

## Anti-Sulfurated Thick Film Chip Resistors



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, U6S, U6Q**  
(Ag-Pd-based inner electrode type)

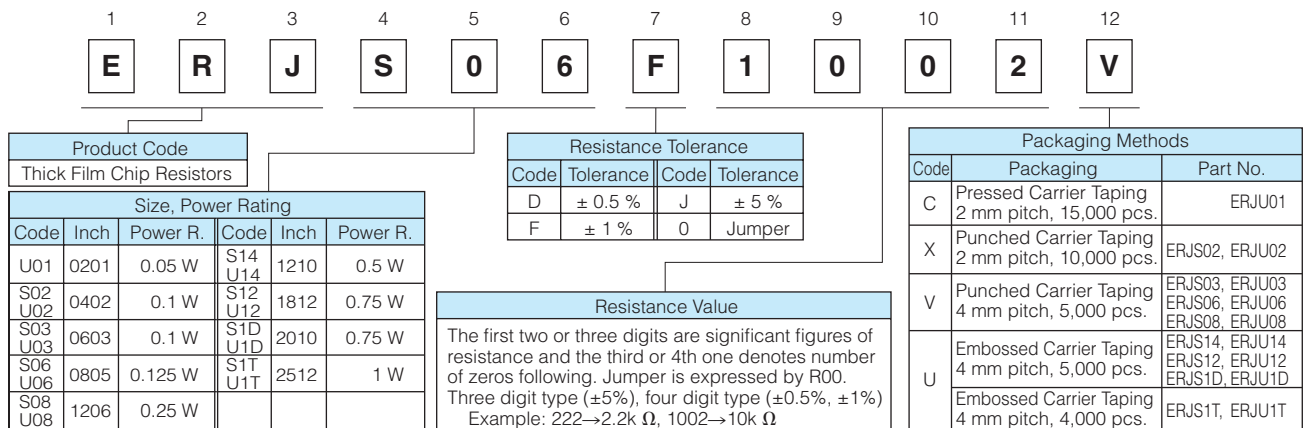
### Features

- 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
- Low Resistance type...ERJU6S, U6Q : 0.1 Ω to 1.0 Ω
- Reference Standard...IEC 60115-8, JIS C 5201-8, EIAJ RC-2134B
- AEC-Q200 qualified (Exemption ERJU01)
- RoHS compliant

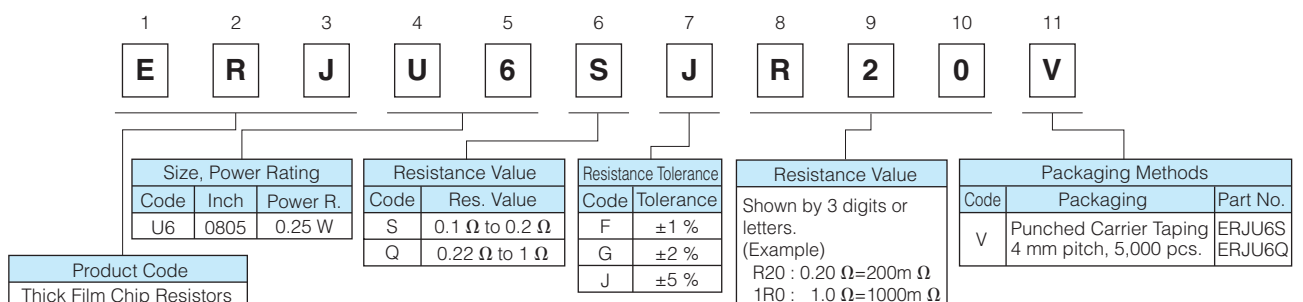
■ **As for Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions,**  
Please see Data Files

### Explanation of Part Numbers

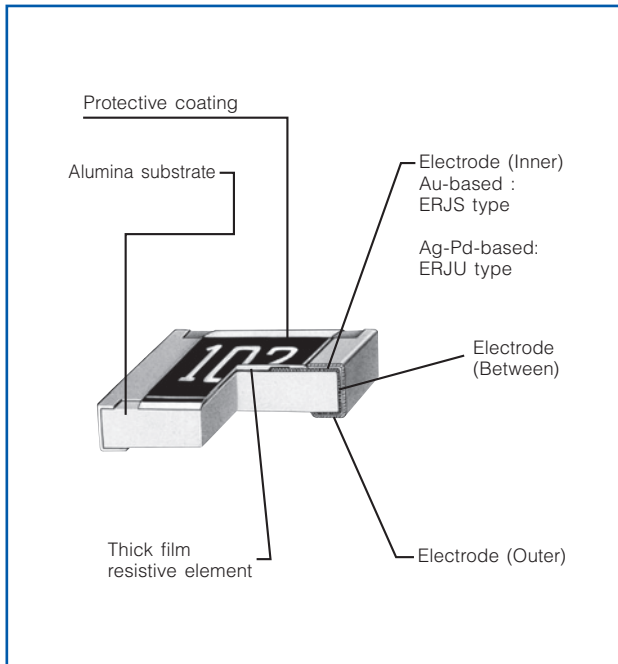
- ERJU01 to ERJU1T, ERJS02 to ERJS1T Type



