

# Thick Film Chip Resistors

## Performance Specification

|                                 |                                                                                                                                                             |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature Coefficient         | 0Ω1 ~ 0Ω99      ±800PPM/°C<br>1Ω ~ 10Ω          ±400PPM/°C<br>10.1Ω ~ 100Ω      ±200PPM/°C<br>>100Ω              ±100PPM/°C      (0201: >100Ω ≤ ±200PPM/°C) |
| Short Time Overload             | ±5%: ±(2.0% + 0.1Ω)Max<br>±1%: ±(1.0% + 0.1Ω)Max                                                                                                            |
| Insulation Resistance           | Min. 1,000 Mega Ohm                                                                                                                                         |
| Dielectric Withstanding Voltage | No evidence of flashover, mechanical damage, arcing or insulation breakdown.                                                                                |
| Terminal Bending                | ±(1.0% + 0.05Ω)Max                                                                                                                                          |
| Soldering Heat                  | ±(1.0% + 0.05Ω)Max                                                                                                                                          |
| Solderability                   | Min. 95% coverage.                                                                                                                                          |
| Temperature Cycling             | ±5% : ±(1.0% + 0.05Ω)Max<br>±1% : ±(0.5% + 0.05Ω)Max                                                                                                        |
| Humidity (Steady State)         | ±5% : ±(3.0% + 0.1Ω)Max<br>±1% : ±(0.5% + 0.1Ω)Max                                                                                                          |
| Load Life in Humidity           | ±5% : ±(3.0% + 0.1Ω)Max<br>±1% : ±(1.0% + 0.1Ω)Max                                                                                                          |
| Load Life                       | ±5% : ±(3.0% + 0.1Ω)Max<br>±1% : ±(1.0% + 0.1Ω)Max                                                                                                          |

## Ordering Procedure: Ex.: 1206, 1/4W-S, +/-5%, 10Ω T/R-5000

|                                                                                                                                                                                                                                                  |   |   |   |                                                                 |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |   |   |   |                                                                                                                                                                                                        |   |   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|-----------------------------------------------------------------|---|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|
| 1                                                                                                                                                                                                                                                | 2 | 0 | 6 | S                                                               | 4 | J | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1 | 0 | 0 | T                                                                                                                                                                                                      | 5 | E |
| <b>Resistor Size:</b><br>0201, 0402, 0603, 0805, 1206, 1210, 1812, 2010, 2512<br><b>Wide Terminals:</b><br>0508, 0612, 1020, 1218, 1225                                                                                                          |   |   |   |                                                                 |   |   | <b>Resistance Value:</b> <ul style="list-style-type: none"> <li>E-24 series:<br/>1<sup>st</sup> digit is "0"<br/>2<sup>nd</sup> &amp; 3<sup>rd</sup> digits are significant figures of the resistance<br/>4<sup>th</sup> indicates the number of zeros</li> <li>E-96 series:<br/>1<sup>st</sup> to 3<sup>rd</sup> digits are significant figures of the resistance<br/>4<sup>th</sup> digit indicates the number of zeros.<br/>"J" ~ 0.1, "K" ~ 0.01, "L" ~ 0.001<br/>Ex. 012J ~ 1Ω2, 226K ~ 2Ω26</li> <li>Jumper : use "0" for 1<sup>st</sup> to 4<sup>th</sup> digits</li> </ul> |   |   |   |                                                                                                                                                                                                        |   |   |
| <b>Wattage:</b><br>Normal size: WH=1/32W, WM=1/20W, WG=1/16W, WA=1/10W, W8=1/8W, W4=1/4W, W2=1/2W, 1W=1W<br>Small size: SA=1/10W-S, S8=1/8W-S, S4=1/4W-S, S3=1/3W-S, 07=3/4W-S, U2=1/2W-SS<br>Applicable for Wide Terminal only: WJ=1.5W, 2W, 3W |   |   |   |                                                                 |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |   |   |   |                                                                                                                                                                                                        |   |   |
|                                                                                                                                                                                                                                                  |   |   |   | <b>Tolerance:</b><br>D = ±0.5%<br>F = ±1%<br>G = ±2%<br>J = ±5% |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |   |   |   | <b>Packing Type:</b><br>T = Tape/Reel                                                                                                                                                                  |   |   |
|                                                                                                                                                                                                                                                  |   |   |   |                                                                 |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |   |   |   | <b>Packing Qty:</b><br>1 = 1,000 pcs.    2 = 2,000 pcs.<br>4 = 4,000 pcs.    5 = 5,000 pcs.<br>A = 500 pcs.      C = 10,000 pcs.<br>D = 20,000 pcs. E = 15,000 pcs.<br>F = 40,000 pcs. G = 60,000 pcs. |   |   |
| <b>Note :</b><br>1.) Special resistance value, tolerance, T.C.R. requirement is available on a case-to-case basis.<br>2.) Standard reel size = 7"<br>3.) 4", 10", & 13" reels are available upon request                                         |   |   |   |                                                                 |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |   |   |   | <b>Special Feature:</b><br>E = Lead (Pb) Free Plating Type/<br>RoHS compliant                                                                                                                          |   |   |

