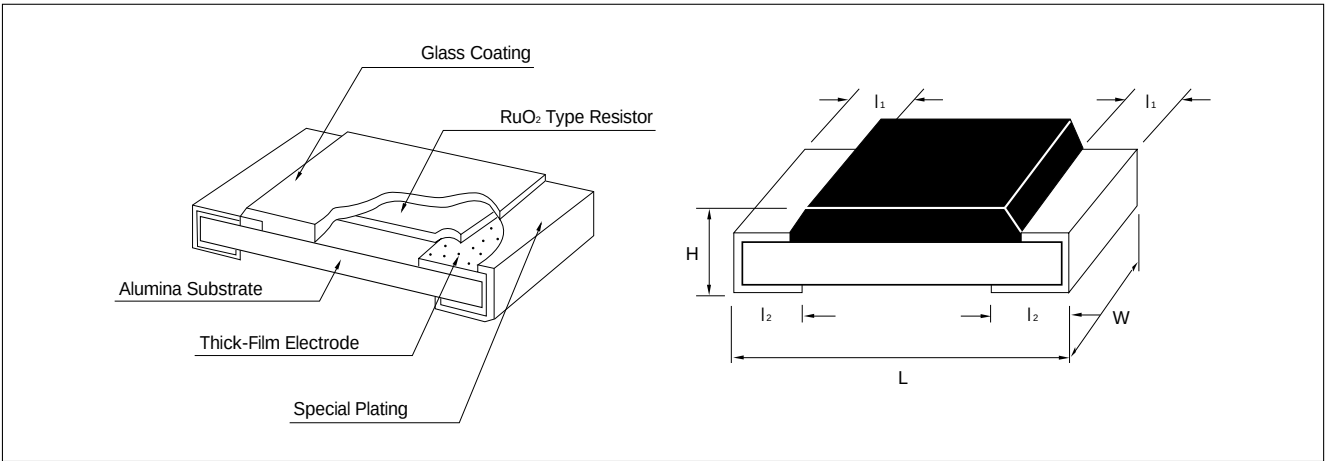


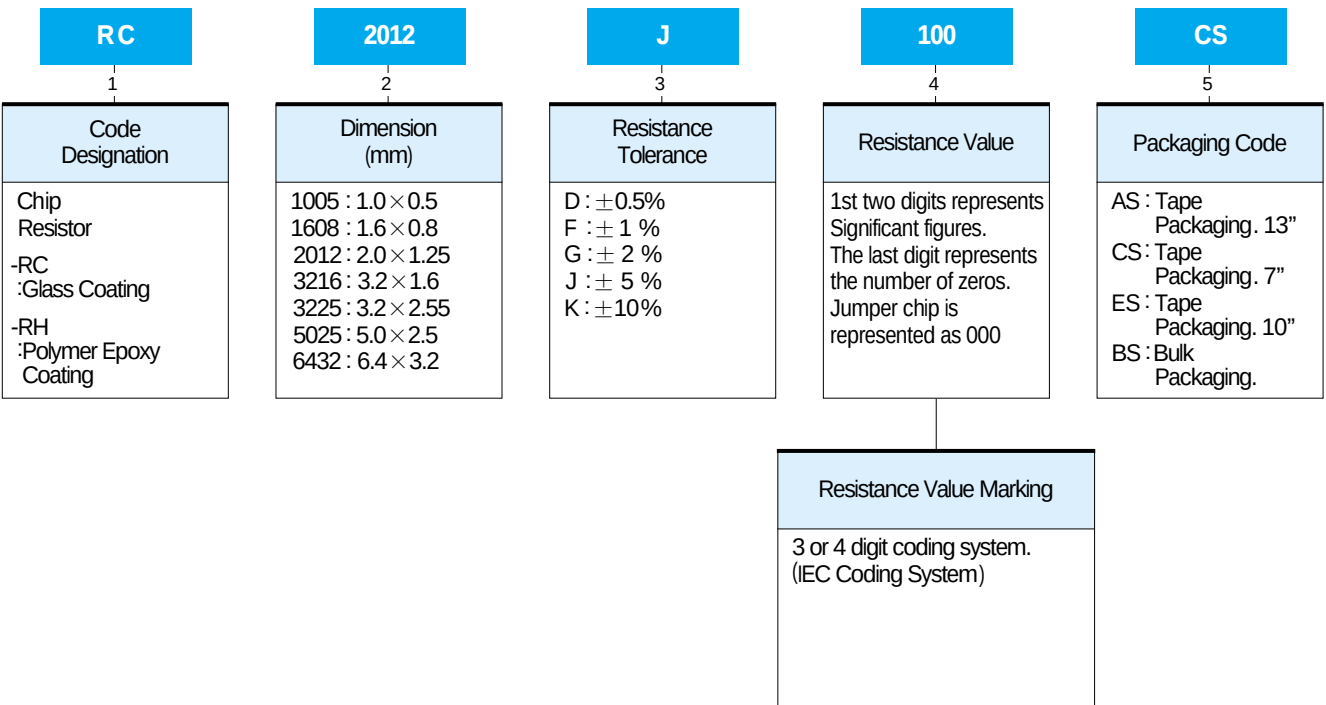
STRUTURE AND DIMENSIONS



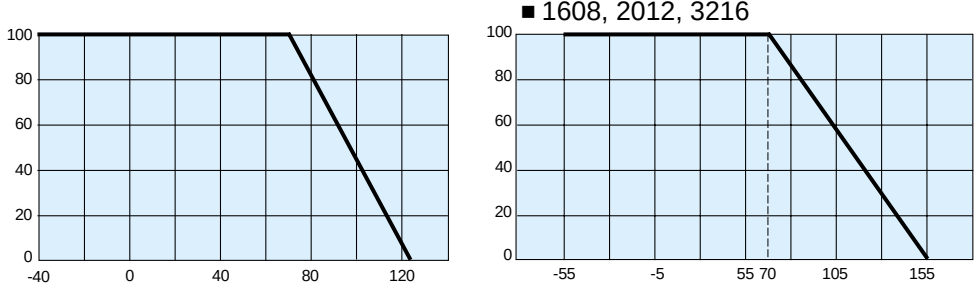
(UNIT : mm)

