



Features

- Thick film technology
- Power rating up to 1 watt @ 70 °C
- RoHS compliant*
- Halogen free**
- Sulfur-resistant design (ASTM B-809)
- AEC-Q200 compliant

CRxxxxA-AS - Sulfur-Resistant, AEC-Q200 Compliant Chip Resistors

Electrical Characteristics

| Characteristic | Model No. | | | |
|--|--|--|--|--|
| | CR0201A-AS | CR0402A-AS | CR0603A-AS | CR0805A-AS |
| Power Rating @ 70 °C | 0.05 W | 0.063 W | 0.1 W | 0.125 W |
| Operating Temp. Range | -55 to +125 °C | -55 to +155 °C | | |
| Derated to Zero Load at | +125 °C | +155 °C | | |
| Maximum Working Voltage (1) | 25 V | 50 V | 50 V | 150 V |
| Maximum Overload Voltage | 50 V | 100 V | 100 V | 300 V |
| Resistance Tolerance | ±1 %, ±5 % | | | |
| Temperature Coefficient @ 1 % (E24 + E96) | 1 Ω ~ 9.76 Ω -200 ~ +600 ppm/°C 10 Ω ~ 3M Ω +200 ppm/°C | 1 Ω ~ 9.76 Ω -200 ~ +500 ppm/°C 100 Ω ≤ R ≤ 1M Ω ±100 ppm/°C 10 Ω ≤ R < 100 Ω 1M Ω < R ≤ 10M Ω ±200 ppm/°C | 1 Ω ~ 9.76 Ω ±400 ppm/°C 10 Ω ≤ R ≤ 1M Ω ±100 ppm/°C 1M Ω < R ≤ 10M Ω ±200 ppm/°C | 1 Ω ~ 9.76 Ω ±400 ppm/°C 10 Ω ≤ R ≤ 1M Ω ±100 ppm/°C 1M Ω < R ≤ 10M Ω ±200 ppm/°C |
| Temperature Coefficient @ 5 % (E24) | 1 Ω ~ 9.1 Ω -200 ~ +600 ppm/°C 10 Ω ~ 10M Ω +200 ppm/°C | 1 Ω ~ 9.1 Ω -200 ~ +500 ppm/°C 10 Ω ≤ R ≤ 10M Ω ±200 ppm/°C 10M Ω ≤ R ≤ 20M Ω ±400 ppm/°C | 1 Ω ~ 9.1 Ω 10M < R ≤ 20M Ω ±400 ppm/°C 10 Ω ≤ R ≤ 10M Ω ±200 ppm/°C | 1 Ω ~ 9.1 Ω 10M < R ≤ 20M Ω ±400 ppm/°C 10 Ω ≤ R ≤ 10M Ω ±200 ppm/°C |
| Zero Ohm Jumper ≤ 0.05 Ω Rated / Max. Current | 0.5 A / 1 A | 1 A / 2.5 A | 1 A / 2.5 A | 2 A / 5 A |

(1) Maximum Working Voltage is calculated with formula $V = \sqrt{P \cdot R}$ with the maximum value from the Electrical Characteristics table.

Environmental Characteristics

Moisture Sensitivity Level..... 1



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

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

** Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

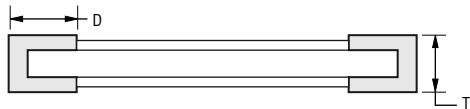
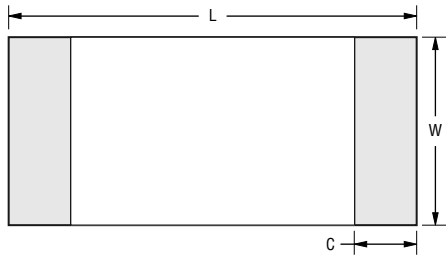
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Electrical Characteristics (continued)

