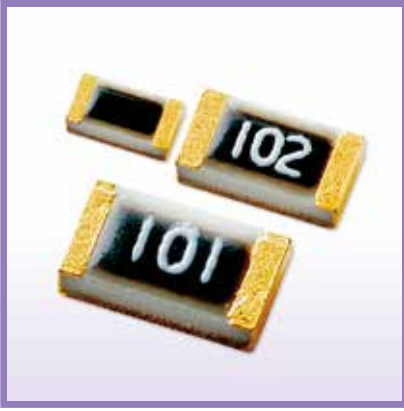


# High temperature thin film chip resistors

■ RGA series

AEC-Q200 Compliant



## Features

- Conductive epoxy compatible
- Operating temperature up to 230°C
- Resistance tolerance:  $\pm 0.1\%$ , TCR:  $\pm 10\text{ppm}/^\circ\text{C}$
- Thin film structure enabling low noise and anti-sulfur

## Applications

- Automotive electronics
- Equipment used in high temperature
- Downhole drilling

Thin film surface mount resistors



RGA series

## ◆ Part numbering system

**RGA 2012 N - 104 - B - T1**

Series code

Size: RGA1005, RGA1608, RGA2012

Temperature coefficient of resistance

Nominal resistance value (E-24: 3digit, E-96: 4digit)

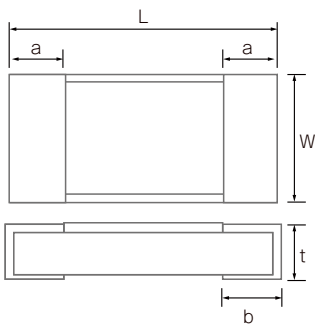
Packaging quantity:  
T1 (1,000pcs), T5 (5,000pcs)

Resistance tolerance

## ◆ Electrical Specification

Type	Power ratings	Temperature coefficient of resistance (ppm/°C)	Resistance range(Ω) Resistance tolerance		Maximum voltage	Resistance value series	Operating temperature	Packaging quantity
			$\pm 0.1\%$ (B)	$\pm 0.5\%$ (D)				
RGA1005	1/32W	$\pm 10$ (N)	47 $\leq$ R $\leq$ 100k		50V	E-24, E-96	-55°C ~ 230°C	T1 T5
		$\pm 25$ (P)	10 $\leq$ R $\leq$ 100k					
RGA1608	1/16W	$\pm 10$ (N)	47 $\leq$ R $\leq$ 274k		100V	E-24, E-96	-55°C ~ 230°C	T1 T5
		$\pm 25$ (P)	10 $\leq$ R $\leq$ 332k	10 $\leq$ R $\leq$ 360k				
RGA2012	1/10W	$\pm 10$ (N)	47 $\leq$ R $\leq$ 475k		150V	E-24, E-96	-55°C ~ 230°C	T1 T5
		$\pm 25$ (P)	10 $\leq$ R $\leq$ 1M					

## ◆ Dimensions



Type	Size (inch)	L	W	a	b	t
RGA1005	0402	1.00 $\pm$ 0.1/-0.05	0.50 $\pm$ 0.10	0.20 $\pm$ 0.10	0.25 $\pm$ 0.05	0.35 $\pm$ 0.05
RGA1608	0603	1.60 $\pm$ 0.20	0.80 $\pm$ 0.25/-0.20	0.30 $\pm$ 0.20	0.30 $\pm$ 0.20	0.40 $\pm$ 0.15/-0.10
RGA2012	0805	2.00 $\pm$ 0.20	1.25 $\pm$ 0.25/-0.20	0.40 $\pm$ 0.20	0.40 $\pm$ 0.20	0.40 $\pm$ 0.15/-0.10

(unit : mm)

## ◆ Reliability specification

Test items	Condition (test methods (MIL-PRF-55342/JIS C5201-1))	Standard
Short time overload	2.5 x rated voltage,*1 5seconds	±(0.1%+0.01Ω)
Life (biased)	125°C, rated voltage,*1 90min on 30min off, 1000hours	±(0.2%+0.05Ω)
High temperature high humidity	85°C, 85%RH, 1/10 of rated power, 90min on 30min off, 1000hours	±(0.2%+0.01Ω)
Temperature shock	-55°C (30min) ~ 125°C (30min) 1000cycles	±(0.2%+0.01Ω)
High temperature exposure	155°C, no bias, 1000hours	±(0.2%+0.05Ω)
Vibration	Frequency 10Hz ~ 500Hz, vibration amplitude 1.5mm or acceleration 10gn test duration for each of 3 axis: 6 hours	±(0.2%+0.05Ω)
Resistance to soldering heat	260±5°C, 10 seconds (reflow)	±(0.5%+0.01Ω)

