

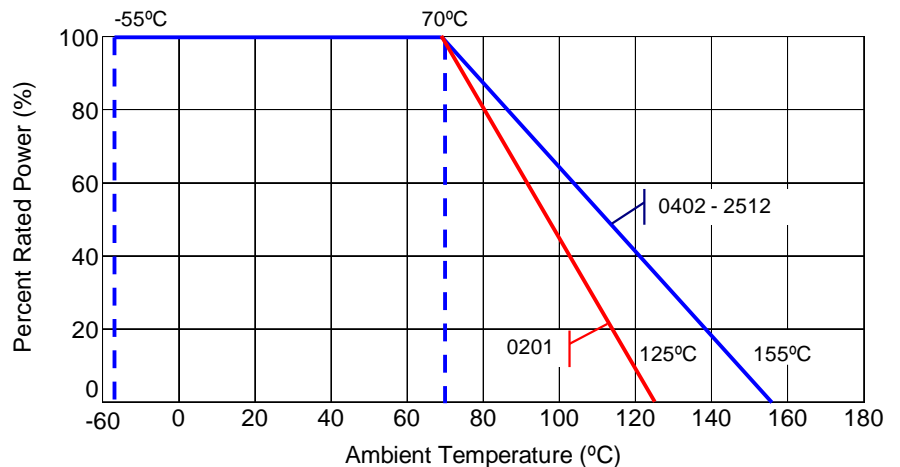
- Features:
- Precision performance
 - RoHS compliant
 - Highly stable performance over time
 - Power derating from 100% at 70°C to zero at 150°C
 - Tolerances of 0.1% may be available - contact factory for details
 - Temperature coefficient of resistance as low as $\pm 50\text{ppm}/^\circ\text{C}$
 - 0402 and 0603 package sizes are qualified to AEC-Q200



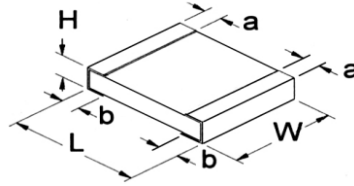
Electrical Specifications							
Type / Code	Power Rating (Watts) @ 70°C	Maximum Working Voltage ⁽¹⁾	Maximum Overload Voltage	TCR (ppm/°C)	Ohmic Range (Ω) and Tolerance		
					0.1%	0.5%	1%
RGC0201	0.05W	25V	50V	$\pm 200\text{ ppm}/^\circ\text{C}$	-	10 - 10M	-
RGC0402	0.063W	50V	100V	$\pm 50\text{ ppm}/^\circ\text{C}$ $\pm 100\text{ ppm}/^\circ\text{C}$ $\pm 200\text{ ppm}/^\circ\text{C}$	-	100 - 1M	
						10 - 1M	
						1.02M - 10M	-
RGC0603	0.1W	75V	150V	$\pm 50\text{ ppm}/^\circ\text{C}$ $\pm 100\text{ ppm}/^\circ\text{C}$ $\pm 200\text{ ppm}/^\circ\text{C}$	10 - 1M	10 - 10M	
						10 - 1M	
						1.02M - 10M	-
RGC0805	0.125W	150V	300V	$\pm 50\text{ ppm}/^\circ\text{C}$ $\pm 100\text{ ppm}/^\circ\text{C}$ $\pm 200\text{ ppm}/^\circ\text{C}$	10 - 1M	10 - 10M	
						10 - 1M	
						1.02M - 10M	-
RGC1206	0.25W	200V	400V	$\pm 50\text{ ppm}/^\circ\text{C}$ $\pm 100\text{ ppm}/^\circ\text{C}$ $\pm 200\text{ ppm}/^\circ\text{C}$	10 - 1M	10 - 10M	
						10 - 1M	
						1.02M - 10M	-
RGC1210	0.33W	200V	400V	$\pm 50\text{ ppm}/^\circ\text{C}$ $\pm 100\text{ ppm}/^\circ\text{C}$ $\pm 200\text{ ppm}/^\circ\text{C}$	10 - 1M	10 - 10M	
						10 - 1M	
						1.02M - 10M	-
RGC2010	0.75W	200V	400V	$\pm 50\text{ ppm}/^\circ\text{C}$ $\pm 100\text{ ppm}/^\circ\text{C}$ $\pm 200\text{ ppm}/^\circ\text{C}$	10 - 1M	10 - 10M	
						10 - 1M	
						1.02M - 10M	-
RGC2512	1W	250V	500V	$\pm 50\text{ ppm}/^\circ\text{C}$ $\pm 100\text{ ppm}/^\circ\text{C}$ $\pm 200\text{ ppm}/^\circ\text{C}$	10 - 1M	10 - 10M	
						10 - 1M	
						1.02M - 10M	-

