

## 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							
			<b>SERIES</b>	<b>A</b>	<b>Ø B</b>	<b>Ø C</b>	<b>WEIGHT in g</b>
			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 $P_{70^\circ\text{C}}$ 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					

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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 $\Omega$	$\pm 0.5 \%$ 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	$\leq \pm (1 \% + 0.05 W)$ 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  $\pm 0.5 \%$ .

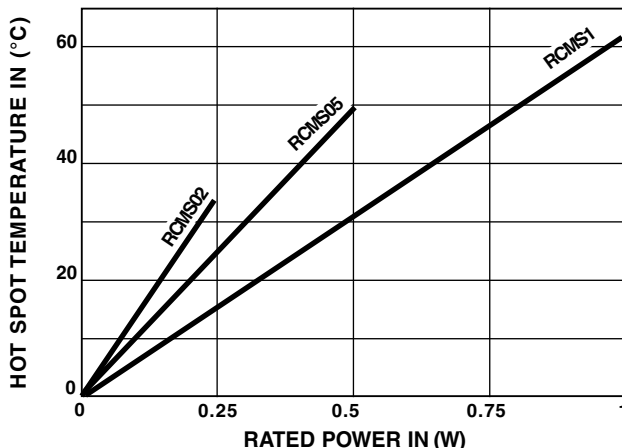
**NOISE LEVEL**

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.

**TEMPERATURE RISE**







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