

### Thick Film Chip Resistors 01005, 0201, 0402, 0603, 0805, 1206, 1210, 1812, 2010, 2512

Type: **ERJ XG, 1G, 2G, 3G, 6G, 8G,  
14, 12, 12Z, 1T**



#### ■ Features

- Small size and lightweight
- High reliability  
Metal glaze thick film resistive element and three layers of electrodes
- Compatible with placement machines  
Taping packaging available
- Suitable for both reflow and flow soldering
- Reference Standards  
IEC 60115-8, JIS C 5201-8, EIAJ RC-2134B

- RoHS compliant

■ Packaging Methods Please see Pages 40 to 43

■ Recommended Land Pattern Please see Pages 44 to 45

■ Recommended Soldering Conditions Please see Page 46

■ Safety Precautions Please see Page 47

#### ■ Explanation of Part Numbers

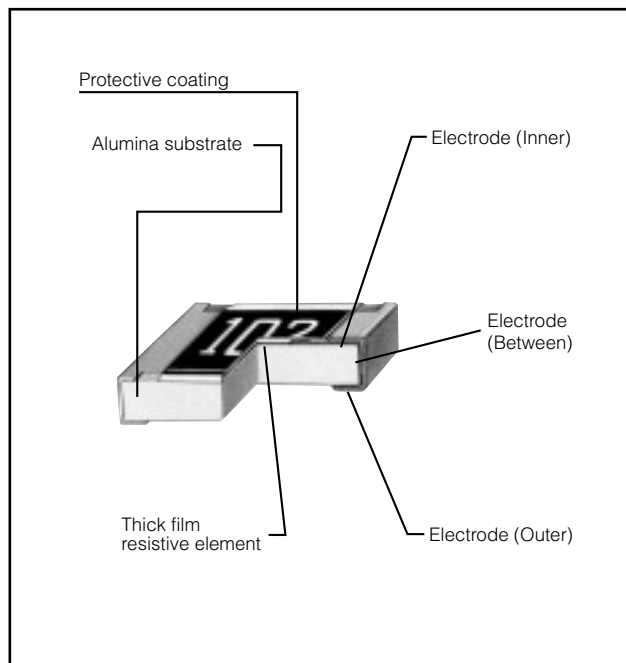
- ERJXGN, 1GN, 2GE, 3GE, 6GE, 8GE, 14, 12, 12Z, 1T Series, ±5 % type

|                                              |                    |          |         |                                                   |                                                                                                                                                                                                                        |           |                   |                                              |        |                            |                                                   |
|----------------------------------------------|--------------------|----------|---------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------|----------------------------------------------|--------|----------------------------|---------------------------------------------------|
| 1                                            | 2                  | 3        | 4       | 5                                                 | 6                                                                                                                                                                                                                      | 7         | 8                 | 9                                            | 10     | 11                         | 12                                                |
| E                                            | R                  | J        | 3       | G                                                 | E                                                                                                                                                                                                                      | Y         | J                 | 1                                            | 0      | 2                          | V                                                 |
| Product Code<br>Thick Film<br>Chip Resistors | Size, Power Rating |          | Marking |                                                   | Resistance Tolerance                                                                                                                                                                                                   |           | Packaging Methods |                                              |        |                            |                                                   |
|                                              | Type : inch        | Power R. | Code    | Marking                                           | Code                                                                                                                                                                                                                   | Tolerance | Code              | Packaging                                    | Type   |                            |                                                   |
|                                              | XGN : 01005        | 0.031 W  | Y       | Value Marking on<br>black side                    | J                                                                                                                                                                                                                      | ±5 %      | Y                 | Pressed Carrier Taping<br>W8P2, 20,000 pcs.  | ERJXGN |                            |                                                   |
|                                              | 1GN : 0201         | 0.05 W   |         |                                                   | 0                                                                                                                                                                                                                      | Jumper    | U                 | Embossed Carrier Taping<br>W4P1, 40,000 pcs. |        |                            |                                                   |
|                                              | 2GE : 0402         | 0.1 W    |         |                                                   | Resistance Value<br>The first two digits are significant figures of resistance and<br>the third one denotes number of zeros following.<br>Decimal Point is expressed by R as 4.7 = 4R7.<br>Jumper is expressed by R00. |           |                   |                                              |        | C                          | Pressed Carrier Taping<br>2 mm pitch, 15,000 pcs. |
|                                              | 3GE : 0603         | 0.1 W    | X       | Punched Carrier Taping<br>2 mm pitch, 10,000 pcs. |                                                                                                                                                                                                                        |           |                   |                                              |        | ERJ2GE                     |                                                   |
|                                              | 6GE : 0805         | 0.125 W  | Y       | Punched Carrier Taping<br>2 mm pitch, 20,000 pcs. |                                                                                                                                                                                                                        |           |                   |                                              |        |                            |                                                   |
|                                              | 8GE : 1206         | 0.25 W   | V       | Punched Carrier Taping<br>4 mm pitch, 5,000 pcs.  |                                                                                                                                                                                                                        |           |                   |                                              |        | ERJ3GE<br>ERJ6GE<br>ERJ8GE |                                                   |
|                                              | 14 : 1210          | 0.5 W    | U       | Embossed Carrier Taping<br>4 mm pitch, 5,000 pcs. |                                                                                                                                                                                                                        |           |                   |                                              |        | ERJ14<br>ERJ12<br>ERJ12Z   |                                                   |
|                                              | 12 : 1812          | 0.75 W   |         | Embossed Carrier Taping<br>4 mm pitch, 4,000 pcs. |                                                                                                                                                                                                                        |           |                   |                                              |        | ERJ1T                      |                                                   |
| 12Z : 2010                                   | 0.75 W             |          |         |                                                   |                                                                                                                                                                                                                        |           |                   |                                              |        |                            |                                                   |
| 1T : 2512                                    | 1 W                |          |         |                                                   |                                                                                                                                                                                                                        |           |                   |                                              |        |                            |                                                   |

