

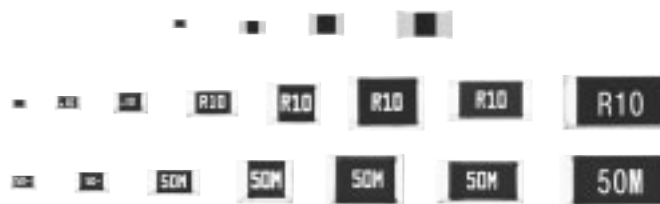
Thick Film Chip Resistors / Low Resistance Type

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 m Ω to 100 m Ω , ERJ3BW : 20 m Ω to 100 m Ω , ERJ6BW, 8BW : 10 m Ω to 100 m Ω
 - ERJL03, L06, L08 : 47 m Ω to 100 m Ω , ERJL14, L12 : 20 m Ω to 100 m Ω , ERJL1D, L1W : 40 m Ω to 100 m Ω
- Reference Standards : IEC 60115-8, JIS C 5201-8, JEITA RC-2144

● RoHS compliant

■ 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

Please see Page 47

■ 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

1	2	3	4	5	6	7	8	9	10	11
E	R	J	8	R	Q	F	R	2	2	V

Product Code	Size, Power Rating	Resistance Value	Resistance Tolerance	Packaging Methods
Thick Film Chip Resistors	Type: inch Power R.	Code Res. Value	Code Tolerance	Code Packaging Type
	2B : 0402 0.125 W(0.166 W)	S 0.1 Ω to 0.2 Ω	F $\pm 1\%$	X Punched Carrier Taping 2 mm pitch, 10,000 pcs. ERJ2B
	3R : 0603 0.1 W	Q 0.22 Ω to 9.1 Ω *	G $\pm 2\%$	V Punched Carrier Taping 4 mm pitch, 5,000 pcs. ERJ3R/3B ERJ6R/6B ERJ8R/8B
	3B : 0603 0.2 W(0.25 W)	* 2B : 0.22 Ω to 1.0 Ω	J $\pm 5\%$	U Embossed Carrier Taping 4 mm pitch, 5,000 pcs. ERJ14R/14B ERJ12R ERJ12Z
	6R : 0805 0.125 W			Embossed Carrier Taping 4 mm pitch, 4,000 pcs. ERJ1TR
	6B : 0805 0.25 W(0.33 W)			
	8R : 1206 0.25 W			
	8B : 1206 0.33 W(0.5 W)			
	14R : 1210 0.25 W			
	14B : 1210 0.5 W			
	12R : 1812 0.5 W			
	12Z : 2010 0.5 W			
	1TR : 2512 1 W			

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

1	2	3	4	5	6	7	8	9	10	11	12
E	R	J	2	B	W	G	R	0	4	7	X

Product Code	Code	Size:inch	Power Rating	Resistance Value	Resistance Tolerance	Resistance Value	Packaging Methods
Thick Film Chip Resistors	2BW	0402	0.125 W (0.25W)	47 m Ω to 100 m Ω	Code Tolerance	Shown by 4 digits or letters. (Ex.) R047 : 0.047 Ω =47 m Ω	Code Packaging Type
	3BW	0603	0.25 W	20 m Ω to 100 m Ω	F $\pm 1\%$		X Pressed Carrier Taping 2 mm pitch, 10,000 pcs. ERJ2BW
	6BW	0805	0.33 W	10 m Ω to 100 m Ω	G $\pm 2\%$		V Punched Carrier Taping 4 mm pitch, 5,000 pcs. ERJ3BW ERJ6BW ERJ8BW
	8BW	1206	0.5 W (1W)	10 m Ω to 100 m Ω	J $\pm 5\%$		

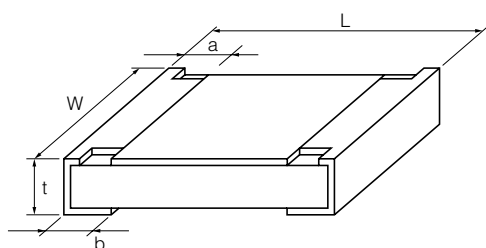
● ERJL03, L06, L08, L14, L12, L1D, L1W Series Low TCR type

