------|---|
| 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

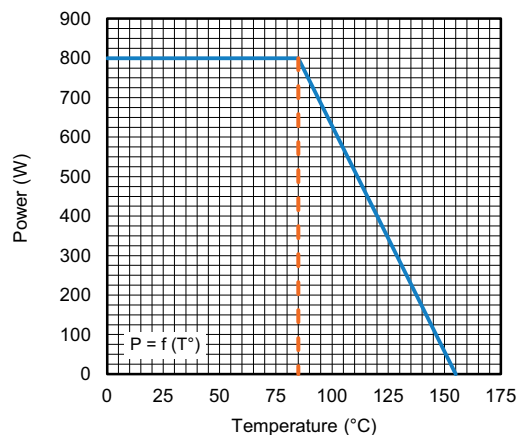
| TESTS | CONDITIONS | REQUIREMENTS | TYPICAL VALUES |
|-----------------------------|--|---|----------------|
| Damp heat | 56 days, 40 °C, 93 % RH (IEC 60068-2-78) | $\pm (1 \% + 0.05 \Omega)$ Insul. $> 10^3 \text{ M}\Omega$ | $< 0.2 \%$ |
| Climatic sequence | Low temperature: -55 °C High temperature 150 °C Number of cycles: 21 Exposure time: 3 hours for high temperature and 2 hours for low temperature (IEC 60068-2-14 Nb) | $\pm (1 \% + 0.05 \Omega)$ | $< 0.2 \%$ |
| 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) | $\pm (0.25 \% + 0.05 \Omega)$ | $< 0.1 \%$ |
| 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) | $\pm (0.25 \% + 0.05 \Omega)$ | $< 0.2 \%$ |

| 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 % |

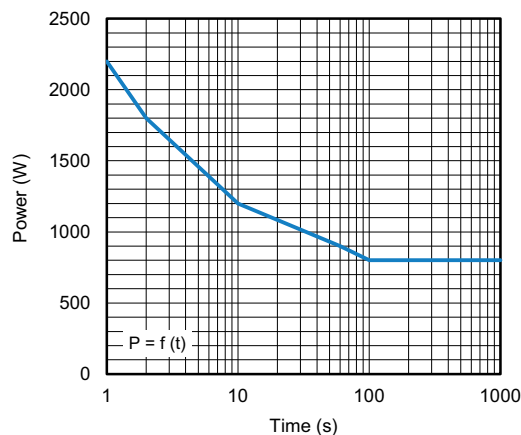
Note

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

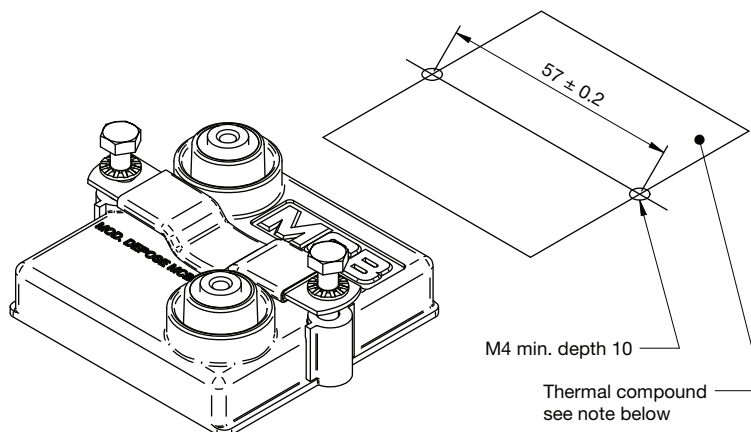
| ENERGY | |
|--|---|
| $R \leq 390 \Omega$ | $R > 390 \Omega$ |
| Repetitive operation = 8 J Pulse $\tau = 50 \mu\text{s}$ | Repetitive operation = 4 J Pulse $\tau = 50 \mu\text{s}$ |
| Accidental operation = 20 J Pulse $\tau = 50 \mu\text{s}$ 120 pulses | Other τ values: consult us |

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) | | | | | | | | |



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