Type	L	W	H	l ₁	l ₂
RC1005(1/16W)	1.00 ± 0.05	0.50 ± 0.05	0.35 ± 0.05	0.20 ± 0.10	0.25 ± 0.10
RC1608(1/10W)	1.60 ± 0.10	0.80 ± 0.15	0.45 ± 0.10	0.30 ± 0.20	0.35 ± 0.10
RC2012(1/8W)	2.00 ± 0.20	1.25 ± 0.15	0.50 ± 0.10	0.40 ± 0.20	0.35 ± 0.20
RC3216(1/4W)	3.20 ± 0.20	1.60 ± 0.15	0.55 ± 0.10	0.45 ± 0.20	0.40 ± 0.20
RC3225(1/4W)	3.20 ± 0.20	2.55 ± 0.20	0.55 ± 0.10	0.45 ± 0.20	0.40 ± 0.20
RC5025(1/2W)	5.00 ± 0.15	2.50 ± 0.15	0.55 ± 0.15	0.60 ± 0.20	0.60 ± 0.20
RC6432(1W)	6.30 ± 0.15	3.20 ± 0.15	0.55 ± 0.15	0.60 ± 0.20	0.60 ± 0.20

PARTS NUMBERING SYSTEM



GENERAL SPECIFICATION

Description	RC1005	RC1608	RC2012	RC3216	RC3225	RC5025	RC6432
Power Rating (W) at 70℃	0.063W	0.10W	0.125W	0.25W	0.25W	0.5W	1W
Power Derating Curve	 ■ 1608, 2012, 3216 The rated power is the maximum continuous loading power at 70℃ ambient temperature. For ambient temperature's above 70℃ the loading power follows the above power derating curve.						
Rated Voltage	$\sqrt{\text{Rated power(w)} \times \text{Normal resistance value (W)}}$						
Working Voltage (Max)	50V	50V	50V	150V	200V	200V	200V
Overload Voltage (Max)	100V	100V	100V	300V	400V	400V	400V
Resistance Range	(UNIT: Ω)						
D(±0.5%)	-	10~1M	10~1M	10~1M	10~1M	-	-
F(±1%), G(±2%)	10~1M	10~1M	10~1M	10~1M	10~1M	10~1M	10~1M
J(±5%)	10~1M	1~10M	1~10M	1~10M	1~10M	1~10M	1~10M
K(±10%)	10~1M	1~10M	1~10M	1~10M	1~10M	1~10M	1~10M
Jumper Chip	50 mΩ max						
Operating Temperature Range	-55℃ ~ 125℃ -55℃ ~ 155℃ (For 1608, 2012, 3216)						
Rated Temperature Range	70℃						
Temperature Coefficient	Resistance Tolerance	Resistance Range		Temperature Coefficient			
	J (±5%) K (±10%)	1 Ω ≤ R ≤ 10 MΩ		±(300/200) PPM/℃			
		10 Ω ≤ R < 1 MΩ		±100 PPM/℃			
		1 MΩ ≤ R < 10 MΩ		±3 00 PPM/℃			
	G (±2%) F (±1%) D (±0.5%)	10 Ω ≤ R < 1 MΩ		±100 PPM/℃			

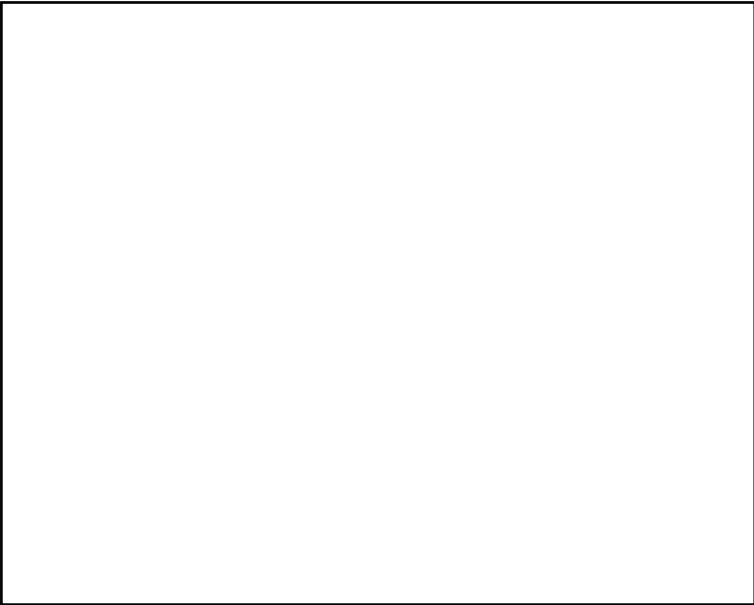
* Please specify wattage when power rathing at the mark(*) is required at the time of ordering.

