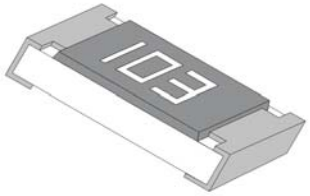
■ 抗浪涌厚膜片式固定電阻器

Anti-Surge THICK FILM CHIP FIXED RESISTOR



• 特點 FEATURES

＊ 體積小、重量輕	Miniature and light weight.
＊ 適應再流焊與波峰焊	Suit for reflow and wave flow solder.
＊ 高功率、大幅提高抗浪涌能力	High power ,Substantially increase the ability of anti-surge
＊ 電性能穩定，可靠性高	Stable electrical capability, high reliability.
＊ 裝配成本低，并與自動裝貼設備匹配	Low assembly cost, suit for automatic SMT equipment.
＊ 符合無鹵素要求	Compliant with halogen free requirement.
＊ 符合RoHS指令要求	RoHS compliant

• 品名構成 TYPE DESIGNATION

例 Example

R A	G	0 6	K	1 0 0 3	F	T	G
①	②	③	④	⑤	⑥	⑦	⑧

① 產品代號 Product Code

抗浪涌厚膜片式固定電阻器 Anti-Surge Thick Film Chip FiXED Re sis tors

② 額定功率系列代號 Power Rating Series Code

代號 Code	型號 Type	功率 Power Rating
C	0402	1/16W
Q	0603	1/5W
F	0805	1/4W
G	1206	1/2W

③ 型號代號 Type Code

代號 Code	型號 Type
02	0402
03	0603
05	0805
06	1206

④ 電阻温度系數代號 Resistance Temperature Coefficient Code

型號 Type	代號 Code	功率 Power Rating
0402	W	±200PPM/℃
	U	±400PPM/℃
0603	K	±100PPM/℃
0805		
1206	L	±250PPM/℃

⑤ 電阻值代號 Resistance Value Code

三位數(E-24系列)：前兩位表示有效數字,第三位表示有效數字后零的個數
Three digits (E-24 series): The first two digits are significant figures and the third one denotes number of zeros.
四位數(E-96系列)：前三位表示有效數字,第四位表示有效數字后零的個數
Four digits(E-96 series): The first three digits are significant figures and the four one denotes number of zeros.
小數點用R表示 Decimal point should be expressed by "R".
例如Example：
103=10KΩ(E-24)
1003=100KΩ(E-96) 1R0=1.0Ω

⑥ 電阻值誤差精度代號 Resistance Tolerance Code

代號 Code	誤差精度 Tolerance
D	±0.5%
F	±1%
G	±2%
J	±5%
K	±10%
M	±20%

⑦ 包裝方式代號 Packing Style Code

代號 Code	包裝方法 Packing Style
T	編帶包裝 Tape & Reel
B	塑料盒包裝 Bulk Case
C	塑料袋散裝 Case

⑧ 無鉛化等級代號 Lead-free Level Code

代號 Code	無鉛化等級 Lead-free Level
無表示 No Marking	端子無鉛(端子鉛含量≤100ppm) Terminal Lead-free (pb content in ter-minal ≤100ppm)
L	整體低鉛(≤1000ppm) Low Lead (pb content in resistor body ≤1000ppm)
G	整體無鉛(≤100ppm) Low Lead (pb content in resistor body ≤100ppm)

＊ 產品標記表示方法請與廠家聯系

＊ Products marked that way, please contact the manufacturer.

