

### Thick Film Chip Resistors / Low Resistance Type

ERJ R, B : 0402, 0603, 0805, 1206, 1210, 1812, 2010, 2512

ERJ BW : 0402, 0603, 0805, 1206

ERJ L : 0603, 0805, 1206, 1210, 1812, 2010, 2512

Type: ERJ 2B, 3B, 6B, 8B, 14B, 3R,  
6R, 8R, 14R, 12R, 12Z, 1TR  
ERJ 2BW, 3BW, 6BW, 8BW  
ERJ L03, L06, L08, L14, L12,  
L1D, L1W



#### ■ Features

- Small size and lightweight
- High reliability : Metal glaze thick film resistive element and three layers of electrodes
- Suitable for both reflow and flow soldering
- Improved high-power/resistance to pulse characteristics  
by double-sided resistive elements structure : ERJ2BW, 3BW, 6BW, 8BW Type
- Low Resistance Value  
ERJ2BS, 2BQ : 0.1 Ω to 1.0 Ω  
ERJ3BS/Q, 6BS/Q, 8BS/Q, 14BS/Q, 3R, 6R, 8R, 14R, 12R, 12Z, 1TR : 0.1 Ω to 9.1 Ω  
ERJ2BW : 47 mΩ to 100 mΩ, ERJ3BW : 20 mΩ to 100 mΩ, ERJ6BW, 8BW : 10 mΩ to 100 mΩ  
ERJL03, L06, L08 : 47 mΩ to 100 mΩ, ERJL14, L12 : 20 mΩ to 100 mΩ, ERJL1D, L1W : 40 mΩ to 100 mΩ
- Reference Standards : IEC 60115-8, JIS C 5201-8, JEITA RC-2144

#### ■ Packaging Methods

Please see Pages 40 to 43

#### ■ Recommended Land Pattern

Please see Pages 44 to 45

#### ■ Recommended Soldering Conditions

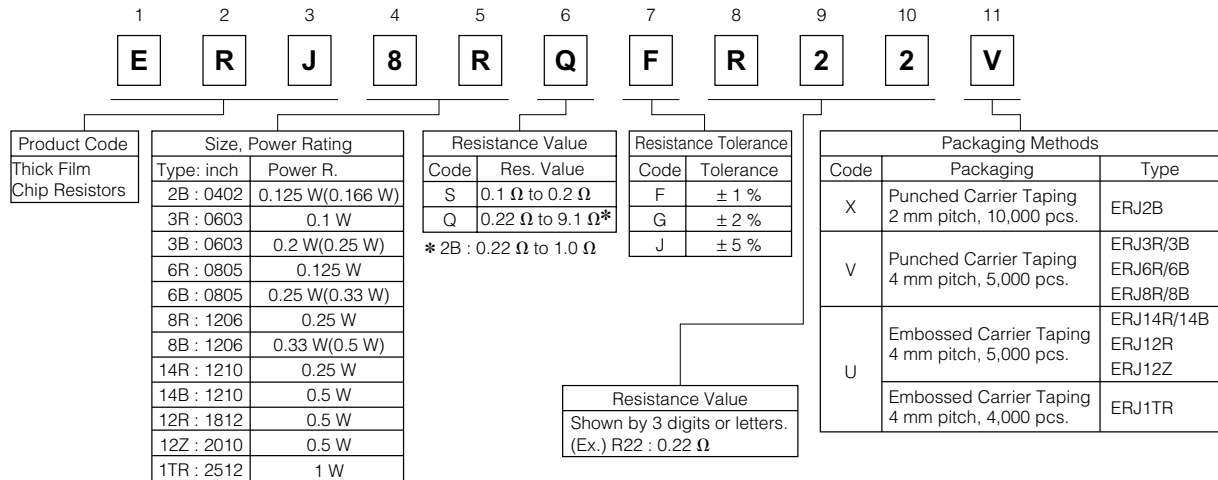
Please see Page 46

#### ■ Safety Precautions

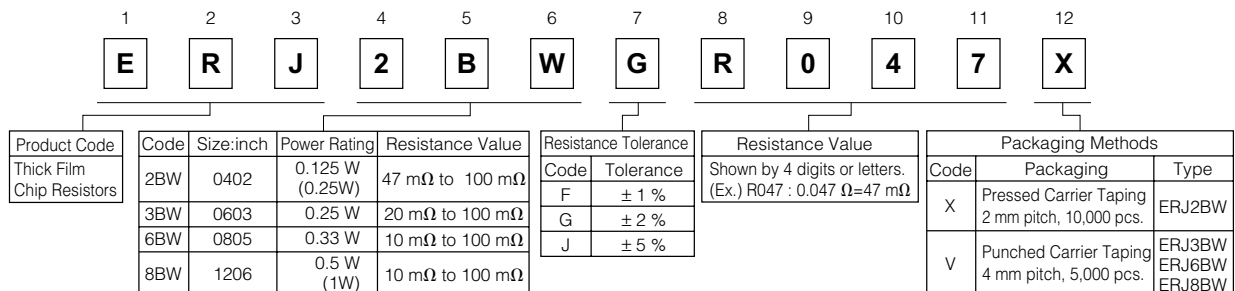
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#### ■ Explanation of Part Numbers