SPECIFICATION IN THE LOW RESISTANCE RANGE

Description	RC2012	RC3216	RC3225	RC5025	RC6432
Power Rating (W) at 70℃	0.10W	0.125W *0.25W	0.25W	0.5W	1W
Power Derating Curve	POWER Derating Curve The rated power is the maximum continuous loading power at 70℃ ambient temperature. For ambient temperature's above 70℃ the loading power follows the above power derating curve.				
Rated Voltage	$\sqrt{\text{Rated power (W)} \times \text{Normal resistance value (}\Omega\text{)}}$				
Working Voltage (Max)	50V	100V	200V	200V	200V
Overload Voltage (Max)	100V	200V	400V	400V	400V
Resistance range	(UNIT : Ω)				
F(±1%)	0.2 Ω ~ 0.91 Ω (E24 Series)				
G(±2%)					
J(±5%)					
K(±10%)					
Operating temperature range	-55℃ ~ 125℃				
Rated Ambient Temperature	70℃				
Temperature Coefficient	Resistance Tolerance	Resistance Range	Temperature Coefficient		
	F(±1%)	0.2 Ω ≤ R ≤ 1 Ω	±200 PPM/℃		
	G(±2%)	0.2 Ω ≤ R ≤ 1 Ω	±200PPM/℃		
	J(±5%)	0.2 Ω ≤ R ≤ 1 Ω	±(600/300)PPM/℃		
	K(±10%)	0.2 Ω ≤ R ≤ 1 Ω	±(600/300)PPM/℃		

* Please specify wattage when power rathing at the mark(*) is required at the time of ordering.

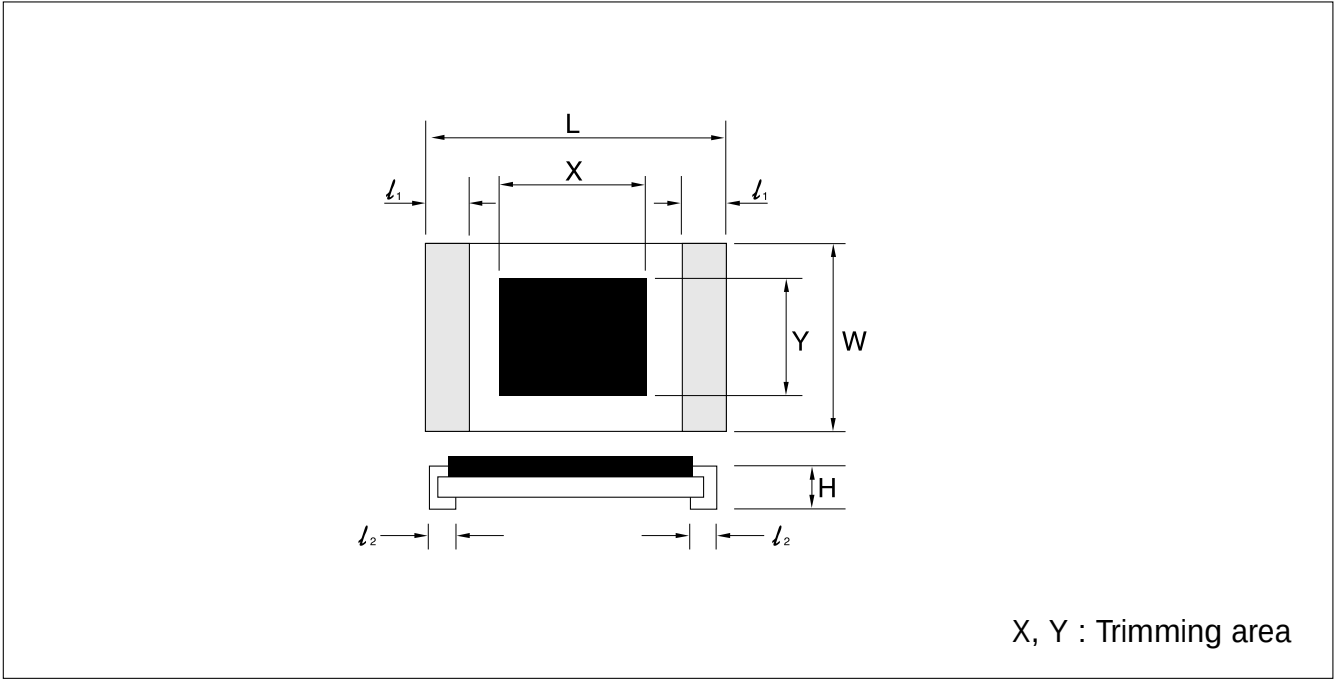
TRIMMABLE CHIP RESISTOR



FEATURES

- Available in use of function trimming.
- Compatible with both wave and reflow soldering.
- Highly stable in auto-placement surface mounting application.
- Excellent eletrical characteristic.

DIMENSIONS



(Unit : mm)

TYPE	L	W	H	l ₁	l ₂	X	Y
RT1608	1.60±0.10	0.80±0.15	0.45±0.10	0.30±0.20	0.35±0.10	0.50±0.10	0.40±0.10
RT2012	2.00±0.20	1.25±0.15	0.50±0.10	0.40±0.20	0.35±0.20	0.70±0.10	0.60±0.10
RT3216	3.20±0.20	1.60±0.15	0.55±0.10	0.45±0.20	0.40±0.20	1.30±0.10	1.00±0.10

GENERAL SPECIFICATION

RT	2012	M	100	CS
Code Designation	Dimension (mm)	Resistance Tolerance	Resistance Value	Packaging Code
Trimmable Chip Resistor	1608:1.6×0.8 2012:2.0×1.25 3216:3.2×1.6	K = ±10%	E12 Series E6 Series (IEC Coding system)	CS : Tape Packaging GS : Bulk Packaging

* RT:DIP Type(Major)

