Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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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

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 : ±75×10^{-6}/°C (ERJ6CW, 8CW)
- Low Resistance Value : Thick film resistors available from 5m Ω (ERJ3LW, 6LW)
- 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
2LW	0402	0.2 W	10m Ω
3LW	0603	0.25 W	5m Ω,10m Ω
6LW	0805	0.5 W	5, 6, 7, 8, 9m Ω
2BW	0402	0.25 W	47m Ω to 100m Ω
3BW	0603	0.33 W	20m Ω to 100m Ω
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

Resistance Tolerance	
Code	Tolerance
D	± 0.5 %*
F	± 1 %
G	± 2 %
J	± 5 %

* Please refer to the rating table for the resistance tolerance

Resistance Value
Shown by 4 digits or letters. (Ex.) R047 : 0.047 Ω=47m Ω

Packaging Methods		
Code	Packaging	Part No.
X	Pressed Carrier Taping 2 mm pitch, 10,000 pcs.	ERJ2LW ERJ2BW
V	Punched Carrier Taping 4 mm pitch, 5,000 pcs.	ERJ3LW ERJ6LW ERJ3BW ERJ6BW ERJ8BW ERJ6CW ERJ8CW

● 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

Thick Film Chip Resistors

Size, Power Rating

Type	Inch	Power R.
2B	0402	0.166 W
3B	0603	0.25 W
3R	0603	0.1 W
6D	0805	0.5 W
6B	0805	0.33 W
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
12R	1812	0.5 W
12Z	2010	0.5 W
1TR	2512	1 W

Resistance Value

Code	Res. Value
S	0.1 Ω to 0.2 Ω
Q	0.22 Ω to 9.1 Ω*

* 2B : 0.22 Ω to 1.0 Ω

Resistance Tolerance

Code	Tolerance
D	± 0.5 %*
F	± 1 %
G	± 2 %
J	± 5 %

* Please refer to the rating table for the resistance tolerance

Resistance Value

Shown by 3 digits or letters.
Only when it is D (E24,E96) or F (E96), shown by 4 digits or letters.
(Ex.) R22 : 0.22 Ω
R102 : 0.102 Ω

Packaging Methods

Code	Packaging	Part No.
X	Punched Carrier Taping 2 mm pitch, 10,000 pcs.	ERJ2B
V	Punched Carrier Taping 4 mm pitch, 5,000 pcs.	ERJ3B/3R ERJ6D/6B/6R ERJ8B/8R
U	Embossed Carrier Taping 4 mm pitch, 5,000 pcs.	ERJ14B/14R ERJ12R ERJ12Z
	Embossed Carrier Taping 4 mm pitch, 4,000 pcs.	ERJ1TR

● 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

Type	Inch	Power R.
L03	0603	0.2 W
L06	0805	0.25 W
L08	1206	0.33 W
L14	1210	0.33 W
L12	1812	0.5 W
L1D	2010	0.5 W
L1W	2512	1 W

Code / Res. Value

Code	Res. Value
K	Std. 20m Ω, 22m Ω, 33m Ω, 39m Ω, 47m Ω, 50m Ω, 100m Ω *
U	20m Ω to 100m Ω*

* L03, L06, L08 : 47m Ω to 100m Ω
L1D, L1W : 40m Ω to 100m Ω

Resistance Tolerance

Code	Tolerance
F	± 1 %
J	± 5 %

Resistance Value

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

Packaging Methods

Code	Packaging	Part No.
V	Punched Carrier Taping 4 mm pitch, 5,000 pcs.	ERJL03 ERJL06 ERJL08
U	Embossed Carrier Taping 4 mm pitch, 5,000 pcs.	ERJL14 ERJL12 ERJL1D
	Embossed Carrier Taping 4 mm pitch, 3,000 pcs.	ERJL1W

