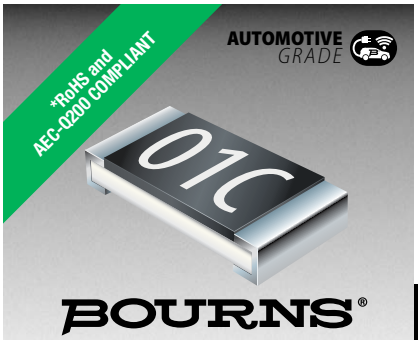


Features

- Tight tolerance
- Wide resistance range
- Four package sizes available
- Sulfur-resistant
- RoHS compliant*
- AEC-Q200 compliant

Applications

- Automotive
- Precision circuits
- DDR memory modules
- SD cards
- Automation equipment
- Navigation equipment

CRT-A Series – Thin Film Precision Chip Resistors

Electrical Characteristics

Characteristic	Model No.			
	CRT0402A	CRT0603A	CRT0805A	CRT1206A
Power Rating @ 70 °C	1/16 W	1/10 W	1/8 W	1/4 W
Operating Temp. Range	-55 °C to +155 °C			
Derated to Zero Load @	+155 °C			
Max. Working Voltage	50 V	75 V	150 V	200 V
Max. Overload Voltage	100 V	150 V	300 V	400 V
Resistance Range (E-96 + E-24 Values)	(See Standard Values table)			
Temperature Coefficient of Resistance (TCR)	10 to 50 PPM/°C (See Value - TCR Table on Page 2)			

Additional Information

Click these links for more information:

PRODUCT SELECTOR | TECHNICAL LIBRARY | INVENTORY | SAMPLES | CONTACT

How to Order

CRT 0603 A CW - 1003 E LF

Model
CRT = Thin Film Precision Chip Resistor

Size
0402
0603
0805
1206

Compliance
A = AEC-Q200 Compliant

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

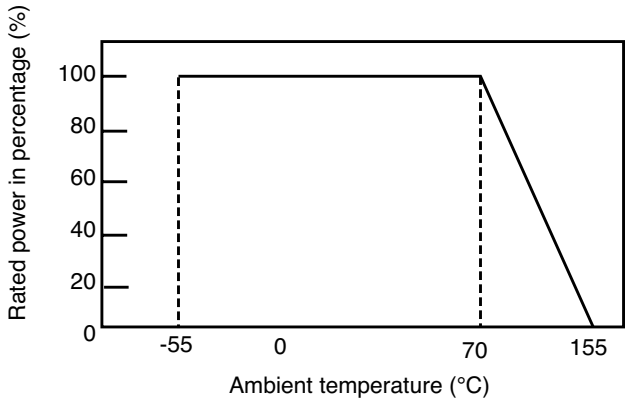
TCR (PPM/°C)
Z = ±50
Y = ±25
X = ±15
W = ±10

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 (CRT0402A)
E = Paper tape (5K pcs.) on 7 ″ plastic reel (CRT0603A, CRT0805A, CRT1206A)

Termination
LF = Tin-plated (RoHS Compliant)