RATING

Type	Power Rating	Working Voltage (MAX)	Over load Voltage (MAX)	Resistance Range	Operating Temperature Range	Rating Ambient Temperature	Temperature Coefficient
RT1608	1/16 W	50 V	100 V	1~10 MΩ	-55 °C ~ +125 °C	+70 °C	±200ppm/ °C ±300ppm/ °C
RT2012	1/10W	100 V	200 V	1~10 MΩ			
RT3216	1/8W	200 V	400 V	1~10 MΩ			
	1/4W	200 V	400 V	1~10 MΩ			

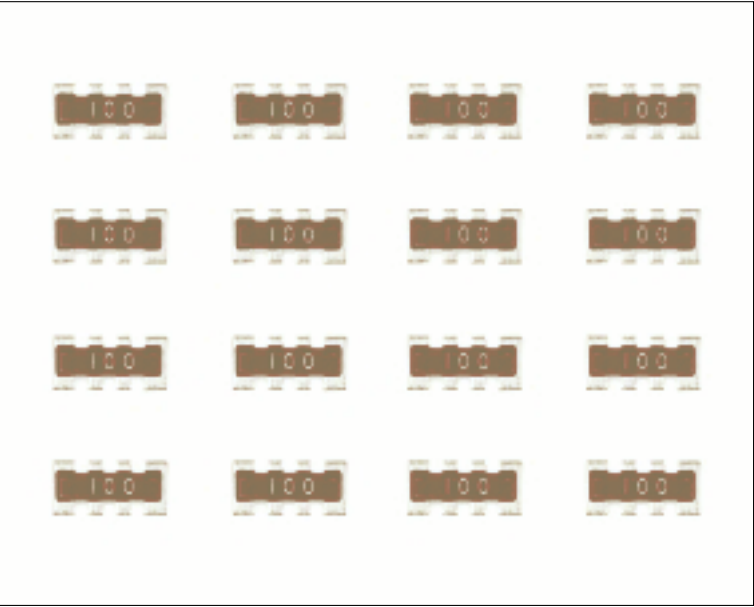
PACKAGING

- The Chip Network Resistors can be supplied with packaged carrier tape for effective use in SMD machine.
- All Reel taping specifications are in accordance with EIAJ RC-1009.
- Standard Quantity :

7 inch reel	5,000/1 reel
13 inch reel	20,000/1 reel

- Chip Resistor for Bulk shall be in the polyethylene bag and Quantity of the Chip Resistors in bag is determined by customer orders.(Standard Quantity : 5,000EA)

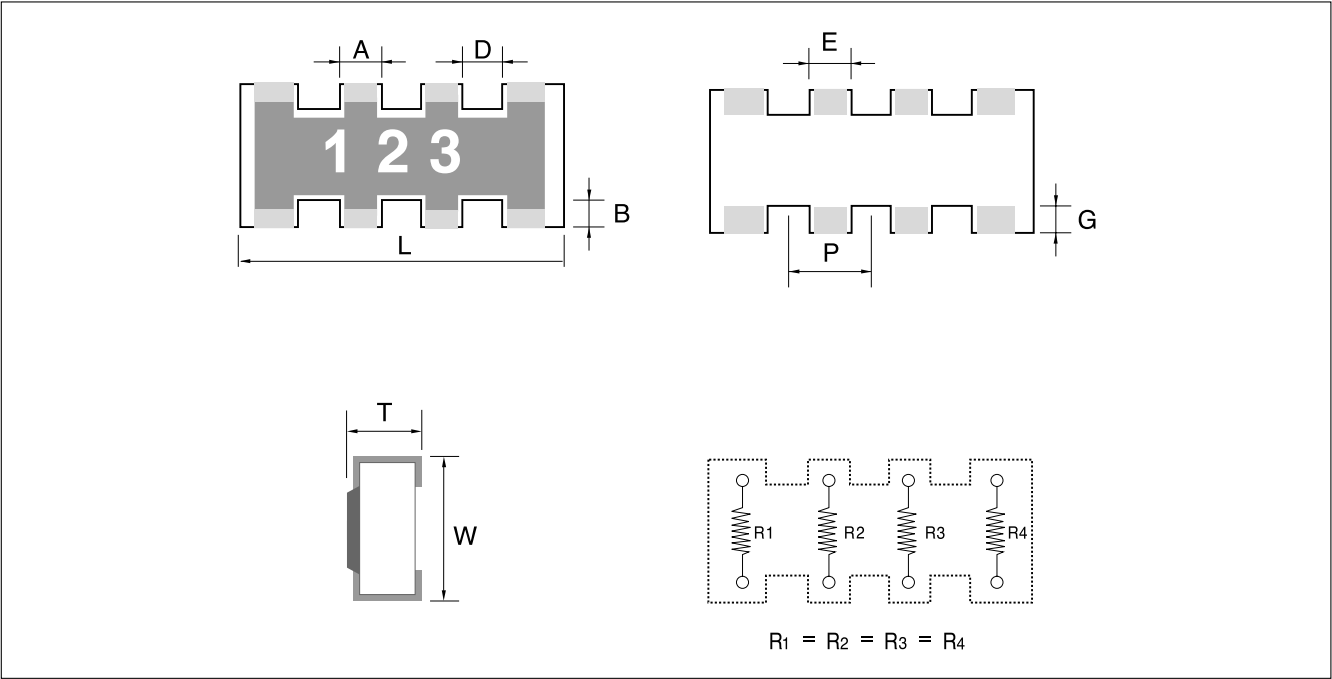
R/R TYPE CHIP NET WORK RESISTOR



FEATURES

- High density mouting
- Improvement of placement efficiency.
- Automatic placement.

