

Thick Film Chip Resistors / Low Resistance Type

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



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Features

- Current Sensing resistor
- Small size and lightweight
- Realize both low-resistance & High-precision by original thick film resistive element & special electrode structure
- Suitable for both reflow and flow soldering
- Realize High-power by double-sided resistive elements structure that aimed to suppress temperature rising : ERJ2LW, 3LW, 6LW, 2BW, 3BW, 6BW, 8BW, 6CW, 8CW
- Low TCR : $\pm 75 \times 10^{-6}/^{\circ}\text{C}$ (ERJ6CW, 8CW)
- Low Resistance Value
 - 5, 6, 7, 8, 9m Ω : ERJ6LW
 - 5m Ω , 10m Ω : ERJ3LW
 - 10m Ω : ERJ2LW
 - 10m Ω to 50m Ω : ERJ8CW
 - 10m Ω to 30m Ω : ERJ6CW
 - 10m Ω to 100m Ω : ERJ6BW, 8BW
 - 20m Ω to 100m Ω : ERJ3BW, ERJL14, L12
 - 40m Ω to 100m Ω : ERJL1D, L1W
 - 47m Ω to 100m Ω : ERJ2BW, ERJL03, L06, L08
- Reference Standards : IEC 60115-8, JIS C 5201-8, JEITA RC-2144
- AEC-Q200 qualified
- RoHS compliant

■ **As for Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions,**
 Please see Data Files

Explanation of Part Numbers

- ERJ2LW, 3LW, 6LW, 2BW, 3BW, 6BW, 8BW, 6CW, 8CW
 <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	Inch	Power Rating	Resistance Value		Resistance Tolerance		Resistance Value		Packaging Methods		
	2LW	0402	0.2 W	10m Ω		Code	Tolerance	Shown by 4 digits or letters. (Ex.) R047 : 0.047 Ω=47m Ω		Code	Packaging	Part No.
	3LW	0603	0.25 W	5m Ω, 10m Ω		D	± 0.5 %*			X	Pressed Carrier Taping 2 mm pitch, 10,000 pcs.	ERJ2LW ERJ2BW
	6LW	0805	0.5 W	5, 6, 7, 8, 9m Ω		F	± 1 %			V	Punched Carrier Taping 4 mm pitch, 5,000 pcs.	ERJ3LW ERJ6LW ERJ3BW ERJ6BW ERJ8BW ERJ6CW ERJ8CW
	2BW	0402	0.25 W	47m Ω to 100m Ω		G	± 2 %					
	3BW	0603	0.33 W	20m Ω to 100m Ω		J	± 5 %					
	6BW	0805	0.5 W	10m Ω to 100m Ω								
	8BW	1206	1 W	10m Ω to 100m Ω								
	6CW	0805	0.5 W	10m Ω to 30m Ω								
	8CW	1206	1 W	10m Ω to 50m Ω								
						* Please refer to the rating table for the resistance tolerance						

- ERJ2BS/2BQ, 3BS/3BQ, 6BS/6BQ, 8BS/8BQ, 14BS/14BQ, 6D, 3R, 6R, 8R, 14R, 12R, 12Z, 1TR
<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	Part No.
	2B	0402	0.166 W	S	0.1 Ω to 0.2 Ω	D	± 0.5 %*	X	Punched Carrier Taping 2 mm pitch, 10,000 pcs.	ERJ2B
	3B	0603	0.25 W	Q	0.22 Ω to 9.1 Ω*	F	± 1 %	V	Punched Carrier Taping 4 mm pitch, 5,000 pcs.	ERJ3B/3R ERJ6D/6B/6R ERJ8B/8R
	3R	0603	0.1 W	* 2B : 0.22 Ω to 1.0 Ω		G	± 2 %	U	Embossed Carrier Taping 4 mm pitch, 5,000 pcs.	ERJ14B/14R ERJ12R ERJ12Z
	6D	0805	0.5 W			J	± 5 %		Embossed Carrier Taping 4 mm pitch, 4,000 pcs.	ERJ1TR
	6B	0805	0.33 W	* Please refer to the rating table for the resistance tolerance						
	6R	0805	0.125 W							
	8B	1206	0.5 W							
	8R	1206	0.25 W							
	14B	1210	0.5 W							
	14R	1210	0.25 W	Resistance Value Shown by 3 digits or letters. (Ex.) R22 : 0.22 Ω						
	12R	1812	0.5 W							
	12Z	2010	0.5 W							
	1TR	2512	1 W							

