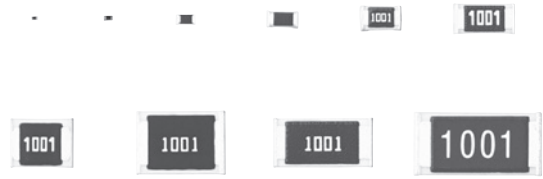


Precision Thick Film Chip Resistors

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



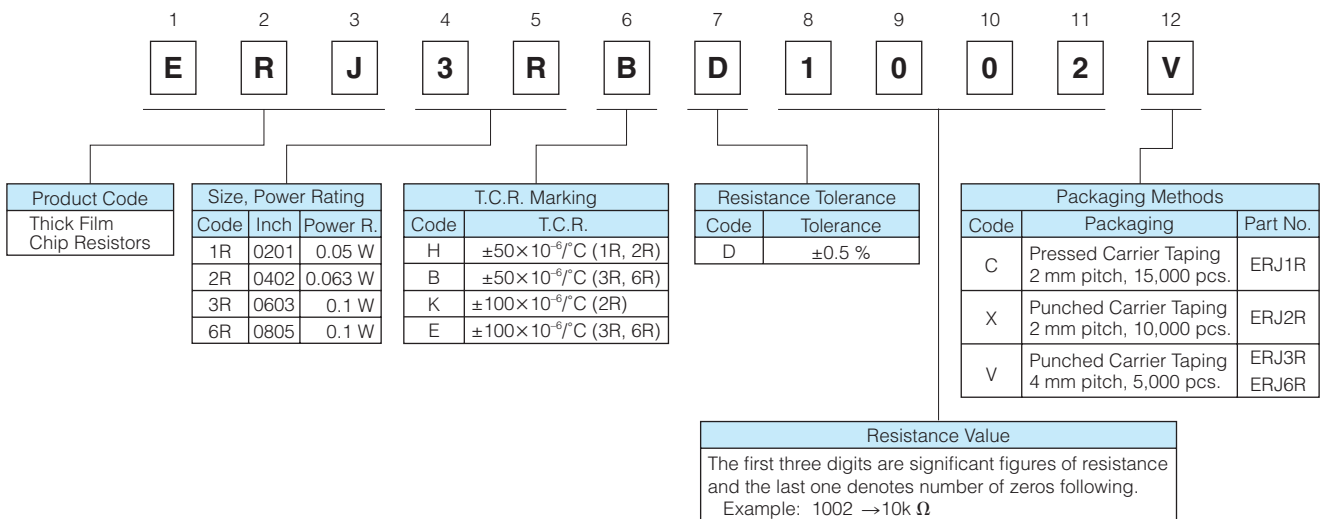
Features

- 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
- Low Resistance Tolerance
ERJXG, 1G, 2R, 3E, 6E, 8E, 14, 12, 1T Type : ±1 %
ERJ1R, 2R, 3R, 6R Type : ±0.5 %
- Reference Standards
IEC 60115-8, JIS C 5201-8, EIAJ RC-2134B
- AEC-Q200 qualified (Exemption ERJXG, ERJ1R)
- RoHS compliant

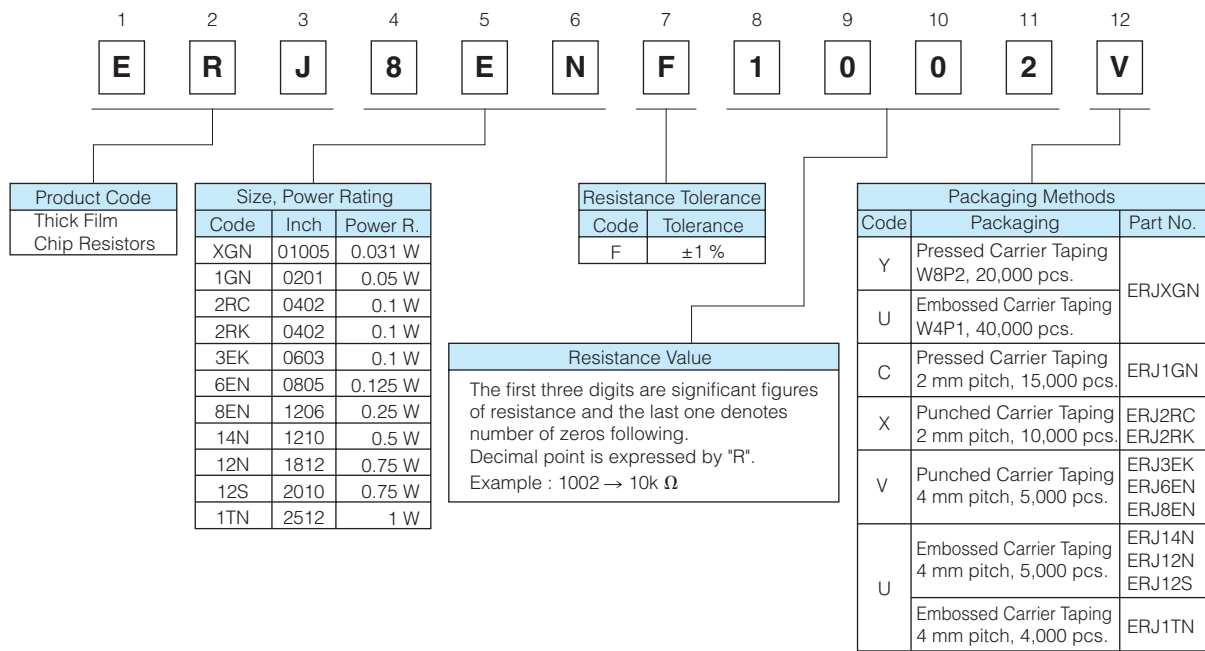
■ **As for Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions,**
 Please see Data Files

