

# General Purpose Thick Film Resistors (CR Series)



## Features:

- RoHS Compliant (9/10) and Halogen Free
- TCR as low as  $\pm 100\text{ppm}$
- Available Sizes 01005 to 2512
- Stable over temperature range
- Good power dissipation capabilities (Rated power is conservatively rated)
- 100% matte Tin over Nickel with wrap around termination for excellent solderability
- Some values available for conductive epoxy application (suitable for MRI applications)

## Part Number Structure

| CR Series | 1206 Size | 8W Power Rating | 103 Resistance       | J Tolerance                             | Termination                             | T Packaging     | Optional Reel Identifier           |
|-----------|-----------|-----------------|----------------------|-----------------------------------------|-----------------------------------------|-----------------|------------------------------------|
| 01005     | 0201      | 32W = 0.031W    | 3 DIGIT (J TOL.)     | D = $\pm 0.5\%$                         | Leave blank for standard termination.   | T = Tape & Reel | Leave blank if standard Reel size. |
| 0603      | 0805      | 20W = 0.05W     | 4 DIGIT (D & F TOL.) | F = $\pm 1\%$                           | P = Palladium Silver Termination (PdAg) |                 | Add "-13" if 13" Reel is required  |
| 1206      | 1210      | 10W = 0.10W     | Jumper               | J = $\pm 5\%$                           |                                         |                 |                                    |
| 2010      | 2512      | 8W = 0.125W     |                      | No tolerance specified for the zero ohm |                                         |                 |                                    |
|           |           | 4W = 0.25W      |                      | Leave blank for zero ohm value          |                                         |                 |                                    |
|           |           | 2W = 0.50W      |                      |                                         |                                         |                 |                                    |
|           |           | 1W = 1W         |                      |                                         |                                         |                 |                                    |
|           |           | 2W = 2W         |                      |                                         |                                         |                 |                                    |

Note: 1% E24 values may be marked with a 3 digit code.

Example P/N: CR1206-8W-103JT

Standard termination finish is 100% matte Tin (Sn) over Nickel.

