Molded Metal Film High Stability Resistors

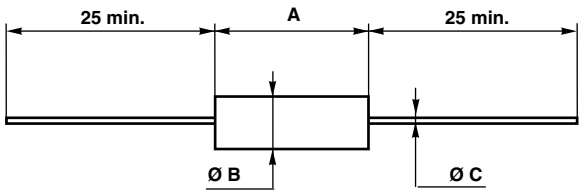
FEATURES

- 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 ≤ ± 30 ppm/°C in the range -10 °C to +70 °C
- Excellent initial precision: Up to ± 1 %
- High insulation typical values: 10^6 MΩ
- Termination = pure matte tin
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

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

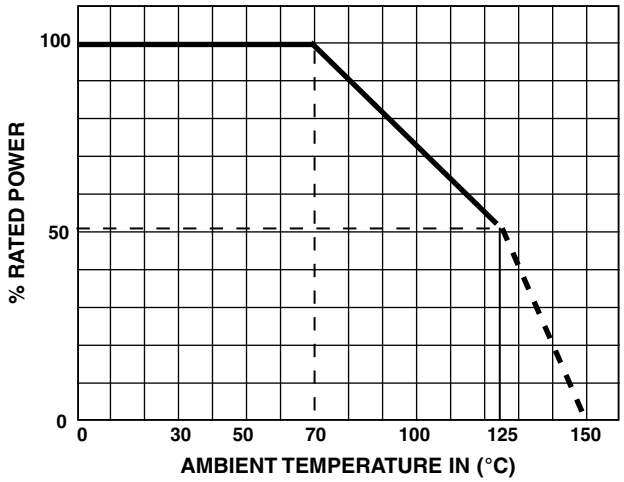
MODEL	RESISTANCE RANGE Ω	RATED POWER $P_{70\ °C}$ W	LIMITING ELEMENT VOLTAGE V	TOLERANCE ± %	TEMPERATURE COEFFICIENT ± ppm/°C
RCMS02	1 to 150K	0.125	300	1	30, 50
	1 to 150K	0.250	300,	1	30, 50
	1 to 150K	0.500	350	1	30, 50
RCMS05	1 to 332K	0.250	350	1	30, 50
	1 to 332K	0.500	350	1	30, 50
RCMS1	1 to 1M	0.500	400	1	30, 50

TECHNICAL AND QUALITY SPECIFICATIONS

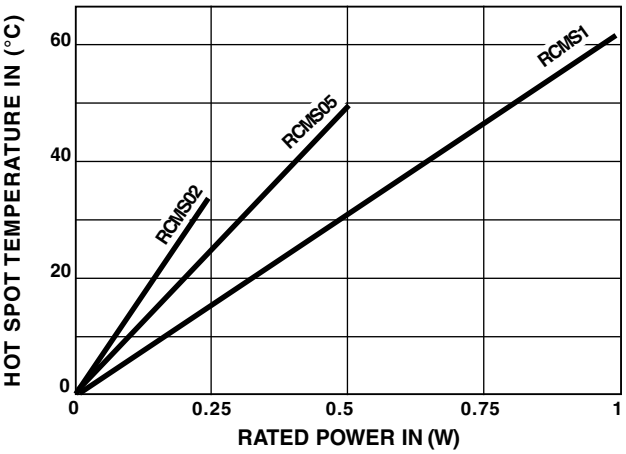
VISHAY SFERNICE SERIES		RCMS02			RCMS05		RCMS1
Reference under CECC 40 101-002 approvals		RS58Y	RS64Y	RS71Y	RS63Y	RS69Y	RS68Y
Reference under CECC 40 101-803 approvals		BC	-	-	CC	-	DC
MIL-R-105509 F equivalent reference		RN55C	-	-	RN60C	-	RN65C
Power Rating at 70 °C		0.125 W	0.250 W	0.500 W	0.250 W	0.500 W	0.500 W
Resistance Value Range in Relation to Tolerance	± 1 % E96	1 Ω to 150 kΩ	1 Ω to 150 kΩ	1 Ω to 150 kΩ	1 Ω to 332 kΩ	1 Ω to 332 kΩ	1 Ω to 1 MΩ
Maximum Voltage		300 V	300 V	350 V	350 V	350 V	400 V
Critical Resistance		-	-	-	490 kΩ	245 kΩ	320 kΩ
Temperature Coefficient	Rated in the range -55 °C +155 °C	K3 ≤ ± 50 ppm/°C					
	Typical in the range -10 °C +70 °C	K3 ≤ ± 30 ppm/°C					
Insulation Resistance (Typical)		≥ 10^7 MΩ (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	≤ ± (1 % + 0.05 Ω) Insulation resist. > 1 GΩ	± 0.5 % or 0.05 Ω Insulation resist. 10^6 MΩ
Short Time Overload	2.5 Un / 5 s Limited to 2 Um	≤ ± (0.25 % + 0.05 Ω)	± 0.1 % or 0.05 Ω
Damp Heat Humidity (Steady State)	56 days with low load	≤ ± (1 % + 0.05 Ω) Insulation resist. > 1 GΩ	± 0.5 % or 0.05 Ω Insulation resist. 10^6 MΩ
Rapid Temperature Change	-55 °C +125 °C	≤ ± (0.25 % + 0.05 Ω)	± 0.1 % or 0.05 Ω
Climatic Sequence	-55 °C +125 °C severity 1	≤ ± (0.5 % + 0.05 Ω) Insulation resist. > 1 GΩ	± 0.1 % or 0.05 Ω Insulation resist. 10^6 MΩ
Terminal Strength	Pull - twist - 2 bends	≤ ± (1 % + 0.05 Ω)	± 0.05 % or 0.05 Ω
Vibration	10 Hz to 500 Hz	≤ ± (0.25 % + 0.05 Ω)	± 0.05 % or 0.05 Ω
Soldering (Thermal Shock)	+260 °C 10 s	≤ ± (0.25 % + 0.05 Ω)	± 0.1 % or 0.05 Ω
Load Life	Cycle 90'/30' 1000 h at P_n at 70 °C	≤ ± (1 % + 0.05 W) Insulation resist. > 1 GΩ	± 0.2 % or 0.05 Ω Insulation resist. 10^6 MΩ
Shelf Life	1 year ambient temperature	-	± 0.1 % or 0.05 Ω

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 ≤ 30 ppm/°C	
LONG LIFE 90'/30' cycles ambient temperature 70 °C	1000 h at P_r	± 0.25 %
	10 000 h at P_r	± 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 ± 0.5 %.

NOISE LEVEL

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

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.

GLOBAL PART NUMBER INFORMATION

R	C	M	S	0	5		4	R	6	4	0	F	H	A	2	0

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

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay’s knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer’s responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer’s technical experts. Product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.