1.SUBJECT : This specification applies on the chip resistors was made by **SYNTON-TECH** Corporation。

2.PART NUMBER : Part number of the chip resistor is identified by the Style, tolerance, resistance value 。

Example : **DESCRIPTION : 0402 5% 10K**

SYNTON CODE : RC 0402 J 103

Product	Style	Tolerance	Resistance Value
CHIP RESISTOR	RC0201:1/20W RC0402:1/16W RC0603:1/10W RC0805: 1/8W RC1206: 1/4W RC1210: 1/3W RC1812: 1/2W RC2010: 3/4W RC1218: 1W RC2512: 1W RC2030: 2W (Please see detail of Figure2)	B : ±0.1% C : ±0.25% D : ±0.5% F : ±1% J : ±5%	E24 Series 5% 3 Digits : 2R2 : 2.2Ω 101 : 100Ω 103 : 10K 105 : 1M E96 Series 1% 4 Digits : 2R20 : 2.2Ω 1000 : 100Ω 1002 : 10K 1004 : 1M

Marking:

(1) 5%tolerance:3 digits, first two digits are significant figures, third digit is number of zeros. Letter R is decimal point.

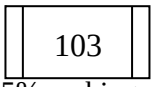
(2) 1%&0.5%tolerance:4 digits, first three digits are significant figures, fourth digit is number of zeros. Letter R is decimal point.

(3) Letter " 0 " ohm is 0 ohm.

(4) *RC0603±1%:E-24 marking first two digits are significant figures, third digit is number.

***RC0603±1%:**E-96 marking. (as the below list)

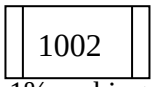
(5) RC0402 / RC0201 no marking.



5%marking

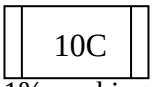
Value=10KΩ

RC0603±1%(E-24)



1%marking

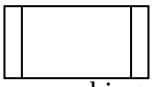
Value=10KΩ



1% marking

Value=12.4KΩ

RC0603±1%(E-96)



no marking

RC0402/RC0201

E-96 MARKING

CodeR	Value	codeR	Value	codeR	Value	codeR	Value	codeR	Value	codeR	Value	codeR	Value	codeR	Value
01	100	13	133	25	178	37	237	49	316	61	422	73	562	85	750
02	102	14	137	26	182	38	243	50	324	62	432	74	576	86	768
03	105	15	140	27	187	39	249	51	332	63	442	75	590	87	787
04	107	16	143	28	191	40	255	52	340	64	453	76	604	88	806
05	110	17	147.	29	196	41	261	53	348	65	464	77	619	89	825
06	113	18	150	30	200	42	267	54	357	66	475	78	634	90	845
07	115	19	154	31	205	43	274	55	365	67	487	79	649	91	866
08	118	20	158	32	210	44	280	56	374	68	499	80	665	92	887
09	121	21	162	33	215	45	287	57	383	69	511	81	681	93	909
10	124	22	165	34	221	46	294	58	392	70	523	82	698	94	931
11	127	23	169	35	226	47	301	59	402	71	536	83	715	95	953
12	130	24	174	36	232	48	309	60	412	72	549	84	732	96	976

This table shows the first two digits for the three-digit EIA-96 part marking scheme.

The third character is a letter multiplier:$Y=10^{-2}$ $X=10^{-1}$ $A=10^{0}$ $B=10^{1}$ $C=10^{2}$ $D=10^{3}$ $E=10^{4}$ $F=10^{5}$

Figure 1

3.ELECTRICAL CHARACTERISTICS

STYLE		RC0201	RC0402	RC0603	RC0805	RC1206	RC1210	RC1812	RC2010	RC1218	RC2512	RC2030
POWER		1/20W	1/16W	1/10W	1/8W	1/4W	1/3W	1/2W	3/4W	1W	1W	2W
Maximum Working Voltage		25V	50V	50V	150V	200V	200V	200V	200V	200V	200V	200V
Maximum Overload Voltage		50V	100V	100V	300V	400V	400V	400V	400V	400V	400V	400V
Dielectric Withstand Voltage		50V	100V	100V	300V	500V	500V	500V	500V	500V	500V	500V
Operating Temp. Range		-55℃ ～ +125℃	—55℃～＋155℃									
Resistance Range	standard		±5%					±1%, ±0.5%, ±0.25%, ±0.1%				
			1 Ω~10MΩ					100Ω~330KΩ				
	special		Low to 0.01Ω High to 100M					Low to 1Ω High to 47M				
Temperature Coefficient (± PPM / ℃)	standard		± 200 PPM/℃					± 100 PPM/℃ (± 200 PPM/℃ For RC0201)				
	special		Special TCR on request									

