

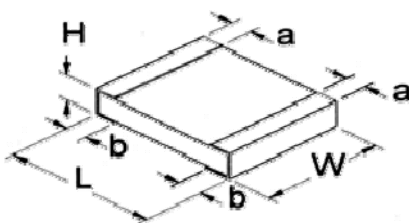
- Features:
- Precision tolerances to $\pm 0.01\%$
 - TCR down to $\pm 5\text{ppm}/^\circ\text{C}$
 - E96 and E24 values are standard
 - Wide R-value range
 - Consult factory for tighter tolerances
 - 2010 and 2512 sizes now available
 - RoHS compliant



Electrical Specifications											
Type / Code	Old Pkg Code	Power Rating (Watts) @ 70°C	Maximum Working Voltage(1)	Maximum Overload Voltage	Resistance Temperature Coefficient	Ohmic Range (Ω) and Tolerance					
						0.01%	0.05%	0.1%	0.25%	0.5%	1%
RNCF0201	05	0.032W (0.05W(2))	15V	30V	$\pm 25\text{ppm}/^\circ\text{C}$ $\pm 50/100\text{ppm}/^\circ\text{C}$	-	-	-	-	49.9 - 5K 49.9 - 33K	49.9 - 5K 49.9 - 33K
RNCF0402	10	0.063W	25V	50V	$\pm 5\text{ppm}/^\circ\text{C}$ $\pm 10\text{ppm}/^\circ\text{C}$ $\pm 25\text{ppm}/^\circ\text{C}$ $\pm 50/100\text{ppm}/^\circ\text{C}$	49.9 - 5K 49.9 - 12K - -	49.9 - 5K 49.9 - 12K - -	49.9 - 5K 10 - 100K 10 - 205K 10 - 205K	- 10 - 100K 10 - 205K 10 - 205K	- 10 - 100K 10 - 205K 1 - 205K	- 10 - 100K 10 - 205K 1 - 205K
RNCF0603	16	0.063W (0.1W(2))	50V	100V	$\pm 5\text{ppm}/^\circ\text{C}$ $\pm 10\text{ppm}/^\circ\text{C}$ $\pm 25\text{ppm}/^\circ\text{C}$ $\pm 50/100\text{ppm}/^\circ\text{C}$	24.9 - 15K 24.9 - 100K - -	24.9 - 15K 4.7 - 332K 4.7 - 332K 4.7 - 332K	24.9 - 15K 4.7 - 390K 4.7 - 1M 4.7 - 1M	10 - 390K - 2 - 1M 2 - 1M	- 10 - 390K 2 - 1M 1 - 1M	- 10 - 390K 2 - 1M 1 - 1M
RNCF0805	20	0.1W (0.125W(2))	100V	200V	$\pm 5\text{ppm}/^\circ\text{C}$ $\pm 10\text{ppm}/^\circ\text{C}$ $\pm 25\text{ppm}/^\circ\text{C}$ $\pm 50/100\text{ppm}/^\circ\text{C}$	24.9 - 30K 24.9 - 200K - -	24.9 - 30K 4.7 - 511K 4.7 - 511K 4.7 - 511K	24.9 - 30K 4.7 - 800K 4.7 - 2M 4.7 - 2M	- 10 - 800K 1 - 2M 1 - 2M	- 10 - 800K 1 - 2M 1 - 2M	- 10 - 800K 1 - 2M 1 - 2M
RNCF1206	32	0.125W (0.25W(2))	150V	300V	$\pm 5\text{ppm}/^\circ\text{C}$ $\pm 10\text{ppm}/^\circ\text{C}$ $\pm 25\text{ppm}/^\circ\text{C}$ $\pm 50/100\text{ppm}/^\circ\text{C}$	24.9 - 50K 24.9 - 500K - -	24.9 - 50K 4.7 - 1M 4.7 - 1M 4.7 - 1M	24.9 - 50K 4.7 - 1M 4.7 - 2.5M 4.7 - 2.5M	- 10 - 1M 1 - 2.5M 1 - 2.5M	- 10 - 1M 1 - 2.5M 1 - 2.5M	- 10 - 1M 1 - 2.5M 1 - 2.5M
RNCF1210	50	0.2W (0.25W(2))	150V	300V	$\pm 5\text{ppm}/^\circ\text{C}$ $\pm 10\text{ppm}/^\circ\text{C}$ $\pm 25\text{ppm}/^\circ\text{C}$ $\pm 50/100\text{ppm}/^\circ\text{C}$	24.9 - 50K 24.9 - 500K - -	24.9 - 50K 4.7 - 1M 4.7 - 1M 4.7 - 1M	24.9 - 50K 4.7 - 1M 4.7 - 2.5M 4.7 - 2.5M	- - 1 - 2.5M 1 - 2.5M	- - 1 - 2.5M 1 - 2.5M	- - 1 - 2.5M 1 - 2.5M
RNCF2010	57	0.25W (0.5W(2))	150V	300V	$\pm 5\text{ppm}/^\circ\text{C}$ $\pm 10\text{ppm}/^\circ\text{C}$ $\pm 25\text{ppm}/^\circ\text{C}$ $\pm 50/100\text{ppm}/^\circ\text{C}$	24.9 - 100K 24.9 - 500K - -	24.9 - 100K 4.7 - 1M 4.7 - 1M 4.7 - 1M	24.9 - 100K 4.7 - 1M 4.7 - 3M 4.7 - 3M	- - 1 - 3M 1 - 3M	- - 1 - 3M 1 - 3M	- - 1 - 3M 1 - 3M
RNCF2512	63	0.5W (1W(2))	150V	300V	$\pm 5\text{ppm}/^\circ\text{C}$ $\pm 10\text{ppm}/^\circ\text{C}$ $\pm 25\text{ppm}/^\circ\text{C}$ $\pm 50/100\text{ppm}/^\circ\text{C}$	24.9 - 100K 24.9 - 500K - -	24.9 - 100K 4.7 - 1M 4.7 - 1M 4.7 - 1M	24.9 - 100K 4.7 - 1M 4.7 - 3M 4.7 - 3M	- - 1 - 3M 1 - 3M	- - 1 - 3M 1 - 3M	- - 1 - 3M 1 - 3M