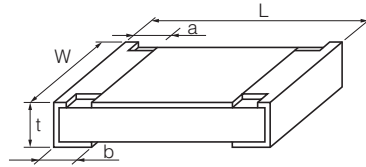
- ERJU6S, U6Q Type



## Construction



## Dimensions in mm (not to scale)



Part No.	Dimensions (mm)					Mass (Weight) [g/1000 pcs.]
	L	W	a	b	t	
ERJU01	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 ERJU02	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 ERJU03	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 ERJU06	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
ERJU6□	2.00 <sup>+0.20</sup>	1.25 <sup>+0.10</sup>	0.45 <sup>+0.20</sup>	0.45 <sup>+0.20</sup>	0.55 <sup>+0.10</sup>	6
ERJS08 ERJU08	3.20 <sup>+0.05</sup>	1.60 <sup>+0.15</sup>	0.50 <sup>+0.20</sup>	0.50 <sup>+0.20</sup>	0.60 <sup>+0.10</sup>	10
ERJS14 ERJU14	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 ERJU12	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 ERJU1D	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 ERJU1T	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

## Ratings

Part No. (inch size)	Power Rating <sup>(3)</sup> 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)	AEC-Q200 Grade
ERJU01 (0201)	0.05	25	50	±1	10 to 1M (E24, E96)	<10 Ω: -100 to +600  10 Ω to 1M Ω: ±200(±5%) ±100(±0.5, ±1%)*  *ERJU01, ERJS02, ERJU02 : ±200  1M Ω<: -400 to +150	-55 to +125	-
ERJS02 ERJU02 (0402)	0.1	50	100	±0.5, ±1	1 to 1M (E24, E96)		-55 to +155	Grade 0
ERJS03 ERJU03 (0603)	0.1	75	150	±0.5, ±1	1 to 3.3M (E24)		-55 to +155	Grade 0
ERJS06 ERJU06 (0805)	0.125	150	200	±0.5, ±1	1 to 1M (E24, E96)		-55 to +155	Grade 0
ERJS08 ERJU08 (1206)	0.25	200	400	±0.5, ±1	1 to 10M (E24)		-55 to +155	Grade 0
ERJS14 ERJU14 (1210)	0.5	200	400	±0.5, ±1	1 to 1M (E24, E96)		-55 to +155	Grade 0
ERJS12 ERJU12 (1812)	0.75	200	500	±0.5, ±1	1 to 10M (E24)		-55 to +155	Grade 0
ERJS1D ERJU1D (2010)	0.75	200	500	±0.5, ±1	1 to 1M (E24, E96)		-55 to +155	Grade 0
ERJS1T ERJU1T (2512)	1.0	200	500	±0.5, ±1	1 to 10M (E24)		-55 to +155	Grade 0
				±5	1 to 10M (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 Test Voltage (OTV) shall be determined from  $OTV = \text{Specified Magnification (refer to performance)} \times RCWV$  or Maximum Overload Voltage listed above, whichever less.  
 (3) Use it on the condition that the case temperature is below the upper category temperature.

### [Low Resistance type]

Part No. (inch size)	Power Rating <sup>(1)</sup> at 70 °C (W)	Resistance Tolerance (%)	Resistance Range (Ω)	T.C.R. (×10 <sup>-6</sup> /°C)	Category Temperature Range (°C)	AEC-Q200 Grade
ERJU6S (0805)	0.25	±1, ±2, ±5	0.1 to 0.2 (E24)	±150	-55 to +155	Grade 0
ERJU6Q (0805)			0.22 to 1 (E24)			

- (1) 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  $OTV = \text{Specified Magnification (refer to performance)} \times RCWV$ .

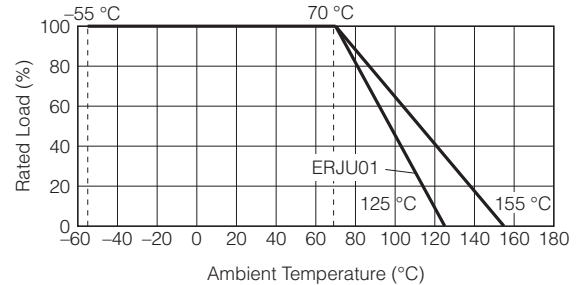
[For Jumper]

Part No. (inch size)	Rated Current (A)	Maximum Overload Current <sup>(1)</sup> (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)		

(1) Overload test current

### Power Derating Curve

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



## Performance

### ● ERJU01 to ERJU1T, ERJS02 to ERJS1T Type

Test Item	Performance Requirements		Test Conditions
	Resistor type	Jumper type	
Resistance	Within Specified Tolerance	100m Ω or less	20 °C
T. C. R.	Within Specified T. C. R.	200m Ω or less	+25 °C/+155 °C (ERJU01 : +25 °C/+125 °C)
Overload	±2%	100m Ω or less	Rated Voltage × 2.5, 5s Jumper type : Max. Overload Current, 5 s
Resistance to Soldering Heat	±1%	100m Ω or less	270 °C, 10 s
Rapid Change of Temperature	±1%	100m Ω or less	-55 °C (30min.) / +155 °C (ERJU01: +125 °C) (30min.), 100 cycles
High Temperature Exposure	±1%	100m Ω or less	+155 °C (ERJU01 : +125 °C), 1000 h
Damp Heat, Steady State	±1%	100m Ω or less	60 °C, 90% to 95 %RH, 1000 h
Load Life in Humidity	±3%	100m Ω or less	60 °C, 90% to 95 %RH, Rated Voltage (Jumper type : Rated Current), 1.5 h ON/0.5 h OFF cycle, 1000h
Endurance at 70 °C	±3%	100m Ω or less	70 °C, Rated Voltage (Jumper type : Rated Current), 1.5 h ON/0.5 h OFF cycle, 1000 h

### ● ERJU6S, U6Q 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	±1%	Rated Voltage × 2.5, 5 s
Resistance to Soldering Heat	±1%	270 °C, 10 s
Rapid Change of Temperature	±1%	-55 °C (30min.) / +125 °C (30min.), 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

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