

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

■ PRG series

AEC-Q200 Compliant

## Features

- Long side terminal enabling higher power capability
- Significantly larger power handling capability than conventional same size resistors  
Size: 2010 ~ 6432, power ratings: 0.5 ~ 3.0W, Resistance range: 2.5 ~ 250K $\Omega$
- 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

- Automotive electronics
- DC motor, inverters
- Robotics, Industrial control system



Thin film surface mount resistors

PRG series

## ◆ Part numbering system

**PRG 3216 P - 1001 - B - T5**

Series code

Size: PRG2010, PRG3216  
PRG5025, PRG6432

Temperature coefficient of resistance

Nominal resistance value (E-24, E-96: all 4 digit)

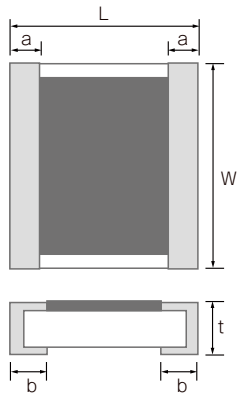
Packaging quantity: T4(4,000pcs)  
(PRG6432, PRG5025)  
T5(5,000pcs)  
(PRG3216, PRG2010)

Resistance tolerance

## ◆ Electrical Specification

| Type    | Power ratings | Temperature coefficient of resistance<br>(ppm/ $^\circ\text{C}$ ) | Resistance range( $\Omega$ )<br>Resistance tolerance |                        | Maximum voltage | Resistance value series | Operating temperature                      | Packaging quantity |
|---------|---------------|---|--|------------------------|-----------------|-------------------------|--|--------------------|
|         |               |   | $\pm 0.1\%$ (B)                                      | $\pm 0.5\%$ (D)        |                 |                         |  |                    |
| PRG2010 | 0.5W          | $\pm 25$ (P)  | $47 \leq R \leq 25k$                                 | $10 \leq R \leq 25k$   | 100V            | E-24, E-96              | $-55^\circ\text{C} \sim 155^\circ\text{C}$ | T5                 |
|         |               | $\pm 50$ (Q)  |  | $2.5 \leq R \leq 25k$  |                 |                         |  |                    |
| PRG3216 | 1.0W          | $\pm 25$ (P)  | $47 \leq R \leq 100k$                                | $10 \leq R \leq 100k$  | 150V            |                         |  |                    |
|         |               | $\pm 50$ (Q)  |  | $2.5 \leq R \leq 100k$ |                 |                         |  |                    |
| PRG5025 | 1.5W ~ 2.0W   | $\pm 25$ (P)  | $47 \leq R \leq 200k$                                | $10 \leq R \leq 200k$  | 200V            |                         |  |                    |
|         |               | $\pm 50$ (Q)  |  | $2.5 \leq R \leq 200k$ |                 |                         |  |                    |
| PRG6432 | 2.0W ~ 3.0W   | $\pm 25$ (P)  | $47 \leq R \leq 250k$                                | $10 \leq R \leq 250k$  | 400V            |                         |  |                    |
|         |               | $\pm 50$ (Q)  |  | $2.5 \leq R \leq 250k$ |                 |                         |  |                    |

## ◆Dimensions



| Type           | Size (inch) | W               | L         | a         | b         | t               |
|----------------|-------------|-----------------|-----------|-----------|-----------|-----------------|
| <b>PRG2010</b> | 0804        | 2.00±0.20       | 1.00±0.20 | 0.20±0.10 | 0.25±0.10 | 0.35±0.10       |
| <b>PRG3216</b> | 1206        | 3.20+0.40/-0.20 | 1.60±0.20 | 0.30±0.20 | 0.35±0.20 | 0.45+0.15/-0.10 |
| <b>PRG5025</b> | 2010        | 5.00±0.20       | 2.50±0.20 | 0.55±0.20 | 0.60±0.20 | 0.45+0.15/-0.10 |
| <b>PRG6432</b> | 2512        | 6.40+0.20/-0.40 | 3.20±0.20 | 0.40±0.20 | 0.55±0.20 | 0.45+0.15/-0.10 |

(unit : mm)

Thin film surface mount resistors

## ◆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 | ±(0.25%+0.05Ω) | ±(0.1%+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)                                     | ±(0.1%+0.01Ω)  | ±(0.05%+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.

