

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

Type: **ERJ P03, PA3, P06, P08, P14**  
**ERJ P6W**



#### ■ Features

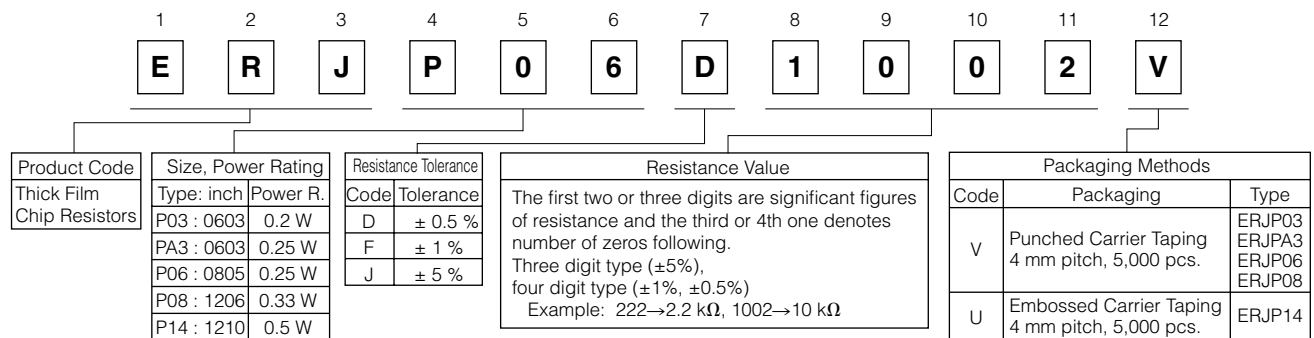
- ESD surge characteristics superior to standard metal film resistors
- High reliability  
Metal glaze thick film resistive element and three layers of electrodes
- Suitable for both reflow and flow soldering
- High power...
  - 0.2 W : 1608(0603) size(ERJP03)
  - 0.25 W : 1608(0603) size(ERJPA3), 2012(0805) size(ERJP06)
  - 0.33 W : 3216(1206) size(ERJP08)
  - 0.5 W : 3225(1210) size(ERJP14), double-sided resistive elements structure 2012(0805) size(ERJP6W)
- Reference Standards...IEC 60115-8, JIS C 5201-8, EIAJ RC-2134B
- RoHS compliant

