

### Precision Thick Film Chip Resistors

ERJ G : 01005, 0201  
 ERJ R : 0201, 0402, 0603, 0805  
 ERJ E : 0603, 0805, 1206,  
 1210, 1812, 2010, 2512



Type: ERJ XG, 1G  
 ERJ 1R, 2R, 3R, 6R  
 ERJ 3E, 6E, 8E, 14, 12, 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
- RoHS compliant

- Low Resistance Tolerance  
ERJXG, 1G, 2R, 3E, 6E, 8E, 14, 12, 1T Series.....±1 %  
ERJ1R, 2R, 3R, 6R Series ..... ±0.5 %
- Reference Standards  
IEC 60115-8, JIS C 5201-8, EIAJ RC-2134B

■ 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

- ERJ1R, 2R, 3R, 6R Series, ±0.5 % type



● ERJXG, 1G, 2R, 3E, 6E, 8E, 14, 12, 1T Series, ±1 % type



■ 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 <sup>+0.02</sup>          | 0.20 <sup>+0.02</sup>          | 0.10 <sup>+0.03</sup> | 0.10 <sup>+0.03</sup> | 0.13 <sup>+0.02</sup> | 0.04                           |
| ERJ1G, 1R<br>(0201)        | 0.60 <sup>+0.03</sup>          | 0.30 <sup>+0.03</sup>          | 0.10 <sup>+0.05</sup> | 0.15 <sup>+0.05</sup> | 0.23 <sup>+0.03</sup> | 0.15                           |
| ERJ2R□<br>(0402)           | 1.00 <sup>+0.05</sup>          | 0.50 <sup>+0.05</sup>          | 0.20 <sup>+0.10</sup> | 0.25 <sup>+0.05</sup> | 0.35 <sup>+0.05</sup> | 0.8                            |
| ERJ3R□<br>ERJ3EK<br>(0603) | 1.60 <sup>+0.15</sup>          | 0.80 <sup>+0.15</sup><br>-0.05 | 0.30 <sup>+0.20</sup> | 0.30 <sup>+0.15</sup> | 0.45 <sup>+0.10</sup> | 2                              |
| ERJ6R□<br>ERJ6EN<br>(0805) | 2.00 <sup>+0.20</sup>          | 1.25 <sup>+0.10</sup>          | 0.40 <sup>+0.20</sup> | 0.40 <sup>+0.20</sup> | 0.60 <sup>+0.10</sup> | 4                              |
| ERJ8EN<br>(1206)           | 3.20 <sup>+0.05</sup><br>-0.20 | 1.60 <sup>+0.05</sup><br>-0.15 | 0.50 <sup>+0.20</sup> | 0.50 <sup>+0.20</sup> | 0.60 <sup>+0.10</sup> | 10                             |
| ERJ14N<br>(1210)           | 3.20 <sup>+0.20</sup>          | 2.50 <sup>+0.20</sup>          | 0.50 <sup>+0.20</sup> | 0.50 <sup>+0.20</sup> | 0.60 <sup>+0.10</sup> | 16                             |
| ERJ12N<br>(1812)           | 4.50 <sup>+0.20</sup>          | 3.20 <sup>+0.20</sup>          | 0.50 <sup>+0.20</sup> | 0.50 <sup>+0.20</sup> | 0.60 <sup>+0.10</sup> | 27                             |
| ERJ12S<br>(2010)           | 5.00 <sup>+0.20</sup>          | 2.50 <sup>+0.20</sup>          | 0.60 <sup>+0.20</sup> | 0.60 <sup>+0.20</sup> | 0.60 <sup>+0.10</sup> | 27                             |
| ERJ1TN<br>(2512)           | 6.40 <sup>+0.20</sup>          | 3.20 <sup>+0.20</sup>          | 0.65 <sup>+0.20</sup> | 0.60 <sup>+0.20</sup> | 0.60 <sup>+0.10</sup> | 45                             |

