



**THE DATASHEET OF
CR25121J**



Thick Film Chip Resistor

CR Series

MERITEK

FEATURE

- Excellent Mechanical Strength and Electrical Stability
- Ideal for Pick and Place Machinery
- Stable High Frequency Characteristics
- Miniature, High Board Density
- Equivalent Specification EIAJ-RC-2690, EIAJ-RC-1009B, EIA-RS-481A



PART NUMBERING SYSTEM



CR 10 1002 F - 13
(1) (2) (3) (4) (5)

| No | Item | Code | Description | Series Reference |
|-----|----------------|------|--------------|--|
| (1) | Meritek Series | CR | Thick Film | Chip Resistor |
| (2) | Size | 10 | 10: 0805 | 01: 2512, 02: 2010, 03: 1812, 04: 1210 08: 1206, 16: 0603, 20: 0402, 25: 0201 |
| (3) | Resistance | 1002 | 1002: 10KΩ | 3 Digit: First 2 are significant, Last is multiplier (10 ^X) 4 Digit: First 3 are significant, Last is multiplier (10 ^X) |
| (4) | Tolerance | F | F: ±1% | B: ±0.1%, D: ±0.5%, G: ±2%, J: ±5% |
| (5) | Packaging | 13 | 13: 13" reel | Blank: Standard 7" reel |

ELECTRICAL CHARACTERISTICS

Resistance Range: ≥ 1Ω & 0Ω

| Type | Rated Power 70°C | Max Working Voltage | Max Overload Voltage | T.C.R. (ppm/°C) | Resistance Range (Ω) | | | | Jumper Rated Current | | Jumper Resistance | |
|-----------------------|---------------------|---------------------|----------------------|-------------------------------|-------------------------|---------------------------|-------------------------|--------------------------|----------------------|------------|-------------------|-------------|
| | | | | | B(±1%) E-24, E-96 | D(±0.5%) E-24, E-96 | F(±1%) E-24, E-96 | G(±2%) J(±5%) E-24 | J (±5%) | F (±1%) | J (±5%) | F (±1%) |
| CR25 (0201) | 1/20W | 25V | 50V | -200 +400 | - | 1≤R<10 | 1≤R<10 | 1≤R<10 | 0.5A | 0.5A | 50mΩ Max | 35mΩ Max |
| | | | | ±200 | 47~1M | 10~10M | 10~10M | | | | | |
| CR20 (0402) | 1/16W | 50V | 100V | ±100 | 100~1M | 10~1M | 10~22M | 10~22M | 1A | 1.5A | 50mΩ Max | 20mΩ Max |
| | | | | ±200 | - | - | 1≤R<10 | 1≤R<10 | | | | |
| CR16 (0603) | 1/10W | 75V | 150V | ±100 | 100~1M | 10~1M | 10~22M | 10~22M | 1A | 2A | 50mΩ Max | 20mΩ Max |
| | | | | ±200 | - | 1≤R<10 | 1≤R<10 | 1≤R<10 | | | | |
| CR10 (0805) | 1/8W | 150V | 300V | ±100 | 100~1M | 10~10M | 10~27M | 10~27M | 2A | 2.5A | 50mΩ Max | 20mΩ Max |
| | | | | ±200 | - | 1≤R<10 | 1≤R<10 | 1≤R<10 | | | | |
| CR08 (1206) | 1/4W | 200V | 400V | ±100 | 10~1M | 10~10M | 10~27M | 10~27M | 2A | 3.5A | 50mΩ Max | 20mΩ Max |
| | | | | ±200 | 3≤R<10 | 1≤R<10 | 1≤R<10 | 1≤R<10 | | | | |
| CR04 (1210) | 1/2W | 200V | 400V | ±100 | 100~1M | 10~10M | 10~27M | 10~27M | 2A | 4A | 50mΩ Max | 20mΩ Max |
| | | | | ±200 | - | - | 1≤R<10 | 1≤R<10 | | | | |
| CR03 (1812) | 3/4W | 200V | 400V | ±100 | 100~1M | 10~10M | 10~20M | 10~20M | 2A | 5A | 50mΩ Max | 20mΩ Max |
| | | | | ±200 | - | - | 1≤R<10 | 1≤R<10 | | | | |
| CR02 (2010) | 3/4W | 200V | 400V | ±100 | 100~1M | 10~10M | 10~20M | 10~20M | 2A | 5A | 50mΩ Max | 20mΩ Max |
| | | | | ±200 | - | - | 1≤R<10 | 1≤R<10 | | | | |
| CR01 (2512) | 1W | 200V | 400V | ±100 | 100~1M | 10~10M | 10~20M | 10~20M | 2A | 7A | 50mΩ Max | 20mΩ Max |
| | | | | ±200 | - | - | 1≤R<10 | 1≤R<10 | | | | |
| Operating Temperature | | | | -55~+155°C (0201: -55~+125°C) | | | | | | | | |

Thick Film Chip Resistor

CR Series

MERITEK

ELECTRICAL CHARACTERISTICS (CONTINUED)

