

## 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](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### LINKS TO ADDITIONAL RESOURCES



3D Models

### STANDARD ELECTRICAL SPECIFICATIONS

| MODEL    | RESISTANCE RANGE<br>$\Omega$ | MAX. RATED POWER $BC_{85}^{\circ}\text{C}$<br>W | TOLERANCE<br>$\pm \%$ | TEMPERATURE COEFFICIENT<br>$\pm \text{ppm}/^{\circ}\text{C}$ | E-SERIES<br>OHMIC<br>VALUES <sup>(3)</sup> |
|----------|------------------------------|-------------------------------------------------|-----------------------|--------------------------------------------------------------|--------------------------------------------|
| RCEC 750 | 0.15 <sup>(2)</sup> to 0.49  | 800                                             | 10, 5                 | 700 (typical)                                                | E24                                        |
|          | 0.5 to 3                     | 800                                             | 10, 5 <sup>(1)</sup>  | 300 (typical)                                                | E24                                        |
|          | 3.3 to 1M                    | 800                                             | 10, 5 <sup>(1)</sup>  | 100 (typical)                                                | E24                                        |

#### Notes

<sup>(1)</sup>  $\pm 2 \%$  or  $\pm 1 \%$  on special request for limited resistance value and with reduction of maximum power and pulse rating (contact us for details)

<sup>(2)</sup> Current limitation for 0.15  $\Omega$ : 30 A<sub>RMS</sub> max.

<sup>(3)</sup> Other on request

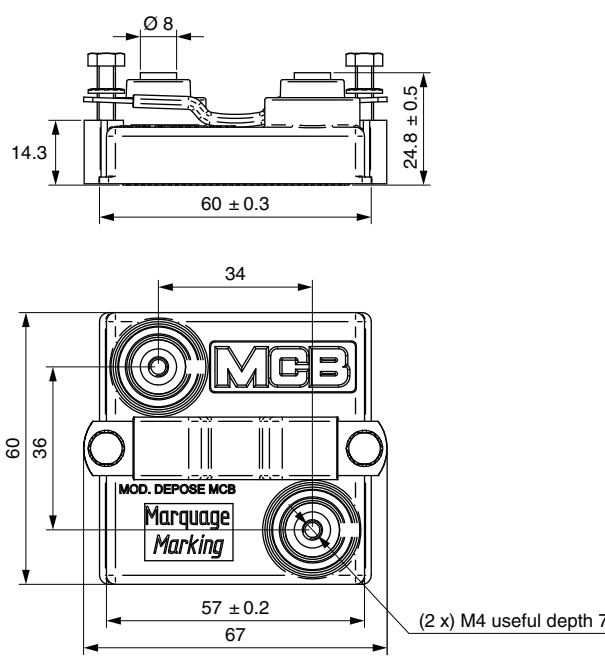
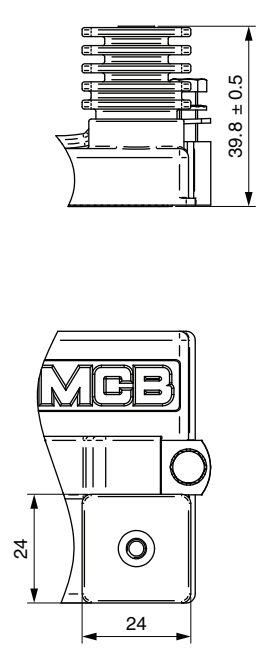
### MECHANICAL SPECIFICATIONS

|                             |                                               |
|-----------------------------|-----------------------------------------------|
| 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 $^{\circ}\text{C}$ to +155 $^{\circ}\text{C}$                                                               |                                  |
| Maximum operating voltage between terminals          | 5000 V <sub>DC</sub>                                                                                            |                                  |
| Dielectric strength V <sub>RMS</sub> (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 <sub>eff</sub> ( $\leq 10$ pC at 7000 V <sub>eff</sub> on request)<br>Other cases: contact us |                                  |
| Capacitance / ground (frequency 10 kHz)              | 120 pF (typical)                                                                                                |                                  |
| Self-inductance (frequency 10 kHz)                   | < 40 nH (typical)                                                                                               |                                  |
| Insulation resistance                                | > 100 G $\Omega$ at 1000 V <sub>DC</sub>                                                                        |                                  |
| Weight                                               | 120 g (maximum)                                                                                                 |                                  |

**DIMENSIONS** in millimeters

| STANDARD                                                                          | HV                                                                                  |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |

**PERFORMANCES**

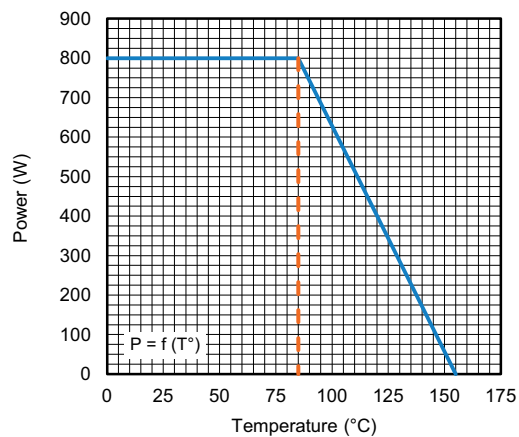
| TESTS                       | CONDITIONS                                                                                                                                                                                                               | REQUIREMENTS                                                  | TYPICAL VALUES |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|----------------|
| Damp heat                   | 56 days, 40 °C, 93 % RH<br>(IEC 60068-2-78)                                                                                                                                                                              | $\pm (1 \% + 0.05 \Omega)$<br>Insul. $> 10^3 \text{ M}\Omega$ | $< 0.2 \%$     |
| Climatic sequence           | Low temperature: -55 °C<br>High temperature 150 °C<br>Number of cycles: 21<br>Exposure time:<br>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<br>High temperature: 125 °C<br>Number of cycles: 5<br>Exposure time: 30 min<br>Manual transition time: 2 min.<br>(IEC 60068-2-14 Na)                                                             | $\pm (0.25 \% + 0.05 \Omega)$                                 | $< 0.1 \%$     |
| Shock                       | Shock type: half-sine<br>Amplitude: 100 m/s <sup>2</sup><br>Duration: 6 ms<br>Frequency: 1 bump per second<br>Number of bumps: 3000<br>Directions tested: 6<br>(500 bumps in each direction)<br>(IEC 60068-2-29 test Eb) | $\pm (0.25 \% + 0.05 \Omega)$                                 | $< 0.2 \%$     |

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

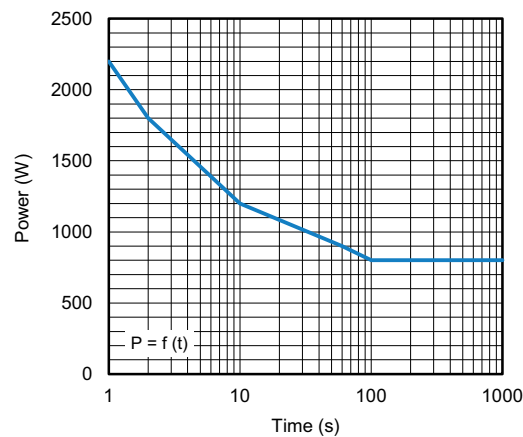
**Note**

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

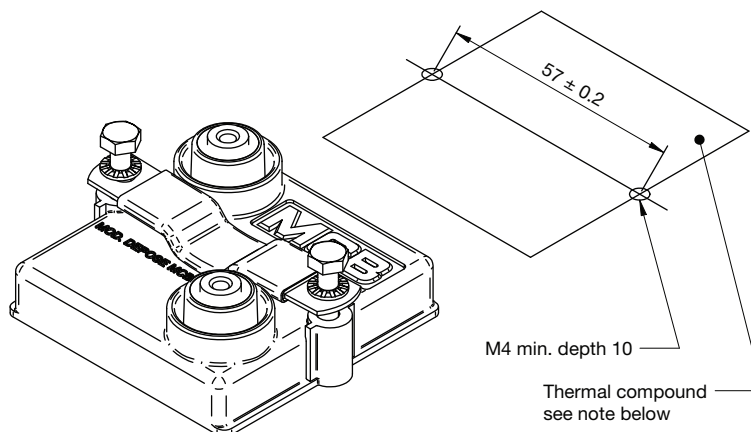
| ENERGY                                                                     |                                                             |
|----------------------------------------------------------------------------|-------------------------------------------------------------|
| $R \leq 390 \Omega$                                                        | $R > 390 \Omega$                                            |
| Repetitive operation = 8 J<br>Pulse $\tau = 50 \mu\text{s}$                | Repetitive operation = 4 J<br>Pulse $\tau = 50 \mu\text{s}$ |
| Accidental operation = 20 J<br>Pulse $\tau = 50 \mu\text{s}$<br>120 pulses | Other $\tau$ 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  $\mu$
- 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](http://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 %<br>± 10 %<br>Other on request | Optional<br>On request:<br>special value,<br>tolerance shape,<br>M5 terminals, etc. |           |



GLOBAL PART NUMBER INFORMATION

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



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