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

### ■ Ratings

<±0.5 %>

| 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) |
|---------------------|---------------------------------|---|---|--------------------------------|--|-----------------------------------|---------------------------------------|
| ERJ1RH<br>(0201)    | 0.05                            | 15  | 30  | ±0.5                           | 1 k to 1 M<br>(E24, E96)                 | ±50                               | -55 to +125                           |
| ERJ1RK<br>(0201)    | 0.05                            | 15  | 30  | ±0.5                           | 100 to 976<br>(E24, E96)                 | ±100                              | -55 to +125                           |
| ERJ2RH<br>(0402)    | 0.063                           | 50  | 100   | ±0.5                           | 100 to 100 k<br>(E24, E96)               | ±50                               | -55 to +125                           |
| ERJ2RK<br>(0402)    | 0.063                           | 50  | 100   | ±0.5                           | 10 to 97.6<br>102 k to 1 M<br>(E24, E96) | ±100                              | -55 to +125                           |
| ERJ3RB<br>(0603)    | 0.063<br>(0.1) <sup>(4)</sup>   | 50  | 100   | ±0.5                           | 100 to 100 k<br>(E24, E96)               | ±50                               | -55 to +125                           |
| ERJ3RE<br>(0603)    | 0.063<br>(0.1) <sup>(4)</sup>   | 50  | 100   | ±0.5                           | 10 to 97.6<br>102 k to 1 M<br>(E24, E96) | ±100                              | -55 to +125                           |
| ERJ6RB<br>(0805)    | 0.1                             | 150   | 200   | ±0.5                           | 100 to 100 k<br>(E24, E96)               | ±50                               | -55 to +125                           |
| ERJ6RE<br>(0805)    | 0.1                             | 150   | 200   | ±0.5                           | 10 to 97.6<br>102 k to 1 M<br>(E24, E96) | ±100                              | -55 to +125                           |

<±1 %>

| 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  | ±1                             | 10 to 1 M<br>(E24, E96)                | <100 Ω : ±300<br>100 Ω ≤ : ±200   | -55 to +125                           |
| ERJ1G<br>(0201)     | 0.05                            | 25  | 50  | ±1                             | 10 to 1 M <sup>(3)</sup><br>(E24, E96) | ±200                              | -55 to +125                           |
| ERJ2RK<br>(0402)    | 0.1                             | 50  | 100   | ±1                             | 10 to 1 M <sup>(3)</sup><br>(E24, E96) | ±100                              | -55 to +155                           |
| ERJ3EK<br>(0603)    | 0.1                             | 75  | 150   | ±1                             | 10 to 1 M<br>(E24, E96)                | ±100                              | -55 to +155                           |
| ERJ6EN<br>(0805)    | 0.125                           | 150   | 200   | ±1                             | 10 to 2.2 M<br>(E24, E96)              | ±100                              | -55 to +155                           |
| ERJ8EN<br>(1206)    | 0.25                            | 200   | 400   | ±1                             | 10 to 2.2 M<br>(E24, E96)              | ±100                              | -55 to +155                           |
| ERJ14N<br>(1210)    | 0.5                             | 200   | 400   | ±1                             | 10 to 1 M<br>(E24, E96)                | ±100                              | -55 to +155                           |
| ERJ12N<br>(1812)    | 0.75                            | 200   | 500   | ±1                             | 10 to 1 M<br>(E24, E96)                | ±100                              | -55 to +155                           |
| ERJ12S<br>(2010)    | 0.75                            | 200   | 500   | ±1                             | 10 to 1 M<br>(E24, E96)                | ±100                              | -55 to +155                           |
| ERJ1TN<br>(2512)    | 1                               | 200   | 500   | ±1                             | 10 to 1 M<br>(E24, E96)                | ±100                              | -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.

(3) Please contact us when you need a type with a resistance of less than 10 Ω.

(4) Please contact us when resistors with guaranteed high power are needed.

### Power Derating Curve

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



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

01 Mar. 2011