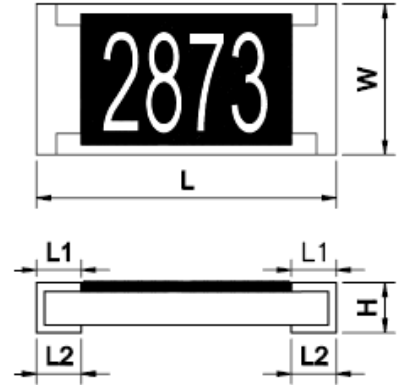
Resistance Range: <1Ω

| Type | Rated Power 70°C | Max Rated Current | Max Overload Current | T.C.R. (ppm/°C) | Resistance Range (mΩ) |
|-----------------------|---------------------|----------------------|-------------------------|-----------------|---------------------------|
| | | | | | F (±1%), G (±2%), J (±5%) |
| CR20 (0402) | 1/16W | 1.58A | 3.95A | ±1500 | 25~37 |
| | | | | ±1200 | 37~60 |
| | | | | ±600 | 60~200 |
| | | | | ±300 | 200~400 |
| | | | | ±250 | 400~600 |
| | | | | ±200 | 600~1000 |
| CR16 (0603) | 1/10W | 3.16A | 7.91A | ±1500 | 10~37 |
| | | | | ±1200 | 37~60 |
| | | | | ±600 | 60~100 |
| | | | | ±300 | 100~200 |
| | | | | ±600 | 200~500 |
| | | | | ±400 | 500~1000 |
| CR10 (0805) | 1/8W | 3.53A | 8.82A | ±1500 | 10~19 |
| | | | | ±1200 | 19~33 |
| | | | | ±800 | 33~50 |
| | | | | ±600 | 50~100 |
| | | | | ±200 | 100~1000 |
| CR08 (1206) | 1/3W | 5.77A | 14.42A | ±1500 | 10~19 |
| | | | | ±1200 | 19~25 |
| | | | | ±1000 | 25~50 |
| | | | | ±600 | 50~100 |
| | | | | ±200 | 100~1000 |
| CR04 (1210) | 1/2W | 7.07A | 17.67A | ±1500 | 10~19 |
| | | | | ±1000 | 19~25 |
| | | | | ±700 | 25~50 |
| | | | | ±400 | 50~100 |
| | | | | ±200 | 100~1000 |
| CR03 (1812) | 3/4W | 8.66A | 21.65A | ±1500 | 10~19 |
| | | | | ±1200 | 19~25 |
| | | | | ±900 | 25~50 |
| | | | | ±500 | 50~100 |
| | | | | ±200 | 100~1000 |
| CR02 (2010) | 3/4W | 8.66A | 21.65A | ±1500 | 10~19 |
| | | | | ±1200 | 19~25 |
| | | | | ±900 | 25~50 |
| | | | | ±500 | 50~100 |
| | | | | ±200 | 100~1000 |
| CR01 (2512) | 1W | 10A | 25A | ±1500 | 10~19 |
| | | | | ±1200 | 19~25 |
| | | | | ±900 | 25~50 |
| | | | | ±500 | 50~100 |
| | | | | ±200 | 100~1000 |
| Operating Temperature | | | | -55 ~ +155°C | |

DIMENSIONS

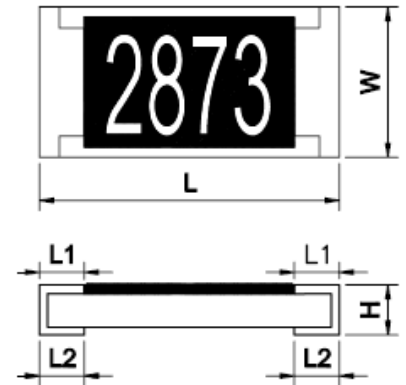
Resistance Range: $\geq 1\Omega$ & 0Ω

| Type | Size | Dimensions (mm) | | | | |
|------|------|-----------------|-----------|-----------|-----------|-----------|
| | | L | W | H | L1 | L2 |
| CR25 | 0201 | 0.60±0.03 | 0.30±0.03 | 0.23±0.03 | 0.10±0.05 | 0.15±0.05 |
| CR20 | 0402 | 1.00±0.10 | 0.50±0.05 | 0.30±0.05 | 0.20±0.10 | 0.25±0.10 |
| CR16 | 0603 | 1.60±0.10 | 0.80±0.10 | 0.45±0.10 | 0.30±0.15 | 0.30±0.15 |
| CR10 | 0805 | 2.00±0.10 | 1.25±0.10 | 0.50±0.10 | 0.35±0.20 | 0.35±0.15 |
| CR08 | 1206 | 3.05±0.10 | 1.55±0.10 | 0.50±0.10 | 0.45±0.20 | 0.35±0.15 |
| CR04 | 1210 | 3.05±0.10 | 2.55±0.10 | 0.55±0.10 | 0.50±0.20 | 0.50±0.20 |
| CR03 | 1812 | 4.40±0.20 | 3.15±0.20 | 0.47±0.20 | 0.60±0.20 | 0.60±0.20 |
| CR02 | 2010 | 5.00±0.20 | 2.50±0.20 | 0.55±0.10 | 0.60±0.20 | 0.60±0.20 |
| CR01 | 2512 | 6.30±0.20 | 3.20±0.20 | 0.55±0.10 | 0.60±0.20 | 0.60±0.20 |

