

Thick Film Chip Resistors / Low Resistance Type

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



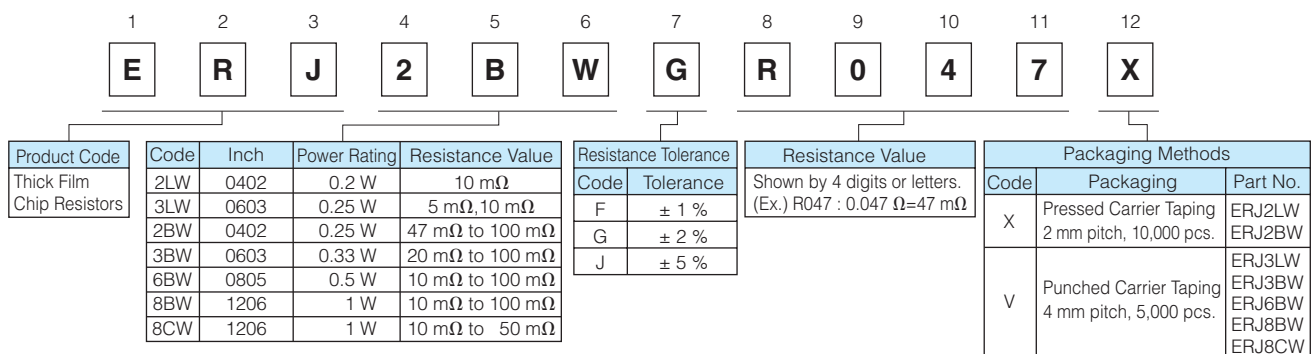
Features

- Current Sensing resistor
- 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 : ERJ2LW, 3LW ,2BW, 3BW, 6BW, 8BW, 8CW
- Low TCR : $\pm 50 \times 10^{-6} / ^\circ\text{C}$ (ERJ8CW)
- Low Resistance Value
 - 5 m Ω , 10 m Ω : ERJ3LW
 - 10 m Ω : ERJ2LW
 - 10 m Ω to 50 m Ω : ERJ8CW
 - 10 m Ω to 100 m Ω : ERJ6BW, 8BW
 - 20 m Ω to 100 m Ω : ERJ3BW, ERJL14, L12
 - 40 m Ω to 100 m Ω : ERJL1D, L1W
 - 47 m Ω to 100 m 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, 2BW, 3BW, 6BW, 8BW, 8CW <High power (double-sided resistive elements structure) type>



- ERJ2BS/2BQ, 3BS/3BQ, 6BS/6BQ, 8BS/8BQ, 14BS/14BQ, 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 Thick Film Chip Resistors	Size, Power Rating			Resistance Value		Resistance Tolerance		Packaging Methods		
	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	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	0.25 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	0.33 W							
	8R	1206	0.25 W							
	8B	1206	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							

Resistance Value	
Shown by 3 digits or letters. (Ex.) R22 : 0.22 Ω	

- 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 Thick Film Chip Resistors	Size, Power Rating			Resistance Value		Resistance Tolerance		Packaging Methods		
	Type	Inch	Power R.	Code	Res. Value	Code	Tolerance	Code	Packaging	Part No.
	L03	0603	0.2 W	K	Std. (20 mΩ, 22 mΩ, 33 mΩ, 39 mΩ, 47 mΩ, 50 mΩ, 100 mΩ)*	F	± 1 %	V	Punched Carrier Taping 4 mm pitch, 5,000 pcs.	ERJL03 ERJL06 ERJL08
	L06	0805	0.25 W			U	20 mΩ to 100 mΩ*	J	± 5 %	U
	L08	1206	0.33 W	* L03, L06, L08 : 47 mΩ to 100 mΩ L1D, L1W : 40 mΩ to 100 mΩ				Embossed Carrier Taping 4 mm pitch, 3,000 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	

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. (× 10 ⁻⁶ /°C)	Category Temperature Range (°C)
ERJ2LW (0402)	0.2	±1, ±2, ±5	10 m	0 to 500	-55 to +125
ERJ3LW (0603)	0.25	±1, ±2, ±5	5 m	0 to 700	-55 to +125
			10 m	0 to 300	-55 to +125
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