PRG series

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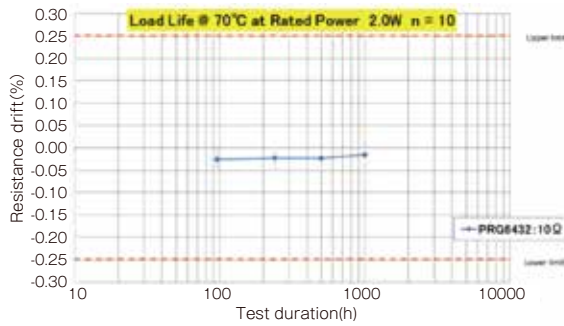
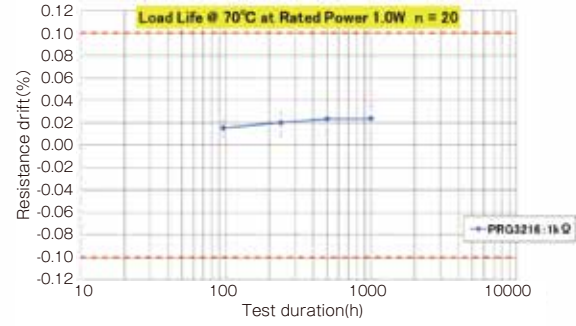
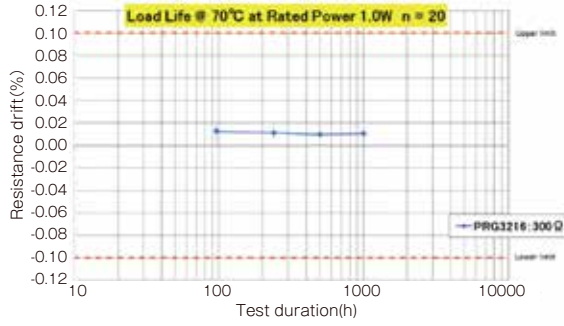
## PRG series

### Reliability test data

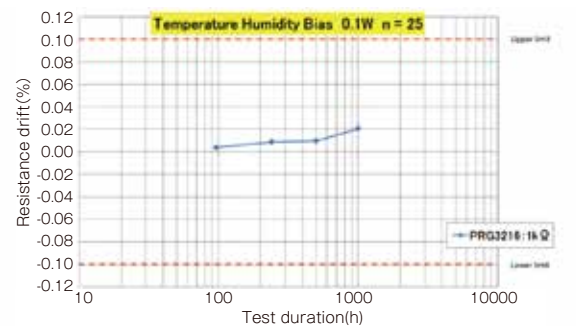
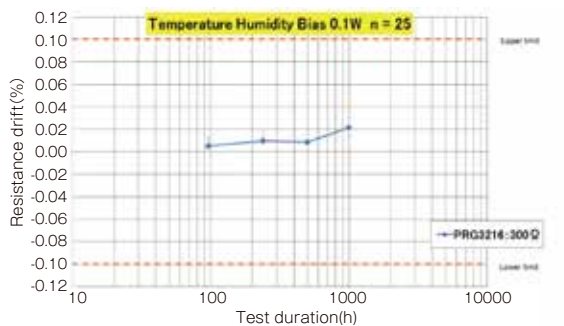
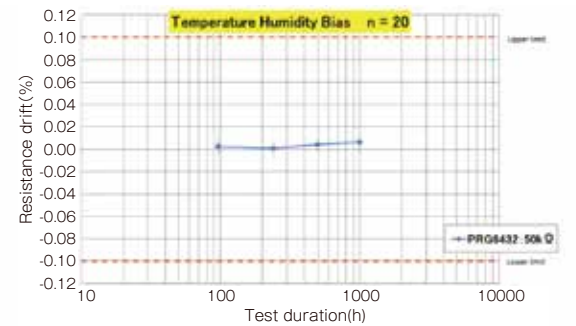
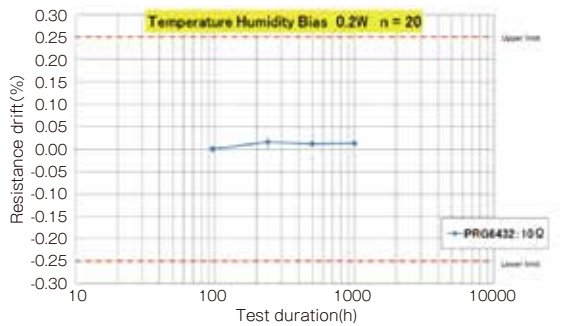
#### Biased life test