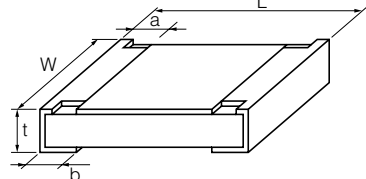
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### Construction



### Dimensions in mm (not to scale)



| Type<br>(inch size) | Dimensions (mm) |                 |                 |                 |                 | Mass (Weight)<br>(g/1000 pcs.) |
|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------------------------|
|                     | L               | W               | a               | b               | t               |                                |
| ERJXG<br>(01005)    | 0.40 $\pm$ 0.02 | 0.20 $\pm$ 0.02 | 0.10 $\pm$ 0.03 | 0.10 $\pm$ 0.03 | 0.13 $\pm$ 0.02 | 0.04                           |
| ERJ1G<br>(0201)     | 0.60 $\pm$ 0.03 | 0.30 $\pm$ 0.03 | 0.10 $\pm$ 0.05 | 0.15 $\pm$ 0.05 | 0.23 $\pm$ 0.03 | 0.15                           |
| ERJ2G<br>(0402)     | 1.00 $\pm$ 0.05 | 0.50 $\pm$ 0.05 | 0.20 $\pm$ 0.10 | 0.25 $\pm$ 0.05 | 0.35 $\pm$ 0.05 | 0.8                            |
| ERJ3G<br>(0603)     | 1.60 $\pm$ 0.15 | 0.80 $\pm$ 0.15 | 0.30 $\pm$ 0.20 | 0.30 $\pm$ 0.15 | 0.45 $\pm$ 0.10 | 2                              |
| ERJ6G<br>(0805)     | 2.00 $\pm$ 0.20 | 1.25 $\pm$ 0.10 | 0.40 $\pm$ 0.20 | 0.40 $\pm$ 0.20 | 0.60 $\pm$ 0.10 | 4                              |
| ERJ8G<br>(1206)     | 3.20 $\pm$ 0.05 | 1.60 $\pm$ 0.05 | 0.50 $\pm$ 0.20 | 0.50 $\pm$ 0.20 | 0.60 $\pm$ 0.10 | 10                             |
| ERJ14<br>(1210)     | 3.20 $\pm$ 0.20 | 2.50 $\pm$ 0.20 | 0.50 $\pm$ 0.20 | 0.50 $\pm$ 0.20 | 0.60 $\pm$ 0.10 | 16                             |
| ERJ12<br>(1812)     | 4.50 $\pm$ 0.20 | 3.20 $\pm$ 0.20 | 0.50 $\pm$ 0.20 | 0.50 $\pm$ 0.20 | 0.60 $\pm$ 0.10 | 27                             |
| ERJ12Z<br>(2010)    | 5.00 $\pm$ 0.20 | 2.50 $\pm$ 0.20 | 0.60 $\pm$ 0.20 | 0.60 $\pm$ 0.20 | 0.60 $\pm$ 0.10 | 27                             |
| ERJ1T<br>(2512)     | 6.40 $\pm$ 0.20 | 3.20 $\pm$ 0.20 | 0.65 $\pm$ 0.20 | 0.60 $\pm$ 0.20 | 0.60 $\pm$ 0.10 | 45                             |

