

## Molded Metal Film High Stability Resistors



### FEATURES

- 0.125 W to 0.5 W at 70 °C
- 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  $\pm 1$  %
- High insulation typical values:  $10^6$  M $\Omega$
- 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	Ø B	Ø C	WEIGHT in g
	RCMS02	6.5 ± 0.2	2.5 <sup>-0</sup> <sub>-0.2</sub>	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

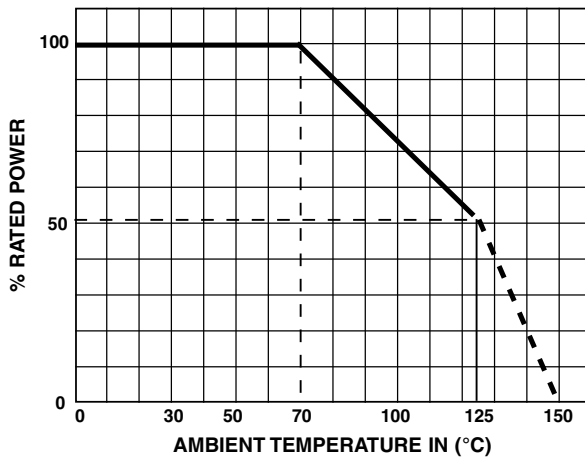
STANDARD ELECTRICAL SPECIFICATIONS					
MODEL	RESISTANCE RANGE $\Omega$	RATED POWER $P_{70\text{ °C}}$ W	LIMITING ELEMENT VOLTAGE V	TOLERANCE $\pm$ %	TEMPERATURE COEFFICIENT $\pm$ ppm/°C
RCMS02	1 to 150K	0.125	300	1	30, 50
	1 to 150K	0.250	300	1	30, 50
	1 to 150K	0.500	350	1	30, 50
RCMS05	1 to 1M	0.250	350	1	30, 50
	1 to 1M	0.500	350	1	30, 50
RCMS1	1 to 1M	0.500	400	1	30, 50

TECHNICAL AND QUALITY SPECIFICATIONS							
VISHAY SFERNICE SERIES		RCMS02		RCMS05		RCMS1	
Reference under CECC 40 101-002		RS58Y	RS64Y	RS71Y	RS63Y	RS69Y	RS68Y
Reference under CECC 40 101-803		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 $\pm 1$ % E96		1 $\Omega$ to 150 k $\Omega$	1 $\Omega$ to 150 k $\Omega$	1 $\Omega$ to 150 k $\Omega$	1 $\Omega$ to 1 M $\Omega$	1 $\Omega$ to 1 M $\Omega$	1 $\Omega$ to 1 M $\Omega$
Maximum voltage		300 V	300 V	350 V	350 V	350 V	400 V
Critical resistance		-	-	-	490 k $\Omega$	245 k $\Omega$	320 k $\Omega$
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 $\Omega$ (500 V <sub>DC</sub> )					
Voltage coefficient		10 ppm/V					
Environmental specification		-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 50 % of $P_n$	$\leq \pm (1 \% + 0.05 \Omega)$ Insulation resist. > 1 G $\Omega$	$\pm 0.5 \%$ or 0.05 $\Omega$ Insulation resist. 10 <sup>6</sup> M $\Omega$
Short time overload	2.5 $U_n$ / 5 s Limited to 2 $U_m$	$\leq \pm (0.25 \% + 0.05 \Omega)$	$\pm 0.1 \%$ or 0.05 $\Omega$
Damp heat humidity (steady state)	56 days with low load	$\leq \pm (1 \% + 0.05 \Omega)$ Insulation resist. > 1 G $\Omega$	$\pm 0.5 \%$ or 0.05 $\Omega$ Insulation resist. 10 <sup>6</sup> M $\Omega$
Rapid temperature change	-55 °C +125 °C	$\leq \pm (0.25 \% + 0.05 \Omega)$	$\pm 0.1 \%$ or 0.05 $\Omega$
Climatic sequence	-55 °C +125 °C severity 1	$\leq \pm (0.5 \% + 0.05 \Omega)$ Insulation resist. > 1 G $\Omega$	$\pm 0.1 \%$ or 0.05 $\Omega$ Insulation resist. 10 <sup>6</sup> M $\Omega$
Terminal strength	Pull - twist - 2 bends	$\leq \pm (1 \% + 0.05 \Omega)$	$\pm 0.05 \%$ or 0.05 $\Omega$
Vibration	10 Hz to 500 Hz	$\leq \pm (0.25 \% + 0.05 \Omega)$	$\pm 0.05 \%$ or 0.05 $\Omega$
Soldering (thermal shock)	+260 °C 10 s	$\leq \pm (0.25 \% + 0.05 \Omega)$	$\pm 0.1 \%$ or 0.05 $\Omega$
Load life	Cycle 90'/30' 1000 h at $P_n$ at 70 °C	$\leq \pm (1 \% + 0.05 W)$ Insulation resist. > 1 G $\Omega$	$\pm 0.2 \%$ or 0.05 $\Omega$ Insulation resist. 10 <sup>6</sup> M $\Omega$
Shelf life	1 year ambient temperature	-	$\pm 0.1 \%$ or 0.05 $\Omega$

