

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



### FEATURES

- System without external radiation
- High power / volume ratio
- Non-inductive
- Screw-on outputs
- Possible configuration with 2 or 3 resistors
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### DESIGN SUPPORT TOOLS AVAILABLE



3D Models

### STANDARD ELECTRICAL SPECIFICATIONS

MODEL	VALUE	RESISTANCE RANGE $\Omega$	MAX. RATED POWER $P_{75^\circ\text{C}}$ W	TOLERANCE $\pm \%$	TEMPERATURE COEFFICIENT $\pm \text{ppm}/^\circ\text{C}$	E-SERIES OHMIC VALUES
RCEC 400	Single	1.0 to 1M	400	10, 5 <sup>(1)</sup>	150 (typical)	E 24
	Double	1.5 to 1M	2 x 180	10, 5 <sup>(1)</sup>	150 (typical)	E 24

#### Note

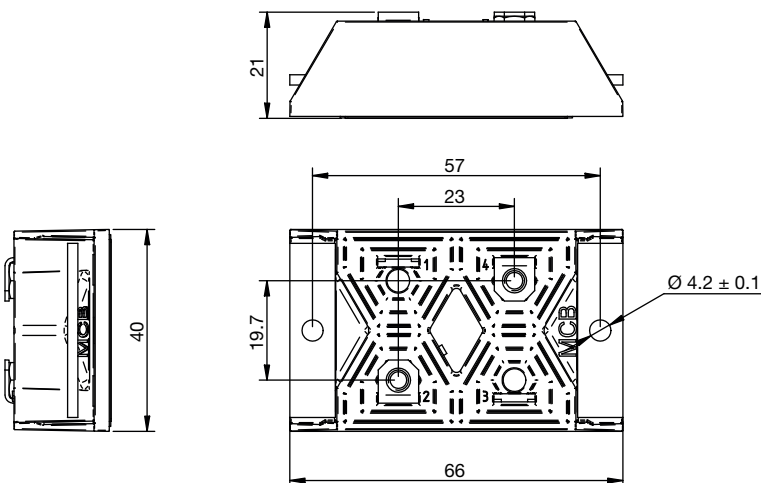
<sup>(1)</sup> On request

### MECHANICAL SPECIFICATIONS

UL 94 flame classifications	Material in accordance with UL 94 V-0
Resistive element	Thick film
Substrate	Alumina
Encapsulation	Resin filled in housing

### TECHNICAL SPECIFICATIONS

PARAMETER	SINGLE VALUE	DOUBLE VALUE
Operating temperature range	-55 °C to +150 °C	
Maximum operating voltage	4000 V	
Dielectric strength $V_{\text{RMS}}$ (50 Hz / 1 min)	6000 V	
Creepage distance	> 42 mm	
Clearance distance	> 12 mm	> 10 mm
CTI index	> 600	
Partial discharge	< 20 pC at 5000 $V_{\text{eff}}$	
Inductance	< 40 nH	
Insulation resistance	$10^5 \text{ M}\Omega$ at 500 $V_{\text{DC}}$	
Weight (max.)	75 g	

**DIMENSIONS** in millimeters

**PERFORMANCES**

TESTS		CONDITIONS	REQUIREMENTS	TYPICAL VALUES
Momentary overload	Single value	800 W / 10 s	2 %	0.2 %
	Double value	2 x 360 W / 10 s		
Humidity (steady state)		56 days, 40 °C, 95 % HR	2 % or 0.05 $\Omega$ <sup>(1)</sup>	0.2 %
VRT		-55 °C to +125 °C 5 cycles	2 % or 0.05 $\Omega$ <sup>(1)</sup>	0.2 %
Mechanical shock		IEC 60115-4 clause 2-3-6	0.5 % or 0.05 $\Omega$ <sup>(1)</sup>	0.25 %
Vibration		IEC 60115-4 clause 2-3-2	0.5 % or 0.05 $\Omega$ <sup>(1)</sup>	0.25 %
Terminals strength		130 Ncm / 100 N	1 % or 0.05 $\Omega$ <sup>(1)</sup>	0.1 %
Endurance		2000 cycles P <sub>n</sub> 30 min / 30 min	5 %	0.2 %