| Characteristic | Model No. | | | |
|--|---|------------|------------|------------|
| | CR1206A-AS | CR1210A-AS | CR2010A-AS | CR2512A-AS |
| Power Rating @ 70 °C | 0.25 W | 0.33 W | 0.5 W | 1 W |
| Operating Temp. Range | -55 to +155 °C | | | |
| Derated to Zero Load at | +155 °C | | | |
| Maximum Working Voltage ⁽¹⁾ | 200 V | | | |
| Maximum Overload Voltage | 400 V | | | |
| Resistance Tolerance | ±1 %, ±5 % | | | |
| Temperature Coefficient @ 1 % (E24 + E96) | 1 Ω ~ 9.76 Ω ±400 ppm/°C | | | |
| | 10 Ω ≤ R ≤ 1M Ω ±100 ppm/°C | | | |
| | 1M Ω < R ≤ 10M Ω ±200 ppm/°C | | | |
| Temperature Coefficient @ 5 % (E24) | 1 Ω ~ 9.1 Ω 10M < R ≤ 20M Ω ±400 ppm/°C | | | |
| | 10 Ω ≤ R ≤ 10M Ω ±200 ppm/°C | | | |
| Zero Ohm Jumper ≤ 0.05 Ω Rated / Max. Current | 2 A / 5 A | | | |

⁽¹⁾ Maximum Working Voltage is calculated with formula $V = \sqrt{P \cdot R}$ with the maximum value from the Electrical Characteristics table.

Product Dimensions



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

| Model | L | W | C | D | T |
|------------|---|---|---|---|---|
| CR0201A-AS | $\frac{0.60 \pm 0.03}{(.024 \pm .001)}$ | $\frac{0.30 \pm 0.03}{(.012 \pm .001)}$ | $\frac{0.10 \pm 0.05}{(.004 \pm .002)}$ | $\frac{0.15 \pm 0.05}{(.006 \pm .002)}$ | $\frac{0.23 \pm 0.03}{(.009 \pm .001)}$ |
| CR0402A-AS | $\frac{1.00 \pm 0.05}{(.039 \pm .002)}$ | $\frac{0.50 \pm 0.05}{(.020 \pm .002)}$ | $\frac{0.20 \pm 0.10}{(.008 \pm .004)}$ | $\frac{0.25 \pm 0.10}{(.010 \pm .004)}$ | $\frac{0.32 \pm 0.05}{(.013 \pm .002)}$ |
| CR0603A-AS | $\frac{1.60 \pm 0.10}{(.063 \pm .004)}$ | $\frac{0.80 \pm 0.10}{(.031 \pm .004)}$ | $\frac{0.30 \pm 0.20}{(.012 \pm .008)}$ | $\frac{0.30 \pm 0.20}{(.012 \pm .008)}$ | $\frac{0.45 \pm 0.10}{(.018 \pm .004)}$ |
| CR0805A-AS | $\frac{2.00 \pm 0.10}{(.079 \pm .004)}$ | $\frac{1.25 \pm 0.10}{(.049 \pm .004)}$ | $\frac{0.40 \pm 0.20}{(.016 \pm .008)}$ | $\frac{0.40 \pm 0.20}{(.016 \pm .008)}$ | $\frac{0.50 \pm 0.10}{(.020 \pm .004)}$ |
| CR1206A-AS | $\frac{3.10 \pm 0.10}{(.122 \pm .004)}$ | $\frac{1.55 \pm 0.10}{(.061 \pm .004)}$ | $\frac{0.50 \pm 0.30}{(.020 \pm .012)}$ | $\frac{0.40 \pm 0.20}{(.016 \pm .008)}$ | $\frac{0.55 \pm 0.10}{(.022 \pm .004)}$ |
| CR1210A-AS | $\frac{3.10 \pm 0.10}{(.122 \pm .004)}$ | $\frac{2.55 \pm 0.10}{(.100 \pm .004)}$ | $\frac{0.50 \pm 0.30}{(.020 \pm .012)}$ | $\frac{0.40 \pm 0.20}{(.016 \pm .008)}$ | $\frac{0.60 \pm 0.10}{(.024 \pm .004)}$ |
| CR2010A-AS | $\frac{5.00 \pm 0.15}{(.197 \pm .006)}$ | $\frac{2.50 \pm 0.15}{(.098 \pm .006)}$ | $\frac{0.60 \pm 0.30}{(.024 \pm .012)}$ | $\frac{0.50 \pm 0.25}{(.020 \pm .010)}$ | $\frac{0.60 \pm 0.10}{(.024 \pm .004)}$ |
| CR2512A-AS | $\frac{6.30 \pm 0.20}{(.248 \pm .008)}$ | $\frac{3.20 \pm 0.20}{(.126 \pm .008)}$ | $\frac{0.60 \pm 0.30}{(.024 \pm .012)}$ | $\frac{0.50 \pm 0.25}{(.020 \pm .010)}$ | $\frac{0.60 \pm 0.10}{(.024 \pm .004)}$ |