Ratings

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

Part No. (inch size)	Power Rating (2) at 70 °C (W)	Resistance Tolerance (%)	Resistance (1) Range (Ω)	T.C.R. (×10⁻⁶/°C)	Category Temperature Range (°C)	AEC-Q200 Grade
ERJ2LW (0402)	0.2	±1, ±2, ±5	10m	0 to 500	–55 to +125	Grade 1
ERJ3LW (0603)	0.25	±1, ±2, ±5	5m	0 to 700	–55 to +125	Grade 1
			10m	0 to 300	–55 to +125	
ERJ6LW (0805)	0.5	±1, ±2, ±5	5, 6, 7, 8, 9m	0 to 300	–55 to +125	Grade 1
ERJ2BW (0402)	0.25	±1, ±2, ±5	47m to 100m (E24)	±300	–55 to +155	Grade 0
ERJ3BW (0603)	0.33	±1, ±2, ±5	20m to 100m (E24)	20m Ω ≤ R < 39m Ω : ±250 39m Ω ≤ R ≤ 100m Ω : ±150	–55 to +155	Grade 0
ERJ6BW (0805)	0.5	±1, ±2, ±5	10m to 100m (E24)	10m Ω ≤ R < 15m Ω : ±300 15m Ω ≤ R ≤ 100m Ω : ±200	–55 to +155	Grade 0
ERJ8BW (1206)	1	±1, ±2, ±5	10m to 100m (E24)	10m Ω ≤ R < 20m Ω : ±200 20m Ω ≤ R < 47m Ω : ±150 47m Ω ≤ R ≤ 100m Ω : ±100	–55 to +155	Grade 0
ERJ6CW (0805)	0.5	±0.5, ±1, ±2, ±5	10m to 30m (E24)	±75	–55 to +125	Grade 1
ERJ8CW (1206)	1	±1, ±2, ±5	10m to 50m (E24)	±75	–55 to +125	Grade 1

(1) Please contact us when resistors of irregular series are needed.
(2) Use it on the condition that the case temperature is below the upper category temperature.
· Rated Continuous Working Voltage (RCWV) shall be determined from RCWV = $\sqrt{\text{Power Rating} \times \text{Resistance Values}}$.
· Overload Test Voltage (OTV) shall be determined from OTV = Specified Magnification (refer to performance) × RCWV.

Ratings

<High power type>

Part No. (inch size)	Power Rating (2) at 70 °C (W)	Resistance (3) Tolerance (%)	Resistance (1) Range (Ω)	T.C.R. (×10⁻⁶/°C)	Category Temperature Range (°C)	AEC-Q200 Grade
ERJ2BS (0402)	0.166	±1, ±2, ±5	0.10 to 0.20 (E24)	±300	–55 to +155	Grade 0
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 +155	Grade 0
ERJ3BQ (0603)			0.22 to 0.91 (E24)			
			1.0 to 9.1 (E24)	±200		
ERJ6DS (0805)	0.5	±0.5, ±1, ±2, ±5	0.10 to 0.20 (E24, E96)	±150	–55 to +155	Grade 0
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 +155	Grade 0
ERJ6BQ (0805)			0.22 to 0.91 (E24)			
			1.0 to 9.1 (E24)	±200		
ERJ8BS (1206)	0.5	±1, ±2, ±5	0.10 to 0.20 (E24)	±250	–55 to +155	Grade 0
ERJ8BQ (1206)			0.22 to 0.91 (E24)			
			1.0 to 9.1 (E24)	±200		
ERJ14BS (1210)	0.5	±1, ±2, ±5	0.10 to 0.20 (E24)	±200	–55 to +155	Grade 0
ERJ14BQ (1210)			0.22 to 0.91 (E24)			
			1.0 to 9.1 (E24)	±100		

(1) Please contact us when resistors of irregular series are needed.
(2) Use it on the condition that the case temperature is below the upper category temperature.
(3) E96 series also have ±0.5 %, ±1 % line-up.
· Rated Continuous Working Voltage (RCWV) shall be determined from RCWV = $\sqrt{\text{Power Rating} \times \text{Resistance Values}}$.
· Overload Test Voltage (OTV) shall be determined from OTV = Specified Magnification (refer to performance) × RCWV.

