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.

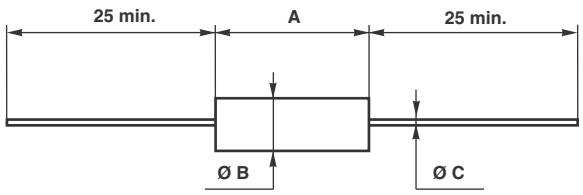
FEATURES

- 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

Pb-free

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 $P_{70\,°C}$ 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

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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 511 kΩ	1 Ω 511 kΩ	49.9 Ω 100 kΩ	49.9 Ω 511 kΩ	100 Ω 100 kΩ	100 Ω 100 kΩ	200 V	-
RCMT01 K4	-										
RCMT02 K3	RS 56C	0.125 W	0.1 W	10 Ω 332 kΩ	1 Ω 332 kΩ	10 Ω 332 kΩ	1 Ω 332 kΩ	10 Ω 100 kΩ	10 Ω 332 kΩ	300 V	-
RCMT02 K4	RS 56E										
RCMT05 K3	RS 60C	0.25 W	0.125 W	10 Ω 332 kΩ	1 Ω 1 MΩ	10 Ω 332 kΩ	1 Ω 1 MΩ	10 Ω 332 kΩ	10Ω 1 MΩ	350 V	980 kΩ
RCMT05 K4	RS 60E										
RCMT08 K3	RS 65C	0.5 W	0.25 W	10 Ω 1 MΩ	1 Ω 1.5 MΩ	10 Ω 1 MΩ	1 Ω 1.5 MΩ	10 Ω 750 kΩ	10 Ω 1.5 MΩ	400 V	640 kΩ
RCMT08 K4	RS 65E										
RCMT1 K3	RS 70C	1 W	0.5 W	10 Ω 1 MΩ	1 Ω 2 MΩ	10 Ω 1 MΩ	1 Ω 2 MΩ	10 Ω 750 kΩ	10 Ω 2 MΩ	500 V	500 kΩ
RCMT1 K4	RS 70E										
RCMT2 K3	-	2 W	1 W	10 Ω 1 MΩ	1Ω 2.5 MΩ	10 Ω 1 MΩ	1 Ω 2.5 MΩ	10 Ω 100 kΩ	10Ω 100 kΩ	600 V	360 kΩ
RCMT2 K4	-										
RCMT4 K3	-	4 W	2 W	10 Ω 2.5 MΩ	1 Ω 5 MΩ	10 Ω 2.5 MΩ	1 Ω 5 MΩ	10 Ω 100 kΩ	10 Ω 100 kΩ	800 V	320 kΩ
RCMT4 K4	-										

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 Un / 5 s Limited to 2 Um		± 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' 70 °C ambient	1000 h at P_n	± 0.5 %	± 0.15 % or 0.05 Ω
		10 000 h at P_n	-	± 0.25 % or 0.05 Ω
Shelf life	1 year ambient temperature		-	< ± 0.05 %

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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 $> 10^7$ MΩ

Voltage Coefficient 10 ppm/V

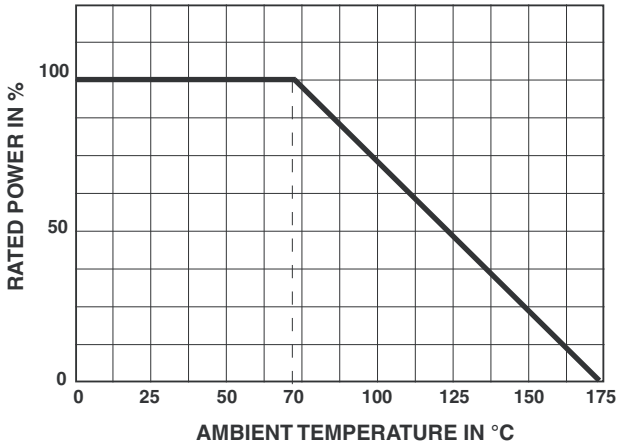
Environmental Specifications -65 °C / +175 °C / 56 days

PRACTICAL OPERATING TOLERANCES

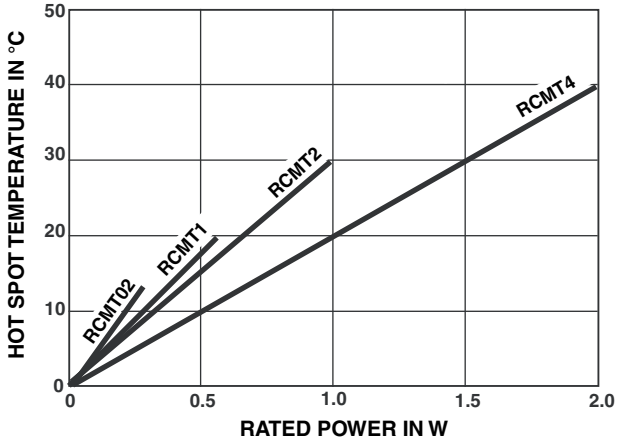
After the 10 000 h load life test, at nominal power rating, 90'/30' cycles, +125 °C ambient temperature, the total actual drifts measured at +125 °C are the following:

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.

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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

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