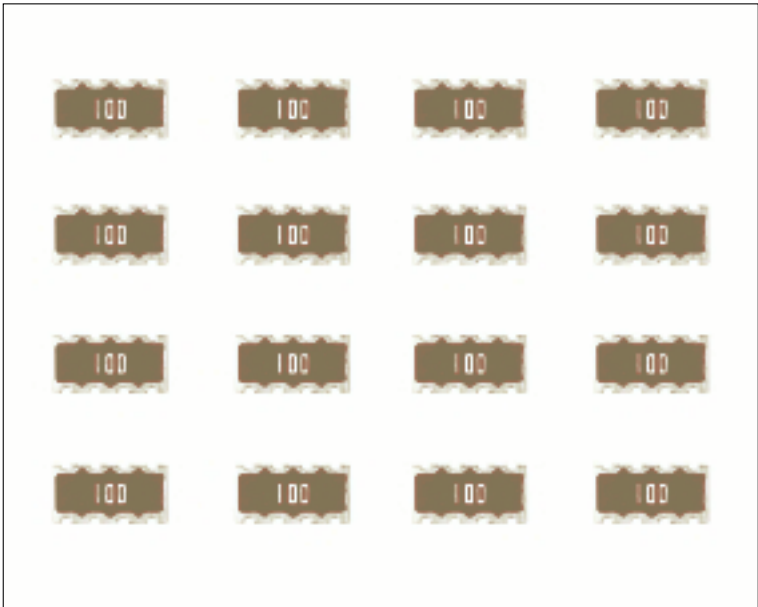
DIMENSIONS



$R_1 = R_2 = R_3 = R_4$

UNIT [mm]									
TYPE	L	W	T	A	D	B	P	E	G
RR164P	3.2±0.2	1.5±0.2	0.5±0.2	0.5±0.2	Max 0.16	0.25±0.2	0.8±0.15	0.5±0.2	0.25±0.2

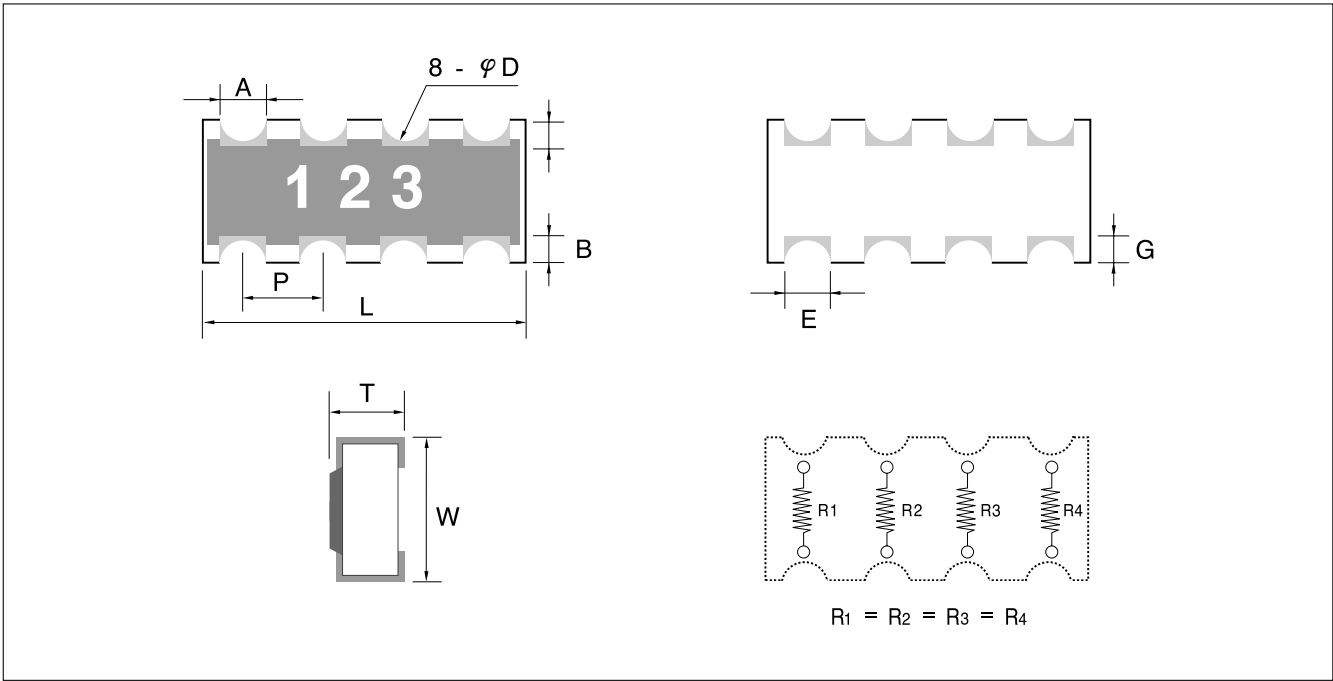
R/R TYPE CHIP NET WORK RESISTOR



FEATURES

- High density mouting
- Improvement of placement efficiency.
- Automatic placement.

