



## Features

- Ultra-tight tolerance
- Wide resistance range
- RoHS compliant\*
- Four package sizes available

## Applications

- Current sense
- Precision circuits
- Medical equipment\*\*
- Printers
- Automation equipment
- Navigation equipment

# CRT Series - Thin Film Precision Chip Resistors

## Electrical Characteristics

Characteristic	Model CRT0402	Model CRT0603	Model CRT0805	Model CRT1206
Power Rating @ 70 °C	1/16 watt	1/10 watt	1/8 watt	1/4 watt
Operating Temperature Range	-55 to +155 °C			
Derated to Zero Load at	+155 °C			
Maximum Working Voltage	25 V	75 V	150 V	200 V
Maximum Overload Voltage	50 V	150 V	300 V	400 V
Resistance Range (E-96 + E-24 Values)	(See Standard Values Table)			
Temperature Coefficient of Resistance (TCR)	2 to 50 PPM/°C (See Value - TCR Table on Page 2)			

## Environmental Characteristics

Specification	Test (MIL STD 202)	Limit ( $\Delta R$ ) (Tol. $\leq 0.05\%$ )	Limit ( $\Delta R$ ) (Tol. $> 0.05\%$ )
Short Time Overload	2.5 x Max. Operating Voltage for 5 seconds	$\pm 0.05\%$	$\pm 0.2\%$
Load Life	1000 Hours at Rated Power	$\pm 0.05\%$	$\pm 0.2\%$
Humidity (Steady State)	Method 103B	$\pm 0.05\%$	$\pm 0.3\%$
Thermal Shock	Method 107	$\pm 0.05\%$	$\pm 0.3\%$
Solderability	Method 208H		
Resistance to Soldering Heat	Method 210E	$\pm 0.05\%$	$\pm 0.2\%$

## How to Order

### CRT 0603 - C V - 1003 E LF

Model \_\_\_\_\_  
 (CRT = Thin Film Precision Chip Resistor)

Size \_\_\_\_\_  
 0402  
 0603  
 0805  
 1206

Resistance Tolerance \_\_\_\_\_  
 F =  $\pm 1\%$     B =  $\pm 0.1\%$   
 D =  $\pm 0.5\%$     A =  $\pm 0.05\%$   
 C =  $\pm 0.25\%$     P =  $\pm 0.01\%$

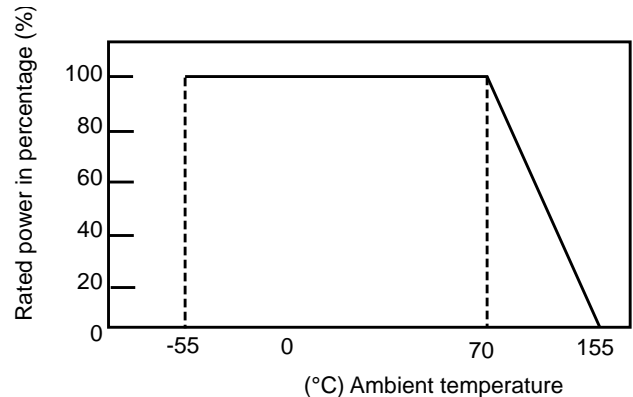
TCR (PPM/°C) \_\_\_\_\_  
 Z =  $\pm 50$     V =  $\pm 5$   
 Y =  $\pm 25$     U =  $\pm 3$   
 X =  $\pm 15$     T =  $\pm 2$   
 W =  $\pm 10$

Resistance Value \_\_\_\_\_  
 <100 ohms: "R" represents decimal point  
 (example: 24R3 = 24.3 ohms)  
 ≥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 (CRT0402)  
 E = Paper tape (5K pcs.) on 7" plastic reel (CRT0603, CRT0805,  
 CRT1206)

Termination \_\_\_\_\_  
 LF = Tin-plated (RoHS compliant)

## Derating Curve



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

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# CRT Series - Thin Film Precision Chip Resistors