Derating Curve



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

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

Environmental Characteristics

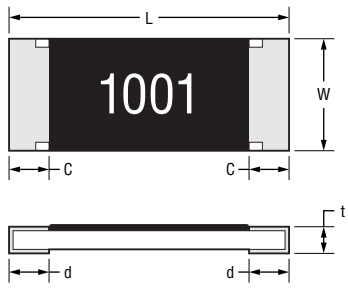
Specification	Reference Standard	Condition of Test	Test Limits
Flowers of Sulfur Corrosion (FoS)	ASTM-B-809-95 (modified)	Sulfur 1000 hrs., 105 °C, unpowered	±(1 % + 0.05 Ω)
Temperature Coefficient of Resistance	IEC 60115-1-4.8 JIS C5201-1-4.8	+25 to +125 °C	Refer 5.0
Short Time Overload	IEC 60115-1-4.13 JIS C5201-1-4.13	2.5 X rated voltage for 5 sec.	±(0.05 % + 0.05 Ω)
High Temperature Exposure (Storage)	AEC-Q200-REV D - Test 3 MIL-STD-202 Method 108	1000 hrs. @ T = 125 °C, unpowered 1000 hrs. @ T = 155 °C, unpowered	±(0.1 % + 0.05 Ω) ±(0.2 % + 0.05 Ω)
Temperature Cycling	JESD22 Method JA-104	-55 °C (30 min.) / +125 °C (30 min.) 1000 cycles, 1 min. max. transition time	±(0.1 % + 0.05 Ω)
Moisture Resistance	AEC-Q200-REV D - Test 6 MIL-STD-202 Method 106	T = 24 hrs. / cycle, 10 cycles, unpowered	±(0.1 % + 0.05 Ω)
Biased Humidity	MIL-STD-202 Method 103	1000 hrs. @ 85 °C / 85 % R.H. 10 % rated power	±(0.1 % + 0.05 Ω)
High Temperature Operational Life	MIL-STD-202 Method 108	1000 hrs. @ T = 70 °C, rated power	±(0.1 % + 0.05 Ω) ±(0.3 % + 0.05 Ω)
Resistance to Solvent	AEC-Q200-REV D - Test 12 MIL-STD-202 Method 215	a: Isopropyl alcohol : mineral spirits = 1:3 b: Terpene defluxer (Bioact EC-7R) c: Deionized water : propylene glycol monomethyl ether : monoethanolamine = 42:1:1	Marking and protective layer can't be detached
Mechanical Shock	AEC-Q200-REV D - Test 13 MIL-STD-202 Method 213	Wave form: tolerance for half sine shock pulse. Peak value is 100 g. Normal duration (D) is 6 (ms).	±(0.1 % + 0.05 Ω)
Vibration	AEC-Q200-REV D - Test 14 MIL-STD-202 Method 204	5 g for 20 min., 12 cycles each of 3 orientations. Note: Test from 10-2000 Hz.	±(0.1 % + 0.05 Ω)
Resistance to Solder Heat	AEC-Q200-REV D - Test 15 MIL-STD-202 Method 210	250 ±5 °C solder, 30 ±5 sec. dwell	±(0.05 % + 0.05 Ω)
Thermal Shock	AEC-Q200-REV D - Test 16 MIL-STD-202 Method 107	-55 °C (15 min.) / +155 °C (15 min.) 1000 cycles, max. transfer time of 20 sec., air-air	±(0.1 % + 0.05 Ω)
ESD	AEC-Q200-REV D - Test 17	Human body model 0402/0603: 200 V 0805/1206: 1 kV	±(0.5 % + 0.05 Ω)
Solderability	IEC 60115-1-4.17 JIS C5201-1-4.17	Aging 4 hours at 155 °C dry heat Lead-free solder bath at: 1. Method B1: 245 ±5 °C solder, 5 ± 0.5 sec. dwell 2. Method D: 260 ±5 °C solder, 30 ± 0.5 sec. dwell	At least 95 % of surface area of electrode shall be covered with new solder.
Flammability	AEC-Q200-REV D - Test 20 UL-94	V-0 or V-1 are acceptable. Electrical test not required.	V-0 or V-1
Board Flex (Bending)	AEC-Q200-005	3 mm deflection for 60 sec.	±(0.1 % + 0.05 Ω)
Terminal Strength (SMD)	AEC-Q200-REV D - Test 22	04: 1.0 kg for 60 sec. 06/10/12: 1.8 kg for 60 sec.	No broken terminals

Value - TCR Table

Model	TCR		Resistance Range			
	(PPM/°C)	(Code)	±0.1 % (B)	±0.25 % (C)	±0.5 % (D)	±1 % (F)
CRT0402A	±10	(W)	10 Ω to 100K Ω			
	±15	(X)				
	±25	(Y)				
	±50	(Z)				
CRT0603A	±10	(W)	10 Ω to 511K Ω			
	±15	(X)				
	±25	(Y)				
	±50	(Z)				
CRT0805A	±10	(W)	10 Ω to 800K Ω			
	±15	(X)				
	±25	(Y)				
	±50	(Z)				
CRT1206A	±10	(W)	10 Ω to 1M Ω			
	±15	(X)				
	±25	(Y)				
	±50	(Z)				

Chip Dimensions

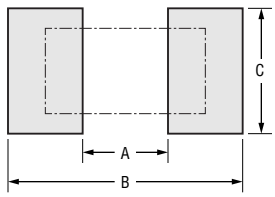
Dimension	CRT0402A	CRT0603A	CRT0805A	CRT1206A
L	1.00 ± 0.10 (.040 ± .004)	1.60 ± 0.10 (.063 ± .004)	2.00 ± 0.10 (.079 ± .004)	3.20 ± 0.15 (.126 ± .006)
W	0.50 ± 0.05 (.020 ± .002)	0.80 ± 0.10 (.031 ± .004)	1.25 ± 0.10 (.049 ± .004)	1.55 ± 0.15 (.061 ± .006)
t	0.35 ± 0.10 (.014 ± .004)	0.45 ± 0.10 (.018 ± .004)	0.50 ± 0.15 (.020 ± .006)	0.55 ± 0.15 (.022 ± .006)
c	0.20 ± 0.10 (.008 ± .004)	0.30 ± 0.20 (.012 ± .008)	0.40 ± 0.20 (.016 ± .008)	0.50 ± 0.30 (.020 ± .012)
d	0.25 ± 0.10 (.010 ± .004)	0.30 +0.20/-0.10 (.012 +.008/-.004)	0.40 ± 0.20 (.016 ± .008)	0.40 ± 0.20 (.016 ± .008)



DIMENSIONS: MM (INCHES)

