

## Anti-Surge Thick Film Chip Resistors

Type: **ERJ PA2, P03, PA3, P06, P08, P14**



### Features

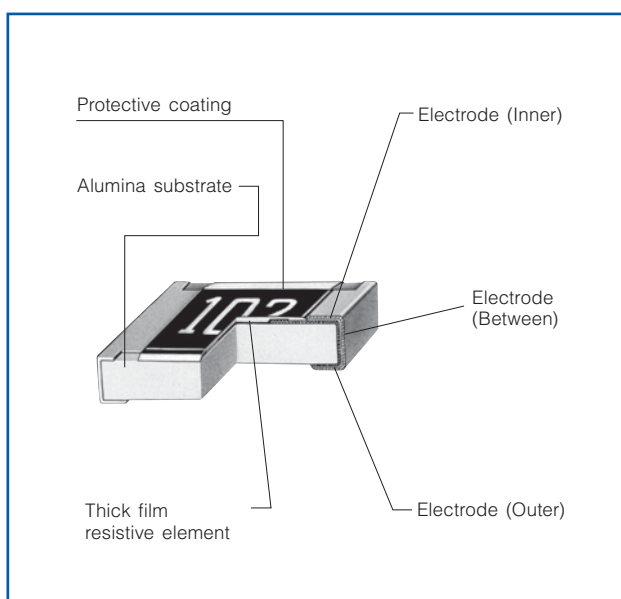
- ESD surge characteristics superior to standard metal film resistors
- High reliability  
Metal glaze thick film resistive element and three layers of electrodes
- Suitable for both reflow and flow soldering
- High power ... 0.20 W : 0402 inch / 1005 mm size (ERJPA2), 0603 inch / 1608 mm size (ERJP03)  
0.25 W : 0603 inch / 1608 mm size (ERJPA3)  
0.50 W : 0805 inch / 2012 mm size (ERJP06), 1210 inch / 3225 mm size (ERJP14)  
0.66 W : 1206 inch / 3216 mm size (ERJP08)
- Reference Standards... IEC 60115-8, JIS C 5201-8, EIAJ RC-2134B
- AEC-Q200 qualified
- RoHS compliant

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

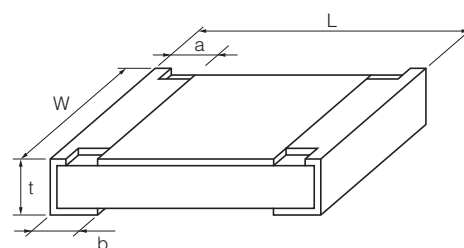
### Explanation of Part Numbers

	1	2	3	4	5	6	7	8	9	10	11	12
	E	R	J	P	0	6	D	1	0	0	2	V
Product Code Thick Film Chip Resistors	Size, Power Rating			Resistance Tolerance		Resistance Value				Packaging Methods		
	Code	Inch	Power R.	Code	Tolerance	<p>The first two or three digits are significant figures of resistance and the third or 4th one denotes number of zeros following.</p> <p>Three digit type (<math>\pm 5\%</math>), four digit type (<math>\pm 1\%</math>, <math>\pm 0.5\%</math>)</p> <p>Example: 222<math>\rightarrow</math>2.2k <math>\Omega</math>, 1002<math>\rightarrow</math>10k <math>\Omega</math></p>				Code	Packaging	Part No.
	PA2	0402	0.20 W	D	$\pm 0.5\%$					X	Punched Carrier Taping 2 mm pitch, 10,000 pcs.	ERJPA2
	P03	0603	0.20 W	F	$\pm 1\%$					V	Punched Carrier Taping 4 mm pitch, 5,000 pcs.	ERJP03 ERJPA3 ERJP06 ERJP08
	PA3	0603	0.25 W	J	$\pm 5\%$					U	Embossed Carrier Taping 4 mm pitch, 5,000 pcs.	ERJP14
	P06	0805	0.50 W									
	P08	1206	0.66 W									
	P14	1210	0.50 W									

