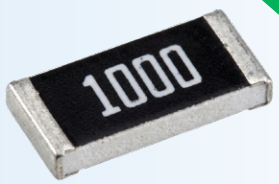
BOURNS®

CRT-TN Series

TaN Thin Film Chip Resistors



*RoHS COMPLIANT

Features

- Tantalum nitride thin film
- High stability in humid environments
- TCR as low as ±10 ppm/°C
- Tolerance as tight as ±0.05 %
- RoHS compliant*
- Sulfur-resistant design (ASTM-B-809-95)

Applications

- Industrial equipment
- Precision circuits
- Navigation equipment
- Telecommunications
- Precision testing devices

Sustainability

- Small size reduces material use
- High pallet density for lower CO_2
- Eco-logistics-friendly packing
- Energy-saving low-power design
- Corrosion-resistant for longevity
- ISO 14001, low-impact energy

Product Overview

Bourns® CRT-TN Series Thin Film Precision Chip Resistors leverage advanced tantalum nitride (TaN) thin-film technology to provide outstanding accuracy, long-term stability, and reliable performance in demanding environments. Featuring tolerances as tight as ±0.05 %, temperature coefficients as low as ±10 ppm/°C, and robust resistance to sulfur contamination and humidity, the CRT-TN Series is ideal for high precision and high reliability applications.

Electrical Characteristics

Characteristic	CRT0402-TN	CRT0603-TN	CRT0805-TN	CRT1206-TN
Power Rating @ 85 °C	0.063 watts	0.167 watts	0.2 watts	0.5 watts
Operating Temperature Range	-55 to +155 °C			
Derated to Zero Load at	+155 °C			
Maximum Working Voltage	50 V	75 V	100 V	200 V
Maximum Overload Voltage	100 V	150 V	200 V	400 V
Resistance Range (E-96 + E-24 Values)	(See Standard Values Table)			
Temperature Coefficient of Resistance (TCR)	(See Value - TCR Table on Page 2)			

Environmental Characteristics

Specification	Test Condition	Reference Standard	Requirement: Limit (ΔR)
Short Time Overload	2.5X operating voltage or max. overload voltage for 5 seconds	JIS-C-5201-1 4.13	±0.1 %
Operational Life	Condition D steady state at 125 °C at derated rated power. 1000 hours duration.	MIL-STD-202 Method 108	±0.1 %
Biased Humidity	85 °C / 85 % RH with 10 % operation power. 1000 hours duration	MIL-STD-202 Method 103	±0.1 %
Temperature Cycling	-55 °C to +125 °C with 1000 cycles	JESD22 Method JA-104	±0.1 %
Solderability	245 ±5 °C for 3 seconds	JIS-C5201-1 4.17 IEC-600115-1 4.17	Solder coverage ≥95 %
Resistance to Soldering Heat	260 ±5 °C for 10 seconds	JIS-C5201-1 4.18 IEC-600115-1 4.18	±0.1 %

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*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

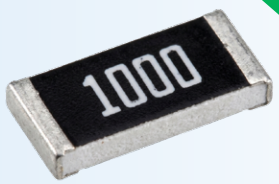
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CRT-TN Series

TaN Thin Film Chip Resistors



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How to Order

CRT 0603 - B Y - 1003 - E TN

Model
- CRT = Thin Film Precision Chip Resistor

Size
- 0402
- 0603
- 0805
- 1206

Resistance Tolerance
- A = ±0.05 %
- B = ±0.1 %
- C = ±0.25 %
- D = ±0.5 %
- F = ±1 %

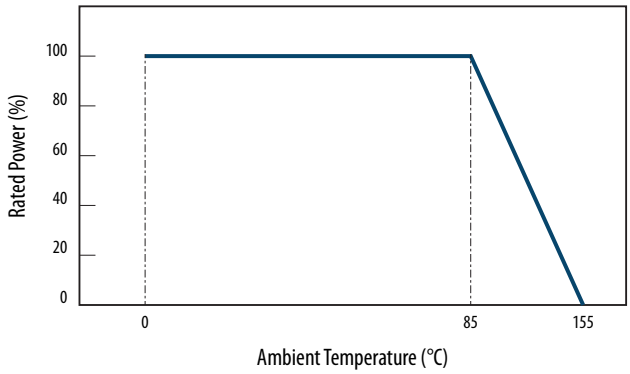
TCR (ppm/°C)
- Z = ±50
- Y = ±25
- X = ±15
- W = ±10