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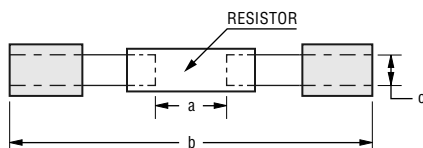
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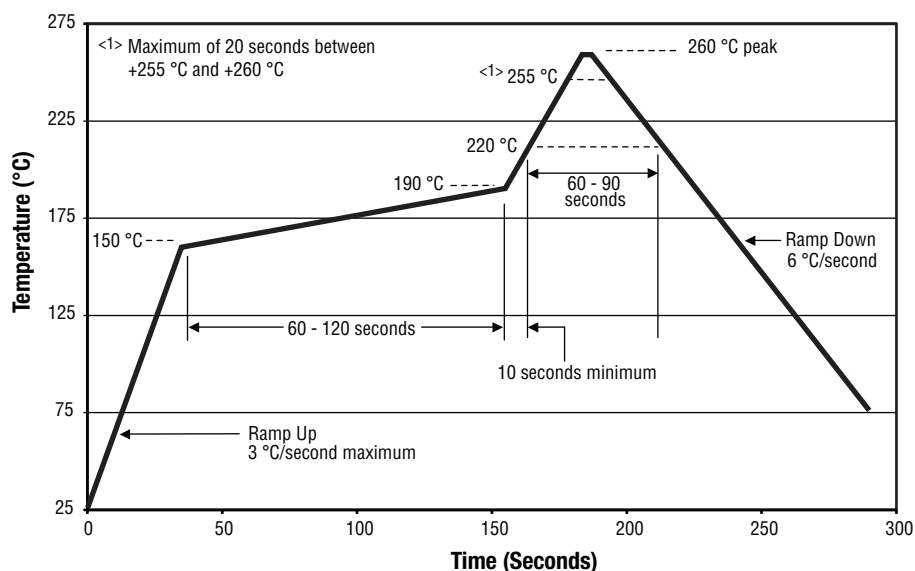
Recommended Pad Layout



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

| Model | a | b | c |
|------------|---|---|---|
| CR0201A-AS | $\frac{0.25 \sim 0.30}{(.010 \sim .012)}$ | $\frac{0.70 \sim 0.90}{(.028 \sim .035)}$ | $\frac{0.30 \sim 0.40}{(.012 \sim .016)}$ |
| CR0402A-AS | $\frac{0.50 \sim 0.60}{(.020 \sim .024)}$ | $\frac{1.40 \sim 1.60}{(.055 \sim .063)}$ | $\frac{0.40 \sim 0.60}{(.012 \sim .024)}$ |
| CR0603A-AS | $\frac{0.70 \sim 0.90}{(.028 \sim .035)}$ | $\frac{2.00 \sim 2.20}{(.079 \sim .087)}$ | $\frac{0.80 \sim 1.00}{(.031 \sim .039)}$ |
| CR0805A-AS | $\frac{1.00 \sim 1.40}{(.039 \sim .055)}$ | $\frac{3.20 \sim 3.80}{(.126 \sim .150)}$ | $\frac{0.90 \sim 1.40}{(.035 \sim .055)}$ |
| CR1206A-AS | $\frac{2.00 \sim 2.40}{(.079 \sim .094)}$ | $\frac{4.40 \sim 5.00}{(.173 \sim .197)}$ | $\frac{1.20 \sim 1.80}{(.047 \sim .071)}$ |
| CR1210A-AS | $\frac{2.00 \sim 2.40}{(.079 \sim .094)}$ | $\frac{4.50 \sim 5.00}{(.177 \sim .197)}$ | $\frac{2.30 \sim 3.50}{(.091 \sim .138)}$ |
| CR2010A-AS | $\frac{3.30 \sim 3.70}{(.130 \sim .146)}$ | $\frac{5.70 \sim 6.50}{(.224 \sim .256)}$ | $\frac{2.30 \sim 3.50}{(.091 \sim .138)}$ |
| CR2512A-AS | $\frac{3.60 \sim 4.00}{(.142 \sim .157)}$ | $\frac{7.60 \sim 8.60}{(.299 \sim .339)}$ | $\frac{2.30 \sim 3.50}{(.091 \sim .138)}$ |

