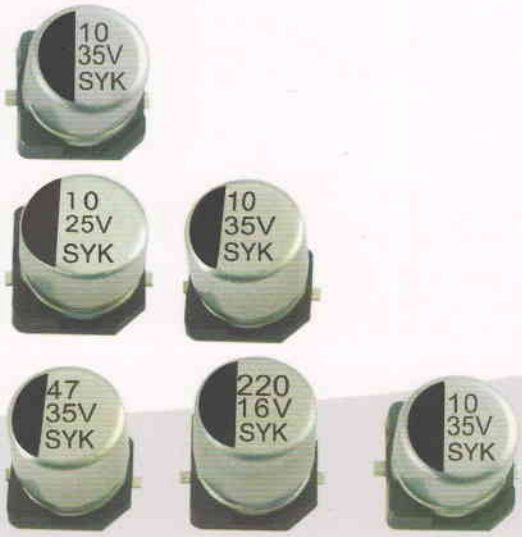
深圳市三炎科電子科技有限公司
SHENZHEN SANYANKE ELECTRONIC TECHNOLOGY CO., LTD



鋁電解電容器
Aluminum Electrolytic Capacitor

2011 產品目録 Contents

ABOUT Us

深圳市三炎科电子科技有限公司成立于2010年10月的民营高科技企业，公司股东庄炎标、庄炎廷、庄炎文和生产管理技术主要人员都从事铝电解电容器行业数十年之久。对铝电解电容器的生产、品质、销售积累了丰富的经验，主要生产开发和销售高品质贴片铝电解电容器。

公司预计总投资2亿元人民币，现已完成首期投资2500万元人民币，并在1个月的试产期和2个月的量产期内形成可生产4*5.4/5*5.4/6.3*5.4/8*10.2/10*10.2等不同规格尺寸,年产贴片铝电解电容器2亿只以上。公司预计2011底完成2期投资5000万人民币，届时将可年产全系列贴片铝电解电容器4亿只，余下的投资正在规划中。

保证产品品质方面，公司除了严格按照ISO19001、ISO14001、QC080000、ROHS、TS16949等国际标准的要求生产和品质管理，主要生产原材料方面均采购日本、韩国等著名公司的产品，最大范围的提高产品的各项电气性能及其稳定性。产品性能达到或者超过国际知名同行业产品标准。生产和试验所用的机器设备也都是目前国际上最先进的专用机械。

本公司奉行:诚信经营、品质第一、服务社会、供求双赢的经营理念，全面提升并不断完善管理体制，为顾客提供性能稳定、质量可靠、绿色环保的高品质产品。

Shenzhen City inflammation Electronics Ltd was established in October 2010 the private hi-tech enterprises, shareholders Zhuang Yan standard, Zhuang Yanting, Zhuangyan Wen and production management skills of key personnel are engaged in electrolytic capacitor industry for 19 years. The production of electrolytic capacitors, quality, accumulated rich experience in sales, the main production and development and sales of chip aluminum electrolytic capacitors.

Company expects a total investment of 200 million yuan, has now completed the first phase investment of 25 million yuan, and the 1-month trial production period, and 2-month production period of the formation can produce 4 * 5.4 / 5 * 5.4/6.3 * 5.4 / 8 * 10.2 * 10.2/10 different specifications such as size, annual output of 200 million chip aluminum electrolytic capacitor or more. Completed in late 2011 the company invested 50 million yuan 2, will be an annual output of the full range of SMD aluminum electrolytic capacitors 400,000,000, and the remaining investments are planned.

Ensure product quality, the company except in strict accordance with ISO19001, ISO14001, QC080000, ROHS, TS16949 and other international standards of production and quality management, production of raw materials were the major procurement in Japan, Korea and other famous products, the largest range of products to improve the term electrical performance and stability. Product performance meet or exceed internationally recognized standards for the industry products. All the machinery and equipment are also currently the most advanced machinery.

