

Data Sheet

| | |
|--------------|---|
| Customer: | |
| Product: | Thick Film Chip Resistor - CR Series |
| Size: | 01005/0201/0402/0603/0805/1206/1210/2010/2512/ 1225/0612 |
| Issued Date: | 15-Jul-16 |
| Edition: | REV.C3 |



VIKING TECH CORPORATION
光頤科技股份有限公司
No.70 Guangfu N. Rd., Hukou
Township, Hsinchu County 303,
Taiwan

TEL:886-3-5972931
FAX:886-3-5972935•886-3-5973494
E-mail:sales@viking.com.tw

VIKING TECH CORPORATION KAOHSIUNG BRANCH
光頤科技股份有限公司高雄分公司
No.248-3, Sin-Sheng Rd., Cian-Jhen Dist., Kaohsiung,
806, Taiwan

TEL:886-7-8217999
FAX:886-7-8228229
E-mail:sales@viking.com.tw

WUXI TMTEC CO., LTD.
無錫泰銘電子有限公司
No.22 Xixia Road, Machinery & Industry Park,
National Hi-Tech Industrial Development Zone
of Wuxi, Wuxi, Jiangsu Province, China
Zip Code:214028
TEL:86-510-85203339
FAX:86-510-85203667•86-510-85203977
E-mail:china@viking.com.tw

| Produced by (QC) | Checked (QC) | Approved by (QC) | Prepared by (Sales) | Accepted by (Customer) |
|---------------------|-----------------|---------------------|------------------------|---------------------------|
| 15-Jul-16 | 15-Jul-16 | 15-Jul-16 | 15-Jul-16 | |
| Susan Huang | J.C. Liu | J.C. Liu | | |

Thick Film Chip Resistor
Thick Film Chip Resistor



Scope

- This specification applies to all sizes of rectangular-type fixed chip resistors with Ruthenium-base as material.

Features

- Small size and light weight
- Highly reliable multilayer electrode construction
- Compatible with all soldering process
- Long side terminations

Construction



Applications

- Telecommunication Equipments
- Radio and Tape Recorders, TV Tuners
- Digital Cameras, Watches, Pocket Calculators
- Computers, Instruments
- Medical and Military Equipment

| | | |
|---------------------|----------------------|----------------------|
| ① Alumina Substrate | ④ Edge Electrode | ⑦ Resistor Layer |
| ② Bottom Electrode | ⑤ Barrier Layer | ⑧ Primary Overcoat |
| ③ Top Electrode | ⑥ External Electrode | ⑨ Secondary Overcoat |

Dimensions

| Type | Size (Inch) | L (mm) | W (mm) | T (mm) | D1 (mm) | D2 (mm) | Weight (g) (1000pcs) |
|-------|-------------|-----------|-----------|-----------|-----------|-----------|----------------------|
| CR-E5 | 01005 | 0.40±0.02 | 0.20±0.02 | 0.13±0.02 | 0.10±0.03 | 0.10±0.03 | 0.037 |
| CR-01 | 0201 | 0.60±0.03 | 0.30±0.03 | 0.23±0.03 | 0.15±0.05 | 0.15±0.05 | 0.150 |
| CR-02 | 0402 | 1.00±0.05 | 0.50±0.05 | 0.35±0.05 | 0.20±0.10 | 0.20±0.10 | 0.620 |
| CR-03 | 0603 | 1.60±0.10 | 0.80±0.10 | 0.45±0.10 | 0.30±0.20 | 0.30±0.20 | 2.042 |
| CR-05 | 0805 | 2.00±0.10 | 1.25±0.10 | 0.50±0.10 | 0.35±0.20 | 0.40±0.20 | 4.368 |
| CR-06 | 1206 | 3.10±0.10 | 1.55±0.10 | 0.55±0.10 | 0.50±0.25 | 0.50±0.20 | 8.947 |
| CR-10 | 1210 | 3.10±0.10 | 2.60±0.15 | 0.55±0.10 | 0.50±0.25 | 0.50±0.20 | 15.959 |
| CR-0A | 2010 | 5.00±0.10 | 2.50±0.15 | 0.55±0.10 | 0.60±0.25 | 0.50±0.20 | 24.241 |
| CR-12 | 2512 | 6.35±0.10 | 3.10±0.15 | 0.55±0.10 | 0.60±0.25 | 0.50±0.20 | 39.448 |
| CR-25 | 1225 | 3.10±0.15 | 6.30±0.15 | 0.90±0.15 | 0.60±0.30 | 0.80±0.25 | 64.88 |
| CR-62 | 0612 | 1.55±0.10 | 3.10±0.15 | 0.55±0.10 | 0.25±0.15 | 0.35±0.15 | 9.31 |