### Construction



### Dimensions in mm (not to scale)



Part No. (inch size)	Dimensions (mm)					Mass (Weight) [g/1000 pcs.]
	L	W	a	b	t	
ERJPA2 (0402)	1.00 $\pm 0.05$	0.50 $\pm 0.05$	0.20 $\pm 0.15$	0.25 $\pm 0.05$	0.35 $\pm 0.05$	0.8
ERJP03 (0603)	1.60 $\pm 0.15$	0.80 $\pm 0.15$ $-0.05$	0.15 $\pm 0.15$ $-0.10$	0.30 $\pm 0.15$	0.45 $\pm 0.10$	2
ERJPA3 (0603)	1.60 $\pm 0.15$	0.80 $\pm 0.15$ $-0.05$	0.15 $\pm 0.15$ $-0.10$	0.25 $\pm 0.10$	0.45 $\pm 0.10$	2
ERJP06 (0805)	2.00 $\pm 0.20$	1.25 $\pm 0.10$	0.25 $\pm 0.20$	0.40 $\pm 0.20$	0.60 $\pm 0.10$	4
ERJP08 (1206)	3.20 $\pm 0.05$ $-0.20$	1.60 $\pm 0.05$ $-0.15$	0.40 $\pm 0.20$	0.50 $\pm 0.20$	0.60 $\pm 0.10$	10
ERJP14 (1210)	3.20 $\pm 0.20$	2.50 $\pm 0.20$	0.35 $\pm 0.20$	0.50 $\pm 0.20$	0.60 $\pm 0.10$	16

## Ratings

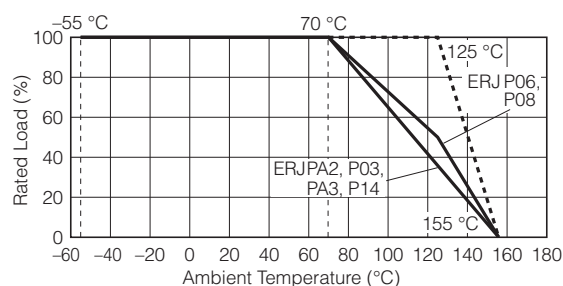
Part No. (inch size)	Power Rating <sup>(3)</sup> at 70 °C (W)	Limiting Element Voltage <sup>(1)</sup> (V)	Maximum Overload Voltage <sup>(2)</sup> (V)	Resistance Tolerance (%)	Resistance Range (Ω)	T.C.R. ( $\times 10^{-6}/^{\circ}\text{C}$ )	Category Temperature Range (°C)
ERJPA2 (0402)	0.20	50	100	$\pm 0.5, \pm 1$	10 to 1M (E24, E96)	$\pm 100$	-55 to +155
				$\pm 5$	10 to 1M (E24)	$\pm 200$	
ERJP03 (0603)	0.20	150	200	$\pm 0.5$	10 to 1M (E24, E96)	$\pm 150$	-55 to +155
				$\pm 1$	10 to 1M (E24, E96)	$\pm 200$	
				$\pm 5$	1 to 1M (E24)	$R < 10 \Omega : -150 \text{ to } +400$ $10 \Omega \leq R : \pm 200$	
ERJPA3 (0603)	0.25	150	200	$\pm 0.5, \pm 1$	10 to 1M (E24, E96)	$\pm 100$	-55 to +155
				$\pm 5$	1 to 1.5M (E24)	$\pm 200$	
ERJP06 (0805)	0.50	400	600	$\pm 0.5, \pm 1$	10 to 1M (E24, E96)	$R < 33 \Omega : \pm 300$ $33 \Omega \leq R : \pm 100$	-55 to +155
				$\pm 5$	1 to 3.3M (E24)	$R < 10 \Omega : -100 \text{ to } +600$ $10 \Omega \leq R < 33 \Omega : \pm 300$ $33 \Omega \leq R : \pm 200$	
ERJP08 (1206)	0.66	500	1000	$\pm 0.5, \pm 1$	10 to 1M (E24, E96)	$\pm 100$	-55 to +155
				$\pm 5$	1 to 10M (E24)	$R < 10 \Omega : -100 \text{ to } +600$ $10 \Omega \leq R : \pm 200$	
ERJP14 (1210)	0.50	200	400	$\pm 0.5, \pm 1$	10 to 1M (E24, E96)	$\pm 100$	-55 to +155
				$\pm 5$	1 to 1M (E24)	$R < 10 \Omega : -100 \text{ to } +600$ $10 \Omega \leq R : \pm 200$	

(1) Rated Continuous Working Voltage (RCWW) shall be determined from  $\text{RCWW} = \sqrt{\text{Power Rating} \times \text{Resistance Values}}$ , or Limiting Element Voltage listed above, whichever less.  
(2) Overload (Short-time Overload) Test Voltage (SOTV) shall be determined from  $\text{SOTV} = 2.5 \times \text{RCWW}$  or max. Overload Voltage listed above whichever less.  
(3) Use it on the condition that the case temperature is below 155 °C.

