

## Thick Film Chip Resistors / Low Resistance Type

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

ERJ BW, CW : 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, 8CW  
ERJ L03, L06, L08, L14, L12,  
L1D, L1W



### ■ Features

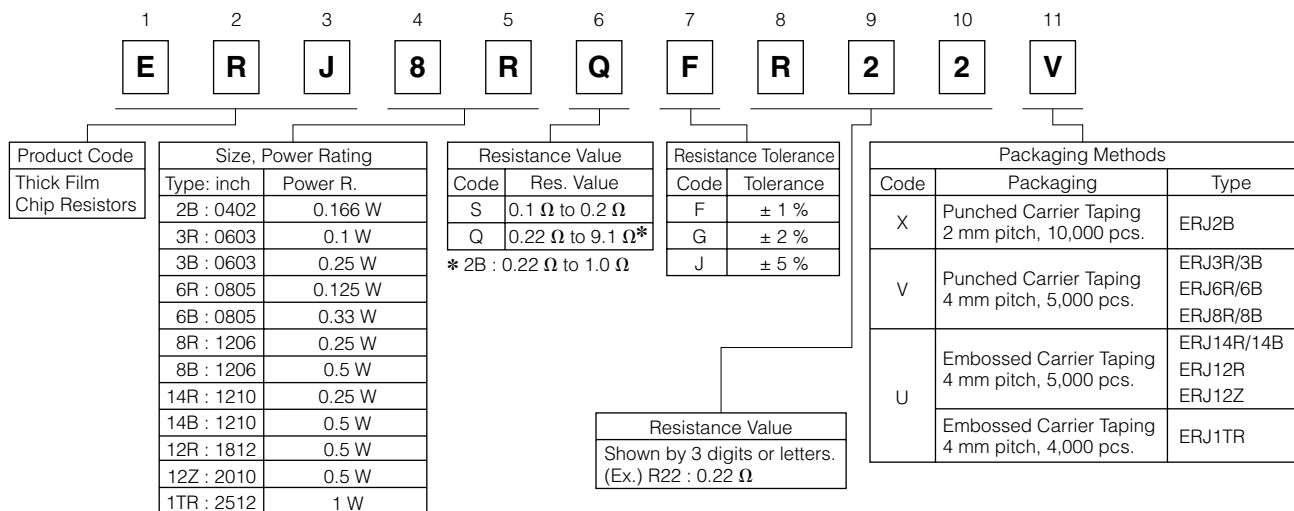
- Small size and lightweight
- High reliability : Metal glaze thick film resistive element and three layers of electrodes
- Suitable for both reflow and flow soldering
- Improved high-power/resistance to pulse characteristics  
by double-sided resistive elements structure : ERJ2BW, 3BW, 6BW, 8BW, 8CW Type
- Low TCR :  $\pm 50 \times 10^{-6} / ^\circ\text{C}$  (ERJ8CW)
- Low Resistance Value  
10 m $\Omega$  to 50 m $\Omega$  : ERJ8CW  
10 m $\Omega$  to 100 m $\Omega$  : ERJ6BW, 8BW  
20 m $\Omega$  to 100 m $\Omega$  : ERJ3BW, ERJL14, L12  
40 m $\Omega$  to 100 m $\Omega$  : ERJL1D, L1W  
47 m $\Omega$  to 100 m $\Omega$  : ERJ2BW, ERJL03, L06, L08
- Reference Standards : IEC 60115-8, JIS C 5201-8, JEITA RC-2144
- RoHS compliant

### ■ Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions

Please see Data Files

### ■ 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, 8CW 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	0.25 W	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	0.33 W	20 mΩ to 100 mΩ	F	± 1 %			X	Pressed Carrier Taping 2 mm pitch, 10,000 pcs.	ERJ2BW
	6BW	0805	0.5 W	10 mΩ to 100 mΩ	G	± 2 %			V	Punched Carrier Taping 4 mm pitch, 5,000 pcs.	ERJ3BW
	8BW	1206	1 W	10 mΩ to 100 mΩ	J	± 5 %					ERJ6BW
8CW	1206	1 W	10 mΩ to 50 mΩ					ERJ8BW	ERJ8CW		

● 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

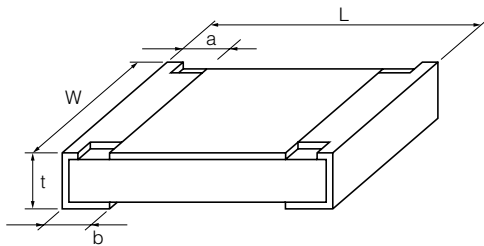
  

Product Code Thick Film Chip Resistors	Size, Power Rating		Code	Res. Value	Resistance Tolerance		Packaging Methods				
	Type: inch	Power R.			Code	Tolerance	Code	Packaging	Type		
	L03 : 0603	0.2 W	K Std. (20 mΩ, 22 mΩ, 33 mΩ, * 39 mΩ, 47 mΩ, 50 mΩ, 100 mΩ) U 20 mΩ to 100 mΩ*	F	± 1 %	V	Punched Carrier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