Part Numbering

Part Number : CR-03FL7---10R

Part Number : CR-03JL7----0R

| CR- | 03 | F | L | 7 | - - - 1 0 R |
|--------------|---|---|---|--|---|
| CR- | 03 | J | L | 7 | - - - - 0 R |
| Product Type | Dimensions | Resistance Tolerance | Function Code | Packaging Code | Resistance |
| CR- | E5: 01005 01: 0201 02: 0402 03: 0603 05: 0805 06: 1206 10: 1210 0A: 2010 12: 2512 25: 1225 62: 0612 | B: ±0.1% C: ±0.25% D: ±0.5% F: ±1% J: ±5% | L: Standard & High Precision E: TC50 P: High Power H: Ultra High Power | 0: 7" Reel 15Kpcs 2: 7" Reel 2Kpcs 4: 7" Reel 4Kpcs 5: 7" Reel 20Kpcs 6: 7" Reel 10Kpcs 7: 7" Reel 5Kpcs 9: 10" Reel 8Kpcs A: 10" Reel 10Kpcs B: 10" Reel 20Kpcs C: 13" Reel 40Kpcs D: 13" Reel 20Kpcs | --- 1R2: 1.2Ω --- 3K3: 3.3KΩ --- 10K: 10KΩ -- 100K: 100KΩ “-“ to fill up 6 spaces |

Standard Electrical Specifications

| Item Type | Power Rating at 70°C Jumper Rated Current | Operating Temp. Range | Max. Operating Voltage | Max. Overload Voltage | Resistance Range | | TCR (PPM/°C) |
|---------------|---|-----------------------|------------------------|-----------------------|--|----------|------------------------------|
| | | | | | ±1%(E24、E96) | ±5%(E24) | |
| CR-E5 (01005) | 1/32W | -55 ~ +125°C | 15V | 30V | 10Ω - 1MΩ | | ±300 |
| | Jumper: 0.5A | | | | 0Ω (<50mΩ) | | - |
| CR-01 (0201) | 1/20W | -55 ~ +125°C | 25V | 50V | 1Ω - 10MΩ | | ±200 |
| | Jumper: 1A | | | | 0Ω (<50mΩ) | | - |
| CR-02 (0402) | 1/16W | -55 ~ +155°C | 50V | 100V | 1Ω - 9.76Ω 10Ω - 1MΩ 1.02MΩ - 20MΩ 20.5MΩ - 100MΩ | | ±200 ±100 ±200 ±400 |
| | Jumper: 1A | | | | 0Ω (<50mΩ) | | - |
| CR-03 (0603) | 1/10W | -55 ~ +155°C | 75V | 150V | 1Ω - 9.76Ω 10Ω - 1MΩ 1.02MΩ - 20MΩ 20.5MΩ - 100MΩ | | ±200 ±100 ±200 ±400 |
| | Jumper: 1A | | | | 0Ω (<50mΩ) | | - |
| CR-05 (0805) | 1/8W | -55 ~ +155°C | 150V | 300V | 1Ω - 9.76Ω 10Ω - 1MΩ 1.02MΩ - 20MΩ 20.5MΩ - 100MΩ | | ±200 ±100 ±200 ±400 |
| | Jumper: 2A | | | | 0Ω (<50mΩ) | | - |
| CR-06 (1206) | 1/4W | -55 ~ +155°C | 200V | 400V | 1Ω - 9.76Ω 10Ω - 1MΩ 1.02MΩ - 20MΩ 20.5MΩ - 100MΩ | | ±200 ±100 ±200 ±400 |
| | Jumper: 2A | | | | 0Ω (<50mΩ) | | - |
| CR-10 (1210) | 1/3W | -55 ~ +155°C | 200V | 400V | 1Ω - 9.76Ω 10Ω - 1MΩ 1.02MΩ - 20MΩ 20.5MΩ - 39MΩ | | ±200 ±100 ±200 ±400 |
| | Jumper: 2.5A | | | | 0Ω (<50mΩ) | | - |