Figure 2

4. POWER RATING

(1)Power Derating : The rated power at the temperature in excess of 70℃ shall be derated in accordance with figure3

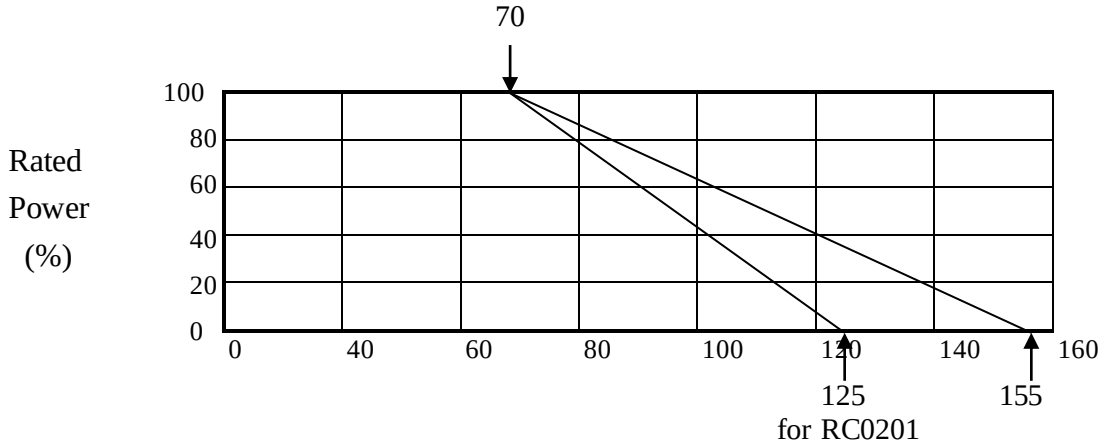


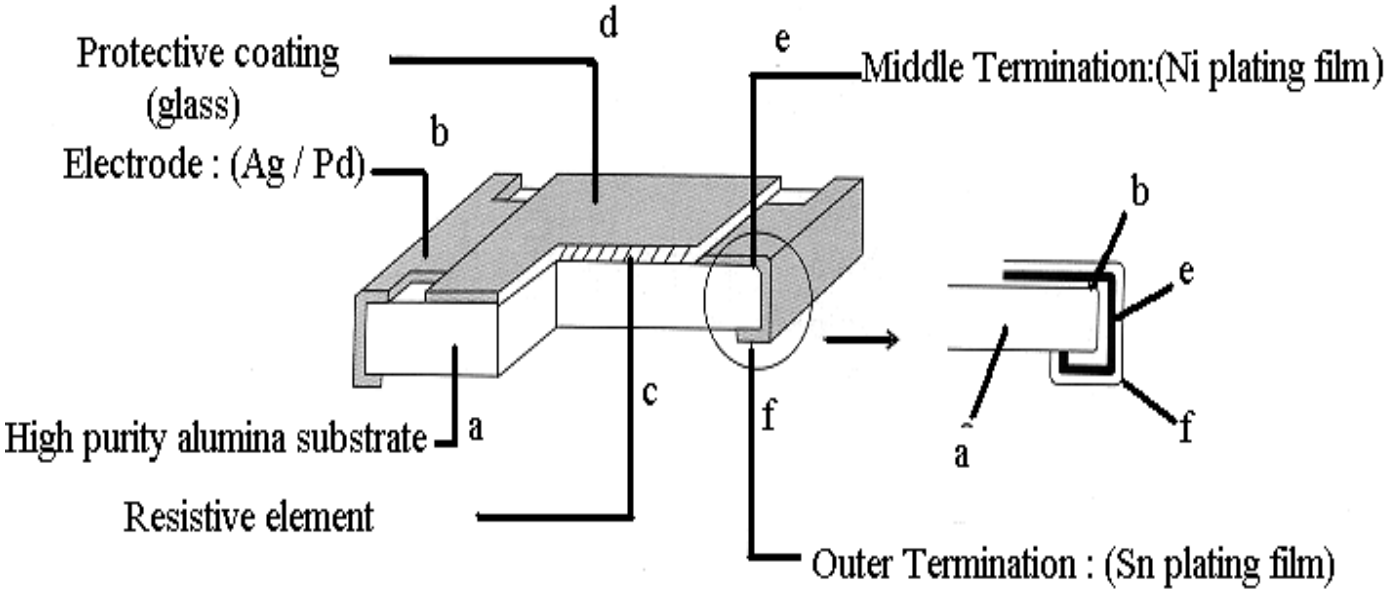
Figure3

(2)Rated Voltage : The DC or AC(rms) continuous working voltage corresponding to the rated power is determined by the following formula:

$$V = \sqrt{R \times P}$$

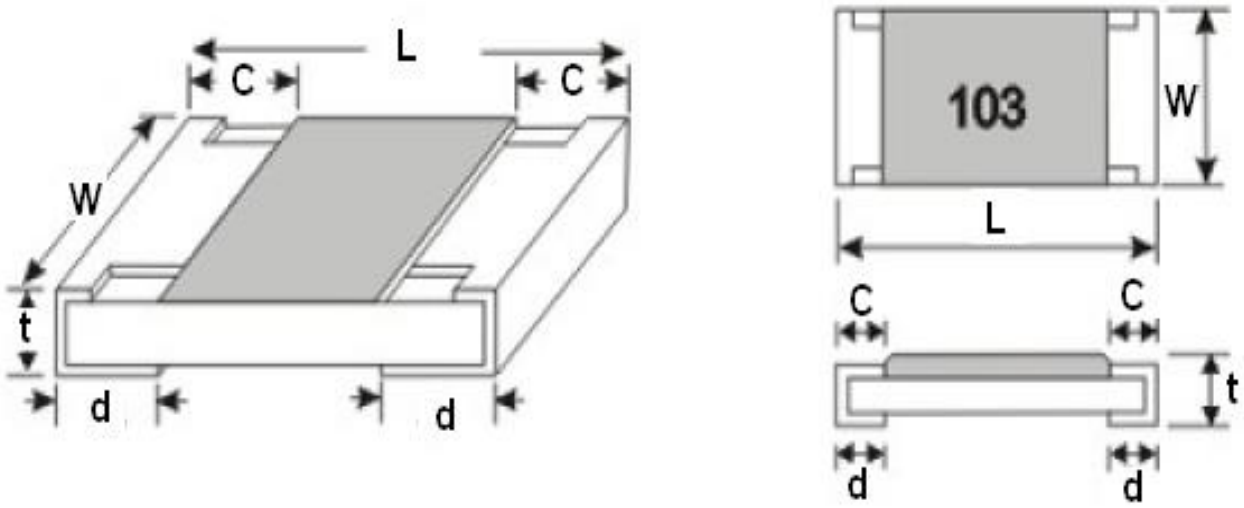
Where V : Continuous rated DC or AC (rms) working voltage (v)
P : Rated power (w)
R : Resistance value (Ω)

