

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

Type: **ERJ 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 : 1608(0603) size(ERJP03)
0.25 W : 1608(0603) size(ERJPA3)
0.50 W : 2012(0805) size(ERJP06), 3225(1210) size(ERJP14)
0.66 W : 3216(1206) size(ERJP08)
- Reference Standards···IEC 60115-8, JIS C 5201-8, EIAJ RC-2134B
- AEC-Q200 qualified
- RoHS compliant

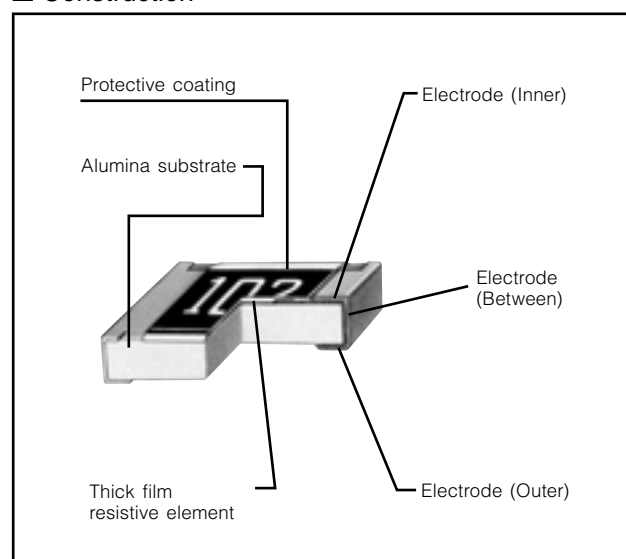
■ Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions

Please see Data Files

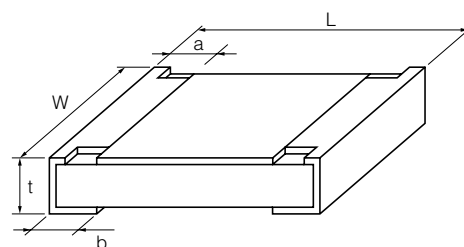
■ Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	R	J	P	0	6	D	1	0	0	2	V
Product Code Thick Film Chip Resistors	Size, Power Rating Type: inch Power R. P03 : 0603 0.20 W PA3 : 0603 0.25 W P06 : 0805 0.50 W P08 : 1206 0.66 W P14 : 1210 0.50 W		Resistance Tolerance Code Tolerance D ± 0.5 % F ± 1 % J ± 5 %		Resistance Value 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%, ±0.5%) Example: 222→2.2 kΩ, 1002→10 kΩ				Packaging Methods Code Packaging Type V Punched Carrier Taping 4 mm pitch, 5,000 pcs. ERJP03 ERJPA3 ERJP06 ERJP08 U Embossed Carrier Taping 4 mm pitch, 5,000 pcs. ERJP14		

■ 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} _{-0.05}	0.80 ^{+0.15} _{-0.05}	0.15 ^{+0.15} _{-0.10}	0.30 ^{+0.15} _{-0.10}	0.45 ^{+0.10} _{-0.10}	2
ERJPA3 (0603)	1.60 ^{+0.15} _{-0.05}	0.80 ^{+0.15} _{-0.05}	0.15 ^{+0.15} _{-0.10}	0.25 ^{+0.10} _{-0.10}	0.45 ^{+0.10} _{-0.10}	2
ERJP06 (0805)	2.00 ^{+0.20} _{-0.10}	1.25 ^{+0.10} _{-0.10}	0.25 ^{+0.20} _{-0.10}	0.40 ^{+0.20} _{-0.10}	0.60 ^{+0.10} _{-0.10}	4
ERJP08 (1206)	3.20 ^{+0.05} _{-0.20}	1.60 ^{+0.05} _{-0.15}	0.40 ^{+0.20} _{-0.10}	0.50 ^{+0.20} _{-0.10}	0.60 ^{+0.10} _{-0.10}	10
ERJP14 (1210)	3.20 ^{+0.20} _{-0.10}	2.50 ^{+0.20} _{-0.10}	0.35 ^{+0.20} _{-0.10}	0.50 ^{+0.20} _{-0.10}	0.60 ^{+0.10} _{-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.

