

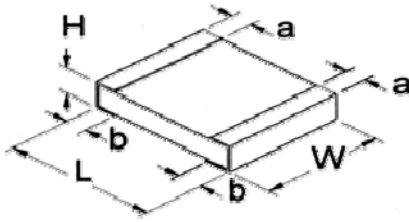
- Features:
- Precision tolerances to  $\pm 0.01\%$
  - TCR down to  $\pm 5\text{ppm}/^\circ\text{C}$
  - E96 and E24 values are standard; E192 are built to order with no part marking
  - Wide R-value range
  - Consult factory for tighter tolerances
  - 2010 and 2512 sizes now available
  - RoHS compliant



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	$\pm 5\text{ ppm}/^\circ\text{C}$	49.9 - 5K	49.9 - 5K	49.9 - 5K	-	-	-
					$\pm 10\text{ ppm}/^\circ\text{C}$	49.9 - 12K	49.9 - 12K	10 - 100K	10 - 100K	10 - 100K	10 $\Omega$ - 100K
					$\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50/100\text{ppm}/^\circ\text{C}$	-	-	10 - 205K	10 - 205K	10 - 205K	10 - 205K
RNCF0603	16	0.063W (0.1W(2))	50V	100V	$\pm 5\text{ ppm}/^\circ\text{C}$	24.9 - 15K	24.9 - 15K	24.9 - 15K	-	-	-
					$\pm 10\text{ ppm}/^\circ\text{C}$	24.9 - 100K	4.7 - 332K	4.7 - 390K	10 - 390K	10 - 390K	10 $\Omega$ - 390K
					$\pm 25\text{ ppm}/^\circ\text{C}$	-	4.7 - 332K	4.7 - 1M	2 - 1M	2 - 1M	2 - 1M
					$\pm 50/100\text{ppm}/^\circ\text{C}$	-	4.7 - 332K	4.7 - 1M	2 - 1M	1 - 1M	1 - 1M
RNCF0805	20	0.1W (0.125W(2))	100V	200V	$\pm 5\text{ ppm}/^\circ\text{C}$	24.9 - 30K	24.9 - 30K	24.9 - 30K	-	-	-
					$\pm 10\text{ ppm}/^\circ\text{C}$	24.9 - 200K	4.7 - 511K	4.7 - 800K	10 - 800K	10 - 800K	10 $\Omega$ - 800K
					$\pm 25\text{ ppm}/^\circ\text{C}$	-	4.7 - 511K	4.7 - 2M	1 - 2M	1 - 2M	1 - 2M
					$\pm 50/100\text{ppm}/^\circ\text{C}$	-	4.7 - 511K	4.7 - 2M	1 - 2M	1 - 2M	1 - 2M
RNCF1206	32	0.125W (0.25W(2))	150V	300V	$\pm 5\text{ ppm}/^\circ\text{C}$	24.9 - 50K	24.9 - 50K	24.9 - 50K	-	-	-
					$\pm 10\text{ ppm}/^\circ\text{C}$	24.9 $\Omega$ - 500K	4.7 - 1M	4.7 - 1M	10 - 1M	10 - 1M	10 $\Omega$ - 1M
					$\pm 25\text{ ppm}/^\circ\text{C}$	-	4.7 - 1M	4.7 - 2.5M	1 - 2.5M	1 - 2.5M	1 - 2.5M
					$\pm 50/100\text{ppm}/^\circ\text{C}$	-	4.7 - 1M	4.7 - 2.5M	1 - 2.5M	1 - 2.5M	1 - 2.5M
RNCF1210	50	0.2W (0.25W(2))	150V	300V	$\pm 5\text{ ppm}/^\circ\text{C}$	24.9 - 50K	24.9 - 50K	24.9 - 50K	-	-	-
					$\pm 10\text{ ppm}/^\circ\text{C}$	24.9 - 500K	4.7 - 1M	4.7 - 1M	-	-	-
					$\pm 25\text{ ppm}/^\circ\text{C}$	-	4.7 - 1M	4.7 - 2.5M	1 - 2.5M	1 - 2.5M	1 - 2.5M
					$\pm 50/100\text{ppm}/^\circ\text{C}$	-	4.7 - 1M	4.7 - 2.5M	1 - 2.5M	1 - 2.5M	1 - 2.5M
RNCF2010	57	0.25W (0.5W(2))	150V	300V	$\pm 5\text{ ppm}/^\circ\text{C}$	24.9 - 100K	24.9 - 100K	24.9 - 100K	-	-	-
					$\pm 10\text{ ppm}/^\circ\text{C}$	24.9 - 500K	4.7 - 1M	4.7 - 1M	-	-	-
					$\pm 25\text{ ppm}/^\circ\text{C}$	-	4.7 - 1M	4.7 - 3M	1 - 3M	1 - 3M	1 - 3M
					$\pm 50/100\text{ppm}/^\circ\text{C}$	-	4.7 - 1M	4.7 - 3M	1 - 3M	1 - 3M	1 - 3M
RNCF2512	63	0.5W (1W(2))	150V	300V	$\pm 5\text{ ppm}/^\circ\text{C}$	24.9 - 100K	24.9 - 100K	24.9 - 100K	-	-	-
					$\pm 10\text{ ppm}/^\circ\text{C}$	24.9 - 500K	4.7 - 1M	4.7 - 1M	-	-	-
					$\pm 25\text{ ppm}/^\circ\text{C}$	-	4.7 - 1M	4.7 - 3M	1 - 3M	1 - 3M	1 - 3M
					$\pm 50/100\text{ppm}/^\circ\text{C}$	-	4.7 - 1M	4.7 - 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  $\leq 105^\circ\text{C}$



