

RG series, ultra-precision & ultra-reliability metal film chip resistors



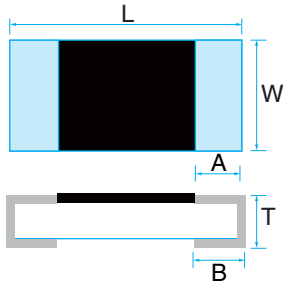
Tight resistance tolerance of $\pm 0.02\%$ and temperature coefficient of resistance of $\pm 5\text{ppm}/^\circ\text{C}$ are achieved. Under high temperature and humid condition of 85°C and $85\%\text{RH}$, and at 155°C (duration: 10000 hours for both tests), superior reliability of only less than $\pm 0.1\%$ of change in resistance value is realized.

RoHS compliant Completely lead free



SPECIFICATIONS

Mechanical



Dimension (Inch Size)	RG1005 (0402)	RG1608 (0603)	RG2012 (0805)	RG3216 (1206)
L	1.0 ± 0.05	1.6 ± 0.2	2.0 ± 0.2	3.2 ± 0.2
W	0.5 ± 0.05	0.8 ± 0.2	1.25 ± 0.2	1.6 ± 0.2
A	0.2 ± 0.10	0.3 ± 0.2	0.4 ± 0.2	0.5 ± 0.25
B	0.25 ± 0.05	0.3 ± 0.2	0.4 ± 0.2	0.5 ± 0.2
T	0.35 ± 0.05	0.4 ± 0.1	0.4 ± 0.1	0.4 ± 0.1

(unit : mm)

Electrical

Type	RG1005					RG1608				
	general	1/16W				general	1/10W			
Power	Ultra-reliability	1/32W				Ultra-reliability	1/16W			
Tolerance % (code)	$\pm 0.5(D)$	$\pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.02(P), \pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.5(D)$	$\pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.02(P), \pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.1(B), \pm 0.5(D)$	$\pm 0.5(D)$
Resistance Range (Ω)	10~46.4	47~97.6	100~2.94k	3k~100k	10~46.4	47~97.6	100~4.99k	5.1k~270k	274~332k	340~360k
TCR ppm / $^\circ\text{C}$ (code)	$\pm 100(R)$	$\pm 10(N), \pm 25(P)$	$\pm 5(V), \pm 10(N), \pm 25(P)$	$\pm 10(N), \pm 25(P)$	$\pm 50(Q)$	$\pm 10(N), \pm 25(P)$	$\pm 5(V), \pm 10(N), \pm 25(P)$	$\pm 10(N), \pm 25(P)$	$\pm 10(N), \pm 25(P)$	$\pm 25(P)$
Max Operating Voltage	25V					75V				
Resistance Value	E-24, E-96									
Operating Temp. Range	$-55^\circ\text{C} \sim 155^\circ\text{C}$									
Package	1,000pcs/reel (T1:P,W,B), 5,000pcs/reel (T5:W,B), 10,000pcs/reel (T10:W,B,C,D)					1,000pcs/reel (T1:P,W,B), 5,000pcs/reel (T5:W,B,C,D)				

Type	RG2012					RG3216				
	general	1/8W				general	1/4W			
Power	Ultra-reliability	1/10W				Ultra-reliability	1/8W			
Tolerance % (code)	$\pm 0.5(D)$	$\pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.02(P), \pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.1(B), \pm 0.5(D)$	$\pm 0.5(D)$	$\pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.02(P), \pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.5(D)$
Resistance Range (Ω)	10~46.4	47~97.6	100~10k	10.2k~475k	487k~1M	10~46.4	47~97.6	100~33.2k	34k~1M	
TCR ppm / $^\circ\text{C}$ (code)	$\pm 50(Q)$	$\pm 10(N), \pm 25(P)$	$\pm 5(V), \pm 10(N), \pm 25(P)$	$\pm 10(N), \pm 25(P)$	$\pm 25(P)$	$\pm 50(Q)$	$\pm 10(N), \pm 25(P)$	$\pm 10(N), \pm 25(P)$	$\pm 10(N), \pm 25(P)$	$\pm 10(N), \pm 25(P)$
Max Operating Voltage	100V					150V				
Resistance Value	E-24, E-96									
Operating Temp. Range	$-55^\circ\text{C} \sim 155^\circ\text{C}$									
Package	1,000pcs/reel (T1:P,W,B), 5,000pcs/reel (T5:W,B,C,D)					1,000pcs/reel (T1), 5,000pcs/reel (T5)				

- Please contact us for Resistance tolerance $\pm 0.01\%$.
- Please contact us for RG3225 series with power of 1/2W
- The stability (reliability) characteristics differ depending on the rated power.