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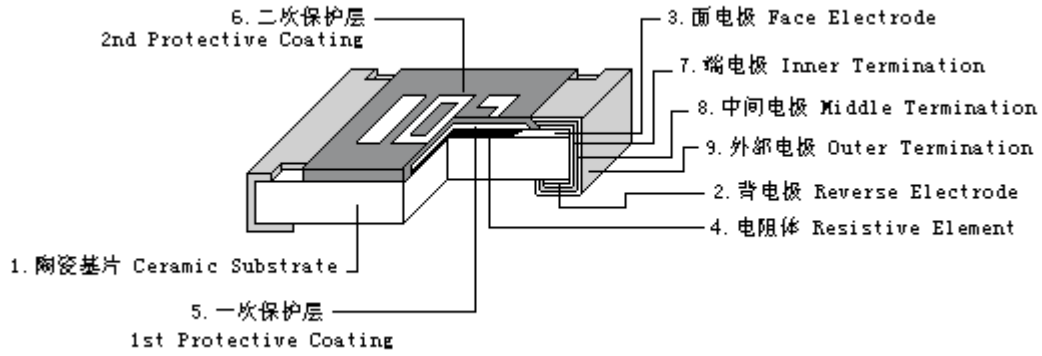
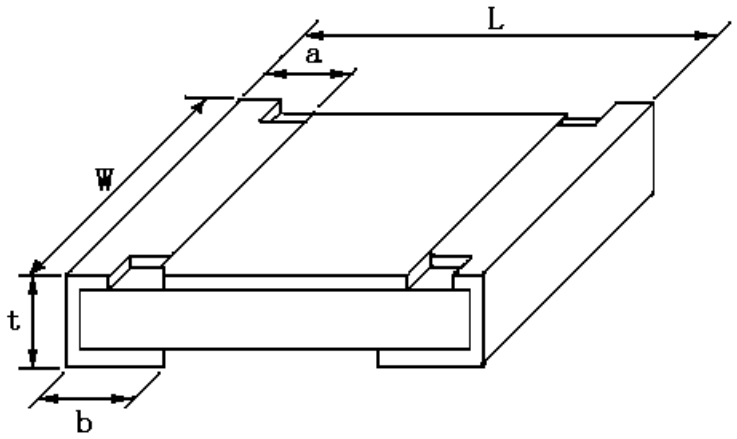
• 結構及規格尺寸CONSTRUCTION AND DIMENSION





單位unit:mm

型號 TYPE	L	W	t	a	b
0402	1.00±0.10	0.50±0.10	0.30±0.10	0.20±0.10	0.25±0.10
0603	1.60±0.15	0.80±0.15	0.40±0.10	0.30±0.20	0.30±0.20
0805	2.00±0.20	1.25±0.15	0.50±0.10	0.30±0.20	0.40±0.20
1206	3.20±0.20	1.60±0.15	0.55±0.10	0.50±0.20	0.50±0.20

• 產品外觀 APPEARANCE

＊ 電阻器表面保護膜覆蓋完好且難以脱落,表面平整。
The surface of resistor is covered with Protective Coating which hard to fade, and the surface of coating should avoid unevenness.

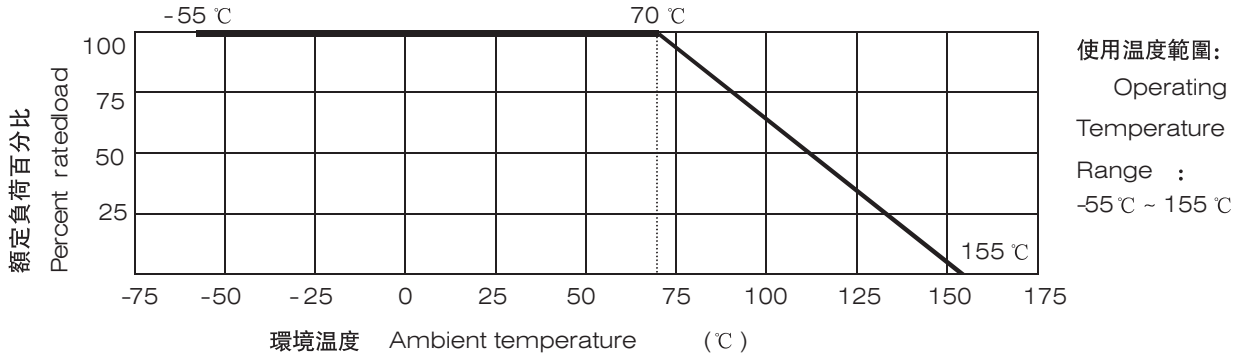
＊ 電阻器引出端電極覆蓋均匀、鍍層較難脱落，且平整、無裂痕、針孔、變色。
The terminal part is covered equable , the plating is hard to fade, and should avoid unevenness,flaw, pinhole and discoloration.

