

## Molded Metal Film High Stability Resistors

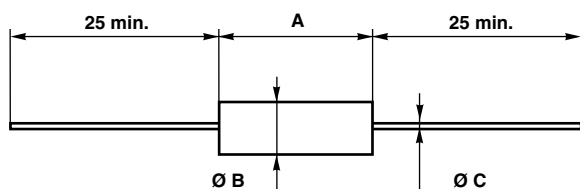


### FEATURES

- 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  $\pm 1$  %
- 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 $^{+0}_{-0.2}$	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 $\Omega$	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


#### Note

-  Undergoes European Quality Insurance System (CECC)

### TECHNICAL SPECIFICATIONS

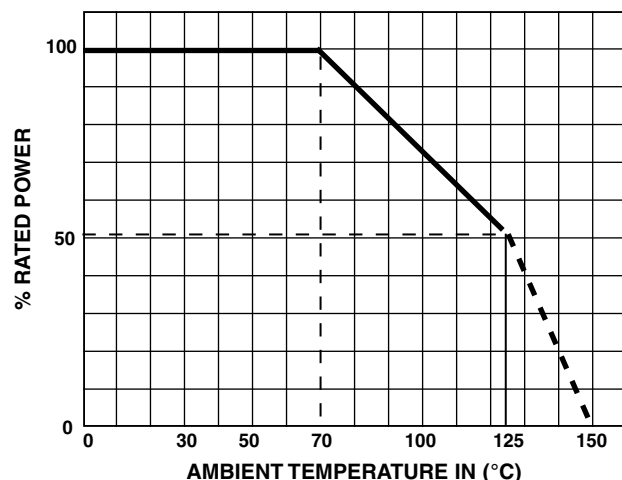
VISHAY SFERNICE SERIES		RCMS02 			RCMS05 		RCMS1 
Reference under CECC 40 101-002 approvals		RS58Y	RS64Y	RS71Y	RS63Y	RS69Y	RS68Y
Reference under CECC 40 101-803 approvals		BC	-	-	CC	-	DC
MIL-R-105509 F equivalent reference		RN55C	-	-	RN60C	-	RN65C
Power Rating at 70 °C		0.125 W	0.250 W	0.500 W	0.250 W	0.500 W	0.500 W
Resistance Value Range in Relation to Tolerance $\pm 1$ % E96		1 $\Omega$ to 332 k $\Omega$	1 $\Omega$ to 332 k $\Omega$	1 $\Omega$ to 332 k $\Omega$	1 $\Omega$ to 1 M $\Omega$	1 $\Omega$ to 1 M $\Omega$	1 $\Omega$ to 2.21 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					

#### Note

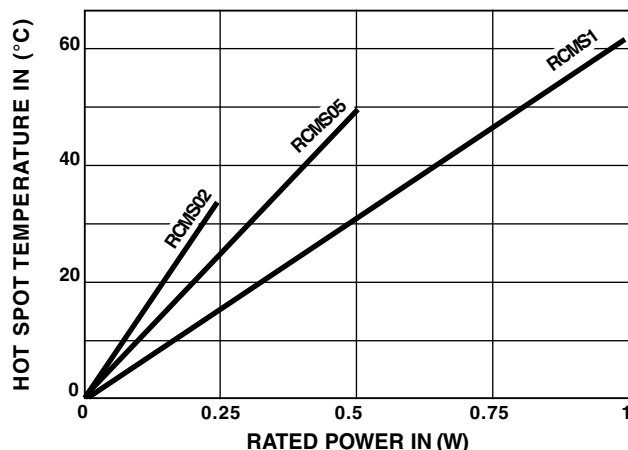
-  Undergoes European Quality Insurance System (CECC)

<b>PERFORMANCE</b>			
<b>CECC 40 100 EN 140-100</b>		<b>TYPICAL VALUES AND DRIFTS</b>	
<b>TESTS</b>	<b>CONDITIONS</b>	<b>REQUIREMENTS</b>	
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 $U_n$	$\leq \pm (0.25 \% + 0.05 \Omega)$	$\pm 0.1 \%$ 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	$\leq \pm (1 \% + 0.05 \Omega)$ 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



## TEMPERATURE RISE



## 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  $\pm 0.5 \%$ .

## 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, style NF style (if applicable), 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.	The first four digits are significant figures and the last digit specifies the number of zeros to follow. R designates decimal point. <b>4R640</b> = 4.64 $\Omega$ <b>48701</b> = 48 700 $\Omega$ <b>10002</b> = 100 000 $\Omega$ <b>R0100</b> = 0.01 $\Omega$ <b>R6800</b> = 0.68 $\Omega$ <b>27000</b> = 2700 $\Omega$ = 2.7 k $\Omega$				<b>F</b> = 1 %	<b>H</b> = K3, 50 ppm/K		AM500 = <b>A20</b> AM1000 = <b>A22</b> BAG50 = <b>S09</b> BAG100 = <b>S14</b>						



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