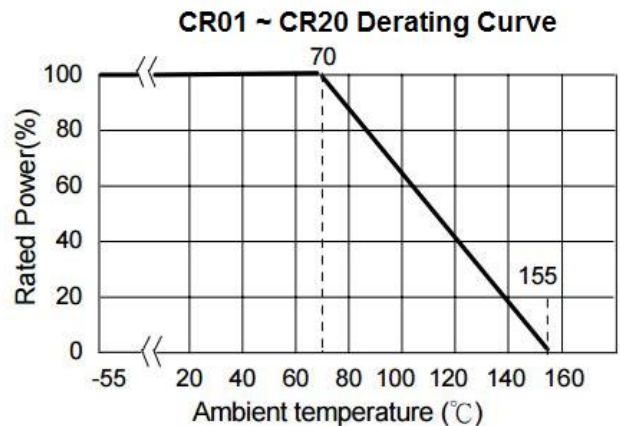
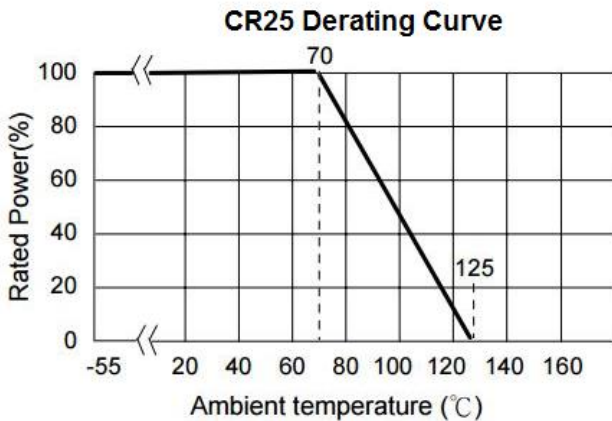


Resistance Range: $< 1\Omega$

| Type | Size | Dimensions (mm) | | | | |
|------|------|-----------------|-----------|-----------|-----------|-----------|
| | | L | W | H | L1 | L2 |
| CR20 | 0402 | 1.00±0.10 | 0.50±0.05 | 0.30±0.10 | 0.25±0.10 | 0.20±0.15 |
| CR16 | 0603 | 1.60±0.10 | 0.80±0.10 | 0.45±0.10 | 0.25±0.15 | 0.35±0.15 |
| CR10 | 0805 | 2.00±0.10 | 1.25±0.10 | 0.50±0.10 | 0.35±0.20 | 0.35±0.20 |
| CR08 | 1206 | 3.05±0.10 | 1.55±0.10 | 0.50±0.10 | 0.45±0.20 | 0.55±0.25 |
| CR04 | 1210 | 3.05±0.10 | 2.55±0.10 | 0.55±0.10 | 0.50±0.20 | 0.50±0.20 |
| CR03 | 1812 | 4.40±0.20 | 3.15±0.20 | 0.47±0.20 | 0.60±0.20 | 0.60±0.20 |
| CR02 | 2010 | 5.00±0.20 | 2.50±0.20 | 0.60±0.10 | 0.65±0.20 | 0.65±0.20 |
| CR01 | 2512 | 6.30±0.20 | 3.20±0.20 | 0.60±0.10 | 0.65±0.20 | 0.65±0.20 |