Resistance Value
- <100 ohms: "R" represents decimal point (example: 24R3 = 24.3 oms)
- ≥100 ohms: First three digits are significant. Fourth digit represents number of zeroes to follow (example: 8252 = 82.5K ohms)

Packaging
- G = Paper tape (10K pcs.) on 7 ″ plastic reel (0402)
- E = Paper tape (5K pcs.) on 7″ plastic reel (0603, 0805, 1206)

Termination
- TN = Tantalum nitride element, tin-plated (RoHS compliant)

Derating Curve



Value - TCR Table

Model	TCR		Resistance Tolerance (Code)				
	(PPM/°C)	(Code)	±0.05 % (A)	±0.1 % (B)	±0.25 % (C)	±0.5 % (D)	±1 % (F)
CRT0402-TN	±10	(W)	40 to 35K Ω				
	±15	(X)					
	±25	(Y)					
	±50	(Z)					
CRT0603-TN	±10	(W)	40 to 130K Ω				
	±15	(X)					
	±25	(Y)					
	±50	(Z)					
CRT0805-TN	±10	(W)	10 to 350K Ω				
	±15	(X)					
	±25	(Y)					
	±50	(Z)					
CRT1206-TN	±10	(W)	10 to 1M Ω				
	±15	(X)					
	±25	(Y)					
	±50	(Z)					

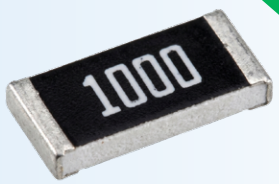
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CRT-TN Series

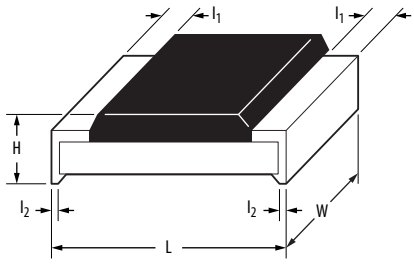
TaN Thin Film Chip Resistors



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Chip Dimensions

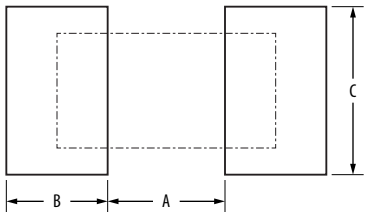
Dimension	CRT0402-TN	CRT0603-TN	CRT0805-TN	CRT1206-TN
L	1.00 ± 0.05 (0.040 ± 0.002)	1.55 ± 0.10 (0.061 ± 0.004)	2.00 ± 0.15 (0.079 ± 0.006)	3.05 ± 0.15 (0.120 ± 0.006)
W	0.50 ± 0.05 (0.020 ± 0.002)	0.80 ± 0.10 (0.031 ± 0.004)	1.25 ± 0.15 (0.049 ± 0.006)	1.55 ± 0.15 (0.061 ± 0.006)
H	0.30 ± 0.05 (0.012 ± 0.002)	0.45 ± 0.10 (0.018 ± 0.004)	0.55 ± 0.10 (0.022 ± 0.004)	0.55 ± 0.10 (0.022 ± 0.004)
I_1	0.20 ± 0.10 (0.008 ± 0.004)	0.30 ± 0.20 (0.012 ± 0.008)	0.30 ± 0.20 (0.012 ± 0.008)	0.42 ± 0.20 (0.017 ± 0.008)
I_2	0.20 ± 0.10 (0.008 ± 0.004)	0.30 ± 0.20 (0.012 ± 0.008)	0.40 ± 0.20 (0.016 ± 0.008)	0.35 ± 0.25 (0.014 ± 0.010)



DIMENSIONS: MM (INCHES)

