

# METAL OXIDE FILM RESISTORS

## (RSF & RSS SERIES)

RSF series are electric power type highly reliable fixed resistors with special metal oxide film thermochemically burned on the high heat conductive base material. They include those of flame-resisting coating type and nonflammable coating type and owing to their uniform quality produced through the most modern products able to use easily for various kinds of electronic devices and instruments.

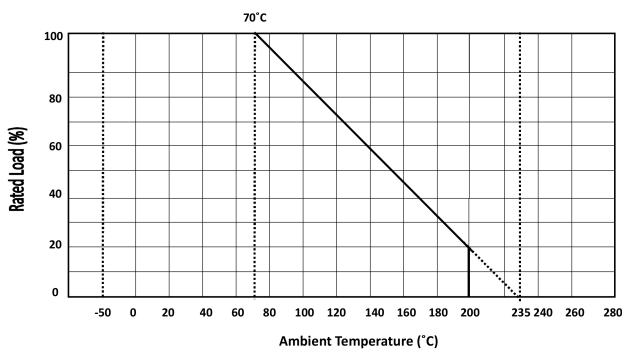
RSS are small-sized metal oxide film resistors, apply high aluminum content ceramic cores with performance for compact sizes.

## Features

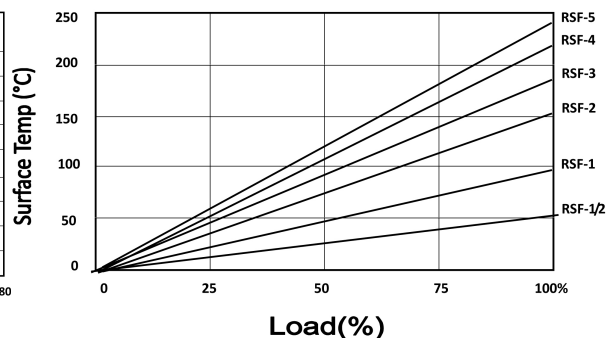
- 1.Small in size comparatively.
- 2.Electrical and mechanical stability and high reliability.
- 3.Best resistive to heat, humidity and noncombustible.
- 4.Annual shift is the lowest for the strengthen metal oxide film.
- 5.Low noise,with high resistance value which wire wound type can not be produced.

- \* Coating and marking resist IPA or other cleaning solvents
- \* Improved stability,dissipation,and low TCR available, Consult factory.
- \* RSF 1/2-3W apply color code,RSF 4-7W apply graphic marking.

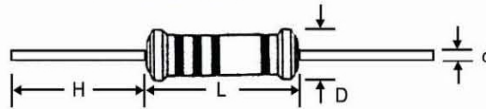
Derating Curve



Surface Temp Rise



## Dimensions



### General Specification

| Style |      | Dimensions |         |           |            | Max.<br>Working<br>V. | Max.<br>Overload<br>V. | Dielectric<br>Withstanding<br>V. | Resistance<br>Range<br>± 5%(J) |
|-------|------|------------|---------|-----------|------------|-----------------------|------------------------|----------------------------------|--------------------------------|
| RSS   | RSF  | L          | D       | d         | H<br>(Min) |                       |                        |                                  |                                |
| 1W    | 1/2W | 9.0±0.5    | 3.2±0.5 | 0.55±0.05 | 25         | 300V                  | 500V                   | 400V                             | 0.1Ω~1M                        |
| 2W    | 1W   | 11.0±1.0   | 4.5±0.5 | 0.73±0.05 | 27         | 350V                  | 600V                   | 500V                             | 0.1Ω~1M                        |
| 3W    | 2W   | 15.5±1.0   | 5.0±0.5 | 0.75±0.05 | 27         | 350V                  | 600V                   | 500V                             | 0.1Ω~1M                        |
| *5WS  |      | 18.0±1.0   | 6.5±1.0 | 0.75±0.05 | 27         | 500V                  | 800V                   | 500V                             | 10Ω~150KΩ                      |
| 5W    | 3W   | 24.5±1.0   | 8.5±1.0 | 0.75±0.05 | 27         | 700V                  | 900V                   | 500V                             | 0.5Ω~1M                        |
| *6WS  |      | 24.5±1.0   | 8.5±1.0 | 0.75±0.05 | 27         | 750V                  | 1000V                  | 500V                             | 0.5Ω~1M                        |
| 7W    | 5W   | 41.0±1.0   | 8.5±1.0 | 0.75±0.05 | 27         | 750V                  | 1000V                  | 500V                             | 10Ω~150KΩ                      |
| 10W   | 7W   | 53.0±1.0   | 8.5±1.0 | 0.75±0.05 | 27         | 750V                  | 1000V                  | 500V                             | 10Ω~150KΩ                      |

