



**THE DATASHEET OF
HRG3216P-1000-D-T1**





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: $\pm 0.1\%$, very small TCR: $\pm 25\text{ppm}/^\circ\text{C}$
- Thin film structure enabling low noise and anti-sulfur

Applications

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



◆ Part numbering system

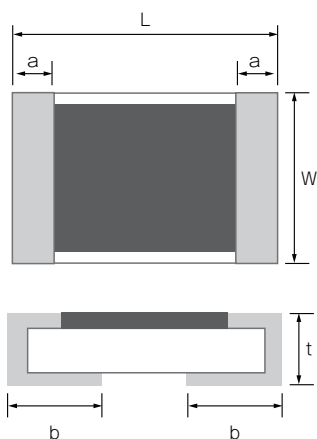
HRG 3216 P - 1001 - B - T5

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

◆ 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 |
|---------|---------------|---|---|------------------------------|-----------------|-------------------------|--|--------------------|
| | | | $\pm 0.1\%$ (B) | $\pm 0.5\%$ (D) | | | | |
| HRG3216 | 1.0W | ± 25 (P) | $47 \leq R \leq 100\text{k}$ | | 200V | E-24, E-96 | $-55^\circ\text{C} \sim 155^\circ\text{C}$ | T1 T5 |
| | | ± 50 (Q) | $47 \leq R \leq 100\text{k}$ | $10 \leq R \leq 100\text{k}$ | | | | |

◆ 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°C, rated voltage,*1 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) |

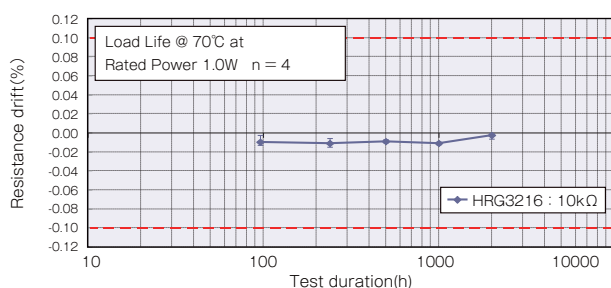
*1 Rated voltage is given by $E = \sqrt{R \times P}$

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

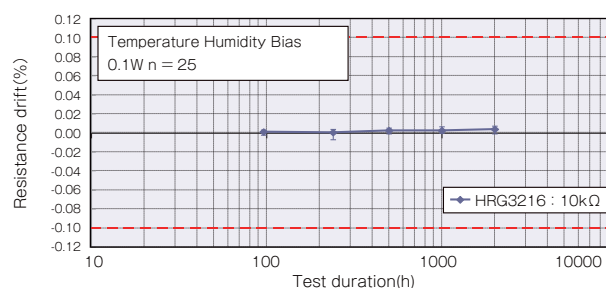
If rated voltage exceeds maximum voltage /element, maximum voltage/element is the rated voltage.

◆ Reliability test data

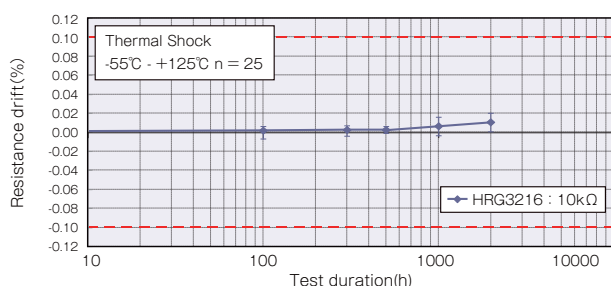
○ Biased life test



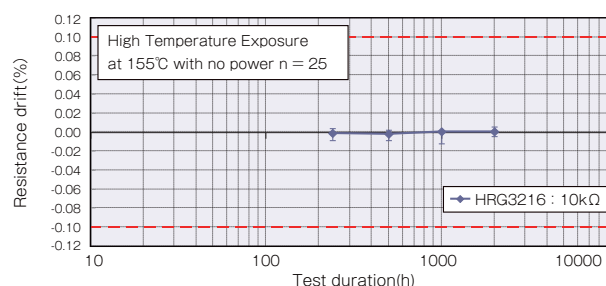
○ High temperature high humidity (biased)



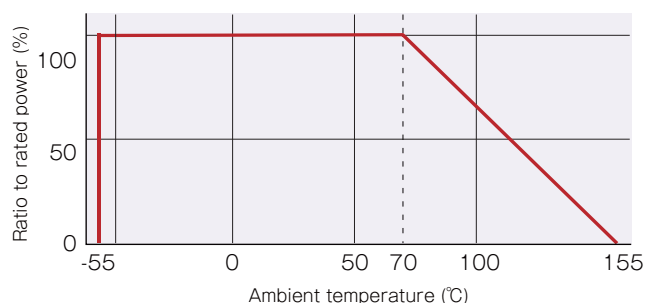
○ Temperature shock



○ High temperature exposure



◆ Derating Curve



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