

- Features:
- Special Passivation for moisture sensitive applications
  - Absolute TCR's to 15 ppm/°C
  - Test proven immunity to humidity and moisture corrosion
  - Absolute tolerances to 0.1%
  - Ideal replacement for costly Tantalum Nitride resistors
  - RNCS 0603 and 1206 package sizes qualified to AEC-Q200
  - RoHS compliant / lead-free



The RNCS/RNCH series employs a special manufacturing process to ensure high power, high precision, ultra stable performance, and long life in the harshest environments. In moisture comparison testing, the RNCS/RNCH series outperformed Nichrome Chip Resistors and demonstrated the anti-corrosive claims characterized by Tantalum Nitride resistor products.

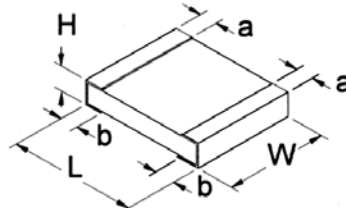
Electrical Specifications					
Type / Code	Power Rating (Watts) @ 70°C	Maximum Working Voltage <sup>(1)</sup>	Maximum Overload Voltage	Resistance Temperature Coefficient	Ohmic Range (Ω) and Tolerance
					0.1%, 0.25%, 0.5%
RNCS0402	0.063W	25V	50V	±15 ppm/°C ±25 ppm/°C ±50 ppm/°C	49.9 - 12K 25 - 25K
RNCS0603 <sup>(*)</sup>	0.063W	50V	100V	±15 ppm/°C ±25 ppm/°C ±50 ppm/°C	25 - 332K
RNCH0603	0.1W	75V	150V	±15 ppm/°C ±25 ppm/°C ±50 ppm/°C	25 - 220K
RNCS0805	0.1W	100V	200V	±15 ppm/°C ±25 ppm/°C ±50 ppm/°C	10 - 1M
RNCH0805	0.25W	150V	300V	±15 ppm/°C ±25 ppm/°C ±50 ppm/°C	25 - 680K
RNCS1206 <sup>(*)</sup>	0.125W	150V	300V	±15 ppm/°C ±25 ppm/°C ±50 ppm/°C	10 - 1M
RNCH1206	0.33W	200V	400V	±15 ppm/°C ±25 ppm/°C ±50 ppm/°C	25 - 1M
RNCS2010	0.25W (0.5W) <sup>(2)</sup>	150V	300V	±15 ppm/°C ±25 ppm/°C ±50 ppm/°C	25 - 1M 10 - 1M
RNCS2512	0.5W (1W) <sup>(2)</sup>	150V	300V	±15 ppm/°C ±25 ppm/°C ±50 ppm/°C	25 - 1M 10 - 1M

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

(2) Higher power rating for each package size is valid if ambient temp ≤80°C and terminal temp ≤105°C

(\*) RNCS 0603 and 1206 package sizes qualified to AEC-Q200

**Mechanical Specifications**



Type / Code	L Body Length	W Body Width	H Body Height	a Top Termination	b Bottom Termination	Unit
RNCS0402	0.039 ± 0.002 1.00 ± 0.05	0.020 ± 0.002 0.50 ± 0.05	0.012 ± 0.002 0.30 ± 0.05	0.008 ± 0.004 0.20 ± 0.10	0.008 ± 0.004 0.20 ± 0.10	inches mm
RNCS0603 RNCH0603	0.061 ± 0.008 1.55 ± 0.20	0.031 ± 0.008 0.80 ± 0.20	0.018 ± 0.004 0.45 ± 0.10	0.012 ± 0.008 0.30 ± 0.20	0.012 ± 0.008 0.30 ± 0.20	inches mm
RNCS0805 RNCH0805	0.079 ± 0.008 2.00 ± 0.20	0.049 ± 0.008 1.25 ± 0.20	0.022 ± 0.004 0.55 ± 0.10	0.012 ± 0.008 0.30 ± 0.20	0.016 ± 0.008 0.40 ± 0.20	inches mm
RNCS1206 RNCH1206	0.120 ± 0.008 3.05 ± 0.20	0.061 ± 0.008 1.55 ± 0.20	0.022 ± 0.004 0.55 ± 0.10	0.017 ± 0.012 0.42 ± 0.30	0.014 ± 0.008 0.35 ± 0.20	inches mm
RNCS2010	0.193 ± 0.006 4.90 ± 0.15	0.094 ± 0.006 2.40 ± 0.15	0.022 ± 0.004 0.55 ± 0.10	0.024 ± 0.012 0.60 ± 0.30	0.020 ± 0.010 0.50 ± 0.25	inches mm
RNCS2512	0.248 ± 0.006 6.30 ± 0.15	0.122 ± 0.006 3.10 ± 0.15	0.022 ± 0.004 0.55 ± 0.10	0.024 ± 0.012 0.60 ± 0.30	0.020 ± 0.010 0.50 ± 0.25	inches mm