- ERJ2BS/2BQ, 3BS/3BQ, 6BS/6BQ, 8BS/8BQ, 14BS/14BQ, 3R, 6R, 8R, 14R, 12R, 12Z, 1TR Series High power type/Standard type



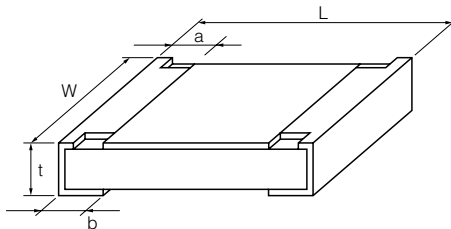
- ERJ2BW, 3BW, 6BW, 8BW Series <High power (double-sided resistive elements structure) type>



● ERJL03, L06, L08, L14, L12, L1D, L1W Series Low TCR type

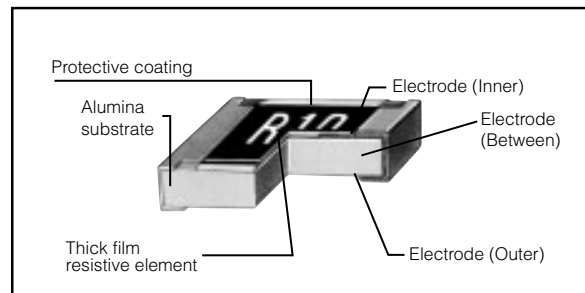


■ Dimensions in mm (not to scale)



Type (inch size)	Dimensions (mm)					Mass(Weight) [g/1000pcs.]
	L	W	a	b	t	
ERJ2BW (0402)	1.00 <sup>+0.10</sup>	0.50 <sup>+0.10/-0.05</sup>	0.24 <sup>+0.10</sup>	0.24 <sup>+0.10</sup>	0.35 <sup>+0.05</sup>	0.8
ERJ2BS ERJ2BQ (0402)	1.00 <sup>+0.10</sup>	0.50 <sup>+0.10/-0.05</sup>	0.20 <sup>+0.10</sup>	0.27 <sup>+0.10</sup>	0.35 <sup>+0.05</sup>	0.8
ERJ3BW (0603)	1.60 <sup>+0.15</sup>	0.80 <sup>+0.15</sup>	0.40 <sup>+0.20</sup>	0.40 <sup>+0.20</sup>	0.55 <sup>+0.10</sup>	3
ERJ3R ERJ3B (0603) ERJL03	1.60 <sup>+0.15</sup>	0.80 <sup>+0.15/-0.05</sup>	0.30 <sup>+0.20</sup>	0.30 <sup>+0.15</sup>	0.45 <sup>+0.10</sup>	2
ERJ6BW(0805)	2.00 <sup>+0.20</sup>	1.25 <sup>+0.20</sup>	0.55 <sup>+0.20</sup>	0.55 <sup>+0.20</sup>	0.65 <sup>+0.10</sup>	6
ERJ6R ERJ6B (0805) ERJL06	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
ERJ8BW(1206)	3.20 <sup>+0.20</sup>	1.60 <sup>+0.20</sup>	1.00 <sup>+0.20</sup>	1.00 <sup>+0.20</sup>	0.65 <sup>+0.10</sup>	13
ERJ8R ERJ8B (1206) ERJL08	3.20 <sup>+0.05/-0.20</sup>	1.60 <sup>+0.05/-0.15</sup>	0.50 <sup>+0.20</sup>	0.50 <sup>+0.20</sup>	0.60 <sup>+0.10</sup>	10
ERJ14R ERJ14B (1210) ERJL14	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
ERJ12R ERJL12 (1812)	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
ERJ12Z ERJL1D (2010)	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
ERJ1TR ERJL1W (2512)	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
	6.40 <sup>+0.20</sup>	3.20 <sup>+0.20</sup>	0.65 <sup>+0.20</sup>	1.30 <sup>+0.20</sup>	1.10 <sup>+0.10</sup>	79

■ Construction



■ Ratings

<High power type>

Type (inch size)	Power Rating at 70 °C (W)	Resistance Tolerance (%)	Resistance Range (Ω)	T.C.R. (×10 <sup>-6</sup> /°C)	Category Temperature Range (°C)
ERJ2BS (0402)	0.125	±2, ±5	0.10 to 0.20 (E24)	±300	-55 to +125
ERJ2BQ (0402)	(0.166) <sup>(1)</sup>		±1, ±2, ±5	0.22 to 1.0 (E24)	
ERJ3BS (0603)	0.2 (0.25) <sup>(1)</sup>	±1, ±2, ±5	0.10 to 0.20 (E24)	±300	-55 to +125
ERJ3BQ (0603)			0.22 to 0.91 (E24)		
			1.0 to 9.1 (E24)		
ERJ6BS (0805)	0.25 (0.33) <sup>(1)</sup>	±1, ±2, ±5	0.10 to 0.20 (E24)	±250	-55 to +125
ERJ6BQ (0805)			0.22 to 0.91 (E24)		
			1.0 to 9.1 (E24)		
ERJ8BS (1206)	0.33 (0.5) <sup>(1)</sup>	±1, ±2, ±5	0.10 to 0.20 (E24)	±250	-55 to +125
ERJ8BQ (1206)			0.22 to 0.91 (E24)		
			1.0 to 9.1 (E24)		
ERJ14BS (1210)	0.5	±1, ±2, ±5	0.10 to 0.20 (E24)	±200	-55 to +125
ERJ14BQ (1210)			0.22 to 0.91 (E24)		
			1.0 to 9.1 (E24)		

(1) Please contact us when resistors with guaranteed high power are needed.

