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# 香 港 電 阻 製 造 廠

香港柴灣安業街十二號長益工業大廈10字樓A座

## HONG KONG RESISTORS MANUFACTORY

(Wholly owned by Hong Kong Resistors Manufactory International Ltd.)

AN ISO 9001: 2015 CERTIFIED MANUFACTURER

AN ISO 45001 : 2018 MANUFACTURER

AN ISO 14001 : 2015 MANUFACTURER

10A Cheong Yick Industrial Building, 12 On Yip St., Chai Wan, Hong Kong

Tel.: (852) 2896 2782

Fax.: (852) 2896 5291

国内工厂一：东莞溢辉电子有限公司

地址：广东省东莞市大岭山镇大岭山大道396号4栋801室

Tel.: (86 769) 8331 5373 Fax.: (86 769) 8331 1603

国内工厂二：恒辉电阻(益阳)有限公司

地址：湖南省益阳市资阳区长春工业园五福路

Tel.: (86 737) 3800 399 Fax.: (86 737) 3800 199

国内工厂三：南充溢辉电子科技有限公司

地址：四川省南充市高坪区青莲街道金辉路8号

Tel.: (86 817) 3315 388 Fax.: (86 817)3315 388

### SPECIFICATIONS FOR APPROVAL

**Customer:**

Name of Product: Chip Resistor - RCA Series (RoHS)

Sales Executive : \_\_\_\_\_ Date: 2023/7/21

制造 Prepared by	品质 Quality by	业务 Sales by	核准 Authorized by
客户 customer approval	客户 customer approval	客户 customer approval	客户 customer approval



# Chip Resistor - RCA Series

[RoHS]

本公司产品遵循 SONY SS-00259 环境要求,不含 10 大环境相关有害禁用物质。  
HKR products comply with environmental requirement in accordance with SONY of code no. SS-00259 for not related in 10 harmful materials.

## 特性(Features)

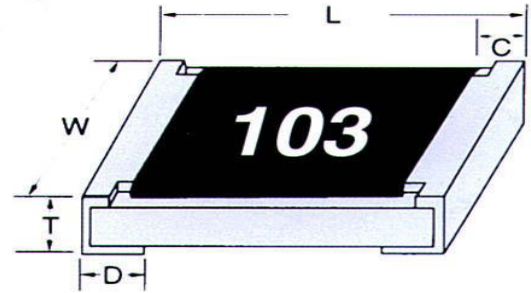
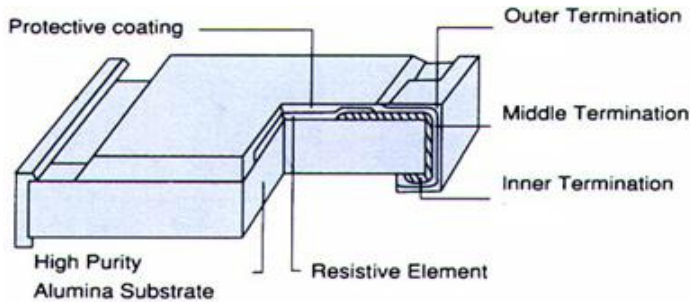
- 轻薄短小：小型轻量,大幅缩小 PC 板面积及重量。  
Small size and lightweight with size range per international standard
- 装配性佳：外观尺寸均匀精确,易于装配。  
Highly stable in auto-placement surface mounting application
- 可使用于波峰焊及回流焊。  
Compatible with both wave soldering and reflow soldering

## 料号编码 (Part Number)

<u>RCA</u>	<u>05</u>	<u>27K</u>	<u>J</u>	<u>LF</u>
Type	Size	Value	Tolerance	Lead Free
型号	尺寸	阻值	精度	不含铅
RCA	02 : 0402		F : ±1%	
	03 : 0603		J : ±5%	
	05 : 0805			
	06 : 1206			
	10 : 1210			
	20 : 2010			
	25 : 2512			



