



Thin film surface mount resistors

HRG series

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

## ■ HRG series

AEC-Q200 Compliant

### Features

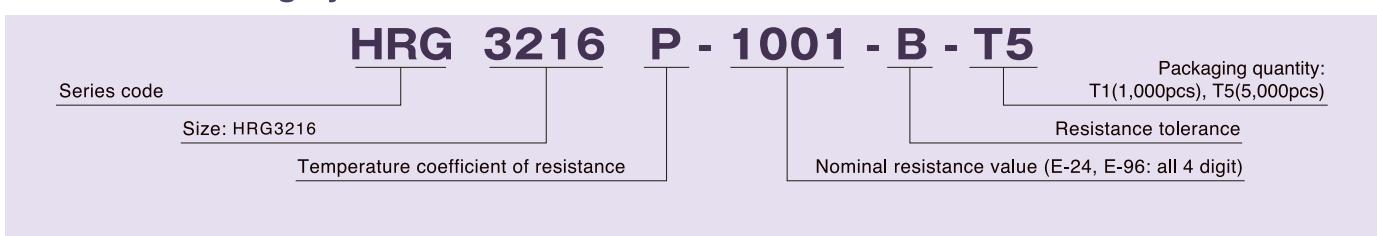
- Wider bottom terminal enabling higher power capability (short side terminal)
- Significantly larger power handling capability than existing same size resistors
- Size: 3216, Power rating: 1.0W, Resistance range: 10 ~ 100KΩ
- Precision resistance tolerance: ±0.1%, very small TCR: ±25ppm/°C
- Thin film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



### Applications

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

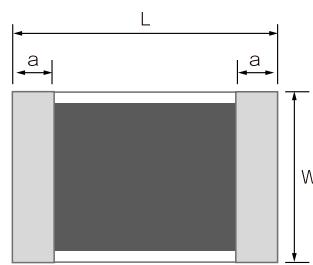
### ◆ Part numbering system



### ◆ Electrical Specification

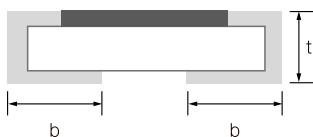
Type	Power ratings	Temperature coefficient of resistance (ppm/°C)	Resistance range(Ω) Resistance tolerance			Maximum voltage	Resistance value series	Operating temperature	Packaging quantity
			±0.1% (B)	±0.5% (D)					
HRG3216	1.0W	±25(P)	47≤R≤100k			200V	E-24, E-96	-55°C ~ 155°C	T1 T5
		±50(Q)	47≤R≤100k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

### ◆ Dimensions



Type	Size (inch)	L	W	a	b	t
HRG3216	1206	3.20±0.20	1.60±0.25	0.50±0.25	1.10±0.20	0.40+0.15/-0.10

(unit : mm)



## ◆Reliability specification

Test items	Condition (test methods (JIS C5201-1))	Standard	
		≤47Ω	≥47Ω
Life (biased)	70°C, rated voltage, <sup>*1</sup> 90min on 30min off, 1000hours	±(0.5%+0.05Ω)	±(0.25%+0.01Ω)
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)
Temperature shock	-55°C (30min) ~ 125°C (30min) 1000cycles	±(0.25%+0.05Ω)	±(0.1%+0.01Ω)
High temperature exposure	155°C, no bias, 1000hours	±(0.25%+0.05Ω)	±(0.1%+0.01Ω)
Resistance to soldering heat	260±5°C, 10 seconds (reflow)	±(0.25%+0.05Ω)	±(0.1%+0.01Ω)

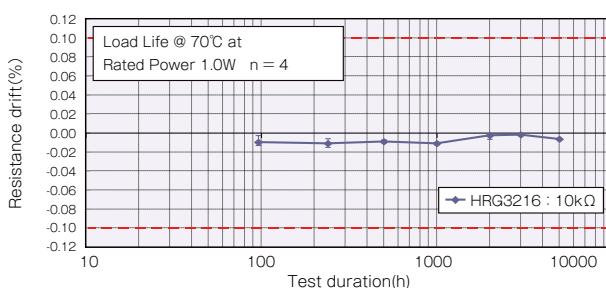
\*1 Rated voltage is given by  $E=\sqrt{R \times P}$

E= rated voltage (V), R=nominal resistance value(Ω), P=rated power(W)

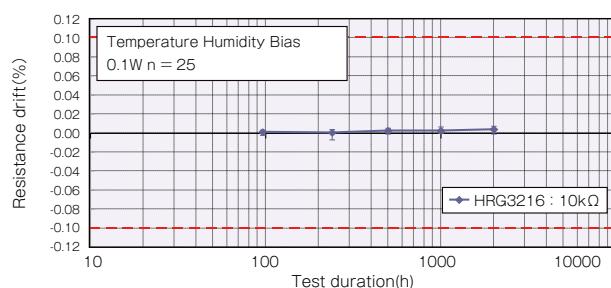
If rated voltage exceeds maximum voltage /element, maximum voltage/element is the rated voltage.

## ◆Reliability test data

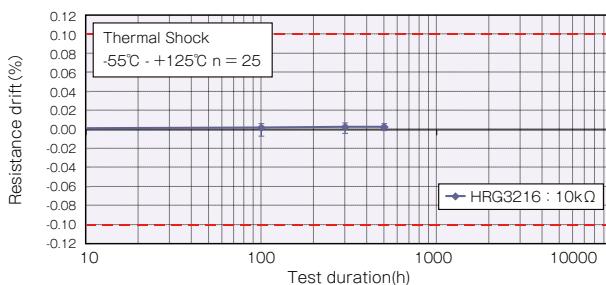
### ○Biased life test



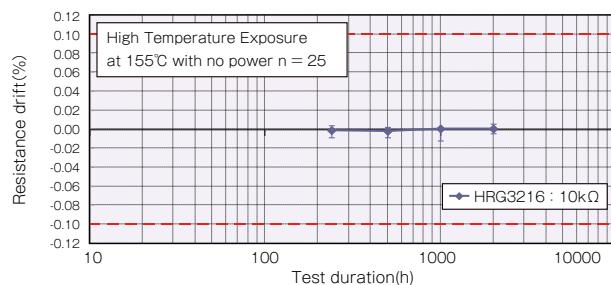
### ○High temperature high humidity (biased)



### ○Temperature shock



### ○High temperature exposure



## ◆Derating Curve

