

# Metal thin film chip resistors (Ultra-precision)

■ RG series (This series now includes the former RGH series.)



## Features

- Ultimate chip resistors: the result of all of our thin film technology expertise including inorganic passivation
- Resistance drift: less than +/-0.1% after 10000 hour accelerated reliability test
- +/-0.02% of resistance tolerance and +/-5ppm/°C of temperature coefficient of resistance
- Excellent tolerance to power surges

## Applications

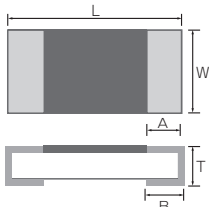
- Any applications that require precision resistors such as automotive electronics, industrial test and measurement equipment, and consumer electronics

## Specifications

\* Standard stock item: E-24 series with TCR P, Q, and R grades, as well as tolerance D and B grades. Other E-24 grades and E-96 series are made to order

unit : mm

### Dimensions



Dimension (inch)	RG1005 (0402) OLD:RGH1005 included	RG1608 (0603) OLD:RGH1608 included	RG2012 (0805) OLD:RGH2012 included	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

**NOTE** Obsoleted : RGH1005 (0402) RGH:1608-2C (0603) RGH2012 (0805)  
Alternative P/N : RG1005 (0402) RG1608(0603) RG2012 (0805)

### Electrical characteristics

Series name		RG1005				RG1608					
Rated power*1	High power application	1/8W (OLD : RGH1005-2B)				1/6W (OLD : RGH1608-2C)					
	Regular power application	1/16W				1/10W					
	High precision	1/32W				1/16W					
E series offered		E-24, E-96				E-24, E-96					
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
Resistance tolerance (%)	±0.02% (P)	—	—	○	—	—	—	○	—	—	—
	±0.05% (W)	—	○	○	○	—	○	○	○	—	—
	±0.1% (B)	—	○	○	○	—	○	○	○	○	—
	±0.25% (C)	—	○	○	○	—	○	○	○	○	—
	±0.5% (D)	○	○	○	○	○	○	○	○	○	○
Temperature coefficient of resistance (ppm/°C)	±5 (V)	—	—	○	—	—	—	○	—	—	—
	±10 (N)	—	○	○	○	—	○	○	○	—	—
	±25 (P)	—	○	○	○	—	○	○	○	○	○
	±50 (Q)	—	—	—	—	○	—	—	—	—	—
	±100 (R)	○	—	—	—	—	—	—	—	—	—
Maximum voltage		25V				75V					
Operating temperature		-55°C~155°C				-55°C~155°C					
Packaging	5,000pcs	CodeT5				CodeT5					
	10,000pcs	CodeT10				—					

Series name		RG2012				RG3216				
Rated power*1	High power application	1/4W (OLD : RGH2012-2E)				—				
	Regular power application	1/8W				1/4W				
	High precision	1/10W				1/8W				
E series offered		E-24, E-96				E-24, E-96				
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
Resistance tolerance (%)	±0.02% (P)	—	—	○	—	—	—	—	○	—
	±0.05% (W)	—	○	○	○	—	—	○	○	○
	±0.1% (B)	—	○	○	○	○	—	○	○	○
	±0.25% (C)	—	○	○	○	○	—	○	○	○
	±0.5% (D)	○	○	○	○	○	○	○	○	○
Temperature coefficient of resistance (ppm/°C)	±5 (V)	—	—	○	—	—	—	—	○	—
	±10 (N)	—	○	○	○	—	—	○	○	○
	±25 (P)	—	○	○	○	○	—	○	○	○
	±50 (Q)	—	—	—	—	—	○	—	—	—
	±100 (R)	○	—	—	—	—	○	—	—	—
Maximum voltage		100V				150V				
Operating temperature		-55°C~155°C				-55°C~155°C				
Packaging	5,000pcs	CodeT5				CodeT5				

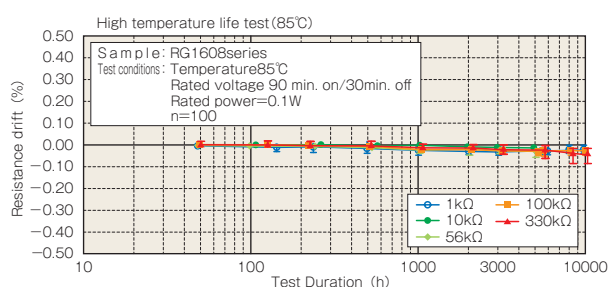
\*1 Depending on customer's reliability requirements, power rating between high power and regular power can be selected.  
· Contact us for RG3225 with 1/2W rated power.