## Dimensions

| Unit: inches (mm) |                                        |                                        |                                         |                                        |                                        |
|-------------------|----------------------------------------|----------------------------------------|-----------------------------------------|----------------------------------------|----------------------------------------|
| Size              | L                                      | W                                      | T                                       | C <sub>1</sub>                         | C <sub>2</sub>                         |
| 01005             | 0.016 $\pm$ 0.0008<br>(0.4 $\pm$ 0.02) | 0.008 $\pm$ 0.0008<br>(0.2 $\pm$ 0.02) | 0.005 $\pm$ 0.0008<br>(0.13 $\pm$ 0.02) | 0.003 $\pm$ 0.001<br>(0.08 $\pm$ 0.03) | 0.003 $\pm$ 0.001<br>(0.08 $\pm$ 0.03) |
| 0201              | 0.024 $\pm$ 0.002<br>(0.6 $\pm$ 0.05)  | 0.012 $\pm$ 0.001<br>(0.3 $\pm$ 0.02)  | 0.010 $\pm$ 0.002<br>(0.25 $\pm$ 0.05)  | 0.020 $\pm$ 0.008<br>(0.50 $\pm$ 0.20) | 0.006 $\pm$ 0.002<br>(0.15 $\pm$ 0.05) |
| 0402              | 0.040 $\pm$ 0.002<br>(1.0 $\pm$ 0.05)  | 0.020 $\pm$ 0.001<br>(0.5 $\pm$ 0.02)  | 0.014 $\pm$ 0.002<br>(0.35 $\pm$ .05)   | 0.008 $\pm$ 0.004<br>(0.2 $\pm$ 0.1)   | 0.008 $\pm$ 0.004<br>(0.2 $\pm$ 0.1)   |
| 0603              | 0.063 $\pm$ 0.004<br>(1.6 $\pm$ 0.1)   | 0.031 $\pm$ 0.004<br>(0.8 $\pm$ 0.1)   | 0.018 $\pm$ 0.004<br>(0.45 $\pm$ 0.1)   | 0.012 $\pm$ 0.006<br>(0.30 $\pm$ 0.15) | 0.012 $\pm$ 0.006<br>(0.30 $\pm$ 0.15) |
| 0805              | 0.079 $\pm$ 0.006<br>(2.0 $\pm$ 0.15)  | 0.050 $\pm$ 0.006<br>(1.25 $\pm$ 0.15) | 0.018 $\pm$ 0.006<br>(0.45 $\pm$ 0.15)  | 0.014 $\pm$ 0.006<br>(0.35 $\pm$ 0.15) | 0.014 $\pm$ 0.006<br>(0.35 $\pm$ 0.15) |
| 1206              | 0.126 $\pm$ 0.006<br>(3.2 $\pm$ 0.15)  | 0.063 $\pm$ 0.006<br>(1.6 $\pm$ 0.15)  | 0.022 $\pm$ 0.006<br>(0.56 $\pm$ 0.15)  | 0.020 $\pm$ 0.008<br>(0.50 $\pm$ 0.20) | 0.020 $\pm$ 0.008<br>(0.50 $\pm$ 0.20) |
| 1210              | 0.126 $\pm$ 0.006<br>(3.2 $\pm$ 0.15)  | 0.098 $\pm$ 0.006<br>(2.50 $\pm$ 0.15) | 0.022 $\pm$ 0.006<br>(0.56 $\pm$ 0.15)  | 0.020 $\pm$ 0.008<br>(0.50 $\pm$ 0.20) | 0.020 $\pm$ 0.008<br>(0.50 $\pm$ 0.20) |
| 2010              | 0.197 $\pm$ 0.006<br>(5.0 $\pm$ 0.15)  | 0.098 $\pm$ 0.006<br>(2.50 $\pm$ 0.15) | 0.022 $\pm$ 0.006<br>(0.56 $\pm$ 0.15)  | 0.026 $\pm$ 0.008<br>(0.65 $\pm$ 0.25) | 0.024 $\pm$ 0.008<br>(0.60 $\pm$ 0.20) |
| 2512 (1W)         | 0.248 $\pm$ 0.006<br>(6.3 $\pm$ 0.15)  | 0.126 $\pm$ 0.006<br>(3.2 $\pm$ 0.15)  | 0.022 $\pm$ 0.006<br>(0.56 $\pm$ 0.15)  | 0.026 $\pm$ 0.008<br>(0.65 $\pm$ 0.25) | 0.024 $\pm$ 0.008<br>(0.60 $\pm$ 0.20) |
| 2512 (2W)         | 0.248 $\pm$ 0.006<br>(6.3 $\pm$ 0.15)  | 0.126 $\pm$ 0.006<br>(3.2 $\pm$ 0.15)  | 0.024 $\pm$ 0.008<br>(0.60 $\pm$ 0.20)  | 0.024 $\pm$ 0.008<br>(0.60 $\pm$ 0.20) | 0.020 $\pm$ 0.008<br>(0.50 $\pm$ 0.20) |

## Structure

|   |                    |    |                 |
|---|--------------------|----|-----------------|
|   |                    |    |                 |
| 1 | Alumina Substrate  | 6  | Tin Plating     |
| 2 | Backside Electrode | 7  | Primary Coating |
| 3 | Topside Electrode  | 8  | Secondary Layer |
| 4 | Edge Electrode     | 9  | Resistive layer |
| 5 | Nickel Plating     | 10 | Marking         |

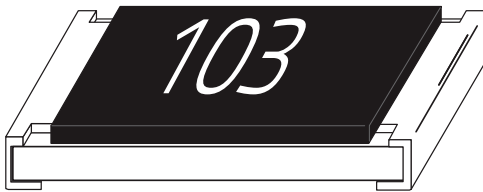
# General Purpose Thick Film Resistors (CR Series)