The company pursues: business integrity, quality first, social services, supply and demand win-win business philosophy, a comprehensive upgrade and continue to improve the management system, to provide customers with stable, reliable, high-quality green products.

企业文化 Enterprises of heritage wen

以国家政策为导向. 以人为本创新务实
技术改进创造声誉. 市场支撑创造利润
品质技术创造保障. 永续经营回报社会

With the national policy oriented. People-oriented innovative and pragmatic
Technical improvement to create reputation. Market support to create profits
Quality technology to create security. Sustainable management social returns

经营理念 Management idea

诚信经营　　品质第一
服务社会　　供求双赢

Integrity management　　Quality first
Social services　　Supply and demand win-win

质量目标 Quality objectives

提供顾客满意产品
年度顾客满意度100%
不断提升和完善质量管理水平

Customer satisfaction products
Annual customer satisfaction 100%
Continuously improve and perfect quality management level

环境目标 Environmental objectives

遵守法规　　预防污染
节能达标　　利用资源
事故为零　　改善环境

Comply with regulations to prevent pollution
Energy-saving standard use of resources
Accident for zero to improve the environment

資質證書 Certificate

2011年2月通過ISO9001和ISO14001認證
2011年3月通過QC08000認證
2011年3月通過ISO/TS16949認證
2011年5月通過RoHS認證
REWARDED ISO9001 AND ISO14001 IN DECEMBER 2011
REWARDED QC08000 IN MARCH 2011
REWARDED ISO/TS16949 IN MARCH 2011
REWARDED RoHS IN MAY 2011

索 引 Contents

片式鋁電解電容器一般使用注意事項
Application Guideline For V-chip Aluminum Electrolytic Capacitors

電路設計

1. 充分考慮電容器使用和安裝條件在本公司產品目錄的規定範圍內.
2. 工作温度和施加的紋波電流應在本公司產品目錄的規定範圍內.
3. 在設計電路時，應選擇符合壽命要求的產品。
4. 鋁電解電容器是有極性的，不應加反向電壓或交流電壓。對可能出現反向電壓的電路，應選擇雙極．陸電容。注意：即使雙極性電容器，也不能直接用于純交流電路。
5. 對需要快速和頻繁充放電的電路，不應使用鋁電解電容器．而應選擇特別設計的具有較長壽命的電容器。
6. 不應使用過載電壓。

A. 直流電壓與紋波電壓叠加後的峰值電壓不應超過額定工作電壓。

B. 若2個以上電容器串聯，應確保施加電壓低于額定值．而且要并聯一個平衡電阻，以使每個電容器所加電壓相等。

7. 電容器不能應用于下述環境條件下：

(1)a. 電容器被暴露于水(包括濃縮液)、鹽水或油中。

b. 周圍環境中有氫化硫、亞硫酸、亞硝酸、氯氣、溴氣、溴化甲烷、氨氣等有毒氣體。

c. 周圍環境中有臭氧、紫外綫及輻射。

(2)嚴重的振動及機械衝擊超過本公司產品目錄的規定範圍。

振動的測試條件如下：

振動頻率範圍：10-55-10Hz

掃描頻率：10-55-10Hz／分鐘

掃描方式：對數

振幅或加速度：1. 5mm(最大加工速度罵10G)

振動方向：X、丫、Z方向

測試時間：每個方向2小時

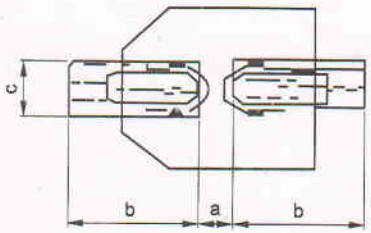
衝擊一般不適用。

如有特殊要求，請與我們銷售部門聯系。

8. 電解液主要化學劑及電解紙為易燃物，且電解液導電。當電解液與PC板接觸時，可能會腐蝕PC板上的綫路，或造成短路．以致產生烟或着火。因此在電容器封口下端不應有任何綫路。