(1) Lesser of $\sqrt{\text{PR}}$ or maximum working voltage.

(2) Higher power rating for each package size is valid if ambient temp $\leq 80^\circ\text{C}$ and terminal temp $\leq 105^\circ\text{C}$



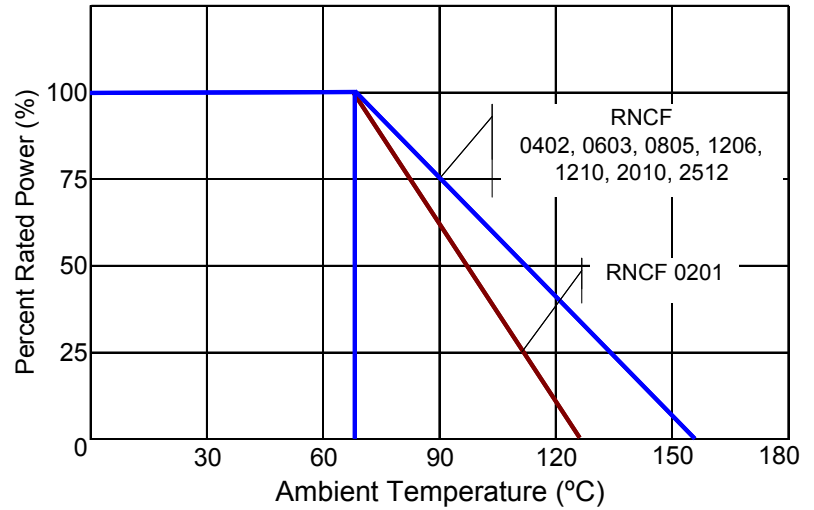
Mechanical Specifications						
Type / Code	L Body Length	W Body Width	H Body Height	a Top Termination	b Bottom Termination	Unit
RNCF0201	0.024 ± 0.002 0.60 ± 0.05	0.012 ± 0.002 0.30 ± 0.05	0.009 ± 0.001 0.23 ± 0.03	0.005 ± 0.002 0.12 ± 0.05	0.005 ± 0.002 0.12 ± 0.05	inches mm
RNCF0402	0.039 ± 0.002 1.00 ± 0.05	0.020 ± 0.002 0.50 ± 0.05	0.014 ± 0.002 0.35 ± 0.05	0.008 ± 0.004 0.20 ± 0.10	0.010 ± 0.004 0.25 ± 0.10	inches mm
RNCF0603	0.063 ± 0.008 1.60 ± 0.20	0.031 ± 0.008 0.80 ± 0.20	0.016 ± 0.006 0.40 ± 0.15	0.012 ± 0.008 0.30 ± 0.20	0.012 ± 0.008 0.30 ± 0.20	inches mm
RNCF0805	0.079 ± 0.008 2.00 ± 0.20	0.049 ± 0.008 1.25 ± 0.20	0.020 ± 0.006 0.50 ± 0.15	0.016 ± 0.008 0.40 ± 0.20	0.016 ± 0.008 0.40 ± 0.20	inches mm
RNCF1206	0.126 ± 0.008 3.20 ± 0.20	0.063 ± 0.008 1.60 ± 0.20	0.020 ± 0.006 0.50 ± 0.15	0.020 ± 0.012 0.50 ± 0.30	0.016 ± 0.008 0.40 ± 0.20	inches mm
RNCF1210	0.122 ± 0.008 3.10 ± 0.20	0.094 ± 0.006 2.40 ± 0.15	0.024 ± 0.004 0.60 ± 0.10	0.020 ± 0.012 0.50 ± 0.30	0.016 ± 0.008 0.40 ± 0.20	inches mm
RNCF2010	0.193 ± 0.006 4.90 ± 0.15	0.094 ± 0.006 2.40 ± 0.15	0.024 ± 0.004 0.60 ± 0.10	0.024 ± 0.012 0.60 ± 0.30	0.020 ± 0.010 0.50 ± 0.25	inches mm
RNCF2512	0.248 ± 0.006 6.30 ± 0.15	0.122 ± 0.006 3.10 ± 0.15	0.024 ± 0.004 0.60 ± 0.10	0.024 ± 0.012 0.60 ± 0.30	0.020 ± 0.010 0.50 ± 0.25	inches mm