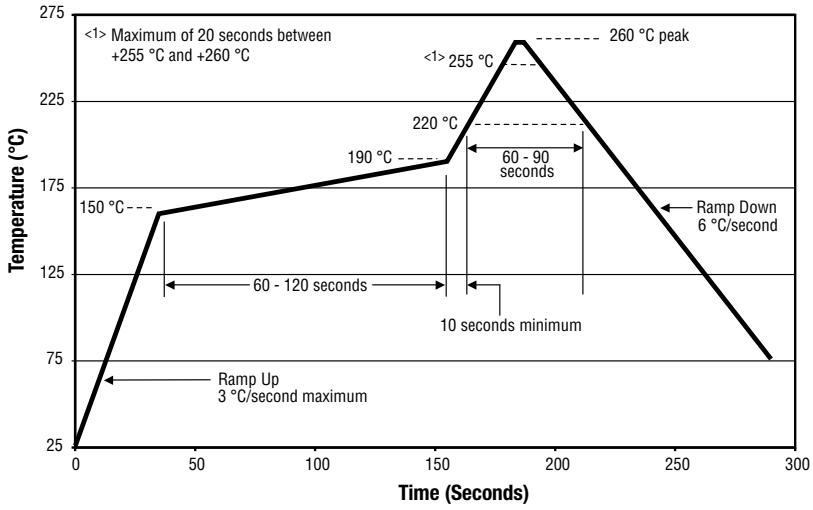
Recommended Land Pattern

Dimension	CRT0402A	CRT0603A	CRT0805A	CRT1206A
A	0.50 ~ 0.60 (.020 ~ .024)	0.70 ~ 0.90 (.028 ~ .035)	1.00 ~ 1.40 (.039 ~ .055)	2.00 ~ 2.40 (.079 ~ .094)
B	1.40 ~ 1.60 (.055 ~ .063)	2.00 ~ 2.20 (.079 ~ .087)	3.20 ~ 3.80 (.126 ~ .150)	4.40 ~ 5.00 (.173 ~ .197)
C	0.50 ~ 0.60 (.020 ~ .024)	0.90 ~ 1.00 (.035 ~ .039)	1.30 ~ 1.40 (.051 ~ .055)	1.60 ~ 1.80 (.063 ~ .071)



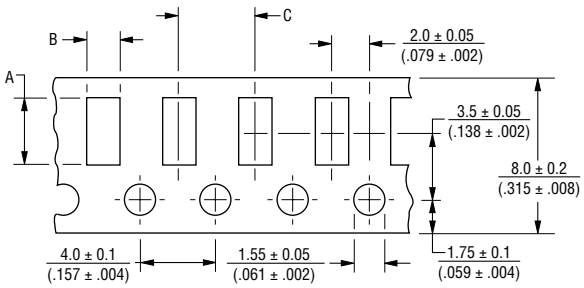
DIMENSIONS: MM (INCHES)

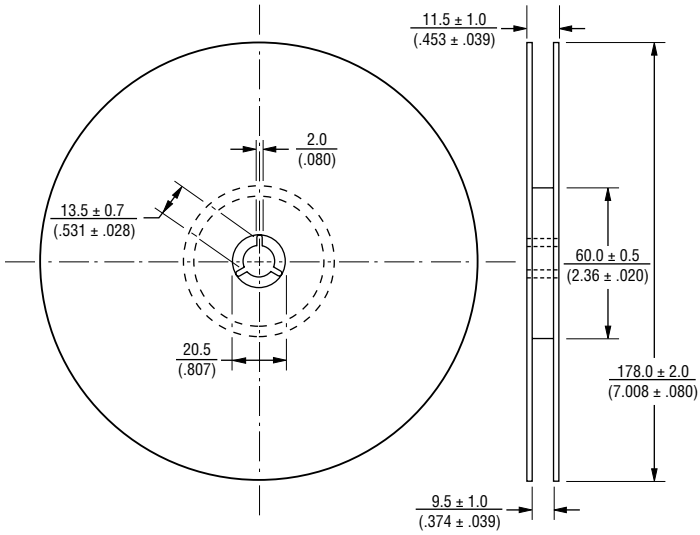
Soldering Profile



Packaging Dimensions – Tape

Dimension	CRT0402A	CRT0603A	CRT0805A	CRT1206A
A	1.20 ± 0.05 (.047 ± .002)	1.90 ± 0.10 (.075 ± .004)	2.40 ± 0.20 (.094 ± .008)	3.60 ± 0.20 (.142 ± .008)
B	0.70 ± 0.05 (.028 ± .002)	1.10 ± 0.10 (.043 ± .004)	1.60 ± 0.15 (.063 ± .006)	2.00 ± 0.15 (.079 ± .006)
C	2.00 ± 0.10 (.079 ± .004)	4.00 ± 0.10 (.157 ± .004)	4.00 ± 0.10 (.157 ± .004)	4.00 ± 0.10 (.157 ± .004)





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