

RGF series Thick Film Non-Magnetic Chip Resistor

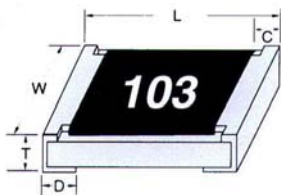
◆ Features

- » Non-magnetic chip resistors by copper plating on middle termination
- » Non-magnetic chip resistors pass 3000 gauss magnetic detection
- » Compatible with flow and reflow soldering
- » Suitable for lead free soldering
- » Meet RoHS compliant
- » RoHS compliant & Halogen Free

◆ Applications

- » Medical equipment
- » Automotive industry
- » MRI industry
- » Measurement instrument

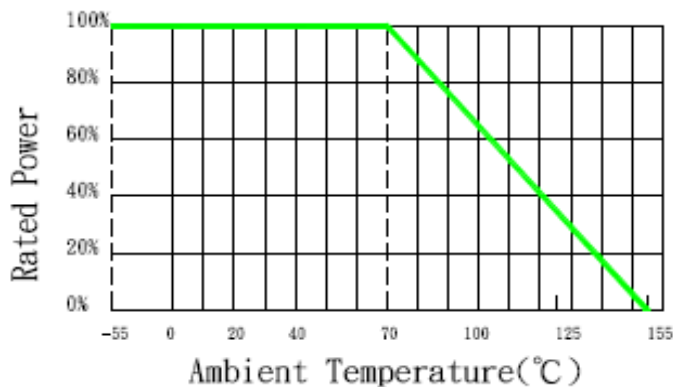
◆ Dimensions



| Size | L | W | C | D | T |
|------|-----------|-----------|-----------|-----------|-----------|
| 0603 | 1.60±0.10 | 0.80±0.10 | 0.30±0.20 | 0.30±0.20 | 0.45±0.15 |
| 0805 | 2.00±0.10 | 1.25±0.10 | 0.40±0.20 | 0.40±0.20 | 0.50±0.15 |
| 1206 | 3.10±0.10 | 1.60±0.10 | 0.50±0.25 | 0.50±0.25 | 0.55±0.15 |

Unit: mm

◆ Power Derating Curve



◆ Rating

Lead Free Chip Resistor

| Type | Power Rating at 70°C | Max. RCWV | Max. Overload Voltage | Resistance Tolerance (%) | Temperature Coefficient (ppm/°C) | Resistance Range | | Standard Resistance Values |
|---------|----------------------|-----------|-----------------------|--------------------------|----------------------------------|------------------|------|----------------------------|
| | | | | | | Min. | Max. | |
| RGF0603 | 1/10W | 50V | 100V | ± 1% (F) | ± 100 | 1Ω | 10MΩ | E-96 |
| | | | | ± 5% (J) | ± 200 | 0Ω & 1Ω | 10MΩ | E-24 |
| RGF0805 | 1/8W | 150V | 300V | ± 1% (F) | ± 100 | 1Ω | 10MΩ | E-96 |
| | | | | ± 5% (J) | ± 200 | 0Ω & 1Ω | 10MΩ | E-24 |
| RGF1206 | 1/4W | 200V | 400V | ± 1% (F) | ± 100 | 1Ω | 10MΩ | E-96 |
| | | | | ± 5% (F) | ± 200 | 0Ω & 1Ω | 10MΩ | E-24 |

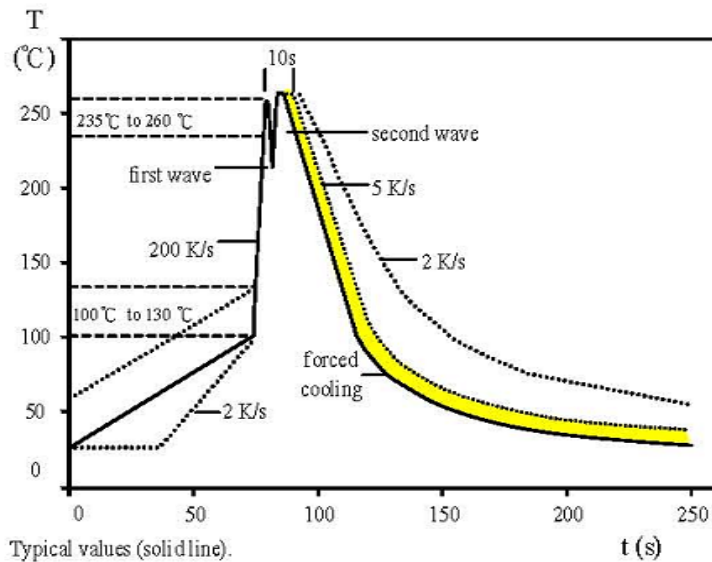
◆ Part Number

| RGF | 0805 | F | 10K | □ | □□ |
|------|------|-----------|-------------|------------|-----------------------------|
| Type | Size | Tolerance | R Value | Reel Size | Package Quantity |
| RGF | 0603 | F: ± 1% | 10KΩ = 10K | Blank = 7" | (standard package As below) |
| | 0805 | J: ± 5% | 0Ω = 0R | B= 13" | 10= 10K per reel |
| | 1206 | | 2.2MΩ = 2M2 | C= 10" | 20= 20K per reel |

