

## Datasheet

### RS Pro RS Series Axial Carbon Resistor 1Ω ±5% 1W -500 → +350ppm/°C

RS Stock No: **707-8546**



## Product Details

RS Pro axial carbon resistor with ±5% tolerance, provides 1 Ω resistance and is power rated at 1 W. The temperature coefficient of resistance is in the range -500 to +350 ppm/°C. Carbon film axial leaded resistor offers excellent long-term stability. It features standard solder-plated copper leads. Applications include automotive, telecommunication and medical equipment. A comprehensive range of high stability carbon film resistors are qualified and tested to the requirements of IEC 115 and IEC 115-2. The ruggedized welded cap and lead method of manufacture provides a considerable strength and resistance to damage. The coating materials and the colour bands are epoxy resin and are highly resistant to solvents, abrasion and chipping. Improvements in materials and processing have allowed the rated power to be improved. Excellent stability against changes in load conditions or moisture levels, with a low noise level and high reliability make these carbon film resistors suitable for a wide range of applications. Rated at 70°C in free air mounted horizontally.

## Features and Benefits

- Available in resistances from 1 Ω to 9.1 mΩ
- Resistor body: 2.3 mm diameter, 6.3 mm length
- Long-term stability
- Solder plated copper leads

**Specifications:**

|                                 |                     |
|---------------------------------|---------------------|
| Case Style                      | Ceramic             |
| Diameter                        | 3.2 mm              |
| Dimensions                      | 3.2 (dia.) x 9 mm   |
| Lead Diameter                   | 0.65 mm             |
| Length                          | 9 mm                |
| Maximum Operating Temperature   | +155°C              |
| Maximum Temperature Coefficient | +350 ppm/°C         |
| Minimum Operating Temperature   | -55°C               |
| Minimum Temperature Coefficient | -500 ppm/°C         |
| Power Rating                    | 1 W                 |
| Resistance                      | 1 Ω                 |
| Technology                      | Carbon Film         |
| Temperature Coefficient         | -500 to +350 ppm/°C |
| Termination Style               | Axial               |
| Tolerance                       | ±5%                 |
| Lead Length                     | 26 mm               |
| Maximum Operating Voltage       | 400 V               |
| Maximum Overload Voltage        | 800 V               |

# Carbon Film Leaded Resistor - RS Series



|   |                  |   |                                     |
|---|------------------|---|-------------------------------------|
| ① | Ceramic Rod      | ④ | Non-flame Paint With Sol Vent-proof |
| ② | Tinned Iron Caps | ⑤ | Colour Code                         |
| ③ | Carbon Film      | ⑥ | Lead Wire                           |

## ■Dimensions

Unit: mm

| Type            | L            | D       | H        | d            | Weight (g)<br>(1000pcs) |
|-----------------|--------------|---------|----------|--------------|-------------------------|
| Carbon 0.125W   | 3.3+0.4/-0.2 | 1.8±0.3 | 29.3±2.0 | 0.452.3±0.03 | 92                      |
| Carbon 0.25W    | 6.3±0.5      | 2.3±0.3 | 28±2.0   | 0.55±0.03    | 155                     |
| Carbon 0.5W (H) | 6.3±0.5      | 2.3±0.3 | 28±2.0   | 0.55±0.03    | 155                     |
| Carbon 1W (H)   | 9.0±0.5      | 3.2±0.5 | 26±2.0   | 0.65±0.03    | 352                     |
| Carbon 2W (H)   | 11.5±1.0     | 4.5±0.5 | 35±2.0   | 0.78±0.03    | 775                     |

## ■Part Numbering



Derating Curve



Hop-Spot Temperature



Environmental Characteristics

| Item                            | Requirement   | Test Method   |
|---------------------------------|---|---|
| Short Time Overload             | ±(0.75%+0.05Ω)  | JIS-C-5201-1 5.5<br>RCWV*2.5 or Max. overload voltage for 5 seconds   |
| Insulation Resistance           | > 1000MΩ  | JIS-C-5201-1 5.6<br>Apply 100V <sub>DC</sub> for 1 minute   |
| Endurance                       | ±(3%+0.05Ω)   | JIS-C-5201-1 7.10<br>70±2°C, Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"            |
| Damp Heat with Load             | □ 100KΩ±3%<br>□ 100KΩ±5%  | JIS-C-5201-1 7.9<br>40±2°C, 90~95% R.H. Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF" |
| Solderability                   | 90% min. Coverage   | JIS-C-5201-1 6.5<br>245±5°C for 3 seconds   |
| Dielectric Withstanding Voltage | By Type   | JIS-C-5201-1 5.7<br>Apply Max. Overload Voltage for 1 minute  |
| Temperature Coefficient         | < 100KΩ +350ppm~-500ppm<br>100KΩ~1MΩ -0ppm~-700ppm<br>> 1 MΩ -0ppm~-1500ppm | Resistance value at room temperature and room Temperature+100°C   |
| Pulse Overload                  | ±(1%+0.05Ω)   | JIS-C-5201-1 5.8<br>4 times RCWV for 10000 cycles with 1 second "ON" and 25 seconds "OFF"                     |
| Resistance To Solvent           | No deterioration of coatings and markings                                   | JIS-C-5201-1 6.9<br>Trichroethane for 1 min. with ultrasonic  |
| Terminal Strength               | Tensile: □ 2.5 kg   | Direct Load for 10 seconds<br>In the direction off the terminal leads   |