**BOURNS®**

## Value - TCR Table

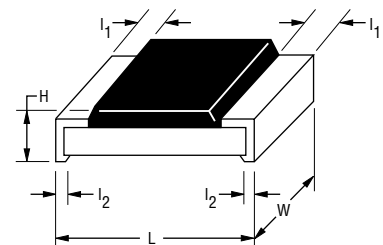
Model	TCR		Resistance Tolerance (Code)					
	(PPM/°C)	(Code)	±0.01 % (P)	±0.05 % (A)	±0.1 % (B)	±0.25 % (C)	±0.5 % (D)	±1 % (F)
CRT0402	±2	(T)	49.9 to 4.99K Ω			N/A		
	±3	(U)	49.9 to 4.99K Ω			N/A		
	±5	(V)	49.9 to 4.99K Ω			N/A		
	±10	(W)	49.9 to 12K Ω		49.9 to 60K Ω			
	±15	(X)			49.9 to 69.8K Ω			
	±25	(Y)			10 to 255K Ω		4.7 to 511K Ω	
	±50	(Z)			10 to 255K Ω		4.7 to 511K Ω	
CRT0603	±2	(T)	24.9 to 15K Ω			N/A		
	±3	(U)	24.9 to 15K Ω			N/A		
	±5	(V)	24.9 to 15K Ω			N/A		
	±10	(W)	24.9 to 100K Ω		4.7 to 332K Ω			
	±15	(X)			4.7 to 332K Ω			
	±25	(Y)			4.7 to 332K Ω		4.7 to 1M Ω	
	±50	(Z)			4.7 to 332K Ω		4.7 to 1M Ω	
CRT0805	±2	(T)	24.9 to 30K Ω			N/A		
	±3	(U)	24.9 to 30K Ω			N/A		
	±5	(V)	24.9 to 30K Ω			N/A		
	±10	(W)	24.9 to 200K Ω		4.7 to 511K Ω			
	±15	(X)			4.7 to 511K Ω		4.7 to 1M Ω	
	±25	(Y)			4.7 to 1M Ω		1 to 1M Ω***	
	±50	(Z)			4.7 to 1M Ω		1 to 1M Ω***	
CRT1206	±2	(T)	24.9 to 49.9K Ω			N/A		
	±3	(U)	24.9 to 49.9K Ω			N/A		
	±5	(V)	24.9 to 49.9K Ω			N/A		
	±10	(W)	24.9 to 499K Ω		24.9 to 49.9K Ω			
	±15	(X)			4.7 to 1M Ω***			
	±25	(Y)			4.7 to 1M Ω***			
	±50	(Z)			4.7 to 1M Ω***			

\*\*\*Select part numbers listed below are not available:

CRT0805-DZ-1504ELF, CRT1206-CY-1R00ELF, CRT1206-DZ-1R74ELF, CRT1206-DZ-2004ELF

## Chip Dimensions

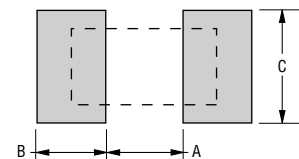
Dimension	Model CRT0402	Model CRT0603	Model CRT0805	Model CRT1206
L	$\frac{1.00 \pm 0.10}{(0.040 \pm 0.004)}$	$\frac{1.55 \pm 0.10}{(0.061 \pm 0.004)}$	$\frac{2.00 \pm 0.15}{(0.079 \pm 0.006)}$	$\frac{3.05 \pm 0.15}{(0.120 \pm 0.006)}$
W	$\frac{0.50 \pm 0.05}{(0.020 \pm 0.002)}$	$\frac{0.80 \pm 0.10}{(0.031 \pm 0.004)}$	$\frac{1.25 \pm 0.15}{(0.049 \pm 0.006)}$	$\frac{1.55 \pm 0.15}{(0.061 \pm 0.006)}$
H	$\frac{0.30 \pm 0.05}{(0.012 \pm 0.002)}$	$\frac{0.45 \pm 0.15}{(0.018 \pm 0.006)}$	$\frac{0.55 \pm 0.10}{(0.022 \pm 0.004)}$	$\frac{0.55 \pm 0.10}{(0.022 \pm 0.004)}$
l <sub>1</sub>	$\frac{0.20 \pm 0.10}{(0.008 \pm 0.004)}$	$\frac{0.30 \pm 0.20}{(0.012 \pm 0.008)}$	$\frac{0.30 \pm 0.20}{(0.012 \pm 0.008)}$	$\frac{0.42 \pm 0.20}{(0.017 \pm 0.008)}$
l <sub>2</sub>	$\frac{0.20 \pm 0.10}{(0.008 \pm 0.004)}$	$\frac{0.30 \pm 0.20}{(0.012 \pm 0.008)}$	$\frac{0.40 \pm 0.25}{(0.016 \pm 0.010)}$	$\frac{0.35 \pm 0.25}{(0.014 \pm 0.010)}$



DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

## Recommended Land Pattern

Dimension	Model CRT0402	Model CRT0603	Model CRT0805	Model CRT1206
A	$\frac{0.50}{(0.020)}$	$\frac{0.80}{(0.031)}$	$\frac{1.00}{(0.039)}$	$\frac{2.00}{(0.079)}$
B	$\frac{0.50}{(0.020)}$	$\frac{1.00}{(0.039)}$	$\frac{1.00}{(0.039)}$	$\frac{1.15}{(0.045)}$
C	$\frac{0.60 \pm 0.20}{(0.024 \pm 0.008)}$	$\frac{0.90 \pm 0.20}{(0.035 \pm 0.008)}$	$\frac{1.35 \pm 0.20}{(0.053 \pm 0.008)}$	$\frac{1.70 \pm 0.20}{(0.067 \pm 0.008)}$



