

**ENGLISH** 

## **Datasheet**

# RS Pro RS Series Thick Film Surface Mount Resistor 0603 Case $22\Omega \pm 5\% \ 0.1W \pm 200 ppm/^{\circ}C$

RS Stock No: 713-4087



### **Product Details**

RS Pro 0603 thick film surface mount resistor with  $\pm 5\%$  tolerance, provides 22  $\Omega$  resistance and is power rated at 0.1 W. The temperature coefficient of resistance is  $\pm 200$  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	22 Ω
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

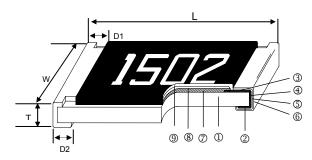


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# Thick Film Chip Resistor 5% - RS Series

0201/0402/0603/0805/1206

#### **■**Construction



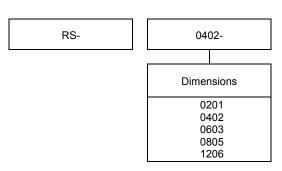
1	Alumina Substrate	4	Edge Electrode (NiCr)	7	Resistor Layer (RuO <sub>2</sub> /Ag)
2	Bottom Electrode (Ag)	(3)	Barrier Layer (Ni)	8	Primary Overcoat (Glass)
3	Top Electrode (Ag-Pd)	6	External Electrode (Sn)	9	Secondary Overcoat (Epoxy)

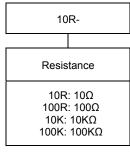
#### **■**Dimensions

Unit: mm

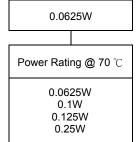
Туре	Size (Inch)	L	w	т	D1	D2	Weight (g) (1000pcs)
RS-0201	0201	0.60±0.03	0.30±0.03	0.23±0.03	0.15±0.05	0.15±0.05	0.150
RS-0402	0402	1.00±0.05	0.50±0.05	0.35±0.05	0.20±0.10	0.20±0.10	0.620
RS-0603	0603	1.60±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20	2.042
RS-0805	0805	2.00±0.10	1.25±0.10	0.50±0.10	0.35±0.20	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**





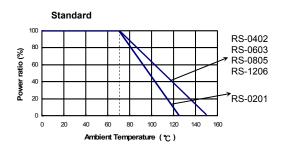






#### **■**Derating Curve

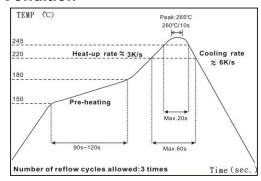
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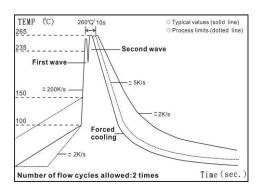


#### **■**Standard Electrical Specifications

Item	Item Power Rating at 70°C Jumper		Max. Operating	Max. Overload	Resistance Range	TCR (PPM/°C)		
Туре	Rated Current	Range	Voltage	Voltage	±5%	( ,		
RS-0201	1/20W	55 ~ +155°C	25V	50V	1Ω – 9.76ΜΩ	±200		
Jumper	1A	-55 ~ +155 ·C	250	50 V	$0\Omega$ (< $50$ m $\Omega$ )	-		
RS-0402	1/16W	55 145500	55 ,45500 501/ 4001/				1Ω – 9.76ΜΩ	±200
Jumper	1A	55 ∼ +155°C	500	1000	$0\Omega$ (<50m $\Omega$ )	-		
RS-0603	1/10W	55 145500	75\/	150V	1Ω – 9.76ΜΩ	±200		
Jumper	1A	-00 ~ +100°C	-55 ~ +155°C 75V		$0\Omega$ (< $50$ m $\Omega$ )	-		
RS-0805	1/8W	FF			1Ω – 9.76ΜΩ	±200		
Jumper	2A	55 ∼ +155°C	150V	300V	$0\Omega$ (< $50$ m $\Omega$ )	-		
RS-1206	1/4W	FF 14FF00	2001/	4001/	1Ω – 9.76ΜΩ	±200		
Jumper	2A	55 ∼ +155°C	200V	400V	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

Itom	Requ	irement	Test Method		
Item	±5% Jumper		Test 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		
0	. (0.00( 0.000)	.50	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		
Endonesia	. (0.00( + 0.400)	*100m*O	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1		
Endurance	±(3.0%+0.10Ω)	<100mΩ	70±2°C, Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"		
		<100mΩ	JIS-C-5201-1 4.24		
Damp Heat with Load	±(3.0%+0.10Ω)		$40\pm2^{\circ}$ 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		
			at +125/+155°C for 1000 hrs		
		<50mΩ	JIS-C-5201-1 4.33 IEC-60115-1 4.33		
Bending Strength	$\pm (1.0\% + 0.05\Omega)$		Bending once for 5 seconds		
			2010, 2512 sizes: 2mm Other sizes: 3mm		
Solderability	95% min. coverage		JIS-C-5201-1 4.17 IEC-60115-1 4.17		
<b>,</b>	3		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		
3	_(,		260±5°C for 10 seconds		
Voltage Proof	No breakdown or flashover		JIS-C-5201-1 4.7 IEC-60115-1 4.7		
			1.42 times RCWV (RMS) for 1 minute		
Leaching	Individual leaching		JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1		
J	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		

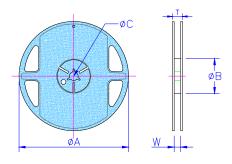
■ Storage Temperature: 25±3°C; Humidity < 80%RH



# **Packaging**

Reel Specifications & Packaging Quantity

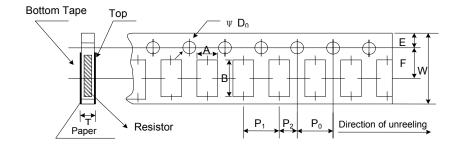




Unit: mm

Туре	Packaging Quantity	Tape Width	Reel Diameter	ФА	ФВ	ФС	W	Т
RS-0201	RS-0201 RS-0402 Paper		7 inch	178.5±1.5	60+1/-0	13.0±0.2	9.0±0.5	12.5±0.5
		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	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	$\Phi D_0$	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



### **■**Marking

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Unit: mm

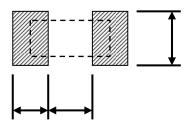
No Marking for 0201 and 0402

Jumper for all: Letter "0"

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

Example:  $101=100\Omega$   $102=1K\Omega$  (1 and 2 are E24 code and 3 code is multiplier)

#### **■**Recommend Land Pattern



_	_	_	
Type	Α	В	С
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

RS, Professionally Approved Products, gives you professional quality parts across all products categories. Our range has been testified by engineers as giving comparable quality to that of the leading brands without paying a premium price.