**Performance Characteristics**

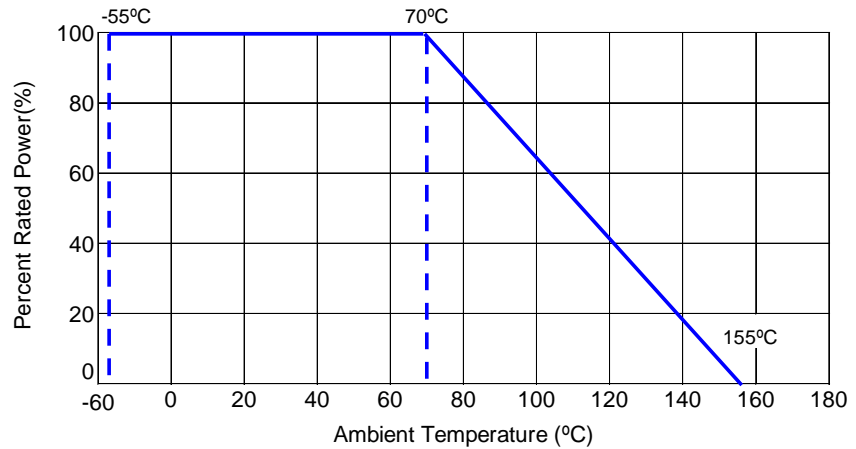
Test	Test Conditions	Test Results	
		Size 0603, 0805, 1206 2012, 2512	Size 0402
Short Time Overload	RCWV *2.5 or Max Overloading Voltage, 2 seconds	≤±0.02%	≤±0.1%
Thermal Shock	MIL - STD - 202F Method 107G -55°C - 125°C, 100 Cycles	≤±0.02%	≤±0.1%
Load Life	MIL - STD - 202F Method 108A RCWV, 70°C, 1.5 hours ON, 0.5 hours OFF, total 1000 - 1048 hours	≤±0.05%	≤±0.25%
Biased Humidity	MIL - STD - 202 Method 103 1000 h. 85°C / 85% RH 10% of operating power	ΔR ± 0.2% >7KΩ ΔR ± 0.5% ΔR ± 0.5% for high power rating	
Resistance to Dry Heat	JIS - C 5202 - 7.2 1000 hours @ +125°C without load	≤±0.05%	≤±0.5%
Resistance to Soldering Heat	MIL - STD - 202F Method 210E 260 ± 5°C, 10 ± 1 second	≤±0.02%	≤±0.1%

RCWV (Rated continuous working voltage) =  $\sqrt{P \cdot R}$  or Max. Operating Voltage whichever is lower

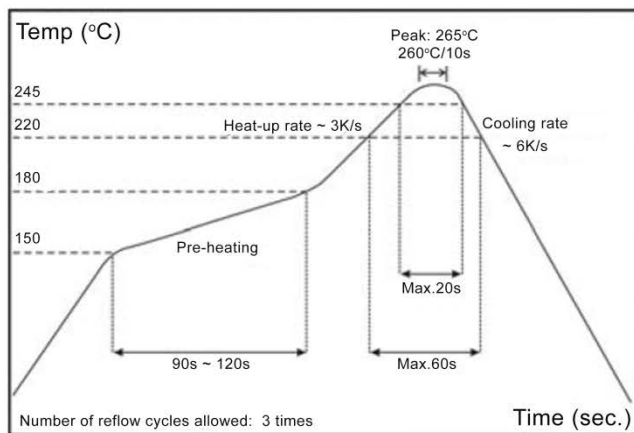
Storage Temperature: 25 ± 3°C; Humidity <80% RH

Operating Temperature Range: -55°C to +155°C

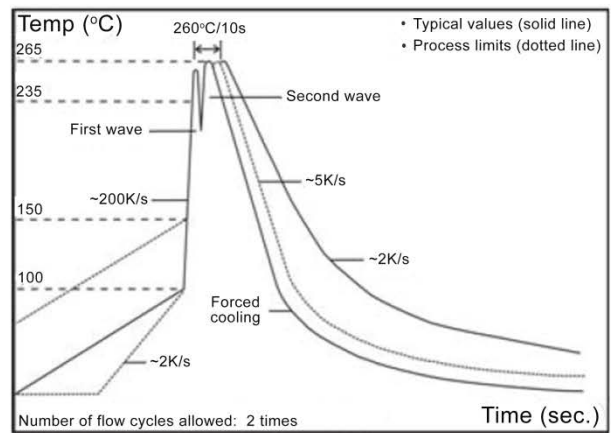
**Power Derating Curve:**



**Soldering Condition:**



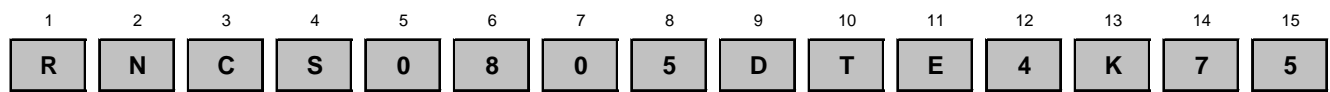
IR Reflow Soldering



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**



Product Series		Size	Tolerance		Packaging				TCR		Resistance Value	
Code	Description		Code	Tol	Code	Description	Size	Quantity	Code	ppm		
RNCS	Anti-corrosive Titanium-nitride Replacement	0402 0603 0805 1206	B	0.1%	E192, E96, E24	T	7" Reel Paper Tape	0402	10,000	S	15	Four characters with the multiplier used as the decimal holder. 10 ohm = 10R0 800 Kohm = 800K 1 Mohm = 1M00
RNCH	High Power	2010 2512	C	0.25%				0603, 0805, 1206	5,000	E	25	
			D	0.5%	2010, 2512	4,000	C	50				
					0603, 0805, 1206	1,000						

(1) E192 values are not marked, and may be subject to 20Kpc MOQ