

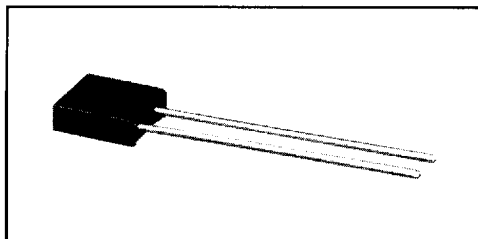
A-19 05

T-62-05



MODELS RCK and RNK Metal Foil Resistors

Military, MIL-R-55182/9 Qualified,
Type RNC90Y and Commercial



FEATURES

- Microcer® process used
- Tight tolerances
- High precision
- Very high stability
- Negligible rise time

STANDARD ELECTRICAL SPECIFICATIONS

ULTRONIX MODEL	POWER RATING @ + 70°C (Watts)	POWER RATING @ + 125°C (Watts)	MAXIMUM WORKING VOLTAGE	RESISTANCE RANGE (Ohms)*			
				± 0.005%	± 0.02% ± 0.01%	± 0.05%	± 0.1%, ± 0.02% ± 0.5%, ± 1.0%
RCK01	0.1	0.06	50V	50-30k	50-30k	50-30k	5-30k
RCK02/02A**	0.6	0.3	300V	50-250k	25-250k	10-250k	1-250k
RCK04	1.0	0.6	350V	50-500k	25-500k	10-500k	1-500k
RCK05/05A	1.2	0.9	500V	50-750k	25-750k	10-750k	1-750k
RCK06/06A	1.5	1.2	650V	50-1.5M	25-1.5M	10-1.5M	1-1.5M

* Minimum values for RNK models are: RNK01 - 50 ohm, RNK02 - 50 ohm, RNK04 - 25 ohm, RNK05 - 15 ohm, RNK06 - 15 ohm.

** Model RCK02A is military style RNC90Y. Consult factory for QPL values.

ELECTRICAL SPECIFICATIONS

Standard Tolerance: ± 0.005% to ± 1%.

Matching Tolerance: To ± 0.002%.

Temperature Coefficient: Typical ≤ ± 3PPM/°C
(- 55°C to + 125°C). ± 0.6PPM/°C (0°C to + 60°C).
Tracking to 0.5PPM/°C. Lower temperature coefficient
of ± 1.0PPM/°C (nominal), maximum of ± 2.5PPM/°C
(-55°C to 125°C) available. Specify RNK in place of RCK.

Temperature Range: - 65°C to + 175°C.

Dielectric Strength: 750 VRMS.

Insulation Resistance: > 10⁶ Megohm.

Thermal Resistance: .08°C/mW.

Thermal EMF: Less than 0.5µV/°C of difference
between leads.

High Stability: < 25PPM/year or < 50PPM/3 years
(shelf life).

Negligible Rise Time: Approximately 1 x 10⁻⁹ seconds.

MECHANICAL SPECIFICATIONS

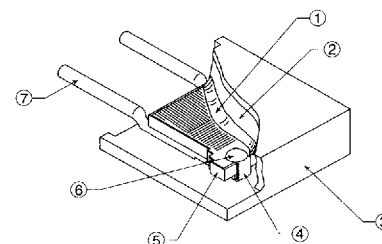
Resistance Element: Nickel-chromium foil.

Case: Insulated case.

Terminals: Tinned copper leads. Solderable/weldable.

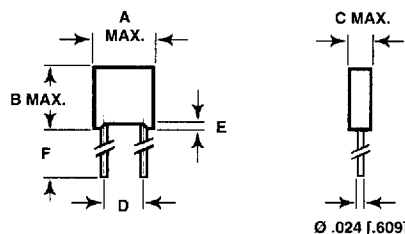
Weight: 0.6 gram average.

RNC90Y CONSTRUCTION



1. Silicone RTV Coating.
2. Epoxy Encapsulation.
3. Ryton Shell.
4. Ribbon (Welded to Foil).
5. Ultra Stable Microcer® Chip.
6. Epoxy Dot (Weld Protection).
7. Tinned Copper Paddle Lead.

DIMENSIONAL CONFIGURATIONS [Numbers in brackets indicate millimeters]



MODEL	A	B	C	D	E	F (Min.)
RCK01	.210 [5.33]	.210 [5.33]	.110 [2.80]	.100 [2.54]	.015 ± .005 [.381 ± .127]	.750 [19.05]
RCK02	.320 [8.13]	.345 [8.76]	.120 [3.05]	.200 [5.08]	.015 ± .005 [.381 ± .127]	.875 [22.22]
RCK02A	.320 [8.13]	.345 [8.76]	.120 [3.05]	.150 [3.81]	.015 ± .005 [.381 ± .127]	.875 [22.22]
RCK04	.575 [14.60]	.413 [10.49]	.138 [3.49]	.400 [10.16]	.015 ± .005 [.381 ± .127]	1.40 [35.56]
RCK05	.894 [22.71]	.413 [10.49]	.138 [3.49]	.700 [17.78]	.015 ± .005 [.381 ± .127]	1.40 [35.60]
RCK05A	.894 [22.71]	.413 [10.49]	.138 [3.49]	.650 [16.51]	.015 ± .005 [.381 ± .127]	1.40 [35.60]
RCK06	1.215 [30.86]	.545 [13.84]	.260 [6.60]	.900 [22.86]	—	1.00 [25.40]
RCK06A	1.215 [30.86]	.545 [13.84]	.260 [6.60]	.650 [16.51]	—	1.00 [25.40]