POWER DERATING CURVE



RELIABILITY TEST CONDITIONS AND REQUIREMENTS

| Item | Standard | Test Conditions | Requirements | | | | | | | | | | | | | | |
|--|---|---|--|------------|-------|---------------|---|-----------------|--|---------------------------|---|-------------------|---|------------------|--|---------------------|--|
| Temperature Coefficient of Resistance | JIS-C5201-1 4.8 | $T.C.R = \frac{(R2-R1)}{R1 (T2-T1)} \times 10^6,$ R1: Resistance at Room Temperature R2: Resistance at -55°C or +125°C T1: Room Temperature T2: -55°C or +125°C | As Specified | | | | | | | | | | | | | | |
| Short Time Overload | JIS-C5201-1 4.13 | Apply 2.5 times rated voltage for 5 seconds and release the load for about 30 minutes, then measure. Apply maximum overload current for jumpers. | Resistance $\geq 1\Omega$: 0.1%, 0.5%, 1%: $\pm(1.0\%+0.05\Omega)$ 2%, 5%: $\pm(2.0\%+0.10\Omega)$ Resistance $< 1\Omega$: 1%, 2%, 5%: $\pm(2.0\%+0.001\Omega)$ Jumper: As Specified No evidence of mechanical damage No short or burned appearance | | | | | | | | | | | | | | |
| Insulation Resistance | JIS-C5201-1 4.6 | Put the resistor in the fixture and apply 100VDC for 1 min. Then measure the insulation resistance between electrodes and insulating enclosure or between electrodes and base material. | $\geq 10^9\Omega$ | | | | | | | | | | | | | | |
| Dielectric Withstand Voltage | JIS-C5201-1 4.7 | Put the resistor in the fixture and apply: CR01,02,03,04,08,10 : 500VAC for 1 minute CR16,20,25 : 300VAC for 1 minute | No short or burned appearance | | | | | | | | | | | | | | |
| Intermittent Overload | JIS-C5201-1 4.13 | Put the tested resistor into test chamber of $25\pm 2^\circ\text{C}$ and load 2.5 times rated voltage for 1 sec. on, 25 sec. off. Test for 10,000 ~ 10,400 cycles. Leave the resistor at no load for 1 hr before measuring. Apply max overload current for jumper. | Resistance $\geq 1\Omega$: $\pm(5.0\%+0.10\Omega)$ Resistance $< 1\Omega$: $\pm(5.0\%+0.001\Omega)$ Jumper: As Specified No evidence of mechanical damage No short or burned appearance | | | | | | | | | | | | | | |
| Noise Level | JIS-C5201-1 4.12 | Refer to JIS-C5201-1 4.12 | <table border="1"> <thead> <tr> <th>Resistance</th> <th>Noise</th> </tr> </thead> <tbody> <tr> <td>$< 100\Omega$</td> <td>$\leq -10\text{db}$ (0.32 $\mu\text{V/V}$)</td> </tr> <tr> <td>100~1KΩ</td> <td>$\leq 0\text{db}$ (1.0 $\mu\text{V/V}$)</td> </tr> <tr> <td>1KΩ~10KΩ</td> <td>$\leq 10\text{db}$ (3.2 $\mu\text{V/V}$)</td> </tr> <tr> <td>10K~100KΩ</td> <td>$\leq 15\text{db}$ (5.6 $\mu\text{V/V}$)</td> </tr> <tr> <td>100K~1MΩ</td> <td>$\leq 20\text{db}$ (10 $\mu\text{V/V}$)</td> </tr> <tr> <td>$> 1\text{M}\Omega$</td> <td>$\leq 30\text{db}$ (32 $\mu\text{V/V}$)</td> </tr> </tbody> </table> | Resistance | Noise | $< 100\Omega$ | $\leq -10\text{db}$ (0.32 $\mu\text{V/V}$) | 100~1K Ω | $\leq 0\text{db}$ (1.0 $\mu\text{V/V}$) | 1K Ω ~10K Ω | $\leq 10\text{db}$ (3.2 $\mu\text{V/V}$) | 10K~100K Ω | $\leq 15\text{db}$ (5.6 $\mu\text{V/V}$) | 100K~1M Ω | $\leq 20\text{db}$ (10 $\mu\text{V/V}$) | $> 1\text{M}\Omega$ | $\leq 30\text{db}$ (32 $\mu\text{V/V}$) |
| Resistance | Noise | | | | | | | | | | | | | | | | |
| $< 100\Omega$ | $\leq -10\text{db}$ (0.32 $\mu\text{V/V}$) | | | | | | | | | | | | | | | | |
| 100~1K Ω | $\leq 0\text{db}$ (1.0 $\mu\text{V/V}$) | | | | | | | | | | | | | | | | |
| 1K Ω ~10K Ω | $\leq 10\text{db}$ (3.2 $\mu\text{V/V}$) | | | | | | | | | | | | | | | | |
| 10K~100K Ω | $\leq 15\text{db}$ (5.6 $\mu\text{V/V}$) | | | | | | | | | | | | | | | | |
| 100K~1M Ω | $\leq 20\text{db}$ (10 $\mu\text{V/V}$) | | | | | | | | | | | | | | | | |
| $> 1\text{M}\Omega$ | $\leq 30\text{db}$ (32 $\mu\text{V/V}$) | | | | | | | | | | | | | | | | |
| Core Body Strength | JIS-C5201-1 4.15 | Apply R0.5 test probe at its central part then pushing 10N force on the sample for 10 sec. CR16,20: Probe R0.2 | Resistance $\geq 1\Omega$: $\pm(1.0\%+0.05\Omega)$ Resistance $< 1\Omega$: $\pm(1.0\%+0.001\Omega)$ No evidence of mechanical damage No short or burned appearance | | | | | | | | | | | | | | |
| Terminal Strength | JIS-C5201-1 4.16 | <u>Test 1:</u> Mount the resistor on the board and apply 5N pushing force on the sample. Read for 10 sec. (CR25: 3N) <u>Test2:</u> Mount the resistor on the board and slowly add force onto the terminal until it breaks. | <u>Test 1:</u> No evidence of mechanical damage <u>Test 2:</u> CR25 $\geq 3\text{N}$ Other type $\geq 5\text{N}$ | | | | | | | | | | | | | | |
| Resistance to Solvent | JIS-C5201-1 4.29 | Immerse the resistor into isopropyl alcohol of 20~25 °C for 5 min. Leave the resistor at room temperature for 48 hrs before measuring. | Resistance $\geq 1\Omega$: CR25: $\pm(1.0\%+0.05\Omega)$ Others: $\pm(0.5\%+0.05\Omega)$ Resistance $< 1\Omega$: $\pm(1.0\%+0.001\Omega)$ No evidence of mechanical damage No G2 overcoating and Sn layer | | | | | | | | | | | | | | |
| Solderability | JIS-C5201-1 4.17 | <u>Preconditioning:</u> Place the resistor in the PCT apparatus at 105°C, 100% RH, and 1.22x10 ⁵ Pa for 4 hrs. Leave the resistor at room temperature for 48 hrs before test <u>Test Method:</u> Immerse the resistor into a solder pot at 235 \pm 5°C for 2 sec. Leave the resistor under a microscope to observe its solder area. | 95% coverage minimum | | | | | | | | | | | | | | |

