# 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

Lead free   Halogen free   RoHS Compliance

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 *1 (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 | E24, E96 | -55℃ ~ 155℃ | T1 T05 T01 |
| | | ±2(L) | | | | | | | | | |
| URG2012 | 1/10W | ±1(K) | 100≦R≦36k | | | | | 150V | | | |
| | | ±2(L) | | | | | | | | | |
| URG3216 | 1/4W | ±1(K) | 100≦R≦68k | | | | | 200V | | | |
| | | ±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
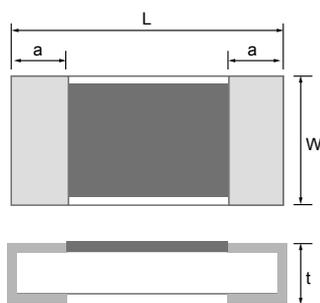


| Type | Size (inch) | L | W | a | t |
|---|---|---|---|---|---|
| URG1608 | 0603 | 1.60±0.20 | 0.80+0.25/−0.20 | 0.30±0.20 | 0.40+0.15/−0.10 |
| URG2012 | 0805 | 2.00±0.20 | 1.25+0.25/−0.20 | 0.40±0.20 | 0.40+0.15/−0.10 |
| URG3216 | 1206 | 3.20±0.20 | 1.60±0.25 | 0.50±0.25 | 0.40+0.15/−0.10 |
| URG5025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

(unit : mm)

Thin film surface mount resistors

URG series

## ◆Reliability specification

| Test items | Condition (test methods (MIL-PRF-55342/JIS C5201-1) | Standard |
|---|---|---|
| Short time overload | 2.5 x rated voltage,[1]  5seconds | ±0.02%+0.01Ω |
| Life (biased) | 70°C, rated voltage,[1]  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)
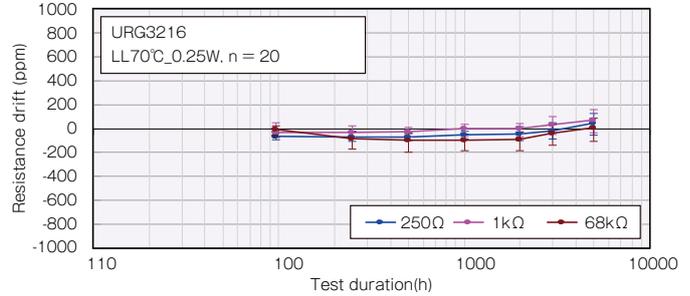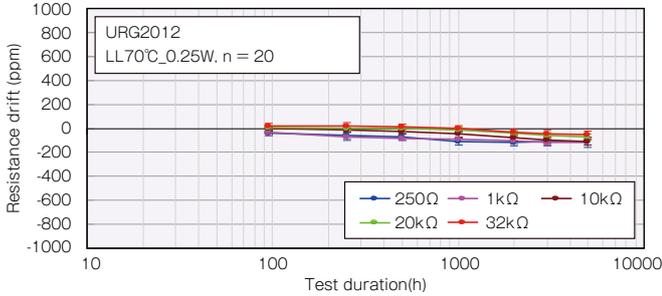　　 If rated voltage exceeds maximum voltage /element, maximum voltage/element is the rated voltage.

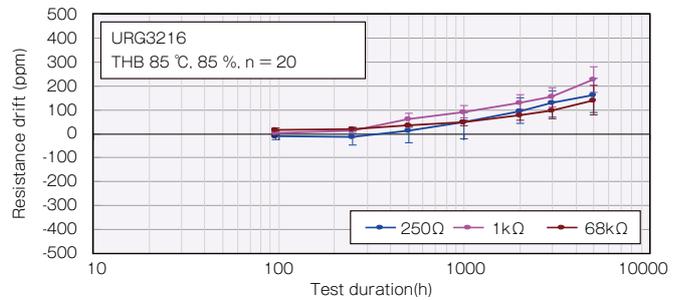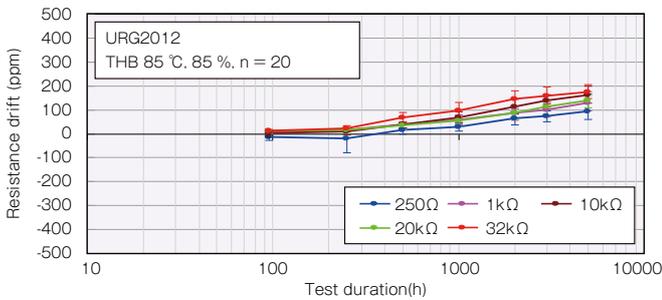# Metal thin film chip resistors
## (the highest reliability and precision)
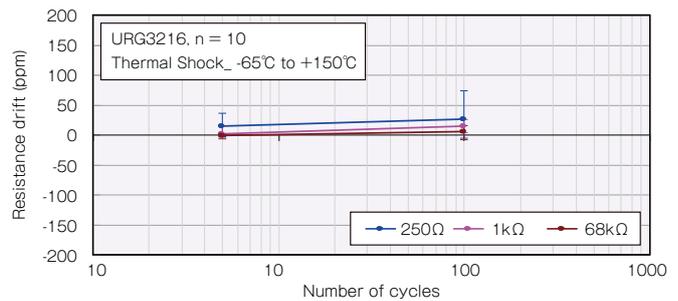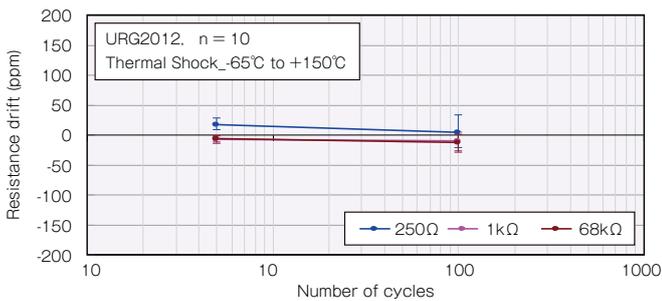
### ■URG series

