



**EN:** This Datasheet/Document is presented by the manufacturer.

Please visit our website for pricing and availability at [www.hestore.hu](http://www.hestore.hu).

# Thick Film Chip Resistors

## Performance Specification

|                                 |                                                                              |                                                                   |
|---------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Temperature Coefficient         | 1Ω ~ 10Ω<br>11Ω ~ 100Ω<br>>100Ω                                              | ±400PPM/°C<br>±200PPM/°C<br>±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                  | Resistance change rate is ±(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 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|
| <div>Resistor Size:<br/>0201, 0402, 0603, 0805, 1206,<br/>1210, 2010, 2512<br/>Wide Terminals:<br/>0508, 0612, 1020, 1218, 1225</div>                                                                                                                                                    |   |   |   |   |   |   | <div>Resistance Value:<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<br/>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<br/>figures of the resistance<br/>4<sup>th</sup> digit indicates the number of<br/>zeros.<br/>"J" ~ 0.1, "K" ~ 0.01, "L" ~ 0.001<br/><b>Ex.</b> 012J ~ 1Ω2, 226K ~ 2Ω26</li><li>Jumper : use "0" for 1<sup>st</sup> to 4<sup>th</sup><br/>digits</li></ul></div> |   |   |   |   |   |   |
| <div>Wattage:<br/>Normal size: WH=1/32W, WM=1/20W, WG=1/16W,<br/>WA=1/10W, W8=1/8W, W4=1/4W,<br/>W2=1/2W, 1W=1W<br/>Small size: SA=1/10W-S, S8=1/8W-S, S4 =1/4W-S,<br/>S3=1/3W-S, 07=3/4W-S<br/>Extra small size: U2=1/2W-SS (1210)<br/>Applicable for Wide Terminal only: WJ=1.5W</div> |   |   |   |   |   |   | <div>Packing Type:<br/>T = Tape/Reel</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |   |   |   |
| <div>Tolerance:<br/>0 = Jumper<br/>D = ±0.5%<br/>F = ±1%<br/>G = ±2%<br/>J = ±5%</div>                                                                                                                                                                                                   |   |   |   |   |   |   | <div>Packing Qty:<br/>1 = 1,000 pcs.    2 = 2,000 pcs.    3 = 3,000 pcs.<br/>4 = 4,000 pcs.    5 = 5,000 pcs.<br/>A = 500 pcs.    B = 2,500 pcs.    C = 10,000 pcs.<br/>D = 20,000 pcs.    E = 15,000 pcs.</div>                                                                                                                                                                                                                                                                                                                                                                                         |   |   |   |   |   |   |
| <div>Note :<br/>1.) Special resistance value, tolerance, T.C.R. requirement is available<br/>on a case-to-case basis.<br/>2.) Zero ohm chip tolerance 5% use "J"<br/>3.) Standard reel size = 7"</div>                                                                                   |   |   |   |   |   |   | <div>Special Feature:<br/>E = Lead (Pb) Free Plating Type/<br/>RoHS compliant</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   |   |   |   |   |   |

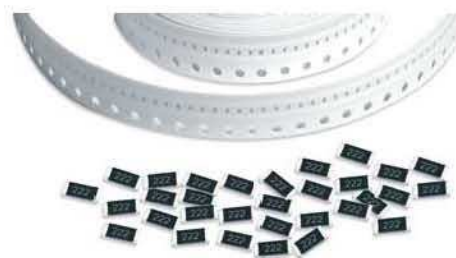
### Note :

- 1.) Special resistance value, tolerance, T.C.R. requirement is available on a case-to-case basis.
- 2.) Zero ohm chip tolerance 5% use "J"
- 3.) Standard reel size = 7"
- 4.) 4", 10", & 13" reels are available upon request