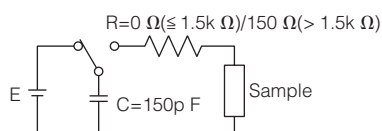
## Power Derating Curve

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 ERJP14 is 155 °C or less, the derating start temperature can be changed to 125 °C. (See the dotted line)

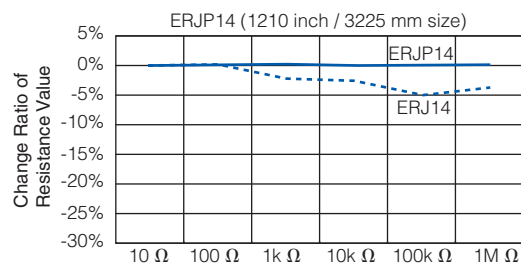
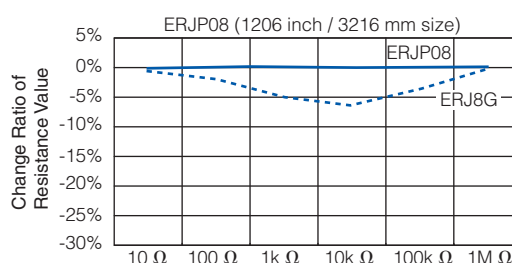
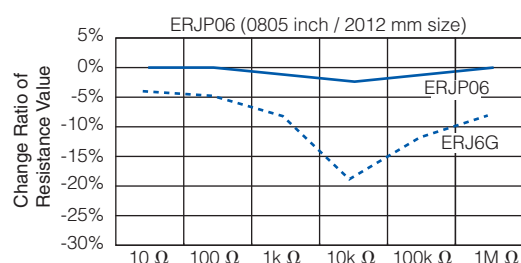
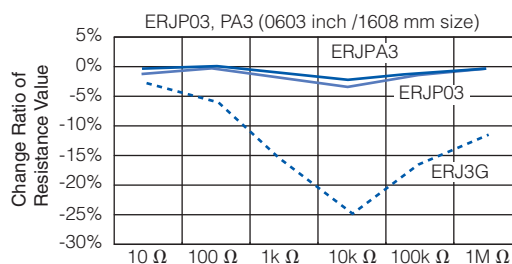
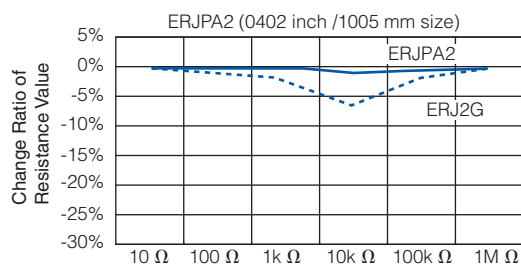