9設計綫路板時應確保發熱元器件不靠近鋁電解電容器或PC板的另一面，避免其正好在電容器的下面。

10. 當使用片式電容器進設計時，請參考以下安裝尺寸：



Land Space

1. 設計綫路板時應考慮到電容器的電性能可能隨温度和頻率的變化而變化。
2. 當2個以上電容器并聯時，應考慮到通過這些電容器的電流平衡。
3. 在雙面綫路板上安裝電容器時，電容器的安裝位置應避開多餘地基板孔和過孔。

Circuit Design

1. Please make sure the environmental and mounting conditions to which the capacitor will be exposed are within the conditions specified in catalogue.
2. Operating temperature and applied ripple shall be within specification.
3. Appropriate capacitors which comply with the life requirement of the products shouldbe selected when designing the circuit.
4. Aluminum electrolytic capacitors are polar. Make sure that no reverse v61tage orAC voltage is applied to the capacitors. Please use bi-polar capacitors for a circuit that can possibly see reversed polarity. Note : Even bi-polar capacitors cannot be used forAC voltage application.
5. Do not use aluminum electrolytic capacitors in a circuit that requires rapid and very frequent charge/discharge. In this type of circuit, it is necessary to use a special design capacitor with extended life characteristics.
6. Do not apply excess voltage.

A. Please pay attention to that the peak voltage, which is DC voltage overlapped by ripple current, will not exceed the rated voltage.

B. In the case where more than two aluminum electrolytic capacitors are used in series, please make sure that applied voltage will be lower than rated voltage and the voltage will be applied to each capacitor equally by using a balancing resistor in parallel with the capacitor.

7. Aluminum electrolytic capacitors shall not be used under the following environmental conditions:

(1) a.Capacitors will be exposed to water (including condensation), brine or oil.

b.Ambient conditions that include toxic gases such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, bromine, methyl bromide, ammonium, etc.

c. Ambient conditions that expose the capacitor to ozone, ultraviolet ray and radiation.

(2) Severe vibration and physical shock conditions that exceed specification.

Vibration test condition:

Vibration frequency range:10-55-10Hz

Sweep rate: 10~55~10Hz/minute

Sweep method: logarithmic

Smplitude or acceleration: 1.5mm (max. acceleration is 10G)

Direction of vibration: X, Y, Z direction

Testing time:2 hours per each direction

Shock is not applicable normally.

If a particular condition is required, please contact our sales office.

8. The main chemical solution of the electrolyte and the separator paper used in the capacitors are combustible. The electrolyte is conductive. When it comes in contact with circuit pattern, which could result in smoking or catching fire. Do not locate any circuit pattern beneath the capacitor end seal.
9. Do not design a circuit board that the heat generating components are placed near the aluminum electrolytic capacitor or on the reverse side of PC board, if that just under the capacitor.
10. Please refer to the table of land size (mm) bellow when you design in surface mount capacitors.

Size	a	b	c
φ4	1.0	2.6	1.6
φ5	1.4	3.0	1.6
φ6.3	2.1	3.5	1.6
φ8x6.5	3.0	3.5	2.5
φ8 x 10.5	3.0	3.5	2.5
φ10x10.5	4.0	4.0	2.5

11. Electrical characteristics may vary depending on changes in temperature and frequency. Please consider this variation when you design circuits.
12. When you install more than 2 capacitors in parallel, please consider the balance of current flowing into the capacitors.
13. While mounting capacitors on double-side PC board, the capacitors should be away form those unnecessary base plate holes and connection holes.