<Standard type>

Part No. (inch size)	Power Rating (2) at 70 °C (W)	Resistance Tolerance (%)	Resistance (1) Range (Ω)	T.C.R. (×10⁻⁶/°C)	Category Temperature Range (°C)	AEC-Q200 Grade
ERJ3RS (0603)	0.1	±1, ±2, ±5	0.10 to 0.20 (E24)	±300	–55 to +155	Grade 0
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 +155	Grade 0
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 +155	Grade 0
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 +155	Grade 0
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 +155	Grade 0
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 +155	Grade 0
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 +155	Grade 0
ERJ1TRQ (2512)			0.22 to 0.91 (E24)			
			1.0 to 9.1 (E24)	±100		

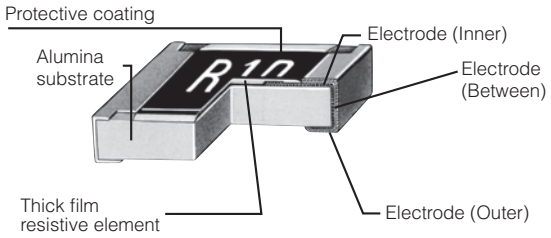
(1) Please contact us when resistors of irregular series are needed.
(2) Use it on the condition that the case temperature is below the upper category temperature.
· Rated Continuous Working Voltage (RCWV) shall be determined from RCWV = $\sqrt{\text{Power Rating} \times \text{Resistance Values}}$.
· Overload Test Voltage (OTV) shall be determined from OTV = Specified Magnification (refer to performance) × RCWV.

<Low TCR type>

Part No. (inch size)	Power Rating (2) at 70 °C (W)	Resistance Tolerance (%)	Resistance (1) Range (Ω)	T.C.R. (×10⁻⁶/°C)	Category Temperature Range (°C)	AEC-Q200 Grade
ERJL03 (0603)	0.2	±1, ±5	47m to 100m	±200	–55 to +125	Grade 1
ERJL06 (0805)	0.25	±1, ±5	47m to 100m	±100	–55 to +125	Grade 1
ERJL08 (1206)	0.33	±1, ±5	47m to 100m	±100	–55 to +125	Grade 1
ERJL14 (1210)	0.33	±1, ±5	20m to 100m		–55 to +125	Grade 1
ERJL12 (1812)	0.5	±1, ±5	20m to 100m	R < 47m Ω : ±300	–55 to +125	Grade 1
ERJL1D (2010)	0.5	±1, ±5	40m to 100m	R ≥ 47m Ω : ±100	–55 to +125	Grade 1
ERJL1W (2512)	1	±1, ±5	40m to 100m		–55 to +125	Grade 1

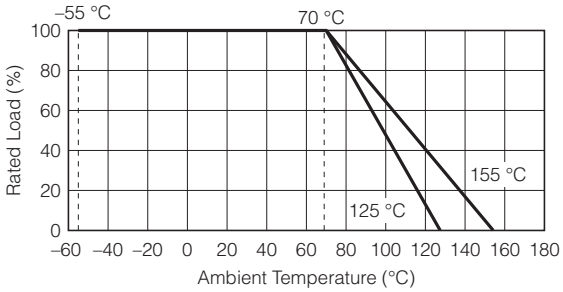
(1) Standard R.V. : 20m Ω, 22m Ω, 33m Ω, 39m Ω, 47m Ω, 50m Ω, 100m Ω, Custom R.V. : Each 1m Ω within upper range.
(2) Use it on the condition that the case temperature is below the upper category temperature.
· Rated Continuous Working Voltage (RCWV) shall be determined from RCWV = $\sqrt{\text{Power Rating} \times \text{Resistance Values}}$.
· Overload Test Voltage (OTV) shall be determined from OTV = Specified Magnification (refer to performance) × RCWV.