## ESD Characteristic



0402 inch size : E=±1k V  
0603, 0805, 1206, 1210 inch size : E=±3k V

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



## Anti-Pulse Thick Film Chip Resistors



Type: **ERJ T06, T08, T14**  
**ERJ T14L**

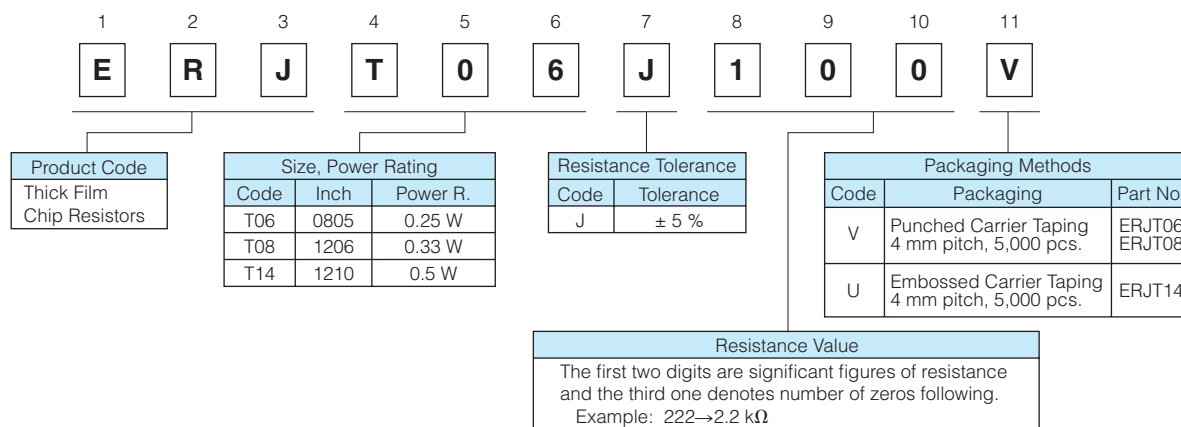
### Features

- Anti-Pulse characteristics  
High pulse characteristics achieved by the optimized trimming specifications (ERJT06, T08, T14)
- Further high pulse characteristics achieved by trimming-less specifications (ERJT14L)
- High reliability  
Metal glaze thick film resistive element and three layers of electrodes
- Suitable for both reflow and flow soldering
- High power ... 0.25W : 0805 inch / 2012 mm size (ERJT06)  
0.33W : 1206 inch / 3216 mm size (ERJT08)  
0.50W : 1210 inch / 3225 mm size (ERJT14, ERJT14L)
- Reference Standards...IEC 60115-8, JIS C 5201-8, EIAJ RC-2134B
- AEC-Q200 qualified
- RoHS compliant

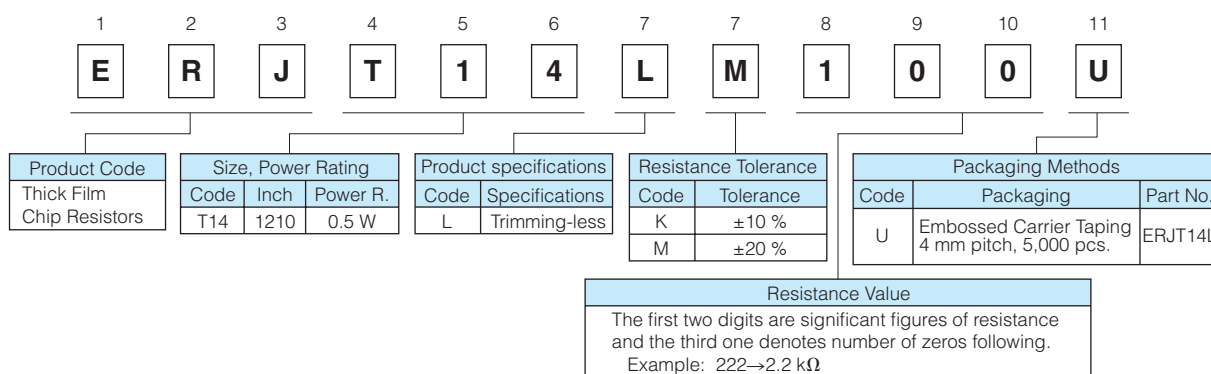
■ **As for Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions,**  
Please see Data Files

### Explanation of Part Numbers

- ERJT06, T08, T14 Type

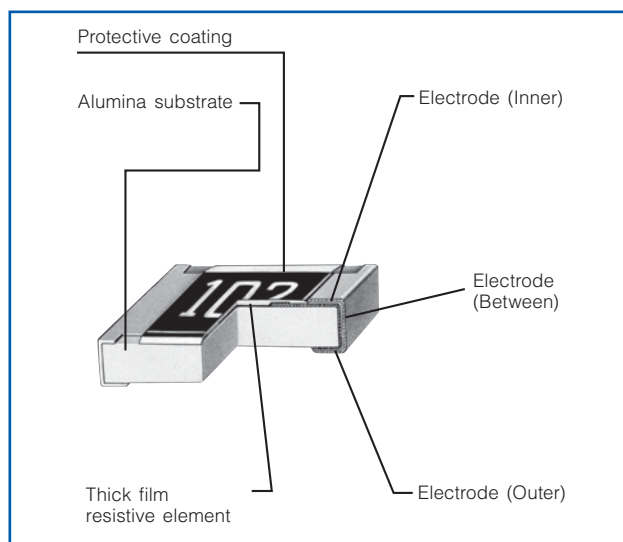


- ERJT14L Type

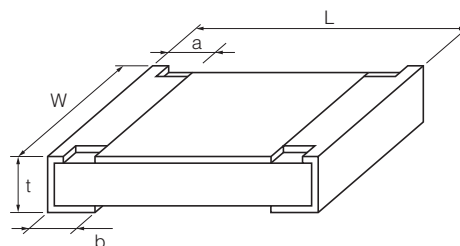


\* Please contact us for 2012 (mm) and 3216 (mm) size trimming-less types.