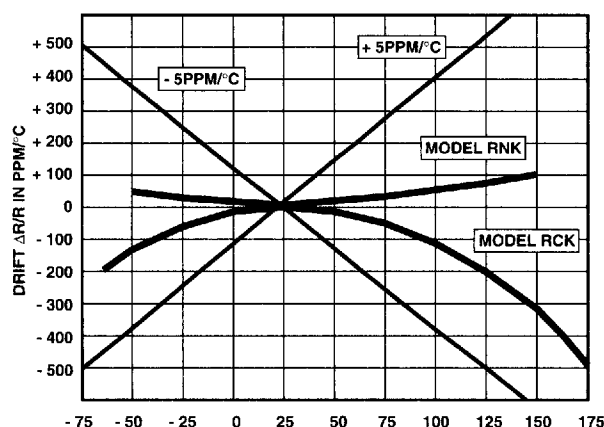
MODELS RCK and RNK

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ENVIRONMENTAL PERFORMANCE				
TEST ¹		CONDITIONS	MIL-R-55182/9E REQUIREMENT	TYPICAL CHANGE
Power Conditioning	(108)	100 hours at rated power at + 125°C, 90"/30" cycle	—	
Thermal Shock	(107)	5 cycles, - 65°C to + 150°C	$\Delta R \leq 0.05\%^2$	$\Delta R \leq 0.01\%$
Short Time Overload		6.25 times rated power for 5 seconds	combined tests	
Low Temperature Storage and Operation		1 hour storage, 45 minutes at rated power at - 65°C	$\Delta R \leq 0.05\%^2$	$\Delta R \leq 0.005\%$
High Temperature Exposure		2,000 hours, no load at + 175°C	$\Delta R \leq 0.05\%^2$	$\Delta R \leq 0.025\%$
Moisture Resistance	(106)	240 hours with humidity ranging from 80% RH to 98% RH	$\Delta R \leq 0.05\%^2$	$\Delta R \leq 0.005\%$
Resistance to Soldering Heat	(210)	350°C for 3 seconds	$\Delta R \leq 0.02\%^2$	$\Delta R \leq 0.002\%$
Shock	(213)	20 shocks, 100g, 6 ms sawtooth, 2 axes	$\Delta R \leq 0.01\%^2$	$\Delta R \leq 0.005\%$
Vibration	(204)	10 to 2,000 Hz, 20g, 8 hours, 2 axes	$\Delta R \leq 0.02\%^2$	$\Delta R \leq 0.005\%$
Load Life	(108)	2,000 hours at rated power at + 70°C and + 125°C	$\Delta R \leq 0.05\%^2$	$\Delta R \leq 0.025\%$
		10,000 hours at rated power at + 125°C	$\Delta R \leq 0.50\%^2$	$\Delta R \leq 0.100\%$

1. Numbers in parentheses refer to test method of MIL-STD-202 as modified by the detail specification.
 2. All ΔR limits have an additional deviation allotment of 0.01 ohm.

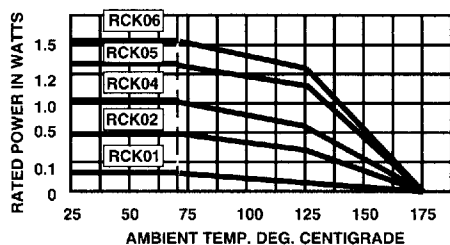
TEMPERATURE COEFFICIENT



Model RCK: Maximum of $\pm 5\text{PPM}/^\circ\text{C}$ above 5 ohm (- 55°C to + 125°C).

Model RNK: $\pm 0.3\text{PPM}/^\circ\text{C}$ (nominal), maximum of $\pm 1.3\text{PPM}/^\circ\text{C}$ (0° to + 60°C).
 $\pm 1.0\text{PPM}/^\circ\text{C}$ (nominal) maximum of $\pm 2.5\text{PPM}/^\circ\text{C}$ (- 55°C to + 125°C). (See minimum values above.)

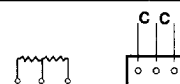
DERATING



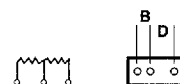
The power ratings listed in the tables are based upon achieving the specified stabilities at maximum ambient temperatures of + 70°C. If a resistor is to be used at higher ambient temperature, the power should be derated linearly to zero per the chart. To insure maximum stability, this power curve should be derated by 25% for tolerances to $\pm 0.05\%$, by 50% for tolerances to $\pm 0.01\%$ and by 75% for tolerances of $\pm 0.005\%$.

RESISTOR NETWORKS

"04" Package Size



RE21*



RE22



RE23

"06" Package Size



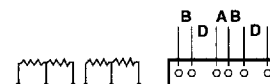
RE41



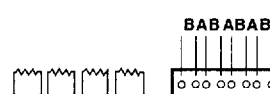
RE42



RE43



RE44



RE45

"05A" Package Size



RE31



RE32



RE33

A = 0.10" [2.54] C = .200" [5.08]
 B = 0.15" [3.81] D = .250" [6.35]

* Available in "02" Package, Lead Spacings of 0.10" [2.54]. Order RE11.

PART MARKING

- Manufacturer's name or code
- Model
- Resistance value
- Tolerance
- Date code

HOW TO ORDER

RCK02A

MODEL

10K500

RESISTANCE VALUE
(Up to 5 significant figures) $\pm .05\%$

TOLERANCE

FAILURE RATE
(RN90Y Only) $\pm 2.0\text{PPM}/^\circ\text{C}$, 0 to + 60°CSPECIAL TCR REQUIREMENT
(Non Mil Only) If Applicable