安裝

1. 一旦電容器經過安裝及加載，不要再試圖用于其他綫路板或其他用途。
2. 貯存超過2年的電容器，其漏電流可能增大。若漏電流增大．請使用1KΩ電阻充電處理。
3. 在將電容器安裝在PC板之前，請確認其規格和極．陸。
4. 不要將電容器掉在地上，或不要使用掉在地上的電容。
5. 安裝時請不要損傷電容器．
6. 請注意貼片機的吸頭、產品檢測夾具或對中裝置對電容器的機械衝擊。
7. 回流焊
   a. 請遵守產品目錄中的回流焊條件。
   b. 當使用紅外綫加熱時，請注意加熱程度．因為紅外綫吸收率會隨着電容器顏色和大小的不同而改變。
8. 將電容器焊接在PC板後，不要傾斜或撥動電容器。
9. 不要抓焊接後的電容器搬運PC板。
10. 不要讓任何物品接觸焊接後的電容器。如果PC板堆放儲存，請確保PC板或其他零部件不觸到電容器。
11. 焊接後的電容器不應受到任何已焊接PC板或其他元器件熱輻射的影響。
12. 清洗：
    a. 不能用滷化清洗劑清洗電容器。如必須使用滷化清洗劑，請與我們銷售部門聯系。
    b. 推薦清洗方法：
    使用範圍：任何類型及規格
    清洗方法：浸泡、超聲波或其他方法的總清洗時間應在2分鐘內。清洗劑温度應在40℃以下。清洗後，應將電容器與PC板一起用熱風吹至少10分鐘。熱風温度應低于電容器工作温度。水洗後若不充分吹幹，可能導致外觀不良．如座板發脹等。
    c. 避免使用破壞臭氧層的清洗劑以保護環境。

安裝後

1. 不要直接用手接觸電容器正負板。
2. 不要在正負極之間用導體連接．也不要在電容器及其附近濺撒導電液體、如酸碱溶液等。
3. 在使用環境中應避免濺上水或油，避免有陽光直射、紫外綫照射、輻射、有毒氣體、振動或機械衝擊。

維護和檢驗

請定期檢測安裝在工業設備上的電容器。檢測項目如下：
外觀：明顯缺陷、如防爆閥打開、電解液泄露等。
電性能：電容量、損耗角正切、漏電流等．有具体数据產品目錄和相關產品規格書。

緊急情況

1. 若看見因防爆閥動作而產生的烟氣、請關閉主開關或撥開離合器。
2. 若吸入氣體或咽下電解液，應立即用水清洗口腔和喉嚨。
3. 若皮膚沾上電解液，請用肥皂和水清洗幹净。

儲存

1. 不要將電容器儲存在濕度和温度高的地方。儲存環境應罵温度：5℃-35℃、相對濕度：〈75%，儲存地點：室内。
2. 避免電容器的儲存環境中有水、鹽水或油。
3. 避免電容器的儲存環境中有毒氣體．如氫化硫、亞硫酸、亞硝酸、氯氣、溴化甲烷和氨氣等。
4. 避免電容器暴露在臭氧、紫外綫或輻射中。