## Construction



## Dimensions in mm (not to scale)



Part No. (inch size)	Dimensions (mm)					Mass (Weight) [g/1000pcs.]
	L	W	a	b	t	
ERJT06 (0805)	2.00 $\pm$ 0.20	1.25 $\pm$ 0.10	0.25 $\pm$ 0.20	0.40 $\pm$ 0.20	0.60 $\pm$ 0.10	4
ERJT08 (1206)	3.20 $\pm$ 0.05 -0.20	1.60 $\pm$ 0.05 -0.15	0.40 $\pm$ 0.20	0.50 $\pm$ 0.20	0.60 $\pm$ 0.10	10
ERJT14 ERJT14L (1210)	3.20 $\pm$ 0.20	2.50 $\pm$ 0.20	0.35 $\pm$ 0.20	0.50 $\pm$ 0.20	0.60 $\pm$ 0.10	16

## Ratings

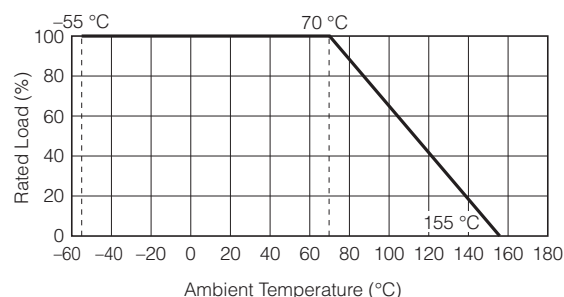
Part No. (inch size)	Power Rating at 70 °C (W)	Limiting Element Voltage <sup>(1)</sup> (V)	Maximum Overload Voltage <sup>(2)</sup> (V)	Resistance Tolerance (%)	Resistance Range ( $\Omega$ )	T.C.R. ( $\times 10^{-6}/^{\circ}\text{C}$ )	Category Temperature Range ( $^{\circ}\text{C}$ )
ERJT06 (0805)	0.25	150	200	$\pm 5$	1 to 1 M (E24)	Less than 10 $\Omega$ : -100 to +600 Less than 33 $\Omega$ : $\pm 300$ More than 33 $\Omega$ : $\pm 200$	-55 to +155
ERJT08 (1206)	0.33	200	400	$\pm 5$	1 to 1 M (E24)	Less than 10 $\Omega$ : -100 to +600 More than 10 $\Omega$ : $\pm 200$	-55 to +155
ERJT14 (1210)	0.50	200	400	$\pm 5$	1 to 1 M (E24)	Less than 10 $\Omega$ : -100 to +600 More than 10 $\Omega$ : $\pm 200$	-55 to +155
ERJT14L (1210)	0.50	200	400	$\pm 10$ $\pm 20$	1 to 1 M (E12)	Less than 10 $\Omega$ : -100 to +600 More than 10 $\Omega$ : $\pm 200$	-55 to +155

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

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

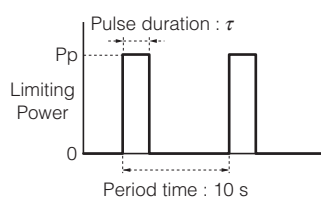
### Power Derating Curve

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

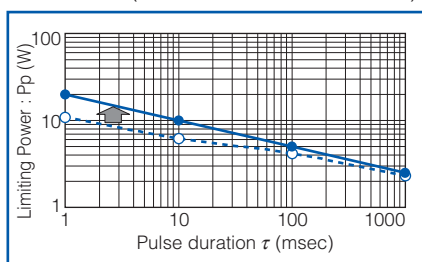
- In rush pulse Characteristic



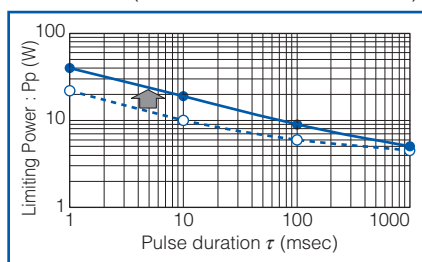
Test cycle : 1000 cycles  
Spec : Resistance value = within  $\pm 5\%$

