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# Metal thin film chip resistors (the highest reliability and precision)

■ URG series

AEC-Q200 Compliant

## Features

- The tightest resistance tolerance: +/-0.01%
- The smallest temperature coefficient of resistance: ±1ppm/°C
- Long term stability with inorganic passivation
- Thin film structure enabling low noise and anti-sulfur

## Applications

- Industrial measurement, electrical scales
- High precision sensors, medical electronics



Thin film surface mount resistors



URG series

## ◆ Part numbering system

**URG 2012 L - 102 - L - T1**

Series code

Size: URG1608, URG2012,  
URG3216, URG5025, URG6432

Temperature coefficient of resistance

Packaging quantity: T1(1,000pcs),  
T05(500pcs), T01(100pcs)

Resistance tolerance

Nominal resistance value (E-24: 3 digit, E-96: 4 digit,  
URG3216, URG5025, URG6432: all 4 digit)

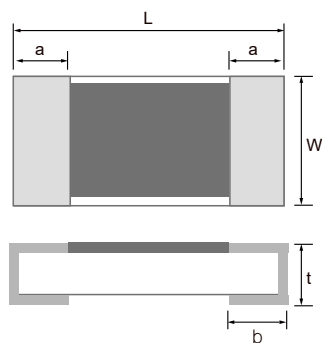
## ◆ Electrical Specification

Type	Power ratings	Temperature coefficient of resistance <sup>*1</sup> (ppm/°C)	Resistance range(Ω) Resistance tolerance					Maximum voltage	Resistance value series	Operating temperature	Packaging quantity
			±0.01% (L)	±0.02% (P)	±0.05% (W)	±0.1% (B)	±0.5% (D)				
URG1608	1/16W	±1 (K)	100≤R≤7.5k					100V			T1
		±2 (L)									
URG2012	1/10W	±1 (K)	100≤R≤36k					150V			T05
		±2 (L)									
URG3216	1/4W	±1 (K)	100≤R≤68k					200V	E24, E96	-55°C ~ 155°C	T01
		±2 (L)									
URG5025	1/2W	±1 (K)	100≤R≤150k					300V			T01
		±2 (L)									
URG6432	3/4W	±1 (K)	100≤R≤200k					300V			
		±2 (L)									

\*1 Applicable TCR range -20°C ~ 125°C

**\*Contact us for requirements not listed in above table.**

## ◆Dimensions



Type	Size (inch)	L	W	a	b	t
URG1608	0603	1.60±0.20	0.80+0.25/-0.20	0.30±0.20	0.30±0.20	0.40+0.15/-0.10
URG2012	0805	2.00±0.20	1.25+0.25/-0.20	0.40±0.20	0.40±0.20	0.40+0.15/-0.10
URG3216	1206	3.20±0.20	1.60±0.25	0.50±0.25	0.50±0.20	0.40+0.15/-0.10
URG5025	2010	5.00±0.20	2.50±0.25	0.60±0.25	0.60±0.25	0.45±0.10
URG6432	2512	6.40+0.20/-0.40	3.20±0.25	0.75±0.25	0.80±0.20	0.45±0.20

(unit : mm)

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## ◆Reliability specification

Test items	Condition (test methods (MIL-PRF-55342/JIS C5201-1))	Standard
Short time overload	2.5 x rated voltage, <sup>*1</sup> 5seconds	±0.02%+0.01Ω
Life (biased)	70°C, rated voltage, <sup>*1</sup> 90min on 30min off, 2000hours	±0.02%+0.01Ω(R≥250Ω)
		±0.05%+0.01Ω(R<250Ω)
High temperature high humidity	85°C, 85%RH, 1/10 of rated power, 90min on 30min off, 1000hours	±0.05%+0.01Ω
Temperature shock	-65°C (15min) ~ 150°C (15min) 100cycles	±0.02%+0.01Ω
High temperature exposure	155°C, no bias, 1000hours	±0.05%+0.01Ω
Resistance to soldering heat	235±5°C, 30 seconds (reflow), (by MIL-PRF-55342)	±0.01%+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)

