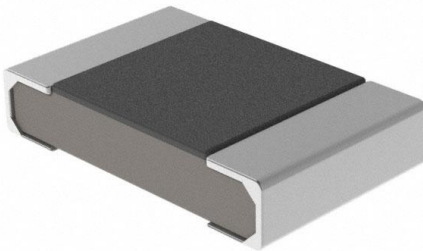


# RG2012P-332-W-T5 Datasheet

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<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	RG2012P-332-W-T5-DG
Manufacturer	<a href="#">Susumu</a>
Manufacturer Product Number	RG2012P-332-W-T5
Description	RES SMD 3.3K OHM 0.05% 1/8W 0805
Detailed Description	3.3 kOhms $\pm$ 0.05% 0.125W, 1/8W Chip Resistor 0805 (2012 Metric) Anti-Sulfur, Automotive AEC-Q200 Thin Film

This model RG2012P-332-W-T5 is available at DiGi Electronics.

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## Purchase and inquiry

**Manufacturer Product Number:**

RG2012P-332-W-T5

**Series:**

RG

**Resistance:**

3.3 kOhms

**Power (Watts):**

0.125W, 1/8W

**Features:**

Anti-Sulfur, Automotive AEC-Q200

**Operating Temperature:**

-55°C ~ 155°C

**Supplier Device Package:**

0805

**Size / Dimension:**

0.079" L x 0.049" W (2.00mm x 1.25mm)

**Number of Terminations:**

2

**Manufacturer:**

Susumu

**Product Status:**

Active

**Tolerance:**

±0.05%

**Composition:**

Thin Film

**Temperature Coefficient:**

±25ppm/°C

**Package / Case:**

0805 (2012 Metric)

**Ratings:**

AEC-Q200

**Height - Seated (Max):**

0.020" (0.50mm)

**Failure Rate:**

-

## Environmental & Export classification

**RoHS Status:**

ROHS3 Compliant

**REACH Status:**

REACH Unaffected

**HTSUS:**

8533.21.0030

**Moisture Sensitivity Level (MSL):**

1 (Unlimited)

**ECCN:**

EAR99



# Metal thin film chip resistors (the highest precision)

■ RG series

AEC-Q200 Compliant

## Features

- Long term stability with inorganic passivation
- Less than  $\pm 0.1\%$  drift after 10000 hours of reliability test
- High precision resistance tolerance:  $\pm 0.05\%$ , very small TCR:  $\pm 5\text{ppm}/^\circ\text{C}$
- Thin film structure enabling low noise and anti-sulfur

## Applications

- Automotive electronics
- Industrial measurement instrumentation, industrial machines
- Various sensors, medical electronics



## ◆ Part numbering system

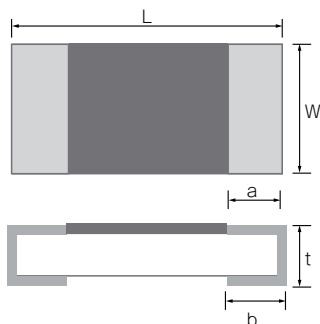
**RG 1608 N - 102 - B - T5**

Series code	Size: RG0603, RG1005, RG1608, RG2012, RG3216	Temperature coefficient of resistance	Resistance tolerance	Nominal resistance value (E-24: 3 digit, E-96: 4 digit, RG3216: all 4 digit)
			Packaging quantity: T5(5,000pcs), T10(10,000pcs)	