处置

請用下面任何一種方法處置電容：
1. 在電容器殼體上開孔或將電容器壓碎後焚燒。
2. 如不能進行焚燒，請交給廢物處理機構進行填埋。

Mounting

1. Once a capacitor has been assembled in the set and power applied, do not attempt to re-use the capacitor in other circuits or application.
2. Leakage current of the capacitors that have been stored for more than 2yearsmayusinga 1KΩ resistor.
3. Please confirm specifications and polarity before installing capacitors on the PC board.
4. Do not drop capacitors on the floor, nor use a capacitor that was dropped.
5. Do not deform the capacitor during installation.
6. Please pay attention to the mechanical shock to the capacitor by suction nozzle of the automatic insertion machine or automatic mounter, or by product checker, or by centering mechanism.
7. Reflow soldering
   a. Please follow "Reflow Soldering Conditions" in catalogue.
   b. When an infrared heater is used, please pay attention to the extent of heating since the absorption rate of infrared will vary due to difference in the color and size of the capacitor.
8. Do not tilt lay down or twist the capacitor body after the capacitor are soldered to the PC board.
9. Do not carry the PC board by grasping the soldered capacitor.
10. Please do not allow anything to touch the capacitor after soldering. If PC boards are stored in stack, please make sure the PC board or other components away from the capacitor.
11. The capacitors shall not be effected by any radiated heat from the soldered PC board or other components after soldering.
12. Cleaning
    a. Do not clean capacitors with halogenated cleaning agent. However, if it is necessary to clean with halogenated cleaning agent, please contact our sales office.
    b. Recommended cleaning method:
    Applicable: any type, any ratings.
    Cleaning conditions: Total cleaning time shall be within 2 minutes by immerion, ultrasonic or other methods. Temperature of the cleaning agents shall be 40℃ or below. After cleaning, capacitors should be dried by using hot air for the minimum 10 minutes operating temperature of the capacitor. Insufficient dryness after water rinse may cause appearance problems, such as bottom-plate bulge and etc.
    c. Avoid using ozone destructive substances as cleaning agents for protecting global environment.

In the Equipment

1. Do not directly touch terminal by hand.
2. Do not link positive terminal and negative terminal-by conductor, not spill conductible liquid such as alkaline or acidic solution on or near the capacitor.
3. Please make sure that the ambient conditions where the set is installed are free form spilling water or oil, direct sunlight, ultraviolet rays, radiation, poisonous gases, vibration or mechanical shock.

Maintenance and Inspection

Please periodically inspect the aluminum capacitors that are installed in industrial equipment. The following items should be checked.
Appearance: remarkable abnormality such as pressure relief vent opening, electrolyte leaking, etc.
Electrical characteristics : capacitance, dielectric loss tangent, leakage current and etc, which are specified in catalogue or alternate product specification.

In an Emergency

1. If you see smoke due to operation of safety vent, please turn off the main switch or pull out the plug form the outlet.
2. If you breathe the gas or ingest the electrolyte, please wash out your mouth and throat with water immediately.
3. If your skin is exposed to the electrolyte, please wash it away using soap and water.