### Ratings

<For Resistor>

| Type<br>(inch size) | Power Rating<br>at 70 °C<br>(W) | Limiting Element<br>Voltage <sup>(1)</sup><br>(V) | Maximum Overload<br>Voltage <sup>(2)</sup><br>(V) | Resistance<br>Tolerance<br>(%) | Resistance<br>Range<br>(Ω) | T.C.R.<br>(×10 <sup>-6</sup> /°C)                              | Category<br>Temperature Range<br>(°C) |
|---------------------|---------------------------------|---------------------------------------------------|---------------------------------------------------|--------------------------------|----------------------------|----------------------------------------------------------------|---------------------------------------|
| ERJXG<br>(01005)    | 0.031                           | 15                                                | 30                                                | ±5                             | 4.7 to 1 M (E24)           | <10 Ω : -100 to +600<br>10 Ω to 100 Ω : ±300<br>100 Ω < : ±200 | -55 to +125                           |
| ERJ1G<br>(0201)     | 0.05                            | 25                                                | 50                                                | ±5                             | 1 to 10 M (E24)            | <10 Ω :<br>-100 to +600                                        | -55 to +125                           |
| ERJ2G<br>(0402)     | 0.1                             | 50                                                | 100                                               | ±5                             | 1 to 10 M (E24)            |                                                                | -55 to +155                           |
| ERJ3G<br>(0603)     | 0.1                             | 75                                                | 150                                               | ±5                             | 1 to 10 M (E24)            |                                                                | -55 to +155                           |
| ERJ6G<br>(0805)     | 0.125                           | 150                                               | 200                                               | ±5                             | 1 to 10 M (E24)            |                                                                | -55 to +155                           |
| ERJ8G<br>(1206)     | 0.25                            | 200                                               | 400                                               | ±5                             | 1 to 10 M (E24)            |                                                                | -55 to +155                           |
| ERJ14<br>(1210)     | 0.5                             | 200                                               | 400                                               | ±5                             | 1 to 10 M (E24)            | 10 Ω to 1 M Ω :<br>±200                                        | -55 to +155                           |
| ERJ12<br>(1812)     | 0.75                            | 200                                               | 500                                               | ±5                             | 1 to 10 M (E24)            |                                                                | -55 to +155                           |
| ERJ12Z<br>(2010)    | 0.75                            | 200                                               | 500                                               | ±5                             | 1 to 10 M (E24)            |                                                                | -55 to +155                           |
| ERJ1T<br>(2512)     | 1                               | 200                                               | 500                                               | ±5                             | 1 to 1 M (E24)             | 1 M Ω < :<br>-400 to +150                                      | -55 to +155                           |

(1) Rated Continuous Working Voltage (RCWV) shall be determined from  $RCWV = \sqrt{\text{Power Rating} \times \text{Resistance Values}}$ , or Limiting Element Voltage listed above, whichever less.

(2) Overload (Short-time Overload) Test Voltage (SOTV) shall be determined from  $SOTV = 2.5 \times \text{Power Rating}$  or max. Overload Voltage listed above whichever less.

<For Jumper>

| Type<br>(inch size) | Rated Current<br>(A) | Maximum Overload Current<br>(A) |
|---------------------|----------------------|---------------------------------|
| ERJXG (01005)       | 0.5                  | 1                               |
| ERJ1G (0201)        |                      |                                 |
| ERJ2G (0402)        |                      |                                 |
| ERJ3G (0603)        | 1                    | 2                               |
| ERJ6G (0805)        |                      |                                 |
| ERJ8G (1206)        |                      |                                 |
| ERJ14 (1210)        | 2                    | 4                               |
| ERJ12 (1812)        |                      |                                 |
| ERJ12Z (2010)       |                      |                                 |
| ERJ1T (2512)        |                      |                                 |

### Power Derating Curve

For resistors operated in ambient temperatures above 70 °C, power rating shall be derated in accordance with the figure below.