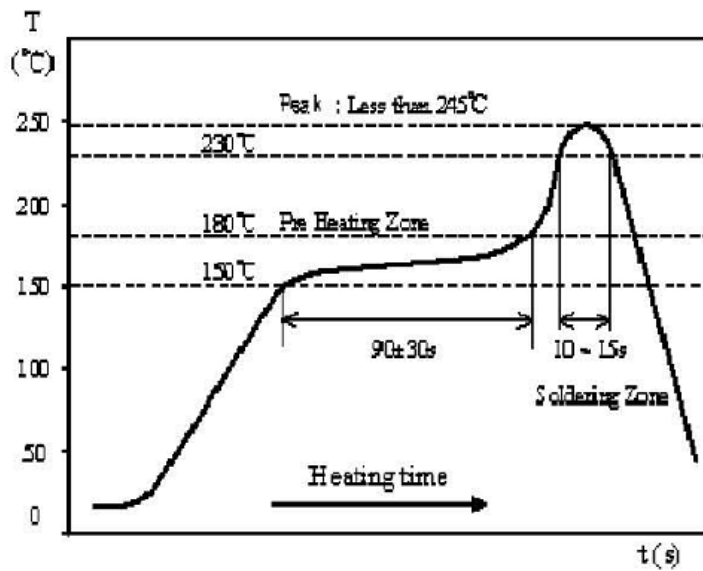
» Standard Package Q'ty for each size is as following.

| TYPE | Standard Package Q'ty |
|---------|-----------------------|
| RGF0603 | 5K per reel |
| RGF0805 | 5K per reel |
| RGF1206 | 5K per reel |

◆ Soldering Temperature Curve



WAVE soldering.