5.CONSTRUCTION AND MATERIALS



6. DIMENSIONS

- **RC0201 / RC0402 / RC0603 / RC0805 / RC1206 / RC1210**
  RC1812 / RC2010 / RC2512

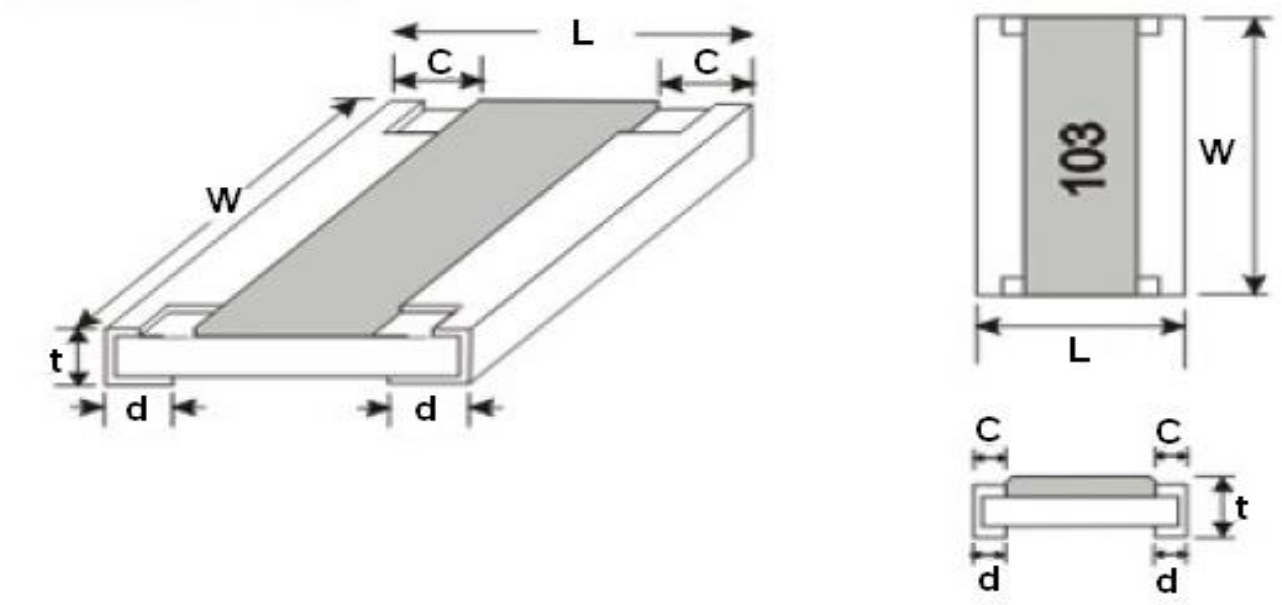


Unit:mm

TYPE	L	W	t	c	d
RC0201	0.60 ±0.10	0.30 ±0.05	0.25 ±0.05	0.15 ±0.10	0.15 ±0.10
RC0402	1.00 ±0.10	0.50 ±0.05	0.30 ±0.10	0.20 ±0.10	0.20 ±0.10
RC0603	1.60 ±0.20	0.80 ±0.10	0.40 ±0.10	0.30 ±0.20	0.30 ±0.15
RC0805	2.00 ±0.20	1.25 ±0.10	0.50 ±0.15	0.35 ±0.20	0.35 ±0.15
RC1206	3.20 ±0.20	1.60 ±0.10	0.55 ±0.15	0.45 ±0.20	0.45 ±0.25
RC1210	3.20 ±0.20	2.50 ±0.15	0.55 ±0.15	0.50 ±0.25	0.50 ±0.25
RC1812	4.50 ±0.20	3.00 ±0.15	0.55 ±0.15	0.55 ±0.25	0.80 ±0.25
RC2010	5.00 ±0.20	2.50 ±0.15	0.55 ±0.15	0.60 ±0.25	0.60 ±0.25
RC2512	6.30 ±0.20	3.20 ±0.20	0.55 ±0.15	0.60 ±0.25	0.60 ±0.25

Figure4

- **RC1218 / RC2030**



Unit:mm

TYPE	L	W	t	C	d
RC1218	3.10 ±0.20	4.60 ±0.20	0.55 ±0.15	0.45 ±0.20	0.50 ±0.25
RC2030	5.20±0.20	7.60±0.20	1.20±0.20	0.80±0.25	0.80±0.25

Figure5

7. CHARACTERISTICS

(1) Temperature Coefficient of Resistance(T.C.R.)

Test Condition : Measure resistance at +25℃or specified room temperature as R1, then measure at -55℃ and +125℃ respectively as R2.
Determine the temperature coefficient of Resistance from the following formula.

$$\text{T. C. R.} = \frac{R2 - R1}{R1\,(t2 - t1)} \times 10^6\ (\text{ppm}/℃)$$

Where t1 = +25℃ or specified room temperature
t2 = -55℃ or +125℃ ±3℃

Test Method : JIS-C-5201-1 4.8

(2) Thermal Shock

Test Condition : -55℃ for 2 minutes and +155℃(125℃ for RC0201) for 2 minutes as One cycle, after 5 cycles the specimen shall be Stabilized at room temperature for one hour Minimum and then measure the △R/R(%).

Acceptance Standard : ±(1.0%+0.05Ω)

Test Method : JIS-C-5201-1 4.19

(3) Low Temperature Operation

Test Condition :Place the specimen in a test chamber maintained at -55℃. After one hour stabilization at this temperature, full rated working voltage shall be applied for 45 minutes. 15 minutes after remove the voltage, the specimen shall be removed from the chamber and stabilized at room temperature for 24 hours minimum. Measure △R/R(%).

Acceptance Standard : ±(1.0%+0.05Ω) No mechanical damage.