RELIABILITY TEST CONDITIONS AND REQUIREMENTS (CONTINUED)

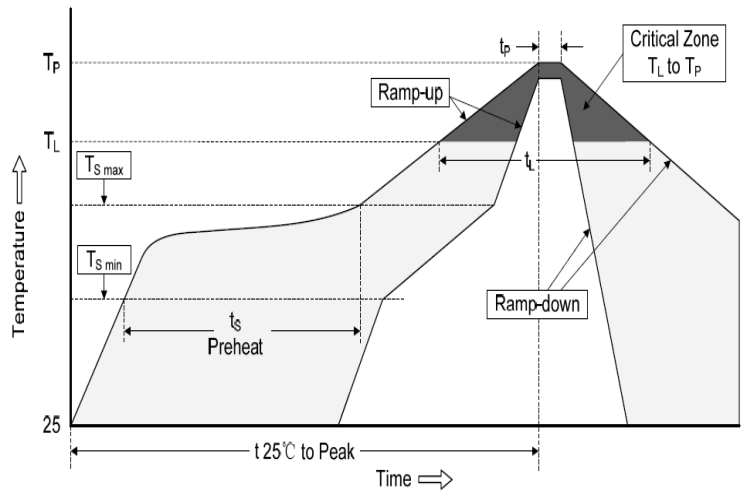
| Item | Standard | Test Conditions | Requirements | | | | | | | | |
|-------------------------------------|--------------------------------------|--|--|--|--------------------|---------|---------------------|---------|--------------------|-----------------|--|
| Resistance to Soldering Heat | JIS-C5201-1 4.18 | <p><u>Test method 1:</u> Immerse the resistor in molten solder of 260~265°C for 10 sec. Then leave the resistor at room temperature for 1 hr.</p> <p><u>Test method 2:</u> Immerse the resistor in molten solder of 260~265°C for 30 sec. Leave the resistor under a microscope to observe its solder area.</p> <p><u>Test method 3:</u> Preheating temperature: 350±10°C Electric iron preheating time: 3~4 sec Place the preheated iron on the electrode termination for 60 mins. and measure.</p> | <p><u>Test item 1 and 3:</u> Resistance ≥1Ω: ±(1.0%+0.05Ω) Resistance <1Ω: ±(1.0%+0.001Ω) No evidence of electrode damage No side conductive peeling off.</p> <p><u>Test item 2:</u> Solder coverage over 95% The underlying material shall not be visible at the crest corner area of electrode.</p> | | | | | | | | |
| Joint Strength of Solder | JIS-C5201-1 4.32 JIS-C5201-1 4.33 | <p><u>Preconditioning:</u> Same as Solderability Preconditioning</p> <p><u>Test item 1:</u> Apply a static load using a R0.5 (CR25: R0.1) scratch tool to the core of the component in the direction of the arrow for 10 seconds. Measure under load: CR25: 5N, CR20: 10N, Others: 20N</p> <p><u>Test item 2:</u> Solder the resistor onto PC board and apply downward force, measure under load Amplitude: CR20,16,10: 5mm, CR25,08,04: 3mm, CR03,02,01: 2mm</p> | <p><u>Test item 1 and 2:</u> Resistance ≥1Ω: ±(1.0%+0.05Ω) Resistance <1Ω: ±(1.0%+0.001Ω) No evidence of mechanical damage No terminal peeling off.</p> | | | | | | | | |
| Vibration | JIS-C5201-1 4.22 | Mount the resistor by its leads to the supporting terminals on the solid table. Apply frequency 10Hz ~ 55Hz and return to 10Hz in a period of 1 min. at an amplitude of 1.5mm. Apply this motion for 2 hrs in each mutually perpendicular directions (total 6 hrs) | <p>Resistance ≥1Ω: 0.1%, 0.5%, 1%: ±(0.5%+0.05Ω) 2%, 5%: ±(1.0%+0.05Ω) Resistance <1Ω: 1%, 2%, 5%: ±(1.0%+0.001Ω) No evidence of mechanical damage</p> | | | | | | | | |
| Resistance to Dry Heat | JIS-C5201-1 4.25 | Put tested resistor into the test chamber of 155±5°C for 1000~1048 hrs. Leave the resistor at room temperature for 1 hour before measuring. (CR25: 125±3°C) | <p>Resistance ≥1Ω: 0.1%, 0.5%, 1%: ±(1.0%+0.05Ω) 2%, 5%: ±(2.0%+0.10Ω) Resistance <1Ω: 1%, 2%, 5%: ±(1.0%+0.001Ω) No evidence of mechanical damage No short or burned appearance</p> | | | | | | | | |
| Thermal Shock | MIL-STD 202 Method 107 | Put tested resistor into the test chamber used in Thermal Shock which is shown in the following table. Cycle 300 times consecutively. Leave the resistor at room temperature for 1 hr before measuring. | <p>Resistance ≥1Ω: 0.1%, 0.5%, 1%: ±(0.5%+0.05Ω) 2%, 5%: ±(1.0%+0.05Ω) Resistance <1Ω: 1%, 2%, 5%: ±(1.0%+0.001Ω) No evidence of mechanical damage No short or burned appearance</p> | | | | | | | | |
| | | <table border="1"> <thead> <tr> <th colspan="2">Testing Condition</th> </tr> </thead> <tbody> <tr> <td>Lowest Temperature</td> <td>-55±5°C</td> </tr> <tr> <td>Highest Temperature</td> <td>125±5°C</td> </tr> <tr> <td>Time at each Temp.</td> <td>15 minutes each</td> </tr> </tbody> </table> | Testing Condition | | Lowest Temperature | -55±5°C | Highest Temperature | 125±5°C | Time at each Temp. | 15 minutes each | |
| Testing Condition | | | | | | | | | | | |
| Lowest Temperature | -55±5°C | | | | | | | | | | |
| Highest Temperature | 125±5°C | | | | | | | | | | |
| Time at each Temp. | 15 minutes each | | | | | | | | | | |
| Load Life in Moisture | JIS-C5201-1 4.24 | Put the tested resistor into the test chamber of 40±2°C, 90~95% RH, and load the rated voltage for 90 mins "ON", 30 min "OFF", total 1000 hrs. Leave the resistor at room temperature for 1 hr before measuring. | <p>Resistance ≥1Ω: CR25: 1% ± (1.0%+0.05Ω) 5% ± (3.0%+0.1Ω) Others: 0.1%, 0.5%, 1%: ±(0.5%+0.05Ω) 2%, 5%: ±(2.0%+0.10Ω) Resistance <1Ω: 1%, 2%, 5%: ±(1.0%+0.001Ω) No evidence of mechanical damage No short or burned appearance</p> | | | | | | | | |
| Load Life | JIS-C5201-1 4.25 | Put the tested resistor into the test chamber of 70±2°C, and load the rated voltage for 90 mins "ON", 30 min "OFF", total 1000 hrs. Leave the resistor at room temperature for 1 hr before measuring. | <p>Resistance ≥1Ω: CR25: 1% ± (1.0%+0.05Ω) 5% ± (3.0%+0.1Ω) Others: 0.1%, 0.5%, 1%: ±(0.5%+0.05Ω) 2%, 5%: ±(2.0%+0.10Ω) Resistance <1Ω: 1%, 2%, 5%: ±(1.0%+0.001Ω) No evidence of mechanical damage No short or burned appearance</p> | | | | | | | | |

