Features

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

Applications

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

CRT-AS Series - Sulfur-Resistant Thin Film Precision Chip Resistors

Electrical Characteristics

Characteristic	Model CRT0402-AS	Model CRT0603-AS	Model CRT0805-AS	Model CRT1206-AS
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)	±10 PPM/°C, ±15 PPM/°C, ±25 PPM/°C, ±50 PPM/°C, (See Value - TCR Table on Page 2)			

Environmental Characteristics

Specification	Test Method	Limit (ΔR) (Tol. ≤ 0.05 %)	Limit (ΔR) (Tol. > 0.05 %)
Short Time Overload	JIS-C-5201-1 4.13 IEC 60115-1 4.13	±0.2 %	
Load Life	MIL-STD-202 Method 108	±0.5 %	
Humidity (Steady State)	MIL-STD-202 Method 103	±0.5 %	
Thermal Shock	JESD22 Method JA-104	±0.05 %	±0.2 %
Solderability	JIS-C-5201-1 4.17 IEC 60115-1 4.17	>95 % coverage	
Resistance to Soldering Heat	JIS-C-5201-1 4.18 IEC 60115-1 4.18	±0.05 %	±0.2 %
Mechanical Shock	MIL-STD-202 Method 213	±0.05 %	±0.1 %
Vibration	MIL-STD-202 Method 204	±0.05 %	±0.1 %
ESD	AEC-Q200-002, 2 kV	±0.1 %	
Flammability	UL-94V0	--	
Sulfur Test	ASTM-B-809-95 3~5 PPM H2S, 50 ± 2 °C, 91~93 % RH, no load for 1000 hrs.	±0.5 %	

How to Order

CRT 0603 - C V - 1003 E AS

Model
(CRT = Thin Film Precision Chip Resistor

Size
0402• • 0603 • 0805 • 1206

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

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

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-AS)
E = Paper tape (5K pcs.) on 7 ˝ plastic reel (CRT0603-AS, CRT0805-AS, CRT1206-AS)

Special Design and Termination
AS = Sulfur-resistant version, Tin-plated (RoHS compliant)

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

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.
**Bourns® products have not been specifically designed and tested for FDA Class III applications and their use in such applications is neither recommended nor supported.

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-AS	±10	(W)	49.9 to 10K Ω	49.9 to 10K Ω			
	±15	(X)		49.9 to 69.8K Ω			
	±25	(Y)		10 to 100K Ω			
	±50	(Z)					
CRT0603-AS	±10	(W)	49.9 to 10K Ω	10 to 332K Ω			
	±15	(X)					
	±25	(Y)					
	±50	(Z)					
CRT0805-AS	±10	(W)	10 to 100K Ω	10 to 511K Ω			
	±15	(X)		10 to 1M Ω			
	±25	(Y)					
	±50	(Z)					
CRT1206-AS	±10	(W)	10 to 200K Ω	10 to 1M Ω			
	±15	(X)					
	±25	(Y)					
	±50	(Z)					

Typical Part Marking

CRT0402-AS
No marking.

CRT0603-AS
3-Digit Marking
E-96

Examples:

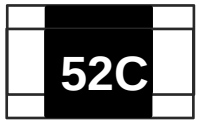
- **52C = 34K Ω,**
- **11C = 12.7K Ω**

Code	E96	Code	E96	Code	E96	Code	E96
01	100	25	178	49	316	73	562
02	102	26	182	50	324	74	576
03	105	27	187	51	332	75	590
04	107	28	191	52	340	76	604
05	110	29	196	53	348	77	619
06	113	30	200	54	357	78	634
07	115	31	205	55	365	79	649
08	118	32	210	56	374	80	665
09	121	33	215	57	383	81	681
10	124	34	221	58	392	82	698
11	127	35	226	59	402	83	715
12	130	36	232	60	412	84	732
13	133	37	237	61	422	85	750
14	137	38	243	62	432	86	768
15	140	39	249	63	442	87	787
16	143	40	255	64	453	88	806
17	147	41	261	65	464	89	825
18	150	42	267	66	475	90	845
19	154	43	274	67	487	91	866
20	158	44	280	68	499	92	887
21	162	45	287	69	511	93	909
22	165	46	294	70	523	94	931
23	169	47	301	71	536	95	953
24	174	48	309	72	549	96	976

Code	A	B	C	D	E	F	G	H	X	Y	Z
Multiplier	10^0	10^1	10^2	10^3	10^4	10^5	10^6	10^7	10^{-1}	10^{-2}	10^{-3}

Typical Part Marking (Continued)

CRT0603-AS
3-Digit Marking
E-24



First two digits are significant; third digit represents number of zeroes to follow.