Soldering Profile



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Performance Characteristics (AEC-Q200)

| Test | Method | Procedure | Test Limits ΔR |
|-------------------------------------|--|---|--|
| Short Time Overload | IEC 60115-1 4.13 | 2.5 X rated voltage for 5 sec. | $\pm (1 \% + 0.05 \Omega)$ Remarks: 0201: $\pm (3 \% + 0.1 \Omega)$ 0402: $\pm (2 \% + 0.1 \Omega)$ 0 Ω : 50 m Ω or less |
| High Temperature Exposure (Storage) | AEC-Q200-REV D-Test 3 MIL-STD-202 Method 108 | 1000 hrs. @ T=155 °C. Unpowered. Measurement at 24 \pm 2 hours after test conclusion. | 1 %: $\pm (1.0 \% + 0.05 \Omega)$ 5 %: $\pm (2.0 \% + 0.1 \Omega)$ 0201: $\pm (3 \% + 0.1 \Omega)$ 0 Ω : 50 m Ω or less |
| Temperature Cycling | AEC-Q200-REV D-Test 4 JESD22 Method JA-104 | 1000 cycles (-55 °C to +125 °C) Measurement at 24 \pm 4 hours after test conclusion. 30 min. maximum dwell time at each temperature extreme. 1 min. maximum transition time. | $\pm (1.0 \% + 0.1 \Omega)$ 0201: $\pm (2 \% + 0.1 \Omega)$ 0 Ω : 50 m Ω or less |
| Moisture Resistance | AEC-Q200-REV D-Test 6 MIL-STD-202 Method 106 | T=24 hours / Cycle, 10 Cycles. Notes: Steps 7a & 7b not required. Unpowered. | 1 %: $\pm (1.0 \% + 0.05 \Omega)$ 2 %, 5 %: $\pm (2.0 \% + 0.1 \Omega)$ 0201: $\pm (3 \% + 0.1 \Omega)$ 0 Ω : 50 m Ω or less |
| Biased Humidity | AEC-Q200-REV D-Test 7 MIL-STD-202 Method 103 | 1000 hours 85 °C / 85 % RH. Note: Specified conditions: 10 % of operating power (not exceeding max. working voltage). Measurement at 24 \pm 2 hours after test conclusion. | $\pm (3 \% + 0.1 \Omega)$ 0201: $\pm (5 \% + 0.1 \Omega)$ 0 Ω : 100 m Ω or less |
| Operational Life | AEC-Q200-REV D-Test 8 MIL-STD-202 Method 108 | 1000 hours T _A =125 °C at 35 % rated power. Measurement at 24 \pm 4 hours after test conclusion. | 1 %: $\pm (1 \% + 0.1 \Omega)$ 5 %: $\pm (3 \% + 0.1 \Omega)$ 0201: $\pm (5 \% + 0.1 \Omega)$ 0 Ω : 100 m Ω or less |
| External Visual | AEC-Q200-REV D-Test 9 MIL-STD-883 Method 2009 | Electrical test not required. Inspect device construction, marking and workmanship. | |
| Physical Dimension | AEC-Q200-REV D-Test 10 JESD22 Method JB-100 | Verify physical dimensions to the applicable device detail spec. Note: User(s) and Suppliers spec. Electrical test not required. | |