Test Method : JIS-C-5201-1 4.19

(4) Short Time Overload

Test Condition : Apply 2.5 times of rated voltage but not exceeding the maximum overload voltage 1 for 5 seconds. Have the specimen stabilized at room temperature for 30 minutes minimum. Measure the △R/R(%).

Acceptance Standard : ±(2.0%+0.05Ω) No evidence of mechanical damage.

Test Method : JIS-C-5201-1 4.13

(5) High Temperature Exposure

Test Condition : Place the specimen in an oven at 125±5℃ for 1000 hours. Remove the specimen from the oven and stabilize at room temperature for one hour minimum. Measure the △R/R(%).

Acceptance Standard : ±(2.0%+0.1Ω)

Test Method : JIS-C-5201-1 4.23

(6) Resistance to Soldering Heat

Test Condition : Immerse the specimen in the solder pot at 260±5℃ for 10±1 seconds. Have the specimen stabilized at room temperature for 30 minutes minimum. Measure the △R/R(%).

Acceptance Standard : ±(1.0%+0.05Ω)

Test Method : JIS-C-5201-1 4.18

(7) Moisture Resistance

Test Condition : Place the specimen in a test chamber at 40±2℃ and 90~95% relative humidity. Apply the rated voltage to the specimen at the 1.5 hours on and 0.5 hour off cycle. The total length of test is 1000 +48/-0 Hrs. After the test, have the specimen stabilized at room temperature for one hour minimum. Measure the △R/R(%).

Acceptance Standard : ±(3.0%+0.1Ω)

Test Method : JIS-C-5201-1 4.24

(8) Load Life

Test Condition : Place the specimen in the over at 70±2℃. Apply the rated voltage to the specimen at 1.5 hours on and 0.5 hour off cycle. The total length of test is 1000 +48/-0 hours. After the test have the specimen stabilized at room temperature for one hour minimum and measure the △R/R(%).

Acceptance Standard : ±(3.0%+0.1Ω)

Test Method : JIS-C-5201-1 4.25

(9) Solderability

Test Condition : Immerse the specimen in the solder pot at 245±5 ℃ for 5 seconds

Acceptance Standard : At least 95% solder coverage on the termination

Test Method : JIS-C-5201-1 4.17

(10) Bending Strength

Test Condition : Mount the specimen on a test board . Slowly apply the force till the board is bend at 5+0.2 mm for 5±1 seconds, and measure the △R/R(%) at this position.

Acceptance Standard : ±(1.0%+0.05Ω)

Test Method : JIS-C-5201-1 4.33

(11) Insulation Resistance

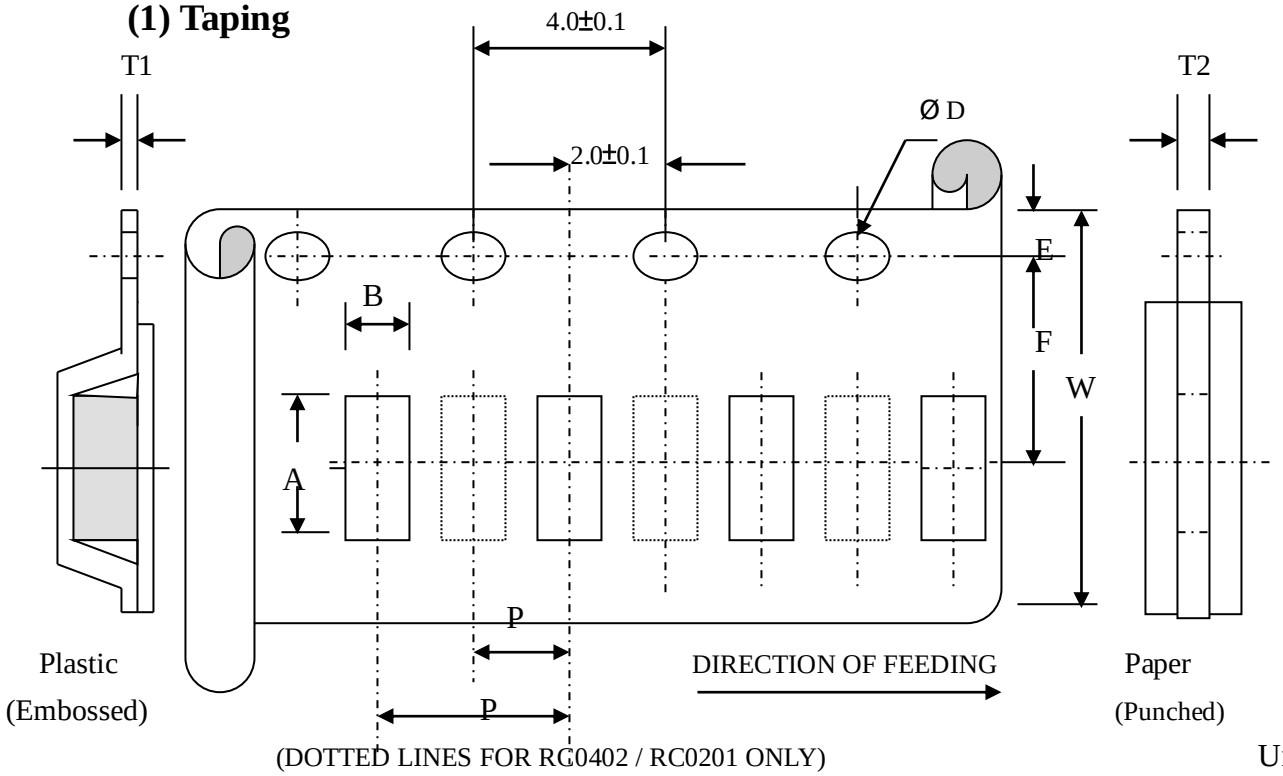
Test Condition : Place the specimen in the jig and apply a 500Vdc voltage for one minute. Measure the insulation resistance.