| Item Type | Power Rating at 70°C Jumper Rated Current | Operating Temp. Range | Max. Operating Voltage | Max. Overload Voltage | Resistance Range | | TCR (PPM/°C) |
|--------------|--|--------------------------|------------------------------|-----------------------------|--|----------|------------------------------|
| | | | | | ±1%(E24、E96) | ±5%(E24) | |
| CR-0A (2010) | 3/4W | -55 ~ +155°C | 200V | 400V | 1Ω - 9.76Ω 10Ω - 1MΩ 1.02MΩ - 20MΩ 20.5MΩ - 100MΩ | | ±200 ±100 ±200 ±400 |
| | Jumper: 3.5A | | | | 0Ω (<50mΩ) | | - |
| CR-12 (2512) | 1W | -55 ~ +155°C | 250V | 500V | 1Ω - 9.76Ω 10Ω - 1MΩ 1.02MΩ - 20MΩ 20.5MΩ - 100MΩ | | ±200 ±100 ±200 ±400 |
| | Jumper: 4A | | | | 0Ω (<50mΩ) | | - |
| CR-25 (1225) | 2W | -55 ~ +155°C | 200V | 400V | 10Ω - 20KΩ | | ±100 |
| | Jumper: 10A | | | | 0Ω (<20mΩ) | | - |
| CR-62 (0612) | 0.75W | -55 ~ +155°C | 200V | 400V | 1Ω~1MΩ | | ±100 |

High Precision Electrical Specifications

| Item Type | Power Rating at 70°C | Operating Temp. Range | Max. Operating Voltage | Max. Overload Voltage | Resistance Range (E24、E96) | | | TCR (PPM/°C) |
|--------------|-------------------------|--------------------------|------------------------------|-----------------------------|-------------------------------|--------------|-------|-----------------|
| | | | | | ±0.1% | ±0.25% | ±0.5% | |
| CR-02 (0402) | 1/16W | -55 ~ +155°C | 50V | 100V | - | 10Ω - 1MΩ | | ±100 |
| CR-03 (0603) | 1/10W | | 75V | 150V | - | 1.02M - 10MΩ | | ±200 |
| CR-05 (0805) | 1/8W | | 150V | 300V | 10Ω - 1MΩ | | | ±100 |
| | | | | | - | 1.02M - 10MΩ | | ±200 |
| CR-06 (1206) | 1/4W | | 200V | 400V | 10Ω - 1MΩ | | | ±100 |
| | | | | | - | 1.02M - 10MΩ | | ±200 |
| CR-10 (1210) | 1/3W | | 200V | 400V | - | 10Ω - 1MΩ | | ±100 |
| CR-0A (2010) | 3/4W | | 200V | 400V | 10Ω - 1MΩ | | | ±100 |
| | | - | | | 1.02M - 10MΩ | | ±200 | |
| CR-12 (2512) | 1W | 250V | 500V | 10Ω - 1MΩ | | | ±100 | |
| | | | | - | 1.02M - 10MΩ | | ±200 | |

TC50 Electrical Specifications

| Item Type | Power Rating at 70°C | Operating Temp. Range | Max. Operating Voltage | Max. Overload Voltage | Resistance Range (E24、E96) | | | | TCR (PPM/°C) |
|--------------|-------------------------|--------------------------|------------------------------|-----------------------------|----------------------------|------------|------------|-----|-----------------|
| | | | | | ±0.1% | ±0.25% | ±0.5% | ±1% | |
| CR-02 (0402) | 1/16W | -55 ~ +155°C | 50V | 100V | - | | 100Ω - 1MΩ | | ±50 |
| CR-03 (0603) | 1/10W | | 75V | 150V | 10Ω - 1MΩ | 10Ω - 10MΩ | | | |
| CR-05 (0805) | 1/8W | | 150V | 300V | | | | | |
| CR-06 (1206) | 1/4W | | 200V | 400V | | | | | |
| CR-10 (1210) | 1/3W | | 200V | 400V | | | | | |
| CR-0A (2010) | 3/4W | | 200V | 400V | | | | | |
| CR-12 (2512) | 1W | | 250V | 500V | | | | | |