IR Reflow Soldering

◆ Specification

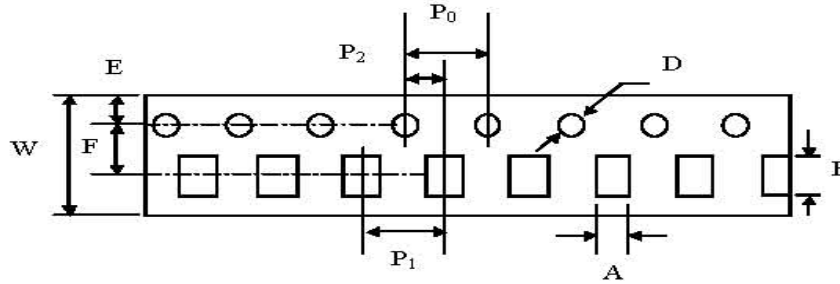
Specification and Test Method

| TEST | SPECIFICATION | TEST METHOD |
|---|---|--|
| DC Resistance | F: $\pm 1\%$ J: $\pm 5\%$ | IEC 60115-1 / JIS C 5201-1 , Clause 4.5 Measure the resistance Value. |
| Short Time Overload | F: $\Delta R \leq \pm (1\% + 0.05\Omega)$ J: $\Delta R \leq \pm (2\% + 0.1\Omega)$ | IEC 60115-1 / JIS C 5201-1 , Clause 4.13 2.5 × Rated voltage or Max. Overload Voltage for 5 sec. measure resistance after 30 minutes |
| Solderability | Over 95% of termination must be covered with solder | IEC 60115-1 / JIS C 5201-1, Clause 4.17 After immersing flux, dip in the $245 \pm 2^\circ\text{C}$ molten solder bath for 3 ± 0.5 sec. |
| Resistance to solder Heat | F: $\Delta R \leq \pm (0.5\% + 0.05\Omega)$ J: $\Delta R \leq \pm (1\% + 0.1\Omega)$ No mechanical damage | IEC 60115-1 / JIS C 5201-1 , Clause 4.18 With $260 \pm 5^\circ\text{C}$ for 10 ± 1 sec |
| Load Life Humidity | F: $\Delta R \leq \pm (1\% + 0.05\Omega)$ J: $\Delta R \leq \pm (3\% + 0.1\Omega)$ | IEC 60115-1 / JIS C 5201-1 , Clause 4.24 Maintain the temperature of the resistor at $40 \pm 2^\circ\text{C}$ and 90% ~ 95% R.H. with the rated voltage applied. Cycle ON for 1.5 hours and OFF for 0.5 hour for 1000+48/-0 hours. After 1 ~ 4 hours, measure the resistance value. |
| Temperature Coefficient of Resistance (TCR) | Refer to the rating table information | IEC 60115-1 / JIS C 5201-1 , Clause 4.8 Test temperature : $25^\circ\text{C}(T1) \rightarrow -55^\circ\text{C}(T2)$ $25^\circ\text{C}(T1) \rightarrow +155^\circ\text{C}(T2)$ $\text{TCR (ppm/}^\circ\text{C)} = \frac{R2 - R1}{R1} \times \frac{1}{T2 - T1} \times 10^6$ T1: 25°C T2: Test temperature R1: Resistance at reference temperature (T1) R2: Resistance at test temperature (T2) |
| Load Life | F: $\Delta R \leq \pm (1\% + 0.05\Omega)$ J: $\Delta R \leq \pm (3\% + 0.1\Omega)$ | IEC 60115-1 / JIS C 5201-1 , Clause 4.25 Permanent resistance change after 1000+48/-0 hours (1.5 hours ON, 0.5 hour OFF) at RCWV or Max. Keep the resistor at $70 \pm 2^\circ\text{C}$ ambient. |
| Temperature Cycle | F: $\Delta R \leq \pm (0.5\% + 0.05\Omega)$ J: $\Delta R \leq \pm (1\% + 0.1\Omega)$ No mechanical damage | IEC 60115-1 / JIS C 5201-1 , Clause 4.19 Repeat 5 cycles as follows -55°C (30min.) $\rightarrow +25^\circ\text{C}$ (2~3min.) $\rightarrow +155^\circ\text{C}$ (30min.) $\rightarrow +25^\circ\text{C}$ (2~3min.) |
| Insulation Resistance | Between termination and coating must be over 1000MΩ | IEC 60115-1 / JIS C 5201-1 , Clause 4.6 Test voltage : $100 \pm 15\text{V}$ |
| Bending strength | F: $\Delta R \leq \pm (0.5\% + 0.05\Omega)$ J: $\Delta R \leq \pm (1\% + 0.1\Omega)$ No mechanical damage | IEC 60115-1 / JIS C 5201-1 , Clause 4.33 Resistance changes after bended on the 90mm PCB. Bend : 3mm for 0603, 0805, 2mm for 1206 |

◆ Packing

Tape and Reel package

Taping specs are according to EIA RS-481

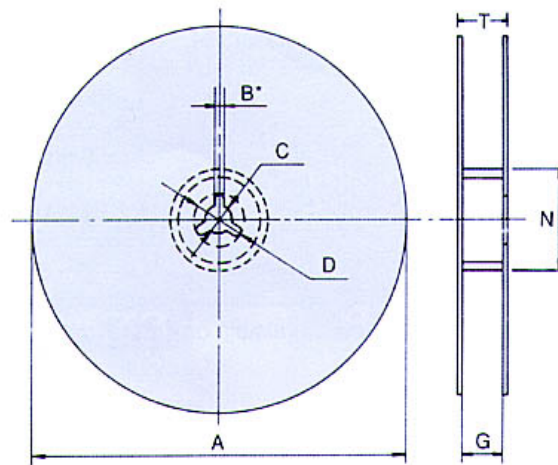


Accumulated dimensional tolerance $40\pm 0.2\text{mm}$

| Size | A | B | W | F | E | P1 | P2 | P0 | D |
|------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 0603 | 1.10 ± 0.20 | 1.90 ± 0.20 | 8.00 ± 0.30 | 3.50 ± 0.05 | 1.75 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.05 | 4.00 ± 0.10 | $1.50+0.10/-0$ |
| 0805 | 1.65 ± 0.20 | 2.40 ± 0.20 | 8.00 ± 0.30 | 3.50 ± 0.05 | 1.75 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.05 | 4.00 ± 0.10 | $1.50+0.10/-0$ |
| 1206 | 2.00 ± 0.20 | 3.60 ± 0.20 | 8.00 ± 0.30 | 3.50 ± 0.05 | 1.75 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.05 | 4.00 ± 0.10 | $1.50+0.10/-0$ |

Unit: mm

Reel Package



| Size | Packing Q'ty | A | N | C | D | B | G | T |
|----------------------|--------------|----------------|----------------|---------------|----------|--------------|---------------|----------|
| 0603 0805 1206 | 5kpcs/Reel | 178.0 ± 2.0 | 60.0 ± 0.5 | 13.0 ± 0.5 | 20(Min.) | 2.0 ± 0.5 | 10.0 ± 1.5 | 14.9max. |
| | 10kpcs/Reel | 254.0 ± 2.0 | 100.0 ± 1.0 | 13.5 ± 0.5 | 20(Min.) | 2.0 ± 0.5 | 10.0 ± 1.5 | 14.9max. |
| | 20kpcs/Reel | 330.0 ± 2.0 | 100.0 ± 1.0 | 13.5 ± 0.5 | 20(Min.) | 2.0 ± 0.5 | 10.0 ± 1.5 | 14.9max. |

Unit: mm