



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 (ΔR) (Tol. $\leq 0.05\%$) | Limit (ΔR) (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 = $\pm 0.01\%$

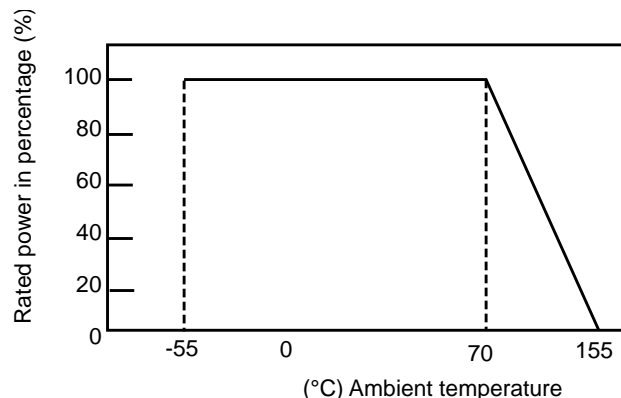
TCR (PPM/°C) _____
 Z = ± 50 V = ± 5
 Y = ± 25 U = ± 3
 X = ± 15 T = ± 2
 W = ± 10

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



WARNING Cancer and Reproductive Harm
www.P65Warnings.ca.gov

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

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CRT Series - Thin Film Precision Chip Resistors

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Value - TCR Table

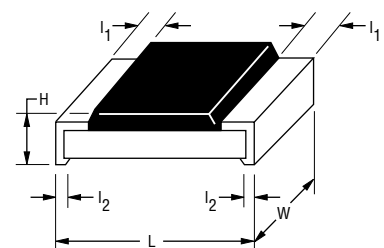
| Model | TCR | | Resistance Tolerance (Code) | | | | | |
|---------|----------|--------|-----------------------------|-------------|-----------------|-------------|---------------|----------|
| | (PPM/°C) | (Code) | ±0.01 % (P) | ±0.05 % (A) | ±0.1 % (B) | ±0.25 % (C) | ±0.5 % (D) | ±1 % (F) |
| CRT0402 | ±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

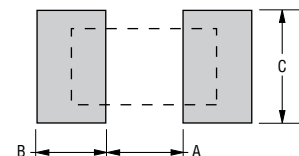
| Dimension | Model CRT0402 | Model CRT0603 | Model CRT0805 | Model CRT1206 |
|----------------|---|---|---|---|
| L | $\frac{1.00 \pm 0.10}{(0.040 \pm 0.004)}$ | $\frac{1.55 \pm 0.10}{(0.061 \pm 0.004)}$ | $\frac{2.00 \pm 0.15}{(0.079 \pm 0.006)}$ | $\frac{3.05 \pm 0.15}{(0.120 \pm 0.006)}$ |
| W |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



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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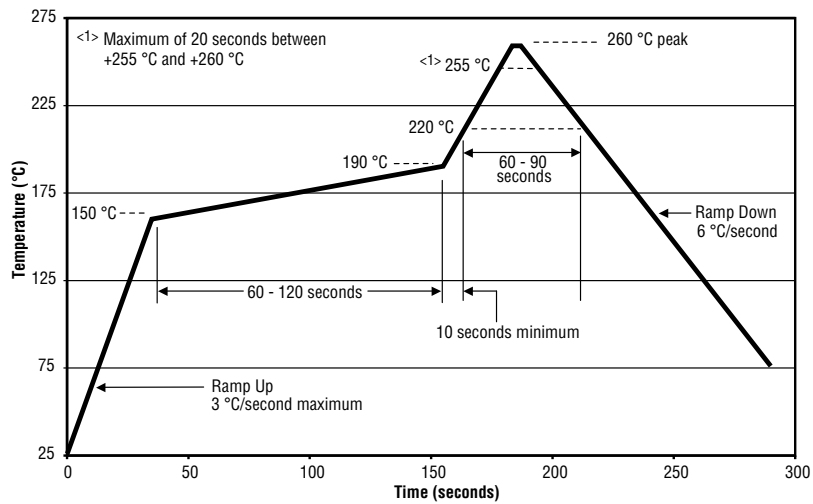
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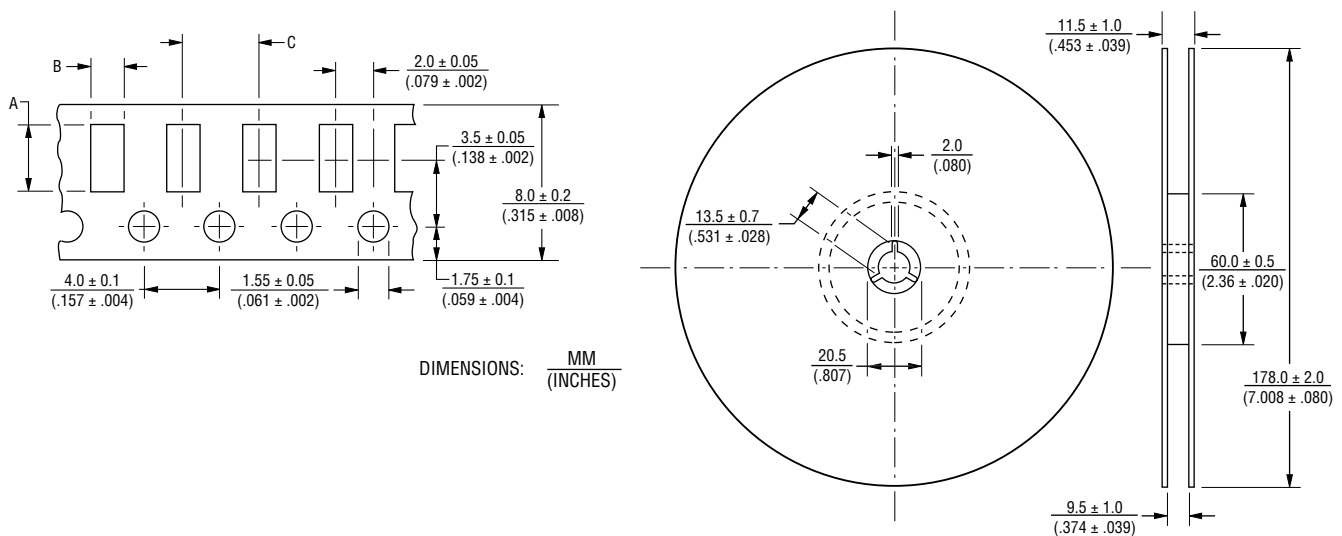
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Soldering Profile



Packaging Dimensions - Tape

| Dimension | Model CRT0402 | Model CRT0603 | Model CRT0805 | Model CRT1206 |
|-----------|---|---|---|---|
| A | $\frac{1.16 \pm 0.05}{(0.046 \pm 0.002)}$ | $\frac{1.90 \pm 0.05}{(0.075 \pm 0.002)}$ | $\frac{2.37 \pm 0.05}{(0.094 \pm 0.002)}$ | $\frac{3.55 \pm 0.05}{(0.140 \pm 0.002)}$ |
| 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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