Construction

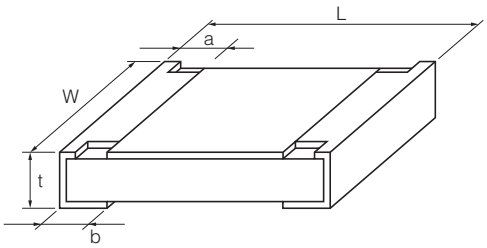


Power Derating Curve

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.	Dimensions (mm) L	W	a	b	t	Mass(Weight) [g/1000pcs.]
ERJ2LW	$1.00^{\pm0.10}$	$0.50^{+0.10}_{-0.05}$	$0.25^{\pm0.10}$	$0.25^{\pm0.10}$	$0.40^{\pm0.05}$	0.8
ERJ2BW	$1.00^{\pm0.10}$	$0.50^{+0.10}_{-0.05}$	$0.24^{\pm0.10}$	$0.24^{\pm0.10}$	$0.35^{\pm0.05}$	0.8
ERJ2BS ERJ2BQ	$1.00^{\pm0.10}$	$0.50^{+0.10}_{-0.05}$	$0.20^{\pm0.10}$	$0.27^{\pm0.10}$	$0.35^{\pm0.05}$	0.8
ERJ3LW (5m Ω)	$1.60^{\pm0.15}$	$0.80^{\pm0.15}$	$0.50^{\pm0.20}$	$0.50^{\pm0.20}$	$0.55^{\pm0.10}$	3
ERJ3LW (10m Ω) ERJ3BW	$1.60^{\pm0.15}$	$0.80^{\pm0.15}$	$0.40^{\pm0.20}$	$0.40^{\pm0.20}$	$0.55^{\pm0.10}$	3
ERJ3R ERJ3B ERJL03	$1.60^{\pm0.15}$	$0.80^{+0.15}_{-0.05}$	$0.30^{\pm0.20}$	$0.30^{\pm0.15}$	$0.45^{\pm0.10}$	2
ERJ6LW	$2.00^{\pm0.20}$	$1.25^{\pm0.20}$	$0.63^{\pm0.20}$	$0.63^{\pm0.20}$	$0.70^{\pm0.10}$	6
ERJ6BW	$2.00^{\pm0.20}$	$1.25^{\pm0.20}$	$0.55^{\pm0.20}$	$0.55^{\pm0.20}$	$0.65^{\pm0.10}$	6
ERJ6CW (10 to 13m Ω)	$2.05^{\pm0.20}$	$1.30^{\pm0.20}$	$0.60^{\pm0.20}$	$0.60^{\pm0.20}$	$0.65^{\pm0.10}$	6
ERJ6CW (15 to 30m Ω)			$0.45^{\pm0.20}$	$0.45^{\pm0.20}$		
ERJ6D	$2.00^{\pm0.20}$	$1.25^{\pm0.10}$	$0.40^{\pm0.20}$	$0.55^{\pm0.25}$	$0.60^{\pm0.10}$	5
ERJ6R ERJ6B ERJL06	$2.00^{\pm0.20}$	$1.25^{\pm0.10}$	$0.40^{\pm0.20}$	$0.40^{\pm0.20}$	$0.60^{\pm0.10}$	5

Part No.	Dimensions (mm) L	W	a	b	t	Mass(Weight) [g/1000pcs.]
ERJ8BW	$3.20^{\pm0.20}$	$1.60^{\pm0.20}$	$1.00^{\pm0.20}$	$1.00^{\pm0.20}$	$0.65^{\pm0.10}$	13
ERJ8CW (10 to 16m Ω)	$3.20^{\pm0.20}$	$1.60^{\pm0.20}$	$1.10^{\pm0.20}$	$1.10^{\pm0.20}$	$0.65^{\pm0.10}$	13
ERJ8CW (18 to 50m Ω)	$3.20^{\pm0.20}$	$1.60^{\pm0.20}$	$0.60^{\pm0.20}$	$0.60^{\pm0.20}$	$0.65^{\pm0.10}$	13
ERJ8R ERJ8B ERJL08	$3.20^{+0.05}_{-0.20}$	$1.60^{+0.05}_{-0.15}$	$0.50^{\pm0.20}$	$0.50^{\pm0.20}$	$0.60^{\pm0.10}$	10
ERJ14R ERJ14B ERJL14	$3.20^{\pm0.20}$	$2.50^{\pm0.20}$	$0.50^{\pm0.20}$	$0.50^{\pm0.20}$	$0.60^{\pm0.10}$	16
ERJ12R ERJL12	$4.50^{\pm0.20}$	$3.20^{\pm0.20}$	$0.50^{\pm0.20}$	$0.50^{\pm0.20}$	$0.60^{\pm0.10}$	27
ERJ12Z ERJL1D	$5.00^{\pm0.20}$	$2.50^{\pm0.20}$	$0.60^{\pm0.20}$	$0.60^{\pm0.20}$	$0.60^{\pm0.10}$	27
ERJ1TR	$6.40^{\pm0.20}$	$3.20^{\pm0.20}$	$0.65^{\pm0.20}$	$0.60^{\pm0.20}$	$0.60^{\pm0.10}$	45
ERJL1W	$6.40^{\pm0.20}$	$3.20^{\pm0.20}$	$0.65^{\pm0.20}$	$1.30^{\pm0.20}$	$1.10^{\pm0.10}$	79