## Electrical Specifications and Range

|                   | Size                     | 01005                                   | 0201                                    | 0402                                    |                                         | 0603                                    |                                         | 0805                                     |                                          | 1206                                     |                                          | 1210                                     |                                          | 2010                                     |                                          | 2512                                     |                                          |
|-------------------|--------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|
|                   | Power Rating at 70°C (W) | 0.03W<br>(1/32W)                        | 0.05W<br>(1/20W)                        | 0.063W<br>(1/16W)                       | 0.10W<br>(1/10W)                        | 0.063W<br>(1/16W)                       | 0.10W<br>(1/10W)                        | 0.10W<br>(1/10W)                         | 0.125W<br>(1/8W)                         | 0.125W<br>(1/8W)                         | 0.25W<br>(1/4W)                          | 0.50W<br>(1/2W)                          | 0.50W<br>(1/2W)                          | 1.0W                                     | 1.0W                                     | 1.0W                                     | 2.0W                                     |
|                   | Max. Working Voltage     | $\sqrt{PR}$ or 15V<br>whichever is less | $\sqrt{PR}$ or 25V<br>whichever is less | $\sqrt{PR}$ or 50V<br>whichever is less | $\sqrt{PR}$ or 75V<br>whichever is less | $\sqrt{PR}$ or 75V<br>whichever is less | $\sqrt{PR}$ or 75V<br>whichever is less | $\sqrt{PR}$ or 150V<br>whichever is less | $\sqrt{PR}$ or 150V<br>whichever is less | $\sqrt{PR}$ or 200V<br>whichever is less | $\sqrt{PR}$ or 200V<br>whichever is less | $\sqrt{PR}$ or 200V<br>whichever is less | $\sqrt{PR}$ or 200V<br>whichever is less | $\sqrt{PR}$ or 200V<br>whichever is less | $\sqrt{PR}$ or 200V<br>whichever is less | $\sqrt{PR}$ or 200V<br>whichever is less | $\sqrt{PR}$ or 200V<br>whichever is less |
|                   | *Max. Overload Voltage   | 30V                                     | 50V                                     | 100V                                    | 150V                                    | 150V                                    | 150V                                    | 300V                                     | 400V                                     | 400V                                     | 400V                                     | 400V                                     | 400V                                     | 400V                                     | 400V                                     | 500V                                     | 500V                                     |
|                   | Operating Temp. Range    | -55°C<br>to +125°C                      | -55°C<br>to +125°C                      | -55°C<br>to +155°C                      | -55°C<br>to +155°C                      | -55°C<br>to +155°C                      | -55°C<br>to +155°C                      | -55°C<br>to +155°C                       | -55°C<br>to +155°C                       | -55°C<br>to +155°C                       | -55°C<br>to +155°C                       | -55°C<br>to +155°C                       | -55°C<br>to +155°C                       | -55°C<br>to +155°C                       | -55°C<br>to +155°C                       | -55°C<br>to +155°C                       | -55°C<br>to +155°C                       |
| Zero Ohm (Jumper) | Current Rating           | 0.5A                                    | 0.5A                                    | 1A                                      | 1A                                      | 1A                                      | 1A                                      | 2A                                       | 2A                                       | 2A                                       | 2A                                       | 2.5A                                     | 2.5A                                     | 3.5A                                     | 3.5A                                     | 4A                                       | 4A                                       |
| Zero Ohm (Jumper) | Resistance               | 50 mΩ<br>(max)                          | 50 mΩ<br>(max)                          | 50 mΩ (max)                             | 50 mΩ (max)                             | 50 mΩ (max)                             | 50 mΩ (max)                             | 50 mΩ (max)                              | 50 mΩ (max)                              | 50 mΩ (max)                              | 50 mΩ (max)                              | 50 mΩ (max)                              | 50 mΩ (max)                              | 50 mΩ (max)                              | 50 mΩ (max)                              | 50 mΩ (max)                              | 50 mΩ (max)                              |
| Tolerance         | TCR                      | Resistance Range                        | Resistance Range                        | Resistance Range                        | Resistance Range                        | Resistance Range                        | Resistance Range                        | Resistance Range                         | Resistance Range                         | Resistance Range                         | Resistance Range                         | Resistance Range                         | Resistance Range                         | Resistance Range                         | Resistance Range                         | Resistance Range                         | Resistance Range                         |
| ±0.5% (D)         | ±100ppm                  | -                                       | -                                       | 10Ω - 1MΩ                               | -                                       | 10Ω - 1MΩ                               | 10Ω - 1MΩ                               | 10Ω - 1MΩ                                | 10Ω - 1MΩ                                | 10Ω - 1MΩ                                | -                                        | -                                        | -                                        | -                                        | -                                        | -                                        | -                                        |