DIMENSIONS



UNIT [mm]									
TYPE	L	W	T	A	D	B	P	E	G
RN164P	3.2±0.2	1.6±0.2	0.6±0.1	0.45±0.1	0.3±0.1	0.3±0.2	0.8±0.1	0.45±0.1	0.40±0.15

PARTS NUMBERING SYSTEM

RP/RN	16/10	4P	J	103	CS
Code Designation	Dimension (mm)	Number of Resistors	Resistance Tolerance	Resistance Value	Packaging Code
Chip Network Resistor	16:1608 Type 10:1005 Type	4p : 4 Resistors	G : $\pm 2\%$ J : $\pm 5\%$ K : $\pm 10\%$	E24 Series (IEC Coding system)	CS/AS/ES : Tape Packaging GS : Bulk Packaging

- * RP, RR: Dip Type(Convex Type)
- * RN: Through Hole Type(Concave Type)

RATING

Type	Power Rating	Working Voltage (MAX)	Overload Voltage (MAX)	Resistance Range	Operting Temperature Range	Rating Ambient Temperature	Temperature Coefficient
RP104P	1/16W	50V	100V	10~1M	-55 ~ 125°C	+70°C	± 250 PPM/°C
RP164P	1/16W	50V	100V	10~1M	-55 ~ 125°C	+70°C	± 250 PPM/°C
RN164P	1/16W	50V	100V	10~1M	-55 ~ 125°C	+70°C	± 250 PPM/°C

PACKAGING

- The Chip Network Resistors can be supplied packaged carrier tape for effective use SMD machine.
- All Reel taping specifications are in accordance with EIAJ RC-1009.
- Standard Quantity :

7 inch reel	5,000EA/1 reel
10 inch reel	10,000EA/1 reel
13 inch reel	20,000EA/1 reel(15,000EA/1reel)

- Chip Network Resistor for Bulk shall be in the plastic case and Quantity of the Chip Resistors in bag is determined by customer orders.(Standard Quantity : 5,000EA)

CHARACTERISTICS PERFORMANCE

ELECTRICAL CHARACTERISTICS

Item	Specification	Test Method														
Direct Current Resistance	Within the regulated resistance tolerance. Jumper chip $\leq 50 \text{ M}\Omega$	Applying time:within 5 sec <table><tr><th>Resistance range(Ω)</th><th>Max test voltage(V)</th></tr><tr><td>R <100</td><td>0.3</td></tr><tr><td>$100 \leq R < 1\text{K}$</td><td>1.0</td></tr><tr><td>$1\text{K} \leq R < 10\text{K}$</td><td>3</td></tr><tr><td>$10\text{K} \leq R < 100\text{K}$</td><td>10</td></tr><tr><td>$100\text{K} \leq R < 1\text{M}$</td><td>25</td></tr><tr><td>$1\text{M} \leq R$</td><td>50</td></tr></table>	Resistance range(Ω)	Max test voltage(V)	R <100	0.3	$100 \leq R < 1\text{K}$	1.0	$1\text{K} \leq R < 10\text{K}$	3	$10\text{K} \leq R < 100\text{K}$	10	$100\text{K} \leq R < 1\text{M}$	25	$1\text{M} \leq R$	50
Resistance range(Ω)	Max test voltage(V)															
R <100	0.3															
$100 \leq R < 1\text{K}$	1.0															
$1\text{K} \leq R < 10\text{K}$	3															
$10\text{K} \leq R < 100\text{K}$	10															
$100\text{K} \leq R < 1\text{M}$	25															
$1\text{M} \leq R$	50															
T.C.R(Resistance Temperature Characteristic)	$1 \leq R < 10$:+300ppm/℃ -200ppm/℃ $10 \leq R < 1\text{M}$:± 100ppm/℃ $1\text{M} \leq R \leq 10\text{M}$:± 300ppm/℃	Test temperature(℃) (20) → (-55) → (20) → (125) → (20) T.C.R(ppm/℃) = (R-Ro)/Ro × 1/(T-To) × 10 ⁶ T = 20(℃) T = Test temperature(℃) Ro = Resistance at room temperature(Ω) R = Resistance at T(Ω)														
Short-time Overload	ΔR : $\leq \pm(1\%+0.1 \Omega)$ of the initial value Visual : No evidence of mechanical damage Jumper chip : $\leq 50 \text{ M}\Omega$	Apply 2.5 times rated voltage for 5sec. Wait 30 minutes at room temperature and measure the resistance value.														
Intermittent Overload	ΔR : $\leq \pm(3\%+0.1 \Omega)$ of the initial value Visual : No evidence of mechanical damage Jumper chip : $\leq 50 \text{ M}\Omega$	Perform 10,000 cycles at 2.5 times RCW or the Max. over load voltage ON(2.5 times rated volage) : 1 sec OFF : 25 sec Have stabilization time of 30 minutes without loading and measure resistance.														
Dielectric withstand-ing Voltage	No evidence of mechanical damage.	Apply AC 500V for 1 minute. 1005(1/16W), 1608(1/16W):Apply AC 100V for 1 minute														
Insulation Resistance	Over the 1000 $\text{M}\Omega$	Apply DC 500V for 1 minute. 1005(1/16W), 1608(1/16W):Apply DC 100V for 1 minute														

