

Molded Metal Film High Stability (< 0.25 % After 1000 h) High Temperature (up to 175 °C) Precision Resistors



The performance of the RCMT resistors exceed the requirements of NF C 83-230 standards. They are particularly relevant to the more stringent military and industrial applications especially when high ambient temperatures such as +175 °C are to be encountered.

The RCMT resistors are manufactured according to the NF C UTE 83-230 standard styles RS56C, RS60E and C, RS65E and C, RS70E and C.

FEATURES

- 0.1 W to 2 W at 125 °C
- EN140100
- According to CECC 40 101-044
- High climatic performance -65 °C / +175 °C / 56 days
- High long term stability drift < 0.25 % after 1000 h
- Tight temperature coefficient to ± 15 ppm/°C
- Temperature coefficient tracking 5 ppm/°C
- Wide ohmic range from 1 Ω to 5 MΩ
- Tight tolerances up to ± 0.1 %
- Matching tolerance to 0.05 %
- Termination: Pure matte tin
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


**RoHS
COMPLIANT**

DIMENSIONS in millimeters					
	SERIES	A max.	Ø B max.	Ø C	WEIGHT in g
	RCMT01	4.32	2.03	0.4	0.11
	RCMT02	6.7	2.5	0.6	0.28
	RCMT05	10.4	3.66	0.6	0.46
	RCMT08	16.5	6.4	0.8	1.3
	RCMT1	19.3	6.4	0.8	1.5
	RCMT2	29	10.2	0.8	4.4
	RCMT4	54	10.2	0.8	13

STANDARD ELECTRICAL SPECIFICATIONS					
MODEL	RESISTANCE RANGE Ω	RATED POWER $P_{70\text{ °C}}$ W	LIMITING ELEMENT VOLTAGE V	TOLERANCE ± %	TEMPERATURE COEFFICIENT ± ppm/°C
RCMT01	1 to 511K	0.063	200	0.1, 0.2, 0.5, 1	15, 25, 50
RCMT02	1 to 322K	0.125	300	0.1, 0.2, 0.5, 1	15, 25, 50
RCMT05	1 to 1M	0.250	350	0.1, 0.2, 0.5, 1	15, 25, 50
RCMT08	1 to 1.5M	0.500	400	0.1, 0.2, 0.5, 1	15, 25, 50
RCMT1	1 to 2M	1.0	500	0.1, 0.2, 0.5, 1	15, 25, 50
RCMT2	1 to 2.5M	2.0	600	0.1, 0.2, 0.5, 1	15, 25, 50
RCMT4	1 to 5M	4.0	800	0.1, 0.2, 0.5, 1	15, 25, 50



