

## 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 qualified and released 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
- 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  $\pm 15$  ppm/°C
- Temperature coefficient tracking 5 ppm/°C
- Wide ohmic range from 1 Ω to 5 MΩ
- Tight tolerances up to  $\pm 0.1$  %
- Matching tolerance to 0.05 %
- Termination: Pure matte tin
- Compliant to RoHS directive 2002/95/EC


**RoHS**  
COMPLIANT

### DIMENSIONS in millimeters

SERIES	A max.	Ø B max.	Ø C	WEIGHT 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

### TEMPERATURE COEFFICIENT

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

### ENVIRONMENTAL SPECIFICATIONS

Insulation Resistance > 10<sup>7</sup> 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:

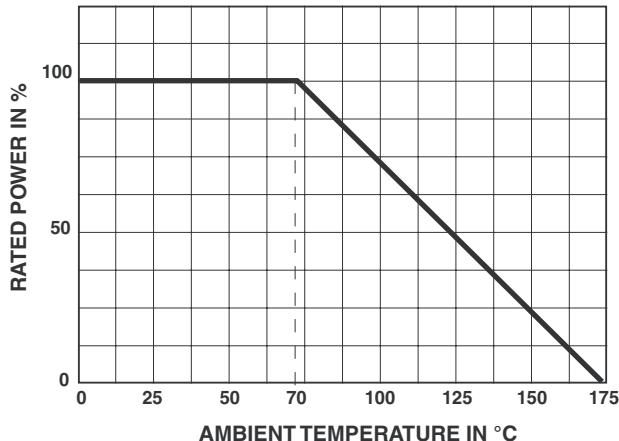
Manufacturing tolerance	$\pm 0.1$ %	$\pm 1$ %
Drift due to TCR (K4) + life drift	$\pm 0.25$ %	$\pm 0.35$ %
Max. total deviation from nominal ohmic value, including the manufacturing tolerance	$\pm 0.35$ %	$\pm 1.35$ %

TECHNICAL SPECIFICATIONS													
VISHAY SFERNICE SERIES	NFC 83-230 CECC 40 101-044	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	-			10 Ω 332 kΩ	1 Ω 332 kΩ	10 Ω 332 kΩ	1 Ω 332 kΩ	10 Ω 100 kΩ	10 Ω 332 kΩ				
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			10 Ω 332 kΩ	1 Ω 1 MΩ	10 Ω 332 kΩ	1 Ω 1 MΩ	10 Ω 332 kΩ	10 Ω 1 MΩ				
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	10 Ω 1 MΩ	350 V	980 kΩ		
RCMT05 K4	RS 60E			10 Ω 332 kΩ	1 Ω 1 MΩ	10 Ω 332 kΩ	1 Ω 1 MΩ	10 Ω 332 kΩ	10 Ω 1 MΩ				
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			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				
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			10 Ω 1 MΩ	1 Ω 2 MΩ	10 Ω 1 MΩ	1 Ω 2 MΩ	10 Ω 750 kΩ	10 Ω 2 MΩ				
RCMT2 K3	-	2 W	1 W	10 Ω 1 MΩ	1 Ω 2.5 MΩ	10 Ω 1 MΩ	1 Ω 2.5 MΩ	10 Ω 1 MΩ	10 Ω 2.5 MΩ	600 V	360 kΩ		
RCMT2 K4	-			10 Ω 1 MΩ	1 Ω 2.5 MΩ	10 Ω 1 MΩ	1 Ω 2.5 MΩ	10 Ω 1 MΩ	10 Ω 2.5 MΩ				
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 2 MΩ	10 Ω 2.5 MΩ	800 V	320 kΩ		
RCMT4 K4	-			10 Ω 2.5 MΩ	1 Ω 5 MΩ	10 Ω 2.5 MΩ	1 Ω 5 MΩ	10 Ω 2 MΩ	10 Ω 2.5 MΩ				

