

## Molded Metal Film Resistors



### FEATURES

- 0.25 W to 1 W at 70 °C
- According to NF C 83-230 (RC21U-31U-41U-32)
- According to CECC 40 100
- High insulation > 10<sup>7</sup> MΩ
- Great mechanical strength
- Termination = pure matte tin
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

| DIMENSIONS in millimeters |        |            |                                   |     |             |
|---------------------------|--------|------------|-----------------------------------|-----|-------------|
|                           | SERIES | A max.     | Ø B max.                          | Ø C | WEIGHT in g |
|                           | RCMM02 | 6.5 ± 0.2  | 2.5 <sup>-0</sup> <sub>-0.2</sub> | 0.6 | 0.26        |
|                           | RCMM05 | 10.2 ± 0.2 | 3.65 ± 0.1                        | 0.6 | 0.46        |
|                           | RCMM1  | 16 ± 0.5   | 6.2 ± 0.2                         | 0.8 | 1.30        |

| STANDARD ELECTRICAL SPECIFICATIONS |                       |  |                               |                  |                                     |
|------------------------------------|-----------------------|--|-------------------------------|------------------|-------------------------------------|
| MODEL                              | RESISTANCE RANGE<br>Ω | RATED POWER<br>P <sub>70 °C</sub><br>W | LIMITING ELEMENT VOLTAGE<br>V | TOLERANCE<br>± % | TEMPERATURE COEFFICIENT<br>± ppm/°C |
| RCMM02                             | 1 to 332K             | 0.25                                   | 300                           | 2, 5             | 50, 100                             |
|                                    | 1 to 332K             | 0.50                                   | 350                           | 2, 5             | 50, 100                             |
| RCMM05                             | 1 to 1M               | 0.50                                   | 350                           | 2, 5             | 50, 100                             |
| RCMM1                              | 1 to 2.26M            | 1.0                                    | 500                           | 2, 5             | 50, 100                             |

| TECHNICAL SPECIFICATIONS                        |                                    |   |                      |                    |                       |
|---|------------------------------------|---|----------------------|--------------------|-----------------------|
| VISHAY SFERNICE SERIES                          |                                    | RCMM02                                      |                      | RCMM05             | RCMM1                 |
| CECC 83-230 (for information)                   |                                    | RC21U                                       | RC32                 | RC31U              | RC41U                 |
| CECC 40 100-802 (for information)               |                                    | BV  | -                    | CV                 | -                     |
| Power rating at 70 °C                           |                                    | 0.25 W                                      | 0.50 W               | 0.50 W             | 1 W                   |
| Resistance value range in relation to tolerance | ± 5 %                              | 1 Ω to 330 kΩ<br>E24                        | 1 Ω to 330 kΩ<br>E24 | 1 Ω to 1 MΩ<br>E24 | 1 Ω to 2.2 MΩ<br>E24  |
|   | ± 2 %                              | 1 Ω to 332 kΩ<br>E48                        | 1 Ω to 332 kΩ<br>E48 | 1 Ω to 1 MΩ<br>E48 | 1 Ω to 2.26 MΩ<br>E48 |
| Maximum voltage                                 |                                    | 300 V                                       | 350 V                | 350 V              | 500 V                 |
| Critical resistance                             |                                    | -   | 245 kΩ               | 245 kΩ             | 250 kΩ                |
| Temperature coefficient                         | Rated in the range -55 °C +155 °C  | K2 ≤ ± 100 ppm/°C                           |                      |                    |                       |
|   | Typical in the range -10 °C +70 °C | ≤ ± 50 ppm/°C                               |                      |                    |                       |
| Insulation resistance (typical)                 |                                    | ≥ 10 <sup>7</sup> MΩ (500 V <sub>DC</sub> ) |                      |                    |                       |
| Voltage coefficient                             |                                    | ≤ ± 10 ppm/V                                |                      |                    |                       |
| Environmental specifications                    |                                    | -65 °C / +155 °C / 56 days                  |                      |                    |                       |

