

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



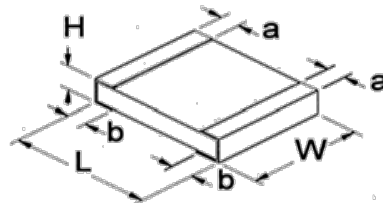
Electrical Specifications										
Type / Code	Power Rating (Watts) @ 70°C	Maximum Working Voltage ⁽¹⁾	Maximum Overload Voltage	Resistance Temperature Coefficient	Ohmic Range (Ω) and Tolerance					
					0.01%	0.05%	0.1%	0.25%	0.5%	1%
RNCF0201	0.032W	15V	30V	$\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50\text{ ppm}/^\circ\text{C}$	-					49.9 - 5K 49.9 - 33K
RNCF0402	0.063W	25V	50V	$\pm 5\text{ ppm}/^\circ\text{C}$	49.9 - 5K					
				$\pm 10\text{ ppm}/^\circ\text{C}$	49.9 - 12K					
				$\pm 15\text{ ppm}/^\circ\text{C}$	49.9 - 12K			49.9 - 70K		
				$\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50\text{ ppm}/^\circ\text{C}$	-	49.9 - 12K	10 - 255K			10 - 255K
RNCF0603	0.063W	50V	100V	$\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50\text{ ppm}/^\circ\text{C}$	-					2 - 4.64 1 - 4.64
				$\pm 5\text{ ppm}/^\circ\text{C}$ $\pm 10\text{ ppm}/^\circ\text{C}$	24.9 - 15K					
	0.1W	75V	150V	$\pm 15\text{ ppm}/^\circ\text{C}$ $\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50\text{ ppm}/^\circ\text{C}$	24.9 - 100K	4.7 - 332K	4.7 - 332K 4.7 - 1M			
RNCF0805	0.1W	100V	200V	$\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50\text{ ppm}/^\circ\text{C}$	-					1.1M - 2M
				$\pm 5\text{ ppm}/^\circ\text{C}$ $\pm 10\text{ ppm}/^\circ\text{C}$	24.9 - 30K					
	0.125W	150V	300V	$\pm 15\text{ ppm}/^\circ\text{C}$ $\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50\text{ ppm}/^\circ\text{C}$	24.9 - 200K	4.7 - 511K	4.7 - 511K 4.7 - 1M		4.7 - 1M	1 - 1M
RNCF1206	0.125W	150V	300V	$\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50\text{ ppm}/^\circ\text{C}$	-					1.1M - 2.49M
				$\pm 5\text{ ppm}/^\circ\text{C}$ $\pm 10\text{ ppm}/^\circ\text{C}$	24.9 - 49.9K					
	0.25W	200V	400V	$\pm 15\text{ ppm}/^\circ\text{C}$ $\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50\text{ ppm}/^\circ\text{C}$	24.9 - 499K	4.7 - 1M				
RNCF1210	0.25W	150V	300V	$\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50\text{ ppm}/^\circ\text{C}$	-					1.1M - 2.49M
				$\pm 5\text{ ppm}/^\circ\text{C}$ $\pm 10\text{ ppm}/^\circ\text{C}$	24.9 - 49.9K					
	0.33W	200V	400V	$\pm 15\text{ ppm}/^\circ\text{C}$ $\pm 25\text{ ppm}/^\circ\text{C}$ $\pm 50\text{ ppm}/^\circ\text{C}$	24.9 - 499K	4.7 - 1M				

