

Datasheet

RS Pro RS Series Thick Film Surface Mount Resistor 0603 Case 33kΩ ±5% 0.1W ±200ppm/°C RS Stock No: 713-4208



Product Details

RS Pro 0603 thick film surface mount resistor with $\pm 5\%$ tolerance, provides 33 k Ω resistance and is power rated at 0.1 W. The temperature coefficient of resistance is ± 200 ppm/°C. Applications include telecommunication equipment, radio and tape recorders, TV tuners, video cameras, watches, pocket calculators, automotive industry, computers, instruments, medical and military equipment.

Features and Benefits

- Small size and lightweight
- Highly reliable multilayer electrode construction
- Compatible with all soldering process



Specifications:

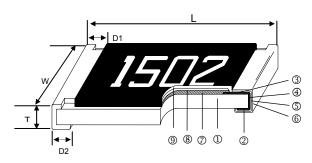
Case Style	Ruthenium Oxide
Depth	0.8 mm
Dimensions	1.6 x 0.8 x 0.45 mm
Height	0.45 mm
Length	1.6 mm
Maximum Operating Temperature	+155°C
Maximum Temperature Coefficient	+200 ppm/°C
Minimum Operating Temperature	-55°C
Minimum Temperature Coefficient	-200 ppm/°C
Package/Case	0603
Power Rating	0.1 W
Resistance	33 kΩ
Technology	Thick Film
Temperature Coefficient	±200 ppm/°C
Termination Style	Solder Pad
Tolerance	±5%
Maximum Overload Voltage	150 V
Maximum Operating Voltage	75 V
Tape Width	8 mm



Thick Film Chip Resistor 5% - RS Series

0201/0402/0603/0805/1206

Construction

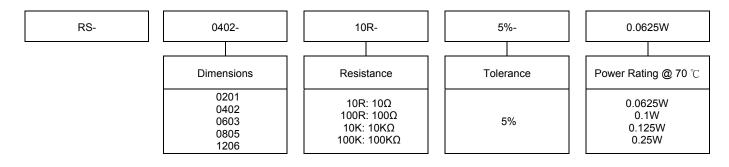


② Bottom Electrode (Ag) ⑤ Barrier Layer (Ni) ⑧ Primary Overcoat (Glass) ③ Top Electrode (Ag-Pd) ⑥ External Electrode (Sn) ⑨ Secondary Overcoat (Epox	(1	Alumina Substrate	4	Edge Electrode (NiCr)	0	Resistor Layer (RuO ₂ /Ag)
3 Top Electrode (Ag-Pd) 6 External Electrode (Sn) 9 Secondary Overcoat (Epox	1	2	Bottom Electrode (Ag)	5	Barrier Layer (Ni)	8	Primary Overcoat (Glass)
	(3	Top Electrode (Ag-Pd)	6	External Electrode (Sn)	9	Secondary Overcoat (Epoxy)

Dimensions

■Dimensio	ons						Unit: mm
Туре	Size (Inch)	L	w	т	D1	D2	Weight (g) (1000pcs)
RS-0201	0201	0.60±0.03	0.30±0.03	0.23±0.03	0.15±0.05	0.15±0.05	0.150
RS-0402	0402	1.00±0.05	0.50±0.05	0.35±0.05	0.20±0.10	0.20±0.10	0.620
RS-0603	0603	1.60±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20	2.042
RS-0805	0805	2.00±0.10	1.25±0.10	0.50±0.10	0.35±0.20	0.40±0.20	4.368
RS-1206	1206	3.10±0.10	1.55±0.10	0.55±0.10	0.50±0.25	0.50±0.20	8.947

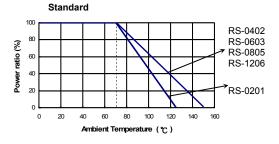
Part Numbering



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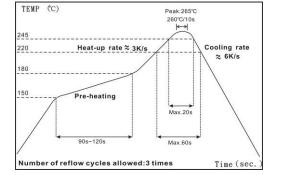
Derating Curve

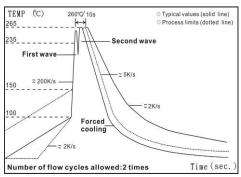


Standard Electrical Specifications

ltem	Power Rating at 70°C Jumper	Operating Temp. Range	Max. Operating	Max. Overload	Resistance Range	TCR (PPM/°C)
Туре	Rated Current		Voltage Voltage		±5%	, ,
RS-0201	1/20W	-55 ~ +155°C	25V	50V	1Ω – 9.76ΜΩ	±200
Jumper	1A	-55 ~ +155 C	230	500	0Ω (<50mΩ)	-
RS-0402	1/16W	EE	50V	100V	1Ω – 9.76ΜΩ	±200
Jumper	1A	-55 ~ +155°C	50 V	1000	0Ω (<50mΩ)	-
RS-0603	1/10W	-55 ~ +155°C	75V	150V	1Ω – 9.76ΜΩ	±200
Jumper	1A	-55~+155°C	750	1500	0Ω (<50mΩ)	-
RS-0805	1/8W	-55 ~ +155°C	150V	300V	1Ω – 9.76ΜΩ	±200
Jumper	2A	-55~+155 C	1500	300 V	0Ω (<50mΩ)	-
RS-1206	1/4W	EE	200V	400V	1Ω – 9.76ΜΩ	±200
Jumper	2A	-55 ~ +155°C	2000	4007	0Ω (<50mΩ)	-