- ERJL03, L06, L08, L14, L12, L1D, L1W <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.			Code	Tolerance	Code	Packaging	Part No.
	L03	0603	0.2 W	K	Std. 20m Ω, 22m Ω, 33m Ω, 39m Ω, 47m Ω, 50m Ω, 100m Ω	F	± 1 %	V	Punched Carrier Taping 4 mm pitch, 5,000 pcs.	ERJL03 ERJL06 ERJL08
	L06	0805	0.25 W	U	20m Ω to 100m Ω*	J	± 5 %	U	Embossed Carrier Taping 4 mm pitch, 5,000 pcs.	ERJL14 ERJL12 ERJL1D
	L08	1206	0.33 W	* L03, L06, L08 : 47m Ω to 100m Ω L1D, L1W : 40m Ω to 100m Ω						
	L14	1210	0.33 W							
	L12	1812	0.5 W							
	L1D	2010	0.5 W							
	L1W	2512	1 W					Embossed Carrier Taping 4 mm pitch, 3,000 pcs. ERJL1W		

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

Ratings

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

Part No. (inch size)	Power Rating at 70 °C (W)	Resistance Tolerance (%)	Resistance ⁽¹⁾ Range (Ω)	T.C.R. ($\times 10^{-6}/^{\circ}\text{C}$)	Category Temperature Range ($^{\circ}\text{C}$)
ERJ2LW (0402)	0.2	$\pm 1, \pm 2, \pm 5$	10m	0 to 500	-55 to +125
ERJ3LW (0603)	0.25	$\pm 1, \pm 2, \pm 5$	5m	0 to 700	-55 to +125
			10m	0 to 300	-55 to +125
ERJ6LW (0805)	0.5	$\pm 1, \pm 2, \pm 5$	5, 6, 7, 8, 9m	0 to 300	-55 to +155
ERJ2BW (0402)	0.25	$\pm 1, \pm 2, \pm 5$	47m to 100m (E24)	± 300	-55 to +155
ERJ3BW (0603)	0.33	$\pm 1, \pm 2, \pm 5$	20m to 100m (E24)	R < 39m Ω : ± 250 R $\geq$ 39m Ω : ± 150	-55 to +155
ERJ6BW (0805)	0.5	$\pm 1, \pm 2, \pm 5$	10m to 100m (E24)	R < 15m Ω : ± 300 R $\geq$ 15m Ω : ± 200	-55 to +155
ERJ8BW (1206)	1	$\pm 1, \pm 2, \pm 5$	10m to 100m (E24)	10m Ω $\leq$ R < 20m Ω : ± 200 20m Ω $\leq$ R < 47m Ω : ± 150 47m Ω $\leq$ R $\leq$ 100m Ω : ± 100	-55 to +155
ERJ6CW (0805)	0.5	$\pm 0.5, \pm 1, \pm 2, \pm 5$	10m to 30m (E24)	± 75	-55 to +125
ERJ8CW (1206)	1	$\pm 1, \pm 2, \pm 5$	10m to 50m (E24)	± 75	-55 to +155 (10m to 33m Ω) -55 to +125 (36m to 50m Ω)

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

Ratings

<High power type>

Part No. (inch size)	Power Rating at 70 °C (W)	Resistance Tolerance (%)	Resistance ⁽¹⁾ Range (Ω)	T.C.R. (×10 ⁻⁶ /°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)	±200	
			1.0 to 9.1 (E24)		
ERJ6DS (0805)	0.5	±0.5, ±1, ±2, ±5	0.10 to 0.20 (E24, E96)	±150	-55 to +155
ERJ6DQ (0805)			0.22 to 9.1 (E24, E96)	±100	
ERJ6BS (0805)	0.33	±1, ±2, ±5	0.10 to 0.20 (E24)	±250	-55 to +125
ERJ6BQ (0805)			0.22 to 0.91 (E24)	±200	
			1.0 to 9.1 (E24)		
ERJ8BS (1206)	0.5	±1, ±2, ±5	0.10 to 0.20 (E24)	±250	-55 to +125
ERJ8BQ (1206)			0.22 to 0.91 (E24)	±200	
			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)	±100	
			1.0 to 9.1 (E24)		