Explanation of Part Numbers

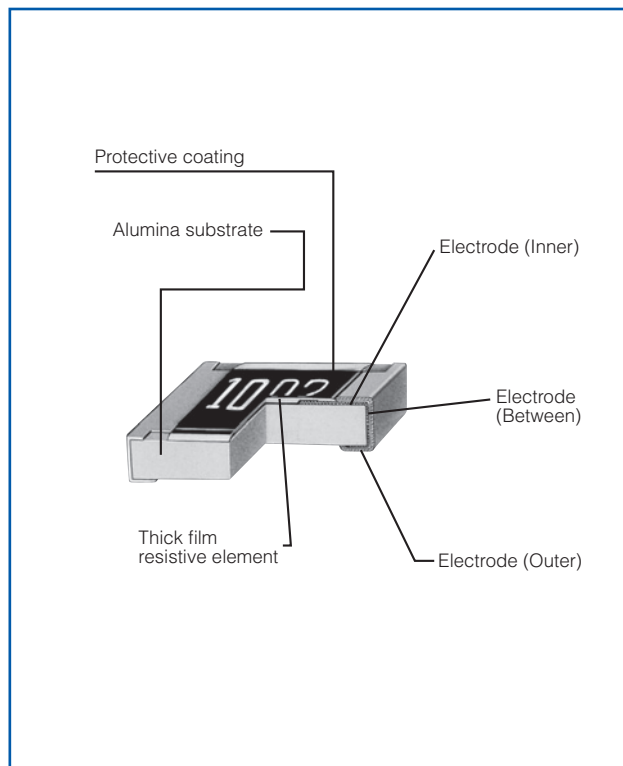
- ERJ1R, 2R, 3R, 6R Type, ±0.5 %



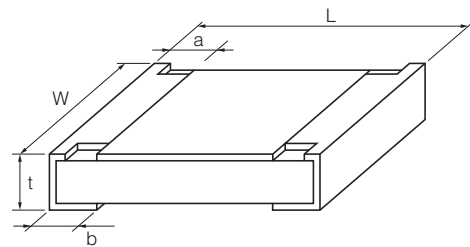
- ERJXGN, 1GN, 2RC, 2RK, 3EK, 6EN, 8EN, 14N, 12N, 12S, 1TN Type, ±1%



Construction



Dimensions in mm (not to scale)