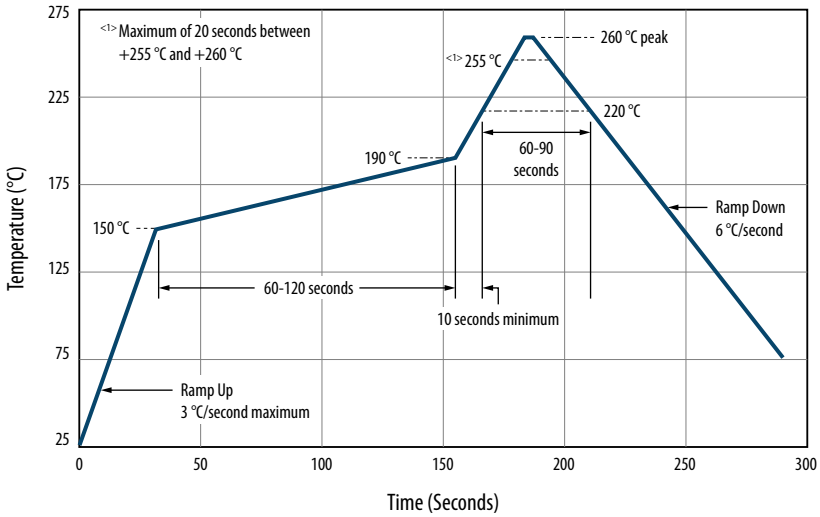
Recommended Land Pattern

Dimension	CRT0402-TN	CRT0603-TN	CRT0805-TN	CRT1206-TN
A	0.50 (0.020)	0.80 (0.031)	1.00 (0.039)	2.00 (0.079)
B	0.50 (0.020)	1.00 (0.039)	1.00 (0.039)	1.15 (0.045)
C	0.60 ± 0.20 (0.024 ± 0.008)	0.90 ± 0.20 (0.035 ± 0.008)	1.35 ± 0.20 (0.053 ± 0.008)	1.70 ± 0.20 (0.067 ± 0.008)



DIMENSIONS: MM (INCHES)

Soldering Profile



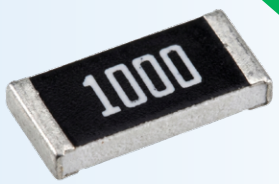
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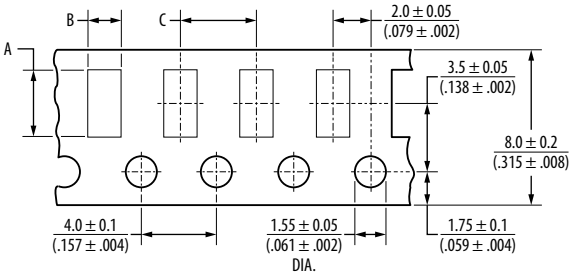
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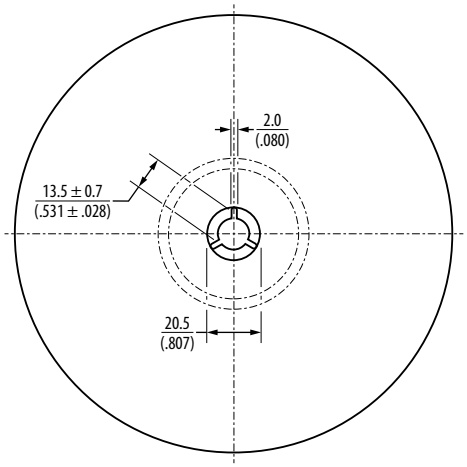
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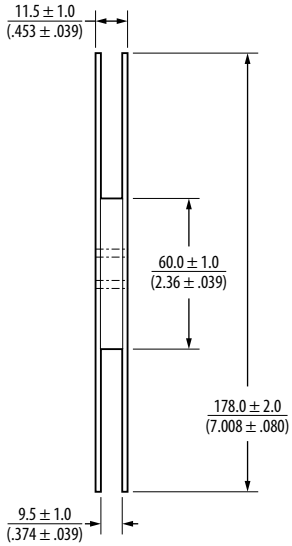
Packaging Dimensions

Dimension	CRT0402-TN	CRT0603-TN	CRT0805-TN	CRT1206-TN
A	1.16 ± 0.05 (0.046 ± 0.002)	1.90 ± 0.05 (0.075 ± 0.002)	2.37 ± 0.05 (0.094 ± 0.002)	3.55 ± 0.05 (0.140 ± 0.002)
B	0.70 ± 0.05 (0.028 ± 0.002)	1.10 ± 0.05 (0.043 ± 0.002)	1.60 ± 0.05 (0.063 ± 0.002)	2.00 ± 0.05 (0.079 ± 0.002)
C	2.00 ± 0.05 (0.079 ± 0.002)	4.00 ± 0.10 (0.157 ± 0.004)	4.00 ± 0.10 (0.157 ± 0.004)	4.00 ± 0.10 (0.157 ± 0.004)



DIMENSIONS: MM / (INCHES)





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