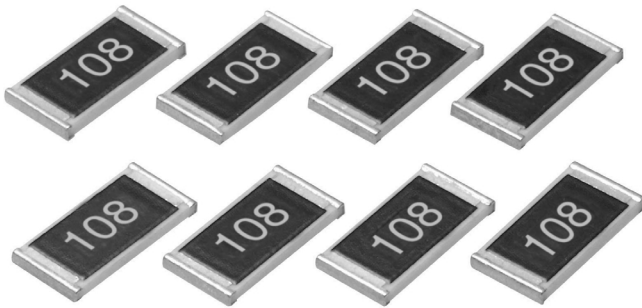




ELECTRO-MECHANICS

Thick Film Chip Resistors.

Rectangular type – High ohms



☞ The new product will be available on the market from the second quarter of year 2002.

FEATURES

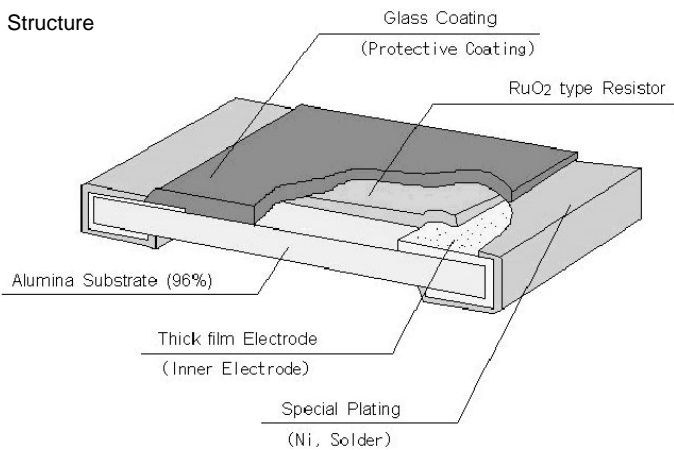
- Over 10 Mega ohms.
- Both flow and reflow soldering are applicable.
- Suitable size and packaging for surface mount assembly.

APPLICATION

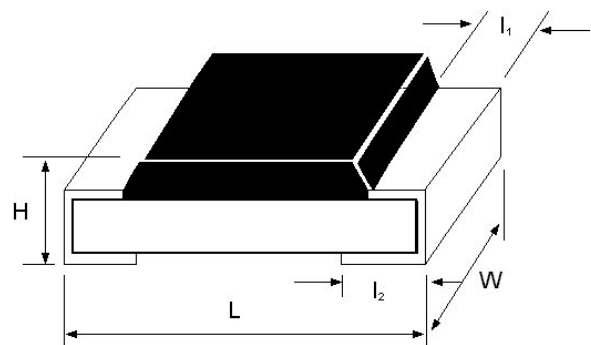
- Limiting voltage current for output part.
- For infrared rays sensors, etc.

STRUCTURE AND DIMENSIONS

Structure



Dimensions



(UNIT : mm)

TYPE	inch	Power (W)	L	W	H	l ₁	l ₂	Unit Weight
RC1608	0603	1/10	1.60±0.10	0.80±0.15	0.45±0.10	0.30±0.20	0.35±0.20	2.1mg
RC2012	0805	1/8	2.00±0.20	1.25±0.15	0.50±0.10	0.40±0.20	0.35±0.20	4.9mg
RC3216	1206	1/4	3.20±0.20	1.60±0.15	0.55±0.10	0.45±0.20	0.40±0.20	9.5mg

PARTS NUMBERING SYSTEM

- The part number system shall be in the following format

RC	2012	J	108	CS
Code Designation	Dimension & Size Code	Tolerance	Resistance Value	Packaging Code
RC : Chip Resistor	1608 : 1.6×0.8(mm)——0603(inch) 2012 : 2.0×1.2(mm)——0805(inch) 3216 : 3.2×1.6(mm)——1206(inch)	J : ± 5% K : ± 10% M : ± 20%	3 digits coding system (IEC coding system) (E-24,12,6 series)	GS: Bulk Packaging CS: Tape Packaging 7" ES: Tape Packaging 10" FS: Tape Packaging 13" AS: Tape Packaging 13"

SPECIFICATION

TYPE	Power Rating(W)	Working Voltage(MAX)	Overload Voltage(MAX)	TCR (ppm/°C)	Resistance Range (Ω)			Rated Ambient Temperature	Rated Working Temperature
					J(±5%) E-24	K(±10%) E-12	M(±20%) E-6		
RC1608	1/10	15(V)	30(V)	±2000ppm	10MΩ-3GΩ	10MΩ-3GΩ	10MΩ-3GΩ	70°C	-55°C ~ +125°C
RC2012	1/8	15(V)	30(V)		10MΩ-3GΩ	10MΩ-3GΩ	10MΩ-3GΩ		
RC3216	1/4	20(V)	40(V)		10MΩ-3GΩ	10MΩ-3GΩ	10MΩ-3GΩ		

• Rated voltage (V) = $\sqrt{\text{Rated power (W)} \times \text{Normal resistance value (R)}}$

Rated voltage should be lower than (MAX) working voltage.

