



## 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 =  $\pm 0.01\%$

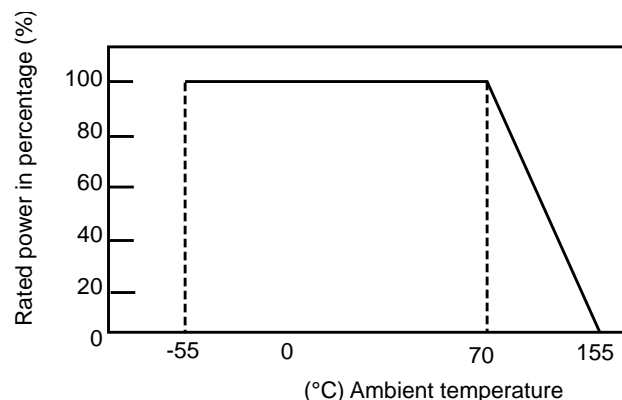
TCR (PPM/°C) \_\_\_\_\_  
Z =  $\pm 50$  V =  $\pm 5$   
Y =  $\pm 25$  U =  $\pm 3$   
X =  $\pm 15$  T =  $\pm 2$   
W =  $\pm 10$

Resistance Value \_\_\_\_\_  
<100 ohms: "R" represents decimal point  
(example: 24R3 = 24.3 ohms)  
 $\geq 100$  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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**WARNING Cancer and Reproductive Harm**  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

# CRT Series - Thin Film Precision Chip Resistors

**BOURNS®**

Value - TCR Table

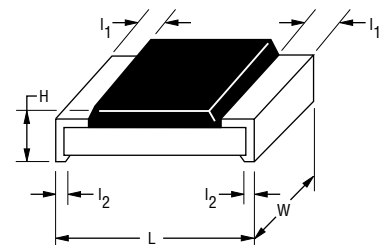
Model	TCR		Resistance Tolerance (Code)							
	(PPM/°C)	(Code)	±0.01 % (P)	±0.05 % (A)	±0.1 % (B)	±0.25 % (C)	±0.5 % (D)	±1 % (F)		
CRT0402	±2	(T)	49.9 to 4.99K Ω			N/A				
	±3	(U)								
	±5	(V)	49.9 to 4.99K Ω							
	±10	(W)	49.9 to 12K Ω		49.9 to 60K Ω					
	±15	(X)			49.9 to 69.8K Ω					
	±25	(Y)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

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

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

## Chip Dimensions

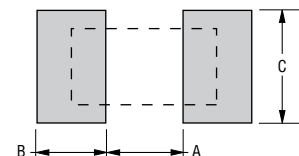
Dimension	Model CRT0402	Model CRT0603	Model CRT0805	Model CRT1206
L	$\frac{1.00 \pm 0.10}{(0.040 \pm 0.004)}$	$\frac{1.55 \pm 0.10}{(0.061 \pm 0.004)}$	$\frac{2.00 \pm 0.15}{(0.079 \pm 0.006)}$	$\frac{3.05 \pm 0.15}{(0.120 \pm 0.006)}$
W	$\frac{0.50 \pm 0.05}{(0.020 \pm 0.002)}$	$\frac{0.80 \pm 0.10}{(0.031 \pm 0.004)}$	$\frac{1.25 \pm 0.15}{(0.049 \pm 0.006)}$	$\frac{1.55 \pm 0.15}{(0.061 \pm 0.006)}$
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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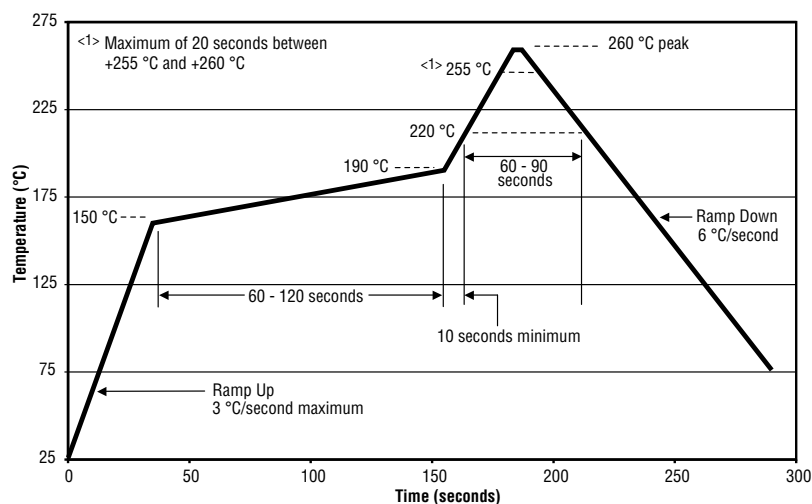
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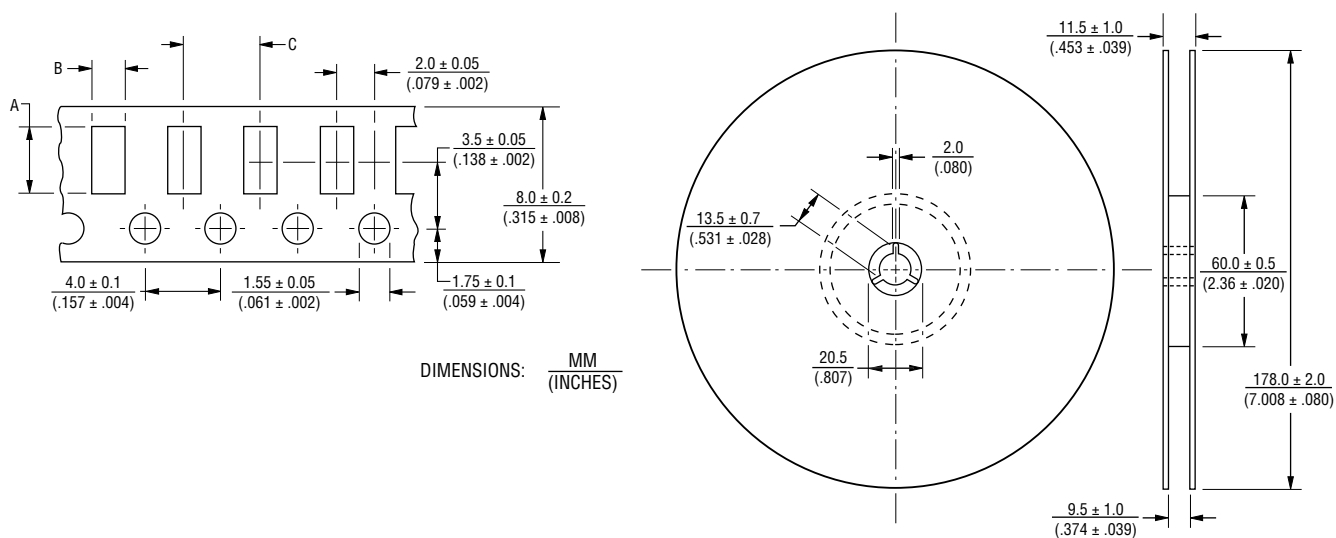
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## Soldering Profile



## Packaging Dimensions - Tape

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



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