## Characteristics

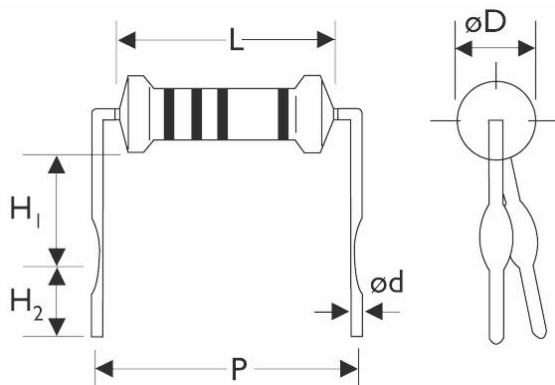
| Requirements                    | Performance  | Test Method                     |            |
|---------------------------------|--|---------------------------------|------------|
|                                 |  | JIS-C-5202                      | MIL-STD202 |
| Operating Temp. Range           | -55°C~+155°C   | —                               | —          |
| Temp. Coefficient (ppm/°C)      | ±300   | 5.2                             | METHOD 304 |
| Short Time Overload             | $\Delta R_{max} \leq \pm(1\%+0.05\Omega)$  | 5.5-A                           | —          |
| Resistance to Soldering Heat    | $\Delta R_{max} \leq \pm(1\%+0.05\Omega)$  | 6.4. 350°C 3 Sec                | METHOD210  |
| Temp. Cycling                   | $\Delta R_{max} \leq \pm(1\%+0.05\Omega)$  | 7.4.-55°C/85°C, 5 cycle         | METHOD107  |
| Moisture Resistance             | $\Delta R_{max} \leq \pm 5\%$  | 7.9 95%RH on-off<br>1.000 hr    | METHOD 106 |
| Load Life                       | $\Delta R_{max} \leq \pm 5\%$  | 7.10 70°C RH on-off<br>1.000 hr | METHOD 108 |
| Dielectric Withstanding Voltage | $\Delta R_{max} \leq \pm(0.5\%+0.05\Omega)$  | 5.7 -A                          | METHOD 301 |
| Insulation Resistance           | 10 <sup>4</sup> MΩ ~   | 5.6 -A                          | —          |
| Non-Combustibility              | The resistor shall withstand Overload test in accordance with Article UL 492.2.13 without producing a fire hazard. |                                 |            |

\*Note: Lower TCR ± 200 ppm or ± 100ppm also available, consult to factory

\*RSS5WS/6WS - the ceramic core is high alumina content which gives excellent heat dissipation and high power



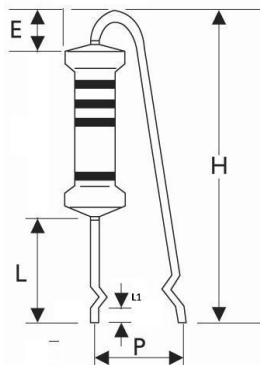
## MF FORM



Unit: mm

| RSS | RSF | $D \pm 0.5$ | $L \pm 1$ | P            | H1         | $H2 \pm 1$ |
|-----|-----|-------------|-----------|--------------|------------|------------|
| 2W  | 1W  | 4.5         | 11        | $15 \pm 1.5$ | $7 \pm 1$  | 4.5        |
| 3W  | 2W  | 5.5         | 15        | $20 \pm 2$   | $10 \pm 2$ | 4.5        |
| 5W  | 3W  | 8.5         | 24        | $30 \pm 2$   | $13 \pm 2$ | 4.5        |

## FK FORM



\*With/without leads kink or kink at only one lead can be done by customers' request

| RSS | RSF | $D \pm 0.5$ | $L \pm 1$ | $H \pm 3$ | $d \pm 0.05$ | Pref | $L1 \pm 1$ | E      |
|-----|-----|-------------|-----------|-----------|--------------|------|------------|--------|
| 2W  | 1W  | 4.5         | 10        | 25MAX     | 0.73         | 8    | 4          | 3.5MAX |
| 3W  | 2W  | 5.5         | 10        | 30MAX     | 0.75         | 8    | 4          | 3.5MAX |

## Part Number system

| RSF                           | 200      | 103          | J         | T               |
|-------------------------------|----------|--------------|-----------|-----------------|
|                               | Wattages | Resistance   | Tolerance | Packaging codes |
| RSF-Metal Oxide Film Resistor | 050=1/2W |              |           | R=Tape reeled   |
| RSS-Metal Oxide Film Resistor | 100=1W   |              | J=5%      | T=AMMO Tape/box |
| Small Size                    | 200=2W   | 3-digit code | F=1%      | FK, MF-Formed & |
| RSF200=RSF2W                  | 300=3W   | 103=10K ohm  |           | Cut Leads       |
|                               | 500=5W   |              |           | B=Bulk Pack,    |
|                               |          |              |           | Straight Leads  |

Note: 52, 63 and 73 MM taping are available for different Wattages

