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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



# 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 ~ 250KΩ
- 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  
PRG5020, PRG6432

Temperature coefficient of resistance

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

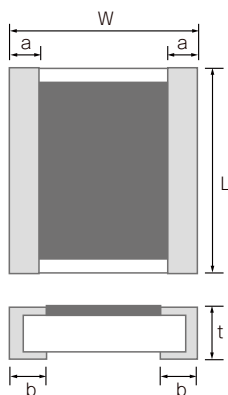
Packaging quantity: T4(4,000pcs)  
(PRG6432, PRG5020)  
T5(5,000pcs)  
(PRG3216, PRG2010)

Resistance tolerance

## ◆ 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)						
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)		$2.5 \leq R \leq 100k$						
PRG5020	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			E-24, E-96	$-55^\circ\text{C} \sim 155^\circ\text{C}$	T4
		$\pm 50$ (Q)		$2.5 \leq R \leq 250k$						

## ◆ Dimensions



Type	Size (inch)	L	W	a	b	t
<b>PRG2010</b>	0804	2.00±0.20	1.00±0.20	0.20±0.10	0.25±0.05	0.35±0.05
<b>PRG3216</b>	1206	3.20+0.40/-0.20	1.60±0.20	0.30±0.20	0.35±0.20	0.45±0.10
<b>PRG5020</b>	2008	5.00±0.20	2.00±0.20	0.40±0.20	0.40±0.20	0.45±0.10
<b>PRG6432</b>	2512	6.40+0.20/-0.40	3.20±0.25	0.40±0.20	0.55±0.20	0.45±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.

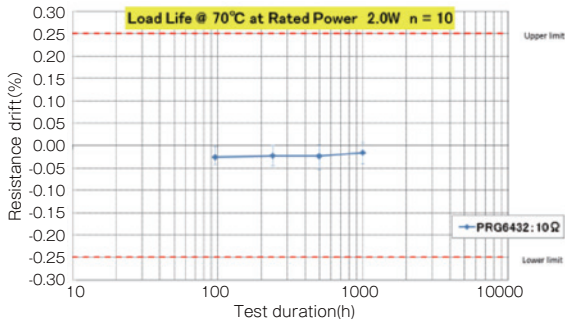
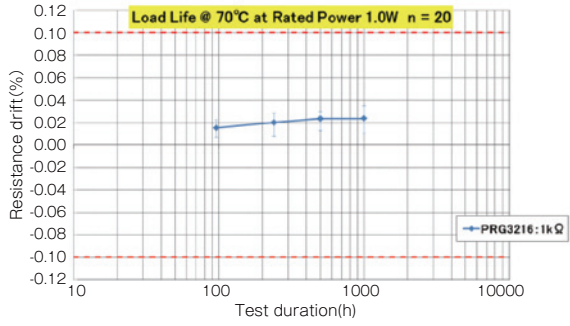
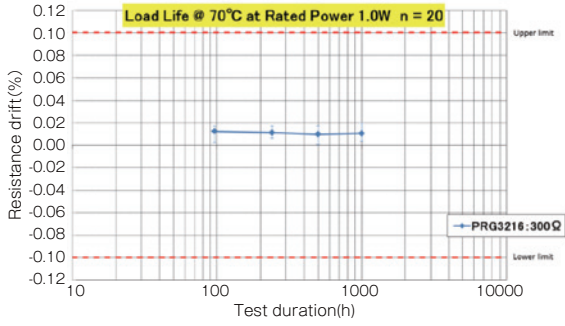
PRG series