TECHNICAL SPECIFICATIONS											
VISHAY SFERNICE SERIES	NF C 83-230 CECC 40 101-044 (FOR INFO.)	POWER RATING AT +70 °C	POWER RATING AT +125 °C	RESISTANCE VALUE RANGE IN RELATION TO - TEMPERATURE COEFFICIENT - TOLERANCE						MAXIMUM VOLTAGE	CRITICAL RESISTANCE
				K3		K4		K5			
				± 0.2 %	± 0.5 % ± 1 %	± 0.1 % ± 0.2 %	± 0.5 % ± 1 %	± 0.1 % ± 0.2 %	± 0.5 % ± 1 %		
RCMT01 K3	-	0.063 W	0.05 W	10 Ω	1 Ω	49.9 Ω	49.9 Ω	100 Ω	100 Ω	200 V	-
RCMT01 K4	-			511 kΩ	511 kΩ	100 kΩ	511 kΩ	100 kΩ	100 kΩ		
RCMT02 K3	RS 56C	0.125 W	0.1 W	10 Ω	1 Ω	10 Ω	1 Ω	10 Ω	10 Ω	300 V	-
RCMT02 K4	RS 56E			332 kΩ	332 kΩ	332 kΩ	332 kΩ	100 kΩ	332 kΩ		
RCMT05 K3	RS 60C	0.25 W	0.125 W	10 Ω	1 Ω	10 Ω	1 Ω	10 Ω	10 Ω	350 V	980 kΩ
RCMT05 K4	RS 60E			332 kΩ	1 MΩ	332 kΩ	1 MΩ	332 kΩ	1 MΩ		
RCMT08 K3	RS 65C	0.5 W	0.25 W	10 Ω	1 Ω	10 Ω	1 Ω	10 Ω	10 Ω	400 V	640 kΩ
RCMT08 K4	RS 65E			1 MΩ	1.5 MΩ	1 MΩ	1.5 MΩ	750 kΩ	1.5 MΩ		
RCMT1 K3	RS 70C	1 W	0.5 W	10 Ω	1 Ω	10 Ω	1 Ω	10 Ω	10 Ω	500 V	500 kΩ
RCMT1 K4	RS 70E			1 MΩ	2 MΩ	1 MΩ	2 MΩ	750 kΩ	2 MΩ		
RCMT2 K3	-	2 W	1 W	10 Ω	1 Ω	10 Ω	1 Ω	10 Ω	10 Ω	600 V	360 kΩ
RCMT2 K4	-			1 MΩ	2.5 MΩ	1 MΩ	2.5 MΩ	100 kΩ	100 kΩ		
RCMT4 K3	-	4 W	2 W	10 Ω	1 Ω	10 Ω	1 Ω	10 Ω	10 Ω	800 V	320 kΩ
RCMT4 K4	-			2.5 MΩ	5 MΩ	2.5 MΩ	5 MΩ	100 kΩ	100 kΩ		

PERFORMANCE			
TESTS	CONDITIONS	REQUIREMENTS	TYPICAL VALUES AND DRIFTS
Dielectric voltage	2 U _n / 1 min	± 0.25 %	< ± 0.05 % or 0.05 Ω
Short time overload	2.5 U _n / 5 s Limited to 2 U _m	± 0.25 %	± 0.05 % or 0.05 Ω
Load life at maximum category temperature	1000 h at +155 °C 0 % of P _r	± 0.5 %	± 0.25 % or 0.05 Ω
Damp heat humidity (steady state)	56 days with low load	± 0.5 %	± 0.2 % or 0.05 Ω Insulation resistance > 10 ⁶ MΩ
Rapid temperature change	-55 °C +175 °C	± 0.1 %	± 0.05 % or 0.05 Ω
Climatic sequence	-65 °C +175 °C severity 1	± 0.5 % Insulation resistance > 10 ³ MΩ	± 0.2 % or 0.05 Ω Insulation resistance > 10 ⁶ MΩ
Terminal strength	Pull - twist - 2 bends	± 0.1 %	± 0.05 % or 0.05 Ω
Vibration	Severity 55 B	± 0.1 %	± 0.05 % or 0.05 Ω
Soldering (thermal shock)	+260 °C 10 s	± 0.1 %	± 0.05 % or 0.05 Ω
Load life	Cycle 90'/30'	1000 h at P _n	± 0.5 %
	70 °C ambient		
Shelf life	1 year ambient temperature	-	< ± 0.05 %

TEMPERATURE COEFFICIENT				
TCR CODE	TEMPERATURE RANGE	NOMINAL TEMPERATURE COEFFICIENT	TEMPERATURE RANGE	TYPICAL TEMPERATURE COEFFICIENT
K5	0 °C to +155 °C	± 15 ppm/°C	0 °C to +70 °C	± 10 ppm/°C
K4	-55 °C to +175 °C	± 25 ppm/°C	-10 °C to +70 °C	± 15 ppm/°C
K3	-55 °C to +175 °C	± 50 ppm/°C	-10 °C to +70 °C	± 30 ppm/°C