## ◆Reliability test data

### ○Biased life test



URG2012
LL70℃_0.25W, n = 20
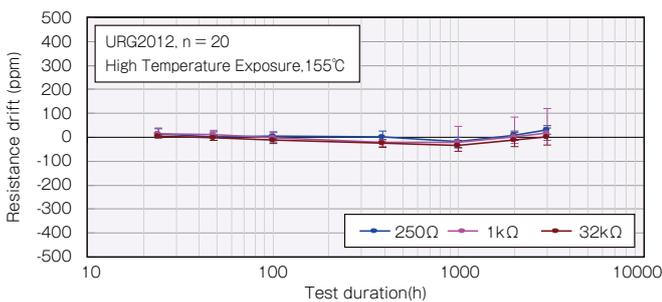— 250Ω — 1kΩ — 10kΩ
— 20kΩ — 32kΩ



URG3216
LL70℃_0.25W, n = 20
— 250Ω — 1kΩ — 68kΩ

### ○High temperature high humidity (biased)



URG2012
THB 85 ℃, 85 %, n = 20
— 250Ω — 1kΩ — 10kΩ
— 20kΩ — 32kΩ



URG3216
THB 85 ℃, 85 %, n = 20
— 250Ω — 1kΩ — 68kΩ

### ○Temperature shock



URG2012, n = 10
Thermal Shock_-65℃ to +150℃
— 250Ω — 1kΩ — 68kΩ



URG3216, n = 10
Thermal Shock_ -65℃ to +150℃
— 250Ω — 1kΩ — 68kΩ

### ○High temperature exposure



URG2012, n = 20
High Temperature Exposure,155℃
— 250Ω — 1kΩ — 32kΩ



URG3216, n = 20
High Temperature Exposure,155℃
— 250Ω — 1kΩ — 68kΩ
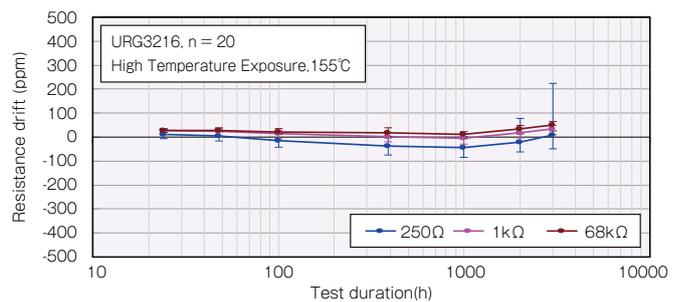
# ◆Temperature coefficient of Resistance