| Resistance to Solvents | 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 cannot 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 grams. Normal duration (D) is 6 ms. | $\pm (1 \% + 0.1 \Omega)$ 0 Ω : 50 m Ω or less |
| Vibration | AEC-Q200-REV D-Test 14 MIL-STD-202 Method 204 | 5 grams for 20 min., 12 cycles each of 3 orientations. Note: Test from 10-2000 Hz. | $\pm (1 \% + 0.1 \Omega)$ 0 Ω : 50 m Ω or less |
| Resistance to Soldering Heat | AEC-Q200-REV D-Test 15 MIL-STD-202 Method 210 | Condition B: Immerse the specimens in and eutectic solder at 260 \pm 5 °C for 10 \pm 1 S. | 1 %: $\pm (0.5 \% + 0.05 \Omega)$ 5 %: $\pm (1 \% + 0.1 \Omega)$ 0201: $\pm (2 \% + 0.1 \Omega)$ 0 Ω : 50 m Ω or less |
| Thermal Shock | AEC-Q200-REV D-Test 16 MIL-STD-202 Method 107 | -55 °C / +155 °C. Note: Number of cycles required: 1000, Maximum transfer time: 20 seconds, Dwell time: 15 minutes. Air to Air. | $\pm (1 \% + 0.1 \Omega)$ 0201: $\pm (2 \% + 0.1 \Omega)$ 0 Ω : 50 m Ω or less |
| ESD | AEC-Q200-REV D-Test 17 | Verify the voltage setting at 500 V | $\pm (1 \% + 0.1 \Omega)$ 0201: $\pm (2 \% + 0.1 \Omega)$ |
| Solderability | AEC-Q200-REV D-Test 18 J-STD-002 | Method B, aging 4 hours at 155 °C dry heat Lead-free solder bath at 235 \pm 3 °C Dipping time: 3 \pm 0.5 seconds | > 95 % area covered with tin |
| Flammability | AEC-Q200-REV D-Test 17 UL-94 | V-0 or V-1 are acceptable. Electrical test not required. | V-0 or V-1 |
| Board Flex (Bending) | AEC-Q200-REV D-Test 21 | The duration of the applied forces shall be 60 (\pm 5) seconds. 3 mm deflection (0201~1210) 2 mm deflection (2010~2512) | 1 %: $\pm (0.5 \% + 0.05 \Omega)$ 5 %: $\pm (1 \% + 0.1 \Omega)$ 0201: $\pm (1 \% + 0.1 \Omega)$ 0 Ω : 50 m Ω or less |
| Terminal Strength (SMD) | IEC 60115-1 4.32 | Force of 1.8 kg for 60 seconds. Note: 0201= N/A | $\pm (0.5 \% + 0.05 \Omega)$ 0 Ω : 50 m Ω or less |
| Sulfuration Test | ASTM-B-809-95 | Sulfur (saturated vapor) 1,000 hours, 105 \pm 2 °C, unpowered | 1 %: $\pm (1 \% + 0.05 \Omega)$ 5 %: $\pm (2 \% + 0.05 \Omega)$ 0201: 1 %: $\pm (2 \% + 0.05 \Omega)$ 5 %: $\pm (3 \% + 0.05 \Omega)$ 0 Ω : 100 m Ω or less |