Performance

● ERJ2LW, 3LW, 6LW, 2BW, 3BW, 6BW, 8BW, 6CW, 8CW
<High power (double-sided resistive elements structure) type>

Test Item	Performance Requirements	Test Conditions
Resistance	Within Specified Tolerance	20 °C
T. C. R.	Within Specified T. C. R.	+25 °C/+125 °C
Overload	±2%	Rated Voltage × 2.0, 5 s ERJ6LW : × 1.77, 5 s ERJ8BW (R > 0.05 Ω) : × 1.77, 5 s
Resistance to Soldering Heat	±1%	270 °C, 10 s
Rapid Change of Temperature	±1% ERJ2LW : ±2%	–55 °C (30 min.) / +155 °C (ERJ✻LW, ERJ✻CW : +125 °C) (30 min.), 100 cycles
High Temperature Exposure	±1%	+155 °C (ERJ✻LW, ERJ✻CW : +125 °C), 1000 h
Damp Heat, Steady State	±1%	60 °C, 90% to 95%RH, 1000 h
Load Life in Humidity	±3%	60 °C, 90% to 95%RH, Rated Voltage, 1.5 h ON/0.5 h OFF cycle, 1000 h
Endurance at 70 °C	±3%	70 °C, Rated Voltage, 1.5 h ON/0.5 h OFF cycle, 1000 h

● ERJ2BS/2BQ, 3BS/3BQ, 6BS/6BQ, 8BS/8BQ, 14BS/14BQ, 6D, 3R, 6R, 8R, 14R, 12R, 12Z, 1TR
<High power type/Standard type>

Test Item	Performance Requirements	Test Conditions
Resistance	Within Specified Tolerance	20 °C
T. C. R.	Within Specified T. C. R.	+25 °C/+125 °C
Overload	±2%	Rated Voltage × 2.5 (ERJ6D : × 1.77), 5 s
Resistance to Soldering Heat	±1%	270 °C, 10 s
Rapid Change of Temperature	±1%	–55 °C (30 min.) / +155 °C (30 min.), 100 cycles
High Temperature Exposure	±1%	+155 °C, 1000 h
Damp Heat, Steady State	±1%	60 °C, 90% to 95%RH, 1000 h
Load Life in Humidity	±3%	60 °C, 90% to 95%RH, Rated Voltage, 1.5 h ON/0.5 h OFF cycle, 1000 h
Endurance at 70 °C	±3%	70 °C, Rated Voltage, 1.5 h ON/0.5 h OFF cycle, 1000 h

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

Test Item	Performance Requirements	Test Conditions
Resistance	Within Specified Tolerance	20 °C
T. C. R.	Within Specified T. C. R.	+25 °C/+125 °C
Overload	±2%	Rated Voltage × 2.5, 5 s
Resistance to Soldering Heat	±1%	270 °C, 10 s
Rapid Change of Temperature	±1%	–55 °C (30 min.) / +125 °C (30 min.), 100 cycles
High Temperature Exposure	±1%	+125 °C, 1000 h
Damp Heat, Steady State	±1%	60 °C, 90% to 95%RH, 1000 h
Load Life in Humidity	±3%	60 °C, 90% to 95%RH, Rated Voltage, 1.5 h ON/0.5 h OFF cycle, 1000 h
Endurance at 70 °C	±3%	70 °C, Rated Voltage, 1.5 h ON/0.5 h OFF cycle, 1000 h