## 构造图(Configuration)

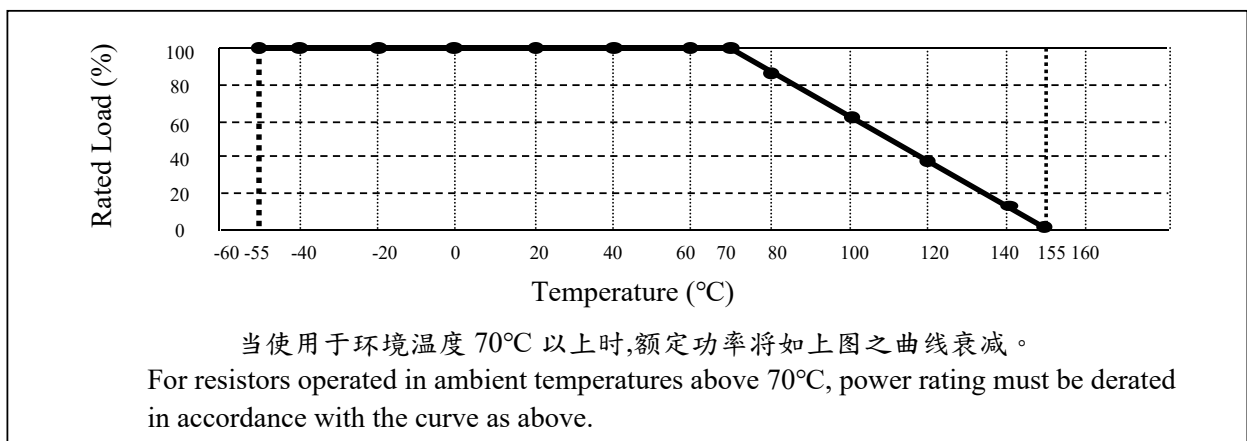


## 尺寸(Dimensions)

(unit: mm)

Size	L	W	T	C	D
0402	1.00 ±0.10	0.50 ±0.05	0.35 ±0.05	0.20 ±0.10	0.25 ±0.10
0603	1.60 ±0.10	0.80 ±0.10	0.45 ±0.10	0.25 ±0.15	0.30 ±0.15
0805	2.00 ±0.10	1.25 ±0.10	0.50 ±0.10	0.35 ±0.20	0.40 ±0.20
1206	3.10 ±0.10	1.55 ±0.10	0.55 ±0.10	0.45 ±0.20	0.40 ±0.20
1210	3.10 ±0.10	2.50 ±0.10	0.55 ±0.10	0.45 ±0.25	0.45 ±0.25
2010	5.00 ±0.20	2.50 ±0.15	0.55 ±0.10	0.60 ±0.25	0.50 ±0.25
2512	6.35 ±0.20	3.10 ±0.15	0.55 ±0.10	0.60 ±0.25	0.60 ±0.25

## 功率衰减曲线(Power Derating Curve)





# Chip Resistor - RCA Series

[RoHS]

## 额定 (Rating)

型号 Type	RCA02	RCA03	RCA05	RCA06	RCA10	RCA20	RCA25
尺寸 Size	0402	0603	0805	1206	1210	2010	2512
额定功率 Power Rating at 70°C	1/16W	1/10W	1/8W	1/4W	1/3W	3/4W	1W
最高使用电压 Max RCWV	50V	75V	150V	200V	200V	200V	200V
最高过负荷电压 Max Overload Voltage	100V	150V	300V	400V	400V	400V	400V
最高使用电流 Jumper < 50mΩ	1A	1A	2A	2A	2A	2A	2A
使用温度范围 Operating Temperature Range	-55~+155°C						
标准阻值范围 Standard Resistance Range	0Ω	0~50mΩ					
	±1% (E-96)	1Ω~10MΩ		1Ω~10MΩ			
	±5% (E-24)	1Ω~10MΩ		1Ω~22MΩ			

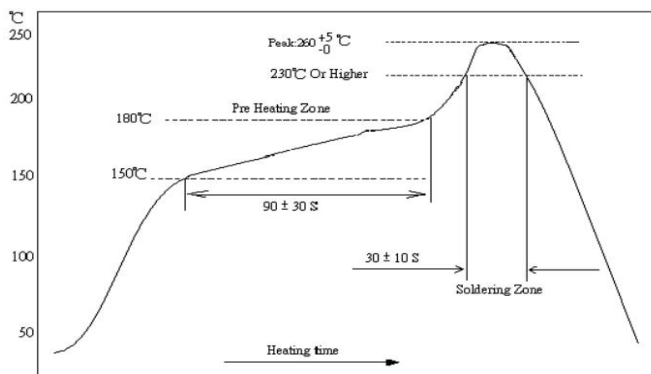
\* 工作电压根据阻值按公式  $V=\sqrt{P*R}$  计算，或者采用上面提供的最高使用电压。

The working voltage is calculated based on the resistance value following the formula of  $V=\sqrt{P*R}$  or to its maximum extent as indicated above.