06 Feb. 2014

■ Ratings

Type (inch size)	Power Rating ⁽³⁾ 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)	0.20	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)	R < 10 Ω : -150 to +400 10 Ω ≤ R : ±200	
ERJPA3 (0603)	0.25	150	200	±0.5, ±1	10 to 1 M (E24, E96)	±100	-55 to +155
				±5	1 to 1.5 M (E24)	±200	
ERJP06 (0805)	0.50	400	600	±0.5, ±1	10 to 1 M (E24, E96)	R < 33 Ω : ±300 33 Ω ≤ R : ±100	-55 to +155
				±5	1 to 3.3 M (E24)	R < 10 Ω : -100 to +600 10 Ω ≤ R < 33 Ω : ±300 33 Ω ≤ R : ±200	
ERJP08 (1206)	0.66	500	1000	±0.5, ±1	10 to 1 M (E24, E96)	±100	-55 to +155
				±5	1 to 10 M (E24)	R < 10 Ω : -100 to +600 10 Ω ≤ R : ±200	
ERJP14 (1210)	0.50	200	400	±0.5, ±1	10 to 1 M (E24, E96)	±100	-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 $RCWV = \sqrt{\text{Power Rating} \times \text{Resistance Values}}$, or Limiting Element Voltage listed above, whichever less.

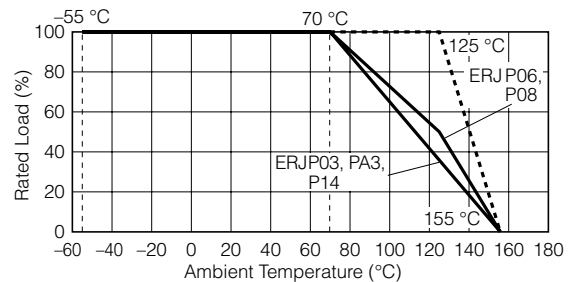
(2) Overload (Short-time Overload) Test Voltage (SOTV) shall be determined from $SOTV = 2.5 \times \text{Power Rating}$ or max. Overload Voltage listed above whichever less.

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

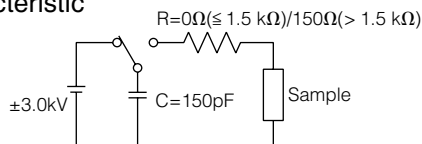
Power Derating Curve

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

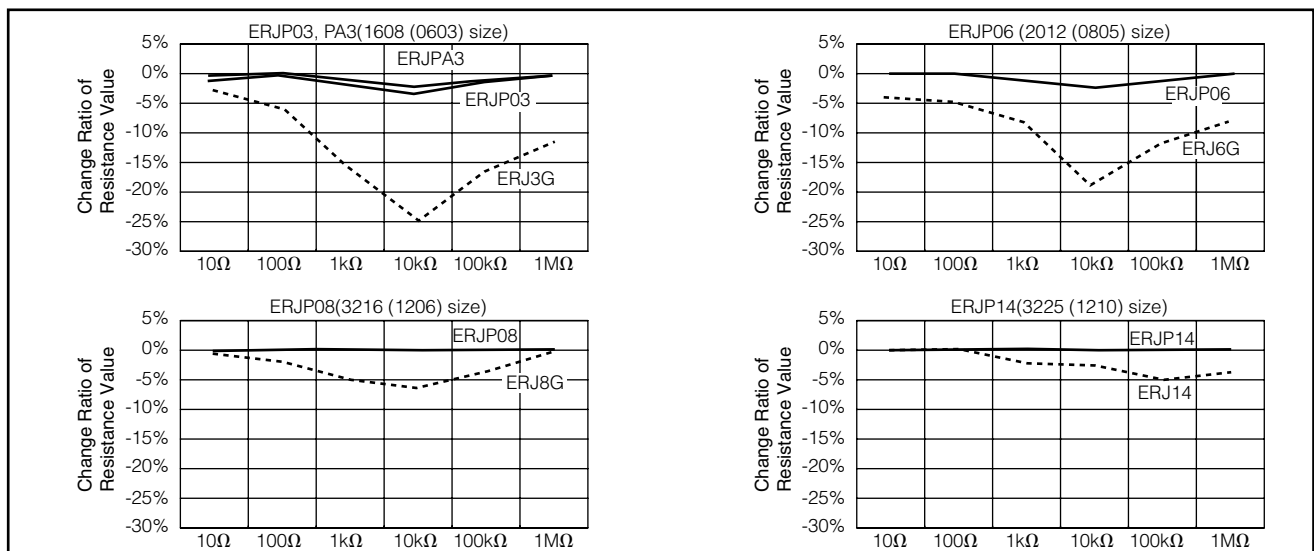
* When the temperature of ERJP14 is 155 °C or less, the derating start temperature can be changed to 125 °C. (See the dotted line)