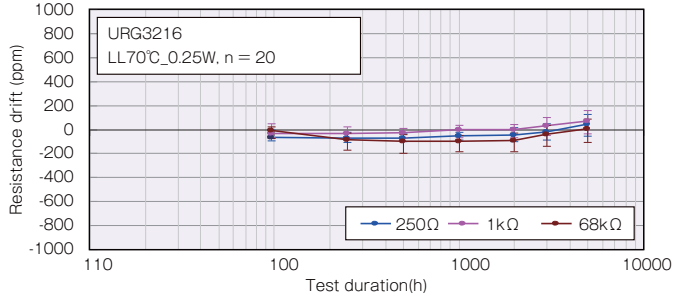
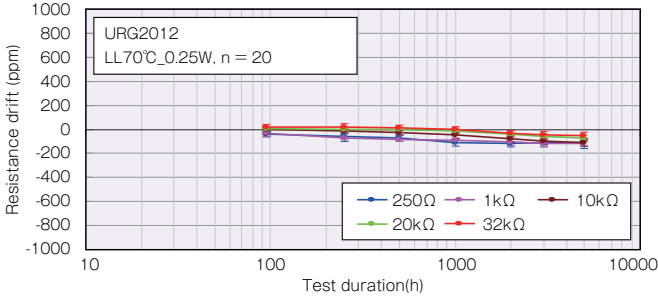
If rated voltage exceeds maximum voltage /element, maximum voltage/element is the rated voltage.

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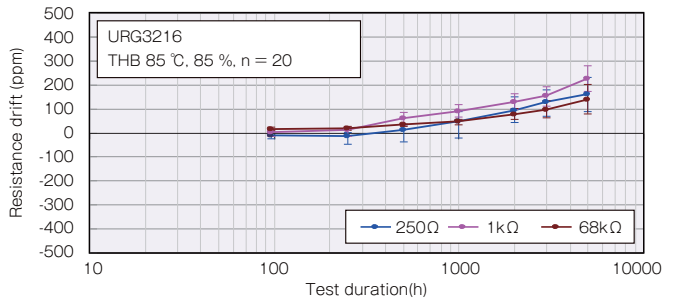
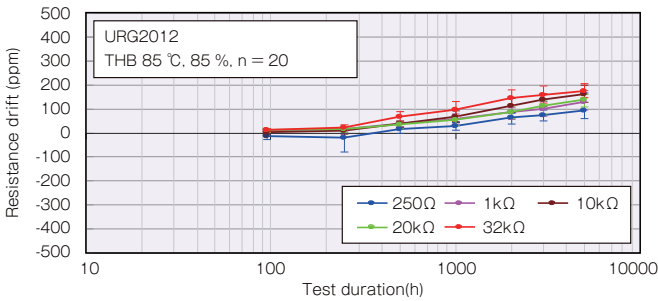
## URG series

### Reliability test data

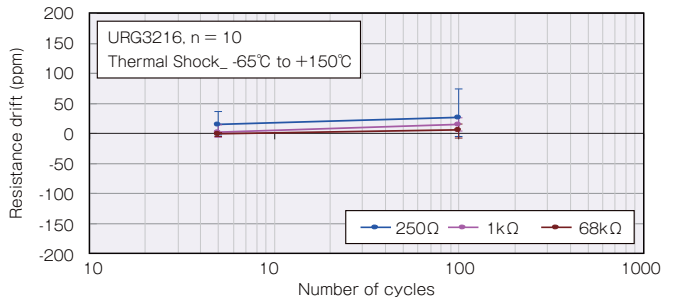
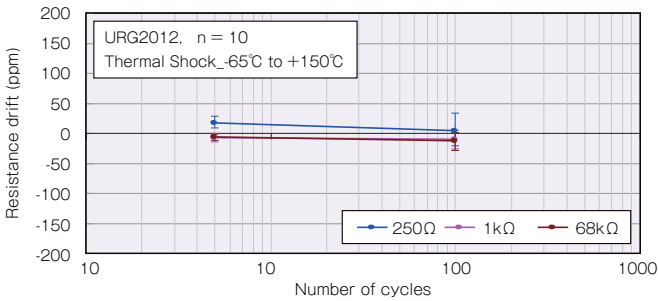
#### Biased life test