＊ 電阻器芯片無裂痕、標志可辨。
With a clear mark , the resistor body is crack-free.

• 參考標准 REFERENCE STANDARD

GB/T 5729-2003
GB/T 9546-1995
IEC 61340-3-1-2006

• 負荷下降曲綫 DERATING CURVE



＊ 當電阻使用的環境温度超過70℃時，其額定負荷(額定功率或額定電流)按上述曲綫下降。
For resistors operated in ambient over 70℃,rated load (power rating or current rating) shall be derated in accordance with the above figure.

• 額定值 RATINGS

項目 Item	0402	0603	0805	1206
額定功率 Power Rating	1/16W	1/5W	1/4W	1/2W
最大工作電壓 Max.Working Voltage	50V	50V	150V	200V
最大過負荷電壓 Max.Overload Voltage	100V	100V	300V	400V
電阻温度系數 Resistance Temperature Coefficient	10Ω≤R≤1MΩ:±200ppm/℃ 1Ω≤R<10Ω,1MΩ<R≤10MΩ: ±400ppm/℃	10Ω≤R≤1MΩ:±100ppm/℃ 1Ω≤R<10Ω,1MΩ<R≤10MΩ:±250ppm/℃		
阻值範圍 Resistance Range	1Ω~10MΩ E-24、E-96系列			
阻值誤差精度 Resistance Tolerance	1Ω~10MΩ: ±1%、±2%、±5%、±10%、±20% (10Ω~1MΩ:±0.5%)			
使用温度範圍 Operating Temperature Range	-55℃~+155℃			
額定温度 Rated Temperature	+70℃			

注：額定電壓=$\sqrt{\text{額定功率} \times \text{標稱電阻值}}$ 或最大工作電壓兩者中的較小值。
Note： Rated Voltage=$\sqrt{\text{Power Rating} \times \text{Resistance Value}}$ or Max. Working Voltage , whichever is lower.