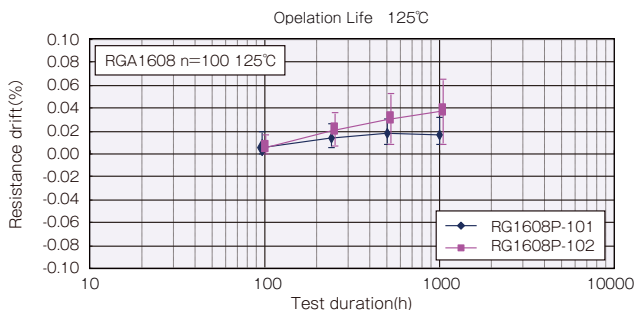
\*1 Rated voltage is given by  $E = \sqrt{R \times P}$   
 E= rated voltage (V), R=nominal resistance value(Ω), P=rated power(W)  
 If rated voltage exceeds maximum voltage /element, maximum voltage/element is the rated voltage.

Thin film surface mount resistors

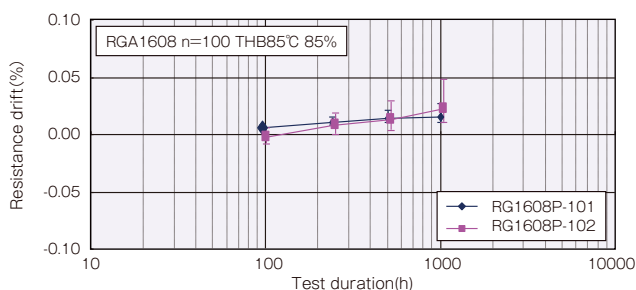
RGA series

## ◆ Reliability test data

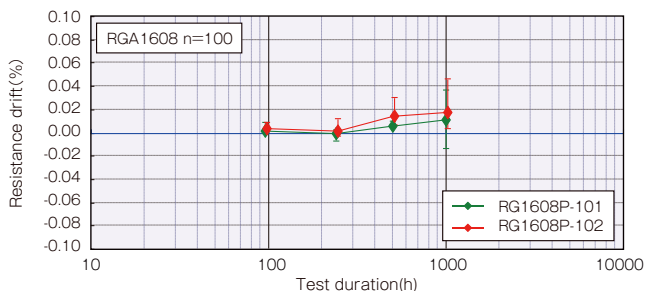
### ○ Biased life test



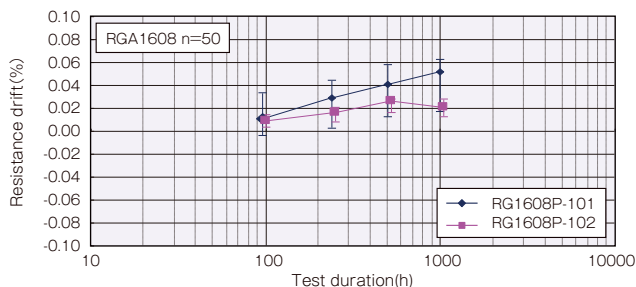
### ○ High temperature high humidity (biased)



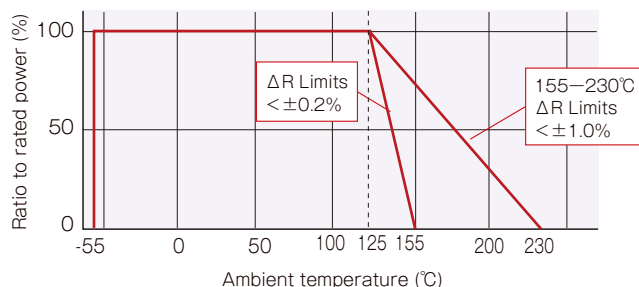
### ○ Temperature shock



### ○ High temperature exposure



## ◆ Derating Curve



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