Thick Film Chip Resistor

High Power & Ultra High Power Rating Electrical Specifications

| Type | Item | Power Rating at 70°C | Operating Temp. Range | Max. Operating Voltage | Max. Overload Voltage | Resistance Range | | TCR (PPM/°C) |
|--------------|-----------|----------------------|-----------------------|------------------------|-----------------------|---------------------------------------|-------------------|--------------|
| | | | | | | ±1% (E24 · E96) | ±5% (E24) | |
| CR-02 (0402) | 1/8W | Jumper: 1.5A | -55 ~ +155°C | 50V | 100V | 1Ω - 9.76Ω 10Ω - 1MΩ 0Ω (<20mΩ) | ±200 ±100 - | |
| | | | | | | | | |
| CR-03 (0603) | 1/4W | Jumper: 2A | | 75V | 150V | | | |
| | | | | | | | | |
| CR-05 (0805) | 1/3W | Jumper: 2.5A | | 150V | 300V | | | |
| | | | | | | | | |
| CR-06 (1206) | 1/3 *1/2W | Jumper: 3.5A | | 200V | 400V | | | |
| | | | | | | | | |
| CR-10 (1210) | 1/2 *3/4W | Jumper: 5A | | 200V | 400V | | | |
| | | | | | | | | |
| CR-0A (2010) | 1W | Jumper: 6A | 200V | 400V | | | | |
| | | | | | | | | |
| CR-12 (2512) | 2W | Jumper: 7A | 250V | 500V | | | | |
| | | | | | | | | |

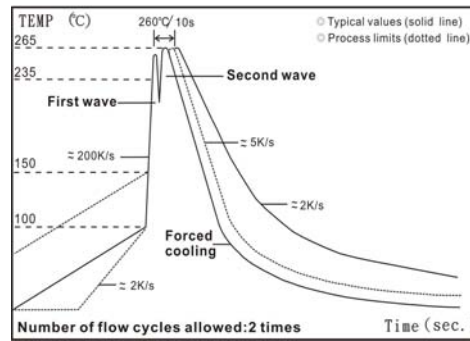
*: Ultra High Power

Operating Voltage= $\sqrt{P \cdot R}$ or Max. Operating Voltage listed above, whichever is lower.

Overload Voltage= $2.5 \cdot \sqrt{P \cdot R}$ or Max. Overload Voltage listed above, whichever is lower.

■ Viking is capable of manufacturing the optional spec based on customer's requirement.

Soldering Condition



IR Reflow Soldering

Wave Soldering (Flow Soldering)

- (1) Time of IR reflow soldering at maximum temperature point 260°C : 10s
- (2) Time of wave soldering at maximum temperature point 260°C : 10s
- (3) Time of soldering iron at maximum temperature point 410°C : 5s