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

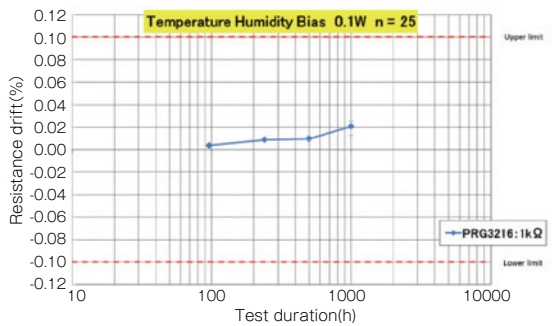
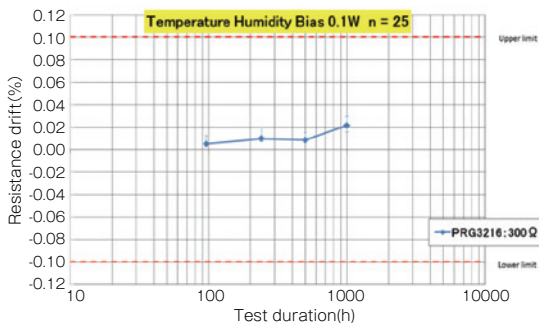
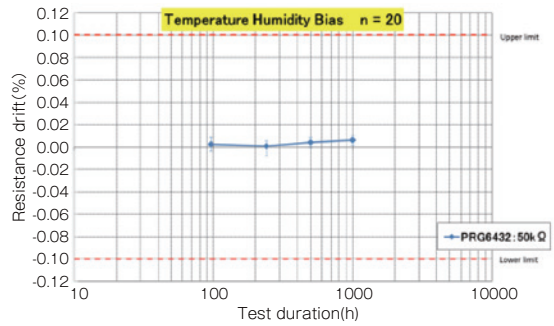
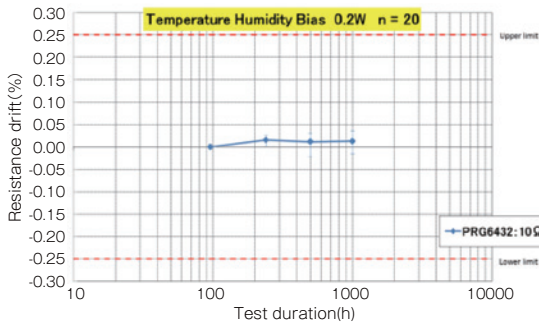
## PRG series

### Reliability test data

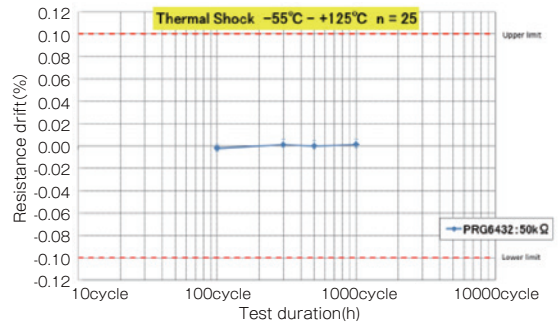
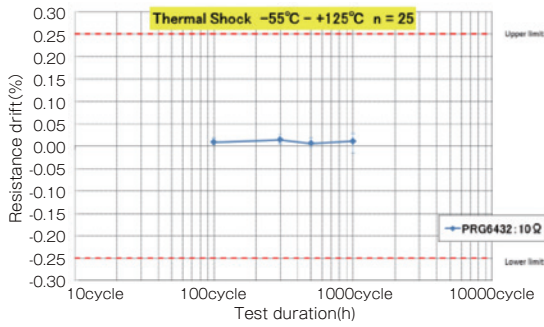
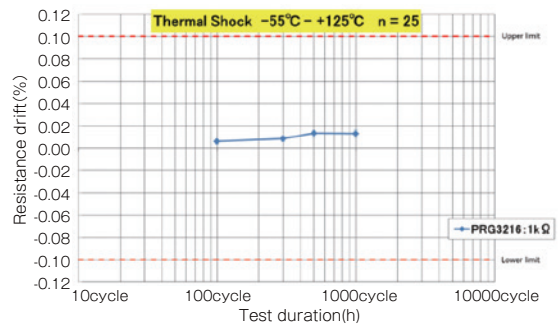
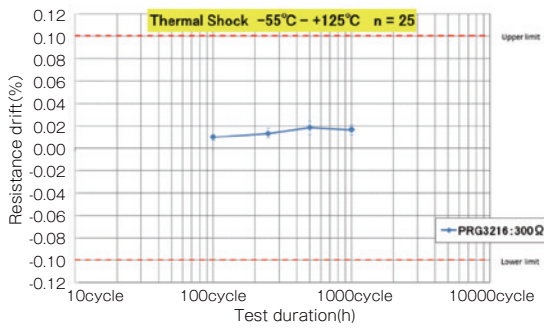
#### Biased life test