## ◆ Electrical Specification

Type	Power ratings			Temperature coefficient of resistance (ppm/ $^\circ\text{C}$ )	Resistance range ( $\Omega$ ) Resistance tolerance (%)			Maximum voltage	Resistance value series	Operating temperature	Pakaging quantity
	Low	Regular	High		$\pm 0.05\%$ (W)	$\pm 0.1\%$ (B)	$\pm 0.5\%$ (D)				
RG0603	1/20W	1/16W	-	$\pm 10$ (N)	-	$100 \leq R \leq 22\text{k}$		30V	E-24, E-96	$-55^\circ\text{C} \sim 155^\circ\text{C}$	T10
				$\pm 25$ (P)							
				$\pm 50$ (Q)		-	$10 \leq R < 47$				
				$\pm 100$ (R)							
RG1005	1/32W	1/16W	1/8W	$\pm 5$ (V)	$100 \leq R < 3\text{k}$		75V	E-24, E-96	$-55^\circ\text{C} \sim 155^\circ\text{C}$	T5, T10 <small>*Products with 0.5% tolerance are only packed with T10.</small>	
				$\pm 10$ (N)	$47 \leq R \leq 100\text{k}$						
				$\pm 25$ (P)	$47 \leq R \leq 150\text{k}$						
				$\pm 100$ (R)	-	-					$10 \leq R < 47$
RG1608	1/16W	1/10W	1/6W	$\pm 5$ (V)	$100 \leq R < 5.1\text{k}$		100V	E-24, E-96	$-55^\circ\text{C} \sim 155^\circ\text{C}$	T5	
				$\pm 10$ (N)	$47 \leq R \leq 274\text{k}$						
				$\pm 25$ (P)	$47 \leq R \leq 274\text{k}$	$47 \leq R \leq 1\text{M}$					
				$\pm 50$ (Q)	-	-					$10 \leq R < 47$
RG2012	1/10W	1/8W	1/4W	$\pm 5$ (V)	$100 \leq R < 10.2\text{k}$		150V	E-24, E-96	$-55^\circ\text{C} \sim 155^\circ\text{C}$	T5	
				$\pm 10$ (N)	$47 \leq R \leq 475\text{k}$						
				$\pm 25$ (P)	$47 \leq R \leq 475\text{k}$	$47 \leq R \leq 2.7\text{M}$					
				$\pm 50$ (Q)	-	-					$10 \leq R < 47$
RG3216	1/8W	1/4W	-	$\pm 5$ (V)	$100 \leq R \leq 33.2\text{k}$		200V	E-24, E-96	$-55^\circ\text{C} \sim 155^\circ\text{C}$	T5	
				$\pm 10$ (N)	$47 \leq R \leq 1\text{M}$						
				$\pm 25$ (P)	$47 \leq R \leq 5.1\text{M}$						
				$\pm 50$ (Q)	-	-					$10 \leq R < 47$

## ◆ Dimensions



Type	Size (inch)	L	W	a	b	t
RG0603	0201	$0.60 \pm 0.05$	$0.30 \pm 0.05$	$0.13 \pm 0.05$	$0.15 \pm 0.05$	$0.23 \pm 0.03$
RG1005	0402	$1.0 \pm 0.05$	$0.50 \pm 0.05$	$0.20 \pm 0.10$	$0.25 \pm 0.05$	$0.35 \pm 0.05$
RG1608	0603	$1.60 \pm 0.20$	$0.80 \pm 0.20$	$0.30 \pm 0.20$	$0.30 \pm 0.20$	$0.40 \pm 0.10$
RG2012	0805	$2.00 \pm 0.20$	$1.25 \pm 0.20$	$0.40 \pm 0.20$	$0.40 \pm 0.20$	$0.40 \pm 0.10$
RG3216	1206	$3.20 \pm 0.20$	$1.60 \pm 0.20$	$0.50 \pm 0.25$	$0.50 \pm 0.20$	$0.40 \pm 0.10$

(unit : mm)

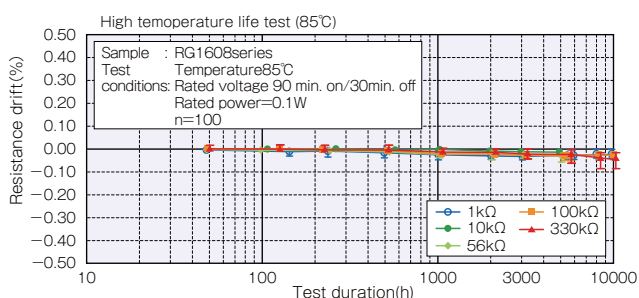
### ◆ Reliability specification

Test Items	Condition (test methods)	Low		Regular		High		Typical
		≤47Ω	≥47Ω	≤47Ω	≥47Ω	≤47Ω	≥47Ω	Low
Short time overload	2.5 x rated voltage,*1 5 seconds	±(0.05%+0.01Ω)	±(0.05%+0.01Ω)	±(0.05%+0.01Ω)	±(0.05%+0.01Ω)	—	±(0.05%+0.01Ω)	±(0.01%)
Life (biased)	85°C, rated voltage,*1 90min on 30min off, 1000hours	±(0.25%+0.05Ω)	±(0.1%+0.01Ω)	±(0.5%+0.05Ω)	±(0.25%+0.05Ω)	—	±(0.5%+0.01Ω)	±(0.01%)
High temperature high humidity	85°C, 85%RH, 1/10 of rated power, 90min on 30min off, 1000hours	±(0.25%+0.05Ω)	±(0.1%+0.01Ω)	±(0.5%+0.05Ω)	±(0.25%+0.05Ω)	—	±(0.5%+0.01Ω)	±(0.05%)
Temperature shock	-55°C (30min) ~ 125°C (30min) 1000cycles	±(0.25%+0.05Ω)	±(0.1%+0.01Ω)	±(0.25%+0.05Ω)	±(0.1%+0.01Ω)	—	±(0.1%+0.01Ω)	±(0.01%)
High temperature exposure	155°C, no bias, 1000hours	±(0.25%+0.05Ω)	±(0.1%+0.01Ω)	±(0.25%+0.05Ω)	±(0.1%+0.01Ω)	—	±(0.1%+0.01Ω)	±(0.01%)
Resistance to soldering heat	260±5°C, 10 seconds (reflow)	±(0.05%+0.01Ω)	±(0.05%+0.01Ω)	±(0.05%+0.01Ω)	±(0.05%+0.01Ω)	—	±(0.05%+0.01Ω)	±(0.01%)