Derating Curve



Environmental Characteristics

| Item | Requirement | | | Test Method |
|--|--|---------------|--------|--|
| | ±1% and Below | ±5% | Jumper | |
| Temperature Coefficient of Resistance (T.C.R.) | As Spec. | | | JIS-C-5201-1 4.8 IEC-60115-1 4.8 -55°C~+125°C, 25°C is the reference temperature |
| Short Time Overload | ±(1.0%+0.05Ω) | ±(2.0%+0.05Ω) | <50mΩ | JIS-C-5201-1 4.13 IEC-60115-1 4.13 RCWV*2.5 or Max. Overload Voltage whichever is lower for 5 seconds, 2 seconds for high power series |
| Insulation Resistance | ≥10G | | | JIS-C-5201-1 4.6 IEC-60115-1 4.6 Max. Overload Voltage for 1 minute |
| Endurance | ±(1.0%+0.10Ω) | ±(2.0%+0.10Ω) | <100mΩ | JIS-C-5201-1 4.25 IEC-60115-1 4.25.1 70±2°C, RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" |
| Damp Heat with Load | ±(1.0%+0.10Ω) | ±(2.0%+0.10Ω) | <100mΩ | JIS-C-5201-1 4.24 IEC-60115-1 4.24 40±2°C, 90~95% R.H., RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" |
| Dry Heat | ±(1.0%+0.05Ω) | ±(1.5%+0.10Ω) | <50mΩ | JIS-C-5201-1 4.23 IEC-60115-1 4.23.2 at +125/+155°C for 1000 hrs |
| Bending Strength | ±(1.0%+0.05Ω) | ±(1.0%+0.05Ω) | <50mΩ | JIS-C-5201-1 4.33 IEC-60115-1 4.33 Bending once for 5 seconds 2010, 2512 sizes: 2mm Other sizes: 3mm |
| Solderability | 95% min. coverage | | | JIS-C-5201-1 4.17 IEC-60115-1 4.17 245±5°C for 3 seconds |
| Resistance to Soldering Heat | ±(0.5%+0.05Ω) | ±(1.0%+0.05Ω) | <50mΩ | JIS-C-5201-1 4.18 IEC-60115-1 4.18 260±5°C for 10 seconds |
| Voltage Proof | No breakdown or flashover | | | JIS-C-5201-1 4.7 IEC-60115-1 4.7 1.42 times Max. Operating Voltage for 1 minute |
| Leaching | Individual leaching area ≤ 5% Total leaching area ≤ 10% | | | JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1 260±5°C for 30 seconds |
| Rapid Change of Temperature | ±(0.5%+0.05Ω) | ±(1.0%+0.05Ω) | <50mΩ | JIS-C-5201-1 4.19 IEC-60115-1 4.19 -55°C to +125/+155°C, 5 cycles |

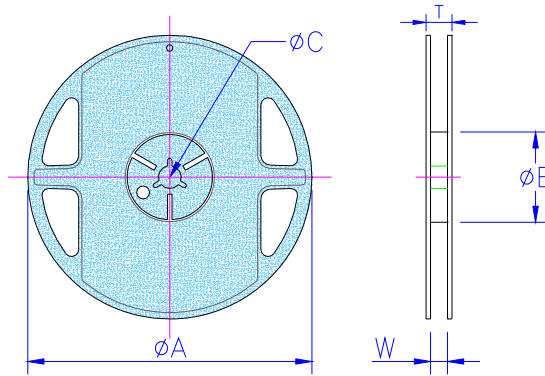
RCWV(Rated Continuous Working Voltage)=√(P*R) or Max. Operating Voltage whichever is lower.