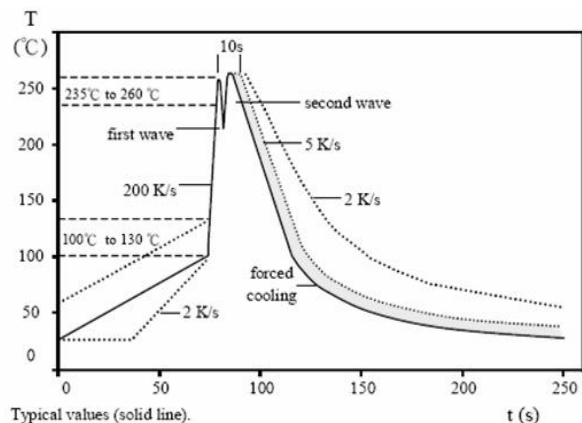
\* 过负荷电压根据阻值按公式  $V=2.5\sqrt{P*R}$  计算，或者采用上面提供的最高过负荷电压。

The overload voltage is calculated based on the resistance value following the formula of  $V=2.5\sqrt{P*R}$  or to its maximum extent as indicated above.

## 焊接温度曲线 (Soldering Temperature Curve)



回流焊 (IR Reflow Soldering)



Typical values (solid line).

Process limits (dotted line).

波峰焊 (WAVE Soldering)



# Chip Resistor - RCA Series

# [RoHS]

## 规格说明及测试方法(Specification and Test Methods)

ITEM	SPECIFICATION	TEST METHOD
焊锡性 Solderability	Over 95% of termination must be covered with solder	<b>JIS C 5201 4.17 / MIL-STD-202G METHOD 208H / IEC 60115-1 4.17</b> Reflow Soldering: Bath temperature:(235±5)°C,Immersion time:(2±0.5)s WAVE Soldering: Bath temperature:(270±10)°C,Immersion time:(2±0.5)s
耐焊性 Resistance to Solder Heat	J: $\Delta R \leq \pm(1\% + 0.05\Omega)$ F: $\Delta R \leq \pm(0.5\% + 0.05\Omega)$ No mechanical damage	<b>JIS C 5201 4.18 / MIL-STD-202G METHOD 210F / IEC 60115-1 4.18</b> The temperature of the solder bath shall be (260±5)°C,The immersion time shall be(5±0.5)s or(10±1)s as prescribed by the detail specification
温度系数 Temperature Coefficient of Resistance (TCR)	0402规格 1Ω~10Ω;>3.3M: ±400ppm/°C 10Ω(excluding 10Ω)~3.3M: ±200ppm/°C 0603及以上规格(0603 or 1Ω~10Ω;>1M: ±200ppm/°C 10Ω(excluding10Ω)~1M: ±100ppm/°C	<b>JIS C 5201 4.8 / MIL-STD-202G METHOD 304 / IEC 60115-1 4.8</b> The temperature characteristic or temperature coefficient of resistance is not specified for resistance values of less than 5R owing to difficulty of accurate measurement
短时间过负荷 Short time Overload	J: $\Delta R \leq \pm(2\% + 0.05\Omega)$ F: $\Delta R \leq \pm(1\% + 0.05\Omega)$	<b>JIS C 5201 4.13/IEC 60115-1 4.13</b> 2.5×Rated voltage or Max. Overload Voltage for 5 sec. measure resistance after 30 minutes
恒温恒湿寿命 试验 Load Life Humidity	J: $\Delta R \leq \pm(3\% + 0.05\Omega)$ F: $\Delta R \leq \pm(2\% + 0.05\Omega)$	<b>JIS C 5201 4.24/MIL-STD-202G Method 106G / IEC 60115-1 4.24</b> Maintain the temperature of the resistor at 40±2°C and 90~95% RH with the rated voltage applied.Cycle ON for 1.5 hours and OFF for 0.5 hour for1000+48/-0 hours. After 1~4 hour, measure the resistance value.
耐久性 Load Life	J: $\Delta R \leq \pm(3\% + 0.05\Omega)$ F: $\Delta R \leq \pm(2\% + 0.05\Omega)$	<b>JIS C 5201 4.25/MIL-STD-202G Method 108A / IEC 60115-1 4.25</b> 70 ±2°C, Max. working voltage for 1000 hrs with 1.5 hrs “ON” and 0.5 hrs “OFF”.
高低温试验 Temperature Cycle	$\Delta R \leq \pm(1\% + 0.05\Omega)$ No mechanical damage	<b>JIS C 5201 4.19/MIL-STD-202G Method 107G / IEC 60115-1 4.19</b> Repeat 5 cycles as follows -65°C(30 min.)+25°C(2~3 min.) +125°C(30 min.)+25°C(2~3 min.)
绝缘阻抗 Insulation Resistance	Between termination and coating must be over 1000MΩ	<b>JIS C 5201 4.6 / MIL-STD-202G Method 302 / IEC 60115-1 4.6</b> Test voltage: 100±15V
弯曲强度 Bending Strength	J: $\Delta R \leq \pm(1\% + 0.05\Omega)$ F: $\Delta R \leq \pm(0.5\% + 0.05\Omega)$ No mechanical damage	<b>JIS C 5201 4.33 / MIL-STD-202G Method 211A / IEC 60115-1 4.33</b> Resistance change after bended on the 90mm PCB. Bend: 3mm for 0402、0603、0805、1206 2mm for 1210 1mm for 2010、2512



