

### Anti-Sulfurated Thick Film Chip Resistors

ERJ S : 0402, 0603, 0805, 1206, 1210, 1812, 2010, 2512

ERJ U : 0201, 0402, 0603, 0805, 1206, 1210, 1812, 2010, 2512

Type: ERJ S02, S03, S06, S08, S14 S12, S1D, S1T (Au-based inner electrode type)

Type: ERJ U01, U02, U03, U06, U08, U14, U12, U1D, U1T (Ag-Pd-based inner electrode type)



#### ■ Features

- High resistance to sulfurization achieved by adopting an Au-based inner electrode (ERJS type) and Ag-Pd-based inner electrode (ERJU type)
- High reliability  
Metal glaze thick film resistive element and three layers of electrodes
- Suitable for both reflow and flow soldering
- Reference Standard: IEC 60115-8, JIS C 5201-8, EIAJ RC-2134B ● RoHS compliant

#### ■ Packaging Methods

Please see Pages 40 to 43

#### ■ Recommended Land Pattern

Please see Pages 44 to 45

#### ■ Recommended Soldering Conditions

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#### ■ Safety Precautions

Please see Page 47

#### ■ Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	R	J	S	0	6	F	1	0	0	2	V

  

Product Code		Resistance Tolerance		Packaging Methods		
Thick FilmChip Resistors		Code	Tolerance	Code	Packaging	Type
Size, Power Rating		F	± 1 %	C	Pressed Carrier Taping 2 mm pitch, 15,000 pcs.	ERJU01
Type: inch	Power R.	J	± 5 %	X	Punched Carrier Taping 2 mm pitch, 10,000 pcs.	ERJS02, ERJU02
U01 : 0201	0.05 W	0	Jumper	V	Punched Carrier Taping 4 mm pitch, 5,000 pcs.	ERJS03, ERJU03 ERJS06, ERJU06 ERJS08, ERJU08
S02 : 0402	0.1 W	Resistance Value		U	Embossed Carrier Taping 4 mm pitch, 5,000 pcs.	ERJS14, ERJU14 ERJS12, ERJU12 ERJS1D, ERJU1D
S03 : 0603	0.1 W	The first two or three digits are significant figures of resistance and the third or 4th one denotes number of zeros following. Jumper is expressed by R00. Three digit type (±5%), four digit type (±1%) Example: 222→2.2 kΩ, 1002→10 kΩ		U	Embossed Carrier Taping 4 mm pitch, 4,000 pcs.	ERJS1T, ERJU1T
S06 : 0805	0.125 W					
S08 : 1206	0.025 W					

#### ■ Construction



#### ■ Dimensions in mm (not to scale)



Type (inch size)	Dimensions (mm)					Mass (Weight) [g/1000 pcs.]
	L	W	a	b	t	
ERJU01 (0201)	0.60 <sup>+0.03</sup>	0.30 <sup>+0.03</sup>	0.10 <sup>+0.05</sup>	0.15 <sup>+0.05</sup>	0.23 <sup>+0.03</sup>	0.15
ERJS02 (0402)	1.00 <sup>+0.05</sup>	0.50 <sup>+0.05</sup>	0.20 <sup>+0.10</sup>	0.25 <sup>+0.10</sup>	0.35 <sup>+0.05</sup>	0.8
ERJS03 (0603)	1.60 <sup>+0.15</sup>	0.80 <sup>+0.15</sup>	0.30 <sup>+0.20</sup>	0.30 <sup>+0.15</sup>	0.45 <sup>+0.10</sup>	2
ERJS06 (0805)	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
ERJS08 (1206)	3.20 <sup>+0.05</sup>	1.60 <sup>+0.05</sup>	0.50 <sup>+0.20</sup>	0.50 <sup>+0.20</sup>	0.60 <sup>+0.10</sup>	10
ERJS14 (1210)	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
ERJS12 (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
ERJS1D (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
ERJS1T (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