Storage Temperature: 15~28°C; Humidity < 80%RH

Thick Film Chip Resistor

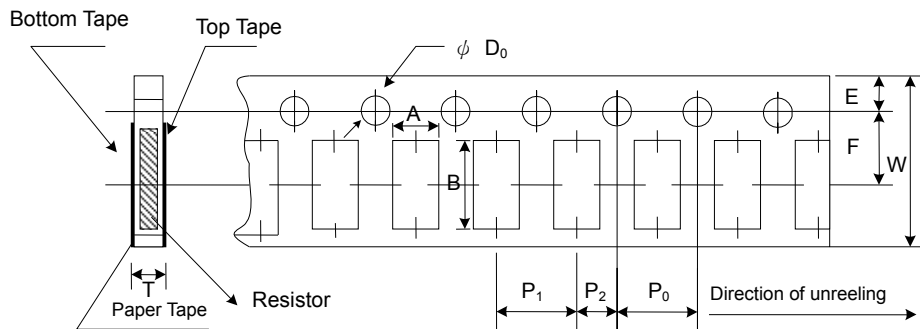
■Packaging

Reel Specifications & Packaging Quantity



| Type | Packaging Quantity | Tape Width | Reel Diameter | ΦA (mm) | ΦB (mm) | ΦC (mm) | W (mm) | T (mm) | |
|----------------------------------|--------------------|------------|---------------|---------|-----------|---------------------|----------|----------|----------|
| CR-E5 | Paper | 10K | 8mm | 7 inch | 178.5±1.5 | 60 ^{+1/-0} | 13.0±0.2 | 9.0±0.5 | 12.5±0.5 |
| | | 20K | 8mm | 7 inch | 178.5±1.5 | 60 ^{+1/-0} | 13.0±0.2 | 9.0±0.5 | 12.5±0.5 |
| CR-01 | Paper | 15K | 8mm | 7 inch | 178.5±1.5 | 60 ^{+1/-0} | 13.0±0.2 | 9.0±0.5 | 12.5±0.5 |
| CR-01 CR-02 | Paper | 10K | 8mm | 7 inch | 178.5±1.5 | 60 ^{+1/-0} | 13.0±0.2 | 9.0±0.5 | 12.5±0.5 |
| | | 20K | 8mm | 10 inch | 254±1.0 | 100±0.5 | 13.0±0.2 | 9.5±0.5 | 13.5±0.5 |
| | | 40K | 8mm | 13 inch | 330±1.0 | 100±0.5 | 13.0±0.2 | 9.5±0.5 | 13.5±0.5 |
| CR-03 CR-05 CR-06 CR-10 | Paper | 5K | 8mm | 7 inch | 178.5±1.5 | 60 ^{+1/-0} | 13.0±0.2 | 9.0±0.5 | 12.5±0.5 |
| | | 10K | 8mm | 10 inch | 254±1.0 | 100±0.5 | 13.0±0.2 | 9.5±0.5 | 13.5±0.5 |
| | | 20K | 8mm | 13 inch | 330±1.0 | 100±0.5 | 13.0±0.2 | 9.5±0.5 | 13.5±0.5 |
| CR-0A CR-12 | Embossed | 4K | 12mm | 7 inch | 178.5±1.5 | 60 ^{+1/-0} | 13.0±0.5 | 13.0±0.5 | 15.5±0.5 |
| | | 8K | 12mm | 10 inch | 250±1.0 | 62±0.5 | 13.0±0.5 | 12.5±0.5 | 16.5±0.5 |
| CR-25 | Embossed | 2K | 12mm | 7 inch | 178.5±1.5 | 60 ^{+1/-0} | 13.0±0.5 | 13.0±0.5 | 15.5±0.5 |
| CR-62 | Paper | 5K | 8mm | 7 inch | 178.5±1.5 | 60 ^{+1/-0} | 13.0±0.2 | 9.0±0.5 | 12.5±0.5 |

Paper Tape Specifications



| Type | A (mm) | B (mm) | W (mm) | E (mm) | F (mm) | P ₀ (mm) | P ₁ (mm) | P ₂ (mm) | ΦD ₀ (mm) | T (mm) |
|-------|-----------|-----------|----------|-----------|-----------|---------------------|---------------------|---------------------|----------------------|-----------|
| CR-E5 | 0.24±0.05 | 0.45±0.05 | 8.0±0.20 | 1.75±0.10 | 3.50±0.05 | 4.00±0.10 | 2.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.40±0.10 |
| CR-01 | 0.38±0.05 | 0.68±0.05 | 8.0±0.20 | 1.75±0.10 | 3.50±0.05 | 4.00±0.10 | 2.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.42±0.20 |
| CR-02 | 0.65±0.10 | 1.15±0.10 | 8.0±0.20 | 1.75±0.10 | 3.50±0.05 | 4.00±0.10 | 2.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.45±0.10 |
| CR-03 | 1.10±0.10 | 1.90±0.10 | 8.0±0.20 | 1.75±0.10 | 3.50±0.05 | 4.00±0.10 | 4.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.70±0.10 |
| CR-05 | 1.60±0.10 | 2.40±0.20 | 8.0±0.20 | 1.75±0.10 | 3.50±0.05 | 4.00±0.10 | 4.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.85±0.10 |
| CR-06 | 1.90±0.10 | 3.50±0.20 | 8.0±0.20 | 1.75±0.10 | 3.50±0.05 | 4.00±0.10 | 4.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.85±0.10 |
| CR-10 | 2.90±0.10 | 3.50±0.20 | 8.0±0.20 | 1.75±0.10 | 3.50±0.05 | 4.00±0.10 | 4.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.85±0.10 |
| CR-62 | 1.90±0.10 | 3.50±0.20 | 8.0±0.20 | 1.75±0.10 | 3.50±0.05 | 4.00±0.10 | 4.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.85±0.10 |

