

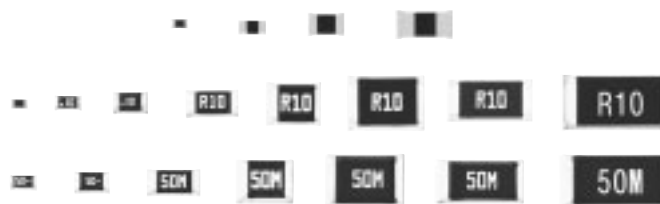
Thick Film Chip Resistors / Low Resistance Type

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 $\pm 5\%$		

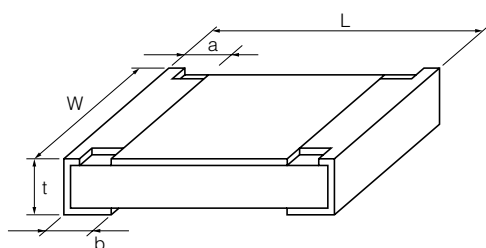
● ERJL03, L06, L08, L14, L12, L1D, L1W Series Low TCR type

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

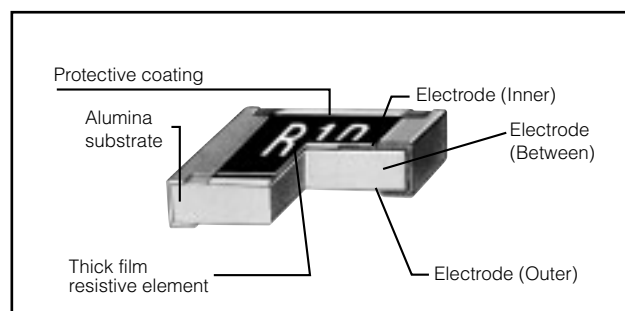
Product Code	Size, Power Rating	Code	Res. Value	Resistance Tolerance	Packaging Methods
Thick Film Chip Resistors	Type: inch Power R.	K	Std. (20 mΩ, 22 mΩ, 33 mΩ, 39 mΩ, 47 mΩ, 50 mΩ, 100 mΩ) * L03, L06, L08 : 47 mΩ to 100 mΩ L1D, L1W : 40 mΩ to 100 mΩ	Code Tolerance F ± 1 % J ± 5 %	Code Packaging Type
	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)	±100	
			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)	±200	
ERJ6RS (0805)			1.0 to 9.1 (E24)	±200	
ERJ6RQ (0805)	0.125	±1, ±2, ±5	0.10 to 0.20 (E24)	±250	-55 to +125
ERJ8RS (1206)			0.22 to 0.91 (E24)	±200	
ERJ8RQ (1206)			1.0 to 9.1 (E24)	±200	
ERJ14RS (1210)	0.25	±1, ±2, ±5	0.10 to 0.20 (E24)	±250	-55 to +125
ERJ14RQ (1210)			0.22 to 0.91 (E24)	±200	
ERJ12RS (1812)			1.0 to 9.1 (E24)	±100	
ERJ12RQ (1812)	0.5	±1, ±2, ±5	0.10 to 0.20 (E24)	±200	-55 to +125
ERJ12ZS (2010)			0.22 to 0.91 (E24)	±100	
ERJ12ZQ (2010)			1.0 to 9.1 (E24)	±100	
ERJ1TRS (2512)	1	±1, ±2, ±5	0.10 to 0.20 (E24)	±200	-55 to +125
ERJ1TRQ (2512)			0.22 to 0.91 (E24)	±100	
			1.0 to 9.1 (E24)	±100	

<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.