- Rated Continuous Working Voltage(RCWV) = √P\*R
- Storage Temperature: 25±3°C; Humidity < 80%RH

**Electrical Specifications**

| Type \ Item | Power Rating at 70°C | Operating Temp. Range | Max. Working Voltage | Max. Overload Voltage | Dielectric Withstanding Voltage | Resistance Range |
|-------------|----------------------|-----------------------|----------------------|-----------------------|---------------------------------|------------------|
|             |                      |                       |                      |                       |                                 | ±5%              |
| Carbon      | 0.125W               | -55 ~ +155°C          | 150V                 | 300V                  | 300V                            | 0.1Ω - 22MΩ      |
| Carbon      | 0.25W                |                       | 250V                 | 500V                  | 500V                            | 1Ω - 10MΩ        |
| Carbon(H)   | 0.5W                 |                       | 300V                 | 500V                  | 500V                            | 0.1Ω - 22MΩ      |
| Carbon(H)   | 1W                   |                       | 400V                 | 800V                  | 800V                            | 1Ω - 10MΩ        |
| Carbon(H)   | 2W                   |                       | 500V                 | 1000V                 | 1000V                           | 0.1Ω - 10MΩ      |

**Taping/Packing Specifications**

Packing Methods (Ammo)

Unit: mm



| Packaging \ Type | Packing Methods |       |    |
|------------------|-----------------|-------|----|
|                  | A               | B1-B2 | S  |
| Carbon 0.125W    | 52+1/-0         | 1.2   | 5  |
| Carbon 0.25W     | 52+1/-0         | 1.2   | 5  |
| Carbon 0.5W (H)  | 52+1/-0         | 1.2   | 5  |
| Carbon 1W (H)    | 52+1/-0         | 1.5   | 5  |
| Carbon 2W (H)    | 52+1/-0         | 1.5   | 10 |

Ammo Packing



Unit: mm

| Packaging \ Type | Packing Methods |       |    | Ammo Packing |     |     |       |
|------------------|-----------------|-------|----|--------------|-----|-----|-------|
|                  | A               | B1-B2 | S  | A            | B   | C   | Qty   |
| Carbon 0.125W    | 26+1/-0         | 1.0   | 5  | 80           | 105 | 264 | 5,000 |
| Carbon 0.25W     | 26+1/-0         | 1.0   | 5  | 80           | 105 | 264 | 5,000 |
| Carbon 0.5W (H)  | 26+1/-0         | 1.0   | 5  | 80           | 105 | 264 | 5,000 |
| Carbon 1W (H)    | 73+1/-0         | 1.5   | 5  | 103          | 82  | 265 | 1,000 |
| Carbon 2W (H)    | 73+1/-0         | 1.5   | 10 | 103          | 96  | 265 | 1,000 |

## ■ Marking & Resistance Tolerance



|     |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ±5% | E-24 | 1.0 | 1.1 | 1.2 | 1.3 | 1.5 | 1.6 | 1.8 | 2.0 | 2.2 | 2.4 | 2.7 | 3.0 | 3.3 | 3.6 | 3.9 | 4.3 | 4.7 | 5.1 | 5.6 | 6.2 | 6.8 | 7.5 | 8.2 | 9.1 |
|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| Color | Digit | Multiplier | Tolerance |   |
|-------|-------|------------|-----------|---|
| -     | -     | -          | -         | - |
| -     | -     | $10^{-2}$  | -         | - |
| -     | -     | $10^{-1}$  | ±5.0%     | J |
| 0     | 0     | $10^0$     | -         | - |
| 1     | 1     | $10^1$     | -         | - |
| 2     | 2     | $10^2$     | -         | - |
| 3     | 3     | $10^3$     | -         | - |
| 4     | 4     | $10^4$     | -         | - |
| 5     | 5     | $10^5$     | -         | - |
| 6     | 6     | $10^6$     | -         | - |
| 7     | 7     | $10^7$     | -         | - |
| 8     | 8     | $10^8$     | -         | - |
| 9     | 9     | $10^9$     | -         | - |