

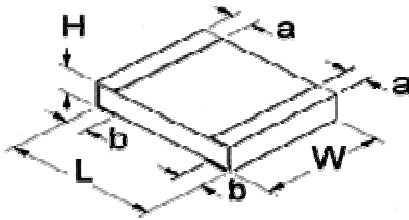
- Features:
- Precision tolerances to  $\pm 0.01\%$
  - TCR down to  $\pm 5\text{ppm}/^\circ\text{C}$
  - Wide R-value range
  - Consult factory for tighter tolerances
  - 2010 and 2512 sizes now available
  - RoHS compliant



Electrical Specifications											
Type / Code	Old Pkg Code	Power Rating (Watts) @ 70°C	Maximum Working Voltage(1)	Maximum Overload Voltage	Resistance Temperature Coefficient	Ohmic Range ( $\Omega$ ) 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	$\pm 5\text{ ppm}/^\circ\text{C}$ $\pm 10\text{ ppm}/^\circ\text{C}$ $\pm 15\text{ ppm}/^\circ\text{C}$ $\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50/100\text{ ppm}/^\circ\text{C}$	49.9 - 5K 49.9 - 12K 49.9 - 12K -	49.9 - 5K 49.9 - 12K -	49.9 - 5K 10 - 100K 49.9 - 70K 10 - 205K 10 - 205K	- 10 - 100K -	10 - 100K -	10 - 100K -
RNCF0603	16	0.063W (0.1W(2))	50V	100V	$\pm 5\text{ ppm}/^\circ\text{C}$ $\pm 10\text{ ppm}/^\circ\text{C}$ $\pm 15\text{ ppm}/^\circ\text{C}$ $\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50/100\text{ ppm}/^\circ\text{C}$	24.9 - 15K 24.9 - 100K 24.9 - 100K -	24.9 - 15K 4.7 - 332K -	24.9 - 15K 4.7 - 390K 4.7 - 332K 4.7 - 1M 4.7 - 1M	- 10 - 390K -	10 - 390K -	10 - 390K -
RNCF0805	20	0.1W (0.125W(2))	100V	200V	$\pm 5\text{ ppm}/^\circ\text{C}$ $\pm 10\text{ ppm}/^\circ\text{C}$ $\pm 15\text{ ppm}/^\circ\text{C}$ $\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50/100\text{ ppm}/^\circ\text{C}$	24.9 - 30K 24.9 - 200K 24.9 - 200K -	24.9 - 30K 4.7 - 511K -	24.9 - 30K 4.7 - 800K 4.7 - 511K 4.7 - 2M 4.7 - 2M	- 10 - 800K -	10 - 800K -	10 - 800K -
RNCF1206	32	0.125W (0.25W(2))	150V	300V	$\pm 5\text{ ppm}/^\circ\text{C}$ $\pm 10\text{ ppm}/^\circ\text{C}$ $\pm 15\text{ ppm}/^\circ\text{C}$ $\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50/100\text{ ppm}/^\circ\text{C}$	24.9 - 50K 24.9 - 500K 24.9 - 500K -	24.9 - 50K 4.7 - 1M -	24.9 - 50K 4.7 - 1M 4.7 - 2.5M 4.7 - 2.5M	- 10 - 1M -	10 - 1M -	10 - 1M -
RNCF1210	50	0.2W (0.25W(2))	150V	300V	$\pm 5\text{ ppm}/^\circ\text{C}$ $\pm 10\text{ ppm}/^\circ\text{C}$ $\pm 15\text{ ppm}/^\circ\text{C}$ $\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50/100\text{ ppm}/^\circ\text{C}$	24.9 - 50K 24.9 - 500K 24.9 - 500K -	24.9 - 50K 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
RNCF2010	57	0.25W (0.5W(2))	150V	300V	$\pm 5\text{ ppm}/^\circ\text{C}$ $\pm 10\text{ ppm}/^\circ\text{C}$ $\pm 15\text{ ppm}/^\circ\text{C}$ $\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50/100\text{ ppm}/^\circ\text{C}$	24.9 - 100K 24.9 - 500K 24.9 - 500K -	24.9 - 100K 4.7 - 1M -	24.9 - 100K 4.7 - 1M 4.7 - 3M 4.7 - 3M	- -	1 - 3M 1 - 3M	1 - 3M 1 - 3M
RNCF2512	63	0.5W (1W(2))	150V	300V	$\pm 5\text{ ppm}/^\circ\text{C}$ $\pm 10\text{ ppm}/^\circ\text{C}$ $\pm 15\text{ ppm}/^\circ\text{C}$ $\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50/100\text{ ppm}/^\circ\text{C}$	24.9 - 100K 24.9 - 500K 24.9 - 500K -	24.9 - 100K 4.7 - 1M -	24.9 - 100K 4.7 - 1M 4.7 - 3M 4.7 - 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  $\leq 105^\circ\text{C}$