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

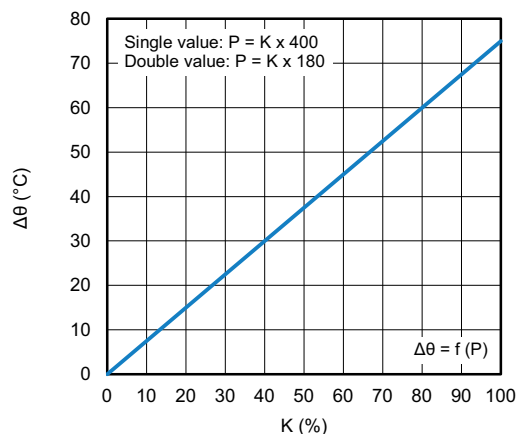
**ENERGY ABSORPTION**
**Single Value**

Repetitive operation: 2 J/t = 50  $\mu$ s  
Other t values: consult us

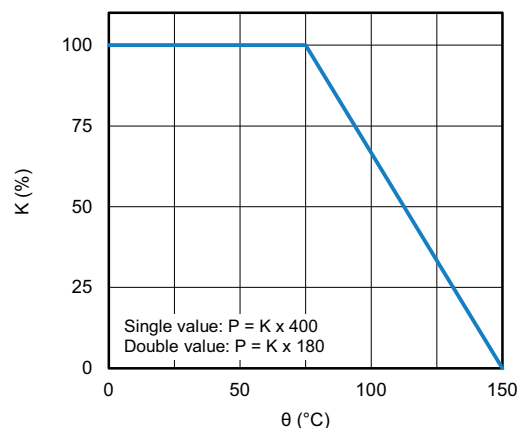
**Double Value**

Repetitive operation: 2 J/t = 50  $\mu$ s  
Other t values: consult us

## DISSIPATION

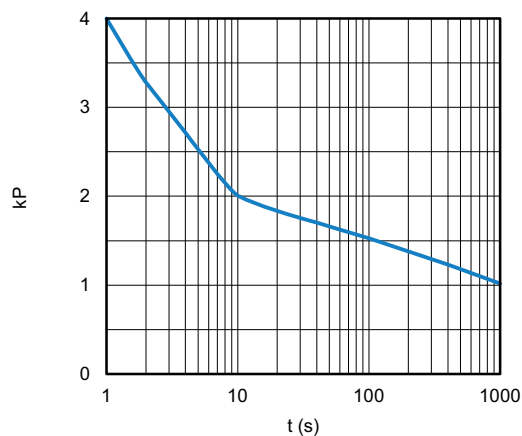


Temperature Rise as a Function of the Power Applied  
Overall Thermal Resistance 0.1875 °C/W  
(Double Value: 0.2083 °C/W)



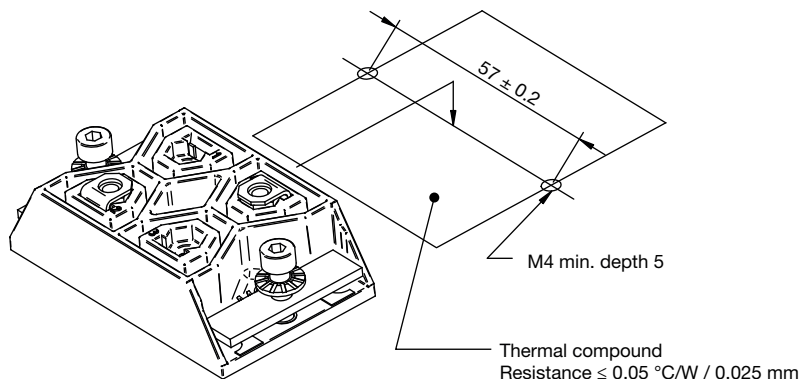
Permanent Applicable Power as a Function  
of Heatsink Temperature

## OVERLOAD



Intermittent Overload (Exceptional Operation)

## ASSEMBLY



Maximum tightening torque:  
150 Ncm, mechanical mounting  
130 Ncm, electrical mounting

## COOLING

The temperature of the heatsink may be maintained at the specified values with:

- Forced air ventilation
- Internal circulation of a cooling liquid
- 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 ≤ 0.05 °C/W / 0.025 mm)

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

ORDERING INFORMATION									
RCEC	400	GD	MP	100K	5 %	100K	5 %	XXX	BO20
MODEL	STYLE		OPTION	RESISTANCE VALUE	TOLERANCE	RESISTANCE VALUE	TOLERANCE	CUSTOM	PACKAGING
	Single Double Triple		Common point for double value	Value for single First value for double	± 5 % ± 10 % Other on request	Second value for double	± 5 % ± 10 % Other on request		

GLOBAL PART NUMBER INFORMATION																	
R	C	E	C	4	0	0	G	S	2	R	7	0	J	B			
1						2		3				4	5	6			
1		2		3		4		5		6							
GLOBAL MODEL		LEAD		OHMIC VALUE		TOLERANCE		PACKAGING		INDUSTRIALIZATION NUMBER							
RCEC 400		Simple = GS Double = GD Triple = GT		The first three digits are significant figures and the last specifies the number of zeros to follow, R designates decimal point. 4702 = 47 kΩ 48R7 = 48.7 Ω In case of double or triple value => value = sum of the 2 or 3 values		J = 5 % K = 10 %		B = box		3 specific digits (if applicable)							

EXAMPLES		
MODEL	DESCRIPTION	PART NUMBER
RCEC 400	RCEC 400 GS 2U7 5 % BO20	RCEC400GS2R70JB
RCEC 400	RCEC 400 GD MP 12K 10 % 12K 10 % 998 BO20	RCEC400GD2402KB998



## 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.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Vishay:

[RCEC400GS1802JB](#) [RCEC400GS33R0JB](#) [RCEC400GS5R60KB](#) [RCEC400GS2702KB](#) [RCEC400GS22R0KB](#)