Storage

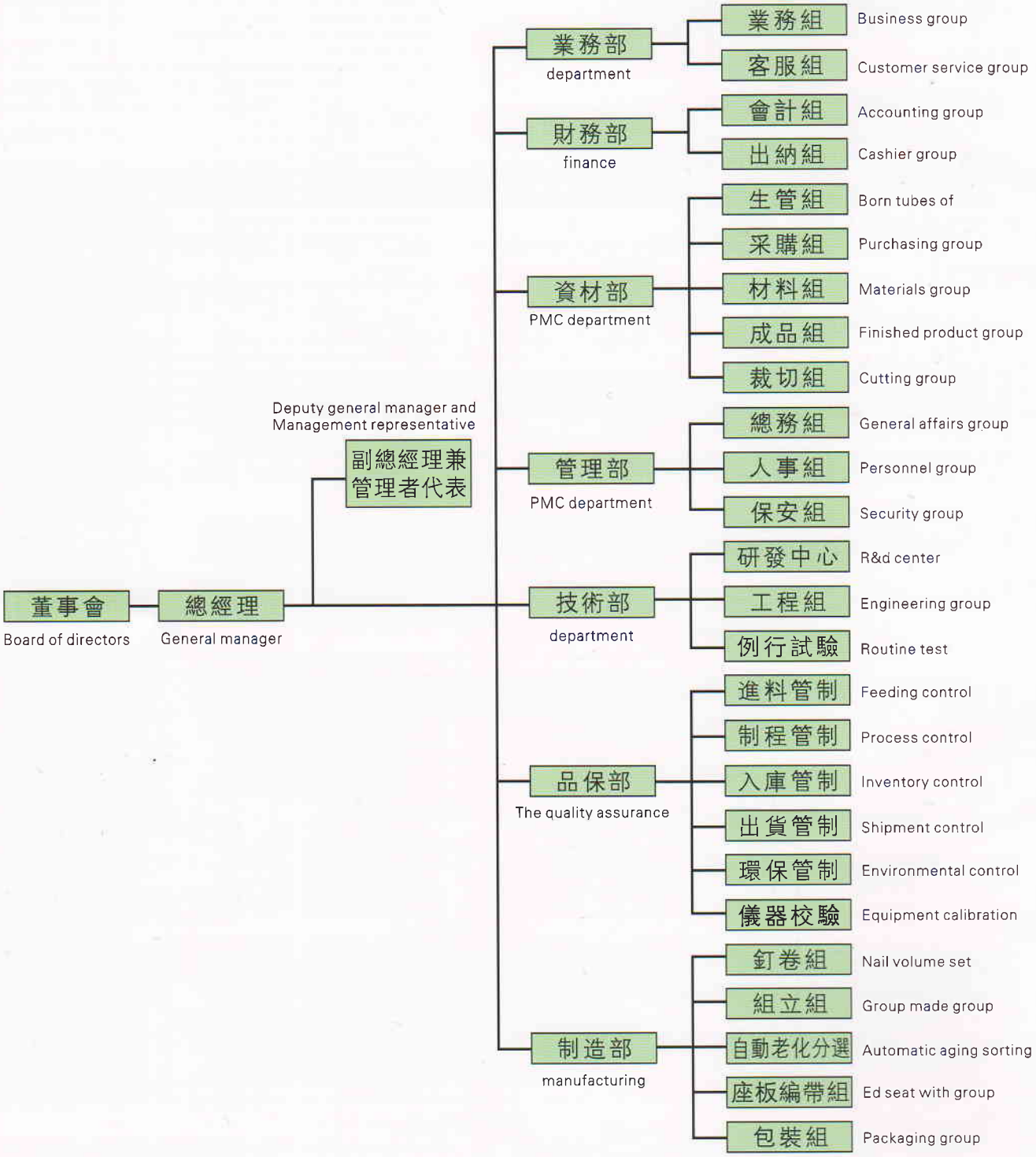
1. Do not keep capacitor in high temperature and high humidity atmosphere.
   Storage condition should be:
   Temperature: 5℃~35℃, humidity: lower than 75%
   Place: indoor
2. Avoid ambient conditions where capacitors are covered with water, brine or oil.
3. Avoid ambient conditions where capacitors are permeated by poisonous gases such as hydrogen sutfide, sulfurous acid, nitrous acid, chlorine, bromine, methyl bromide, ammonium and etc.
4. Avoid ambient condition where capacitors are exposed to ozone, ultraviolet ray or radiation.

Disposal

Please take either of the following methods in disposing capacitors.
1. Incinerate them after crushing capacitors or making a hole on the capacitor body.
2. If incineration is not applicable, hand them over to a waste disposal agent to landfill.

MECHANICAL& ELETRONICAL

組織結構圖



品質保證
Qulity Control

原料 Mateial

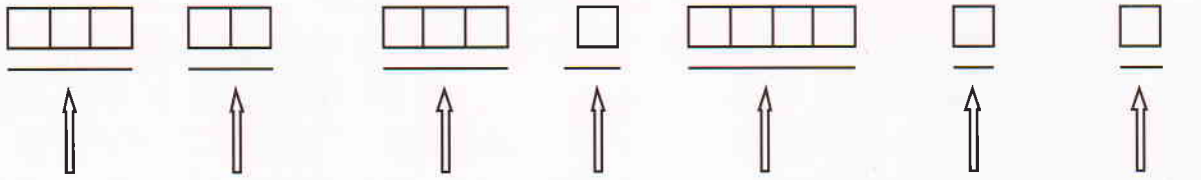
- 陽極箔 Anode.foi
- 陰極箔 Cathode.foi
- 電解紙 Paper
- 箔導針 Foilead Wire
- 電解紙 Paper
- 電解液 Electrolyte
- 鋁殼 Aium.case
- 膠蓋 Rubber
- 底座盒帶 Base Paper
- 包装材料 Packing Material