|                   | ±200ppm                  | -                                       | -                                       | 1.02MΩ - 10MΩ                           | -                                       | 1.02MΩ - 10MΩ                           | 1.02MΩ - 10MΩ                           | 1.02MΩ - 10MΩ                            | 1.02MΩ - 10MΩ                            | 1.02MΩ - 10MΩ                            | -                                        | -                                        | -                                        | -                                        | -                                        | -                                        | -                                        |
| ±1% (F)           | ±100ppm                  | -                                       | -                                       | 10Ω - 10MΩ                              | 10Ω - 1MΩ                               | 10Ω - 10MΩ                              | 10Ω - 10MΩ                              | 10Ω - 10MΩ                               | 10Ω - 10MΩ                               | 10Ω - 10MΩ                               | 10Ω - 1MΩ                                | 10Ω - 1MΩ                                | 10Ω - 1MΩ                                | 10Ω - 1MΩ                                | 10Ω - 1MΩ                                | 10Ω - 1MΩ                                | 10Ω - 1MΩ                                |
|                   | ±200ppm                  | -                                       | 10Ω - 10MΩ                              | 1Ω - 9.76Ω;<br>10.2MΩ - 20MΩ            | 1Ω - 9.76Ω;<br>1.02MΩ - 10MΩ            | 1Ω - 9.76Ω;<br>10.2MΩ - 21.5MΩ          | 1Ω - 9.76Ω;<br>10.2MΩ - 21.5MΩ          | 1Ω - 9.76Ω;<br>10.2MΩ - 21.5MΩ           | 1Ω - 9.76Ω;<br>10.2MΩ - 21.5MΩ           | 1Ω - 9.76Ω;<br>10.2MΩ - 21.5MΩ           | 1Ω - 9.76Ω;<br>1.02MΩ - 20MΩ             | 1Ω - 9.76Ω;<br>1Ω - 9.76Ω                | 1Ω - 9.76Ω;<br>1.02MΩ - 20MΩ             | 1Ω - 9.76Ω;<br>1Ω - 9.76Ω                | 1.02MΩ - 20MΩ                            | 1Ω - 9.76Ω;<br>1.02MΩ - 20MΩ             | 1Ω - 9.76Ω;<br>1.02MΩ - 20MΩ             |
|                   | ±250ppm                  | 100Ω - 1MΩ                              | -                                       | -                                       | -                                       | -                                       | -                                       | -                                        | -                                        | -                                        | -                                        | -                                        | -                                        | -                                        | -                                        | -                                        | -                                        |
|                   | ±300ppm                  | 10Ω - 99Ω                               | -                                       | -                                       | -                                       | -                                       | -                                       | -                                        | -                                        | -                                        | 20.5MΩ - 21.5MΩ                          | -                                        | 20.5MΩ - 21.5MΩ                          | -                                        | -                                        | -                                        | -                                        |
| ±5% (J)           | ±100ppm                  | -                                       | -                                       | -                                       | -                                       | -                                       | -                                       | -                                        | -                                        | -                                        | 10Ω - 1MΩ                                | 10Ω - 1MΩ                                | 10Ω - 1MΩ                                | 10Ω - 1MΩ                                | 10Ω - 1MΩ                                | 10Ω - 1MΩ                                | 10Ω - 1MΩ                                |
|                   | ±200ppm                  | -                                       | 1Ω - 10MΩ                               | 1Ω - 10MΩ                               | 1Ω - 10MΩ                               | 1Ω - 10MΩ                               | 1Ω - 10MΩ                               | 1Ω - 10MΩ                                | 1Ω - 10MΩ                                | 1Ω - 10MΩ                                | 1Ω - 9.76Ω;<br>1.02MΩ - 20MΩ             | 1Ω - 9.76Ω;<br>1Ω - 9.76Ω                | 1Ω - 9.76Ω;<br>1.02MΩ - 20MΩ             | 1Ω - 9.76Ω;<br>1Ω - 9.76Ω                | 1.02MΩ - 20MΩ                            | 1Ω - 9.76Ω;<br>1.1MΩ - 20MΩ              | 1Ω - 9.76Ω;<br>1.1MΩ - 20MΩ              |
|                   | ±250ppm                  | 100Ω - 1MΩ                              | -                                       | -                                       | -                                       | -                                       | -                                       | -                                        | -                                        | -                                        | -                                        | -                                        | -                                        | -                                        | -                                        | -                                        | -                                        |
|                   | ±300ppm                  | 10Ω - 99Ω                               | -                                       | -                                       | -                                       | -                                       | -                                       | -                                        | -                                        | -                                        | 20.5MΩ - 21.5MΩ                          | -                                        | 20.5MΩ - 21.5MΩ                          | -                                        | -                                        | -                                        | -                                        |
|                   | ±350ppm                  | -                                       | -                                       | -                                       | -                                       | 10MΩ - 22MΩ                             | 10MΩ - 22MΩ                             | 10MΩ - 22MΩ                              | 10MΩ - 22MΩ                              | 10MΩ - 22MΩ                              | -                                        | -                                        | -                                        | -                                        | -                                        | -                                        | -                                        |

