

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



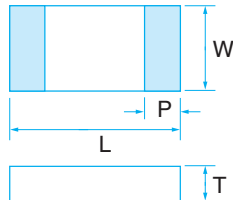
Tight resistance tolerance of  $\pm 0.02\%$  and temperature coefficient of resistance of  $\pm 5\text{ppm}/^\circ\text{C}$  are achieved. Under high temperature and humid condition of  $85^\circ\text{C}$  and  $85\%\text{RH}$ , and at  $155^\circ\text{C}$ (duration:10000 hours for both tests), superior 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	$1.0 \pm 0.05$	$1.6 \pm 0.2$	$2.0 \pm 0.2$	$3.2 \pm 0.2$
W	$0.5 \pm 0.05$	$0.8 \pm 0.2$	$1.25 \pm 0.2$	$1.6 \pm 0.2$
P	$0.2 \pm 0.10$	$0.3 \pm 0.2$	$0.4 \pm 0.2$	$0.5 \pm 0.25$
T	$0.35 \pm 0.05$	$0.4 \pm 0.1$	$0.4 \pm 0.1$	$0.4 \pm 0.1$

(unit : mm)

### Electrical

Type	RG1005				RG1608					
Power	general	1/16W				1/10W				
	Ultra-reliability	1/32W				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( $\Omega$ )	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)	$\pm 100(R)$	$\pm 10(N)$ $\pm 25(P)$	$\pm 10(N)$ $\pm 5(V)$ $\pm 25(P)$	$\pm 10(N)$ $\pm 25(P)$	$\pm 50(Q)$	$\pm 10(N)$ $\pm 25(P)$	$\pm 10(N)$ $\pm 25(P)$	$\pm 10(N)$ $\pm 25(P)$	$\pm 25(P)$	$\pm 25(P)$
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:B), 10,000pcs/reel (T10:B,C,D)				1,000pcs/reel (T1:P,W,B), 5,000pcs/reel(T5:W,B,C,D)					

Type	RG2012					RG3216			
Power	general	1/8W					1/4W		
	Ultra-reliability	1/10W					1/8W		
Tolerance %(code)	$\pm 0.5(D)$	$\pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.02(P), \pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.1(B)$ $\pm 0.5(D)$	$\pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.02(P), \pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.05(W), \pm 0.1(B), \pm 0.25(C), \pm 0.5(D)$	$\pm 0.1(B), \pm 0.5(D)$
Resistance Range( $\Omega$ )	10~46.4	47~97.6	100~10k	10.2k~475k	487k~1M	47~97.6	100~33.2k	34k~1M	
TCR ppm / $^\circ\text{C}$ (code)	$\pm 50(Q)$	$\pm 10(N)$ $\pm 25(P)$	$\pm 10(N)$ $\pm 25(P)$	$\pm 10(N)$ $\pm 25(P)$	$\pm 25(P)$	$\pm 10(N)$ $\pm 25(P)$	$\pm 10(N)$ $\pm 25(P)$	$\pm 10(N)$ $\pm 25(P)$	$\pm 10(N)$ $\pm 25(P)$
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:P,W,B), 5,000pcs/reel(T5:B,C,D)			

· Please contact us for Resistance tolerance  $\pm 0.01\%$ . · Please contact us for RG3225 series with power of 1/2W

### Reliability

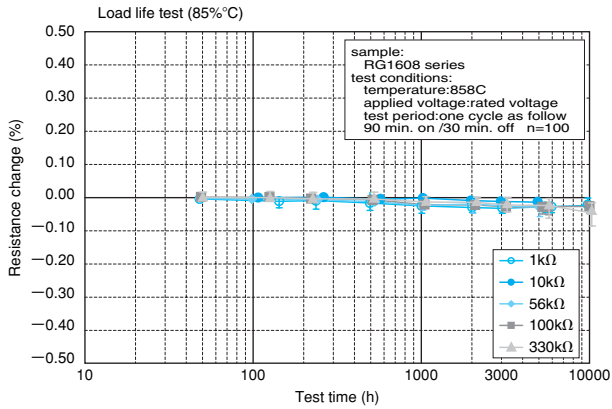
Item	Test Method	Specification		Typical
		Ultra-reliability	general	Ultra-reliability
Short time overload	Applied voltage: $2.5 \times$ rated voltage or $2 \times$ maximum operating voltage which ever is less test duration: 5 seconds	$\pm (0.05\%)$	$\pm (0.05\%)$	$\pm (0.01\%)$
Load Life	Test Temperature: $85^\circ\text{C}$ 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: $-55^\circ\text{C}$ (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	$\pm (0.1\%)$		$\pm (0.01\%)$



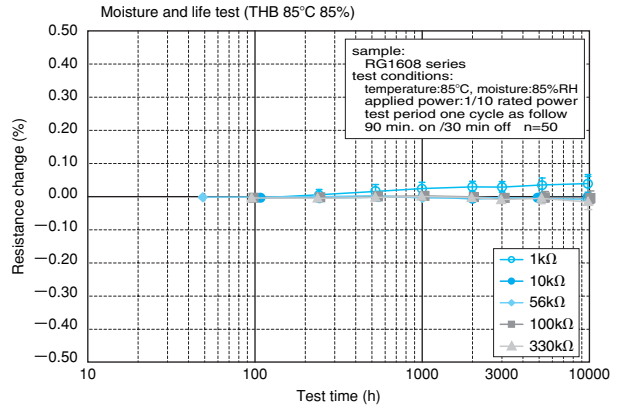


## The result of each reliability test for 10000 hours

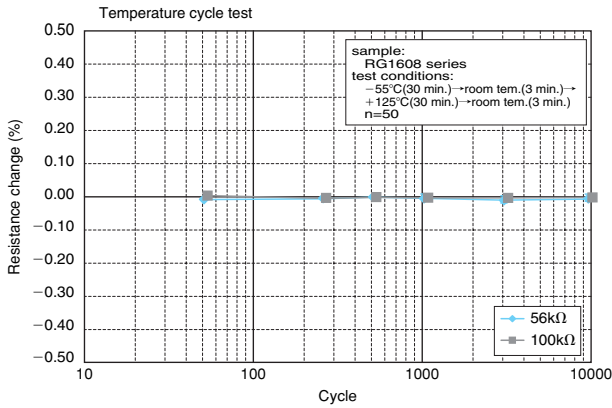
### Load life test



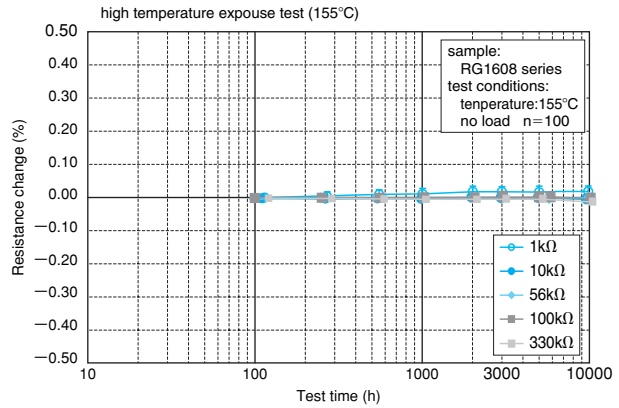
### Moisture and life test



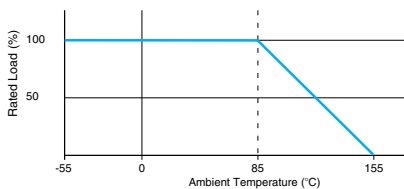
### Temperature cycle test



### 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



susumu group catalog