Note: (1) Lesser of $\sqrt{P \cdot R}$ or maximum working voltage

Power Derating Curve

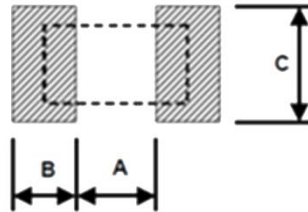


Mechanical Specifications



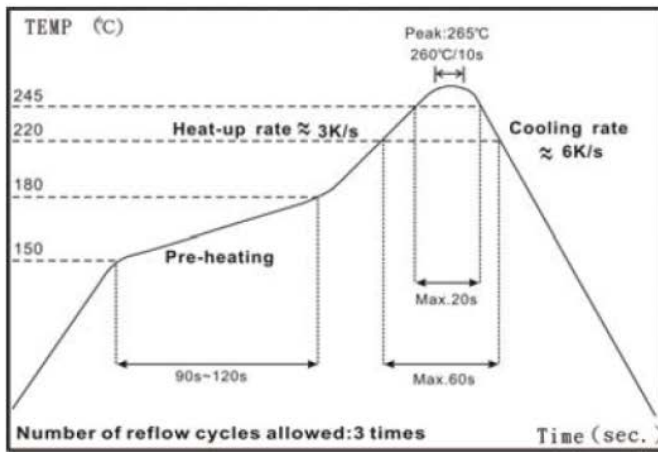
Type / Code	Weight (g) (1000 pc.)	L Body Length	W Body Width	H Body Height	a Top Termination	b Bottom Termination	Unit
RGC0201	0.150	0.024 ± 0.001 0.60 ± 0.03	0.012 ± 0.001 0.30 ± 0.03	0.009 ± 0.001 0.23 ± 0.03	0.006 ± 0.002 0.15 ± 0.05	0.006 ± 0.002 0.15 ± 0.05	inches mm
RGC0402	0.620	0.039 ± 0.004 1.00 ± 0.10	0.020 ± 0.002 0.50 ± 0.05	0.012 ± 0.004 0.30 ± 0.10	0.008 ± 0.004 0.20 ± 0.10	0.010 ± 0.006 0.25 ± 0.15	inches mm
RGC0603	2.042	0.063 ± 0.004 1.60 ± 0.10	0.031 ± 0.004 0.80 ± 0.10	0.018 ± 0.004 0.45 ± 0.10	0.012 ± 0.008 0.30 ± 0.20	0.012 ± 0.008 0.30 ± 0.20	inches mm
RGC0805	4.368	0.079 ± 0.004 2.00 ± 0.10	0.049 ± 0.004 1.25 ± 0.10	0.020 ± 0.004 0.50 ± 0.10	0.016 ± 0.010 0.40 ± 0.25	0.016 ± 0.008 0.40 ± 0.20	inches mm
RGC1206	8.947	0.122 ± 0.006 3.10 ± 0.15	0.061 ± 0.004 1.55 ± 0.10	0.024 ± 0.006 0.60 ± 0.15	0.020 ± 0.010 0.50 ± 0.25	0.020 ± 0.012 0.50 ± 0.30	inches mm
RGC1210	15.959	0.126 ± 0.010 3.20 ± 0.25	0.102 ± 0.006 2.60 ± 0.15	0.022 ± 0.004 0.55 ± 0.10	0.020 ± 0.010 0.50 ± 0.25	0.020 ± 0.008 0.50 ± 0.20	inches mm
RGC2010	24.241	0.197 ± 0.008 5.00 ± 0.20	0.098 ± 0.006 2.50 ± 0.15	0.022 ± 0.004 0.55 ± 0.10	0.024 ± 0.010 0.60 ± 0.25	0.024 ± 0.012 0.60 ± 0.30	inches mm
RGC2512	39.448	0.250 ± 0.008 6.35 ± 0.20	0.124 ± 0.008 3.15 ± 0.20	0.022 ± 0.004 0.55 ± 0.10	0.024 ± 0.010 0.60 ± 0.25	0.024 ± 0.012 0.60 ± 0.30	inches mm