| Part No. | Dimensions (mm) | | | | | Mass (Weight) [g/1000 pcs.] |
|------------------|--|--|-----------------------|-----------------------|-----------------------|--------------------------------|
| | L | W | a | b | t | |
| ERJXG | 0.40 ^{+0.02} | 0.20 ^{+0.02} | 0.10 ^{+0.03} | 0.10 ^{+0.03} | 0.13 ^{+0.02} | 0.04 |
| ERJ1G, 1R | 0.60 ^{+0.03} | 0.30 ^{+0.03} | 0.10 ^{+0.05} | 0.15 ^{+0.05} | 0.23 ^{+0.03} | 0.15 |
| ERJ2R□ | 1.00 ^{+0.05} | 0.50 ^{+0.05} | 0.20 ^{+0.10} | 0.25 ^{+0.05} | 0.35 ^{+0.05} | 0.8 |
| ERJ3R□ ERJ3EK | 1.60 ^{+0.15} | 0.80 ^{+0.15} | 0.30 ^{+0.20} | 0.30 ^{+0.15} | 0.45 ^{+0.10} | 2 |
| ERJ6R□ ERJ6EN | 2.00 ^{+0.20} | 1.25 ^{+0.10} | 0.40 ^{+0.20} | 0.40 ^{+0.20} | 0.60 ^{+0.10} | 4 |
| ERJ8EN | 3.20 ^{+0.05} _{-0.20} | 1.60 ^{+0.05} _{-0.15} | 0.50 ^{+0.20} | 0.50 ^{+0.20} | 0.60 ^{+0.10} | 10 |
| ERJ14N | 3.20 ^{+0.20} | 2.50 ^{+0.20} | 0.50 ^{+0.20} | 0.50 ^{+0.20} | 0.60 ^{+0.10} | 16 |
| ERJ12N | 4.50 ^{+0.20} | 3.20 ^{+0.20} | 0.50 ^{+0.20} | 0.50 ^{+0.20} | 0.60 ^{+0.10} | 27 |
| ERJ12S | 5.00 ^{+0.20} | 2.50 ^{+0.20} | 0.60 ^{+0.20} | 0.60 ^{+0.20} | 0.60 ^{+0.10} | 27 |
| ERJ1TN | 6.40 ^{+0.20} | 3.20 ^{+0.20} | 0.65 ^{+0.20} | 0.60 ^{+0.20} | 0.60 ^{+0.10} | 45 |

Ratings

<±0.5 %>

| Part No. (inch size) | Power Rating at 70 °C ⁽⁴⁾ (W) | Limiting Element Voltage ⁽¹⁾ (V) | Maximum Overload Voltage ⁽²⁾ (V) | Resistance Tolerance (%) | Resistance Range (Ω) | T.C.R. (×10 ⁻⁶ /°C) | Category Temperature Range (°C) | AEC-Q200 Grade |
|-------------------------|--|---|---|--------------------------------|--|-----------------------------------|---------------------------------------|-------------------|
| ERJ1RH (0201) | 0.05 | 15 | 30 | ±0.5 | 1k to 1M (E24, E96) | ±50 | -55 to +125 | - |
| ERJ2RH (0402) | 0.063 | 50 | 100 | ±0.5 | 100 to 100k (E24, E96) | ±50 | -55 to +155 | Grade 0 |
| ERJ2RK (0402) | 0.063 | 50 | 100 | ±0.5 | 10 to 97.6 102k to 1M (E24, E96) | ±100 | -55 to +155 | Grade 0 |
| ERJ3RB (0603) | 0.1 | 50 | 100 | ±0.5 | 100 to 100k (E24, E96) | ±50 | -55 to +155 | Grade 0 |
| ERJ3RE (0603) | 0.1 | 50 | 100 | ±0.5 | 10 to 97.6 102k to 1M (E24, E96) | ±100 | -55 to +155 | Grade 0 |
| ERJ6RB (0805) | 0.1 | 150 | 200 | ±0.5 | 100 to 100k (E24, E96) | ±50 | -55 to +155 | Grade 0 |
| ERJ6RE (0805) | 0.1 | 150 | 200 | ±0.5 | 10 to 97.6 102k to 1M (E24, E96) | ±100 | -55 to +155 | Grade 0 |

<±1 %>

| Part No. (inch size) | Power Rating at 70 °C ⁽⁴⁾ (W) | Limiting Element Voltage ⁽¹⁾ (V) | Maximum Overload Voltage ⁽²⁾ (V) | Resistance Tolerance (%) | Resistance Range (Ω) | T.C.R. (×10 ⁻⁶ /°C) | Category Temperature Range (°C) | AEC-Q200 Grade |
|-------------------------|--|---|---|--------------------------------|--|-----------------------------------|---------------------------------------|-------------------|
| ERJXGN (01005) | 0.031 | 15 | 30 | ±1 | 10 to 1 M (E24, E96) | <100 Ω : ±300 100 Ω ≤ : ±200 | -55 to +125 | - |
| ERJ1GN (0201) | 0.05 | 25 | 50 | ±1 | 10 to 1 M ⁽³⁾ (E24, E96) | ±200 | -55 to +125 | Grade 1 |
| ERJ2RC (0402) | 0.1 | 50 | 100 | ±1 | 1 to 9.76 (E24, E96) | -100 to +600 | -55 to +155 | Grade 0 |
| ERJ2RK (0402) | 0.1 | 50 | 100 | ±1 | 10 to 1 M (E24, E96) | ±100 | -55 to +155 | Grade 0 |
| ERJ3EK (0603) | 0.1 | 75 | 150 | ±1 | 10 to 1 M (E24, E96) | ±100 | -55 to +155 | Grade 0 |
| ERJ6EN (0805) | 0.125 | 150 | 200 | ±1 | 10 to 2.2 M (E24, E96) | ±100 | -55 to +155 | Grade 0 |
| ERJ8EN (1206) | 0.25 | 200 | 400 | ±1 | 10 to 2.2 M (E24, E96) | ±100 | -55 to +155 | Grade 0 |
| ERJ14N (1210) | 0.5 | 200 | 400 | ±1 | 10 to 1 M (E24, E96) | ±100 | -55 to +155 | Grade 0 |
| ERJ12N (1812) | 0.75 | 200 | 500 | ±1 | 10 to 1 M (E24, E96) | ±100 | -55 to +155 | Grade 0 |
| ERJ12S (2010) | 0.75 | 200 | 500 | ±1 | 10 to 1 M (E24, E96) | ±100 | -55 to +155 | Grade 0 |
| ERJ1TN (2512) | 1 | 200 | 500 | ±1 | 10 to 1 M (E24, E96) | ±100 | -55 to +155 | Grade 0 |