Thin film surface mount resistors

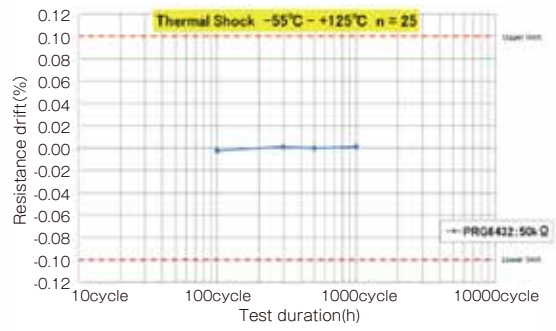
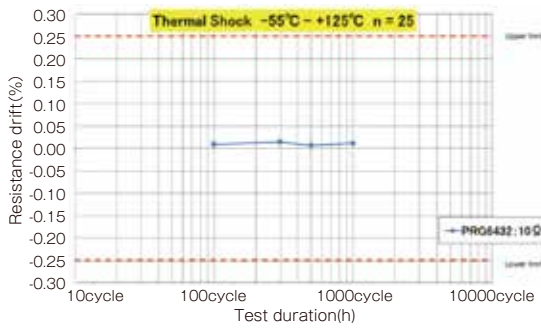
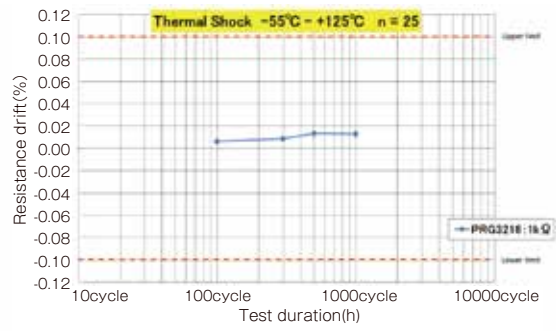
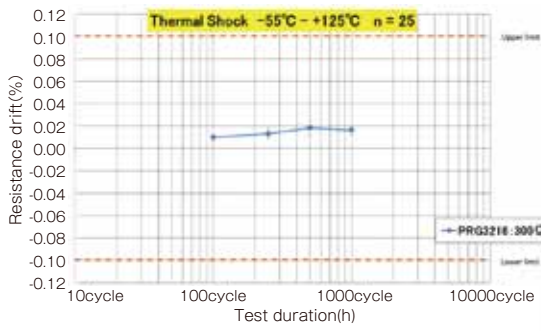
PRG series



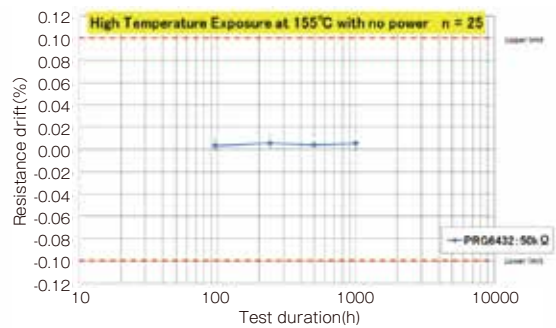
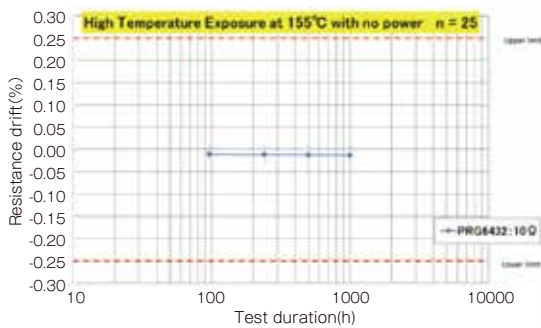
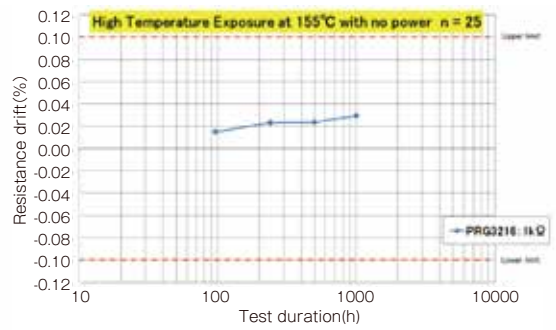
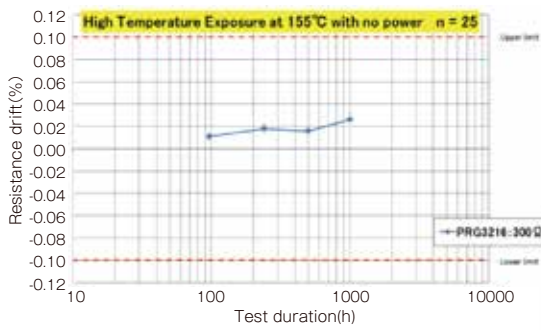
#### High temperature high humidity (biased)



○ Temperature shock

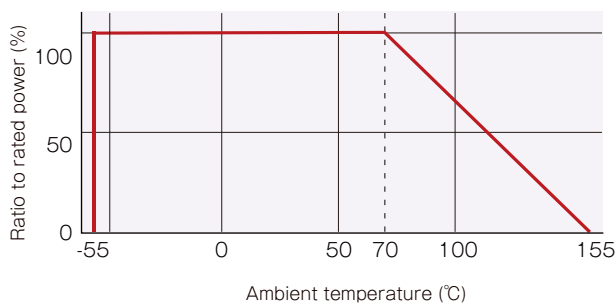


○ High temperature exposure

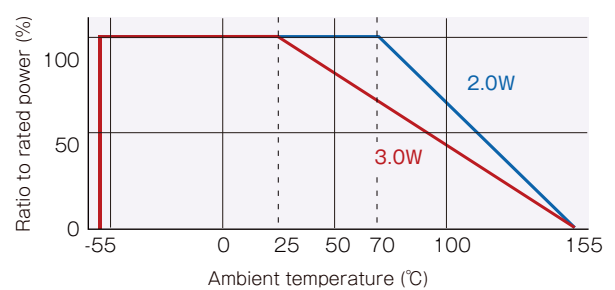


◆ Derating Curve

○ PRG3216



○ PRG6432



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