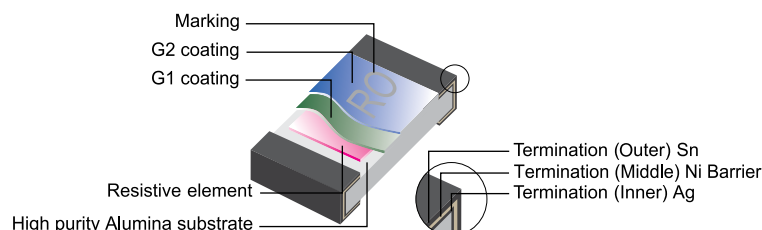
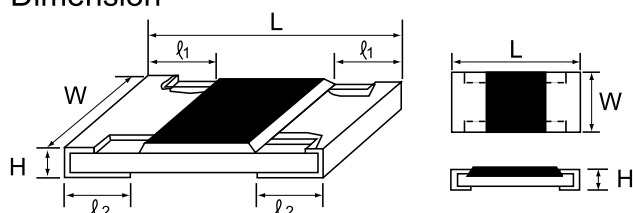
# Thick Film Chip Resistors

## Features

- Small size and light weight
- Suitable for both wave and reflow soldering
- Reduction of assembly costs



## Dimension



| Type        | Power Rating at 70°C      | Max Working Voltage/Current | Max Overload Voltage/Current | Dielectric Withstanding Voltage | Tolerance %       | Resistance Range                    | Dimension (mm) |                                        |           |                |                |
|-------------|---------------------------|-----------------------------|------------------------------|---------------------------------|-------------------|-------------------------------------|----------------|----------------------------------------|-----------|----------------|----------------|
|             |                           |                             |                              |                                 |                   |                                     | L              | W                                      | H         | l <sub>1</sub> | l <sub>2</sub> |
| 0201 (0603) | 1/20W                     | 0.5A                        | 1A                           | -                               | Jumper            | <50mΩ                               | 0.60±0.03      | 0.30±0.03                              | 0.23±0.03 | 0.10±0.05      | 0.15±0.05      |
|             |                           | 25V                         | 50V                          | -                               | ±1%<br>±2%<br>±5% | 1Ω ~ 10MΩ<br>1Ω ~ 10MΩ<br>1Ω ~ 10MΩ |                |                                        |           |                |                |
| 0402 (1005) | 1/16W                     | 1A                          | 2A                           |                                 | Jumper            | <50mΩ                               | 1.00±0.10      | 0.50±0.05                              | 0.35±0.05 | 0.20±0.10      | 0.25±0.10      |
|             |                           | 50V                         | 100V                         | 100V                            | ±1%<br>±2%<br>±5% | 1Ω ~ 10MΩ<br>1Ω ~ 10MΩ<br>1Ω ~ 10MΩ |                |                                        |           |                |                |
| 0603 (1608) | 1/10W-S<br>1/16W          | 1A                          | 2A                           |                                 | Jumper            | <50mΩ                               | 1.60±0.10      | 0.80 <sup>+0.15</sup> <sub>-0.10</sub> | 0.45±0.10 | 0.30±0.20      | 0.30±0.20      |
|             |                           | 75V                         | 150V                         | 300V                            | ±1%<br>±2%<br>±5% | 1Ω ~ 10MΩ<br>1Ω ~ 10MΩ<br>1Ω ~ 10MΩ |                |                                        |           |                |                |
| 0805 (2012) | 1/8W-S<br>1/10W           | 2A                          | 5A                           |                                 | Jumper            | <50mΩ                               | 2.00±0.15      | 1.25 <sup>+0.15</sup> <sub>-0.10</sub> | 0.55±0.10 | 0.40±0.20      | 0.40±0.20      |
|             |                           | 150V                        | 300V                         | 500V                            | ±1%<br>±2%<br>±5% | 1Ω ~ 10MΩ<br>1Ω ~ 10MΩ<br>1Ω ~ 10MΩ |                |                                        |           |                |                |