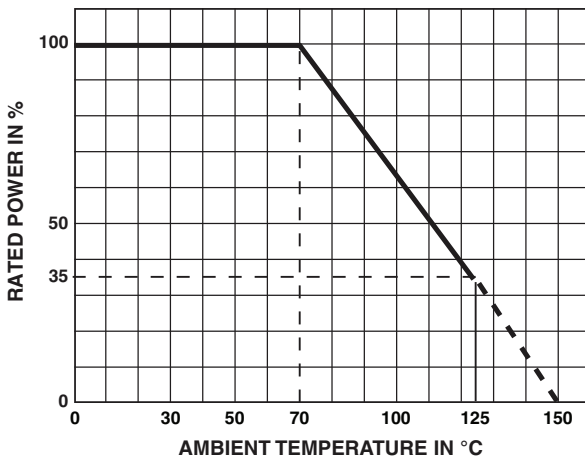


| PERFORMANCE                            |   |   |   |
|--|---|---|---|
| TESTS                                  | CONDITIONS                                | REQUIREMENTS  | TYPICAL VALUES AND DRIFTS   |
| Load life at max. category temperature | 1000 h at 125 °C 35 % of $P_n$            | $\leq \pm (2 \% + 0.1 \Omega)$<br>Insulation resist. > 1 G $\Omega$   | $\pm 0.75 \%$ or 0.05 $\Omega$<br>Insulation resist. 10 <sup>6</sup> M $\Omega$ |
| Short time overload                    | 2.5 $U_n$ / 5 s<br>Limited to 2 $U_m$     | $\leq \pm (0.5 \% + 0.05 \Omega)$                                     | $\pm 0.2 \%$ or 0.05 $\Omega$   |
| Damp heat humidity (steady state)      | 56 days<br>with low load                  | $\leq \pm (2 \% + 0.1 \Omega)$<br>Insulation resist. > 100 M $\Omega$ | $\pm 0.5 \%$ or 0.05 $\Omega$<br>Insulation resist. 10 <sup>6</sup> M $\Omega$  |
| Rapid temperature change               | -55 °C +125 °C                            | $\leq \pm (0.5 \% + 0.05 \Omega)$                                     | $\pm 0.1 \%$ or 0.05 $\Omega$   |
| Climatic sequence                      | -55 °C +125 °C                            | $\leq \pm (2 \% + 0.1 \Omega)$<br>Insulation resist. > 100 M $\Omega$ | $\pm 0.1 \%$ or 0.05 $\Omega$<br>Insulation resist. 10 <sup>6</sup> M $\Omega$  |
| Terminal strength                      | Pull - twist - 2 bends                    | $\leq \pm (0.5 \% + 0.05 \Omega)$                                     | $\pm 0.05 \%$ or 0.05 $\Omega$  |
| Vibration                              | 10 Hz to 500 Hz                           | $\leq \pm (0.5 \% + 0.05 \Omega)$                                     | $\pm 0.05 \%$ or 0.05 $\Omega$  |
| Soldering (thermal shock)              | +260 °C, 10 s                             | $\leq \pm (0.5 \% + 0.05 \Omega)$                                     | $\pm 0.1 \%$ or 0.05 $\Omega$   |
| Load life                              | Cycle 90°/30°<br>1000 h at $P_n$ at 70 °C | $\leq \pm (2 \% + 0.1 \Omega)$<br>Insulation resist. > 1 G $\Omega$   | $\pm 0.5 \%$ or 0.05 $\Omega$<br>Insulation resist. 10 <sup>6</sup> M $\Omega$  |
| Shelf life                             | 1 year<br>ambient temperature             | -   | $\pm 0.1 \%$ or 0.05 $\Omega$   |

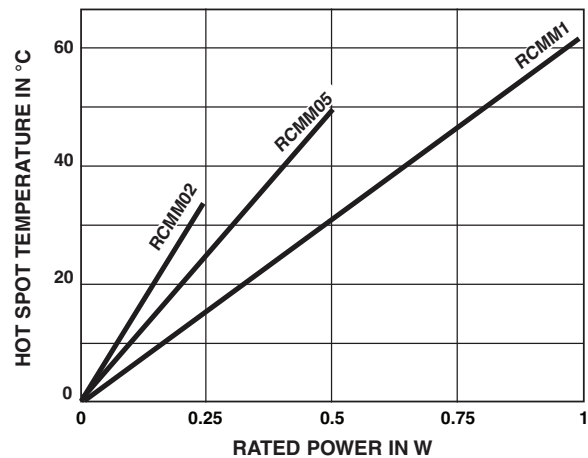
**Note**

- RC41: 15 s

**POWER RATING**



**TEMPERATURE RISE**



**MARKING**

Printed: Vishay Sfernice trademark, series, ohmic value (in  $\Omega$ ), tolerance (in %), temperature coefficient, manufacturing date. Due to lack of space RCMM02 is printed MM02.

| GLOBAL PART NUMBER INFORMATION |                |                               |  |   |   |  |                    |                         |   |  |   |   |   |   |   |
|--------------------------------|----------------|-------------------------------|--|---|---|--|--------------------|-------------------------|---|--|---|---|---|---|---|
| R                              | C              | M                             | M  | 0 | 2 |  | 1                  | 3                       | 0 | 1  | J | K | S | 1 | 4 |
| GLOBAL MODEL                   | SIZE           | SPECIAL                       | OHMIC VALUE  |   |   |  | TOLERANCE          | TEMPERATURE COEFFICIENT |   | PACKAGING  |   |   |   |   |   |
| RCMM                           | 02<br>05<br>10 | As applicable.<br>Contact us. | The first three digits are significant figures and the last digit specifies the number of zeros to follow. R designates decimal point.<br>1301 = 1.3 k $\Omega$<br>3301 = 3.3 k $\Omega$<br>22R0 = 22.0 $\Omega$<br>1R22 = 1.22 $\Omega$ |   |   |  | G = 2 %<br>J = 5 % | K = K2,<br>100 ppm/K    |   | AM500 = A20<br>AM1000 = A22<br>BAG100 = S14<br>BAG50 = S09 |   |   |   |   |   |



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