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

Electrical Specifications (cont.)										
Type / 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%
RNCF2010	0.25W	150V	300V	±25 ppm/°C ±50 ppm/°C	-		1.1M - 3M			
	0.33W	200V	400V	±5 ppm/°C ±10 ppm/°C ±15 ppm/°C ±25 ppm/°C ±50 ppm/°C	24.9 - 49.9K					
24.9 - 499K					4.7 - 1M					
RNCF2512	0.5W	150V	300V	±5 ppm/°C ±10 ppm/°C ±15 ppm/°C ±25 ppm/°C ±50 ppm/°C	24.9 - 100K					
					2.05K - 499K	2.05K - 1M				
					-	2.05K - 1M	2.05K - 3M			
	0.75W	200V	400V	±10 ppm/°C ±15 ppm/°C ±25 ppm/°C ±50 ppm/°C	24.9 - 2K	4.7 - 2K		1 - 2K		
						4.7 - 2K	101 - 2K			
1W	200V	400V	±25 ppm/°C ±50 ppm/°C	-		4.7 - 100	1 - 100			

(1) Lesser of √PR or maximum working voltage.

Mechanical Specifications

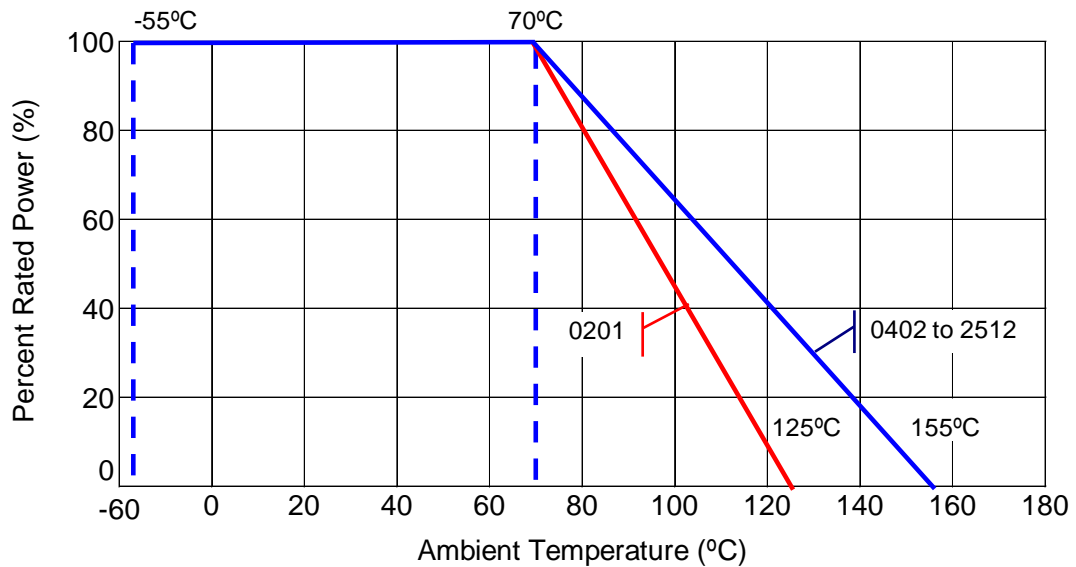


Type / Code	L Body Length	W Body Width	H Body Height	a Top Termination	b Bottom Termination	Unit
RNCF0201	0.024 ± 0.002 0.60 ± 0.05	0.012 ± 0.002 0.30 ± 0.05	0.009 ± 0.001 0.23 ± 0.03	0.005 ± 0.002 0.12 ± 0.05	0.005 ± 0.002 0.12 ± 0.05	inches mm
RNCF0402	0.039 ± 0.002 1.00 ± 0.05	0.020 ± 0.002 0.50 ± 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

