

Version:
March 1, 2017

DIRECT

Electronics Tech.

(RSS, RSN)

Metal Oxide Resistors

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▶ Product Introduction**Metal Oxide Resistors on the pulse in various forming styles for different applications.****Features :**

- Tolerances: G ($\pm 2\%$), J ($\pm 5\%$)
- Lead (Pb)-free and RoHS compliant
- Power wattages up to 10W at + 25 °C
- Operating temperature range: -55°C ~200°C
- Axial leaded type, high power at compact sizes
- Replace carbon composition components in some applications

Applications :

- Ballasts
- Amplifiers
- Power supplies
- Telecommunications
- Household appliances
- Automotive, Computer, Instrumentation

Now available from Direct Electronics is a new range of highly stable and reliable metal oxide resistors providing high power in a small package with various forming styles and different leads for different applications.

New RS series resistors are ideal for pulse applications in adverse conditions and are available in different sizes with power ratings of 0.5W to 10W for a power voltage range from 200V to 850V. Highly temperature resistant the devices feature a resistance range from 10 Ω to 47K Ω .

RS series resistors are available in various forming styles and different leads for different applications like power supplies, amplifiers, household appliances and ballasts.

Manufactured by depositing a homogeneous oxide film of metal alloy onto a high-grade ceramic body, the metal oxide resistors are coated with a nonflammable lacquer providing mechanical, electrical and climatic protection.

The devices come packaged in ammo pack boxed or tape and reel format. All RS Series devices are RoHS-compliant, and compatible with high temperature soldering processes normally employed for lead free solders.

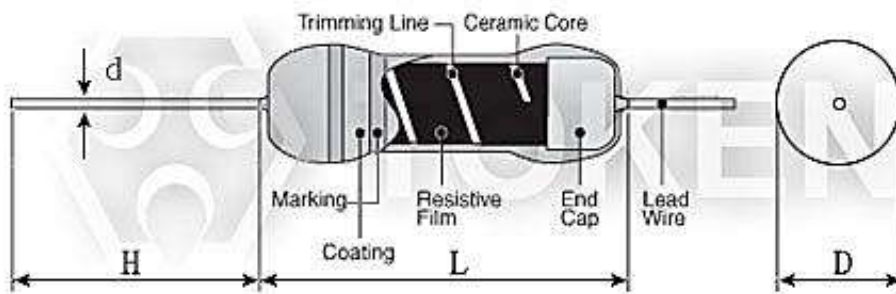
Contact us with your specific needs. For more information, please link to Direct official website "[General Purpose Resistors](#)".



► **Specifications & Dimensions**

Specifications & Dimensions (Unit: mm) (RSS, RSN)

| Type | | Dimensions (Unit: mm) | | | | Resistance Range | Tolerance E24 | MAX Working Voltage | | Dielectric Withstanding Voltage | |
|------|------|-----------------------|-----------|--------|-----------|------------------|---------------|---------------------|------|---------------------------------|-------|
| RSS | RSN | L | D | H | d ± 0.05 | (Ω) | (%) | RSS | RSN | RSS | RSN |
| 1/2W | 1/4W | 6.0± 0.3 | 2.3 ± 0.3 | 26 ± 1 | 0.40~0.50 | 10Ω ~ 22KΩ | ±2%, ±5% | 200V | 300V | 400V | 500V |
| 1W | 1/2W | 9.0± 0.5 | 3.0 ± 0.5 | 26 ± 1 | 0.50~0.55 | 10Ω ~ 33KΩ | ±2%, ±5% | 250V | 350V | 500V | 600V |
| 2W | 1W | 11 ± 1.0 | 4.0 ± 0.5 | 26 ± 3 | 0.75~0.80 | 10Ω ~ 47KΩ | ±2%, ±5% | 300V | 350V | 600V | 700V |
| 3W | 2W | 15 ± 1.0 | 5.0 ± 0.5 | 35 ± 3 | 0.75~0.80 | 10Ω ~ 47KΩ | ±2%, ±5% | 350V | 350V | 700V | 700V |
| 5W | 3W | 17± 1.0 | 6.0 ± 0.5 | 35 ± 3 | 0.75~0.80 | 10Ω ~ 47KΩ | ±2%, ±5% | 350V | 500V | 700V | 1000V |
| - | 5W | 24 ± 1.0 | 8.0 ± 0.5 | 38 ± 3 | 0.75~0.80 | 10Ω ~ 47KΩ | ±2%, ±5% | 500V | 700V | 800V | 1000V |
| 7W | 6W | 24 ± 1.0 | 8.0 ± 0.5 | 38 ± 3 | 0.75~0.80 | 10Ω ~ 47KΩ | ±2%, ±5% | 500V | 700V | 800V | 1000V |
| 10W | 7W | 41 ± 1.0 | 8.0 ± 0.5 | 38 ± 3 | 0.75~0.80 | 10Ω ~ 47KΩ | ±2%, ±5% | 750V | 850V | 850V | 1000V |
| | 10W | 53 ± 1.0 | 8.0 ± 0.5 | 38 ± 3 | 0.75~0.80 | 10Ω ~ 47KΩ | ±2%, ±5% | 750V | 850V | 850V | 1000V |