| 1206 (3216) | 1/4W-S<br>1/8W            | 2A                          | 10A                          |                                 | Jumper            | <50mΩ                               | 3.10±0.15      | 1.55 <sup>+0.15</sup> <sub>-0.10</sub> | 0.55±0.10 | 0.45±0.20      | 0.45±0.20      |
|             |                           | 200V                        | 400V                         | 500V                            | ±1%<br>±2%<br>±5% | 1Ω ~ 10MΩ<br>1Ω ~ 10MΩ<br>1Ω ~ 10MΩ |                |                                        |           |                |                |
| 1210 (3225) | 1/2W-SS<br>1/3W-S<br>1/4W | 2A                          | 10A                          |                                 | Jumper            | <50mΩ                               | 3.10±0.10      | 2.60±0.15                              | 0.55±0.10 | 0.50±0.25      | 0.50±0.20      |
|             |                           | 200V                        | 500V                         | 500V                            | ±1%<br>±2%<br>±5% | 1Ω ~ 10MΩ<br>1Ω ~ 10MΩ<br>1Ω ~ 10MΩ |                |                                        |           |                |                |
| 1812        | 1/2W<br>3/4W-S            | 2A                          | 10A                          |                                 | Jumper            | <50mΩ                               | 4.50±0.20      | 3.20±0.20                              | 0.55±0.20 | 0.50±0.20      | 0.50±0.20      |
|             |                           | 200V                        | 500V                         | 500V                            | ±1%<br>±5%        | 1Ω ~ 10MΩ<br>1Ω ~ 10MΩ              |                |                                        |           |                |                |
| 2010 (5025) | 3/4W-S<br>1/2W            | 2A                          | 10A                          |                                 | Jumper            | <50mΩ                               | 5.00±0.10      | 2.50±0.15                              | 0.55±0.10 | 0.60±0.25      | 0.50±0.20      |
|             |                           | 200V                        | 500V                         | 500V                            | ±1%<br>±2%<br>±5% | 1Ω ~ 10MΩ<br>1Ω ~ 10MΩ<br>1Ω ~ 10MΩ |                |                                        |           |                |                |
| 2512 (6432) | 1W                        | 2A                          | 10A                          |                                 | Jumper            | <50mΩ                               | 6.35±0.10      | 3.20±0.15                              | 0.55±0.10 | 0.60±0.25      | 0.50±0.20      |
|             |                           | 200V                        | 500V                         | 500V                            | ±1%<br>±2%<br>±5% | 1Ω ~ 10MΩ<br>1Ω ~ 10MΩ<br>1Ω ~ 10MΩ |                |                                        |           |                |                |

### Note:

- 1.) Metric information inside parenthesis.
- 2.) Standard Operating Temp (°C): -55 ~ +155
- 3.) Standard: E-96 series: 0.5%, 1%  
E-24 series: 2%, 5%
- 4.) Low resistance range (0.1Ω ~ 0.99Ω) is also available for 0402, 0603, 0805, 1206, 1210, 2010 and 2512

## Derating Curve