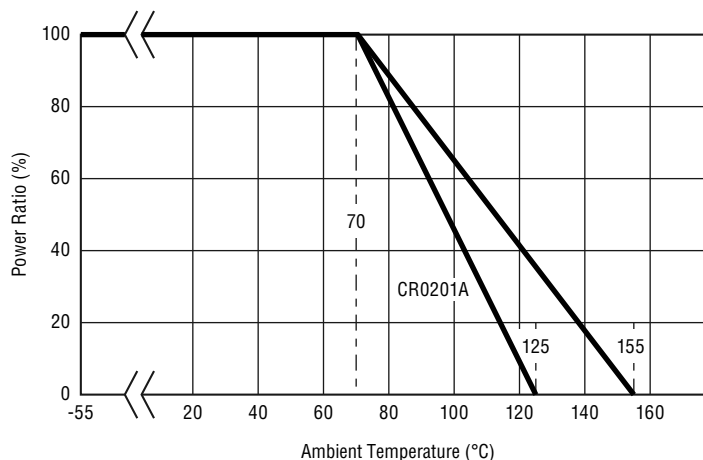
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Derating Curve



Packaging Dimensions (Conforms to EIA RS-481A)

| Model | Tape Type | A | B | W | F | E | P1 | P2 | P0 | T |
|------------|-------------------------------|---|---|--|---|---|---|---|---|---|
| CR0201A-AS | Paper Tape (2 mm pitch) | $\frac{0.37 \pm 0.05}{(.010 \pm .002)}$ | $\frac{0.67 \pm 0.10}{(.026 \pm .004)}$ | $\frac{8.00 \pm 0.20}{(.315 \pm .008)}$ | $\frac{3.50 \pm 0.05}{(.138 \pm .002)}$ | $\frac{1.75 \pm 0.10}{(.069 \pm .004)}$ | $\frac{2.00 \pm 0.10}{(.079 \pm .004)}$ | $\frac{2.00 \pm 0.05}{(.079 \pm .002)}$ | $\frac{4.00 \pm 0.10}{(.157 \pm .004)}$ | $\frac{0.37 \pm 0.10}{(.015 \pm .004)}$ |
| CR0402A-AS | | $\frac{0.70 \pm 0.05}{(.028 \pm .002)}$ | $\frac{1.20 \pm 0.05}{(.047 \pm .002)}$ | | | | | $\frac{2.00 \pm 0.10}{(.079 \pm .004)}$ | | $\frac{0.45 \pm 0.10}{(.018 \pm .004)}$ |
| CR0603A-AS | Paper Tape (4 mm pitch) | $\frac{1.10 \pm 0.10}{(.043 \pm .004)}$ | $\frac{1.90 \pm 0.10}{(.075 \pm .004)}$ | | | | $\frac{4.00 \pm 0.10}{(.157 \pm .004)}$ | $\frac{2.00 \pm 0.05}{(.079 \pm .002)}$ | | $\frac{0.64 \pm 0.10}{(.025 \pm .004)}$ |
| CR0805A-AS | | $\frac{1.65 \pm 0.15}{(.065 \pm .006)}$ | $\frac{2.40 \pm 0.20}{(.094 \pm .008)}$ | | | | | | | $\frac{0.84 \pm 0.10}{(.033 \pm .004)}$ |
| CR1206A-AS | | $\frac{2.00 \pm 0.15}{(.079 \pm .006)}$ | $\frac{3.60 \pm 0.20}{(.142 \pm .008)}$ | | | | | | | $\frac{0.84 \pm 0.10}{(.033 \pm .004)}$ |
| CR1210A-AS | | $\frac{2.80 \pm 0.20}{(.110 \pm .008)}$ | $\frac{3.60 \pm 0.20}{(.142 \pm .008)}$ | | | | | | | $\frac{0.84 \pm 0.10}{(.033 \pm .004)}$ |
| CR2010A-AS | Embossed Tape (4 mm pitch) | $\frac{2.80 \pm 0.20}{(.110 \pm .008)}$ | $\frac{5.30 \pm 0.20}{(.209 \pm .008)}$ | $\frac{12.00 \pm 0.20}{(.472 \pm .008)}$ | $\frac{5.50 \pm 0.05}{(.217 \pm .002)}$ | | | | | $\frac{0.85 \pm 0.15}{(.033 \pm .006)}$ |
| CR2512A-AS | | $\frac{3.60 \pm 0.20}{(.142 \pm .008)}$ | $\frac{6.90 \pm 0.20}{(.272 \pm .008)}$ | | | | | | | $\frac{0.85 \pm 0.15}{(.033 \pm .006)}$ |