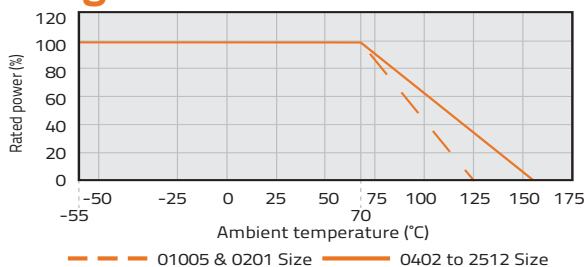
\* Note: Max OverLoad Voltage =  $2.5 \times (P \times R)^{1/2}$  or Max. overload voltage listed above, whichever is lower.

## Marking Code



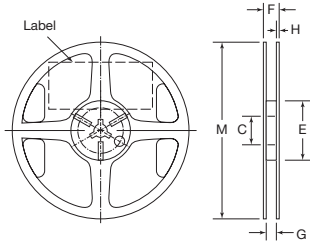
- 1% E-24 values for 0603 size and larger are typically marked with the standard 3 digit marking code.
- 1% E-96 values for 0805 size and larger may or may not be marked with the standard 4 digit marking code.
- 5% E-24 values for 0603 size and larger, will be marked with standard 3 digit marking code.
- 0603 -1% E-96 values will be marked with a standard 3 digit alpha numeric code (Please see page 61 for alpha numeric codes).
- 01005, 0201 and 0402 cannot be marked.
- 5% E-24 values for 1210-2512, may be marked with 4 digit marking code.
- E-192 values will not typically be marked.