#### ■ Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions

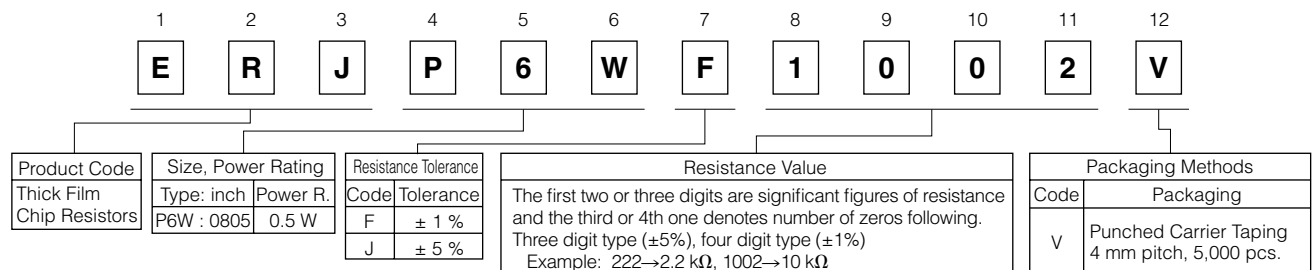
Please see Data Files

#### ■ Explanation of Part Numbers

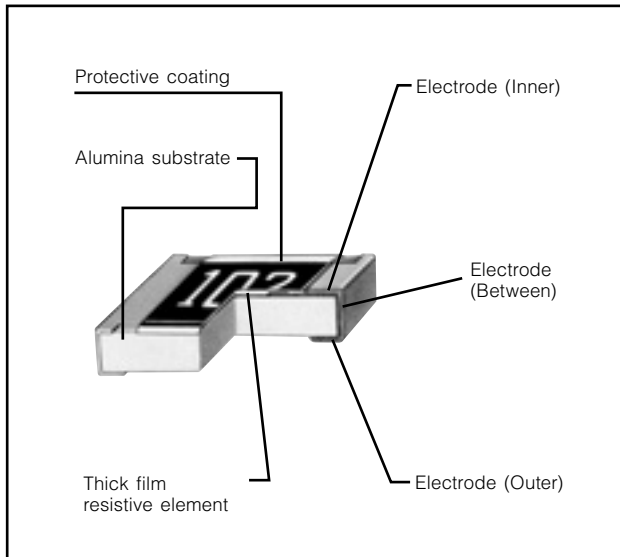
- ERJP03, PA3, P06, P08, P14



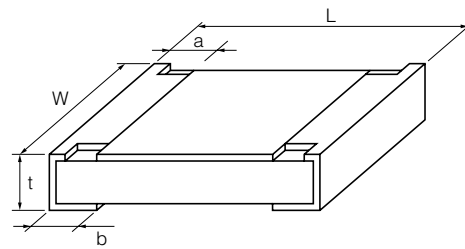
- ERJP6W(double-sided resistive elements structure)



### Construction



### Dimensions in mm (not to scale)



| Type<br>(inch size) | Dimensions (mm)             |                             |                             |                       |                       | Mass (Weight)<br>[g/1000pcs.] |
|---------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------|-----------------------|-------------------------------|
|                     | L                           | W                           | a                           | b                     | t                     |                               |
| ERJP03<br>(0603)    | 1.60 <sup>+0.15</sup>       | 0.80 <sup>+0.15/-0.05</sup> | 0.15 <sup>+0.15/-0.10</sup> | 0.30 <sup>+0.15</sup> | 0.45 <sup>+0.10</sup> | 2                             |
| ERJPA3<br>(0603)    | 1.60 <sup>+0.15</sup>       | 0.80 <sup>+0.15/-0.05</sup> | 0.15 <sup>+0.15/-0.10</sup> | 0.25 <sup>+0.10</sup> | 0.45 <sup>+0.10</sup> | 2                             |
| ERJP06<br>(0805)    | 2.00 <sup>+0.20</sup>       | 1.25 <sup>+0.10</sup>       | 0.25 <sup>+0.20</sup>       | 0.40 <sup>+0.20</sup> | 0.60 <sup>+0.10</sup> | 4                             |
| ERJP6W<br>(0805)    | 2.00 <sup>+0.20</sup>       | 1.25 <sup>+0.20</sup>       | 0.35 <sup>+0.20</sup>       | 0.35 <sup>+0.20</sup> | 0.65 <sup>+0.10</sup> | 6                             |
| ERJP08<br>(1206)    | 3.20 <sup>+0.05/-0.20</sup> | 1.60 <sup>+0.05/-0.15</sup> | 0.40 <sup>+0.20</sup>       | 0.50 <sup>+0.20</sup> | 0.60 <sup>+0.10</sup> | 10                            |
| ERJP14<br>(1210)    | 3.20 <sup>+0.20</sup>       | 2.50 <sup>+0.20</sup>       | 0.35 <sup>+0.20</sup>       | 0.50 <sup>+0.20</sup> | 0.60 <sup>+0.10</sup> | 16                            |