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

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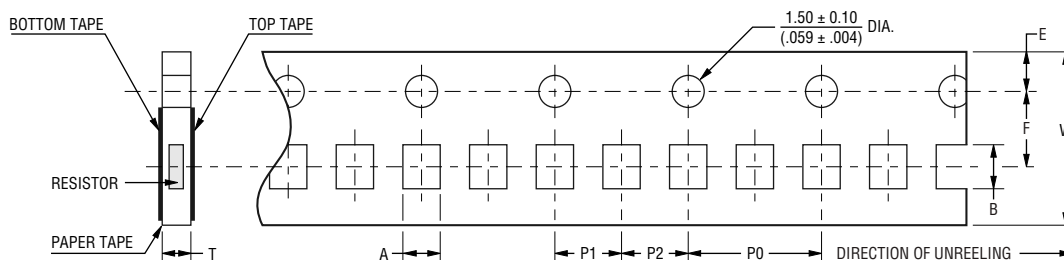
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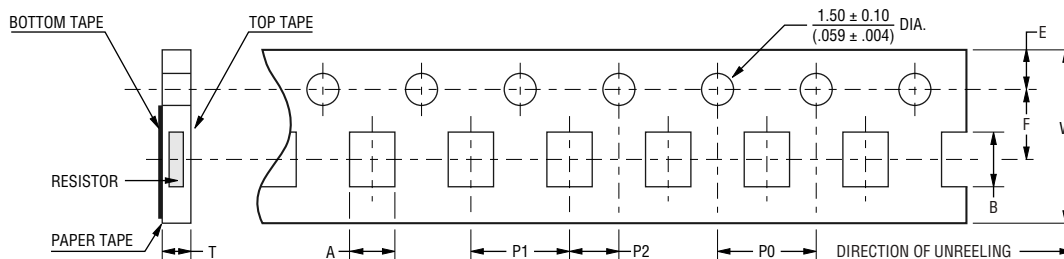
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Packaging Dimensions (Conforms to EIA RS-481A)

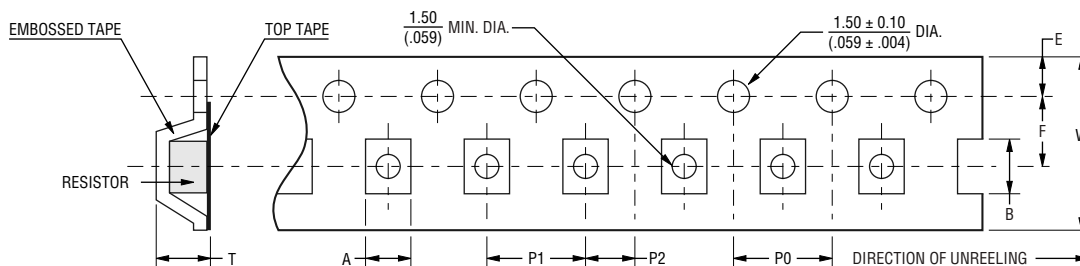
PAPER TAPE (2 mm PITCH)



PAPER TAPE (4 mm PITCH)



EMBOSSSED TAPE (4 mm PITCH)

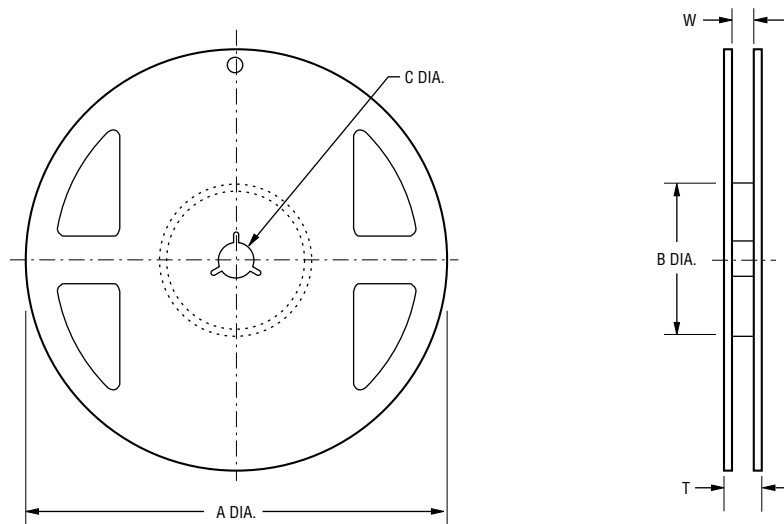


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BOURNS®
Packaging Dimensions (Conforms to EIA RS-481A)