RELIABILITY TEST CONDITIONS AND REQUIREMENTS (CONTINUED)

| Item | Standard | Test Conditions | Requirements |
|---------------------------|---------------------------------|--|---|
| Low Temperature Operation | MIL-R-55342D 4.7.4 | Put tested resistor into the test chamber at room temperature. Decrease the temperature to -55°C and maintain this temperature for 1 hr. Load the rated voltage for 45 min "ON", and 15 min "OFF." Then leave the tested resistor at room temperature for 8±1 hrs., and measure. | Resistance ≥1Ω: 0.1%, 0.5%, 1%: ±(0.5%+0.05Ω) 2%, 5%: ±(1.0%+0.05Ω) Resistance <1Ω: 1%, 2%, 5%: ±(1.0%+0.001Ω) No evidence of mechanical damage No short or burned appearance |
| Whisker Test | JESD Standard NO.22A121 class 2 | Thermal Shock Test 1500 cycles. Inspect for whisker formation. | Max 50µm |

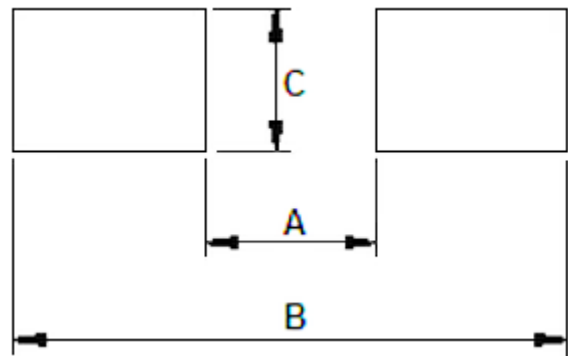
RECOMMENDED SOLDERING PROFILES

| Reflow Condition | | |
|--|-------------------------------|-----------------|
| Pre Heat | Temp. Min $T_{s(min)}$ | 150°C |
| | Temp. Max $T_{s(max)}$ | 180°C |
| | Time (min. to max.) (t_s) | 60~120 seconds |
| Average ramp up rate (T_L) to peak | | 3°C/second max. |
| $T_{s(max)}$ to T_L (Ramp-up rate) | | 3°C/second max. |
| Reflow | Temp. (T_L) | 230°C |
| | Time (min. to max.) (t_L) | 40 seconds max. |
| Peak Temperature (T_p) | | 260~265°C |
| Time within 5°C of actual peak Temperature (t_p) | | 10 seconds max. |
| Ramp-down Rate | | 6°C/second |