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• 特性 CHARACTERISTICS

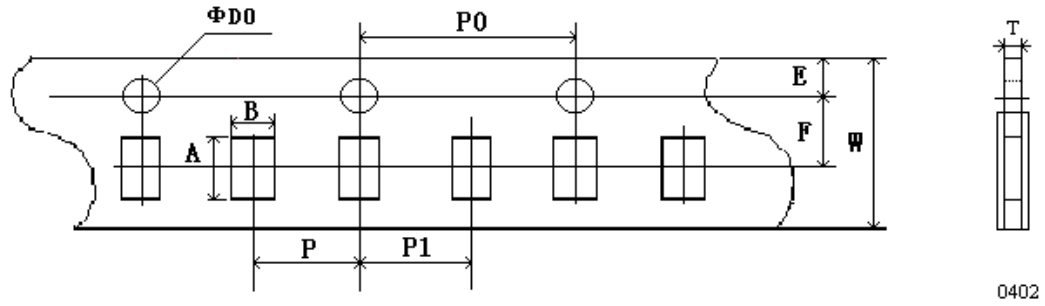
項目 Item	標 准 Specifications	測試方法(GB/T 5729-2003) Test Methods (GB/T 5729-2003)
抗ESD能力 ESD Characteristic	無可見損傷No mechanical damage △R≤ ±(5.0%R+0.05Ω)	根據IEC 61340-3-1-2006(靜電放電模擬方法–人體模型) According to IEC 61340-3-1-2006(ESD simulation - the human body model) 0402：1KV ±3次 間隔1S ； 0402:1 KV ± 3 times interval 1S; 0603：3KV ±3次 間隔1S ； 0603:3 KV ± 3 times interval 1S; 0805：4KV ±3次 間隔1S ； 0805:4 KV ± 3 times interval 1S; 1206：5KV ±3次 間隔1S ； 1206:5 KV ± 3 times interval 1S;
端頭强度 Bending Strength	無可見損傷No mechanical damage △R≤ ±(1.0%R+0.05Ω)	彎曲距離(Bending Distance): 0402、0603、0805：5mm 1206：4mm; 保持時間:60s±5s，然后測試阻值。 Duration:60s±5s，then check the resistance.
電阻温度系數 T.C.R	在規定值内 within specified T.C.R	測定範圍：-55℃～+125℃ Measure between -55℃～+125℃
温度循環 Temperature Cycling	無可見損傷No mechanical damage △R≤ ±(1.0%R+0.05Ω)	-55℃(30分鐘) ～常温(2分鐘~3分鐘) ～155℃(30分鐘) 5個循環 -55℃(30min) ~normal temperature(2min~3min) ~155℃(30min) 5 cycles
短時間過負載 Short Time Overload	無可見損傷No mechanical damage △R≤ ±(2.0%R+0.05Ω)	2.5倍額定電壓或最大過負荷電壓(取最小者) 保持5秒 2.5 × Rated voltage or Max. Overload Voltage whichever is lower for 5 seconds
耐焊接熱 Resistance to Soldering Heat	無可見損傷No mechanical damage △R≤ ±(1.0%R+0.05Ω)	270℃±5℃ 10s±1s
穩態濕熱 Steady state humidity	無可見損傷No mechanical damage △R≤ ±(3.0%R+0.1Ω)	40℃±2℃ 90%~95%RH 1000小時 40℃±2℃ 90%~95%RH 1000h
70℃耐久性 Load Life	無可見損傷No mechanical damage △R≤ ±(3.0%R+0.1Ω)	70℃±2℃,1000小時,額定電壓或最大工作電壓兩者中的較小值，1.5小時/斷0.5小時 70℃±2℃,1000h,Rated Voltage or Max. Working Voltage , whichever is lower. 1.5h on/0.5h off
上限類別温度耐久性 Endurance at upper temperature	無可見損傷No mechanical damage △R≤ ±(3.0%R+0.1Ω)	155℃±2℃ 1000h
耐溶劑性 Resistance to Solvent	無可見損傷 No mechanical damage △R≤ ±(1.0%R+0.05Ω)	浸入三氯乙烯 10h±1h Dip in chloroethylene for 10h±1h.
絶緣電阻 Insulation Resistance	1000MΩ Min	在電極與基片間施加100V直流電壓,保持1分鐘,然后測絶緣電阻值. Apply DC 100V between substrate and termination for 1 minute, then check insulation resistance .
可焊性 Solderability	可焊面積≥95% 95% Cover Min	240℃±5℃ 2s±0.5s
附着力 Adhesion	外觀無可見損傷 No mechanical damage	施加力5N 10s±1s Applying 5N 10s±1s