Thick Film Chip Resistor

Embossed Plastic Tape Specifications



| Type | A (mm) | B (mm) | W (mm) | E (mm) | F (mm) | P ₀ (mm) | P ₁ (mm) | P ₂ (mm) | ΦD ₀ (mm) | T (mm) |
|-------|-----------|-----------|-----------|-----------|----------|---------------------|---------------------|---------------------|----------------------|-------------------|
| CR-0A | 2.8±0.10 | 5.5±0.10 | 12.0±0.30 | 1.75±0.10 | 5.5±0.05 | 4.00±0.10 | 4.00±0.10 | 2.00±0.05 | 1.50+0.1, -0 | 1.2 ⁺⁰ |
| CR-12 | 3.5±0.10 | 6.7±0.10 | 12.0±0.30 | 1.75±0.10 | 5.5±0.05 | 4.00±0.10 | 4.00±0.10 | 2.00±0.05 | 1.50+0.1, -0 | 1.2 ⁺⁰ |
| CR-25 | 3.38±0.10 | 6.68±0.10 | 12.0±0.30 | 1.75±0.10 | 5.5±0.10 | 4.00±0.10 | 4.00±0.10 | 2.00±0.05 | 1.55+0.05 | 1.45±0.20 |

Recommend Land Pattern



| Type | A (mm) | B (mm) | C (mm) |
|-------|--------|--------|--------|
| CR-E5 | 0.14 | 0.18 | 0.25 |
| CR-01 | 0.30 | 0.25 | 0.30 |
| CR-02 | 0.50 | 0.45 | 0.60 |
| CR-03 | 0.90 | 0.60 | 0.90 |
| CR-05 | 1.20 | 0.70 | 1.30 |
| CR-06 | 2.00 | 0.90 | 1.60 |
| CR-10 | 2.00 | 0.90 | 2.80 |
| CR-0A | 3.80 | 0.90 | 2.80 |
| CR-12 | 3.80 | 1.60 | 3.50 |
| CR-25 | 1.20 | 2.00 | 7.00 |
| CR-62 | 0.70 | 1.20 | 3.20 |

Thick Film Chip Resistor

■ Marking

No Marking for 01005, 0201 and 0402

Jumper for all: Letter "0"

1% for 0805/1206/1210/2010/2512/1225/0612: 4 digits marking

Example:

| | | | | | |
|------------|------|-------|------|--------|-------|
| Resistance | 100Ω | 2.2KΩ | 10KΩ | 49.9KΩ | 100KΩ |
| Marking | 1000 | 2201 | 1002 | 4992 | 1003 |

5% for 0603/0805/1206/1210/2010/2512/1225/0612: 3 digits marking in E24

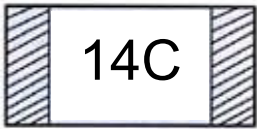
Example: 101=100Ω 102=1KΩ (1st and 2nd are E24 code and 3rd code is multiplier)

| | | | | | | | | | | | | | | | | | | | | | | | | |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| E24 code | 10 | 11 | 12 | 13 | 15 | 16 | 18 | 20 | 22 | 24 | 27 | 30 | 33 | 36 | 39 | 43 | 47 | 51 | 56 | 62 | 68 | 75 | 82 | 91 |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

1% for 0603(E24): 3 digits marking in E24, When the E24 and E96 are the same resistance, this marking in E96

Example: 01A= 100Ω 05C=11KΩ 123=12KΩ 273=27KΩ

1% for 0603: 3 digits marking in E96



3 digits marking for Example: 14C=13K7Ω 13C=13K3Ω
68B=4K99Ω 68X=49.9Ω

Marking Table

| 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 | X | Y | | |
| Multiplier | 10 ⁰ | 10 ¹ | 10 ² | 10 ³ | 10 ⁴ | 10 ⁵ | 10 ⁶ | 10 ⁻¹ | 10 ⁻² | | |

REVISION HISTORY

| REVISION | DATE | CHANGE NOTIFICATION | DESCRIPTION |
|------------|--------------|---------------------|--|
| Version C | Jun 03, 2014 | - | - Environmental Characteristics updated - Size CR-25 specifications added |
| Version C1 | Apr 30, 2015 | - | - High Power & Ultra High Power Rating Electrical Increase Jumper Specifications |
| Version C2 | Jun 09, 2015 | - | - Increase 0603(E24) 1% marking description |
| Version C3 | Jul 15, 2016 | - | - Remove Material Description - Size CR-62 specifications added - Modify Storage Temperature |

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