

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

DESIGN SUPPORT TOOLS

[click logo to get started](#)

3D
Models
Available

STANDARD ELECTRICAL SPECIFICATIONS

| MODEL | VALUE | RESISTANCE RANGE Ω | 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 ⁽¹⁾ | 150 (typical) | E 24 |
| | Double | 1.5 to 1M | 2 x 180 | 10, 5 ⁽¹⁾ | 150 (typical) | E 24 |

Note

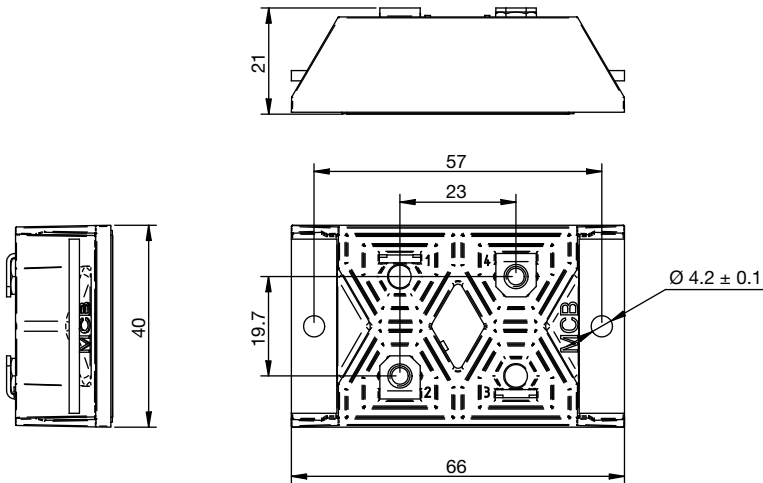
⁽¹⁾ On request

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_{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_{eff} | |
| Inductance | < 40 nH | |
| Insulation resistance | $10^5 \text{ M}\Omega$ at 500 V_{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 Ω ⁽¹⁾ | 0.2 % |
| VRT | | -55 °C to +125 °C 5 cycles | 2 % or 0.05 Ω ⁽¹⁾ | 0.2 % |
| Mechanical shock | | IEC 60115-4 clause 2-3-6 | 0.5 % or 0.05 Ω ⁽¹⁾ | 0.25 % |
| Vibration | | IEC 60115-4 clause 2-3-2 | 0.5 % or 0.05 Ω ⁽¹⁾ | 0.25 % |
| Terminals strength | | 130 Ncm / 100 N | 1 % or 0.05 Ω ⁽¹⁾ | 0.1 % |
| Endurance | | 2000 cycles P _n 30 min / 30 min | 5 % | 0.2 % |

Note

⁽¹⁾ The higher of either value

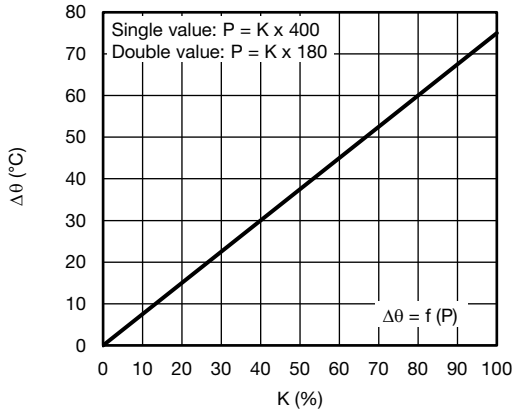
ENERGY ABSORPTION
Single Value

Repetitive operation: 2 J/t = 50 μs
 Other t values: consult us

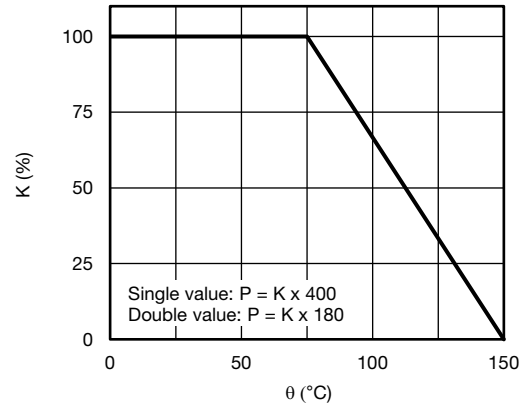
Double Value

Repetitive operation: 2 J/t = 50 μs
 Other t values: consult us

DISSIPATION

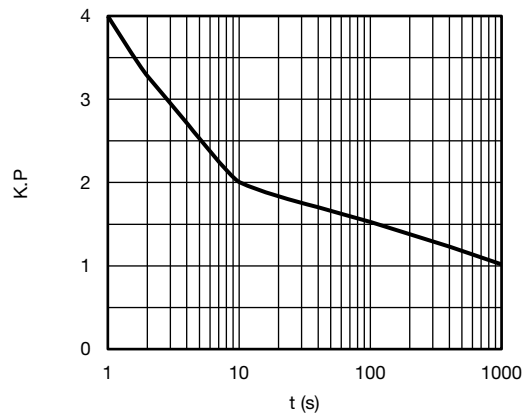


Temperature Rise as a Function of the Power Applied
Overall Thermal Resistance 0.1875 °C/W
(Double Value: 0.2083 °C/W)



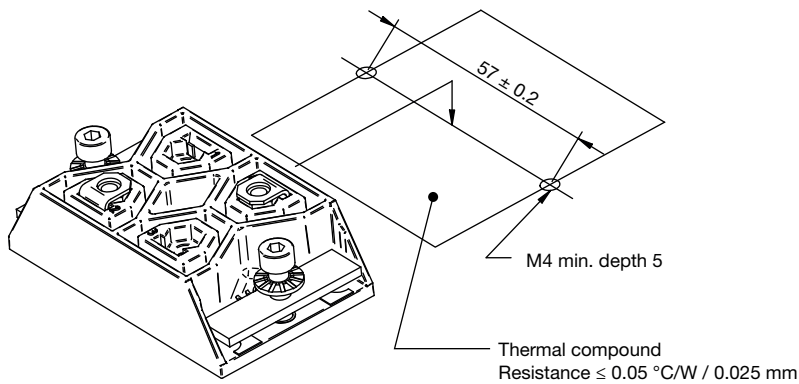
Permanent Applicable Power as a Function
of Heatsink Temperature

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 |



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