

## 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 / volume ratio
- Non-inductive
- Easy assembly, self calibrated pressure (120 N to 160 N)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### ADDITIONAL RESOURCES


[3D Models](#)

### STANDARD ELECTRICAL SPECIFICATIONS

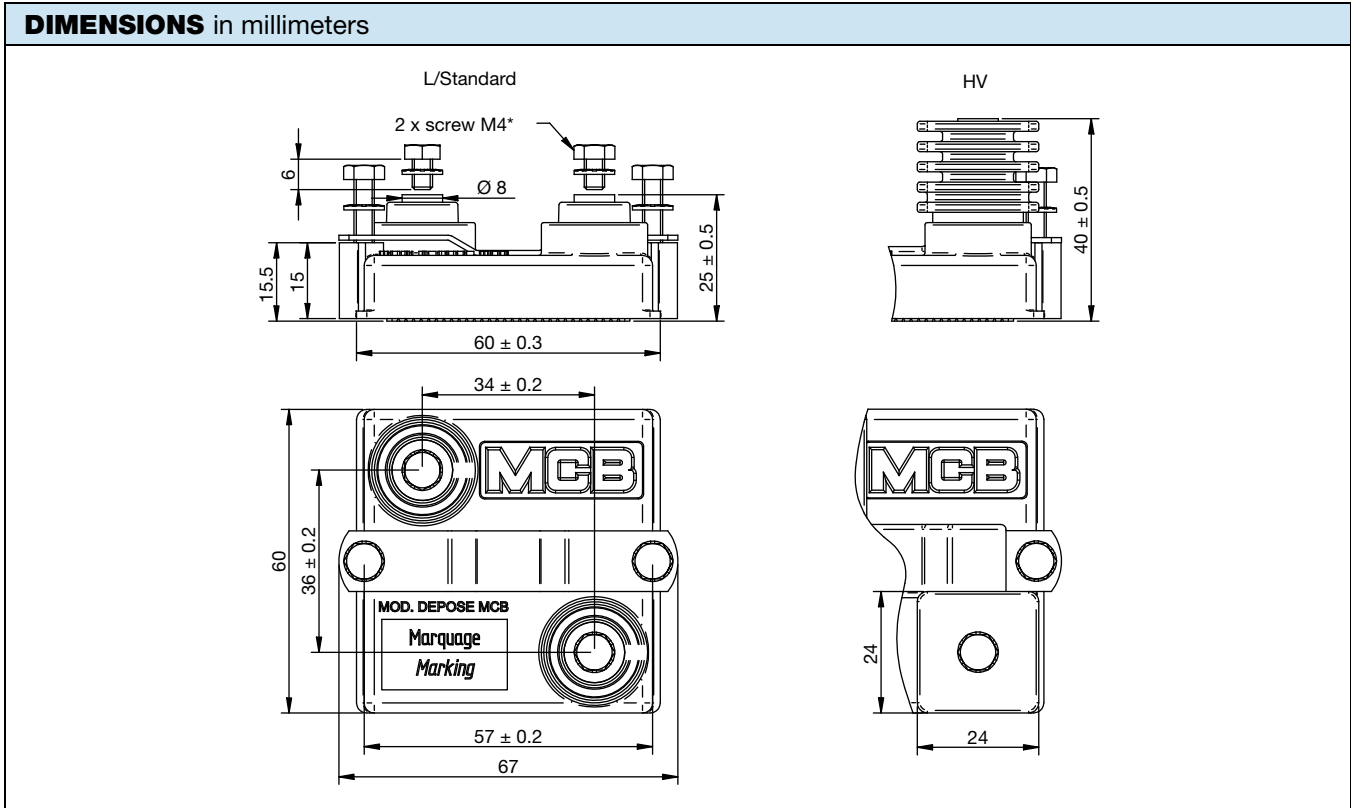
MODEL	RESISTANCE RANGE $\Omega$	RATED POWER $P_{BC85\text{ }^\circ\text{C}}$ W	TOLERANCE $\pm \%$	TEMPERATURE COEFFICIENT $\pm \text{ppm}/^\circ\text{C}$	E-SERIES OHMIC VALUES
RCEC 500	0.47 to 3	500	10, 5	300	E24
	3.3 to 1M	500	10, 5	100	