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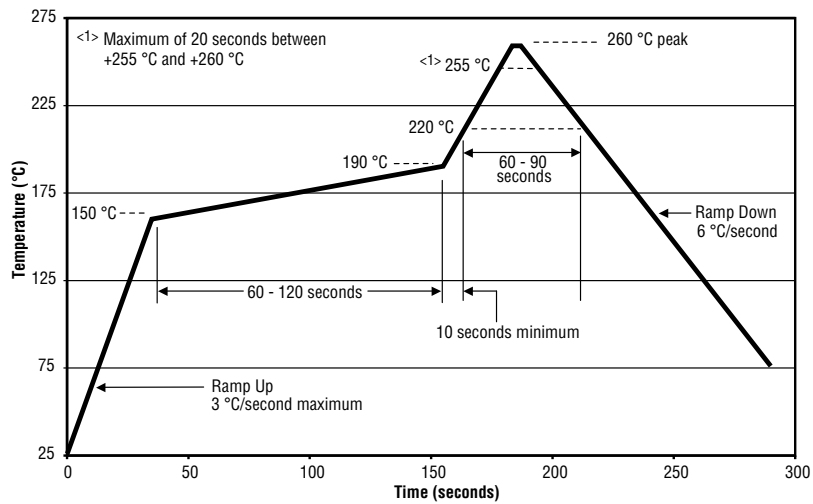
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# CRT Series - Thin Film Precision Chip Resistors

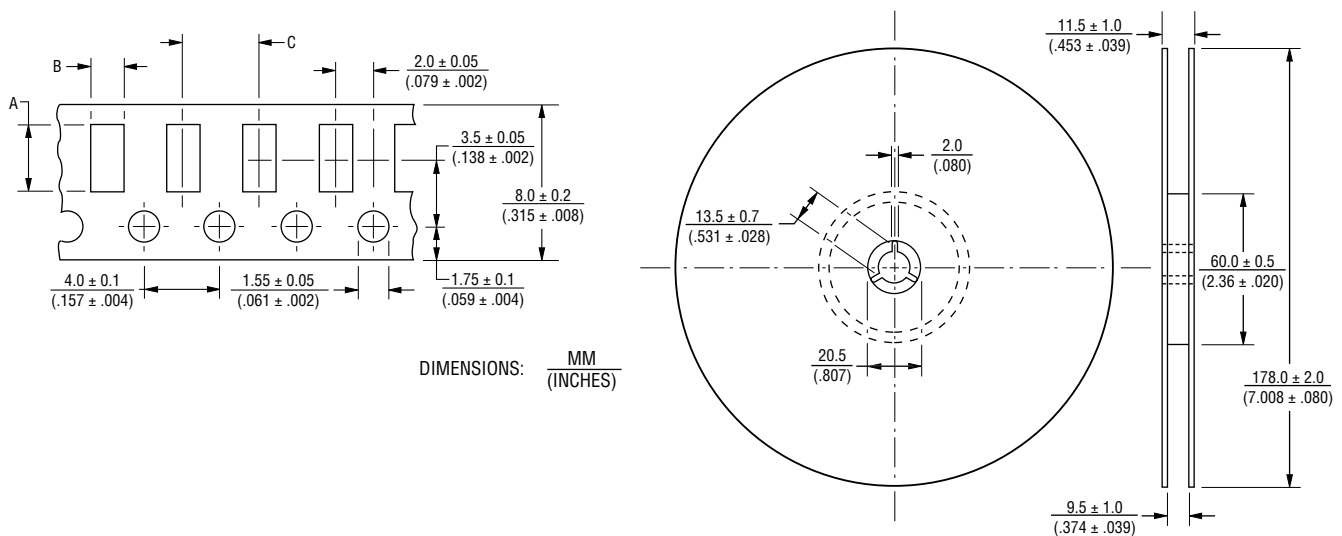
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## Soldering Profile



## Packaging Dimensions - Tape

Dimension	Model CRT0402	Model CRT0603	Model CRT0805	Model CRT1206
A	$\frac{1.16 \pm 0.05}{(0.046 \pm 0.002)}$	$\frac{1.90 \pm 0.05}{(0.075 \pm 0.002)}$	$\frac{2.37 \pm 0.05}{(0.094 \pm 0.002)}$	$\frac{3.55 \pm 0.05}{(0.140 \pm 0.002)}$
B	$\frac{0.70 \pm 0.05}{(0.028 \pm 0.002)}$	$\frac{1.10 \pm 0.05}{(0.043 \pm 0.002)}$	$\frac{1.60 \pm 0.05}{(0.063 \pm 0.002)}$	$\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$
C	$\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$



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