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### ■ Ratings

<For Resistor>

Type (inch size)	Power Rating at 70 °C (W)	Limiting Element Voltage <sup>(1)</sup> (V)	Maximum Overload Voltage <sup>(2)</sup> (V)	Resistance Tolerance (%)	Resistance Range (Ω)	T.C.R. (×10 <sup>-6</sup> /°C)	Category Temperature Range (°C)					
ERJU01 (0201)	0.05	25	50	±1	10 to 1 M (E24, E96)	<10 Ω: -100 to +600  10 Ω to 1 MΩ: ±200(±5%) ±100(±1%)*  *ERJU01, ERJS02, ERJU02 : ±200  1 MΩ<: -400 to +150	-55 to +125					
				±5	1 to 1 M (E24)							
ERJS02 ERJU02 (0402)	0.1	50	100	±1	10 to 1 M (E24, E96)		<10 Ω: -100 to +600  10 Ω to 1 MΩ: ±200(±5%) ±100(±1%)*  *ERJU01, ERJS02, ERJU02 : ±200  1 MΩ<: -400 to +150	-55 to +155				
				±5	1 to 3.3 M (E24)							
ERJS03 ERJU03 (0603)	0.1	75	150	±1	10 to 1 M (E24, E96)			<10 Ω: -100 to +600  10 Ω to 1 MΩ: ±200(±5%) ±100(±1%)*  *ERJU01, ERJS02, ERJU02 : ±200  1 MΩ<: -400 to +150	-55 to +155			
				±5	1 to 10 M (E24)							
ERJS06 ERJU06 (0805)	0.125	150	200	±1	10 to 1 M (E24, E96)				<10 Ω: -100 to +600  10 Ω to 1 MΩ: ±200(±5%) ±100(±1%)*  *ERJU01, ERJS02, ERJU02 : ±200  1 MΩ<: -400 to +150	-55 to +155		
				±5	1 to 10 M (E24)							
ERJS08 ERJU08 (1206)	0.25	200	400	±1	10 to 1 M (E24, E96)					<10 Ω: -100 to +600  10 Ω to 1 MΩ: ±200(±5%) ±100(±1%)*  *ERJU01, ERJS02, ERJU02 : ±200  1 MΩ<: -400 to +150	-55 to +155	
				±5	1 to 10 M (E24)							
ERJS14 ERJU14 (1210)	0.5	200	400	±1	10 to 1 M (E24, E96)						<10 Ω: -100 to +600  10 Ω to 1 MΩ: ±200(±5%) ±100(±1%)*  *ERJU01, ERJS02, ERJU02 : ±200  1 MΩ<: -400 to +150	-55 to +155
				±5	1 to 10 M (E24)							
ERJS12 ERJU12 (1812)	0.75	200	500	±1	10 to 1 M (E24, E96)	<10 Ω: -100 to +600  10 Ω to 1 MΩ: ±200(±5%) ±100(±1%)*  *ERJU01, ERJS02, ERJU02 : ±200  1 MΩ<: -400 to +150						-55 to +155
				±5	1 to 10 M (E24)							
ERJS1D ERJU1D (2010)	0.75	200	500	±1	10 to 1 M (E24, E96)		<10 Ω: -100 to +600  10 Ω to 1 MΩ: ±200(±5%) ±100(±1%)*  *ERJU01, ERJS02, ERJU02 : ±200  1 MΩ<: -400 to +150					-55 to +155
				±5	1 to 10 M (E24)							
ERJS1T ERJU1T (2512)	1.0	200	500	±1	10 to 1 M (E24, E96)			<10 Ω: -100 to +600  10 Ω to 1 MΩ: ±200(±5%) ±100(±1%)*  *ERJU01, ERJS02, ERJU02 : ±200  1 MΩ<: -400 to +150				-55 to +155
				±5	1 to 10 M (E24)							

(1) Rated Continuous Working Voltage (RCWV) shall be determined from  $RCWV = \sqrt{\text{Power Rating} \times \text{Resistance Values}}$ , or Limiting Element Voltage listed above, whichever less.

(2) Overload (Short-time Overload) Test Voltage (SOTV) shall be determined from  $SOTV = 2.5 \times \text{Power Rating}$  or max. Overload Voltage listed above whichever less.

<For Jumper>

Type (inch size)	Rated Current (A)	Maximum Overload Current (A)
ERJU01 (0201)	0.5	1
ERJS02 ERJU02 (0402)	1	2
ERJS03 ERJU03 (0603)		
ERJS06 ERJU06 (0805)	2	4
ERJS08 ERJU08 (1206)		
ERJS14 ERJU14 (1210)		
ERJS12 ERJU12 (1812)		
ERJS1D ERJU1D (2012)		
ERJS1T ERJU1T (2512)		

### Power Derating Curve

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



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