### MECHANICAL SPECIFICATIONS

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

### TECHNICAL SPECIFICATIONS

PARAMETER	500L	500	500HV
Operating temperature range	-55 °C to +155 °C		
Maximum operating voltage	5000 V		
Dielectric strength $V_{\text{eff}}$ (50 Hz 1 min)	6000 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	-	$\leq 500 \text{ pC}$ at 7000 $V_{\text{eff}}$ $\leq 10 \text{ pC}$ at 5000 $V_{\text{eff}}$ Other cases: consult us	
Inductance	$\leq 40 \text{ nH}$		
Insulation resistance	$10^5 \text{ M}\Omega$ at 500 $V_{\text{CC}}$		
Weight (max.)	120 g		



<b>PERFORMANCES</b>			
<b>TESTS</b>	<b>CONDITIONS</b>	<b>REQUIREMENTS</b>	<b>TYPICAL VALUES</b>
Momentary overload	1000 W / 10 s @ 70 °C	2 %	0.2 %
Humidity (steady state)	56 days, 40 °C, 95 % HR	2 % or 0.05 Ω <sup>(1)</sup>	0.2 %
VRT	-55 °C to +125 °C 5 cycles	Insul. > 10 <sup>9</sup> MΩ	0.2 %
Mechanical shock	CEI 61373 cat 1 class B half sinus 50 m/s <sup>2</sup> / 30 ms 6 per axis (3 negative and 3 positive)	2 % or 0.05 Ω <sup>(1)</sup>	0.25 %
Vibration	CEI 61373 cat 1 class B random 5 Hz to 150 Hz 7.9 m/s 5 h per axis	0.5 % or 0.05 Ω <sup>(1)</sup>	0.25 %
Terminals strength	200 Ncm / 200 N	0.5 % or 0.05 Ω <sup>(1)</sup>	0.1 %
Endurance	2000 cycles P <sub>n</sub> 30 min / 30 min	1 % or 0.05 Ω <sup>(1)</sup>	0.2 %

**Note**
<sup>(1)</sup> The higher of either value

**ENERGY ABSORPTION**
**R < 390 Ω**

Repetitive operation: 7 J/t = 50 μs

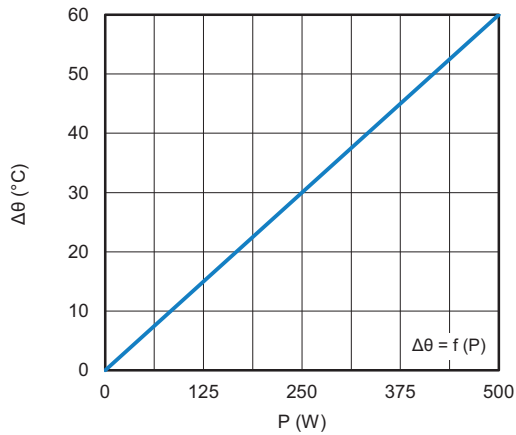
Accidental operation: 20 J/t = 50 μs / 120 impulsions max.