| Model | Packaging Quantity | A | B | C | W | T |
|------------|--------------------|--|---------------------------------------|--|--|--|
| CR0201A-AS | 10K pcs/reel | | | | | |
| CR0402A-AS | | | | | | |
| CR0603A-AS | 5K pcs/reel | $\frac{178 \pm 2.0}{(7.008 \pm .079)}$ | $\frac{60 \pm 1.0}{(2.362 \pm .039)}$ | $\frac{13.0 \pm 1.0}{(.512 \pm .039)}$ | $\frac{9.0 \pm 1.0}{(.354 \pm .039)}$ | $\frac{11.5 \pm 1.0}{(.453 \pm .039)}$ |
| CR0805A-AS | | | | | | |
| CR1206A-AS | | | | | | |
| CR1210A-AS | | | | | | |
| CR2010A-AS | 4K pcs/reel | $\frac{178 \pm 2.0}{(7.008 \pm .079)}$ | $\frac{60 \pm 0.5}{(2.362 \pm .020)}$ | $\frac{13.0 \pm 0.5}{(.512 \pm .020)}$ | $\frac{13.0 \pm 1.0}{(.512 \pm .039)}$ | $\frac{15.5 \pm 1.0}{(.610 \pm .039)}$ |
| CR2512A-AS | | | | | | |

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How to Order

CR 0603 A F X - 1002 E AS

Model

(CR = Fixed Resistor)

Size

0201 = 0201 size
 0402 = 0402 size
 0603 = 0603 size
 0805 = 0805 size
 1206 = 1206 size
 1210 = 1210 size
 2010 = 2010 size
 2512 = 2512 size

Feature

A = AEC-Q200 Compliant

Resistance Tolerance

F = $\pm 1\%$
 J = $\pm 5\%$

TCR (ppm/°C) – See Electrical Characteristics Chart

X = ± 100
 W = ± 200
 Z = ± 400
 / = Used for zero Ω (jumper) and values from 1 Ω through 9.76 Ω .

Resistance Value

For 1 % Tolerance:

<100 Ω "R" represents decimal point (example: 24R3 = 24.3 Ω).>100 Ω First three digits are significant, fourth digit represents number of zeros to follow (example: 8252 = 82.5K Ω).

For 5 % Tolerance:

<10 Ω "R" represents decimal point (example: 4R7 = 4.7 Ω).>10 Ω First two digits are significant, third digit represents number of zeros to follow (example: 474 = 470K Ω).

Packaging

G = Paper Tape (10,000 pcs.) on 7 " Reel – CR0201A-AS, CR0402A-AS

E = Paper Tape (5,000 pcs.) on 7 " Reel – CR0603A-AS, CR0805A-AS, CR1206A-AS, CR1210A-AS

E = Embossed Tape (4,000 pcs) on 7 " Reel – CR2010A-AS, CR2512A-AS

Termination

AS = Anti-sulfur version, Tin-plated (RoHS Compliant)

Symbol for E96 Series Nominal Resistance Value

| Symbol | E96 | Symbol | E96 | Symbol | E96 | Symbol | 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 |

Symbol for Multipliers

| Symbol | 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 |

Marking Explanation



±5 % (E24): CR0603-A-AS /
CR0805A-AS / CR1206A-AS /
CR1210A-AS / CR2010A-AS /
CR2512A-AS

Resistance value is expressed by 3 digits.
The first two digits represent the significant
figures of nominal resistance value in Ω.
The third digit represents exponent for
base of 10.

EX: 102 = 10 × 10² = 1000 Ω = 1K Ω



±1 % (E96): CR0805A-AS /
CR1206A-AS / CR1210A-AS /
CR2010A-AS / CR2512A-AS

Resistance value is expressed by 3 digits.
The first two digits represent the significant
figures of nominal resistance value in Ω.
The third digit represents exponent for
base of 10.

EX: 102 = 10 × 10² = 1000 Ω = 1K Ω



±1 % (E96): CR0603A-AS

When the marking space is too small in
such small-sized resistors as CR0603A-AS,
the marking cannot be made by 4 digits
and may be made by two digits combined
with one English capital.

EX: 01A = 100 × 10⁰ = 100 Ω



CR0402A-AS

When the marking space is too small in
such small-sized resistors as CR0402A-AS,
the marking cannot be made by 4 digits
and may be made by 2 digits combined
with one English capital.

EX: 121 = 130 × 10¹ = 1300 Ω or 1.3K Ω



CR0201A-AS

When the marking space is too small in
such small-sized resistors as CR0201A-AS,
the marking cannot be made by 4 digits
and may be represented by a dash.

EX: - = 100 Ω; - = 511K Ω

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