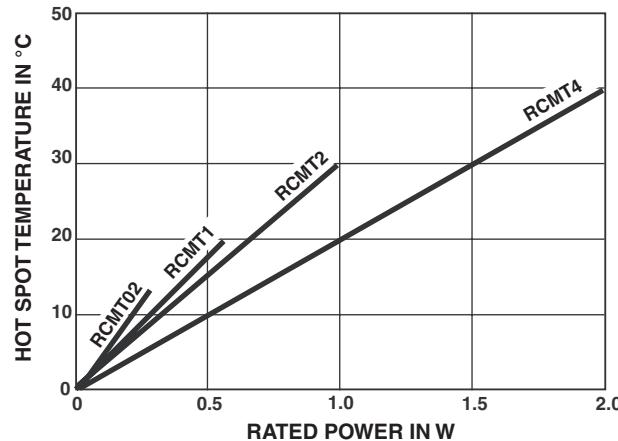
## Note

-  Undergoes European Quality Insurance System (CECC)

## POWER RATING



## TEMPERATURE RISE



<b>PERFORMANCE</b>			
EN140100 - CECC 40 101-044			<b>TYPICAL VALUES AND DRIFTS</b>
TESTS	CONDITIONS	REQUIREMENTS	
<b>Dielectric Voltage</b>	$2 U_n/1 \text{ min}$	$\pm 0.25 \%$	$< \pm 0.05 \%$ or $0.05 \Omega$
<b>Short Time Overload</b>	$2.5 U_m/5 \text{ s}$ limited to $2 U_n$	$\pm 0.25 \%$	$\pm 0.05 \%$ or $0.05 \Omega$
<b>Load Life at Maximum Category Temperature</b>	$1000 \text{ h at } +155 \text{ }^\circ\text{C}$ $0 \% \text{ of } P_r$	$\pm 0.5 \%$	$\pm 0.25 \%$ or $0.05 \Omega$
<b>Damp Heat Humidity (Steady State)</b>	56 days with low load	$\pm 0.5 \%$	$\pm 0.2 \%$ or $0.05 \Omega$ Insulation resistance $> 10^6 \text{ M}\Omega$
<b>Rapid Temperature Change</b>	- $55 \text{ }^\circ\text{C}$ + $175 \text{ }^\circ\text{C}$	$\pm 0.1 \%$	$\pm 0.05 \%$ or $0.05 \Omega$
<b>Climatic Sequence</b>	- $65 \text{ }^\circ\text{C}$ + $175 \text{ }^\circ\text{C}$ severity 1	$\pm 0.5 \%$ Insulation resistance $> 10^3 \text{ M}\Omega$	$\pm 0.2 \%$ or $0.05 \Omega$ Insulation resistance $> 10^6 \text{ M}\Omega$
<b>Terminal Strength</b>	Pull - twist - 2 bends	$\pm 0.1 \%$	$\pm 0.05 \%$ or $0.05 \Omega$
<b>Vibration</b>	Severity 55 B	$\pm 0.1 \%$	$\pm 0.05 \%$ or $0.05 \Omega$
<b>Soldering (Thermal Shock)</b>	+ $260 \text{ }^\circ\text{C}$ 10 s	$\pm 0.1 \%$	$\pm 0.05 \%$ or $0.05 \Omega$
<b>Load Life</b>	Cycle 90°/30' 70 °C ambient	$1000 \text{ h at } P_n$ $10 000 \text{ h at } P_n$	$\pm 0.5 \%$ - $\pm 0.25 \%$ or $0.05 \Omega$
<b>Shelf Life</b>	1 year ambient temperature	-	$< \pm 0.05 \%$

### NOISE LEVEL

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

### SPECIAL APPLICATIONS

Temperature coefficient tracking to 5 ppm.

Tolerance matching to 0.05 %.

Selection of positive or negative TCR in temperature range of -  $20 \text{ }^\circ\text{C}$  to +  $125 \text{ }^\circ\text{C}$ .

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, NF style if applicable, ohmic value (in  $\Omega$ ), 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. <b>13001</b> = 13 $\Omega$ <b>33001</b> = 33 $\Omega$ <b>220R0</b> = 220 $\Omega$ <b>1R220</b> = 1.22 $\Omega$		<b>B</b> = 0.1 % <b>A</b> = 0.2 % <b>D</b> = 0.5 % <b>F</b> = 1 %	<b>H</b> = K3, 50 ppm/K <b>E</b> = K4, 25 ppm/K <b>D</b> = K5, 15 ppm/K		AM500 = <b>A20</b> BAG100 = <b>S14</b> BAG50 = <b>S09</b> BAG10 = <b>S03</b> BO50* = <b>B25</b>		*: possible in N/A						

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