**POWER RATING**



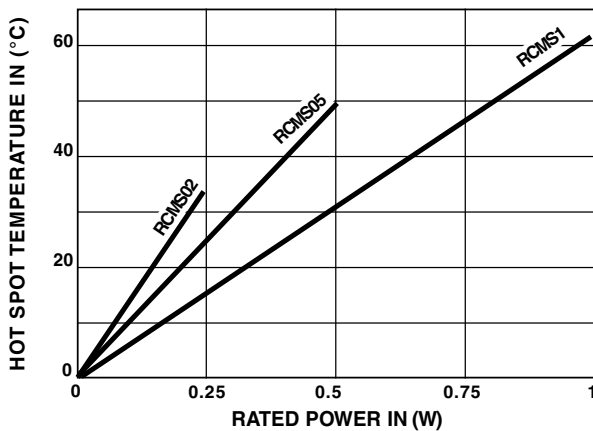
**PRACTICAL OPERATING TOLERANCES**

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 $\leq 30$ 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  $\pm 0.5 \%$ .

**TEMPERATURE RISE**



**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 $\Omega$ .

**MARKING**

Printed: Vishay Sfernice trademark, series, ohmic value (in  $\Omega$ ), tolerance (in %), temperature coefficient, manufacturing data. Due to lack of space RCMS 02 is printed MS 02.



GLOBAL PART NUMBER INFORMATION																
<b>R</b>	<b>C</b>	<b>M</b>	<b>S</b>	<b>0</b>	<b>5</b>		<b>4</b>	<b>R</b>	<b>6</b>	<b>4</b>	<b>0</b>	<b>F</b>	<b>H</b>	<b>A</b>	<b>2</b>	<b>0</b>
GLOBAL MODEL	SIZE	SPECIAL	OHMIC VALUE				TOLERANCE	TEMPERATURE COEFFICIENT		PACKAGING						
<b>RCMS</b>	<b>02</b> <b>05</b> <b>10</b>	As applicable. Contact us.	<p>The first four digits are significant figures and the last digit specifies the number of zeros to follow. R designates decimal point.</p> <p><b>4R640</b> = 4.64 Ω  <b>48701</b> = 48 700 Ω  <b>10002</b> = 100 000 Ω  <b>R0100</b> = 0.01 Ω  <b>R6800</b> = 0.68 Ω  <b>27000</b> = 2700 Ω = 2.7 kΩ</p>				<b>F</b> = 1 %	<b>H</b> = K3, 50 ppm/K		<b>AM500</b> = <b>A20</b> <b>AM1000</b> = <b>A22</b> <b>BAG50</b> = <b>S09</b> <b>BAG100</b> = <b>S14</b>						



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