

ENGLISH

Datasheet

RS Pro RS Series Thick Film Surface Mount Resistor 0805 Case 3.9k Ω ±5% 0.125W ±200ppm/°C

RS Stock No: 713-6985



Product Details

RS Pro 0805 thick film surface mount resistor with $\pm 5\%$ tolerance, provides 3.9 k Ω resistance and is power rated at 0.125 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:

| opeomodione. | |
|---------------------------------|-------------------|
| Case Style | Ruthenium Oxide |
| Depth | 1.25 mm |
| Dimensions | 2 x 1.25 x 0.5 mm |
| Height | 0.5 mm |
| Length | 2 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 | 0805 |
| Power Rating | 0.125 W |
| Resistance | 3.9 kΩ |
| Technology | Thick Film |
| Temperature Coefficient | ±200 ppm/°C |
| Termination Style | Solder Pad |
| Tolerance | ±5% |
| Maximum Operating Voltage | 150 V |
| Maximum Overload Voltage | 300 V |
| Tape Width | 8 mm |
| | |

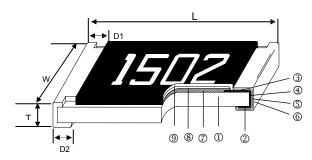


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Thick Film Chip Resistor 5% - RS Series

0201/0402/0603/0805/1206

■Construction



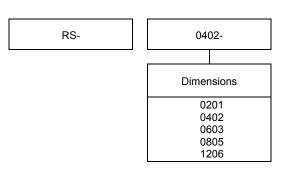
| 1 | Alumina Substrate | 4 | Edge Electrode (NiCr) | 7 | Resistor Layer (RuO ₂ /Ag) |
|---|-----------------------|-----|-------------------------|---|---------------------------------------|
| 2 | Bottom Electrode (Ag) | (3) | Barrier Layer (Ni) | 8 | Primary Overcoat (Glass) |
| 3 | Top Electrode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

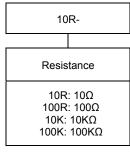
■Dimensions

Unit: mm

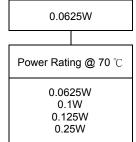
| Туре | Size (Inch) | L | w | т | D1 | D2 | Weight (g) (1000pcs) |
|---------|----------------|-----------|-----------|-----------|-----------|-----------|-------------------------|
| RS-0201 | 0201 | 0.60±0.03 | 0.30±0.03 | 0.23±0.03 | 0.15±0.05 | 0.15±0.05 | 0.150 |
| RS-0402 | 0402 | 1.00±0.05 | 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





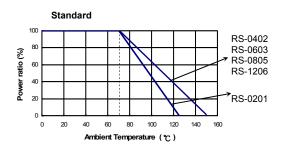






■Derating Curve

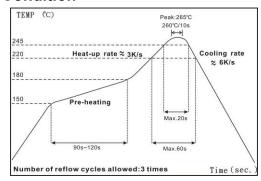
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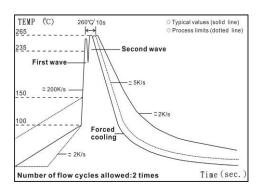


■Standard Electrical Specifications

| Item | Power Rating at 70°C Jumper | Operating Temp. Range | Max. Operating | Max. Overload | Resistance Range | TCR (PPM/°C) |
|---------|-----------------------------------|--------------------------|-------------------|------------------|--------------------------------|-----------------|
| Туре | Rated Current | 19 | Voltage | Voltage | ±5% | (|
| RS-0201 | 1/20W | 55 ~ +155°C | 25V | 50V | 1Ω – 9.76ΜΩ | ±200 |
| Jumper | 1A | -55 ~ +155 ·C | 250 | 50 V | 0Ω (< 50 m Ω) | |
| RS-0402 | 1/16W | 55 145500 | 55 45500 501/ 400 | | 1Ω – 9.76ΜΩ | ±200 |
| Jumper | 1A | 55 ∼ +155°C | 50V | 100V | 0Ω (<50m Ω) | - |
| RS-0603 | 1/10W | 55 145500 | 75\/ | 150V | 1Ω – 9.76ΜΩ | ±200 |
| Jumper | 1A | -00 ~ +100°C | 55 ~ +155°C 75V | | 0Ω (< 50 m Ω) | - |
| RS-0805 | 1/8W | FF | | | 1Ω – 9.76ΜΩ | ±200 |
| Jumper | 2A | 55 ∼ +155°C | 150V | 300V | 0Ω (< 50 m Ω) | - |
| 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 | | | | | |
| 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 | | | |
| | ±(1.0%+0.05Ω) | <50mΩ | JIS-C-5201-1 4.33 IEC-60115-1 4.33 | | | |
| Bending Strength | | | 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 | | | |
| , | 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 | | | |
| 3. | | | 1.42 times RCWV (RMS) for 1 minute | | | |
| Leaching | Individual leaching area 5% | | 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 | | | |

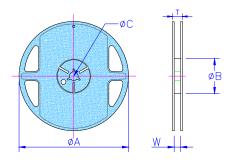
■ Storage Temperature: 25±3°C; Humidity < 80%RH



Packaging

Reel Specifications & Packaging Quantity

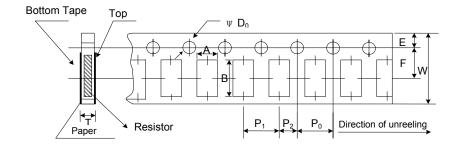




Unit: mm

| 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 ₀ | P ₁ | P ₂ | ΦD_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

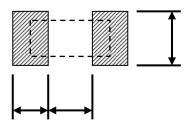
No Marking for 0201 and 0402

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.