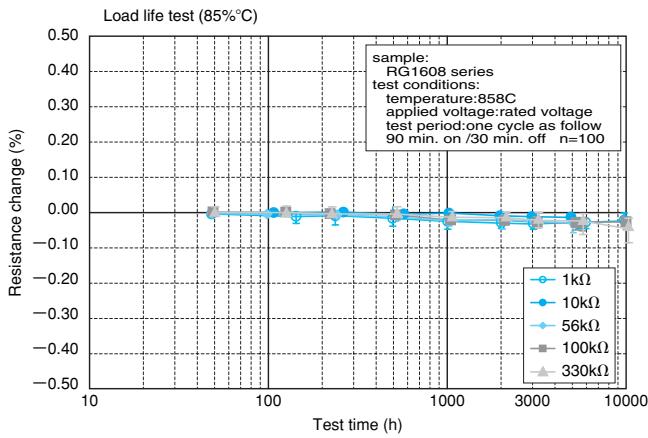
Reliability

Item	Test Method	Specification		Typical
		Ultra-reliability	general	Ultra-reliability
Short time overload	Applied voltage: $2.5 \times$ rated voltage or $2 \times$ maximum operating voltage which ever is less test duration: 5 seconds	$\pm(0.05\%)$	$\pm(0.05\%)$	$\pm(0.01\%)$
Load Life	Test Temperature: 85°C Applied voltage: rated voltage Test period: repeat 1000 cycle as follow: 90 min. on/30 min. off cycled	$\pm(0.1\%)$	$\pm(0.25\%)$	$\pm(0.01\%)$
Moisture load life	Test condition: $85^\circ\text{C}85\%\text{RH}$ Applied power: 1/10 rated Power Test period: repeat 1000 cycle as follow: 90 min. on/30 min. off cycled	$\pm(0.1\%)$	$\pm(0.25\%)$	$\pm(0.05\%)$
Temperature cycle	Repeat 1000 cycle as follow: -55°C (30 min.)/Room Tem.(2 min.)/ $+125^\circ\text{C}$ (30 min.)/Room Tem.(2 min.)	$\pm(0.1\%)$		$\pm(0.01\%)$
High temperature exposure	$+155^\circ\text{C}$ for 1000 hours with no load	$\pm(0.1\%)$		$\pm(0.01\%)$

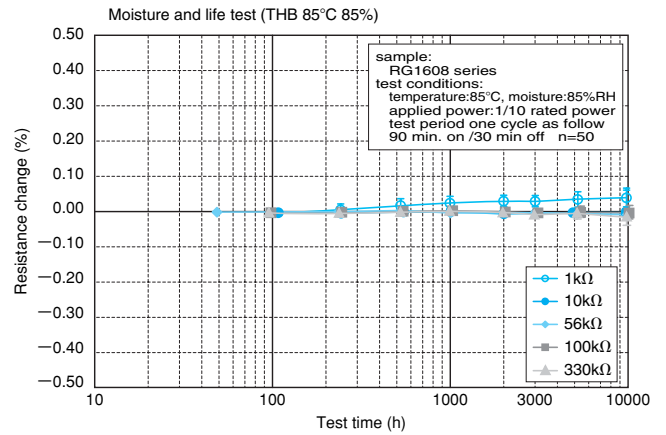


The result of each reliability test for 10000 hours

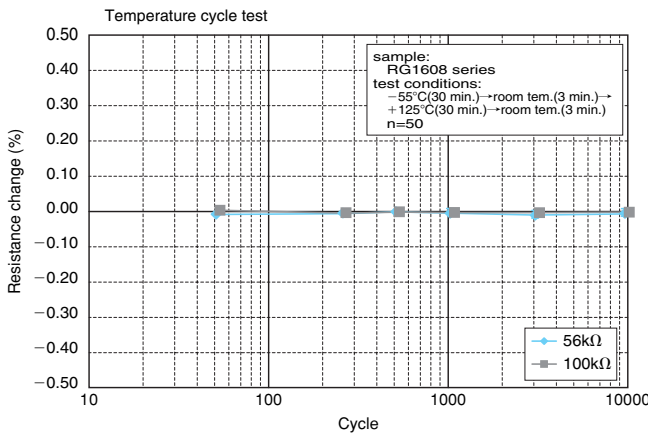
Load life test



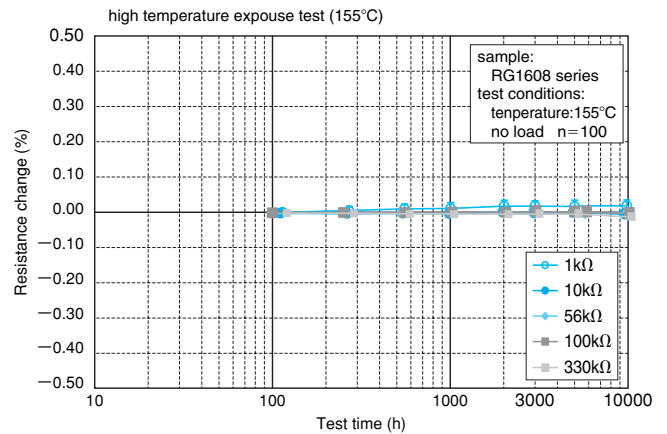
Moisture and life test



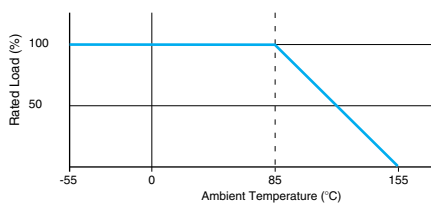
Temperature cycle test



High temperature exposure test



CHARACTERISTIC of Power Temperature Derating Curve



PART NUMBER

RG 1608 N - 102 - B - T5

Package (T1,T5,T10)

Resistance Tolerance

Resistance
(E-24: in a 3 digit number,
E-96: in a 4 digit number 4 digits for all RG3216)

Temperature Coefficient of Resistance

Dimensions

Part Code