## ○URG2012



Variation of resistance with temperature
URG2012-1kΩ

No.1
No.2
No.3
No.4
No.5
No.6
No.7
No.8
No.9
No.10

········ ±2ppm / ℃
——— ±5ppm / ℃



Variation of resistance with temperature
URG2012-32kΩ

No.1
No.2
No.3
No.4
No.5
No.6
No.7
No.8
No.9
No.10

········ ±2ppm / ℃
——— ±5ppm / ℃

## ○URG3216



Variation of resistance with temperature
URG3216-1kΩ

No.1
No.2
No.3
No.4
No.5
No.6
No.7
No.8
No.9
No.10

········ ±2ppm / ℃
——— ±5ppm / ℃



Variation of resistance with temperature
URG3216-68kΩ

No.1
No.2
No.3
No.4
No.5
No.6
No.7
No.8
No.9
No.10

········ ±2ppm / ℃
——— ±5ppm / ℃
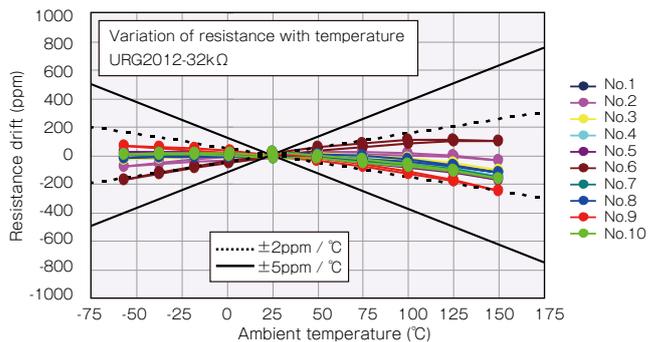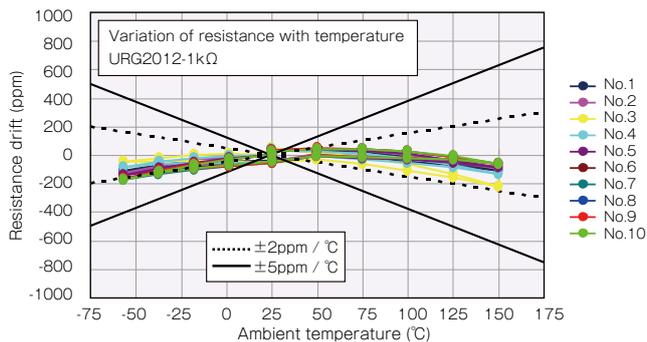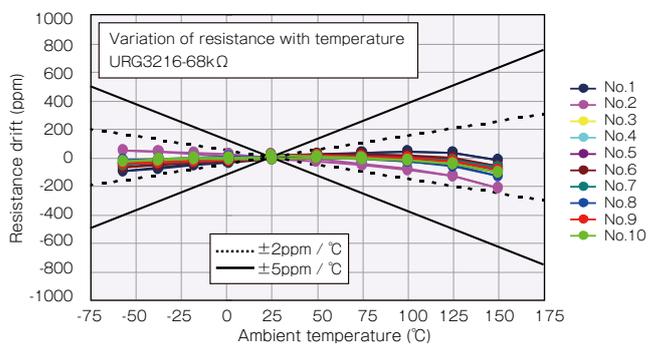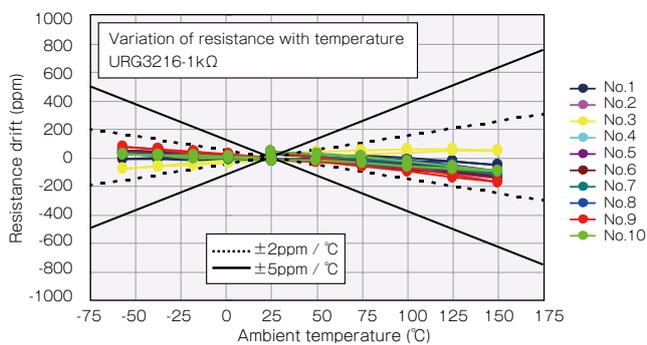
# ◆Derating Curve
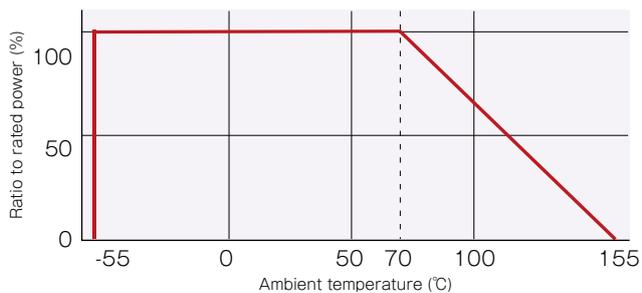
# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Susumu](#):

URG3216L-152-L-T05   URG3216L-221-L-T05   URG3216L-681-L-T05   URG3216L-333-L-T05   URG2012L-331-L-T05
URG2012L-681-L-T05   URG2012L-682-L-T05   URG3216L-471-L-T05   URG3216L-683-L-T05   URG2012L-472-L-T05
URG1608L-221-L-T05   URG3216L-331-L-T05   URG3216L-101-L-T05   URG3216L-223-L-T05   URG2012L-103-L-T05
URG2012L-151-L-T05   URG3216L-153-L-T05   URG1608L-151-L-T05   URG2012L-102-L-T05   URG3216L-103-L-T05
URG1608L-472-L-T05   URG1608L-682-L-T05   URG1608L-101-L-T05   URG3216L-472-L-T05   URG3216L-222-L-T05
URG1608L-331-L-T05   URG1608L-681-L-T05   URG1608L-102-L-T05   URG1608L-332-L-T05   URG2012L-332-L-T05
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