## 字码编码说明 (Markings)



1.1.  $\pm 5\%$  (IEC E-24系列 Series )0603、0805、1206及以上规格(0402无字码)均用三字码表示。

No markings on 0402. Markings on the other sizes are expressed by a 3-digit code in its exact value.

E. G. : 6R8=6.8 $\Omega$ ; 100=10 $\times 10^0$ =10 $\Omega$ ; 472=47 $\times 10^2$ =4700 $\Omega$ =4.7K $\Omega$ 。

1.2.  $\pm 1\%$  阻值表示规则 (+/-1% Resistance value markings)

a. 0805、1206及以上规格  $\pm 1\%$  阻值均用四字码表示。

Markings on sizes 0805, 1206 and above are expressed by a 4-digit code.

E. G. : 82R5=82.5 $\Omega$ ; 1000=100 $\times 10^0$ =100 $\Omega$ ; 2212=221 $\times 10^2$ =22100 $\Omega$ =22.1K $\Omega$ 。

b. 0603  $\pm 1\%$  (IEC E-96系列)阻值均采用三代码表示。前两位为阻值的数字代码; 后一位为英文大写字母, 表示倍率(10n次幂)。

Markings on 0603  $\pm 1\%$  (IEC E-96 Series ) are expressed by a 3-digit code; the first two digits represent the value code and the last capital letter represents the multiplier.

E-96系列阻值的数字代码如下表: The coding system of the E-96 series is as follows :

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

倍率字母代码如下表: (Multiplier code)

Code	A	B	C	D	E	F	G	X	Y	Z
Multiplier	10 <sup>0</sup>	10 <sup>1</sup>	10 <sup>2</sup>	10 <sup>3</sup>	10 <sup>4</sup>	10 <sup>5</sup>	10 <sup>6</sup>	10 <sup>-1</sup>	10 <sup>-2</sup>	10 <sup>-3</sup>

E. G. : 01Y=100 $\times 10^{-2}$ =1 $\Omega$ ; 68A=499 $\times 10^0$ =499 $\Omega$ ; 02D=102 $\times 10^3$ =102K $\Omega$

c. 任何 1%电阻其阻值不在 E-96 范围系列中, 则其字码表示与E-24系列 +/-5%字码相同。仅用标签注明误差。

Any resistance values of 1% tolerance but not included in the E-96 series, the value markings are the same as +/-5% tolerance with labelling identification.

E. G. : 120=12 $\times 10^0$ =12 $\Omega$ ; 475=47 $\times 10^5$ =4.7M $\Omega$ 。

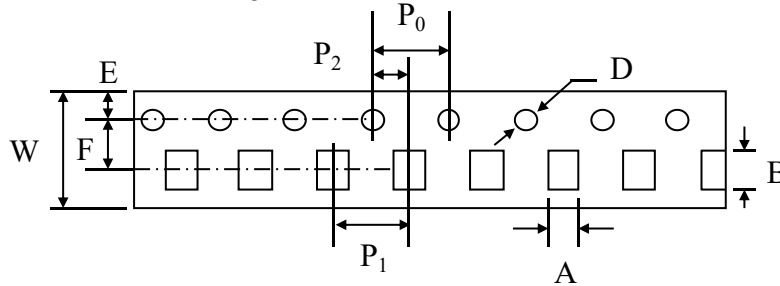
1.3 零欧姆晶片电阻字码均用一个“0”表示, 其阻值在0~50m $\Omega$  范围内, 并无误差之分, 所以我司标签上无注明误差值。

Marking of the 0 Ohm resistor is a '0' with its value range from 0-50m $\Omega$ . No tolerance shown on the product label.



