

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


RoHS
COMPLIANT

ADDITIONAL RESOURCES



3D Models

STANDARD ELECTRICAL SPECIFICATIONS

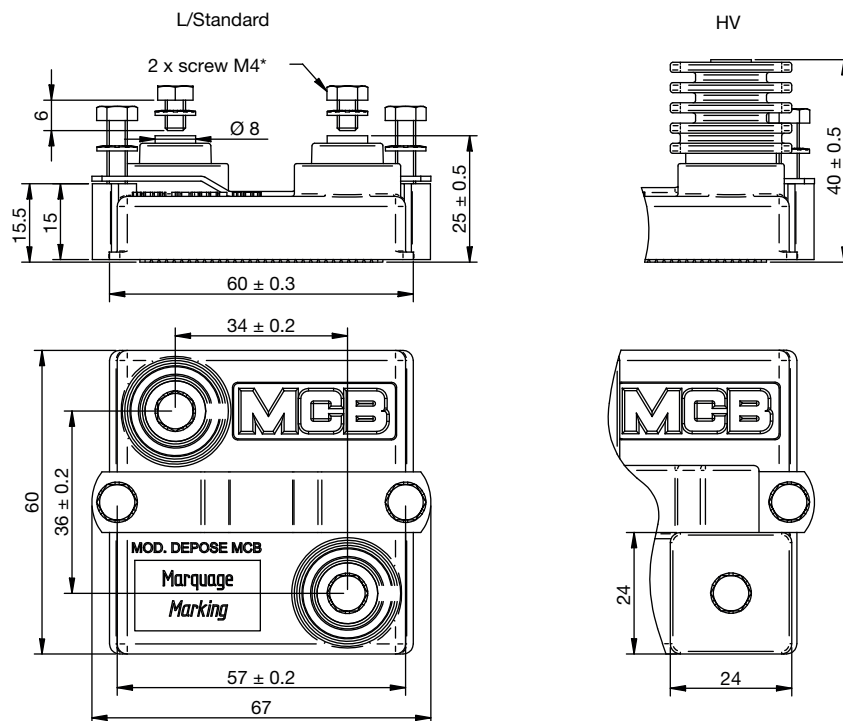
MODEL	RESISTANCE RANGE Ω	RATED POWER $P_{BC85\text{ }^{\circ}\text{C}}$ W	TOLERANCE $\pm \%$	TEMPERATURE COEFFICIENT $\pm \text{ppm}/^{\circ}\text{C}$	E-SERIES OHMIC VALUES
RCEC 500	0.47 to 3	500	10, 5	300	E24
	3.3 to 1M	500	10, 5	100	

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 _{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	-	≤ 500 pC at 7000 V _{eff} ≤ 10 pC at 5000 V _{eff} Other cases: consult us	
Inductance	≤ 40 nH		
Insulation resistance	10 ⁵ MΩ at 500 V _{CC}		
Weight (max.)	120 g		

DIMENSIONS in millimeters

PERFORMANCES

TESTS	CONDITIONS	REQUIREMENTS	TYPICAL VALUES
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 ⁽¹⁾	0.2 %
VRT	-55 °C to +125 °C 5 cycles	Insul. > 10 ⁹ MΩ	0.2 %
Mechanical shock	CEI 61373 cat 1 class B half sinus 50 m/s ² / 30 ms 6 per axis (3 negative and 3 positive)	2 % or 0.05 Ω ⁽¹⁾	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 ⁽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
R < 390 Ω

Repetitive operation: 7 J/t = 50 μs

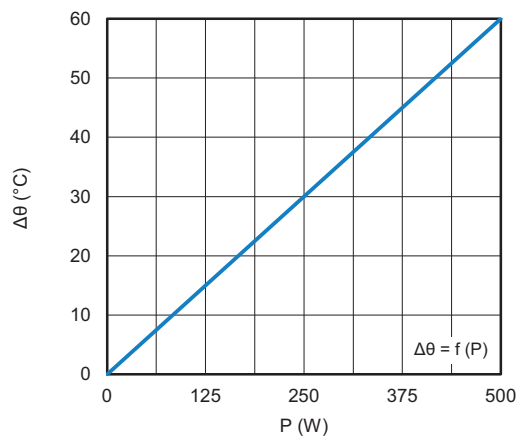
Accidental operation: 20 J/t = 50 μs / 120 impulsions max.

R > 390 Ω

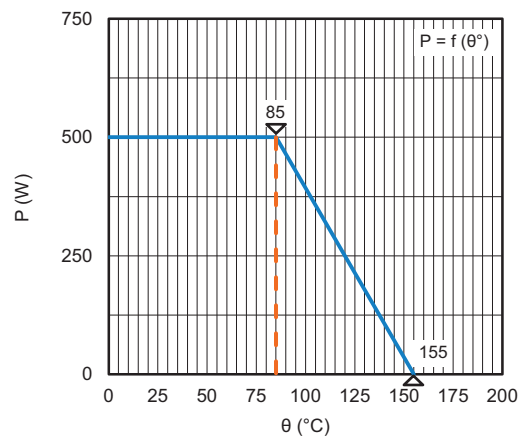
Repetitive operation: 3.5 J/t = 50 μs

Other t values: consult us

DISSIPATION

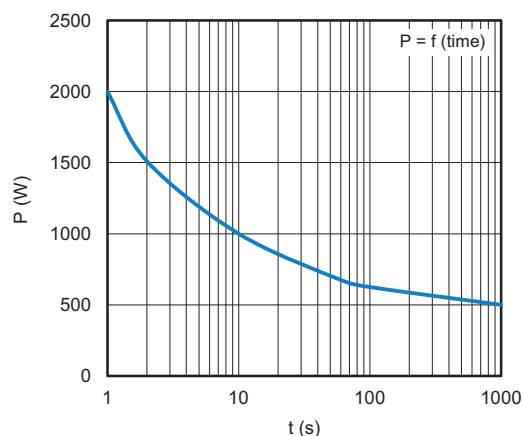


Temperature Rise as a Function of the Power Applied
Overall Thermal Resistance 0.12 °C/W (See Assembly)



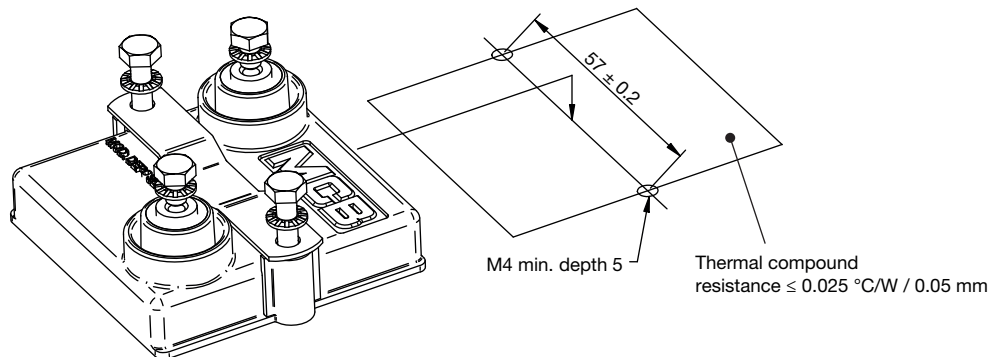
Permanent Applicable Power as a Function
of Bottom Case Temperature

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 μ m
- 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	Standard (no digit) = dielectric strength 7 kV + partial discharge HV = dielectric strength 12 kV + partial discharge L = dielectric strength 6 kV		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 and L 15 pcs for HV)		3 specific digits (if applicable)								

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	



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.