■ ESD Characteristic



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



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06 Feb. 2014

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

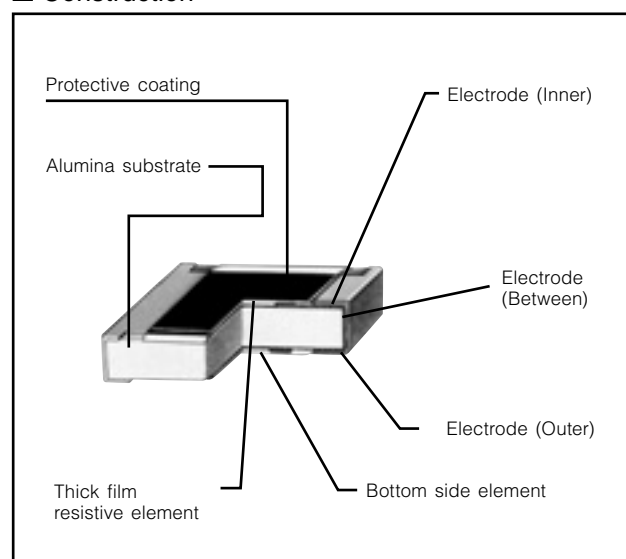
Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions

Please see Data Files

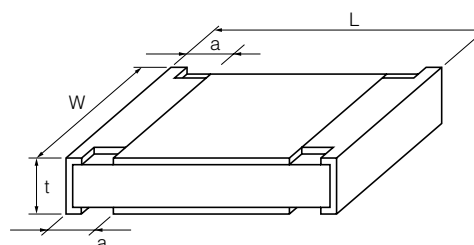
Explanation of Part Numbers

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 ($\pm 5\%$), four digit type ($\pm 1\%$) Example: 222→2.2 k Ω , 1002→10 k Ω				Code	Packaging
		P6W : 0805	0.50 W	F	$\pm 1\%$					V	Punched Carrier Taping 4 mm pitch, 5,000 pcs.
				J	$\pm 5\%$						

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

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01 Feb. 2014

■ Ratings

Type (inch size)	Power Rating ⁽³⁾ at 70 °C (W)	Limiting Element Voltage ⁽¹⁾ (V)	Maximum Overload Voltage ⁽²⁾ (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	

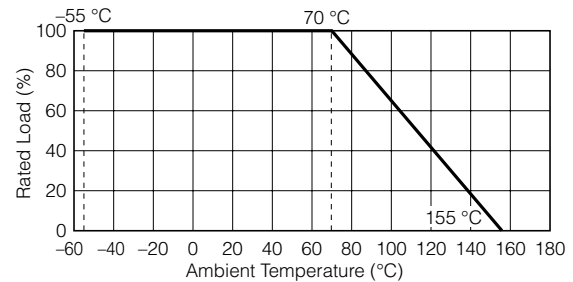
(1) Rated Continuous Working Voltage (RCWV) shall be determined from $\text{RCWV} = \sqrt{\text{Power Rating} \times \text{Resistance Values}}$, or Limiting Element Voltage listed above, whichever less.

(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.