Acceptance Standard : 1,000MΩ minimum.

Test Method : JIS-C-5201-1 4.6

8. TAPING SPECIFICATIONS

(1) Taping

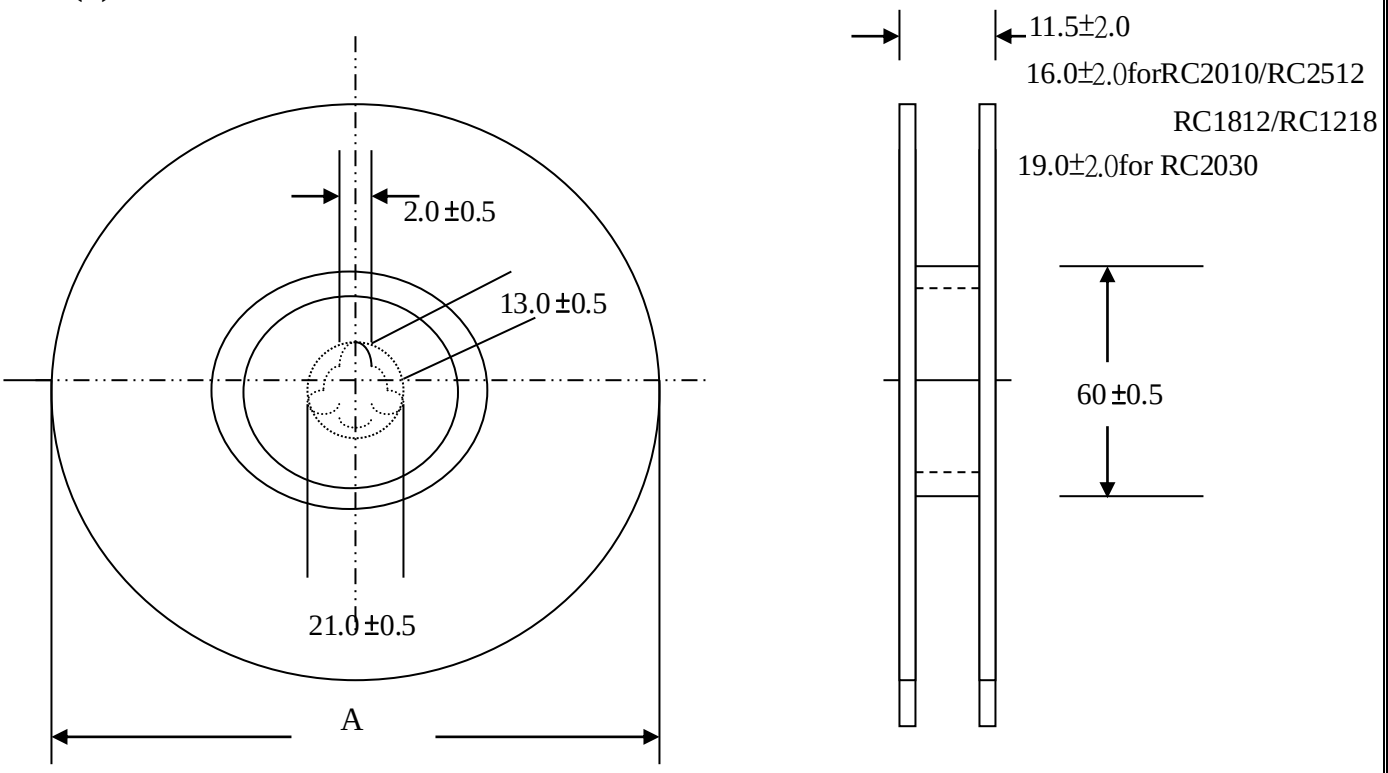


Unit : mm

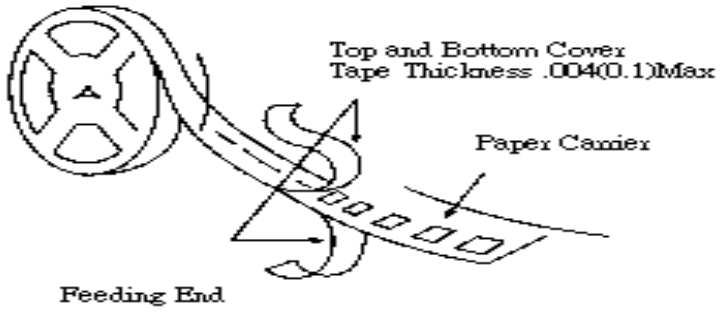
Dimension	A	B	W	E	F	T1	T2	P	D
RC0201	0.75 ±0.1	0.45 ±0.1	8.0 ±0.2	1.75 ±0.1	3.5 ±0.05		0.45 ±0.1	2.0 ±0.1	1.5 ±0.1
RC0402	1.15 ±0.1	0.65 ±0.1	8.0 ±0.2	1.75 ±0.1	3.5 ±0.05		0.45 ±0.1	2.0 ±.0.1	1.5 ±0.1
RC0603	1.90 ±0.1	1.10 ±0.1	8.0 ±0.2	1.75 ±0.1	3.5 ±0.05		0.60 ±0.1	4.0 ±0.1	1.5 ±0.1
RC0805	2.40 ±0.1	1.65 ±0.1	8.0 ±0.2	1.75 ±0.1	3.5 ±0.05		0.75 ±0.1	4.0 ±0.1	1.5 ±0.1
RC1206	3.50 ±0.1	1.90 ±0.1	8.0 ±0.2	1.75 ±0.1	3.5 ±0.05		0.75 ±0.1	4.0 ±0.1	1.5 ±0.1