Recommended Soldering Pads

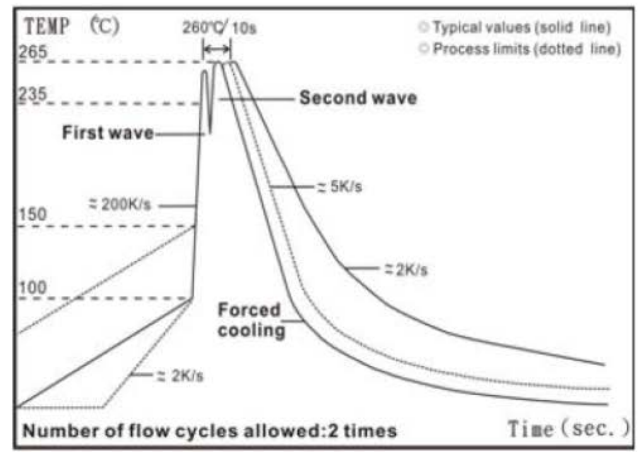


Type/Code	A	B	C	Unit
RGC0201	0.012 0.30	0.010 0.25	0.012 0.30	inches mm
RGC0402	0.020 0.50	0.018 0.45	0.024 0.60	inches mm
RGC0603	0.035 0.90	0.024 0.60	0.035 0.90	inches mm
RGC0805	0.047 1.20	0.028 0.70	0.051 1.30	inches mm
RGC1206	0.079 2.00	0.035 0.90	0.063 1.60	inches mm
RGC1210	0.079 2.00	0.035 0.90	0.110 2.80	inches mm
RGC2010	0.150 3.80	0.035 0.90	0.110 2.80	inches mm
RGC2512	0.150 3.80	0.063 1.60	0.138 3.50	inches mm

Soldering Profiles



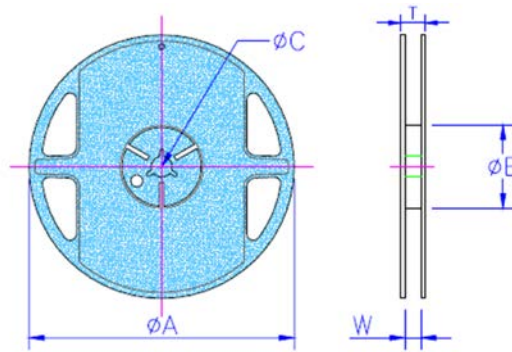
IR Reflow Soldering



Wave Soldering (Flow Soldering)

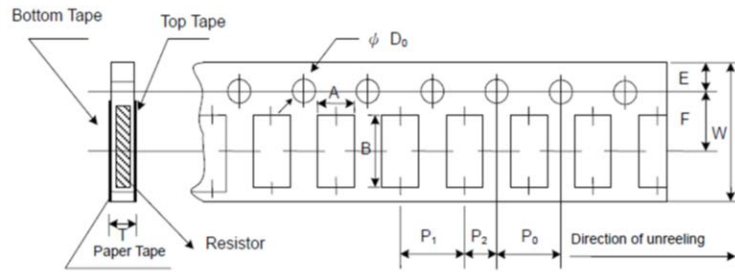
- (1) Time of IR reflow soldering at maximum temperature point 260°C : 10s
- (2) Time of wave soldering at maximum temperature point 260°C : 10s
- (3) Time of soldering iron at maximum temperature point 410°C : 5s

Packaging Specifications



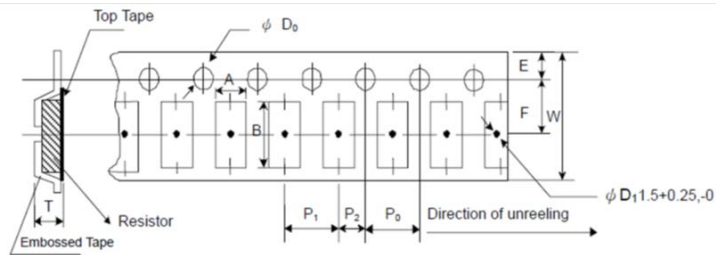
Type/Code	Packaging Description	Tape Width	Reel Diameter	A	B	C	W	T	Unit
RGC0201 RGC0402 RGC0603 RGC0805 RGC1206 RGC1210	Paper	8mm	7 inches	7.028 ± 0.059 178.50 ± 1.50	2.362 ± 0.039 / 0.00 60.00 + 1.00 / 0.00	0.512 ± 0.008 13.00 ± 0.20	0.354 ± 0.020 9.00 ± 0.50	0.492 ± 0.020 12.50 ± 0.50	inches mm
RGC2010 RGC2512	Embossed	12mm	7 inches	7.028 ± 0.059 178.50 ± 1.50	2.362 ± 0.039 / 0.00 60.00 + 1.00 / 0.00	0.512 ± 0.020 13.00 ± 0.50	0.512 ± 0.020 13.00 ± 0.50	0.610 ± 0.020 15.50 ± 0.50	inches mm