▲ : Anti-Pulse Thick Film Chip Resistors (ERJT14L Type)  
● : Anti-Pulse Thick Film Chip Resistors (ERJT Type)  
○ : Thick Film Chip Resistors (ERJ Type)

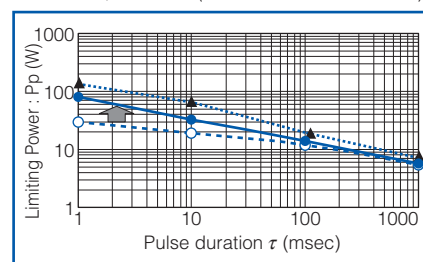
- ERJT06 (0805 inch/2012 mm size)



- ERJT08 (1206 inch/3216 mm size)



- ERJT14,ERJT14L (1210 inch/3225 mm size)



\* Please contact us for 2012 (mm) and 3216 (mm) size trimming-less types.

## Anti-Surge Thick Film Chip Resistors (Double-sided resistive elements structure) 0805

Type: **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···0.50 W : 2012(0805) size(ERJP6W)
- High pulse characteristics···1.5 times higher than 0805 inch size Anti-Surge Thick Film Chip Resistors (ERJP06)
- Reference Standards···IEC 60115-8, JIS C 5201-8, EIAJ RC-2134B
- AEC-Q200 qualified
- RoHS compliant

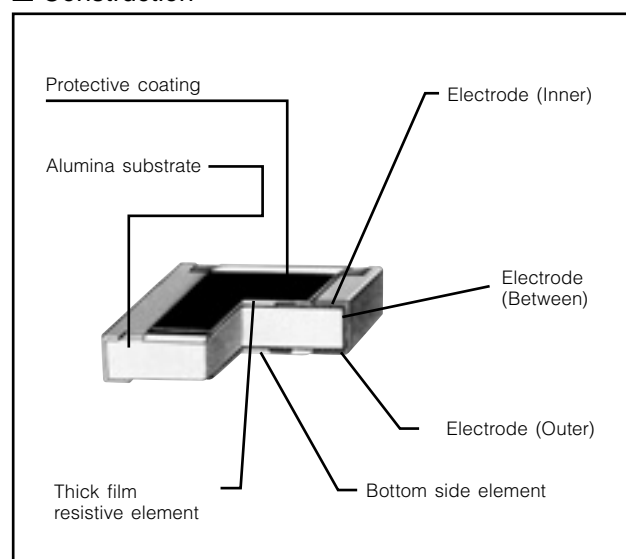
### ■ Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions

Please see Data Files

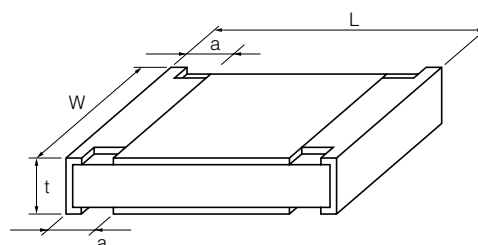
### ■ Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	R	J	P	6	W	F	1	0	0	2	V
Product Code		Size, Power Rating		Resistance Tolerance		Resistance Value				Packaging Methods	
Thick Film Chip Resistors		Type: inch	Power R.	Code	Tolerance	The first two or three digits are significant figures of resistance and the third or 4th one denotes number of zeros following. Three digit type (±5%), four digit type (±1%) Example: 222→2.2 kΩ, 1002→10 kΩ				Code	Packaging
		P6W : 0805	0.50 W	F	± 1 %					V	Punched Carrier Taping 4 mm pitch, 5,000 pcs.
				J	± 5 %						

### ■ Construction



### ■ Dimensions in mm (not to scale)



Type (inch size)	Dimensions (mm)				Mass (Weight) [g/1000 pcs.]
	L	W	a	t	
ERJP6W (0805)	2.00±0.20	1.25±0.20	0.35±0.20	0.65±0.10	6

### ■ Ratings

Type (inch size)	Power Rating <sup>(3)</sup> at 70 °C (W)	Limiting Element Voltage <sup>(1)</sup> (V)	Maximum Overload Voltage <sup>(2)</sup> (V)	Resistance Tolerance (%)	Resistance Range (Ω)	T.C.R. ( $\times 10^{-6}/^{\circ}\text{C}$ )	Category Temperature Range (°C)
ERJP6W (0805)	0.50	150	200	±1	10 to 1 M (E24, E96)	±200	-55 to +155
				±5	1 to 1 M (E24)	R < 10 Ω : -100 to +600 10 Ω ≤ R : ±200	