Performance Characteristics					
Test	Specification	Specification for Tolerances = 0.01%	Specification for Tolerances = 0.05%	Typical	Test Method
Moisture Resistance, Thermal Shock	$\Delta R \pm (0.25\% + 0.05\Omega)$	$\Delta R \pm 0.01\%$	$\Delta R \pm 0.05\%$	$\leq 0.1\%$	-55°C - 150°C, 100 cycles
Load Life	$\Delta R \pm (0.2\% + 0.05\Omega)$	$\Delta R \pm 0.01\%$	$\Delta R \pm 0.05\%$	$\leq 0.2\%$	70±2°C, Maximum working voltage for 1000 hrs with 1.5 hrs ON and 0.5 hrs OFF
	$>7K\Omega \Delta R \pm 0.5\%$ $\Delta R \pm 0.5\%$ for high power rating				
Load Life in Moisture	$\Delta R \pm (0.3\% + 0.05\Omega)$	$\Delta R \pm 0.01\%$	$\Delta R \pm 0.05\%$	$\leq 0.25\%$	40±2°C, 90-95% RH Maximum working voltage for 1000 hrs with 1.5 hrs ON and 0.5 hrs OFF
	$\Delta R \pm 0.5\%$ for high power rating				
Resistance to Soldering Heat	$\Delta R \pm (0.2\% + 0.05\Omega)$	$\Delta R \pm 0.01\%$	$\Delta R \pm 0.05\%$	$\leq 0.5\%$	260±5°C for 10 seconds
Solderability	Min 95% coverage			$\geq 95\%$	245±5°C for 3 seconds
Bending Strength	$\Delta R \pm (0.2\% + 0.05\Omega)$	$\Delta R \pm 0.01\%$	$\Delta R \pm 0.05\%$	$\leq 0.05\%$	Bending amplitude 3mm for 10 seconds
Dielectric Withstanding Voltage	by type			$\leq 0.05\%$	Maximum overload voltage for 1 minute
Short Time Overload	$\Delta R \pm (0.2\% + 0.05\Omega)$	$\Delta R \pm 0.01\%$	$\Delta R \pm 0.05\%$	$\leq 0.05\%$	RCWV*2.5 or Maximum overload volatage for 5 seconds
Insulation Resistance	$>1G\Omega$			$\geq 1G\Omega$	Apply 100V _{DC} for 1 minute
Low Temperature Operation	$\Delta R \pm 0.2\%$	$\Delta R \pm 0.01\%$	$\Delta R \pm 0.05\%$		1 hour, -65°C, followed by 45 minutes of RCWV
	$\Delta R \pm 0.5\%$ for high power rating				

Operating Temperature Range: -55°C to +125°C (0201); -55°C to +155°C (0402 to 2512)

Reference Standards: MIL-STD-202, JIS-C 5201-1

Power Derating Curve:



How to Order

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

R

N

C

F

0

8

0

5

D

T

E

4

K

7

5

Product Series

RNCF

Precision Thin Film Chip Resistors

Size

0201

0402

0603

0805

1206

1210

2010

2512

Power

0.032W

0.063W

0.063W

0.1W

0.125W

0.2W

0.25W

0.5W

Tolerance

Code

Tol

Value

T

A

B

C

D

F

0.01%

0.05%

0.1%

0.25%

0.5%

1%

E192(1), E96, E24

E96, E24

Packaging

Code

Description

Size

Quantity

T

K

7" Reel Paper Tape

7" Reel Paper Tape

0201, 0402

0603, 0805

1206, 1210

2010, 2512

0603, 0805, 1206

2010, 2512

10,000

5,000

4,000

1,000

TCR

Code

ppm

Y

T

E

C

D

5

10

25

50

100

Resistance Value

Four characters with the multiplier used as the decimal holder.

24.9 ohm = 24R9

10 Kohm = 10K0

1 Mohm = 1M00

(1) E192 values are unmarked

Legacy Part Number (before January 3, 2011):

SEI Type		Code			TCR	Nominal Resistance	Tolerance	Packaging			
RNCF		20			T9	4.75K	0.5%	R			
Type	Description	Code	Wattage	Size	TCR		Tol	SEI Types	Pkg Qty	Code	Description
RNCF	Precision Thin Film Chip Resistor	05	0.032W	0201	T1 100ppm		0.01%	0201, 0402	10,000	R	7" reel paper tape
		10	0.063W	0402	T2 50ppm		0.05%	0603, 0805, 1206	5,000	R	
		16	0.063W	0603	T9 25ppm		0.1%	1206	1,000	I	
		20	0.1W	0805	TB 10ppm		0.25%	1210	5,000	R	
		32	0.125W	1206	TA 5ppm		0.5%	2010, 2512	4,000	R	
		50	0.2W	1210			1%		1,000	I	
		57	0.25W	2010							
		63	0.5W	2512							

(1) E192 values are unmarked