Metal thin film chip resistors (Ultra-precision)

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

Lead free　Halogen free　RoHS Compliance

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

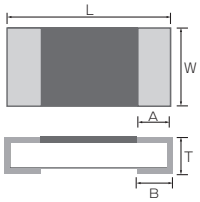
Applications

- 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

Dimensions



unit : mm

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									
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/℃)	±5 (V)	—	—	○	—	—	—	○	—	—	—
	±10 (N)	—	○	○	○	—	○	○	○	—	—
	±25 (P)	—	○	○	○	—	○	○	○	○	○
	±50 (Q)	—	—	—	—	○	—	—	—	—	—
	±100 (R)	○	—	—	—	—	—	—	—	—	—
Maximum voltage		25V				75V					
Operating temperature		−55℃～155℃				−55℃～155℃					
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								
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/℃)	±5 (V)	—	—	○	—	—	—	—	○	—
	±10 (N)	—	○	○	○	—	—	○	○	○
	±25 (P)	—	○	○	○	○	—	○	○	○
	±50 (Q)	○	—	—	—	—	○	—	—	—
Maximum voltage		100V					150V			
Operating temperature		−55℃～155℃					−55℃～155℃			
Packaging	5,000pcs	CodeT5					CodeT5			

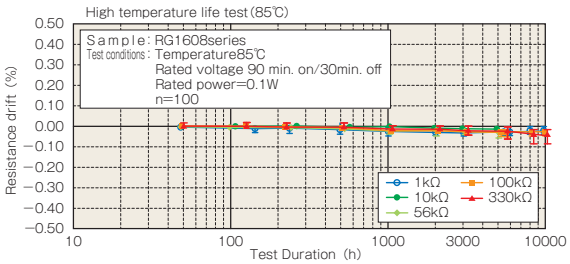
*1 Depending on customer's reliability requirements, power rating between high power and regular power can be selected.
・Contact us for RG3225 with 1/2W rated power.

Reliability characteristics

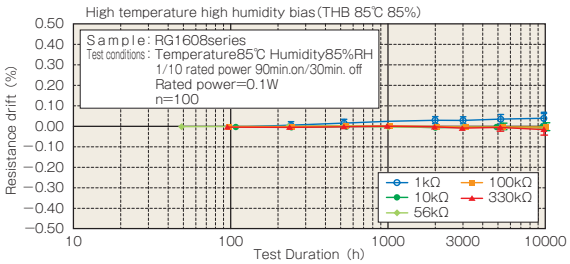
Item	Test Method	Specification: drift limits for each power rating						(Typical)
		Low		Regular		High		
		≦47Ω	≧47Ω	≦47Ω	≧47Ω	≦47Ω	≧47Ω	
Short time Overload	Applied voltage : 2.5Xrated voltage or 2 X Maximum operating voltage which ever is less test duration: 5 seconds	±0.1%	±0.05%	±0.1%	±0.05%	–	±0.1%	±(0.01%)
Load Life	Test Temperature : 85℃ 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℃ 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℃ (30 min.)/Room Temp.(2 min.) / +125℃ (30min.)/Room Temp.(2min.)	±0.25%	±0.1%	±0.25%	±0.1%	–	±0.1%	±(0.01%)
High temperature Exposure	+155℃ for 1000 hours with no load	±0.25%	±0.1%	±0.25%	±0.1%	–	±0.1%	±(0.01%)

10000 hour reliability test data

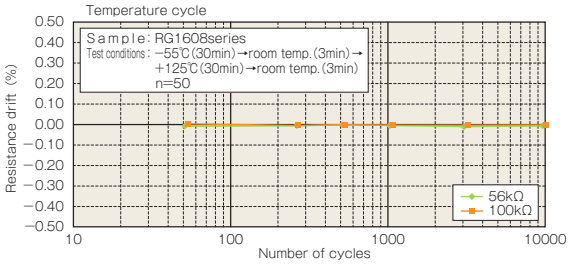
Life test



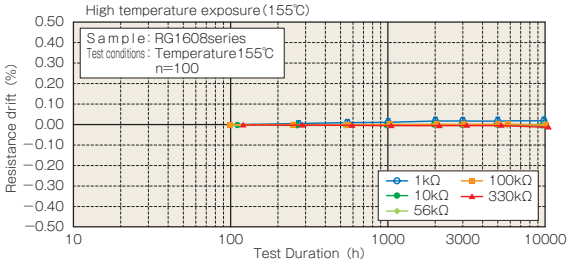
High temperature high humidity bias test



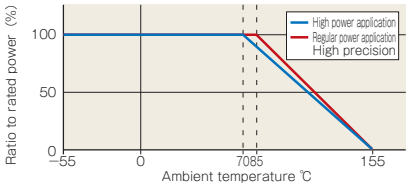
Temperature cycle test



High temperature exposure test

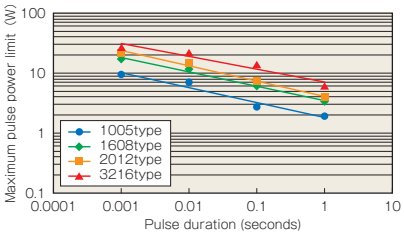


Power derating characteristics



Power derating curve

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

〈New name〉 **RG 1608 N-102-B-T5**

- Packaging: T5 (5000pcs) T10 (10000pcs)
- Resistance tolerance
- Resistance value (E-24:3digit, E-96:4digit, RG3216:all 4 digit)
- Temperature coefficient of resistance
- Power (2B:1/8W, 2C:1/6W, 2E:1/4W)
- Size
- Series code

〈Old name〉 **RGH 1608 2C-N-102-B-T5**