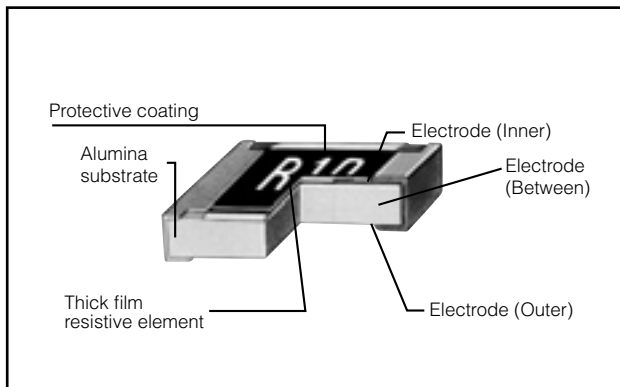
  

Resistance Value	
Shown by 3 digits or letters. (Ex.) 50 M:50 mΩ, 10 C:100 mΩ	

■ Dimensions in mm (not to scale)



■ Construction



Type (inch size)	Dimensions (mm)					Mass(Weight) [g/1000pcs.]
	L	W	a	b	t	
ERJ2BW (0402)	1.00 <sup>+0.10</sup>	0.50 <sup>+0.10</sup> <sub>-0.05</sub>	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</sup> <sub>-0.05</sub>	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</sup> <sub>-0.05</sub>	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
ERJ8CW (10 to 16 mΩ)	3.20 <sup>+0.20</sup>	1.60 <sup>+0.20</sup>	1.10 <sup>+0.20</sup>	1.10 <sup>+0.20</sup>	0.65 <sup>+0.10</sup>	13
ERJ8CW (18 to 50 mΩ)	3.20 <sup>+0.20</sup>	1.60 <sup>+0.20</sup>	0.60 <sup>+0.20</sup>	0.60 <sup>+0.20</sup>	0.65 <sup>+0.10</sup>	13
ERJ8R ERJ8B (1206) ERJL08	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
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

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 type>

Type (inch size)	Power Rating at 70 °C (W)	Resistance Tolerance (%)	Resistance Range (Ω) <sup>(1)</sup>	T.C.R. (×10 <sup>-6</sup> /°C)	Category Temperature Range (°C)
ERJ2BS (0402)	0.166	±1, ±2, ±5	0.10 to 0.20 (E24)	±300	-55 to +125
ERJ2BQ (0402)			0.22 to 1.0 (E24)	±250	
ERJ3BS (0603)	0.25	±1, ±2, ±5	0.10 to 0.20 (E24)	±300	-55 to +125
ERJ3BQ (0603)			0.22 to 0.91 (E24)		
ERJ6BS (0805)			1.0 to 9.1 (E24)	±200	
ERJ6BQ (0805)	0.33	±1, ±2, ±5	0.10 to 0.20 (E24)	±250	-55 to +125
ERJ8BS (1206)			0.22 to 0.91 (E24)		
ERJ8BQ (1206)			1.0 to 9.1 (E24)	±200	
ERJ14BS (1210)	0.5	±1, ±2, ±5	0.10 to 0.20 (E24)	±250	-55 to +125
ERJ14BQ (1210)			0.22 to 0.91 (E24)		
ERJ14BQ (1210)			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)		
ERJ14BQ (1210)			1.0 to 9.1 (E24)	±100	

(1) Please contact us when resistors of irregular series are needed.

#### <Standard 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)
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)			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)		
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)		
ERJ12RS (1812)			1.0 to 9.1 (E24)	±200	
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)		
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)		
ERJ1TRQ (2512)			1.0 to 9.1 (E24)	±100	

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

Type (inch size)	Power Rating at 70 °C (W)	Resistance Tolerance (%)	Resistance Range (Ω) <sup>(1)</sup>	T.C.R. (×10 <sup>-6</sup> /°C)	Category Temperature Range (°C)
ERJ2BW (0402)	0.25	±1, ±2, ±5	47 m to 100 m(E24)	±300	-55 to +155
ERJ3BW (0603)	0.33	±1, ±2, ±5	20 m to 100 m(E24)	R<39m Ω : ±250 R≥39m Ω : ±150	-55 to +155
ERJ6BW (0805)	0.5	±1, ±2, ±5	10 m to 100 m(E24)	R<15m Ω : ±300 R≥15m Ω : ±200	-55 to +155
ERJ8BW (1206)	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
ERJ8CW (1206)	1	±1, ±2, ±5	10 m to 50 m(E24)	±50	-55 to +155 (10 m to 33 mΩ) -55 to +125 (36 m to 50 mΩ)

(1) Please contact us when resistors of irregular series are needed.

### ■ Ratings

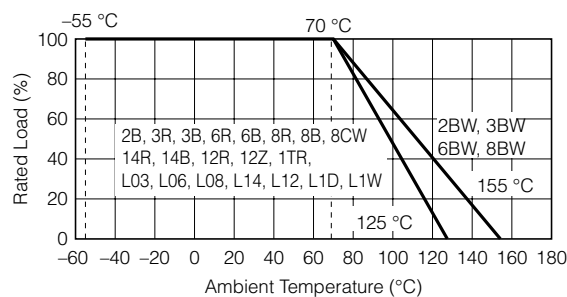
<Low TCR type>

Type (inch size)	Power Rating at 70 °C (W)	Resistance Tolerance (%)	Resistance Range <sup>(1)</sup> (Ω)	T.C.R. ( $\times 10^{-6}/^{\circ}\text{C}$ )	Category Temperature Range (°C)
ERJL03 (0603)	0.2	±1, ±5	47 m to 100 m	±200	-55 to +125
ERJL06 (0805)	0.25	±1, ±5	47 m to 100 m	±100	-55 to +125
ERJL08 (1206)	0.33	±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 : ±300 R ≥ 47 mΩ : ±100	-55 to +125
ERJL1W (2512)	1	±1, ±5	40 m to 100 m		-55 to +125

(1) 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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