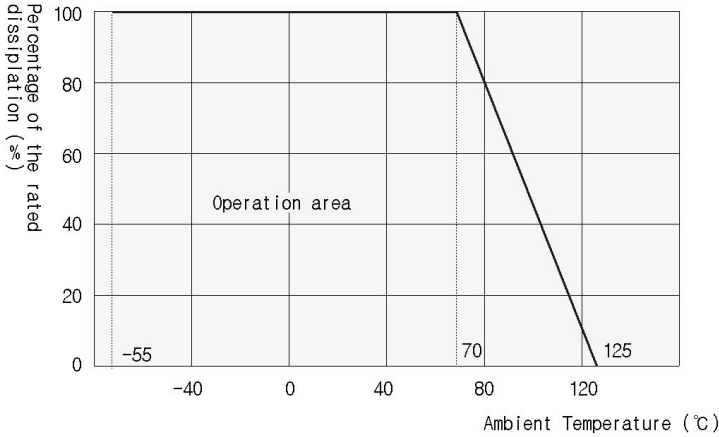
Thick Film Chip Resistors.

Rectangular type – High ohms

■ POWER DERATING CURVE

The rated power is the maximum continuous loading power at 70°C ambient temperature.

For ambient temperature above 70°C, the loading power follows the below power derating curve.



■ MARKING

- 3 digits indication (E-24, E-12, E-6 series)

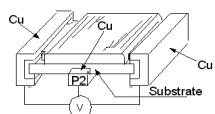
- Left 2 digits represent significant figures.
- Last 1 digit represents exponential number of 10.

- Example : **108**
 Left 2 digits : **10**
 Last 1 digit : **8**
 $108 = 10 \times 10^8 \Omega$
 $= 10 \times 100000000 \Omega$
 $= 10G\Omega$

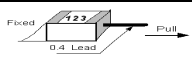


■ CHARACTERISTICS PERFORMANCE

• Electrical Characteristic

Item	Requirements Specification	Test Methods
Direct Current Resistance	Within the regulated resistance tolerance.	JIS C 5202 (5.1) Voltage apply within 5 sec.
Temperature Characteristic	$\pm 2,000\text{ppm}$	$T.C.R(\text{ppm}/^\circ\text{C}) = (R - R_{20}) / R_{20} \times 1 / (T / T_{20}) \times 10^6$ $\times T = \text{Test Temperature}, T_{20} = 20^\circ\text{C}$ $R = \text{Resistance at } T, R_{20} = \text{Resistance at } T_{20}$
Intermittent Overload	ΔR	2.5 times of rated voltage. 1 second ON, 25 second OFF. 10000cycles.
	Visual	
Dielectric Withstanding Voltage	No evidence of mechanical damage.	Apply voltage for 1 minute. Voltage : 30V
Insulation Resistance	Over 1,000G Ω	

• Mechanical Characteristic

Item	Requirements Specification	Test Methods
Solderability	Coverage : $\geq 95\%$ each termination.	Rosin Flux : Rosin 25%, Methanol 75% Solder Temp. : $235 \pm 5^\circ\text{C}$ Dipping time : $2 \pm 0.5\text{sec}$.
Bending Test	ΔR	After soldering resistor on the PCB, 3mm of bending shall be applied for 10 sec.
	Visual	
Terminal Strength	1608 : Over 0.3kg Others : Over 0.5kg	Pull direction fixed 0.4 lead. 

• Environmental Characteristic

Item	Requirements Specification	Test Methods
Temperature Cycle	ΔR	Test Temperature($^\circ\text{C}$) : -55 \rightarrow 20 \rightarrow 125 \rightarrow 20 Test Time (minute) : 30 \rightarrow 15 \rightarrow 30 \rightarrow 15
	Visual	
Load Life	ΔR	Test Voltage : rated voltage Temp : $70 \pm 3^\circ\text{C}$ Time : $1,000^{+48}$ hours (90min ; ON, 30min ; OFF)
	Visual	
Moisture Resistance	ΔR	Test voltage : rated voltage Test Temp. : $40 \pm 2^\circ\text{C}$ Time : $1,000^{+48}$ hours (90min:ON,30min:OFF) Humidity : 90~95% RH Stabilize for 1hrs & Measure.
	Visual	