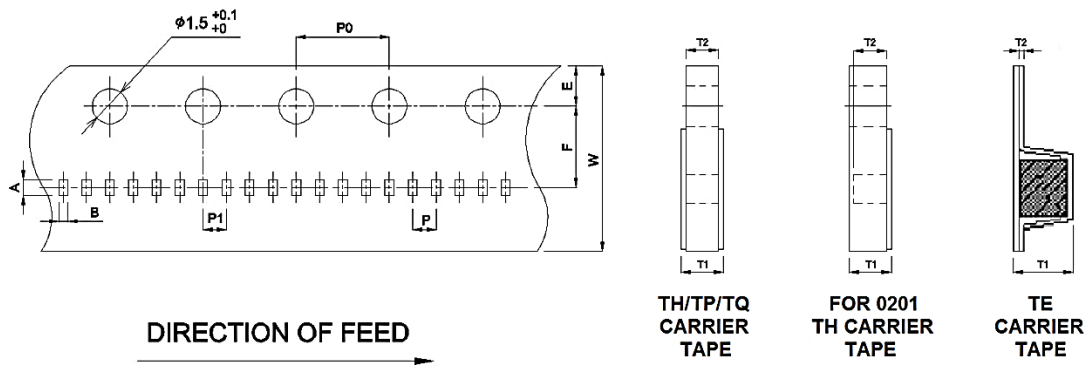


RECOMMENDED LAND PATTERN

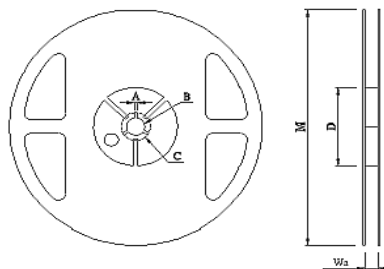
| Type | Dimensions (mm) | | |
|------|-----------------|-----|-----|
| | A | B | C |
| CR25 | 0.3 | 1.0 | 0.4 |
| CR20 | 0.5 | 1.5 | 0.6 |
| CR16 | 0.8 | 2.1 | 0.9 |
| CR10 | 1.2 | 3.0 | 1.3 |
| CR08 | 2.2 | 4.2 | 1.6 |
| CR04 | 2.2 | 4.2 | 2.8 |
| CR03 | 3.1 | 5.9 | 3.0 |
| CR02 | 3.5 | 6.1 | 2.8 |
| CR01 | 3.8 | 8.0 | 3.5 |