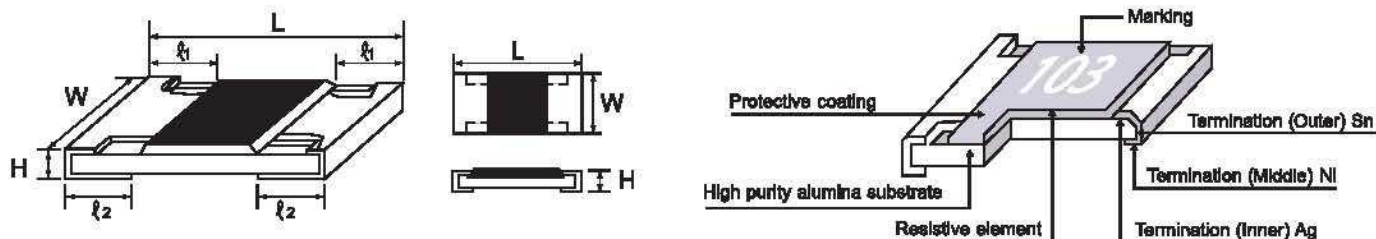
## Thick Film Chip Resistors

### Features

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



### Dimension



| Type             | Power Rating at 70°C      | Max Working Voltage | Max Overload Voltage | Dielectric Withstanding Voltage | Tolerance %       | Resistance Range                    | Dimension (mm) |                                |           |                |                |
|------------------|---------------------------|---------------------|----------------------|---------------------------------|-------------------|-------------------------------------|----------------|--------------------------------|-----------|----------------|----------------|
|                  |                           |                     |                      |                                 |                   |                                     | L              | W                              | H         | l <sub>1</sub> | l <sub>2</sub> |
| 0201<br>(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% | 10Ω ~ 1MΩ<br>1Ω ~ 10MΩ<br>1Ω ~ 1MΩ  |                |                                |           |                |                |
| 0402<br>(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% | 10Ω ~ 1MΩ<br>1Ω ~ 10MΩ<br>1Ω ~ 10MΩ |                |                                |           |                |                |
| 0603<br>(1608)   | 1/10W-S<br>1/16W          | 1A                  | 2A                   |                                 | Jumper            | <50mΩ                               | 1.60±0.10      | 0.80 <sup>+0.15</sup><br>-0.10 | 0.45±0.10 | 0.30±0.20      | 0.30±0.20      |
|                  |                           | 50V                 | 100V                 | 300V                            | ±1%<br>±2%<br>±5% | 10Ω ~ 1MΩ<br>1Ω ~ 10MΩ<br>1Ω ~ 10MΩ |                |                                |           |                |                |
| (0805)<br>(2012) | 1/8W-S<br>1/10W           | 2A                  | 5A                   |                                 | Jumper            | <50mΩ                               | 2.00±0.15      | 1.25 <sup>+0.15</sup><br>-0.10 | 0.55±0.10 | 0.40±0.20      | 0.40±0.20      |
|                  |                           | 150V                | 300V                 | 500V                            | ±1%<br>±2%<br>±5% | 10Ω ~ 1MΩ<br>1Ω ~ 10MΩ<br>1Ω ~ 10MΩ |                |                                |           |                |                |
| 1206<br>(3216)   | 1/4W-S<br>1/8W            | 2A                  | 10A                  |                                 | Jumper            | <50mΩ                               | 3.10±0.15      | 1.55 <sup>+0.15</sup><br>-0.10 | 0.55±0.10 | 0.45±0.20      | 0.45±0.20      |
|                  |                           | 200V                | 400V                 | 500V                            | ±1%<br>±2%<br>±5% | 10Ω ~ 1MΩ<br>1Ω ~ 10MΩ<br>1Ω ~ 10MΩ |                |                                |           |                |                |
| 1210<br>(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                | 400V                 | 500V                            | ±1%<br>±2%<br>±5% | 10Ω ~ 1MΩ<br>1Ω ~ 10MΩ<br>1Ω ~ 10MΩ |                |                                |           |                |                |
| 2010<br>(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                | 400V                 | 500V                            | ±1%<br>±2%<br>±5% | 10Ω ~ 1MΩ<br>1Ω ~ 10MΩ<br>1Ω ~ 10MΩ |                |                                |           |                |                |
| 2512<br>(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                | 400V                 | 500V                            | ±1%<br>±2%<br>±5% | 10Ω ~ 1MΩ<br>1Ω ~ 10MΩ<br>1Ω ~ 10MΩ |                |                                |           |                |                |

#### Note:

- 1.) Metric information inside parenthesis.
- 2.) Standard Operating Temp (°C): -55 ~ +155
- 3.) Standard: E96 series: 1%  
E24 series: 2%, 5%, 10%

### Derating Curve