### Ratings

| Type<br>(inch size) | Power Rating<br>at 70 °C<br>(W) | Limiting<br>Element<br>Voltage <sup>(1)</sup><br>(V) | Maximum<br>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<br>Range (°C) |  |
|---------------------|---------------------------------|--|--|--------------------------------|----------------------------|--|---------------------------------------|--|
| ERJP03<br>(0603)    | 0.2                             | 150  | 200  | ±0.5                           | 10 to 1 M<br>(E24, E96)    | ±150   | -55 to +155                           |  |
|                     |                                 |  |  | ±1                             | 10 to 1 M<br>(E24, E96)    |  |                                       | ±200                                       |
|                     |                                 |  |  | ±5                             | 1 to 1 M<br>(E24)          |  |                                       | R < 10 Ω : -150 to +400<br>10 Ω ≤ R : ±200 |
| ERJPA3<br>(0603)    | 0.25                            | 150  | 200  | ±0.5, ±1                       | 10 to 1 M<br>(E24, E96)    | ±100   | -55 to +155                           |  |
|                     |                                 |  |  | ±5                             | 1 to 1.5 M<br>(E24)        |  |                                       | ±200                                       |
| ERJP06<br>(0805)    | 0.25                            | 400  | 600  | ±0.5, ±1                       | 10 to 1 M<br>(E24, E96)    | R < 33 Ω : ±300<br>33 Ω ≤ R : ±100                                   | -55 to +155                           |  |
|                     |                                 |  |  | ±5                             | 1 to 3.3 M<br>(E24)        | R < 10 Ω : -100 to +600<br>10 Ω ≤ R < 33 Ω : ±300<br>33 Ω ≤ R : ±200 |                                       |  |
| ERJP6W<br>(0805)    | 0.5                             | 150  | 200  | ±1                             | 10 to 1 M<br>(E24, E96)    | ±200   | -55 to +155                           |  |
|                     |                                 |  |  | ±5                             | 1 to 1 M<br>(E24)          |  |                                       | R < 10 Ω : -100 to +600<br>10 Ω ≤ R : ±200 |
| ERJP08<br>(1206)    | 0.33                            | 500  | 1000   | ±0.5, ±1                       | 10 to 1 M<br>(E24, E96)    | ±100   | -55 to +155                           |  |
|                     |                                 |  |  | ±5                             | 1 to 10 M<br>(E24)         |  |                                       | R < 10 Ω : -100 to +600<br>10 Ω ≤ R : ±200 |
| ERJP14<br>(1210)    | 0.5                             | 200  | 400  | ±0.5, ±1                       | 10 to 1 M<br>(E24, E96)    | ±100   | -55 to +155                           |  |
|                     |                                 |  |  | ±5                             | 1 to 1 M<br>(E24)          |  |                                       | R < 10 Ω : -100 to +600<br>10 Ω ≤ R : ±200 |

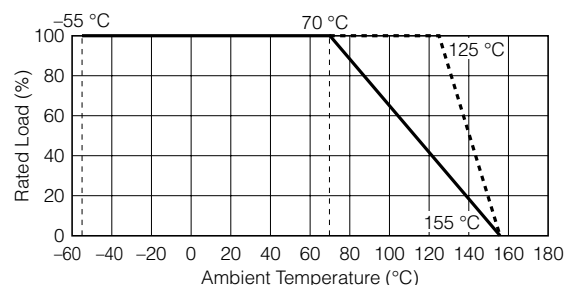
(1) Rated Continuous Working Voltage (RCWV) shall be determined from  $RCWV = \sqrt{\text{Power Rating} \times \text{Resistance Values}}$ , or Limiting Element Voltage listed above, whichever less.

(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.

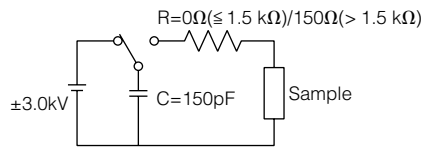
### Power Derating Curve

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

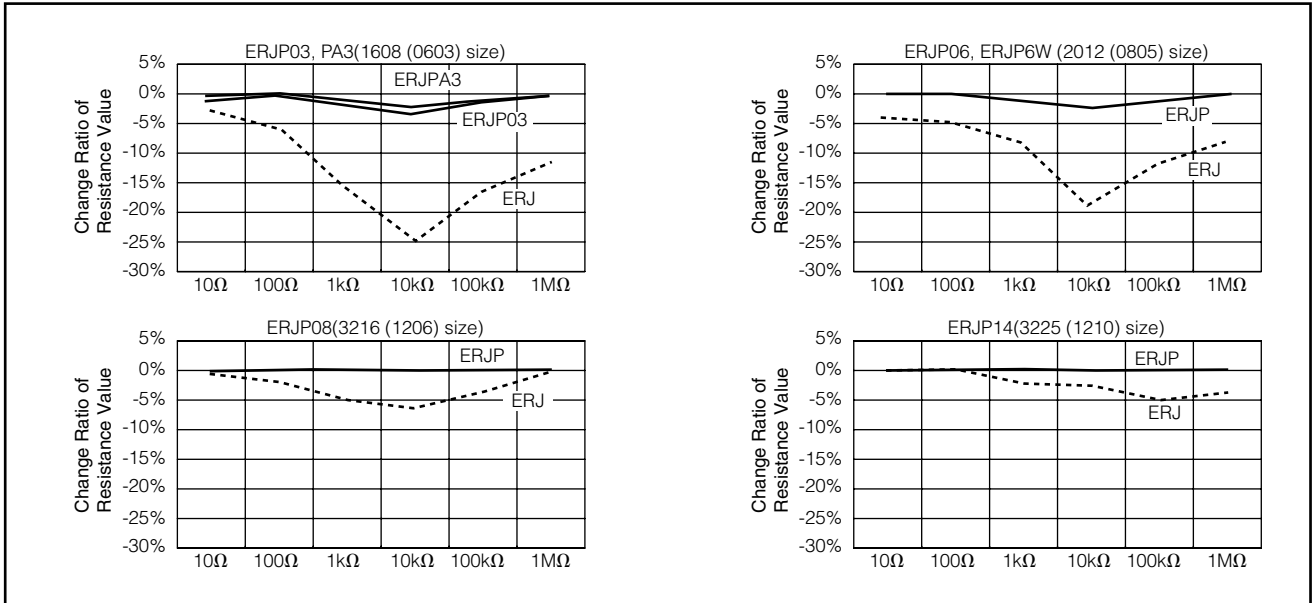
\* When the temperature of ERJP06/08/14 is 155 °C or less, the derating start temperature can be changed to 125 °C. (See the dotted line)