TAPE AND REEL DIMENSIONS



| Tape Dimensions (mm) | | | | | | | | | | | | |
|----------------------|----------|---------------|---------------|----------------|---------------|---------------|-----------------|---------------|---------------|---------------|----------------|---------------|
| Type | Tape | A | B | W | E | F | T1 | T2 | P | P0 | 10 X P0 | P1 |
| CR25 | TQ Paper | 0.68 ±0.05 | 0.38 ±0.03 | 8.00 ±0.10 | 1.75 ±0.10 | 3.50 ±0.05 | 0.42 +0.1/-0 | 0.28 ±0.02 | 1.00 ±0.05 | 4.00 ±0.05 | 40.00 ±0.20 | 1.00 ±0.05 |
| CR25 | TQ PE | 0.68 ±0.03 | 0.38 ±0.03 | 8.00 ±0.10 | 1.75 ±0.10 | 3.50 ±0.05 | 0.38 ±0.05 | 0.30 ±0.02 | 1.00 ±0.05 | 4.00 ±0.05 | 40.00 ±0.20 | 1.00 ±0.05 |
| CR25 | TH Paper | 0.68 ±0.05 | 0.38 ±0.03 | 8.00 ±0.10 | 1.75 ±0.10 | 3.50 ±0.05 | 0.42 +0.1/-0 | 0.28 ±0.02 | 2.00 ±0.05 | 4.00 ±0.05 | 40.00 ±0.20 | 2.00 ±0.05 |
| CR25 | TH PE | 0.68 ±0.03 | 0.38 ±0.03 | 8.00 ±0.10 | 1.75 ±0.10 | 3.50 ±0.05 | 0.38 ±0.05 | 0.30 ±0.02 | 2.00 ±0.05 | 4.00 ±0.05 | 40.00 ±0.20 | 2.00 ±0.05 |
| CR20 | TH | 1.15 ±0.05 | 0.65 ±0.05 | 8.00 ±0.20 | 1.75 ±0.10 | 3.50 ±0.05 | 0.40 +0.2/-0 | 0.40 ±0.05 | 2.00 ±0.10 | 4.00 ±0.05 | 40.00 ±0.20 | 2.00 ±0.05 |
| CR16 | TH | 1.80 ±0.10 | 1.00 ±0.10 | 8.00 ±0.20 | 1.75 ±0.10 | 3.50 ±0.05 | 0.60 +0.2/-0 | 0.60 ±0.10 | 2.00 ±0.10 | 4.00 ±0.05 | 40.00 ±0.20 | 2.00 ±0.05 |
| CR16 | TP | 1.80 ±0.10 | 1.00 ±0.10 | 8.00 ±0.20 | 1.75 ±0.10 | 3.50 ±0.05 | 0.60 +0.2/-0 | 0.60 ±0.10 | 4.00 ±0.10 | 4.00 ±0.05 | 40.00 ±0.20 | 2.00 ±0.05 |
| CR10 | TP | 2.30 ±0.10 | 1.55 ±0.10 | 8.00 ±0.20 | 1.75 ±0.10 | 3.50 ±0.05 | 0.75 +0.2/-0 | 0.75 ±0.10 | 4.00 ±0.10 | 4.00 ±0.05 | 40.00 ±0.20 | 2.00 ±0.05 |
| CR08 | TP | 3.50 ±0.20 | 1.90 ±0.20 | 8.00 ±0.20 | 1.75 ±0.10 | 3.50 ±0.05 | 0.75 +0.2/-0 | 0.75 ±0.10 | 4.00 ±0.10 | 4.00 ±0.05 | 40.00 ±0.20 | 2.00 ±0.05 |
| CR04 | TP | 3.50 ±0.20 | 2.80 ±0.20 | 8.00 ±0.20 | 1.75 ±0.10 | 3.50 ±0.05 | 0.75 +0.2/-0 | 0.75 ±0.10 | 4.00 ±0.10 | 4.00 ±0.05 | 40.00 ±0.20 | 2.00 ±0.05 |
| CR03 | TE | 4.90 ±0.10 | 3.40 ±0.10 | 12.00 ±0.20 | 1.75 ±0.10 | 5.50 ±0.05 | 0.75 ±0.10 | 0.23 ±0.02 | 4.00 ±0.10 | 4.00 ±0.10 | 40.00 ±0.20 | 2.00 ±0.05 |
| CR02 | TE | 5.50 ±0.20 | 2.80 ±0.20 | 12.20 ±0.20 | 1.75 ±0.10 | 5.50 ±0.05 | 1.10 ±0.15 | 0.23 ±0.15 | 4.00 ±0.10 | 4.00 ±0.05 | 40.00 ±0.20 | 2.00 ±0.05 |
| CR01 | TE | 6.70 ±0.20 | 3.40 ±0.20 | 12.00 ±0.20 | 1.75 ±0.10 | 5.50 ±0.05 | 1.10 ±0.15 | 0.23 ±0.15 | 4.00 ±0.10 | 4.00 ±0.05 | 40.00 ±0.20 | 2.00 ±0.05 |



| Reel Dimensions (mm) | | | | | | |
|------------------------|------------|-----------|-----------|------------|------------|------------|
| Reel Type/ Tape | Wa | M | A | B | C | D |
| 7" reel for 8 mm tape | 9.0 ± 0.5 | 178 ± 2.0 | 2.0 ± 0.5 | 13.5 ± 0.5 | 21.0 ± 0.5 | 60.0 ± 1.0 |
| 7" reel for 12 mm tape | 13.8 ± 0.5 | 178 ± 2.0 | | | | 80.0 ± 1.0 |
| 10" reel for 8 mm tape | 10.0 ± 0.5 | 254 ± 2.0 | | | | 100 ± 1.0 |
| 13" reel for 8 mm tape | 10.0 ± 0.5 | 330 ± 2.0 | | | | 100 ± 1.0 |

Thick Film Chip Resistor

CR Series

MERITEK

PACKAGING

| Type | Tape Width (mm) | Packaging Quantity (pcs / reel) | | | | | | | | | | | | | | |
|-------------------|-----------------|---------------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|----|
| | | TQ | | TH | | | | | | | | TP | | | | TE |
| | | Q1 | QE | TH | H0 | H1 | H2 | H3 | H4 | H5 | H6 | TP | P2 | P3 | P4 | TE |
| CR25 | 8 | 20K | 150K | 10K | 15K | 20K | 20K | 30K | 40K | 50K | 60K | - | - | - | - | - |
| CR20 | 8 | - | - | 10K | - | 20K | 20K | 30K | 40K | 50K | 60K | - | - | - | - | - |
| CR16 | 8 | - | - | - | - | - | - | - | 40K | - | - | 5K | 10K | 15K | 20K | - |
| CR10 | 8 | - | - | - | - | - | - | - | - | - | - | 5K | 10K | 15K | 20K | - |
| CR08 | 8 | - | - | - | - | - | - | - | - | - | - | 5K | 10K | 15K | 20K | - |
| CR04 | 8 | - | - | - | - | - | - | - | - | - | - | 5K | 10K | 15K | 20K | - |
| CR03 | 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 4K |
| CR02 | 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 4K |
| CR01 | 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 4K |
| Reel Type | | 7" | 13" | 7" | 7" | 7" | 10" | 10" | 13" | 13" | 13" | 7" | 10" | 13" | 13" | 7" |
| Pitch (mm) | | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 4 | 4 |



Meritek Resistors Series: <http://www.meritekusa.com/EN/productlist/node/2>

Meritek Product Series: <http://www.meritekusa.com/EN/products>

*Specifications subject to change without notice.

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