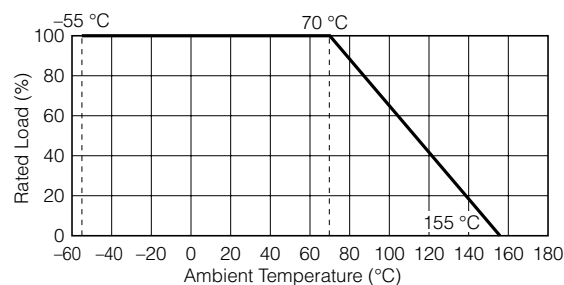
(1) Rated Continuous Working Voltage (RCWV) shall be determined from  $\text{RCWV} = \sqrt{\text{Power Rating} \times \text{Resistance Values}}$ , or Limiting Element Voltage listed above, whichever less.

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

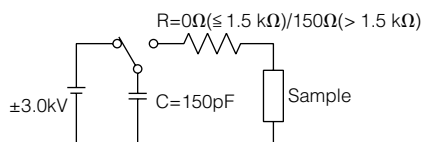
(3) Use it on the condition that the case temperature is below 155 °C.

### Power Derating Curve

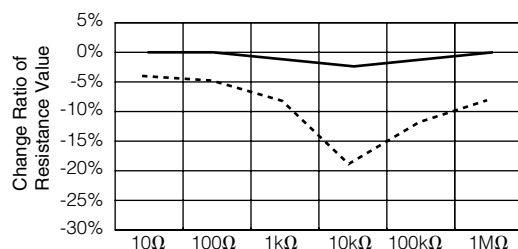
For resistors operated in ambient temperatures above 70 °C, power rating shall be derated in accordance with the figure on the right.



### ■ ESD Characteristic

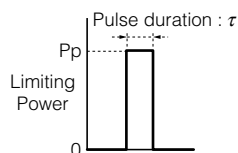


— Anti-Surge Thick Film Chip Resistors(ERJP6W Type)  
 - - - Thick Film Chip Resistors(ERJ6G Type)



### ■ Limiting Power Curve

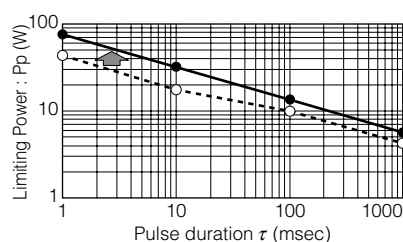
● In rush pulse Characteristic



Test cycle : 1 cycles

Spec : Resistance value = within ±1%

— Anti-Surge Thick Film Chip Resistors(ERJP6W Type)  
 - - - Anti-Surge Thick Film Chip Resistors(ERJP06 Type)