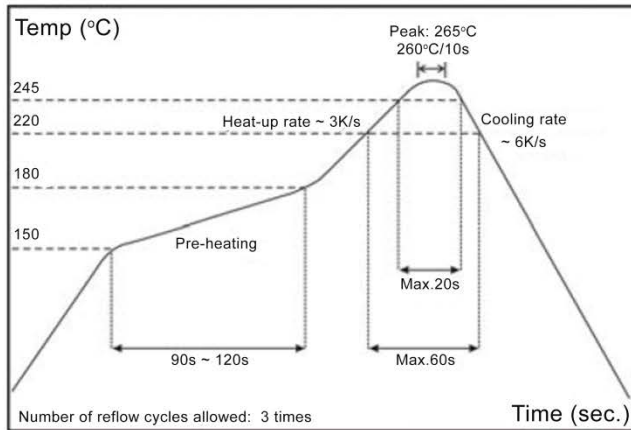
Performance Characteristics					
Test	Specification	Specification for Tolerances = 0.01%	Specification for Tolerances = 0.05%	Typical for Tolerances ≥ 0.1%	Test Method
Moisture Resistance, Thermal Shock	$\Delta R \pm 0.25\%$	$\Delta R \pm 0.01\%$	$\Delta R \pm 0.05\%$	$\leq 0.1\%$	-55°C - 150°C, 100 cycles
Load Life	$\Delta R \pm 0.2\%$	$\Delta R \pm 0.01\%$	$\Delta R \pm 0.05\%$	$\leq 0.2\%$	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	$\Delta R \pm 0.3\%$	$\Delta R \pm 0.01\%$	$\Delta R \pm 0.05\%$	$\leq 0.25\%$	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	$\Delta R \pm 0.2\%$	$\Delta R \pm 0.01\%$	$\Delta R \pm 0.05\%$	$\leq 0.05\%$	260±5°C for 10 seconds
Solderability	Min 95% coverage			$\geq 95\%$	245±5°C for 3 seconds
Bending Strength	$\Delta R \pm 0.2\%$	$\Delta R \pm 0.01\%$	$\Delta R \pm 0.05\%$	$\leq 0.05\%$	Bending amplitude 3mm for 10 seconds
Dielectric Withstanding Voltage	by type			$\leq 0.05\%$	Maximum overload voltage for 1 minute
Short Time Overload	$\Delta R \pm 0.2\%$	$\Delta R \pm 0.01\%$	$\Delta R \pm 0.05\%$	$\leq 0.05\%$	RCWV*2.5 or Maximum overload voltage for 5 seconds
Insulation Resistance	$>1G\Omega$			$\geq 1G\Omega$	Apply 100V _{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

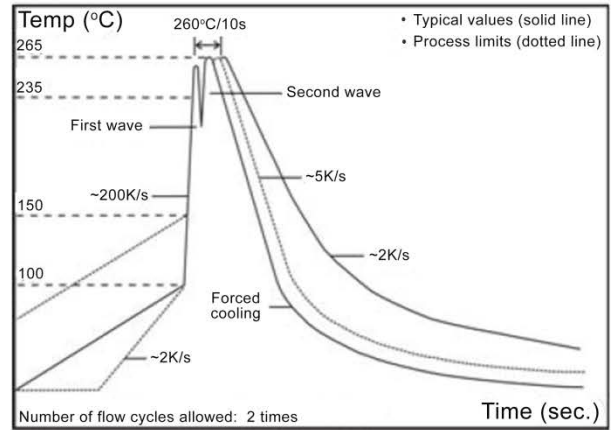
Power Derating Curve:



Soldering Condition:



IR Reflow Soldering



Wave Soldering (Flow Soldering)

- (1) Time of IR reflow soldering at maximum temperature point 260°C : 10s
- (2) Time of wave soldering at maximum temperature point 260°C : 10s
- (3) Time of soldering iron at maximum temperature point 410°C : 5s

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	Tolerance		Packaging			TCR		Resistance Value ⁽²⁾		
Code	Description		Code	Tol	Code	Description	Size	Quantity	Code	ppm		
RNCF	Precision Thin Film Chip Resistors	0201			E192, E96, E24	T	7" Reel Paper Tape	0201, 0402	10,000	Y	5	Four characters with the multiplier used as the decimal holder. 24.9 ohm = 24R9 10 Kohm = 10K0 1 Mohm = 1M00
		0603	A	0.05%				0603, 0805	5,000	T	10	
		0805	B	0.1%				1206, 1210	4,000	S	15	
		1206	C	0.25%				2010, 2512		E	25	
		1210	D	0.5%		K	7" Reel Paper Tape	All Sizes	1,000	C	50	
		2010	F	1%						D	100	
		2512										

(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