• 包裝 PACKAGING

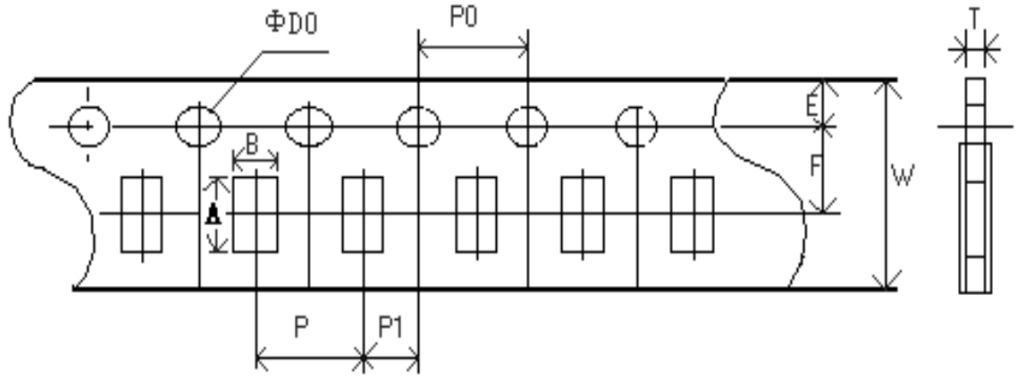
＊ 編帶包裝 Tape and reel

紙帶編帶 Paper taping

0402：



0603、0805、1206：



單位unit:mm

型號 TYPE	A	B	W	F	E
0402	1.20±0.1	0.70±0.1	8.0±0.20	3.5±0.05	1.75±0.1
0603	1.85±0.1	1.10±0.1	8.0±0.20	3.5±0.05	1.75±0.1
0805	2.35±0.1	1.65±0.1	8.0±0.20	3.5±0.05	1.75±0.1
1206	3.50±0.2	1.90±0.2	8.0±0.20	3.5±0.05	1.75±0.1

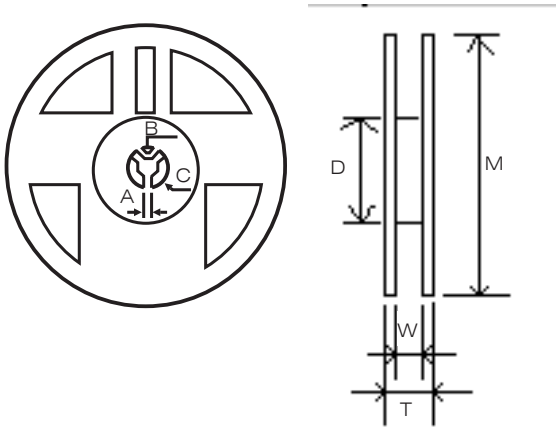
單位unit:mm

型號 TYPE	P	P0	P1	ΦD0	T
0402	2.0±0.05	4.0±0.1	2.0±0.05	1.5±0.1	0.42±0.05
0603	4.0±0.1	4.0±0.1	2.0±0.05	1.5±0.1	0.60±0.1
0805	4.0±0.1	4.0±0.1	2.0±0.05	1.5±0.1	0.75±0.1
1206	4.0±0.1	4.0±0.1	2.0±0.05	1.5±0.1	0.75±0.1

備注：T指紙帶厚度。

Remark:T refers to the thickness of the paper carrier tape.

＊ 卷盤 Reel

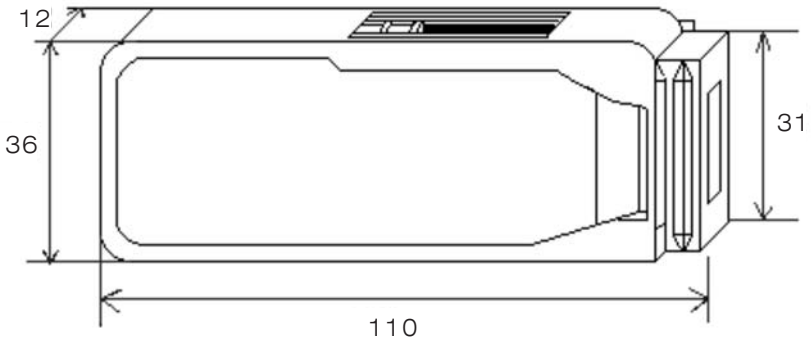


單位unit:mm

型號 TYPE	M	W	T	A	B	C	D
0402 0603 0805 1206	178 ±2.0	9.5 ±1.0	12.5 ±1.5	2.0 ±0.5	13.0 ±0.5	21.0 ±0.5	58.0 ±2.0

＊ 塑料盒包裝Bulk case

單位unit:mm



• 包裝數量 PACKAGING QUANTITY

包裝方法 Packaging style	編帶 Tape and reel		塑料盒 Bulk case				塑料袋散裝 Bulk	
型號 Type	0402	0603 0805 1206	0402	0603	0805	1206	0402	0603 0805 1206
數量(PCS) Quantity	10000	5000	50000	25000	10000	5000	≤50000	≤10000