**R > 390 Ω**

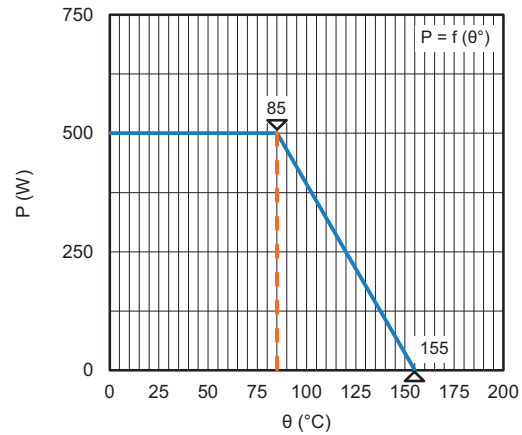
Repetitive operation: 3.5 J/t = 50 μs

Other t values: consult us

**DISSIPATION**

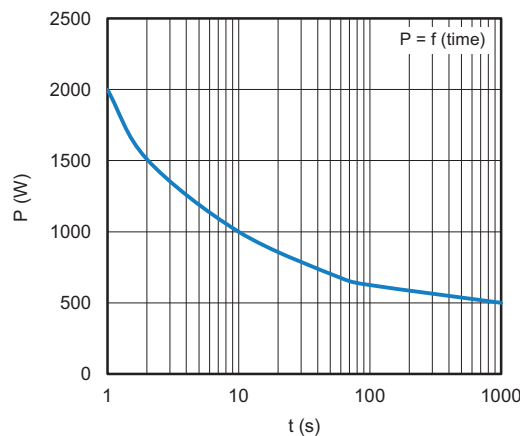


Temperature Rise as a Function of the Power Applied  
Overall Thermal Resistance 0.12 °C/W (See Assembly)



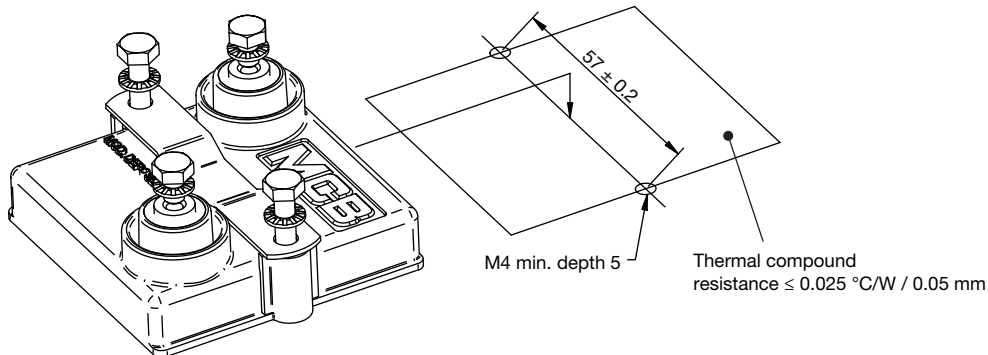
Permanent Applicable Power as a Function of Bottom Case Temperature

**OVERLOAD**



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

**ASSEMBLY**



Screws and bolts supplied.

Maximum tightening torque:

1.8 Nm to 2 Nm, mechanical mounting

1.8 Nm to 2 Nm, electrical mounting



**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.

**TERMINAL OPTIONS**

- Electrical terminals M5
- Other terminal size
- Output cable

ORDERING INFORMATION						
RCEC	500	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																	
R	C	E	C	5	0	0	H	V	5	R	6	0	K	B			
1						2		3			4	5	6				
1	2		3			4		5		6							
GLOBAL MODEL	TERMINAL (if applicable)		OHMIC VALUE			TOLERANCE		PACKAGING		INDUSTRIALIZATION NUMBER							
RCEC 500	<b>Standard (no digit)</b> = dielectric strength 7 kV + partial discharge <b>HV</b> = dielectric strength 12 kV + partial discharge <b>L</b> = dielectric strength 6 kV		<b>The first three digits are significant figures and the last specifies the number of zeros to follow, R designates decimal point.</b> 4702 = 47 kΩ 1000 = 100 Ω 47R0 = 47 Ω 4R70 = 4.7 Ω			<b>J = 5 %</b> <b>K = 10 %</b>		<b>B = box</b> (24 pcs for standard and L 15 pcs for HV)		<b>3 specific digits (if applicable)</b>							

EXAMPLES		
MODEL	DESCRIPTION	PART NUMBER
RCEC 500	RCEC 500 220K 10 % BO24	RCEC5002203KB
RCEC 500 HV	RCEC 500 HV 100U 5 % 310 BO15	RCEC500HV1000JB310



PRODUCT SUMMARY										
SERIES	SIZE / DEVICE STYLE	TCR (± ppm/°C)	TOLERANCE (± %)	RESISTANCE (Ω)		E-SERIES	POWER RATING (W)	TEMP. (°C)	MAX. VOLTAGE (V)	AUTO.
				MIN.	MAX.					

TAGS	
TYPE	PARAMETER
Mounting technology	
Technology	
Applications	
Characteristics	



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