## Derating Curve



# General Purpose Thick Film Resistors (CR Series)

## Reel Specifications

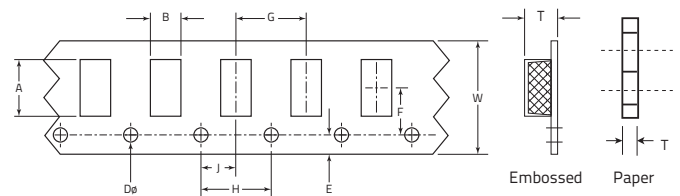


Unit: mm (inch)

| C                            | E                           | F                           | G                          | H                          | M                          |
|------------------------------|-----------------------------|-----------------------------|----------------------------|----------------------------|----------------------------|
| 13.0 ± 0.2<br>(0.51 ± 0.008) | 60.0 ± 1.0<br>(2.36 ± 0.03) | 11.4 ± 1.0<br>(0.45 ± 0.04) | 9.0 ± .3<br>(0.35 ± 0.012) | 1.5 ± .3<br>(0.06 ± 0.012) | 180 ± 2.0<br>(7.09 ± 0.08) |

Minimum of 30 empty pockets at the beginning of reel, 65 minimum empty pockets at the end.

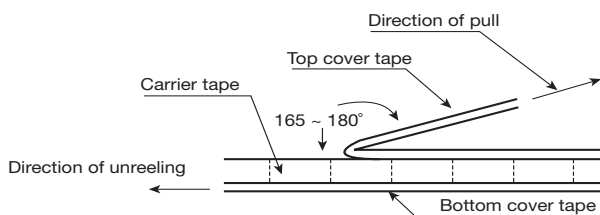
## Tape Specifications



All dimensions in mm.

| Tape     | Size (inches) | A              | B              | W             | E             | F             | T              | G             | H            | J             | Dø             |
|----------|---------------|----------------|----------------|---------------|---------------|---------------|----------------|---------------|--------------|---------------|----------------|
| Paper    | 01005         | 0.45<br>± 0.03 | 0.25<br>± 0.03 | 8.0<br>± 0.2  | 1.75<br>± 0.1 | 3.5<br>± 0.05 | 0.40<br>± 0.10 | 2.0<br>± 0.05 | 4.0<br>± 0.1 | 2.0<br>± 0.05 | 1.5<br>+ 0.1-0 |
|          | 0201          | 0.7<br>± 0.08  | 0.4<br>± 0.08  | 8.0<br>± 0.2  | 1.75<br>± 0.1 | 3.5<br>± 0.05 | 0.42<br>± 0.20 | 2.0<br>± 0.05 | 4.0<br>± 0.1 | 2.0<br>± 0.05 | 1.5<br>+ 0.1-0 |
|          | 0402          | 1.15<br>± 0.1  | 0.65<br>± 0.1  | 8.0<br>± 0.2  | 1.75<br>± 0.1 | 3.5<br>± 0.05 | 0.45<br>± 0.10 | 2.0<br>± 0.05 | 4.0<br>± 0.1 | 2.0<br>± 0.05 | 1.5<br>+ 0.1-0 |
|          | 0603          | 1.9<br>± 0.1   | 1.1<br>± 0.1   | 8.0<br>± 0.2  | 1.75<br>± 0.1 | 3.5<br>± 0.05 | 0.70<br>± 0.10 | 4.0<br>± 0.1  | 4.0<br>± 0.1 | 2.0<br>± 0.05 | 1.5<br>+ 0.1-0 |
|          | 0805          | 2.4<br>± 0.1   | 1.65<br>± 0.1  | 8.0<br>± 0.2  | 1.75<br>± 0.1 | 3.5<br>± 0.05 | 0.85<br>± 0.10 | 4.0<br>± 0.1  | 4.0<br>± 0.1 | 2.0<br>± 0.05 | 1.5<br>+ 0.1-0 |
|          | 1206          | 3.5<br>± 0.1   | 1.9<br>± 0.1   | 8.0<br>± 0.2  | 1.75<br>± 0.1 | 3.5<br>± 0.05 | 0.85<br>± 0.10 | 4.0<br>± 0.1  | 4.0<br>± 0.1 | 2.0<br>± 0.05 | 1.5<br>+ 0.1-0 |
|          | 1210          | 3.5<br>± 0.1   | 2.8<br>± 0.1   | 8.0<br>± 0.2  | 1.75<br>± 0.1 | 3.5<br>± 0.05 | 0.85<br>± 0.10 | 4.0<br>± 0.1  | 4.0<br>± 0.1 | 2.0<br>± 0.05 | 1.5<br>+ 0.1-0 |
| Embossed | 2010          | 5.4<br>± 0.2   | 2.9<br>± 0.2   | 12.0<br>± 0.1 | 1.75<br>± 0.1 | 5.5<br>± 0.5  | 1.2            | 4.0<br>± 0.1  | 4.0<br>± 0.1 | 2.0<br>± 0.05 | 1.5<br>+ 0.1-0 |
|          | 2512          | 6.9<br>± 0.2   | 3.6<br>± 0.2   | 12.0<br>± 0.1 | 1.75<br>± 0.1 | 5.5<br>± 0.5  | 1.2            | 8.0<br>± 0.1  | 4.0<br>± 0.1 | 2.0<br>± 0.05 | 1.5<br>+ 0.1-0 |

