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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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# 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 ~ 100K $\Omega$
- 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

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



Thin film surface mount resistors

HRG series

## ◆ Part numbering system

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

Series code

Size: HRG3216

Temperature coefficient of resistance

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

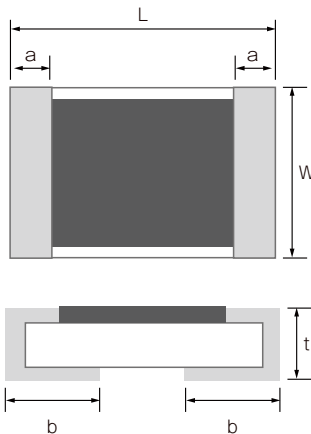
Resistance tolerance

Packaging quantity:  
T1(1,000pcs), T5(5,000pcs)

## ◆ Electrical Specification

Type	Power ratings	Temperature coefficient of resistance (ppm/ $^\circ\text{C}$ )	Resistance range( $\Omega$ ) Resistance tolerance		Maximum voltage	Resistance value series	Operating temperature	Packaging quantity
			$\pm 0.1\%$ (B)	$\pm 0.5\%$ (D)				
HRG3216	1.0W	$\pm 25$ (P)	$47 \leq R \leq 100\text{k}$		200V	E-24, E-96	$-55^\circ\text{C} \sim 155^\circ\text{C}$	T1 T5
		$\pm 50$ (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	$3.20 \pm 0.20$	$1.60 \pm 0.20$	$0.50 \pm 0.25$	$1.10 \pm 0.20$	$0.45 \pm 0.10$

(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)

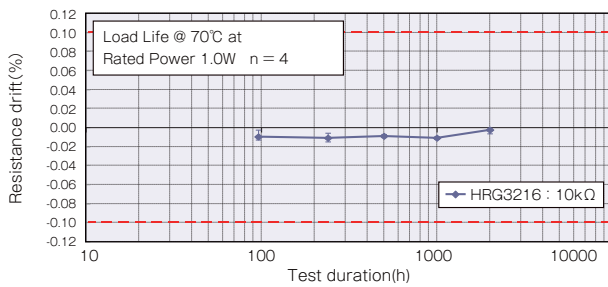
\*1 Rated voltage is given by  $E = \sqrt{R \times P}$   
 E= rated voltage (V), R=nominal resistance value(Ω), P=rated power(W)  
 If rated voltage exceeds maximum voltage /element, maximum voltage/element is the rated voltage.

Thin film surface mount resistors

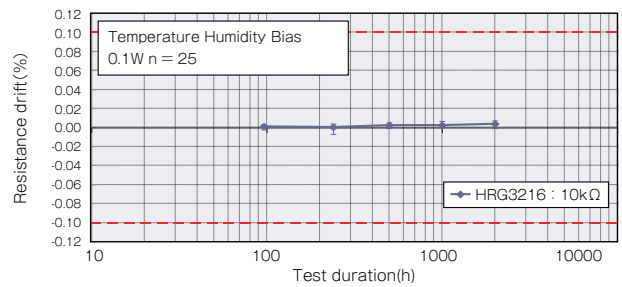
HRG series

## ◆ Reliability test data

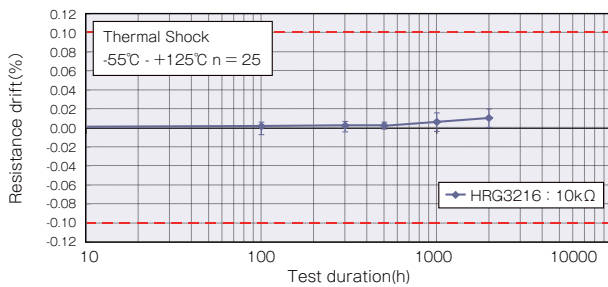
### ○ Biased life test



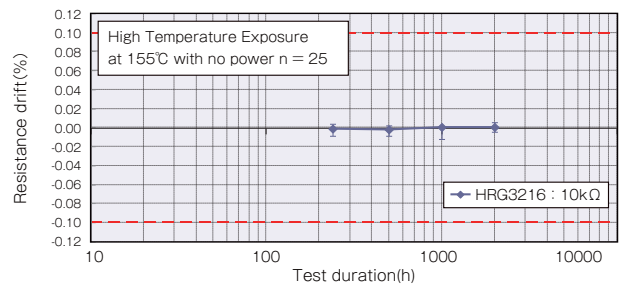
### ○ High temperature high humidity (biased)



### ○ Temperature shock



### ○ High temperature exposure



## ◆ Derating Curve