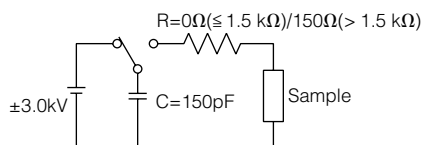
(3) Use it on the condition that the case temperature is below 155 °C.

Power Derating Curve

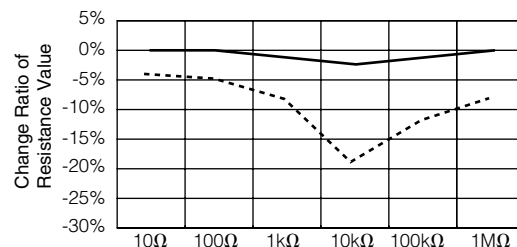
For resistors operated in ambient temperatures above 70 °C, power rating shall be derated in accordance with the figure on the right.



■ ESD Characteristic

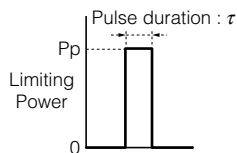


— Anti-Surge Thick Film Chip Resistors(ERJP6W Type)
 - - - Thick Film Chip Resistors(ERJ6G Type)



■ Limiting Power Curve

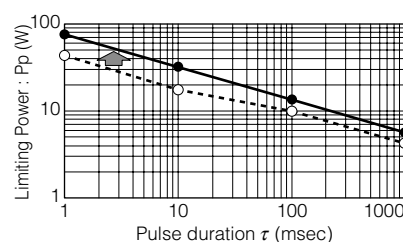
● In rush pulse Characteristic



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)



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

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



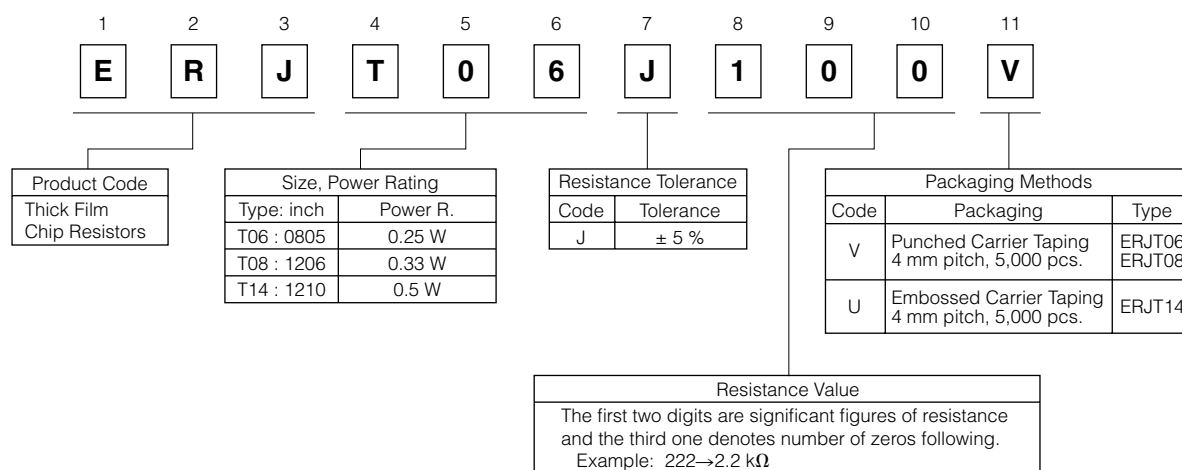
■ Features

- 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
- AEC-Q200 qualified
- RoHS compliant

