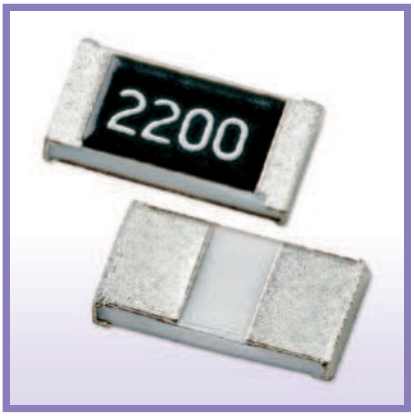



# High power thin film chip resistors
## (short side terminal)

**■HRG series** **AEC-Q200 Compliant**

Lead free Halogen free RoHS Compliance

## Features

- Wider bottom terminal enabling higher power capability (short side terminal)
- Significantly larger power handling capability than existing same size resistors
  Size: 3216, Power rating: 1.0W, Resistance range: 10 ~ 100KΩ
- Precision resistance tolerance: ±0.1%, very small TCR: ±25ppm/°C
- Thin film structure enabling low noise and anti-sulfur

## Applications

- Power source related devices
- DC motors, inverters
- Robotics, Industrial control system

## ◆Part numbering system

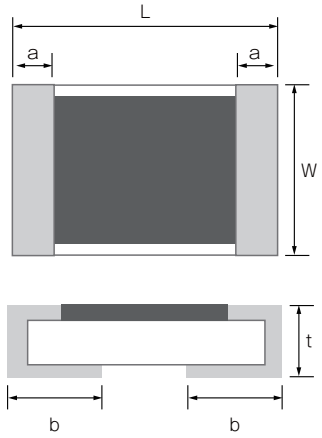
**HRG 3216 P - 1001 - B - T5**

- HRG: Series code
- 3216: Size: HRG3216
- P: Temperature coefficient of resistance
- 1001: Nominal resistance value (E-24, E-96: all 4 digit)
- B: Resistance tolerance
- T5: Packaging quantity: T1(1,000pcs), T5(5,000pcs)

## ◆Electrical Specification

| Type | Power ratings | Temperature coefficient of resistance | Resistance range(Ω) Resistance tolerance | | Maximum voltage | Resistance value series | Operating temperature | Packaging quantity |
|---|---|---|---|---|---|---|---|---|
| | | (ppm/°C) | ±0.1% (B) | ±0.5% (D) | | | | |
| HRG3216 | 1.0W | ±25(P) | 47≦R≦100k | | 200V | E-24, E-96 | -55℃ ~ 155℃ | T1 T5 |
| | | ±50(Q) | 47≦R≦100k | 10≦R≦100k | | | | |

## ◆Dimensions




| Type | Size (inch) | L | W | a | b | t |
|---|---|---|---|---|---|---|
| HRG3216 | 1206 | 3.20±0.20 | 1.60±0.20 | 0.50±0.25 | 1.10±0.20 | 0.45±0.10 |

(unit : mm)

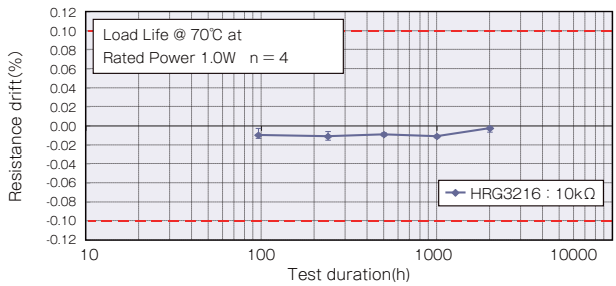
## ◆Reliability specification

| Test items | Condition (test methods (JIS C5201-1) | Standard | |
|---|---|---|---|
| | | ≦47Ω | ≧47Ω |
| Life (biased) | 70℃, rated voltage,*1 90min on 30min off, 1000hours | ±(0.5%+0.05Ω) | ±(0.25%+0.01Ω) |
| High temperature high humidity | 85℃, 85%RH, 1/10 of rated power, 90min on 30min off, 1000hours | ±(0.25%+0.05Ω) | ±(0.1%+0.01Ω) |
| Temperature shock | -55℃ (30min) ~ 125℃ (30min) 1000cycles | ±(0.25%+0.05Ω) | ±(0.1%+0.01Ω) |
| High temperature exposure | 155℃, no bias, 1000hours | ±(0.25%+0.05Ω) | ±(0.1%+0.01Ω) |
| Resistance to soldering heat | 260±5℃, 10 seconds (reflow) | ±(0.25%+0.05Ω) | ±(0.1%+0.01Ω) |

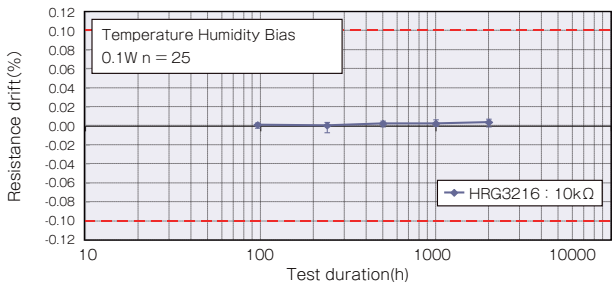
*1 Rated voltage is given by $E=\sqrt{R \times P}$
E= rated voltage (V), R=nominal resistance value(Ω), P=rated power(W)
If rated voltage exceeds maximum voltage /element, maximum voltage/element is the rated voltage.

## ◆Reliability test data

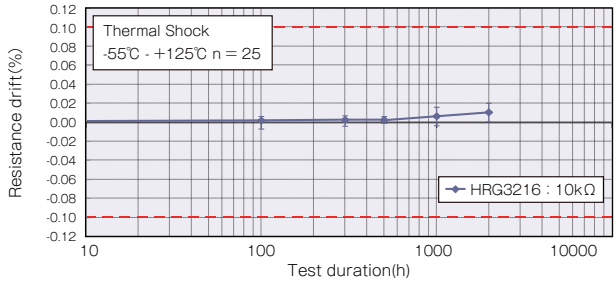
### ○Biased life test



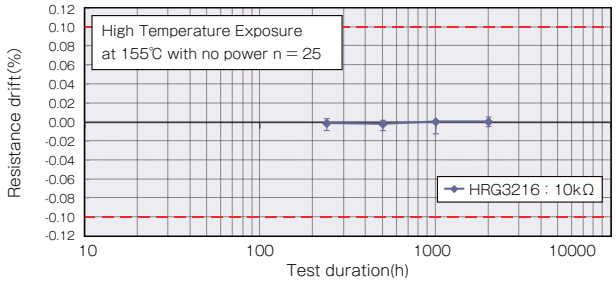

### ○High temperature high humidity (biased)




### ○Temperature shock




### ○High temperature exposure




## ◆Derating Curve

