

Molded Metal Film High Stability Resistors



FEATURES

- 0.125 W to 0.5 W at 70 °C
- Approval according to CECC 40 101 (002 / 803)
- High long term stability drift < 0.5 % after 1000 h
- Excellent temperature coefficient $\leq \pm 30$ ppm/°C in the range -10 °C to +70 °C
- Excellent initial precision: Up to ± 1 %
- High insulation typical values: 10^6 M Ω
- Termination = pure matte tin
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


**RoHS
COMPLIANT**

| DIMENSIONS in millimeters | | | | | |
|---------------------------|--------|------------|-----------------------------------|-----|-------------|
| | SERIES | A | Ø B | Ø C | WEIGHT in g |
| | RCMS02 | 6.5 ± 0.2 | 2.5 ⁻⁰ _{-0.2} | 0.6 | 0.26 |
| | RCMS05 | 10.2 ± 0.2 | 3.65 ± 0.1 | 0.6 | 0.46 |
| | RCMS1 | 16 ± 0.5 | 6.2 ± 0.2 | 0.8 | 1.30 |

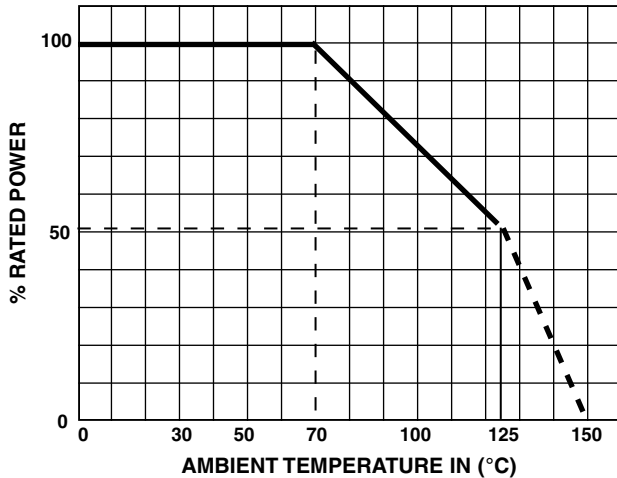
| STANDARD ELECTRICAL SPECIFICATIONS | | | | | |
|------------------------------------|---------------------------|----------------------------------|----------------------------|-------------------|--------------------------------------|
| MODEL | RESISTANCE RANGE Ω | RATED POWER $P_{70\text{ °C}}$ W | LIMITING ELEMENT VOLTAGE V | TOLERANCE \pm % | TEMPERATURE COEFFICIENT \pm ppm/°C |
| RCMS02 | 1 to 332K | 0.125 | 300 | 1 | 30, 50 |
| | 1 to 332K | 0.250 | 300, | 1 | 30, 50 |
| | 1 to 332K | 0.500 | 350 | 1 | 30, 50 |
| RCMS05 | 1 to 1M | 0.250 | 350 | 1 | 30, 50 |
| | 1 to 1M | 0.500 | 350 | 1 | 30, 50 |
| RCMS1 | 1 to 2.21M | 0.500 | 400 | 1 | 30, 50 |