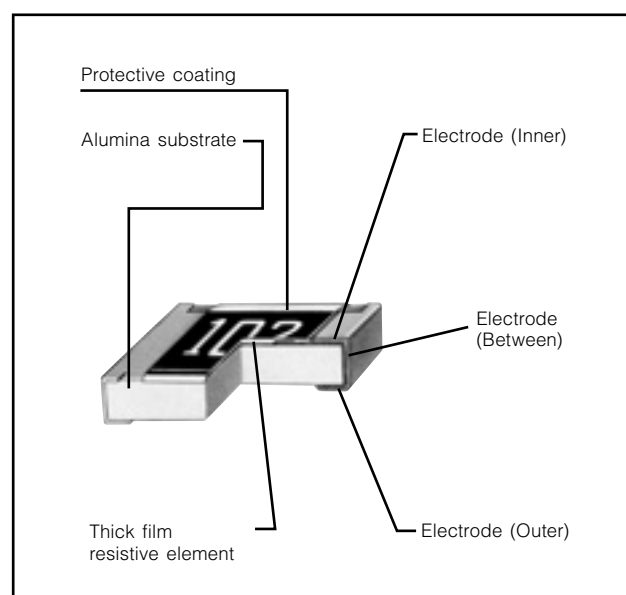
■ Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions

Please see Data Files

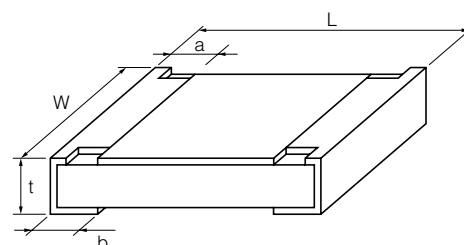
■ Explanation of Part Numbers



■ Construction



■ Dimensions in mm (not to scale)



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

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■ Ratings

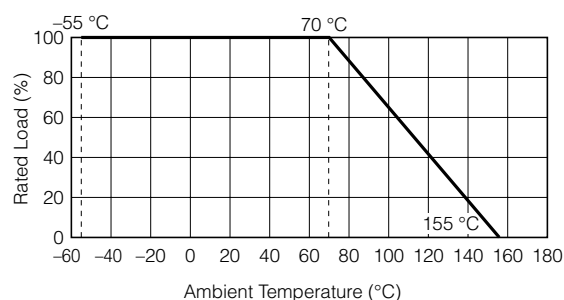
Type (inch size)	Power Rating at 70 °C (W)	Limiting Element Voltage ⁽¹⁾ (V)	Maximum Overload Voltage ⁽²⁾ (V)	Resistance Tolerance (%)	Resistance Range (Ω)	T.C.R. ($\times 10^{-6}/^{\circ}\text{C}$)	Category Temperature Range (°C)
ERJT06 (0805)	0.25	150	200	±5	1 to 1 M (E24)	Less than 10 Ω : -100 to +600 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 $\text{RCWV} = \sqrt{\text{Power Rating} \times \text{Resistance Values}}$, 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.

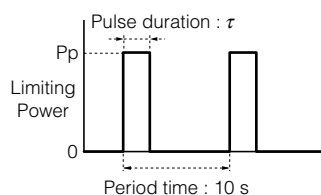
Power Derating Curve

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

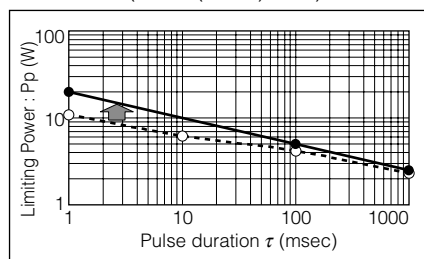


Test cycle : 1000 cycles

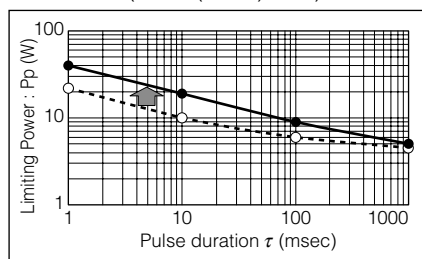
Spec : Resistance value = within ±5%

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

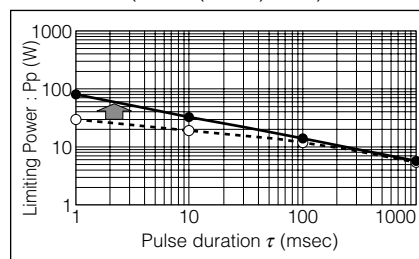
● ERJT06 (1212 (0805) size)



● ERJT08 (3216 (1206) size)



● ERJT14 (3225 (1210) size)



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