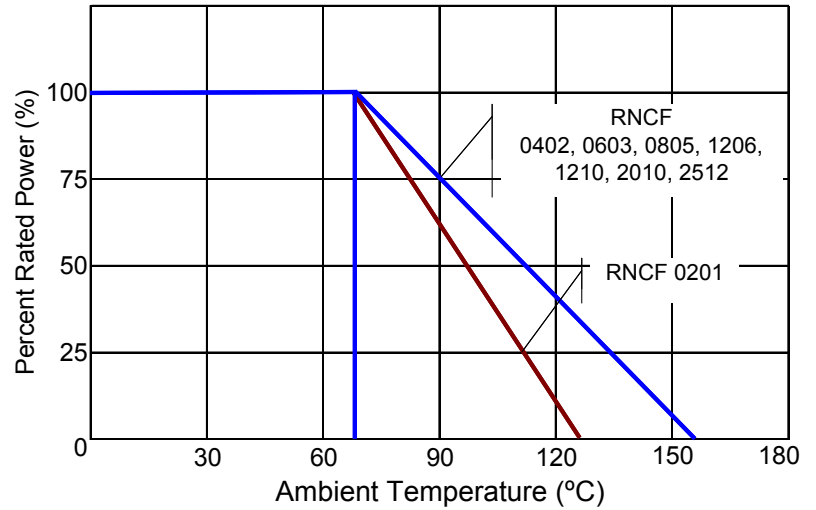
Mechanical Specifications						
Type / Code	L Body Length	W Body Width	H Body Height	a Top Termination	b Bottom Termination	Unit
RNCF0201	0.024 ± 0.002	0.012 ± 0.002	0.009 ± 0.001	0.005 ± 0.002	0.005 ± 0.002	inches
	0.60 ± 0.05	0.30 ± 0.05	0.23 ± 0.030	0.12 ± 0.05	0.12 ± 0.05	mm
RNCF0402	0.039 ± 0.002	0.020 ± 0.002	0.014 ± 0.002	0.008 ± 0.004	0.010 ± 0.002	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	0.032 ± 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	0.016 ± 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 ± 0.006	0.090 ± 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	0.090 ± 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	0.246 ± 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
RNCF	Precision Thin Film Chip Resistors	0201	0.032W	Code	Tol	T	7" reel paper tape	0201, 0402	10,000	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	A	0.05%			0603, 0805	5,000	T	10	
		0603	0.063W	B	0.1%			1206, 1210	4,000	E	25	
		0805	0.1W	C	0.25%			2010, 2512	1,000	C	50	
		1206	0.125W	D	0.5%	K	7" reel paper tape	0603, 0805, 1206 2010, 2512	1,000	D	100	
		1210	0.2W	F	1%							
		2010	0.25W									
		2512	0.5W									

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	Values		SEI Types	Pkg Qty	Code	Description
RNCF	Precision Thin Film Chip Resistor	05	0.032W	0201	T1	100ppm	0.01%	E192®, E96, E24		0201, 0402	10,000	R	7" reel paper tape
		10	0.063W	0402	T2	50ppm	0.05%	E192®, E96, E24		0603, 0805, 1206	5,000	R	
		16	0.063W	0603	T9	25ppm	0.1%	E192®, E96, E24		1206	1,000	I	
		20	0.1W	0805	TB	10ppm	0.25%	E192®, E96, E24		1210	5,000	R	
		32	0.125W	1206	TA	5ppm	0.5%	E192®, E96, E24		2010, 2512	4,000	R	
		50	0.2W	1210			1%	E96, E24			1,000	I	
		57	0.25W	2010									
		63	0.5W	2512									

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