

## Precision Thick Film Chip Resistors

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



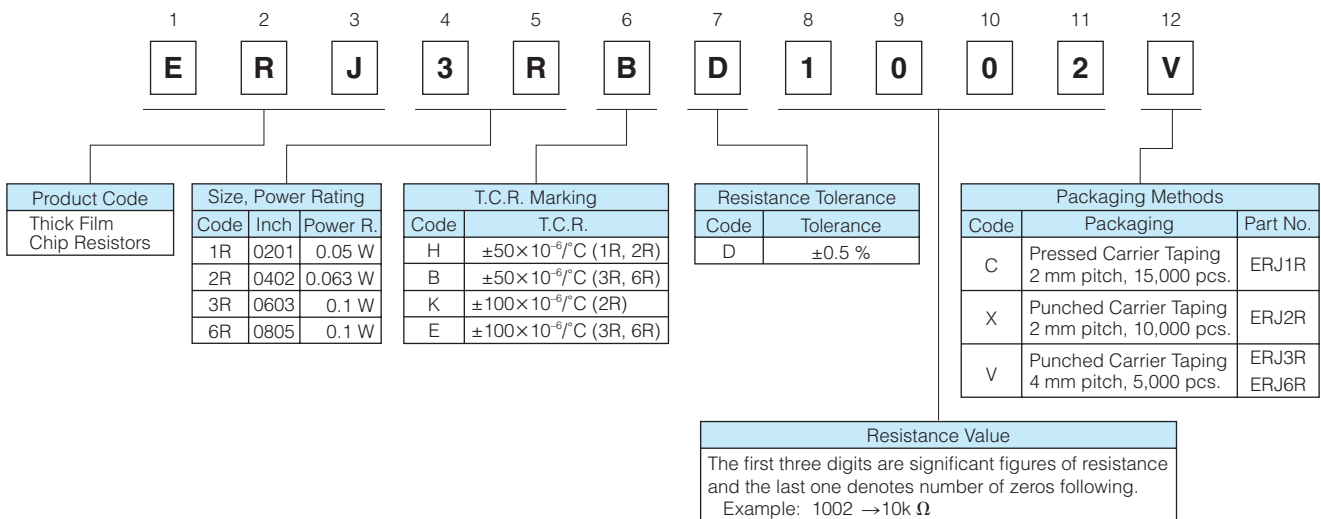
### Features

- 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

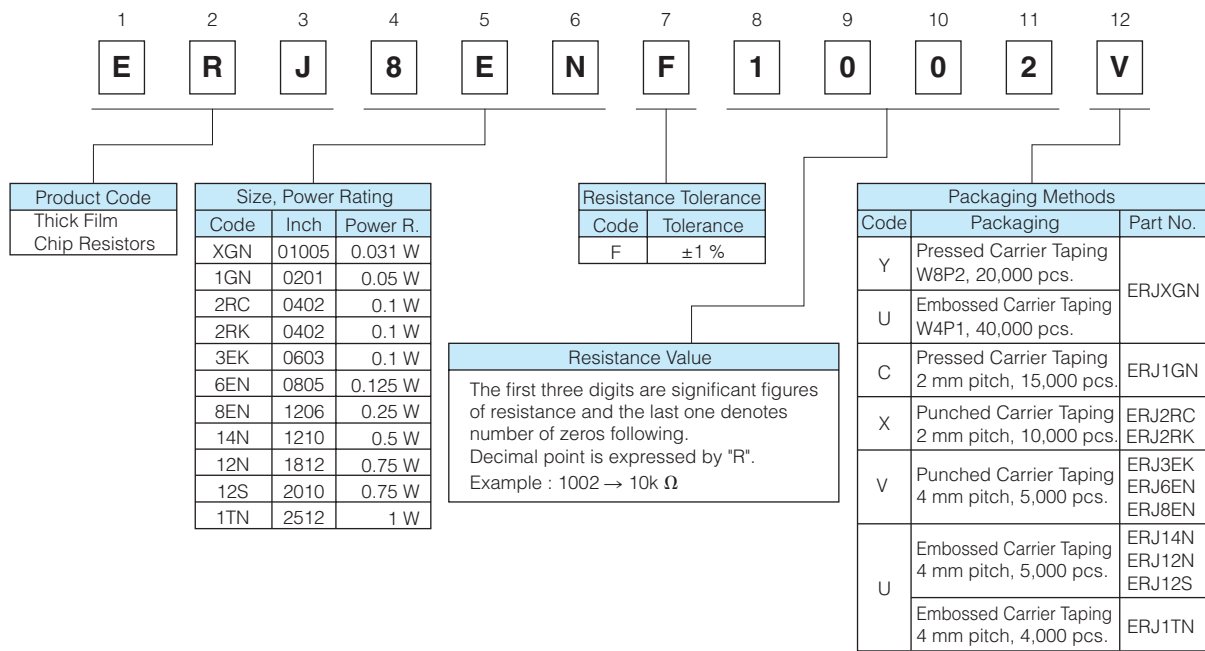
■ **As for Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions,**  
 Please see Data Files