## Peel Back Force and Direction Diagram



Peel back force and direction of peel back angle should follow EIA481-1-A. Peel back force should be between 0.1N – 1.3N and peel back angle of 165° – 180°.

# General Purpose Thick Film Resistors (CR Series)

## Environmental Test Criteria

| ITEM                                                                                        | REQUIREMENT                                              |               |        | TEST METHOD                                                                                                                                  |
|---------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                             | ±1% and Below                                            | ±5%           | Jumper |                                                                                                                                              |
| Temperature Coefficient of Resistance (T.C.R.)                                              | As Spec.                                                 |               |        | JIS-C-5201-1 4.8<br>IEC-60115-1 4.8<br>-55°C~+12°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<br>IEC-60115-1 4.13<br>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<br>IEC-60115-1 4.6<br>Max. Overload Voltage for 1 minute                                                                    |
| Endurance                                                                                   | ±(1.0%+0.10Ω)                                            | ±(2.0%+0.10Ω) | <100mΩ | JIS-C-5201-1 4.25<br>IEC-60115-1 4.25.1<br>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<br>IEC-60115-1 4.24<br>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<br>IEC-60115-1 4.23.2<br>at +125/+155°C for 1000 hrs                                                                       |
| Bending Strength                                                                            | ±(1.0%+0.05Ω)                                            | ±(1.0%+0.05Ω) | <50mΩ  | JIS-C-5201-1 4.33<br>IEC-60115-1 4.33<br>Bending once for 5 seconds<br>2010, 2512 sizes: 2mm Other sizes: 3mm                                |
| Solderability                                                                               | 95% min. coverage                                        |               |        | JIS-C-5201-1 4.17<br>IEC-60115-1 4.17<br>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<br>IEC-60115-1 4.18<br>260±5°C for 10 seconds                                                                              |
| Voltage Proof                                                                               | No breakdown or flashover                                |               |        | JIS-C-5201-1 4.7<br>IEC-60115-1 4.7<br>1.42 times Max. Operating Voltage for 1 minute                                                        |
| Leaching                                                                                    | Individual leaching area ≤5%<br>Total leaching area ≤10% |               |        | JIS-C-5201-1 4.18<br>IEC-60068-2-58 8.2.1<br>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<br>IEC-60115-1 4.19<br>-55°C to +125/+155°C, 5 cycles                                                                      |
| RCWV(Rated Continuous Working Voltage)=V(P*R) or Max. Operating Voltage whichever is lower. |                                                          |               |        |                                                                                                                                              |
| ■ Storage Temperature: 15~28°C; Humidity < 80%RH                                            |                                                          |               |        |                                                                                                                                              |