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<a href="#"><u>ERJ-T06J111V</u></a>	<a href="#"><u>ERJ-T06J112V</u></a>	<a href="#"><u>ERJ-T06J113V</u></a>	<a href="#"><u>ERJ-T06J114V</u></a>	<a href="#"><u>ERJ-T06J120V</u></a>	<a href="#"><u>ERJ-T06J121V</u></a>	<a href="#"><u>ERJ-T06J122V</u></a>
<a href="#"><u>ERJ-T06J123V</u></a>	<a href="#"><u>ERJ-T06J124V</u></a>	<a href="#"><u>ERJ-T06J130V</u></a>	<a href="#"><u>ERJ-T06J131V</u></a>	<a href="#"><u>ERJ-T06J132V</u></a>	<a href="#"><u>ERJ-T06J133V</u></a>	<a href="#"><u>ERJ-T06J134V</u></a>
<a href="#"><u>ERJ-T06J150V</u></a>	<a href="#"><u>ERJ-T06J151V</u></a>	<a href="#"><u>ERJ-T06J152V</u></a>	<a href="#"><u>ERJ-T06J153V</u></a>	<a href="#"><u>ERJ-T06J154V</u></a>	<a href="#"><u>ERJ-T06J160V</u></a>	<a href="#"><u>ERJ-T06J161V</u></a>
<a href="#"><u>ERJ-T06J162V</u></a>	<a href="#"><u>ERJ-T06J163V</u></a>	<a href="#"><u>ERJ-T06J164V</u></a>	<a href="#"><u>ERJ-T06J180V</u></a>	<a href="#"><u>ERJ-T06J181V</u></a>	<a href="#"><u>ERJ-T06J182V</u></a>	<a href="#"><u>ERJ-T06J183V</u></a>
<a href="#"><u>ERJ-T06J184V</u></a>	<a href="#"><u>ERJ-T06J1R0V</u></a>	<a href="#"><u>ERJ-T06J1R1V</u></a>	<a href="#"><u>ERJ-T06J1R2V</u></a>	<a href="#"><u>ERJ-T06J1R3V</u></a>	<a href="#"><u>ERJ-T06J1R5V</u></a>	<a href="#"><u>ERJ-T06J1R6V</u></a>
<a href="#"><u>ERJ-T06J1R8V</u></a>	<a href="#"><u>ERJ-T06J200V</u></a>	<a href="#"><u>ERJ-T06J201V</u></a>	<a href="#"><u>ERJ-T06J202V</u></a>	<a href="#"><u>ERJ-T06J203V</u></a>	<a href="#"><u>ERJ-T06J204V</u></a>	<a href="#"><u>ERJ-T06J220V</u></a>
<a href="#"><u>ERJ-T06J221V</u></a>	<a href="#"><u>ERJ-T06J222V</u></a>	<a href="#"><u>ERJ-T06J223V</u></a>	<a href="#"><u>ERJ-T06J224V</u></a>	<a href="#"><u>ERJ-T06J240V</u></a>	<a href="#"><u>ERJ-T06J241V</u></a>	<a href="#"><u>ERJ-T06J242V</u></a>
<a href="#"><u>ERJ-T06J243V</u></a>	<a href="#"><u>ERJ-T06J244V</u></a>	<a href="#"><u>ERJ-T06J270V</u></a>	<a href="#"><u>ERJ-T06J271V</u></a>	<a href="#"><u>ERJ-T06J272V</u></a>	<a href="#"><u>ERJ-T06J273V</u></a>	<a href="#"><u>ERJ-T06J274V</u></a>
<a href="#"><u>ERJ-T06J2R0V</u></a>	<a href="#"><u>ERJ-T06J2R2V</u></a>	<a href="#"><u>ERJ-T06J2R4V</u></a>	<a href="#"><u>ERJ-T06J2R7V</u></a>	<a href="#"><u>ERJ-T06J300V</u></a>	<a href="#"><u>ERJ-T06J301V</u></a>	<a href="#"><u>ERJ-T06J302V</u></a>
<a href="#"><u>ERJ-T06J303V</u></a>	<a href="#"><u>ERJ-T06J304V</u></a>	<a href="#"><u>ERJ-T06J330V</u></a>	<a href="#"><u>ERJ-T06J331V</u></a>	<a href="#"><u>ERJ-T06J332V</u></a>	<a href="#"><u>ERJ-T06J333V</u></a>	<a href="#"><u>ERJ-T06J334V</u></a>
<a href="#"><u>ERJ-T06J360V</u></a>	<a href="#"><u>ERJ-T06J361V</u></a>	<a href="#"><u>ERJ-T06J362V</u></a>	<a href="#"><u>ERJ-T06J363V</u></a>	<a href="#"><u>ERJ-T06J364V</u></a>	<a href="#"><u>ERJ-T06J390V</u></a>	<a href="#"><u>ERJ-T06J391V</u></a>
<a href="#"><u>ERJ-T06J392V</u></a>	<a href="#"><u>ERJ-T06J393V</u></a>	<a href="#"><u>ERJ-T06J394V</u></a>	<a href="#"><u>ERJ-T06J3R0V</u></a>	<a href="#"><u>ERJ-T06J3R3V</u></a>	<a href="#"><u>ERJ-T06J3R6V</u></a>	<a href="#"><u>ERJ-T06J3R9V</u></a>
<a href="#"><u>ERJ-T06J430V</u></a>	<a href="#"><u>ERJ-T06J431V</u></a>	<a href="#"><u>ERJ-T06J432V</u></a>	<a href="#"><u>ERJ-T06J433V</u></a>	<a href="#"><u>ERJ-T06J434V</u></a>	<a href="#"><u>ERJ-T06J470V</u></a>	<a href="#"><u>ERJ-T06J471V</u></a>
<a href="#"><u>ERJ-T06J472V</u></a>	<a href="#"><u>ERJ-T06J473V</u></a>					