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

<Standard type>

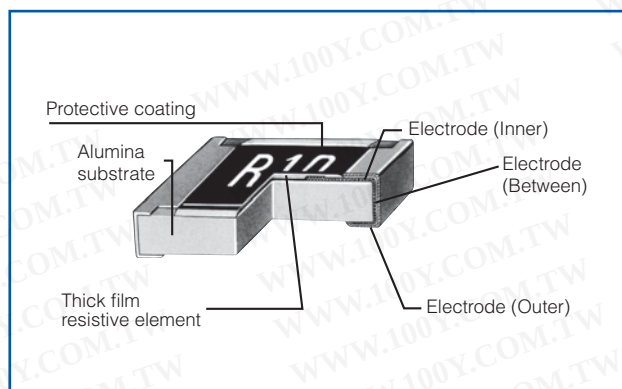
Part No. (inch size)	Power Rating at 70 °C (W)	Resistance Tolerance (%)	Resistance Range (Ω)	T.C.R. (×10 ⁻⁶ /°C)	Category Temperature Range (°C)
ERJ3RS (0603)	0.1	±1, ±2, ±5	0.10 to 0.20 (E24)	±300	-55 to +125
ERJ3RQ (0603)			0.22 to 0.91 (E24)		
			1.0 to 9.1 (E24)	±200	
ERJ6RS (0805)	0.125	±1, ±2, ±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)	±200	
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)	±200	
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)	±100	
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)	±100	
ERJ12ZS (2010)	0.5	±1, ±2, ±5	0.10 to 0.20 (E24)	±200	-55 to +125
ERJ12ZQ (2010)			0.22 to 0.91 (E24)		
			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)		
			1.0 to 9.1 (E24)	±100	

<Low TCR type>

Part No. (inch size)	Power Rating at 70 °C (W)	Resistance Tolerance (%)	Resistance ⁽¹⁾ Range (Ω)	T.C.R. (×10 ⁻⁶ /°C)	Category Temperature Range (°C)
ERJL03 (0603)	0.2	±1, ±5	47m to 100m	±200	-55 to +125
ERJL06 (0805)	0.25	±1, ±5	47m to 100m	±100	-55 to +125
ERJL08 (1206)	0.33	±1, ±5	47m to 100m	±100	-55 to +125
ERJL14 (1210)	0.33	±1, ±5	20m to 100m	R < 47m Ω : ±300 R ≥ 47m Ω : ±100	-55 to +125
ERJL12 (1812)	0.5	±1, ±5	20m to 100m		-55 to +125
ERJL1D (2010)	0.5	±1, ±5	40m to 100m		-55 to +125
ERJL1W (2512)	1	±1, ±5	40m to 100m		-55 to +125

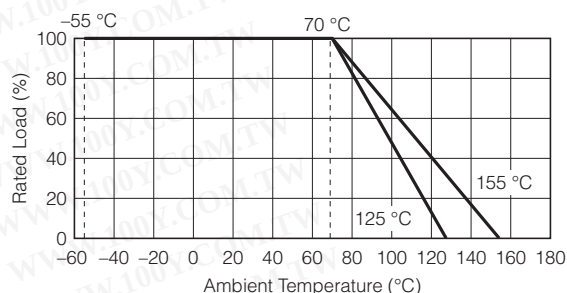
(1) Standard R.V. : 20m Ω, 22m Ω, 33m Ω, 39m Ω, 47m Ω, 50m Ω, 100m Ω, Custom R.V. : Each 1m Ω within upper range.

Construction

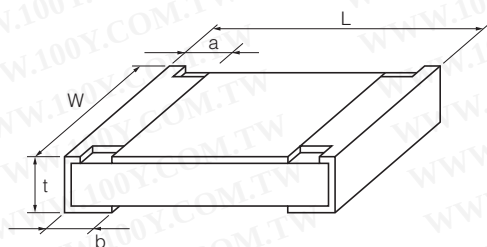


Power Derating Curve

For resistors operated in ambient temperatures above 70 °C, power rating shall be derated in accordance with the figure below.