| TECHNICAL AND QUALITY SPECIFICATIONS | | | | | | | |
|---|--|---|------------------------------|------------------------------|------------------------------|------------------------------|----------------------------|
| VISHAY SFERNICE SERIES | | RCMS02 | | | RCMS05 | | RCMS1 |
| Reference under CECC 40 101-002 approvals | | RS58Y | RS64Y | RS71Y | RS63Y | RS69Y | RS68Y |
| Reference under CECC 40 101-803 approvals | | BC | - | - | CC | - | DC |
| MIL-R-105509 F equivalent reference | | RN55C | - | - | RN60C | - | RN65C |
| Power Rating at 70 °C | | 0.125 W | 0.250 W | 0.500 W | 0.250 W | 0.500 W | 0.500 W |
| Resistance Value Range in Relation to Tolerance ± 1 % E96 | | 1 Ω to 150 k Ω | 1 Ω to 150 k Ω | 1 Ω to 150 k Ω | 1 Ω to 332 k Ω | 1 Ω to 332 k Ω | 1 Ω to 1 M Ω |
| Maximum Voltage | | 300 V | 300 V | 350 V | 350 V | 350 V | 400 V |
| Critical Resistance | | - | - | - | 490 k Ω | 245 k Ω | 320 k Ω |
| Temperature Coefficient | | Rated in the range -55 °C +155 °C $K3 \leq \pm 50$ ppm/°C Typical in the range -10 °C +70 °C $K3 \leq \pm 30$ ppm/°C | | | | | |
| Insulation Resistance (Typical) | | $\geq 10^7$ M Ω (500 V _{DC}) | | | | | |
| Voltage Coefficient | | 10 ppm/V | | | | | |
| Environmental Specification | | -65 °C / +155 °C / 56 days | | | | | |



| PERFORMANCE | | | |
|--|---|--|--|
| CECC 40 100 EN 140-100 | | TYPICAL VALUES AND DRIFTS | |
| TESTS | CONDITIONS | REQUIREMENTS | |
| Load Life at Max. Category Temperature | 1000 h at 125 °C 50 % of P_n | $\leq \pm (1 \% + 0.05 \Omega)$ Insulation resist. > 1 G Ω | $\pm 0.5 \%$ or 0.05 Ω Insulation resist. 10 ⁶ M Ω |
| Short Time Overload | 2.5 $U_n/5$ s limited to 2 U_n | $\leq \pm (0.25 \% + 0.05 \Omega)$ | $\pm 0.1 \%$ or 0.05 Ω |
| Damp Heat Humidity (Steady State) | 56 days with low load | $\leq \pm (1 \% + 0.05 \Omega)$ Insulation resist. > 1 G Ω | $\pm 0.5 \%$ or 0.05 Ω Insulation resist. 10 ⁶ M Ω |
| Rapid Temperature Change | -55 °C +125 °C | $\leq \pm (0.25 \% + 0.05 \Omega)$ | $\pm 0.1 \%$ or 0.05 Ω |
| Climatic Sequence | -55 °C +125 °C severity 1 | $\leq \pm (0.5 \% + 0.05 \Omega)$ Insulation resist. > 1 G Ω | $\pm 0.1 \%$ or 0.05 Ω Insulation resist. 10 ⁶ M Ω |
| Terminal Strength | Pull - twist - 2 bends | $\leq \pm (1 \% + 0.05 \Omega)$ | $\pm 0.05 \%$ or 0.05 Ω |
| Vibration | 10 Hz to 500 Hz | $\leq \pm (0.25 \% + 0.05 \Omega)$ | $\pm 0.05 \%$ or 0.05 Ω |
| Soldering (Thermal Shock) | +260 °C 10 s | $\leq \pm (0.25 \% + 0.05 \Omega)$ | $\pm 0.1 \%$ or 0.05 Ω |
| Load Life | Cycle 90'/30' 1000 h at P_n at 70 °C | $\leq \pm (1 \% + 0.05 W)$ Insulation resist. > 1 G Ω | $\pm 0.2 \%$ or 0.05 Ω Insulation resist. 10 ⁶ M Ω |
| Shelf Life | 1 year ambient temperature | - | $\pm 0.1 \%$ or 0.05 Ω |

POWER RATING



PRACTICAL OPERATING TOLERANCES

Tables 2 and 3 show the basic characteristics and max. values under different stresses. In fact, the values and drifts are maintained to within narrower limits.

| | | |
|--|---------------------|---------------|
| Temperature coefficient between -10 °C and +70 °C | K3 ≤ 30 ppm/°C | |
| LONG LIFE 90'/30' cycles ambient temperature 70 °C | 1000 h at P_r | $\pm 0.25 \%$ |
| | 10 000 h at P_r | $\pm 0.5 \%$ |

Thus, in operation under the specified conditions (P_r at 70 °C) the total drift (load life + TCR) of a RCMS K3 does not exceed $\pm 0.5 \%$.