Metal Oxide Film (RSS, RSN) Dimensions (Unit: mm)



► Electrical Performance

Electrical Performance (RSS, RSN)

| Requirements | | Characteristics | Test Method | |
|---------------------------------|---------------------|---|-----------------|--------------|
| | | | JIS C 5202 | MIL-R-22684B |
| Operating Temp.Range | | -55°C~200°C | | |
| Temp.Coefficient (ppm/°C) | | ± 300 | 5.2 | 4.6.11 |
| Max. Resistance Changes | Short Time Overload | ± (1%+0.05Ω) | 5.2A | 4.6.5 |
| | Effect of Soldering | ± (1%+0.05Ω) | 6.4 350°C 2Sec | 4.6.9 |
| | Temp.Cycling | ± (1%+0.05Ω) | 7.4-55°C / 85°C | 4.6.3 |
| | Moisture Resistance | ± 5% | 7.9 1,000hr | 4.6.10 |
| | Load Life | ± 5% | 7.10 1,000hr | 4.6.12 |
| Dielectric Withstanding Voltage | | ± (0.5%+0.05Ω) | 5.7A | 4.6.7 |
| Non-Combustibility | | The resistor shall withstand Overload test in accordance with Article UL492.2 13 without producing a fire hazard. | | |
| Resistance to Solvents | | No damage on the appearance, co. or bands. | | |

► Application Notes

Non-flammable Resistor Application Notes (RSS, RSN)

- Never use organic solvents to clean non-flammable resistors.
- Maintaining a surface temperature of 200°C or less will extend resistors service life.
- Although the hardness exceeds that of a 3H pencil lead, do not nick the coating with screwdrivers or other pointed objects.
- Smoke emitted from non-flammable resistors on initial use in powered circuits is a normal phenomenon and the component can be safely utilized.
- Non-flammable resistors cannot be utilized in oil. Non-flammable resistors cannot be used in high frequency machinery because of the inductance produced by the grooving.
- Avoid touching non-flammable resistors in operation; the surface temperature ranges from approximately 350 °C to 400°C when utilized at the full rated value.
- All metal oxide film resistors (RSS, RSN) manufactured by Direct Electronics Co., Ltd. comply with the U.S. UL-94 non-flammability test, Class V-0, a continuous combustion period of zero seconds.
- Less resistant against external shocks than ordinary resistors due to special flame retardant coating. So, never give shocks or vibrations on the resistors. Also never damage them by picking up the coated films with pliers, tweezers, etc.
- After cleaning, no external power should be put on the coated films before they are well dried.



Order Codes

Order Codes (RSS, RSN)

| RSS | 0.5W | 1KR | | J | | TB | |
|-------------|-----------------|-------------------------------|--------------|--------------------------|-----------|---------|------------|
| Part Number | Rated Power (W) | Resistance Value (Ω) | | Resistance Tolerance (%) | | Package | |
| RSS | | 10R | 10 Ω | G | $\pm 2\%$ | TB | Taping Box |
| RSN | | 100R | 100 Ω | J | $\pm 5\%$ | | |
| | | 1K | 1K Ω | | | | |
| | | 10K | 10K Ω | | | | |

General Information

General Purpose Resistors with Customized Service

Direct Electronics is expanding business to include a broad range of General Purpose Resistor products designed for high volume applications. This expanded range of commercial resistor presents a more comprehensive product offering for Customer Experience Management (CEM) and other high volume customers that require quality products at competitive pricing.

Backed by the same customer service, technical support and quality assurance that Direct has always provided, these new commercial products enable you the opportunity to source a wider range of resistors from a trusted supplier.

General Use

When an ambient temperature exceeds a rated ambient temperature, resistor shall be applied on the derating curve by derating the load power. General purpose resistor under overloads is not combustion resistant and is likely to emit, flame, gas, smoke, red heat, etc. Flame retardant resistor generally emits smoke and red heat in a certain power and over but do not emit fire or flame.

When resistors are shielded or coated with resin etc., stress from the storage heat and the resins are applied. So, performance and reliability should be checked well before use.

When a voltage higher than rated is applied in a short time (single pulse, repeated pulses, surge, etc.), it does not necessarily ensure safety that an effective wattage is not higher than a rated wattage. Then consult with us with your specified pulse wave shape. Resistors shall be used in a condition causing no dew condensation.

Keep temperature from rising by choosing resistor with a higher rated capacity; do not use a component having the exact load value required. For considerations of safety in extended period applications, the rating should be more than four times higher than the actual wattage involved, but never use resistors at less than 25% of its rated power.

In applications where resistors are subject to intermittent current surges and spikes, be sure in advance that the components selected are capable of withstanding brief durations of increased load.

Do not exceed the recommended rated load. Resistor must use within the rated voltage range to prevent the shortening of service life and/or failure of the wound resistance elements.

Minimum load: Resistor must be utilized at 1/10 or more of the rated voltage to prevent poor conductance due to oxidation build-up. For basic particulars for cautions, refer to EIAJ Technical Report RCR-2121 "Guidance for care note on fixed-resistors".