## Reliability characteristics

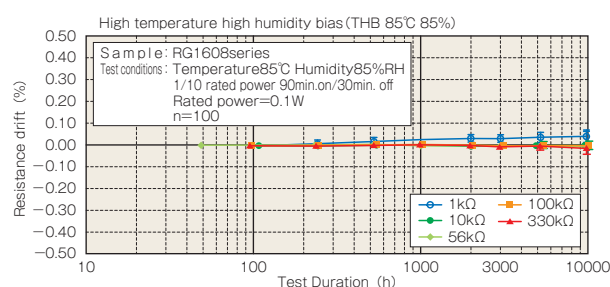
Item	Test Method	Specification: drift limits for each power rating						(Typical)
		Low		Regular		High		
		≤47Ω	≥47Ω	≤47Ω	≥47Ω	≤47Ω	≥47Ω	
Short time Overload	Applied voltage : 2.5Xrated voltage or 2 X Maximum operating voltage which ever is less test duration: 5 seconds	±0.1%	±0.05%	±0.1%	±0.05%	-	±0.1%	±(0.01%)
Load Life	Test Temperature : 85°C Applied voltage: rated voltage Test period : repeat 1000 cycle as follow : 90 min./30 min. off cycled	±0.25%	±0.1%	±0.5%	±0.25%	-	±0.5%	±(0.01%)
Moisture load life	Test condition : 85°C 85% RH Applied power: 1/10 rated Power Test period : repeat 1000 cycle as follow : 90 min./30 min. off cycled	±0.25%	±0.1%	±0.5%	±0.25%	-	±0.5%	±(0.05%)
Temperature Cycle	Repeat 1000 cycle as follow : -55°C (30 min.)/Room Temp.(2 min.) / +125°C (30min.)/Room Temp.(2min.)	±0.25%	±0.1%	±0.25%	±0.1%	-	±0.1%	±(0.01%)
High temperature Exposure	+155°C for 1000 hours with no load	±0.25%	±0.1%	±0.25%	±0.1%	-	±0.1%	±(0.01%)

## 10000 hour reliability test data

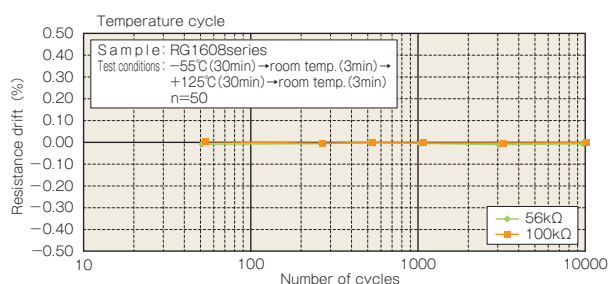
### Life test



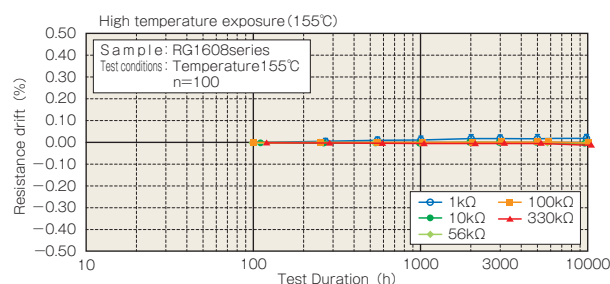
### High temperature high humidity bias test



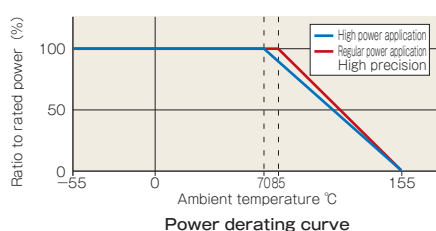
### Temperature cycle test



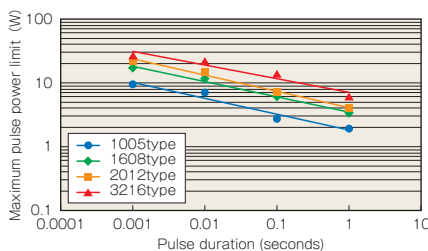
### High temperature exposure test



## Power derating characteristics



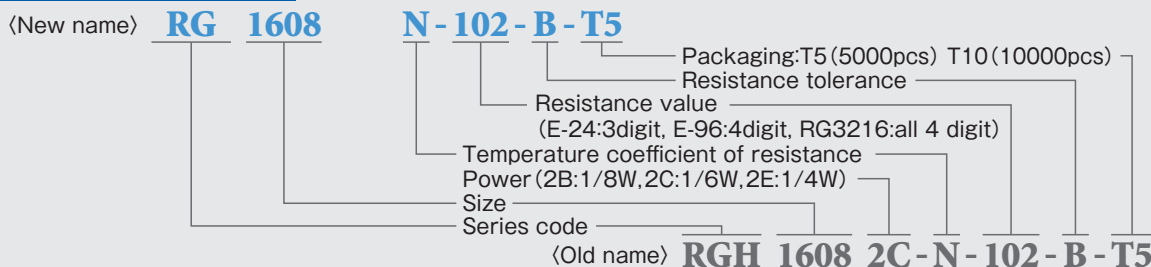
## Maximum pulse power limit



### Test procedure

Voltage pulse is applied to the test samples mounted on the test board. After each pulse, resistance drift is measured. Pulse voltage is increased until the drift exceeds +/-0.5%. The power at that voltage is defined as the maximum pulse power.

## Part numbering system



Thin film surface mount resistors

RG series (This series now includes the former RGH series.)