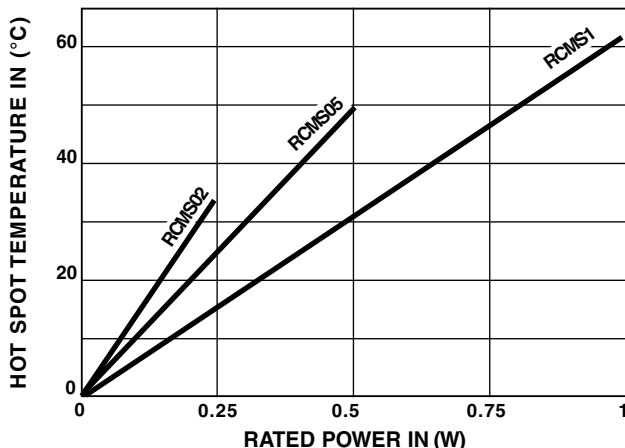
NOISE LEVEL

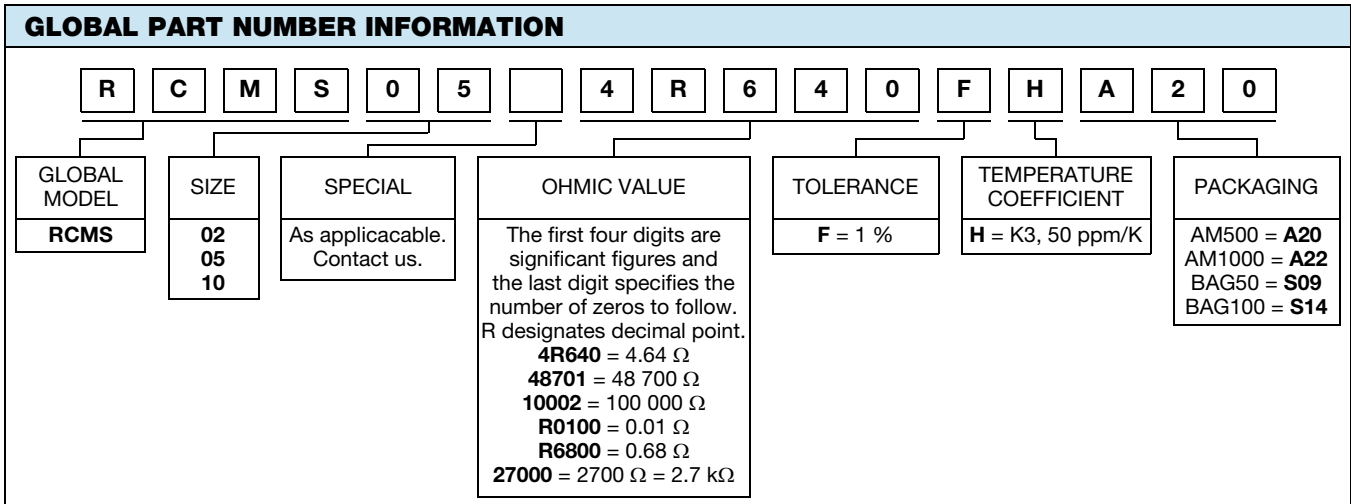
In a frequency decade, the average noise level increases with the ohmic value and can reach 0.3 $\mu V/V$ for the highest values. It is non measurable for $R_n < 2$ k Ω .

MARKING

Printed: Vishay Sfernice trademark, series, style NF style (if applicable), ohmic value (in Ω), tolerance (in %), temperature coefficient, manufacturing data. Due to lack of space RCMS 02 is printed MS 02.

TEMPERATURE RISE







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