Paper Tape Specifications



Type/Code	A	B	W	E	F	Unit
RGC0201	0.015 ± 0.002	0.027 ± 0.002	0.315 ± 0.008	0.069 ± 0.004	0.138 ± 0.002	inches
	0.38 ± 0.05	0.68 ± 0.05	8.00 ± 0.20	1.75 ± 0.10	3.50 ± 0.05	mm
RGC0402	0.026 ± 0.004	0.045 ± 0.004	0.315 ± 0.008	0.069 ± 0.004	0.138 ± 0.002	inches
	0.65 ± 0.10	1.15 ± 0.10	8.00 ± 0.20	1.75 ± 0.10	3.50 ± 0.05	mm
RGC0603	0.043 ± 0.004	0.075 ± 0.004	0.315 ± 0.008	0.069 ± 0.004	0.138 ± 0.002	inches
	1.10 ± 0.10	1.90 ± 0.10	8.00 ± 0.20	1.75 ± 0.10	3.50 ± 0.05	mm
RGC0805	0.063 ± 0.004	0.094 ± 0.008	0.315 ± 0.008	0.069 ± 0.004	0.138 ± 0.002	inches
	1.60 ± 0.10	2.40 ± 0.20	8.00 ± 0.20	1.75 ± 0.10	3.50 ± 0.05	mm
RGC1206	0.075 ± 0.004	0.138 ± 0.008	0.315 ± 0.008	0.069 ± 0.004	0.138 ± 0.002	inches
	1.90 ± 0.10	3.50 ± 0.20	8.00 ± 0.20	1.75 ± 0.10	3.50 ± 0.05	mm
RGC2010	0.114 ± 0.004	0.138 ± 0.008	0.315 ± 0.008	0.069 ± 0.004	0.138 ± 0.002	inches
	2.90 ± 0.10	3.50 ± 0.20	8.00 ± 0.20	1.75 ± 0.10	3.50 ± 0.05	mm
Type/Code	P0	P1	P2	D0	T	Unit
RGC0201	0.157 ± 0.004	0.079 ± 0.002	0.079 ± 0.002	0.059 + 0.004,-0	0.017 ± 0.008	inches
	4.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.50 + 0.10,-0	0.42 ± 0.20	mm
RGC0402	0.157 ± 0.004	0.079 ± 0.002	0.079 ± 0.002	0.059 + 0.004,-0	0.018 ± 0.004	inches
	4.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	1.50 + 0.10,-0	0.45 ± 0.10	mm
RGC0603	0.157 ± 0.004	0.157 ± 0.002	0.079 ± 0.002	0.059 + 0.004,-0	0.028 ± 0.004	inches
	4.00 ± 0.10	4.00 ± 0.05	2.00 ± 0.05	1.50 + 0.10,-0	0.70 ± 0.10	mm
RGC0805	0.157 ± 0.004	0.157 ± 0.002	0.079 ± 0.002	0.059 + 0.004,-0	0.033 ± 0.004	inches
	4.00 ± 0.10	4.00 ± 0.05	2.00 ± 0.05	1.50 + 0.10,-0	0.85 ± 0.10	mm
RGC1206	0.157 ± 0.004	0.157 ± 0.002	0.079 ± 0.002	0.059 + 0.004,-0	0.033 ± 0.004	inches
	4.00 ± 0.10	4.00 ± 0.05	2.00 ± 0.05	1.50 + 0.10,-0	0.85 ± 0.10	mm
RGC2010	0.157 ± 0.004	0.157 ± 0.002	0.079 ± 0.002	0.059 + 0.004,-0	0.033 ± 0.004	inches
	4.00 ± 0.10	4.00 ± 0.05	2.00 ± 0.05	1.50 + 0.10,-0	0.85 ± 0.10	mm