Examples:

- **102 = 1K Ω,**
- **181 = 180 Ω**

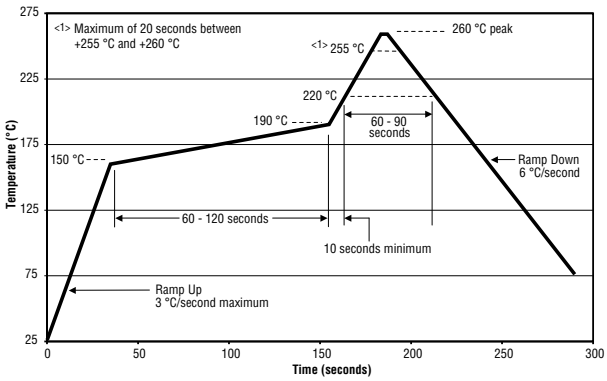
Code			
10	18	33	56
11	20	36	62
12	22	39	68
13	24	43	75
15	27	47	82
16	30	51	91

CRT0805-AS
CRT1206-AS
4-Digit Marking

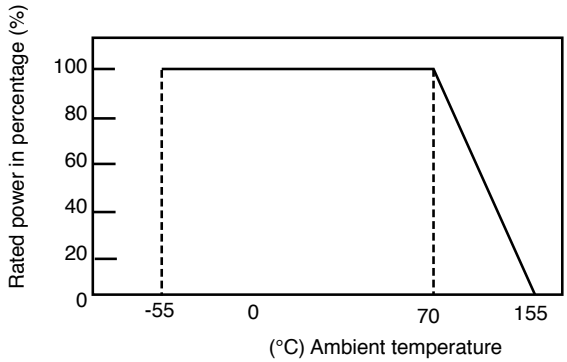
First three digits are significant; fourth digit represents number of zeroes to follow.

Examples	
Resistance	**Marking**
200 Ω	2000
2.4K Ω	2401
5.36K Ω	5361

Soldering Profile

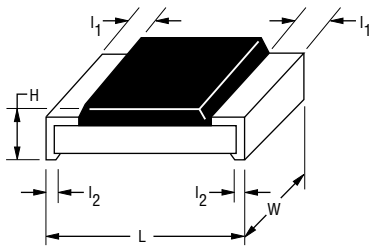


Derating Curve



Chip Dimensions

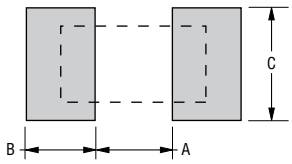
Dimension	Model CRT0402-AS	Model CRT0603-AS	Model CRT0805-AS	Model CRT1206-AS
L	1.00 ± 0.10 (0.040 ± 0.004)	1.55 ± 0.10 (0.061 ± 0.004)	2.00 ± 0.15 (0.079 ± 0.006)	3.05 ± 0.15 (0.120 ± 0.006)
W	0.50 ± 0.05 (0.020 ± 0.002)	0.80 ± 0.10 (0.031 ± 0.004)	1.25 ± 0.15 (0.049 ± 0.006)	1.55 ± 0.15 (0.061 ± 0.006)
H	0.30 ± 0.05 (0.012 ± 0.002)	0.45 ± 0.15 (0.018 ± 0.006)	0.55 ± 0.10 (0.022 ± 0.004)	0.55 ± 0.10 (0.022 ± 0.004)
l_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)
l_2	0.20 ± 0.10 (0.008 ± 0.004)	0.30 ± 0.20 (0.012 ± 0.008)	0.40 ± 0.25 (0.016 ± 0.010)	0.35 ± 0.25 (0.014 ± 0.010)



DIMENSIONS: MM / (INCHES)

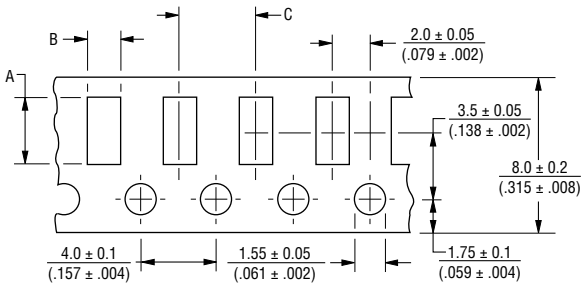
Recommended Land Pattern

Dimension	Model CRT0402-AS	Model CRT0603-AS	Model CRT0805-AS	Model CRT1206-AS
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)



Packaging Dimensions - Tape

Dimension	Model CRT0402-AS	Model CRT0603-AS	Model CRT0805-AS	Model CRT1206-AS
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)



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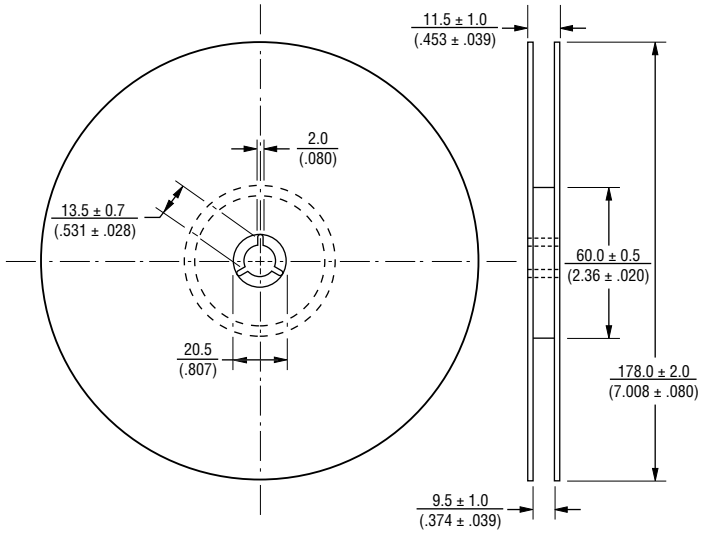

REV. 09/19

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