## 包装及卷包规格(Tape and Reel Package)

Taping is in accordance with EIA RS-481

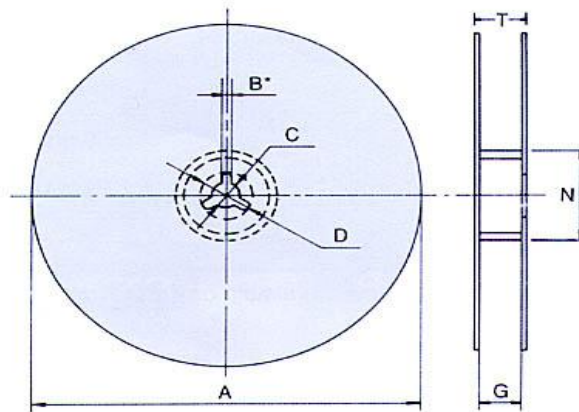


Accumulated dimensional tolerance  $40 \pm 0.2 \text{mm}$

Size	A	B	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D
0402	0.65 ±0.10	1.15 ±0.10	8.00 ±0.30	3.50 ±0.05	1.75 ±0.10	2.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10
0603	1.10 ±0.20	1.90 ±0.20	8.00 ±0.30	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10
0805	1.65 ±0.20	2.40 ±0.20	8.00 ±0.30	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10
1206	2.00 ±0.20	3.50 ±0.20	8.00 ±0.30	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10
1210	2.85 ±0.20	3.50 ±0.20	8.00 ±0.30	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10
2010	2.80 ±0.20	5.50 ±0.20	12.0 ±0.30	5.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10
2512	3.50 ±0.20	6.70 ±0.20	12.0 ±0.30	5.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10

unit: mm

Size	Packaging Q'ty
0402	10Kpcs/Reel
0603	5Kpcs/Reel
0805	
1206	
1210	
2010	4Kpcs/Reel
2512	



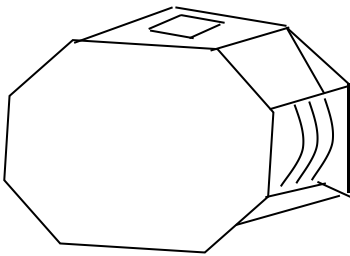
Symbol	A	N	C	D	B	G	T
Dimension	178 ±3.0	60.0 ±2.0	13.0 ±1.0	19.5 ±1.0	2.30 ±0.5	10.0 ±1.5	14.9 max.
	178 ±3.0	60.0 ±2.0	13.0 ±1.0	19.5 ±1.0	2.30 ±0.5	13.8 ±1.5	16.7 max.

贮存环境 Storage Condition	温度 Temp 5~35°C	湿度 Humidity 20%-70%	Storage Time 储存期	1年 1 year
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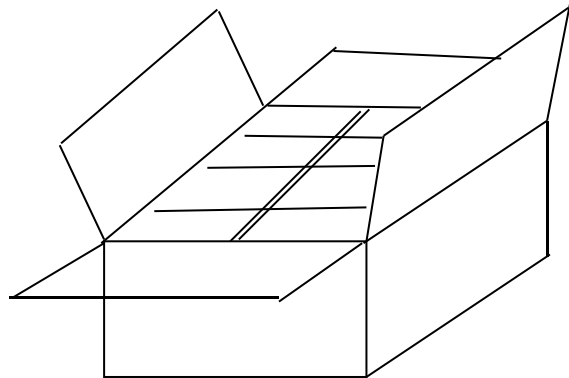


## 外包装(Outer Packaging)



第一次包装：1~10卷

First package: 1~10 reels (inner box)



第二次包装：最多80卷

Second package: 80 reels Max (export carton)

■当包装数量不能达到最大时，剩余空隙部位采用辅助材料填满。

When quantity shall not reach the max, the remaining empty space shall be filled up with buffer material.

■当包装数量为最小时，使用其它方法包装，确保运输过程中无问题是至关重要的。

When the quantity is a few, alternative packing methods may be used. It is important to ensure the safety of the products during transportation.