ENVIRONMENTAL SPECIFICATIONS

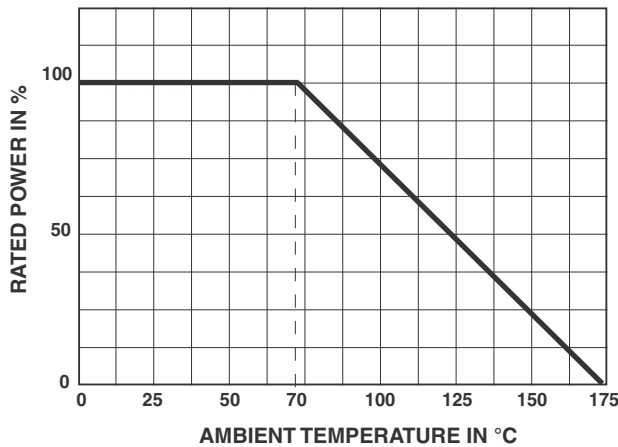
Insulation Resistance > 10⁷ MΩ
Voltage Coefficient 10 ppm/V
Environmental Specifications -65 °C / +175 °C / 56 days

PRACTICAL OPERATING TOLERANCES

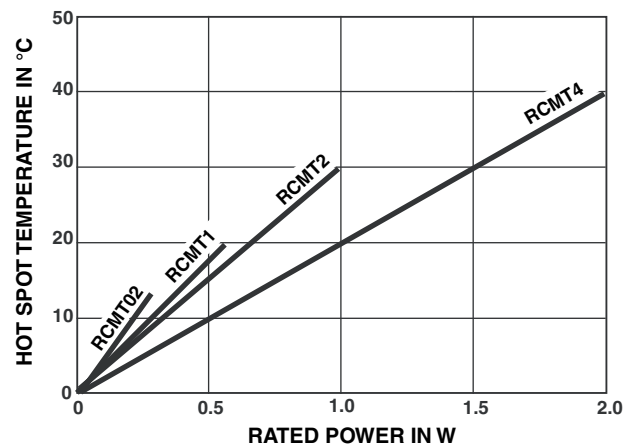
After the 10 000 h load life test, at nominal power rating, 90'/30' cycles, +125 °C ambient temperature, the total actual drifts measured at +125 °C are the following:

Manufacturing tolerance	± 0.1 %	± 1 %
Drift due to TCR (K4) + life drift	± 0.25 %	± 0.35 %
Max. total deviation from nominal ohmic value, including the manufacturing tolerance	± 0.35 %	± 1.35 %

POWER RATING



TEMPERATURE RISE



NOISE LEVEL

In a frequency decade, the average noise level is 0.1 μV/V for models RCMT08, RCMT1, RCMT2, and RCMT4 in all ohmic values. It progressively increases as a function of the ohmic value and can reach 0.2 μV/V for the highest values of models RCMT02 and RCMT05 (0.1 μV/V for R < 10 kΩ).

SPECIAL APPLICATIONS

Temperature coefficient tracking to 5 ppm.
 Tolerance matching to 0.05 %.
 Selection of positive or negative TCR in temperature range of -20 °C to +125 °C.
 For these applications and other requirements consult Vishay Sfernice.

RECOMMENDATION

The lower the ohmic value, the more important the influence of lead resistance is on measurements. The nominal resistance value is therefore measured at a distance of 5 mm from resistor body.

MARKING

Printed: Series, style, ohmic value (in Ω), tolerance (in %), temperature coefficient, manufacturing date. Due to lack of space, RCMT02 is referenced as MT02.



GLOBAL PART NUMBER INFORMATION																
R	C	M	T	0	2		1	3	0	0	1	F	H	S	1	4
GLOBAL MODEL	SIZE	SPECIAL	OHMIC VALUE				TOLERANCE	TEMPERATURE COEFFICIENT		PACKAGING						
RCMT	01 02 05 08 10 20 40	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. 13001 = 13 kΩ 33001 = 33 kΩ 220R0 = 220 Ω 1R220 = 1.22 Ω				B = 0.1 % A = 0.2 % D = 0.5 % F = 1 %	H = K3, 50 ppm/K E = K4, 25 ppm/K D = K5, 15 ppm/K		AM500 = A20 BAG100 = S14 BAG50 = S09 BAG10 = S03 BO50* = B25 *: possible in N/A						



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.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. 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.