Embossed Tape Specifications



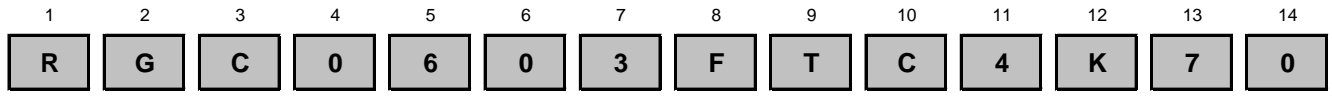
Type/Code	A	B	W	E	F	Unit
RGC2010	0.110 ± 0.004	0.217 ± 0.004	0.472 ± 0.012	0.069 ± 0.004	0.217 ± 0.002	inches
	2.80 ± 0.10	5.50 ± 0.10	12.00 ± 0.30	1.75 ± 0.10	5.50 ± 0.05	mm
RGC2512	0.138 ± 0.004	0.264 ± 0.004	0.472 ± 0.012	0.069 ± 0.004	0.217 ± 0.002	inches
	3.50 ± 0.10	6.70 ± 0.10	12.00 ± 0.30	1.75 ± 0.10	5.50 ± 0.05	mm
Type/Code	P0	P1	P2	D0	T	Unit
RGC2010	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.059 + 0.004,-0	0.047 + 0.000	inches
	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	1.50 + 0.10,-0	1.20 + 0.00	mm
RGC2512	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.059 + 0.004,-0	0.047 + 0.000	inches
	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	1.50 + 0.10,-0	1.20 + 0.00	mm

Performance Characteristics				
Item	Requirement			Test Method
	± 1% and below	± 5%	Jumper	
Temperature Coefficient of Resistance	As specified.			JIS-C-5201-1 4.8 IEC-60115-1 4.8 -55°C +125 C, 25°C is the reference temperature
Short Time Overload	±(1.0%+0.05Ω)	±(2.0%+0.05Ω)	<50mΩ	JIS-C-5201-1 4.13 IEC-60115-1 4.13 RCWV*2.5 or max. overload voltage whichever is lower for 5 seconds; 2 seconds for high power series
Insulation resistance	≥10G			JIS-C-5201-1 4.6 IEC-60115-1 4.6 Max. overload voltage for 1 minute
Endurance	±(1.0%+0.10Ω)	±(2.0%+0.10Ω)	<100mΩ	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1 70±2°C, RCWV for 1000 h. with 1.5 h. "ON" and 0.5 h. "OFF"
Damp Heat with Load	±(1.0%+0.10Ω)	±(2.0%+0.10Ω)	<100mΩ	JIS-C-5201-1 4.24 IEC-60115-1 4.24 40±2°C, 90~95% R.H., RCWV for 1000 h. with 1.5 h. "ON" and 0.5 h. "OFF"
Dry Heat	±(1.0%+0.05Ω)	±(1.5%+0.10Ω)	<50mΩ	JIS-C-5201-1 4.23 IEC-60115-1 4.23.2 at +125/+155°C for 1000 h.
Bending Strength	±(1.0%+0.05Ω)	±(1.0%+0.05Ω)	<50mΩ	JIS-C-5201-1 4.33 IEC-60115-1 4.33 Bending once for 5 seconds 2010, 2512 sizes: 2mm; other sizes: 3mm
Solderability	95% minimum coverage			JIS-C-5201-1 4.17 IEC-60115-1 4.17 245±5°C for 3 seconds
Resistance to Soldering Heat	±(0.5%+0.05Ω)	±(1.0%+0.05Ω)	<50mΩ	JIS-C-5201-1 4.18 IEC-60115-1 4.18 260±5°C for 10 seconds
Voltage Proof	No breakdown or flashover			JIS-C-5201-1 4.7 IEC-60115-1 4.7 1.42 times max. operating voltage for 1 minute
Leaching	Individual leaching area ≤5% Total leaching area ≤10%			JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1 260±5°C for 30 seconds
Rapid Change of Temperature	±(0.5%+0.05Ω)	±(1.0%+0.05Ω)	<50mΩ	JIS-C-5201-1 4.19 IEC-60115-1 4.19 -55°C to +125/+155°C, 5 cycles

RCWV (Rated Continuous Working Voltage) = $\sqrt{P \cdot R}$ or max. operating voltage whichever is lower

Storage Temperature: 25±3°C; humidity < 80% RH

How to Order



Product Series		Size	Power	Tolerance			Packaging				TCR		Resistance Value
Code	Description			Code	Tol	Value	Code	Description	Size	Quantity	Code	ppm	
RGC	Semi-Precision Thick Film	0201	0.05W	B	0.1%	E24, E96	T	7" Reel	0201, 0402	10,000	C	50	Four characters with the multiplier used as the decimal holder. 100 ohm = 100R 10.5 Kohm = 10K5 1 Mohm = 1M00
		0402	0.063W	D	0.5%			Paper Tape	0603, 0805 1206, 1210	5,000	D	100	
		0805	0.125W	F	1%			7" Reel	2010(*)	4,000	L	200	
		1206	0.25W					Plastic Tape	2512				
		1210	0.33W										
		2010	0.75W										
		2512	1W										

(*) RGC2010F 1Ω to 9.76Ω MOQ is 12,000