RC1210	3.50 ±0.1	2.80 ±0.1	8.0 ±0.2	1.75 ±0.1	3.5 ±0.05		0.75 ±0.1	4.0 ±0.1	1.5 ±0.1
RC2010	5.40 ±0.2	2.90 ±0.2	12.0 ±0.2	1.75 ±0.1	5.5 ±0.05	0.23 ±0.15	.	4.0 ±0.1	1.5 ±0.1
RC2512	6.90 ±0.2	3.60 ±0.2	12.0 ±0.2	1.75 ±0.1	5.5 ±0.05	0.23 ±0.15	.	4.0 ±0.1	1.5 ±0.1
RC1812 RC1218	4.60 ±0.2	3.30 ±0.2	12.0 ±0.2	1.75 ±0.1	5.5 ±0.05	0.23 ±0.15	.	4.0 ±0.1	1.5 ±0.1
RC2030	5.50 ±0.2	7.90 ±0.2	16.0 ±0.2	1.75 ±0.1	5.5 ±0.05	0.25 ±0.15	.	8.0 ±0.2	1.5 ±0.1

Figure6

(2)Reel Dimensions



(3)Paper Carrier



A (Max.)	REEL QUANTITY			
	RC0201/ RC0402	RC0603/RC0805 /RC1206/RC1210	RC1812/RC1218/ RC2010/RC2512	RC2030
180 ±2.0mm	10,000PCS	5,000PCS	4,000PCS	1000PCS
254 ±2.0mm	-	10,000PCS	-	-
278 ±2.0mm	-	-	-	-
330 ±2.0mm	-	20,000PCS	-	-

Figure7