

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

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 Thick Film Chip Resistors	Size, Power Rating			Resistance Value				Resistance Tolerance		Packaging Methods											
	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	± 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	± 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	± 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>

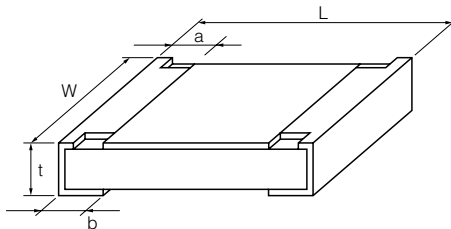
1		2		3		4		5		6		7		8		9		10		11		12	
E		R		J		2		B		W		G		R		0		4		7		X	
Product Code Thick Film Chip Resistors	Code	Size:inch	Power Rating	Resistance Value				Resistance Tolerance		Resistance Value				Packaging Methods									
	2BW	0402	0.125 W (0.25W)	47 mΩ to 100 mΩ				Code	Tolerance	Shown by 4 digits or letters. (Ex.) R047 : 0.047 Ω=47 mΩ				Code	Packaging	Type							
	3BW	0603	0.25 W	20 mΩ to 100 mΩ				F	± 1 %					X	Pressed Carrier Taping 2 mm pitch, 10,000 pcs.	ERJ2BW							
	6BW	0805	0.33 W	10 mΩ to 100 mΩ				G	± 2 %					V	Punched Carrier Taping 4 mm pitch, 5,000 pcs.	ERJ3BW ERJ6BW ERJ8BW							
8BW	1206	0.5 W (1W)	10 mΩ to 100 mΩ				J	± 5 %															

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

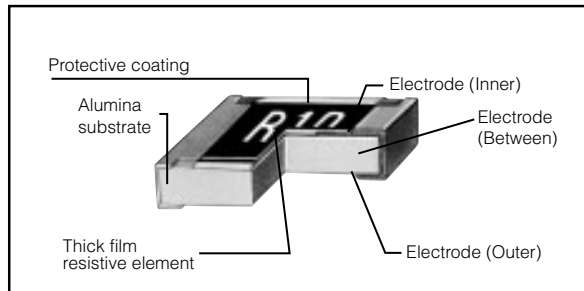


■ Dimensions in mm (not to scale)



Type (inch size)	Dimensions (mm)					Mass(Weight) [g/1000pcs.]
	L	W	a	b	t	
ERJ2BW (0402)	1.00 ^{+0.10}	0.50 ^{+0.10} _{-0.05}	0.24 ^{+0.10}	0.24 ^{+0.10}	0.35 ^{+0.05}	0.8
ERJ2BS 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 ERJ3B (0603) ERJL03	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 ERJ6B (0805) ERJL06	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 ERJ8B (1206) ERJL08	3.20 ^{+0.20}	1.60 ^{+0.05} _{-0.15}	0.50 ^{+0.20}	0.50 ^{+0.20}	0.60 ^{+0.10}	10
ERJ14R ERJ14B (1210) ERJL14	3.20 ^{+0.20}	2.50 ^{+0.20}	0.50 ^{+0.20}	0.50 ^{+0.20}	0.60 ^{+0.10}	16
ERJ12R ERJL12 (1812)	4.50 ^{+0.20}	3.20 ^{+0.20}	0.50 ^{+0.20}	0.50 ^{+0.20}	0.60 ^{+0.10}	27
ERJ12Z ERJL1D (2010)	5.00 ^{+0.20}	2.50 ^{+0.20}	0.60 ^{+0.20}	0.60 ^{+0.20}	0.60 ^{+0.10}	27
ERJ1TR ERJL1W (2512)	6.40 ^{+0.20}	3.20 ^{+0.20}	0.65 ^{+0.20}	0.60 ^{+0.20}	0.60 ^{+0.10}	45
	6.40 ^{+0.20}	3.20 ^{+0.20}	0.65 ^{+0.20}	1.30 ^{+0.20}	1.10 ^{+0.10}	79

■ Construction



■ 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)	
ERJ3BS (0603)	0.2 (0.25) ⁽¹⁾	±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) ⁽¹⁾	±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) ⁽¹⁾	±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.

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■ 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 ⁻⁶ /°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. (×10 ⁻⁶ /°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 ⁽²⁾ (Ω)	T.C.R. (×10 ⁻⁶ /°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	R≥47 mΩ:±100	-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