(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.

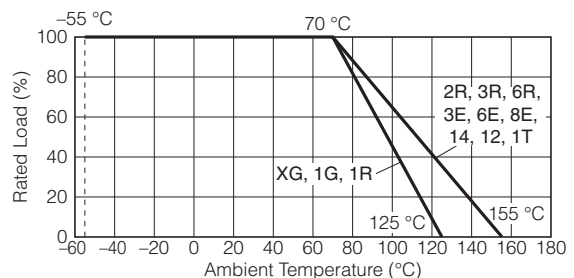
(2) Overload Test Voltage (OTV) shall be determined from $OTV = \text{Specified Magnification (refer to performance)} \times RCWV$ or Maximum Overload Voltage listed above, whichever less.

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

(4) Use it on the condition that the case temperature is below the upper category temperature.

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.



Performance

● ERJ1R, 2R, 3R, 6R Type, $\pm 0.5\%$ (D)

| Test Item | Performance Requirements | Test Conditions |
|------------------------------|-------------------------------|---|
| Resistance | Within Specified Tolerance | 20 °C |
| T. C. R. | Within Specified T. C. R. | +25 °C/+125 °C |
| Overload | $\pm 2\%$ | Rated Voltage \times 2.5, 5 s |
| Resistance to Soldering Heat | $\pm 1\%$ | 270 °C, 10 s |
| Rapid Change of Temperature | $\pm 1\%$ | -55 °C (30min.) / +155 °C (ERJ1R : +125 °C) (30min.), 100 cycles |
| High Temperature Exposure | $\pm 1\%$ | +155 °C (ERJ1R : +125 °C) , 1000 h |
| Damp Heat, Steady State | $\pm 1\%$ | 60 °C, 90% to 95 %RH, 1000 h |
| Load Life in Humidity | $\pm 2\%$ ERJ1R: $\pm 3\%$ | 60 °C, 90% to 95 %RH, Rated Voltage, 1.5 h ON/0.5 h OFF cycle, 1000 h |
| Endurance at 70 °C | $\pm 2\%$ ERJ1R: $\pm 3\%$ | 70 °C, Rated Voltage, 1.5 h ON/0.5 h OFF cycle, 1000 h |

● ERJXGN, 1GN, 2RC, 2RK, 3EK, 6EN, 8EN, 14N, 12N, 12S, 1TN Type, $\pm 1\%$ (F)

| Test Item | Performance Requirements | Test Conditions |
|------------------------------|--------------------------------------|---|
| Resistance | Within Specified Tolerance | 20 °C |
| T. C. R. | Within Specified T. C. R. | +25 °C/+155 °C (ERJXG, ERJ1G : +25 °C/+125 °C) |
| Overload | $\pm 2\%$ | Rated Voltage \times 2.5, 5 s |
| Resistance to Soldering Heat | $\pm 1\%$ | 270 °C, 10 s |
| Rapid Change of Temperature | $\pm 1\%$ | -55 °C (30min.) / +155 °C (ERJXG, ERJ1G : +125 °C) (30min.), 100 cycles |
| High Temperature Exposure | $\pm 1\%$ | +155 °C (ERJXG, ERJ1G : +125 °C) , 1000 h |
| Damp Heat, Steady State | $\pm 1\%$ | 60 °C, 90% to 95 %RH, 1000 h |
| Load Life in Humidity | $\pm 2\%$ ERJXG, ERJ1G: $\pm 3\%$ | 60 °C, 90% to 95 %RH, Rated Voltage, 1.5 h ON/0.5 h OFF cycle, 1000 h |
| Endurance at 70 °C | $\pm 2\%$ ERJXG, ERJ1G: $\pm 3\%$ | 70 °C, Rated Voltage, 1.5 h ON/0.5 h OFF cycle, 1000 h |

Mouser Electronics

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