

Anti-Surge Thick Film Chip Resistors 0603, 0805, 1206, 1210

Type: **ERJ P03, P06, P08, P14**



■ Features

- ESD surge characteristics superior to standard metal film resistors
- High reliability
Metal glaze thick film resistive element and three layers of electrodes
- Suitable for both reflow and flow soldering
- High power...
 - 0.2 W : 1608(0603) size
 - 0.25 W : 2012(0805) size
 - 0.33 W : 3216(1206) size
 - 0.5 W : 3225(1210) size
- 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



■ Construction



■ Dimensions in mm (not to scale)



| Type (inch size) | Dimensions (mm) | | | | | Mass (Weight) [g/1000 pcs.] |
|---------------------|--|--|--|-----------------------|-----------------------|--------------------------------|
| | L | W | a | b | t | |
| ERJP03 (0603) | 1.60 ^{+0.15} | 0.80 ^{+0.15} _{-0.05} | 0.15 ^{+0.15} _{-0.10} | 0.30 ^{+0.15} | 0.45 ^{+0.10} | 2 |
| ERJP06 (0805) | 2.00 ^{+0.20} | 1.25 ^{+0.10} | 0.25 ^{+0.20} | 0.40 ^{+0.20} | 0.60 ^{+0.10} | 4 |
| ERJP08 (1206) | 3.20 ^{+0.05} _{-0.20} | 1.60 ^{+0.05} _{-0.15} | 0.40 ^{+0.20} | 0.50 ^{+0.20} | 0.60 ^{+0.10} | 10 |
| ERJP14 (1210) | 3.20 ^{+0.20} | 2.50 ^{+0.20} | 0.35 ^{+0.20} | 0.50 ^{+0.20} | 0.60 ^{+0.10} | 16 |

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.

00 Sep. 2010

■ Ratings

| Type (inch size) | Power Rating at 70 °C (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) |
|------------------|---------------------------|---|---|--------------------------|----------------------|--|---------------------------------|
| ERJP03 (0603) | 0.2 | 150 | 200 | ±0.5 | 10 to 1 M (E24, E96) | ±150 | -55 to +155 |
| | | | | ±1 | 10 to 1 M (E24, E96) | ±200 | |
| | | | | ±5 | 1 to 1 M (E24) | ±200 Less than 10 Ω : -150 to +400 | |
| ERJP06 (0805) | 0.25 | 150 (400) ⁽³⁾ | 200 (600) ⁽³⁾ | ±0.5, ±1 | 10 to 1 M (E24, E96) | Less than 33 Ω : ±300 More than 33 Ω : ±100 | -55 to +155 |
| | | | | ±5 | 1 to 3.3 M (E24) | Less than 33 Ω : ±300 More than 33 Ω : ±200 | |
| ERJP08 (1206) | 0.33 | 200 (500) ⁽³⁾ | 400 (1000) ⁽³⁾ | ±0.5, ±1 | 10 to 1 M (E24, E96) | ±100 | -55 to +155 |
| | | | | ±5 | 1 to 10 M (E24) | Less than 10 Ω : -100 to +600 More than 10 Ω : ±200 | |
| ERJP14 (1210) | 0.5 | 200 | 400 | ±0.5, ±1 | 10 to 1 M (E24, E96) | ±100 | -55 to +155 |
| | | | | ±5 | 1 to 1 M (E24) | Less than 10 Ω : -100 to +600 More than 10 Ω : ±200 | |

- (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 resistors with guaranteed high voltage are need.

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.

* When the temperature of ERJP06/08/14 is 155 °C or less, the derating start temperature can be changed to 125 °C. (See the dotted line)



■ ESD Characteristic



— Anti-Surge Thick Film Chip Resistors(ERJP Type)
 - - - Thick Film Chip Resistors(ERJ Type)



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Anti-Pulse Thick Film Chip Resistors 0805, 1206, 1210

Type: **ERJ T06, T08, T14**



■ Features

- Anti-Pulse characteristics
High pulse characteristics achieved by the optimized trimming specifications
- High reliability
Metal glaze thick film resistive element and three layers of electrodes
- Suitable for both reflow and flow soldering
- High power···0.25 W : 2012(0805) size
0.33 W : 3216(1206) size
0.5 W : 3225(1210) size
- 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



■ Construction



■ Dimensions in mm (not to scale)



| Type (inch size) | Dimensions (mm) | | | | | Mass (Weight) [g/1000 pcs.] |
|---------------------|--|--|-----------------------|-----------------------|-----------------------|--------------------------------|
| | L | W | a | b | t | |
| ERJT06 (0805) | 2.00 ^{+0.20} | 1.25 ^{+0.10} | 0.25 ^{+0.20} | 0.40 ^{+0.20} | 0.60 ^{+0.10} | 4 |
| ERJT08 (1206) | 3.20 ^{+0.05} _{-0.20} | 1.60 ^{+0.05} _{-0.15} | 0.40 ^{+0.20} | 0.50 ^{+0.20} | 0.60 ^{+0.10} | 10 |
| ERJT14 (1210) | 3.20 ^{+0.20} | 2.50 ^{+0.20} | 0.35 ^{+0.20} | 0.50 ^{+0.20} | 0.60 ^{+0.10} | 16 |

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.

00 Sep. 2010

■ Ratings

| Type (inch size) | Power Rating at 70 °C (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) |
|---------------------|---------------------------------|--|--|--------------------------------|----------------------------|---|--|
| ERJT06 (0805) | 0.25 | 150 | 200 | ±5 | 1 to 1 M (E24) | Less than 10 Ω : -100 to +600 Less than 33 Ω : ±300 More than 33 Ω : ±200 | -55 to +155 |
| ERJT08 (1206) | 0.33 | 200 | 400 | ±5 | 1 to 1 M (E24) | Less than 10 Ω : -100 to +600 More than 10 Ω : ±200 | -55 to +155 |
| ERJT14 (1210) | 0.5 | 200 | 400 | ±5 | 1 to 1 M (E24) | Less than 10 Ω : -100 to +600 More than 10 Ω : ±200 | -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.

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.



■ Limiting Power Curve

- In rush pulse Characteristic



Test cycle : 1000 cycles
Spec : Resistance value = within ±5%

● : Anti-Pulse Thick Film Chip Resistors (ERJT Type)
○ : Thick Film Chip Resistors (ERJ Type)

● ERJT06 (2012 (0805) size)



● ERJT08 (3216 (1206) size)



● ERJT14 (3225 (1210) size)