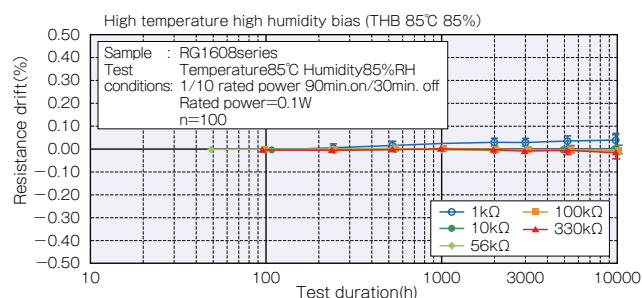
\*1 Rated voltage is given by  $E = \sqrt{R \times P}$  E= rated voltage (V), R=nominal resistance value(Ω), P=rated power(W)  
If rated voltage exceeds maximum voltage /element, maximum voltage/element is the rated voltage.

### ◆ 10000 hour reliability test data

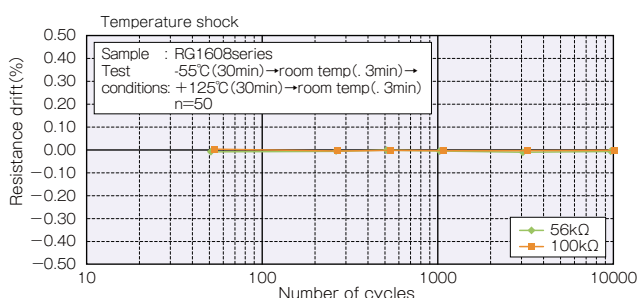
#### ○ Biased life test



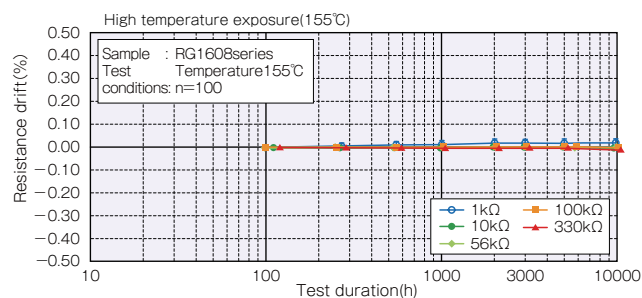
#### ○ High temperature high humidity (biased)



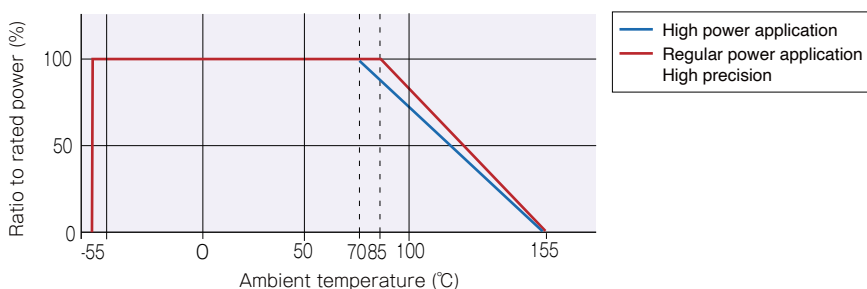
#### ○ Temperature shock



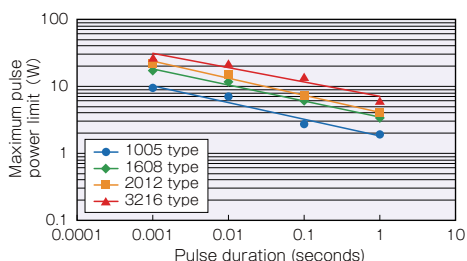
#### ○ High temperature exposure



### ◆ 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.

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