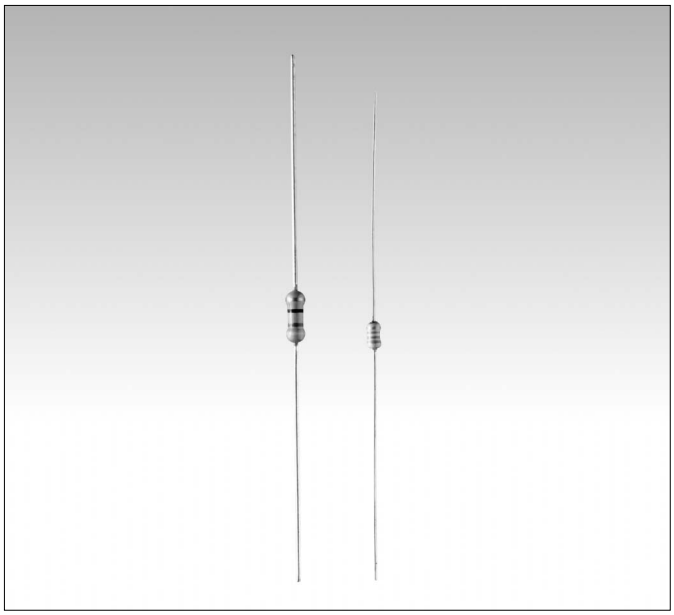
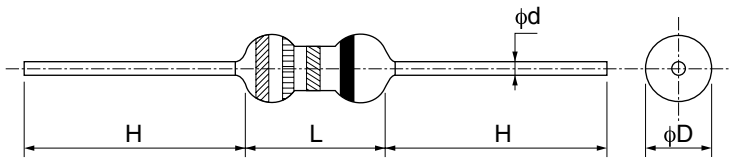
# RD

## • Features

1. Three sizes are available : 1/6W ~ 1/2W.
2. Structure suitable for auto-insertion processing.
3. Stability Class : 5%



## • Dimensions




Unit : mm

| Style | L | D | H | d | *Unit weight/pc. |
|---|---|---|---|---|---|
| RD1/6 | 3.2±0.2 | 1.8±0.1 | 30±3 | 0.45±0.05 | 108mg |
| RD1/4S | | | | | |
| RD1/4 | 6.5±0.5 | 2.4±0.2 | 30±3 | 0.55±0.05 | 217mg |
| RD1/2S | | | | | |

*Values for reference

## • Part Number Description

Example

Style

| RD | 1/4 | 103 | J | B |
|---|---|---|---|---|

**Product Type**

**Rated Dissipation**

| | |
|---|---|
| 1/6 | 0.167W |
| 1/4S | 0.25W |
| 1/4 | |
| 1/2S | 0.5W |

**Rated Resistance**

E24 Series
e.g.: 2R2=2.2 ohm
103=10k ohm

**Tolerance on Rated Resistance**

| | |
|---|---|
| G | ±2% |
| J | ±5% |

***Packaging**

| | |
|---|---|
| B | Bulk (Straight) |
| H | Horizontal Forming |
| TA | 26 mm Width Tape (Ammo Box) |
| TB | 52 mm Width Tape (Ammo Box) |
| TL | 52 mm Width Tape (Reel) |

*Refer to Tape and Packaging information on pages 68~71.