MECHANICAL CHARACTERISTICS

Item	Specification	Test Method												
Solderability	Coverage : $\geq 95\%$ each termination. Visual : No crack of termination parts and ceramic exposure of surface by melting	After immersing in flux, dip into the $235 \pm 5^\circ\text{C}$ molten solder for 2 ± 0.5 sec Solder : S63A(KSD 6704) Flux : ROSIN(KSM 2951) Flux is the composition of ROSIN and the methanol Weight rate of ROSIN is about 25%												
Bending Test	$\Delta R : \leq \pm(0.5\%+0.05 \Omega)$ of the initial value Visual : No evidence of mechanical damage.	After soldering resistor on the PCB, 3mm of bending shall be applied for 10 sec. Material of PCB : Glass Epoxy Thickness : 1.6mm Measure resistance during load application												
Terminal Strenght	Load pull : $\geq 0.5\text{kg}$ 1005(1/16W), 1608(1/16W) $\geq 0.3\text{kg}$	pull Direction fixed 0.4 lead												
Terminal Strenght	$\Delta R : \leq \pm(1\%+0.05 \Omega)$ of the initial value Visual : No evidence of mechanical damage.	Immerse in molten solder at $260 \pm 5^\circ\text{C}$ for 10 ± 1 sec. Preheat and soldering Procedure												
		<table><tr><th>Temperature($^\circ\text{C}$)</th><th>Time(sec)</th></tr><tr><td>80 - 100</td><td>120</td></tr><tr><td>150 - 180</td><td>120</td></tr><tr><td>260 + 5</td><td>10</td></tr><tr><td>150 - 180</td><td>60</td></tr><tr><td>80 - 100</td><td>60</td></tr></table> Solder : S63A(SSD 6704) Flux : The composition of ROSIN (KSM295)25% and methanol (KSM 1658)75%	Temperature($^\circ\text{C}$)	Time(sec)	80 - 100	120	150 - 180	120	260 + 5	10	150 - 180	60	80 - 100	60
Temperature($^\circ\text{C}$)	Time(sec)													
80 - 100	120													
150 - 180	120													
260 + 5	10													
150 - 180	60													
80 - 100	60													
Anti-Vibration Test	$\Delta R : \leq \pm(1\%+0.05 \Omega)$ of the initial value Visual : No evidence of mechanical damage.	2 hours each in X, Y, and Z axis(toyal 6 hours) 10 to 55 Hz sweep in 1 minute amplitude.												

ELECTRICAL CHARACTERISTICS

Item	Specification	Test Method															
Low Temperature exposure	$\Delta R : \leq \pm (3\% + 0.1 \Omega)$ of the initial value. Visual : No evidence of mechanical damage.	Dwell in $-55 \pm 3^\circ\text{C}$ chamber without loading for 1000 ± 12 hours Dwell for 60 minutes at Room temperature and Measure resistance value.															
Temperature Cycle	$\Delta R : \leq \pm (1\% + 0.1 \Omega)$ of the initial value. Visual : No evidence of mechanical damage.	Perform 100Cycles as follows. <table> <tr> <th>No.</th><th>Temperature($^\circ\text{C}$)</th><th>Time(min)</th></tr> <tr> <td>1</td><td>-55 ± 3</td><td>30</td></tr> <tr> <td>2</td><td>20 ± 3</td><td>15</td></tr> <tr> <td>3</td><td>125 ± 3</td><td>30</td></tr> <tr> <td>4</td><td>20 ± 3</td><td>15</td></tr> </table>	No.	Temperature($^\circ\text{C}$)	Time(min)	1	-55 ± 3	30	2	20 ± 3	15	3	125 ± 3	30	4	20 ± 3	15
No.	Temperature($^\circ\text{C}$)	Time(min)															
1	-55 ± 3	30															
2	20 ± 3	15															
3	125 ± 3	30															
4	20 ± 3	15															
Load Life in Moisture	At $R < 10 \Omega$ $\Delta R : \leq \pm 5\%$ At $R < 1 \text{ M}\Omega$ $\Delta R : \leq \pm (3\% + 0.1 \Omega)$ At $R \geq 1 \text{ M}\Omega$ $\Delta R : \leq \pm 5\%$ Visual : No evidence of mechanical damage.	Temperature : $40 \pm 2^\circ\text{C}$ RH : 90~95% Applying rated voltage for 90 minutes "ON" and 30minutes"OFF" Duration : 1000 hours Dwell in Room temperature for 1 hour and measure resistance value.															
Load Life in high Temperature	At $R < 10 \Omega$ $\Delta R : \leq \pm 5\%$ At $R < 1 \text{ M}\Omega$ $\Delta R : \leq \pm (3\% + 0.1 \Omega)$ At $R > 1 \text{ M}\Omega$ $\Delta R : \leq \pm 5\%$	Temperature : $70 \pm 3^\circ\text{C}$ at rated voltage. Applying rated voltage for 90 minutes "ON" and 30minutes"OFF" Duration : 1000 hours Dwell in Room temperature for 1 hour and measure resistance value.															
Heat Resistance (High Temperature Exposure)	$\Delta R : \leq \pm (3\% + 0.1 \Omega)$ of the initial value. Visual : No evidence of mechanical damage.	Dwell in $125 \pm 3^\circ\text{C}$ chamber without loading for 1000 ± 12 hours Dwell in Room temperature for 1 hour and measure resistance value.															

PACKAGING

- The Chip Resistor can be supplied with packaged carrier tape for effective use in SMD machine.
- All Reel taping specifications are in accordance with EIAJ RC-1009.
- Standard Quantity :