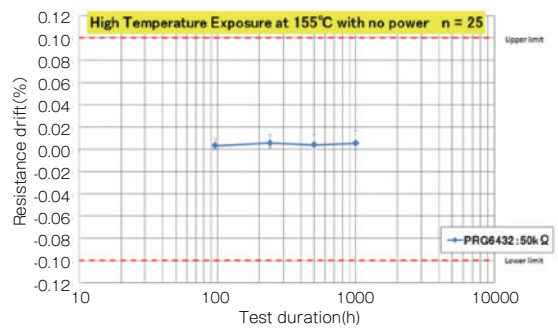
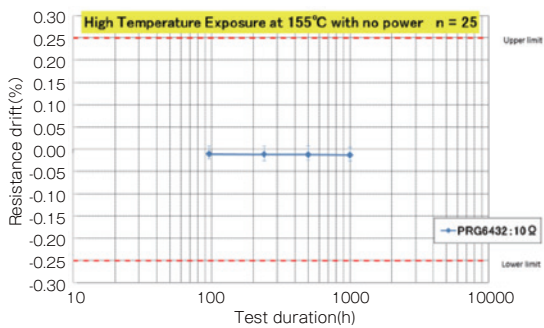
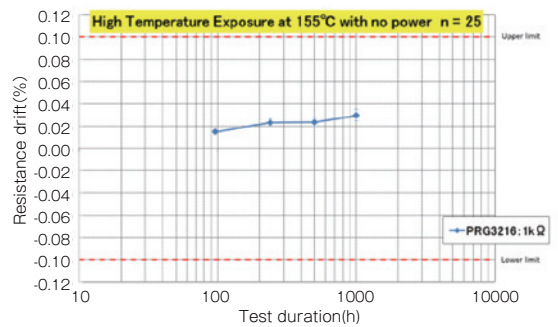
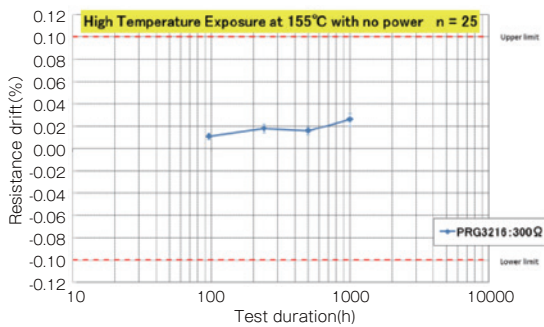
#### High temperature high humidity (biased)



○ Temperature shock

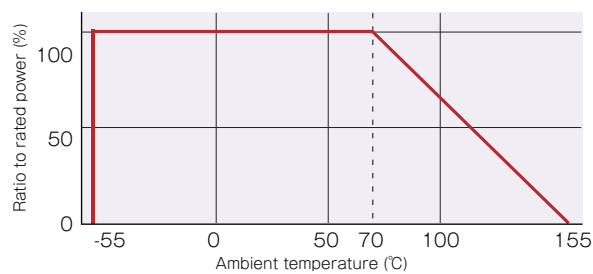


○ High temperature exposure



◆ Derating Curve

○ PRG3216



○ PRG6432