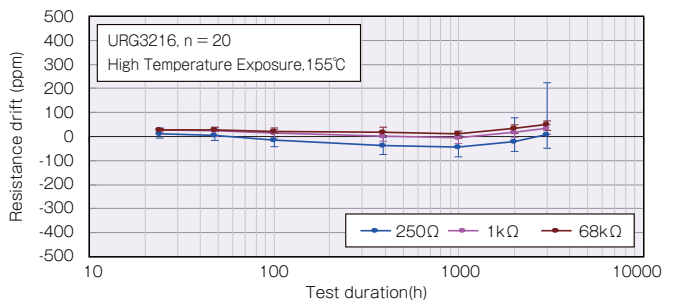
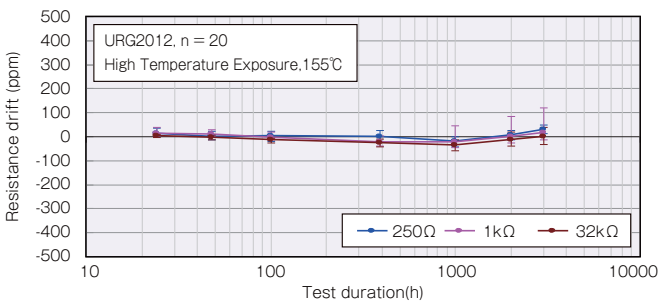
#### High temperature high humidity (biased)



#### Temperature shock

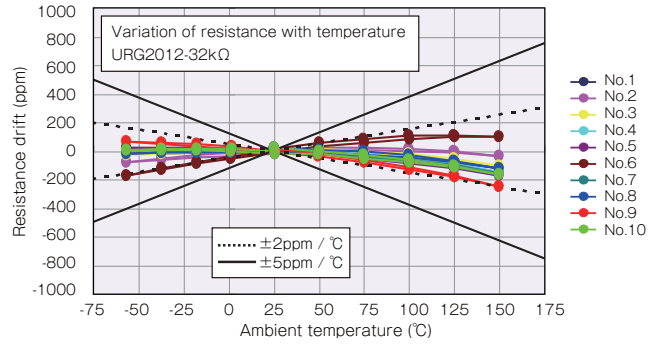
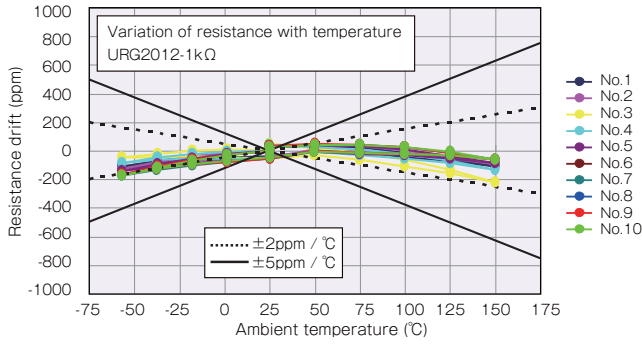


#### High temperature exposure

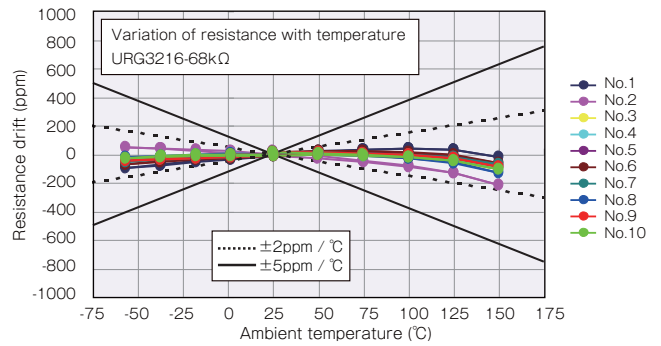
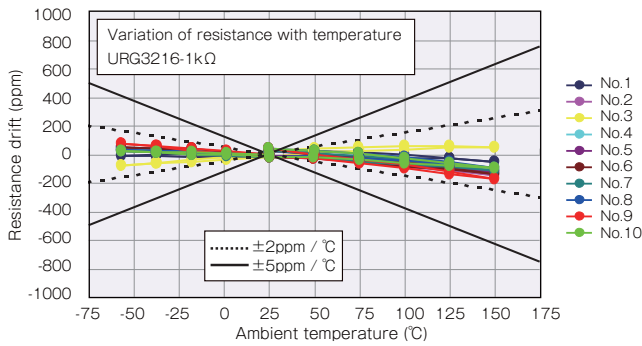


## ◆ Temperature coefficient of Resistance

### ○ URG2012



### ○ URG3216



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## ◆ Derating Curve