1	2	3	4	5	6	7	8	9	10	11	12
E	R	J	L	1	4	K	J	5	0	M	U

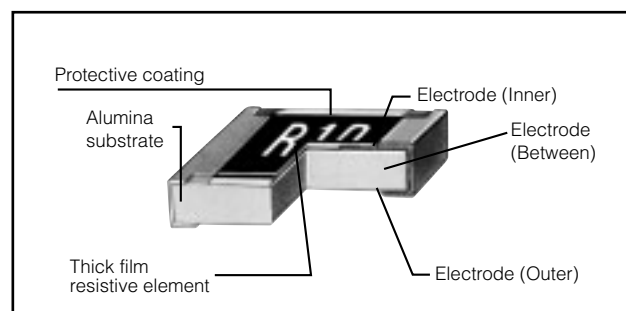
Product Code	Size, Power Rating	Code	Res. Value	Resistance Tolerance	Packaging Methods
Thick Film Chip Resistors	Type: inch Power R.	K	Std. (20 mΩ, 22 mΩ, 33 mΩ, 39 mΩ, 47 mΩ, 50 mΩ, 100 mΩ) * L03, L06, L08 : 47 mΩ to 100 mΩ L1D, L1W : 40 mΩ to 100 mΩ	Code Tolerance F ± 1 % J ± 5 %	Code Packaging Type
	L03 : 0603 0.1 W (0.2 W)	U	20 mΩ to 100 mΩ*		V Punched Carrier Taping 4 mm pitch, 5,000 pcs. ERJL03 ERJL06 ERJL08
	L06 : 0805 0.125 W (0.25 W)				U Embossed Carrier Taping 4 mm pitch, 5,000 pcs. ERJL14 ERJL12 ERJL1D
	L08 : 1206 0.25 W (0.33 W)				Embossed Carrier Taping 4 mm pitch, 4,000 pcs. ERJL1W
	L14 : 1210 0.33 W				
	L12 : 1812 0.5 W				
	L1D : 2010 0.5 W				
	L1W : 2512 1 W				

Resistance Value
Shown by 3 digits or letters. (Ex.) 50 M:50 mΩ, 10 C:100 mΩ

■ Dimensions in mm (not to scale)



■ Construction



Type (inch size)	Dimensions (mm)					Mass (Weight) [g/1000 pcs.]
	L	W	a	b	t	
ERJ2BW (0402)	1.00 ^{+0.10}	0.50 ^{+0.10} _{-0.05}	0.24 ^{+0.10}	0.24 ^{+0.10}	0.35 ^{+0.05}	0.8
ERJ2BS (0402)	1.00 ^{+0.10}	0.50 ^{+0.10} _{-0.05}	0.20 ^{+0.10}	0.27 ^{+0.10}	0.35 ^{+0.05}	0.8
ERJ2BQ (0402)	1.00 ^{+0.10}	0.50 ^{+0.10} _{-0.05}	0.20 ^{+0.10}	0.27 ^{+0.10}	0.35 ^{+0.05}	0.8
ERJ3BW (0603)	1.60 ^{+0.15}	0.80 ^{+0.15}	0.40 ^{+0.20}	0.40 ^{+0.20}	0.55 ^{+0.10}	3
ERJ3R (0603)	1.60 ^{+0.15}	0.80 ^{+0.15} _{-0.05}	0.30 ^{+0.20}	0.30 ^{+0.15}	0.45 ^{+0.10}	2
ERJL03 (0603)	1.60 ^{+0.15}	0.80 ^{+0.15} _{-0.05}	0.30 ^{+0.20}	0.30 ^{+0.15}	0.45 ^{+0.10}	2
ERJ6BW (0805)	2.00 ^{+0.20}	1.25 ^{+0.20}	0.55 ^{+0.20}	0.55 ^{+0.20}	0.65 ^{+0.10}	6
ERJ6R (0805)	2.00 ^{+0.20}	1.25 ^{+0.10}	0.40 ^{+0.20}	0.40 ^{+0.20}	0.60 ^{+0.10}	4
ERJL06 (0805)	2.00 ^{+0.20}	1.25 ^{+0.10}	0.40 ^{+0.20}	0.40 ^{+0.20}	0.60 ^{+0.10}	4
ERJ8BW (1206)	3.20 ^{+0.20}	1.60 ^{+0.20}	1.00 ^{+0.20}	1.00 ^{+0.20}	0.65 ^{+0.10}	13
ERJ8R (1206)	3.20 ^{+0.20}	1.60 ^{+0.20}	0.50 ^{+0.20}	0.50 ^{+0.20}	0.60 ^{+0.10}	10
ERJL08 (1206)	3.20 ^{+0.20}	1.60 ^{+0.20}	0.50 ^{+0.20}	0.50 ^{+0.20}	0.60 ^{+0.10}	10
ERJ14R (1210)	3.20 ^{+0.20}	2.50 ^{+0.20}	0.50 ^{+0.20}	0.50 ^{+0.20}	0.60 ^{+0.10}	16
ERJL14 (1210)	3.20 ^{+0.20}	2.50 ^{+0.20}	0.50 ^{+0.20}	0.50 ^{+0.20}	0.60 ^{+0.10}	16
ERJ12R (1812)	4.50 ^{+0.20}	3.20 ^{+0.20}	0.50 ^{+0.20}	0.50 ^{+0.20}	0.60 ^{+0.10}	27
ERJL12 (1812)	4.50 ^{+0.20}	3.20 ^{+0.20}	0.50 ^{+0.20}	0.50 ^{+0.20}	0.60 ^{+0.10}	27
ERJ12Z (2010)	5.00 ^{+0.20}	2.50 ^{+0.20}	0.60 ^{+0.20}	0.60 ^{+0.20}	0.60 ^{+0.10}	27
ERJL1D (2010)	5.00 ^{+0.20}	2.50 ^{+0.20}	0.60 ^{+0.20}	0.60 ^{+0.20}	0.60 ^{+0.10}	27
ERJ1TR (2512)	6.40 ^{+0.20}	3.20 ^{+0.20}	0.65 ^{+0.20}	0.60 ^{+0.20}	0.60 ^{+0.10}	45
ERJL1W (2512)	6.40 ^{+0.20}	3.20 ^{+0.20}	0.65 ^{+0.20}	1.30 ^{+0.20}	1.10 ^{+0.10}	79