### ESD Characteristic



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



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

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



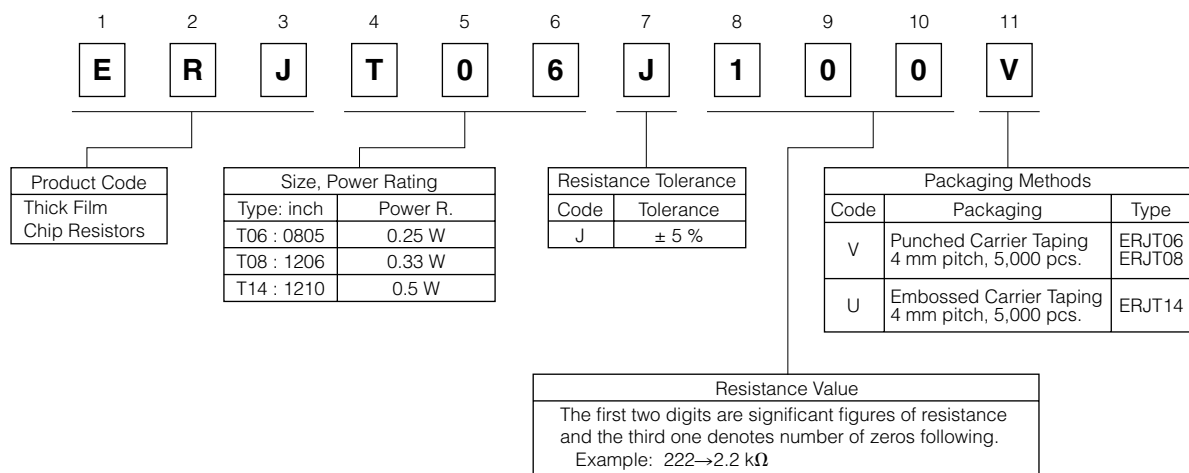
#### ■ Features

- 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
- RoHS compliant

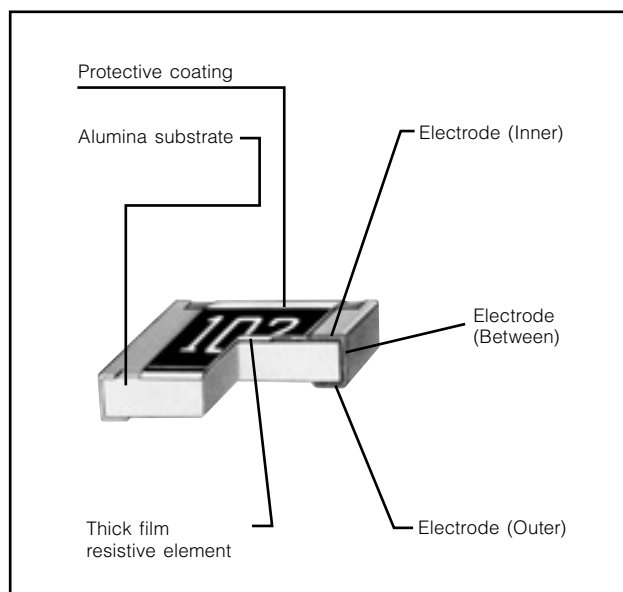
#### ■ Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions

Please see Data Files

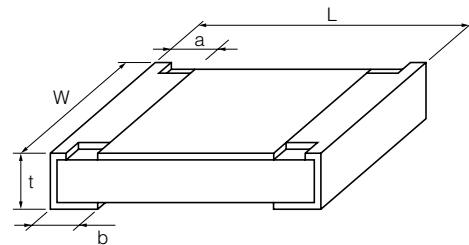
#### ■ Explanation of Part Numbers



#### ■ Construction



#### ■ Dimensions in mm (not to scale)



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

### ■ Ratings

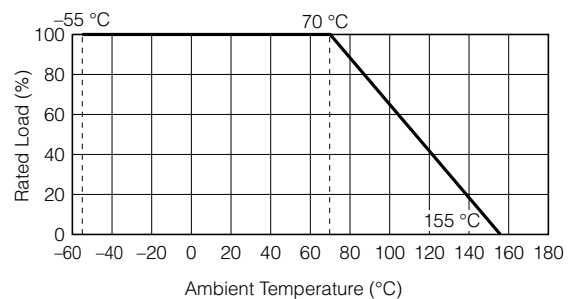
| Type<br>(inch size) | Power Rating<br>at 70 °C<br>(W) | Limiting<br>Element<br>Voltage <sup>(1)</sup><br>(V) | Maximum<br>Overload<br>Voltage <sup>(2)</sup><br>(V) | Resistance<br>Tolerance<br>(%) | Resistance<br>Range<br>(Ω) | T.C.R.<br>(×10 <sup>-6</sup> /°C)   | Category<br>Temperature<br>Range<br>(°C) |
|---------------------|---------------------------------|--|--|--------------------------------|----------------------------|---|--|
| ERJT06<br>(0805)    | 0.25                            | 150  | 200  | ±5                             | 1 to 1 M<br>(E24)          | Less than 10 Ω : -100 to +600<br>Less than 33 Ω : ±300<br>More than 33 Ω : ±200 | -55 to +155                              |
| ERJT08<br>(1206)    | 0.33                            | 200  | 400  | ±5                             | 1 to 1 M<br>(E24)          | Less than 10 Ω : -100 to +600<br>More than 10 Ω : ±200                          | -55 to +155                              |
| ERJT14<br>(1210)    | 0.5                             | 200  | 400  | ±5                             | 1 to 1 M<br>(E24)          | Less than 10 Ω : -100 to +600<br>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.

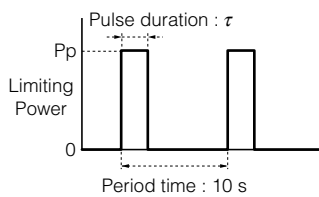
### Power Derating Curve

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

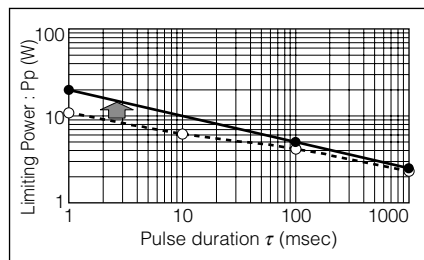
● In rush pulse Characteristic



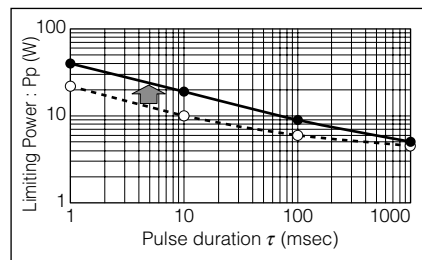
Test cycle : 1000 cycles  
Spec : Resistance value = within ±5%

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

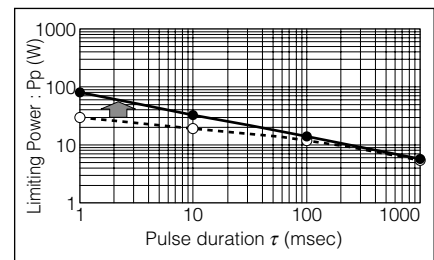
### ● ERJT06 (2012 (0805) size)



### ● ERJT08 (3216 (1206) size)



### ● ERJT14 (3225 (1210) size)



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**Телефон:** 8 (812) 309 58 32 (многоканальный)

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**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.