Dimensions in mm (not to scale)



Part No. (inch size)	Dimensions (mm)					Mass(Weight) [g/1000 pcs.]
	L	W	a	b	t	
ERJ2LW (0402)	1.00 $\pm$ 0.10	0.50 $\pm$ 0.10	0.25 $\pm$ 0.10	0.25 $\pm$ 0.10	0.40 $\pm$ 0.05	0.8
ERJ2BW (0402)	1.00 $\pm$ 0.10	0.50 $\pm$ 0.10	0.24 $\pm$ 0.10	0.24 $\pm$ 0.10	0.35 $\pm$ 0.05	0.8
ERJ2BS ERJ2BQ (0402)	1.00 $\pm$ 0.10	0.50 $\pm$ 0.10	0.20 $\pm$ 0.10	0.27 $\pm$ 0.10	0.35 $\pm$ 0.05	0.8
ERJ3LW (5m Ω) (0603)	1.60 $\pm$ 0.15	0.80 $\pm$ 0.15	0.50 $\pm$ 0.20	0.50 $\pm$ 0.20	0.55 $\pm$ 0.10	3
ERJ3LW (10m Ω) (0603) ERJ3BW	1.60 $\pm$ 0.15	0.80 $\pm$ 0.15	0.40 $\pm$ 0.20	0.40 $\pm$ 0.20	0.55 $\pm$ 0.10	3
ERJ3R ERJ3B (0603) ERJL03	1.60 $\pm$ 0.15	0.80 $\pm$ 0.15	0.30 $\pm$ 0.20	0.30 $\pm$ 0.15	0.45 $\pm$ 0.10	2
ERJ6LW (0805)	2.00 $\pm$ 0.20	1.25 $\pm$ 0.20	0.63 $\pm$ 0.20	0.63 $\pm$ 0.20	0.70 $\pm$ 0.10	6
ERJ6BW (0805)	2.00 $\pm$ 0.20	1.25 $\pm$ 0.20	0.55 $\pm$ 0.20	0.55 $\pm$ 0.20	0.65 $\pm$ 0.10	6
ERJ6CW (10 to 13m Ω)	2.05 $\pm$ 0.20	1.30 $\pm$ 0.20	0.60 $\pm$ 0.20	0.60 $\pm$ 0.20	0.65 $\pm$ 0.10	6
ERJ6CW (15 to 30m Ω)			0.45 $\pm$ 0.20	0.45 $\pm$ 0.20		
ERJ6D (0805)	2.00 $\pm$ 0.20	1.25 $\pm$ 0.10	0.40 $\pm$ 0.20	0.55 $\pm$ 0.25	0.60 $\pm$ 0.10	5
ERJ6R ERJ6B (0805) ERJL06	2.00 $\pm$ 0.20	1.25 $\pm$ 0.10	0.40 $\pm$ 0.20	0.40 $\pm$ 0.20	0.60 $\pm$ 0.10	5
ERJ8BW (1206)	3.20 $\pm$ 0.20	1.60 $\pm$ 0.20	1.00 $\pm$ 0.20	1.00 $\pm$ 0.20	0.65 $\pm$ 0.10	13
ERJ8CW (10 to 16m Ω)	3.20 $\pm$ 0.20	1.60 $\pm$ 0.20	1.10 $\pm$ 0.20	1.10 $\pm$ 0.20	0.65 $\pm$ 0.10	13
ERJ8CW (18 to 50m Ω)	3.20 $\pm$ 0.20	1.60 $\pm$ 0.20	0.60 $\pm$ 0.20	0.60 $\pm$ 0.20	0.65 $\pm$ 0.10	13
ERJ8R ERJ8B (1206) ERJL08	3.20 $\pm$ 0.20	1.60 $\pm$ 0.15	0.50 $\pm$ 0.20	0.50 $\pm$ 0.20	0.60 $\pm$ 0.10	10
ERJ14R ERJ14B (1210) ERJL14	3.20 $\pm$ 0.20	2.50 $\pm$ 0.20	0.50 $\pm$ 0.20	0.50 $\pm$ 0.20	0.60 $\pm$ 0.10	16
ERJ12R ERJL12 (1812)	4.50 $\pm$ 0.20	3.20 $\pm$ 0.20	0.50 $\pm$ 0.20	0.50 $\pm$ 0.20	0.60 $\pm$ 0.10	27
ERJ12Z ERJL1D (2010)	5.00 $\pm$ 0.20	2.50 $\pm$ 0.20	0.60 $\pm$ 0.20	0.60 $\pm$ 0.20	0.60 $\pm$ 0.10	27
ERJ1TR ERJL1W (2512)	6.40 $\pm$ 0.20	3.20 $\pm$ 0.20	0.65 $\pm$ 0.20	0.60 $\pm$ 0.20	0.60 $\pm$ 0.10	45
	6.40 $\pm$ 0.20	3.20 $\pm$ 0.20	0.65 $\pm$ 0.20	1.30 $\pm$ 0.20	1.10 $\pm$ 0.10	79

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