Soldering Condition





IR Reflow Soldering

Wave Soldering (Flow Soldering)

- (1) Time of IR reflow soldering at maximum temperature point 260°C: 10s
- (2) Time of wave soldering at maximum temperature point 260°C: 10s
 - (3) Time of soldering iron at maximum temperature point 410°C: 5s

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Environmental Characteristics

Item	Requ	irement	Test Method						
Item	±5%	Jumper	lest method						
Temperature Coefficient of	As Spec.		JIS-C-5201-1 4.8 IEC-60115-1 4.8						
Resistance (T.C.R.)			-55°C~+125/+155°C, 25°C is the reference temperature						
		.50 . 0	JIS-C-5201-1 4.13 IEC-60115-1 4.13						
Short Time Overload	±(2.0%+0.05Ω)	<50mΩ	RCWV*2.5 or Max. overload voltage for 5 seconds, 2 seconds for high power series						
Insulation Resistance	≥10G		JIS-C-5201-1 4.6 IEC-60115-1 4.6						
			Max. overload voltage for 1 minute						
Faduration		<100mΩ	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1						
Endurance	±(3.0%+0.10Ω)	< 1001102	$70{\pm}2^{\circ}\text{C},~\text{Max.}$ working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"						
			JIS-C-5201-1 4.24						
Damp Heat with Load	±(3.0%+0.10Ω)	<100mΩ	40±2°C, 90~95% R.H. Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"						
Dry Heat	±(1.5%+0.10Ω)	<50mΩ	JIS-C-5201-1 4.23 IEC-60115-1 2.23.2						
2.9.1000			at +125/+155°C for 1000 hrs						
			JIS-C-5201-1 4.33 IEC-60115-1 4.33						
Bending Strength	±(1.0%+0.05Ω)	<50mΩ	Bending once for 5 seconds						
			2010, 2512 sizes: 2mm Other sizes: 3mm						
Solderability	95% min. coverag	e	JIS-C-5201-1 4.17 IEC-60115-1 4.17						
			245±5°C for 3 seconds						
Resistance to Soldering Heat	±(1.0%+0.05Ω)	<50mΩ	JIS-C-5201-1 4.18 IEC-60115-1 4.18						
j	_(,		260±5°C for 10 seconds						
Voltage Proof	No breakdown or	flashover	JIS-C-5201-1 4.7 IEC-60115-1 4.7						
0			1.42 times RCWV (RMS) for 1 minute						
Leaching	Individual leaching	•	JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1						
5	Total leaching are	a 10%	260±5°C for 30 seconds						
Rapid Change of Temperature	±(1.0%+0.05Ω)	<50mΩ	JIS-C-5201-1 4.18 IEC-60115-1 4.18						
	_(,)		-55°C to +125/+155°C, 5 cycles						

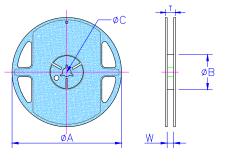
■ Storage Temperature: 25±3°C; Humidity < 80%RH

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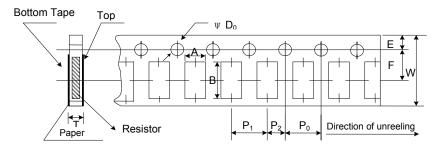
Packaging

Reel Specifications & Packaging Quantity



								Unit: mm
Туре	Packaging Quantity	Tape Width	Reel Diameter	ΦΑ	ФВ	ФС	w	т
RS-0201 RS-0402			7 inch	178.5±1.5	60 ^{+1/-0}	13.0±0.2	9.0±0.5	12.5±0.5
RS-0402	Paper	8mm	10 inch	254±1	100±0.5	13.0±0.2	9.5±0.5	13.5±0.5
RS-0805 RS-1206			13 inch	330±1	100±0.5	13.0±0.2	9.5±0.5	13.5±0.5

Paper Tape Specifications



										Unit: mm
Туре	Α	В	w	E	F	Po	P ₁	P ₂	ΦD₀	т
RS-0201	0.38±0.05	0.68±0.05	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.10	2.00±0.05	2.00±0.05	1.50+0.1,-0	0.42±0.1
RS-0402	0.65±0.10	1.15±0.1	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.10	2.00±0.05	2.00±0.05	1.50+0.1,-0	0.45±0.1
RS-0603	1.10±0.10	1.90±0.1	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.10	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.70±0.1
RS-0805	1.60±0.10	2.40±0.2	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.10	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.85±0.1
RS-1206	1.90±0.10	3.50±0.2	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.10	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.85±0.1

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Marking

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Unit: mm

No Marking for 0201 and 0402

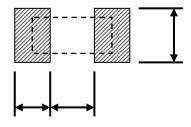
Jumper for all: Letter "0"

5% for 0603/0805/1206: 3 digits marking in E24

Example: 101=100 Ω 102=1K Ω (1st and 2nd are E24 code and 3rd code is multiplier)

	E24 code	10	11	12	13	15	16	18	20	22	24	27	30	33	36	39	43	47	51	56	62	68	75	82	91
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Recommend Land Pattern



Туре	Α	В	C
RS-0201	0.30	0.25	0.30
RS-0402	0.50	0.45	0.60
RS-0603	0.90	0.60	0.90
RS-0805	1.20	0.70	1.30
RS-1206	2.00	0.90	1.60

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