■ Ratings

<High power type>

Type (inch size)	Power Rating at 70 °C (W)	Resistance Tolerance (%)	Resistance Range (Ω)	T.C.R. (×10 ⁻⁶ /°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) ⁽¹⁾	±1, ±2, ±5	0.22 to 1.0 (E24)	±250	
ERJ3BS (0603)	0.2	±1, ±2, ±5	0.10 to 0.20 (E24)	±300	-55 to +125
ERJ3BQ (0603)	(0.25) ⁽¹⁾		0.22 to 0.91 (E24)	±200	
			1.0 to 9.1 (E24)	±200	
ERJ6BS (0805)	0.25	±1, ±2, ±5	0.10 to 0.20 (E24)	±250	-55 to +125
ERJ6BQ (0805)	(0.33) ⁽¹⁾		0.22 to 0.91 (E24)	±200	
			1.0 to 9.1 (E24)	±200	
ERJ8BS (1206)	0.33	±1, ±2, ±5	0.10 to 0.20 (E24)	±250	-55 to +125
ERJ8BQ (1206)	(0.5) ⁽¹⁾		0.22 to 0.91 (E24)	±200	
			1.0 to 9.1 (E24)	±200	
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)	±200	
			1.0 to 9.1 (E24)	±100	

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

■ 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. ($\times 10^{-6}/^{\circ}\text{C}$)	Category Temperature Range (°C)
ERJ2BW (0402)	0.125 (0.25) ⁽¹⁾	±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) ⁽¹⁾	±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 ⁽²⁾ (Ω)	T.C.R. ($\times 10^{-6}/^{\circ}\text{C}$)	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)		
			1.0 to 9.1 (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)		
			1.0 to 9.1 (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)		
			1.0 to 9.1 (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)		
			1.0 to 9.1 (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)		
			1.0 to 9.1 (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)		
			1.0 to 9.1 (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)		

<Low TCR type>

Type (inch size)	Power Rating at 70 °C (W)	Resistance Tolerance (%)	Resistance Range ⁽²⁾ (Ω)	T.C.R. ($\times 10^{-6}/^{\circ}\text{C}$)	Category Temperature Range (°C)
ERJL03 (0603)	0.1 (0.2) ⁽¹⁾	±1, ±5	47 m to 100 m	±200	-55 to +125
ERJL06 (0805)	0.125 (0.25) ⁽¹⁾	±1, ±5	47 m to 100 m	±100	-55 to +125
ERJL08 (1206)	0.25 (0.33) ⁽¹⁾	±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.