# FIXED CARBON FILM RESISTORS RD

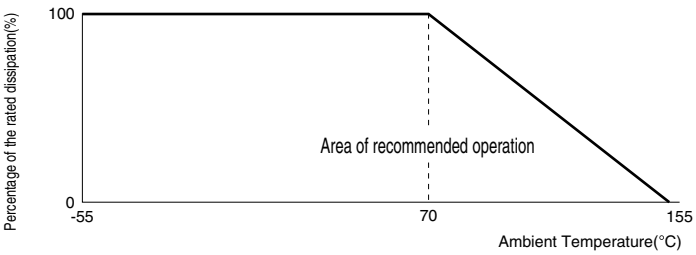
## •Ratings

| Style | Rated Dissipation at 70°C W | Limiting Element Voltage V | Combinations of Rated Resistance Range and Tolerance on Rated Resistance: Rated Resistance Range | Tolerance on Rated Resistance | Combinations of Rated Resistance Range and Temperature Coefficient of Resistance: Temperature Coefficient of Resistance $10^{-6}$/°C | Rated Resistance Range | Preferred Number Series for Resistors | Isolation Voltage V | Category Temperature Range °C |
|---|---|---|---|---|---|---|---|---|---|
| RD1/6 | 0.167 | 200 | 10 ohm～470k ohm<br>1.0 ohm～2.2M ohm | G(±2%)<br>J (±5%) | 0～ +350 | 1 ohm～ 4.7 ohm | E24 | 300 | −55～+155 |
| | | | | | 0～ −450 | 5.1 ohm～ 43k ohm | | | |
| | | | | | 0～ −700 | 47k ohm～430k ohm | | | |
| RD1/4S | 0.25 | 250 | | | 0～−1,000 | 470k ohm～ 1M ohm | | 500 | |
| | | | | | 0～−1,200 | 1.1M ohm～2.2M ohm | | | |
| RD1/4 | | | 10 ohm～1M ohm<br>1.0 ohm～2.2M ohm | G(±2%)<br>J (±5%) | ±350 | 1 ohm～ 100 ohm | | | |
| | | | | | 0～ −350 | 110 ohm～ 33k ohm | | | |
| | | | | | 0～ −650 | 36k ohm～470k ohm | | | |
| RD1/2S | 0.5 | 350 | | | 0～−1,000 | 510k ohm～ 1M ohm | | 700 | |
| | | | | | 0～−1,200 | 1.1M ohm～2.2M ohm | | | |

Note1. Rated Voltage = $\sqrt{(\text{Rated Dissipation}) \times (\text{Rated Resistance})}$. (d.c. or a.c. r.m.s. Voltage)
Note2. Limiting Element Voltage can only be applied to resistors when the resistance value is equal to or higher than the critical resistance value.
Note3. Critical Resistance Value is the resistance value at which the rated voltage is equal to the limiting element voltage.

## •Derating Curve

The derated values of dissipation for temperatures in excess of 70°C shall be indicated by the following Curve.




## •Climatic Category

55/155/56

| | |
|---|---|
| Lower Category Temperature | −55°C |
| Upper Category Temperature | +155°C |
| Duration of the Damp heat, Steady-State Test | 56 days |

## •Performance Characteristics JIS C 5201-1 : 1998

| Description | | Requirements | Test Methods |
|---|---|---|---|
| Voltage proof | | No breakdown or flashover | Clause 4.7 V-block method RD1/6, 1/4S 300Va.c.,60S<br>RD1/4, 1/2S 500Va.c.,60S |
| Variation of resistance with temperature | | See Ratings Table | Clause 4.8 Measuring temperature : +20°C/−55°C/ +20°C/+125°C/+20°C |
| Overload | | ΔR≤±(1%+0.05 ohm)<br>No visible damage, legible marking | Clause 4.13 The applied voltage shall be 2.5 times of the rated voltage or twice of the limiting element voltage, whichever is the less severe, 5s. |
| Robustness of terminations | Tensile | ΔR≤±(1%+0.05 ohm) No visible damage | Clause 4.16.2 RD1/6,1/4S : 5N for 5～10s<br>RD1/4,1/2S : 10N for 5～10s |
| | Bending | ΔR≤±(1%+0.05 ohm) No visible damage | Clause 4.16.3 RD1/6,1/4S : 2.5N twice<br>RD1/4,1/2S : 5N twice |
| | Torsion | ΔR≤±(1%+0.05 ohm) No visible damage | Clause 4.16.4 180°C, 2 rotation |
| Solderability | | In accordance with Clause 4.17.4.5 | Clause 4.17 235°C, 2s |
| Resistance to soldering heat | | ΔR≤±(1%+0.05 ohm) No visible damage, legible marking | Clause 4.18 After immersion into the flux, the immersion into solder shall be carried out in Solder bath at 350°C for 3.5s. |
| Rapid change of temperature | | ΔR≤±(1%+0.05 ohm) No visible damage | Clause 4.19 5 cycles between −55°C and +155°C. |
| Climatic sequence | | ΔR≤±(5%+0.1 ohm) Insulation resistance : R≥100M ohm<br>No visible damage | Clause 4.23 Dry/Damp heat(12+12h cycle), first cycle./ Cold/Damp heat(12+12h cycle), remaining cycle./ D.C.Load. |
| Damp test, steady state | | ΔR≤±(5%+0.1 ohm) Insulation resistance : R≥100M ohm<br>No visible damage, legible marking | Clause 4.24 40°C, 95%R.H., 56 days, test a),b) and c) of Clause 4.24.2.1 |
| Endurance at 70°C | | ΔR≤±(5%+0.1 ohm) No visible damage<br>Insulation resistance : R≥1G ohm | Clause 4.25.1 Rated voltage, 1.5h "ON", 0.5h "OFF", 70°C, 1,000h. |
| Endurance at the upper category temperature | | ΔR≤±(5%+0.1 ohm) No visible damage<br>Insulation resistance : R≥1G ohm | Clause 4.25.3 155°C, no-load, 1,000h. |