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

<High power (double-sided resistive elements structure) type>

Type (inch size)	Power Rating at 70 °C (W)	Resistance Tolerance (%)	Resistance Range (Ω)	T.C.R. (×10 <sup>-6</sup> /°C)	Category Temperature Range (°C)
ERJ2BW (0402)	0.125 (0.25) <sup>(1)</sup>	±2, ±5	47 m to 100 m(E24)	±300	-55 to +155
ERJ3BW (0603)	0.25	±1, ±2, ±5	20 m to 100 m(E24)	R<39m Ω:±250 R≥39m Ω:±150	-55 to +155
ERJ6BW (0805)	0.33	±1, ±2, ±5	10 m to 100 m(E24)	R<15m Ω:±300 R≥15m Ω:±200	-55 to +155
ERJ8BW (1206)	0.5 (1) <sup>(1)</sup>	±1, ±2, ±5	10 m to 100 m(E24)	10 mΩ ≤ R < 20 mΩ : ±200 20 mΩ ≤ R < 47 mΩ : ±150 47 mΩ ≤ R ≤ 100 mΩ : ±100	-55 to +155

<Standard type>

Type (inch size)	Power Rating at 70 °C (W)	Resistance Tolerance (%)	Resistance Range <sup>(2)</sup> (Ω)	T.C.R. (×10 <sup>-6</sup> /°C)	Category Temperature Range (°C)
ERJ3RS (0603)	0.1	±1, ±2, ±5	0.10 to 0.20 (E24)	±300	-55 to +125
ERJ3RQ (0603)			0.22 to 0.91 (E24)		
ERJ6RS (0805)	0.125	±1, ±2, ±5	0.10 to 0.20 (E24)	±250	-55 to +125
ERJ6RQ (0805)			0.22 to 0.91 (E24)		
ERJ8RS (1206)	0.25	±1, ±2, ±5	0.10 to 0.20 (E24)	±250	-55 to +125
ERJ8RQ (1206)			0.22 to 0.91 (E24)		
ERJ14RS (1210)	0.25	±1, ±2, ±5	0.10 to 0.20 (E24)	±200	-55 to +125
ERJ14RQ (1210)			0.22 to 0.91 (E24)		
ERJ12RS (1812)	0.5	±1, ±2, ±5	0.10 to 0.20 (E24)	±200	-55 to +125
ERJ12RQ (1812)			0.22 to 0.91 (E24)		
ERJ12ZS (2010)	0.5	±1, ±2, ±5	0.10 to 0.20 (E24)	±200	-55 ~ +125
ERJ12ZQ (2010)			0.22 to 0.91 (E24)		
ERJ1TRS (2512)	1	±1, ±2, ±5	0.10 to 0.20 (E24)	±200	-55 to +125
ERJ1TRQ (2512)			0.22 to 0.91 (E24)		
			1.0 to 9.1 (E24)	±100	

<Low TCR type>

Type (inch size)	Power Rating at 70 °C (W)	Resistance Tolerance (%)	Resistance Range <sup>(2)</sup> (Ω)	T.C.R. (×10 <sup>-6</sup> /°C)	Category Temperature Range (°C)
ERJL03 (0603)	0.1 (0.2) <sup>(1)</sup>	±1, ±5	47 m to 100 m	±200	-55 to +125
ERJL06 (0805)	0.125 (0.25) <sup>(1)</sup>	±1, ±5	47 m to 100 m	±100	-55 to +125
ERJL08 (1206)	0.25 (0.33) <sup>(1)</sup>	±1, ±5	47 m to 100 m	±100	-55 to +125
ERJL14 (1210)	0.33	±1, ±5	20 m to 100 m	R<47 mΩ:±300 R≥47 mΩ:±100	-55 to +125
ERJL12 (1812)	0.5	±1, ±5	20 m to 100 m		-55 to +125
ERJL1D (2010)	0.5	±1, ±5	40 m to 100 m		-55 to +125
ERJL1W (2512)	1	±1, ±5	40 m to 100 m		-55 to +125

(1) Please contact us when resistors with guaranteed high power are needed.

(2) Standard R.V. : 20 mΩ, 22 mΩ, 33 mΩ, 39 mΩ, 47 mΩ, 50 mΩ, 100 mΩ, Custom R.V. : Each 1 mΩ within upper range.

### 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.



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00 Sep. 2010