<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)		
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>

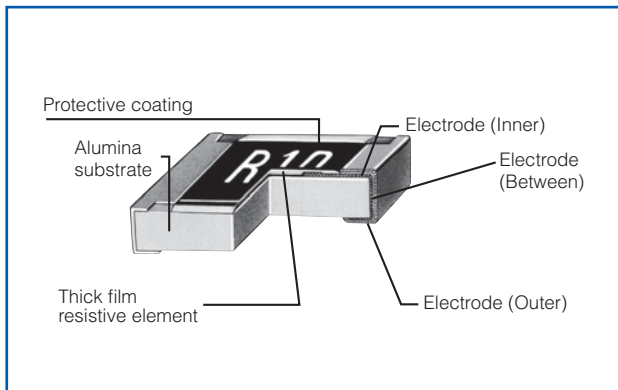
Part No. (inch size)	Power Rating at 70 °C (W)	Resistance Tolerance (%)	Resistance Range (Ω)	T.C.R. (×10 ⁻⁶ /°C)	Category Temperature Range (°C)
ERJ3RS (0603)	0.1	±1, ±2, ±5	0.10 to 0.20 (E24)	±300	-55 to +125
ERJ3RQ (0603)			0.22 to 0.91 (E24)		
			1.0 to 9.1 (E24)	±200	
ERJ6RS (0805)	0.125	±1, ±2, ±5	0.10 to 0.20 (E24)	±250	-55 to +125
ERJ6RQ (0805)			0.22 to 0.91 (E24)	±200	
			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)	±200	
			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)	±100	
			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)	±100	
			1.0 to 9.1 (E24)		
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)	±100	
			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)	±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	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		-55 to +125
ERJL1W (2512)	1	±1, ±5	40 m to 100 m		-55 to +125

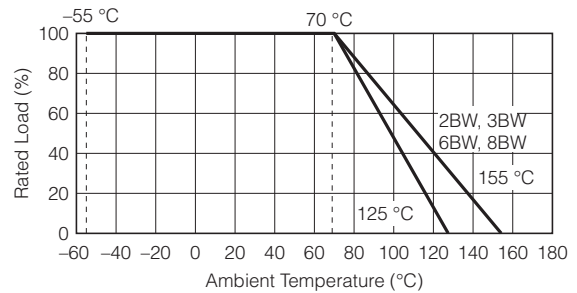
(1) Standard R.V. : 20 mΩ, 22 mΩ, 33 mΩ, 39 mΩ, 47 mΩ, 50 mΩ, 100 mΩ, Custom R.V. : Each 1 mΩ within upper range.

Construction

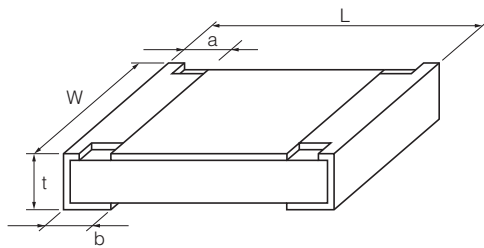


Power Derating Curve

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 ^{+0.10}	0.50 ^{+0.10} _{-0.05}	0.25 ^{+0.10}	0.25 ^{+0.10}	0.40 ^{+0.05}	0.8
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
ERJ3LW (5 mΩ)	1.60 ^{+0.15}	0.80 ^{+0.15}	0.50 ^{+0.20}	0.50 ^{+0.20}	0.55 ^{+0.10}	3
ERJ3LW (10 mΩ) ERJ3BW	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
ERJ8CW (10 to 16 mΩ)	3.20 ^{+0.20}	1.60 ^{+0.20}	1.10 ^{+0.20}	1.10 ^{+0.20}	0.65 ^{+0.10}	13
ERJ8CW (18 to 50 mΩ)	3.20 ^{+0.20}	1.60 ^{+0.20}	0.60 ^{+0.20}	0.60 ^{+0.20}	0.65 ^{+0.10}	13
ERJ8R ERJ8B (1206) ERJL08	3.20 ^{+0.05} _{-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