### Explanation of Part Numbers

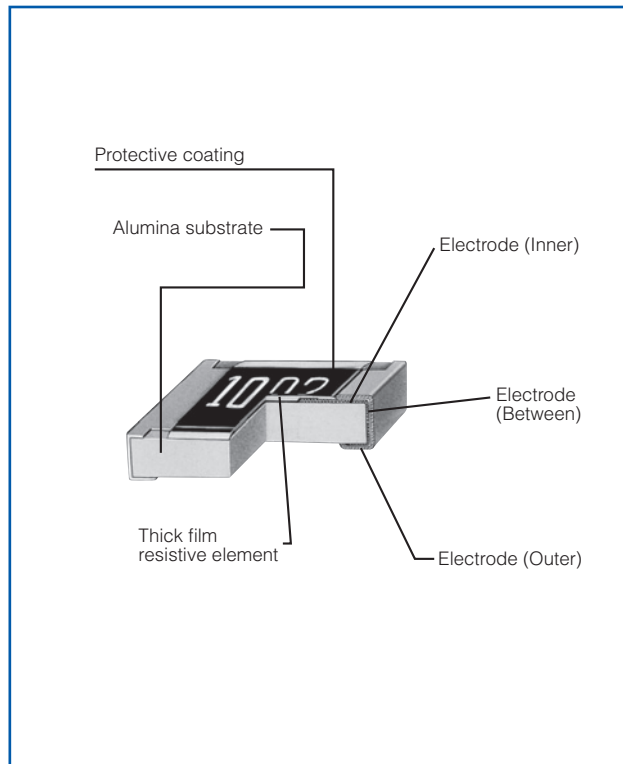
- ERJ1R, 2R, 3R, 6R Type, ±0.5 %



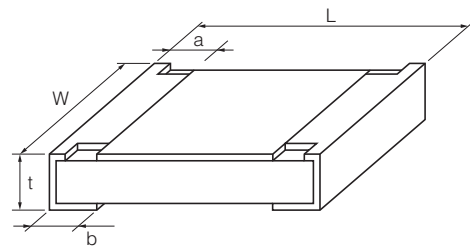
- ERJXGN, 1GN, 2RC, 2RK, 3EK, 6EN, 8EN, 14N, 12N, 12S, 1TN Type, ±1%



## Construction



## Dimensions in mm (not to scale)



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

## Ratings

<±0.5 %>

Part No. (inch size)	Power Rating at 70 °C <sup>(4)</sup> (W)	Limiting Element Voltage <sup>(1)</sup> (V)	Maximum Overload Voltage <sup>(2)</sup> (V)	Resistance Tolerance (%)	Resistance Range (Ω)	T.C.R. (×10 <sup>-6</sup> /°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 <sup>(4)</sup> (W)	Limiting Element Voltage <sup>(1)</sup> (V)	Maximum Overload Voltage <sup>(2)</sup> (V)	Resistance Tolerance (%)	Resistance Range (Ω)	T.C.R. (×10 <sup>-6</sup> /°C)	Category Temperature Range (°C)	AEC-Q200 Grade
ERJXGN (01005)	0.031	15	30	±1	10 to 1 M <sup>(3)</sup> (E24, E96)	<100 Ω : ±300 100 Ω ≤ : ±200	-55 to +125	-
ERJ1GN (0201)	0.05	25	50	±1	10 to 1 M <sup>(3)</sup> (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

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