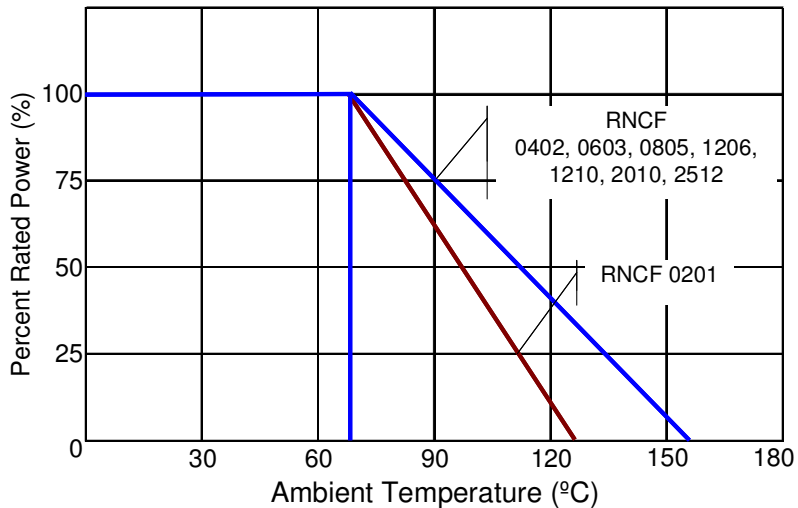


Mechanical Specifications						
Type / Code	L Body Length	W Body Width	H Body Height	a Top Termination	b Bottom Termination	Unit
RNCF0201	0.024 ± 0.002	0.012 ± 0.002	0.009 ± 0.001	0.005 ± 0.002	0.005 ± 0.002	inches
	0.60 ± 0.05	0.30 ± 0.05	0.23 ± 0.03	0.12 ± 0.05	0.12 ± 0.05	mm
RNCF0402	0.039 ± 0.002	0.020 ± 0.002	0.014 ± 0.002	0.008 ± 0.004	0.010 ± 0.004	inches
	1.00 ± 0.05	0.50 ± 0.05	0.35 ± 0.05	0.20 ± 0.10	0.25 ± 0.10	mm
RNCF0603	0.063 ± 0.008	0.031 ± 0.008	0.016 ± 0.006	0.012 ± 0.008	0.012 ± 0.008	inches
	1.60 ± 0.20	0.80 ± 0.20	0.40 ± 0.15	0.30 ± 0.20	0.30 ± 0.20	mm
RNCF0805	0.079 ± 0.008	0.049 ± 0.008	0.020 ± 0.006	0.016 ± 0.008	0.016 ± 0.008	inches
	2.00 ± 0.20	1.25 ± 0.20	0.50 ± 0.15	0.40 ± 0.20	0.40 ± 0.20	mm
RNCF1206	0.126 ± 0.008	0.063 ± 0.008	0.020 ± 0.006	0.020 ± 0.012	0.016 ± 0.008	inches
	3.20 ± 0.20	1.60 ± 0.20	0.50 ± 0.15	0.50 ± 0.30	0.40 ± 0.20	mm
RNCF1210	0.122 ± 0.008	0.094 ± 0.006	0.024 ± 0.004	0.020 ± 0.012	0.016 ± 0.008	inches
	3.10 ± 0.20	2.40 ± 0.15	0.60 ± 0.10	0.50 ± 0.30	0.40 ± 0.20	mm
RNCF2010	0.193 ± 0.006	0.094 ± 0.006	0.024 ± 0.004	0.024 ± 0.012	0.020 ± 0.010	inches
	4.90 ± 0.15	2.40 ± 0.15	0.60 ± 0.10	0.60 ± 0.30	0.50 ± 0.25	mm
RNCF2512	0.248 ± 0.006	0.122 ± 0.006	0.024 ± 0.004	0.024 ± 0.012	0.020 ± 0.010	inches
	6.30 ± 0.15	3.10 ± 0.15	0.60 ± 0.10	0.60 ± 0.30	0.50 ± 0.25	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			$\geq 0.95\%$	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 voltage for 5 seconds
Insulation Resistance	$>1G\Omega$			$\geq 1G\Omega$	Apply 100V <sub>DC</sub> 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		Size	Power	Tolerance			Packaging				TCR		Resistance Value (2)	
RNCF	Precision Thin Film Chip Resistors	0201	0.032W	Code	Tol	Value (1)	T	7" Reel Paper Tape	Size	0201, 0402	Quantity	Code	ppm	Four characters with the multiplier used as the decimal holder. 24.9 ohm = 24R9 10 Kohm = 10K0 1 Mohm = 1M00
		0402	0.063W	T	0.01%	E192, E96, E24				0603, 0805				
		0603	0.063W	A	0.05%				1206, 1210	4,000	S	15		
		0805	0.1W	B	0.1%				2010, 2512	1,000	E	25		
		1206	0.125W	C	0.25%		K	7" Reel Paper Tape	0603, 0805, 1206	1,000	Code	ppm		
		1210	0.2W	D	0.5%	2010, 2512							1,000	
		2010	0.25W	F	1%	E96, E24			D	100				
		2512	0.5W											

(1) E192 values are not marked, and may be subject to 20Kpc MOQ  
 (2) Values below 10 ohm and above 1 Mohm may be subject to 20Kpc MOQ

**Legacy Part Number (before January 3, 2011):**

SEI Type		Code			TCR	Nominal Resistance (2)	Tolerance		Packaging									
RNCF		20			T9	4.75K	0.5%		R									
Type	Description	Code	Wattage	Size	TCR	Tol	Values (1)		SEI Types	Pkg Qty	Code	Description						
RNCF	Precision Thin Film Chip Resistor	05	0.032W	0201	T1	100ppm	E192, E96, E24		0201, 0402	10,000	R	7" reel paper tape						
		10	0.063W	0402	T2	50ppm												
		16	0.063W	0603	T9	25ppm												
		20	0.1W	0805	TD	15ppm												
		32	0.125W	1206	TB	10ppm												
		50	0.2W	1210	TA	5ppm												
		57	0.25W	2010														
		63	0.5W	2512														
																0603, 0805, 1206	5,000	R
																1206	1,000	I
								1210	5,000	R								
								2010, 2512	4,000	R								
									1,000	I								

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