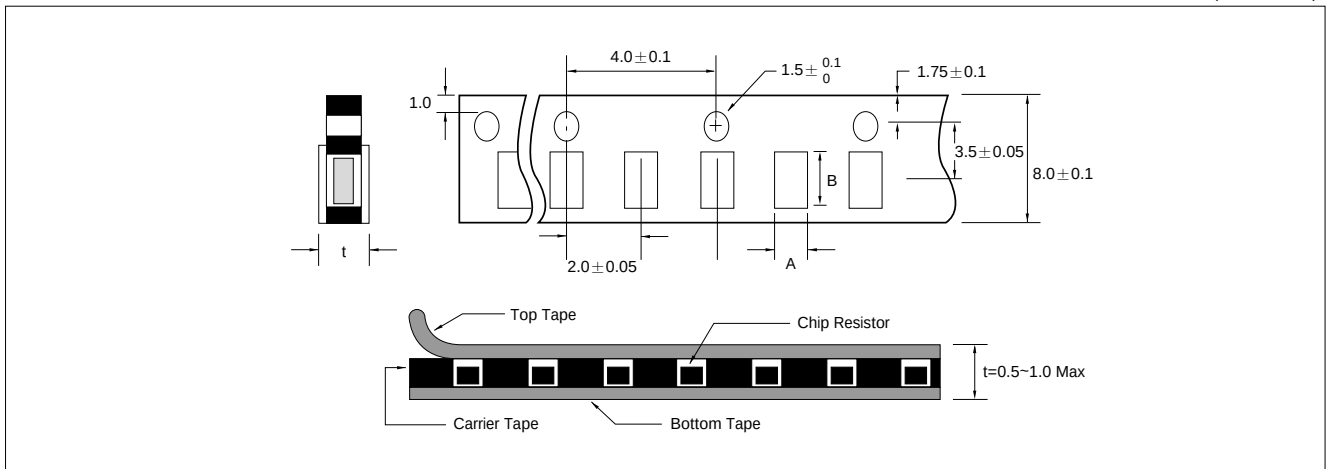
REEL SIZE	1005	1608, 2012, 3216	5025, 6432
7 inch reel	10,000EA/1 reel	5,000EA/1 reel	4,000EA/1 reel
10 inch reel	-	10,000EA/1 reel	-
13 inch reel	40,000EA/1 reel	20,000EA/1 reel	15,000EA/1 reel

- Chip Resistor for Bulk shall be in the plastic Quantity of the
Chip Resistors in bag is determined by custom orders.(Standard Quantity : 5,000EA)

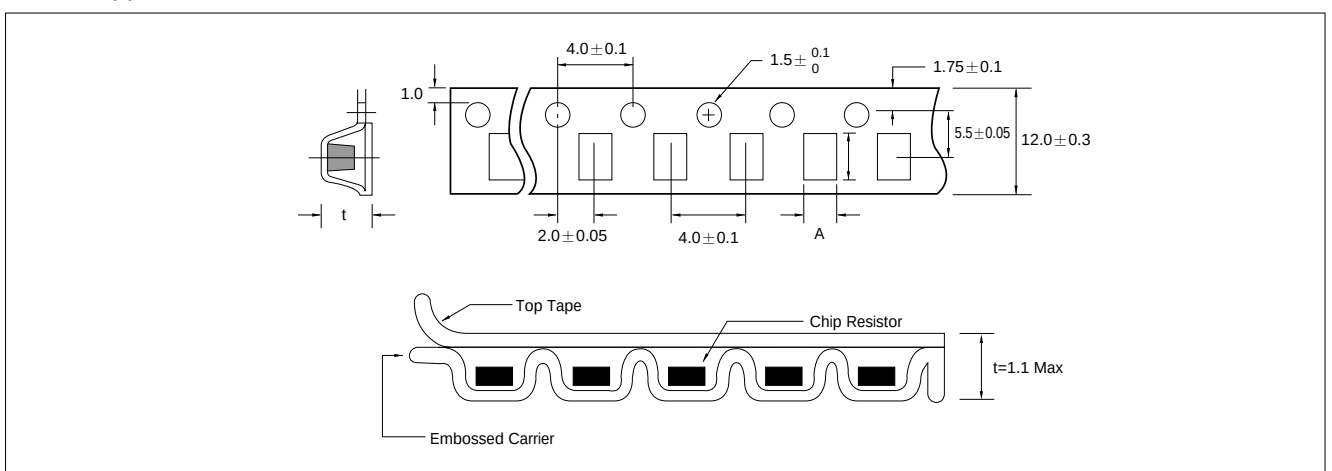
CARRIER TAPE DIMENSIONS

►This is applied to 1005 series.

(Unit: mm)



►This is applied to 5025, 6432 series.



• WINDOW DIMENSIONS

(mm)

SIGN.	ITEM	RC 1005 (1/16W)	RC 5025 (1/2W)	RC 6432 (1W)
A		0.7 ± 0.10	2.80	3.50 ± 0.10
B		1.20 ± 0.10	5.32 ± 0.20	6.75 ± 0.10
t		0.5(MAX)	1.10(MAX)	1.10(MAX)

●

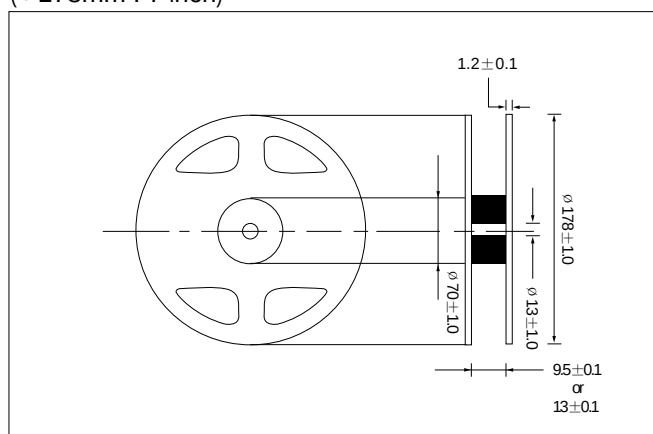
(Unit: mm)



(mm)

The diagram illustrates the components of a tape reel and a segment of the tape. The top part shows a reel with a tape wound around it, divided into sections: Reel, Packed Part, Empty Part, and Lead Part. An arrow points to the Adhesion Tape. The bottom part shows a detailed view of the tape segment, labeled with 'End' and 'Start'. It is divided into sections: Empty portion, Chips, Empty portion, and Lead Part. The 'Chips' section is further divided into '5,000 Pitches or 20,000 Pitches'. The 'Empty portion' sections are labeled '10 Pitches or more'. The 'Lead Part' is labeled '200~250 mm'.

(Φ 178mm : 7 inch)



(Φ 330mm : 13 inch)