制程 Process

- 裁切 Cutting
- ☆ 自動釘卷機 AUTOMATIC STITCHING WINDING MACHINE
  - 釘接 Stitching
  - 卷取 Winding
- ☆ 自動組山Ji機 AUTOMATIC ASSEMBLING
  - 含浸 Impregnating
  - 組立 Assembling
  - 封口 Sealing
- 清洗 Cleaning
- ☆ 自動充電選別機 AUTOMATIC AGEING SORTING MACHINE
  - 上架 on-Shelf
  - 老化 Ageing
  - 選別 S0rt5na
- 外觀檢查 Apperance
- ☆ 自動上底座編帶機 AUTOMATIC FORMING BASE TAPING MACHINE
  - 座板 Foundation Base
    編帶 Taping
- 外觀檢查 Apperance
- 包装 Packing
- 入庫 Wareh0USe
- OQC
- 發貨 Send out goods

● 材料 ● 制程 — QC ⌄ IPQC ☆ 關鍵工序

产品料号介绍: Product materials issue is introduced:



系列码 Series yards	工作电压码 Working voltage yards	容量码 Capacity yards	容量级别码 Capacity levels yards	尺寸码 Size yards	包装形式码 Packaging yards	工厂码 Factory yards

产品系列介绍: Product series is introduced:

系列 Department listed	代号 And number	温度范围 Temperature range	工作电压 Working voltage	容量范围 Capacity range	产品寿命 Product life	介绍页码 Introduction page
标准品 Standard product	SYB	-40--+85℃	6.3—50VDC	0.1—1500UF	2000H	
宽温标准品 Wide temperature standard product	SYK	-55--+105℃	6.3—50VDC	0.1—220UF	1000H	
高频低阻品 High frequency low resistance product	SYZ	-55--+105℃	6.3—50VDC	1.0—1500UF	1000H	
长寿命标准品 Long life standard product	SYC	-40--+105℃	6.3—50VDC	0.1—1000UF	2000H	
双极性产品 Dual polarity products	SYS	-40--+85℃	6.3—50VDC	0.1—100UF	1000H	
高温长寿命/需客户定制 High temperature long life/need customization	SYD	-55--+105℃	6.3—50VDC	0.1—220UF	2000H	
低漏电超长寿命产品 Low leakage current products	SYO	-40--+105℃	6.3—50VDC	0.1—1000UF	3000/5000	需提前90天下单
超高温超长寿命 Super high temperature long life	SYG	-55--+125℃	6.3—50VDC	0.1—220UF	3000/5000	需提前90天下单

工作电压代码表: Working voltage and collation:

系列 series	工作电压V Working voltage V	代码 code	容量UF Capacity UF	代码 code	容量UF Capacity UF	代码 code	容量级别 Capacity levels	代码 code
SYB	4V	0G	0.1	0R1	47	470	±5%	J
SYK	6.3V	0J	0.22	R22	68	680	±10%	K
SYZ	10V	1A	0.33	R33	100	101	±20%	M
SYC	16V	1C	0.47	R47	220	221		
SYS	25V	1E	1.0	010	330	331		
SYO	35V	1V	2.2	2R2	470	471		
SYD	50V	1H	3.3	3R3	680	681		
SYG	63V	1J	4.7	4R7	820	821		
	80V	1K	10	100	1000	102		
	100V	2A	22	220	1500	152		
			33	330				

尺寸代码图示: Size code here:

尺寸 Size	代码 code	尺寸 Size	代码 code
4*5.4	0405	6.3*7.7	0607
5*5.4	0505	8*10.2	0810
6.3*5.4	0605	10*10.2	1010

包装形式代码: Packaging form code:

C: 代表常规包装，以我公司要求包装

F: 为客户要求改变包装的形式,以客户要求包装

C: on behalf of the conventional packing to my company requirements packaging

F: to customer requirements change the form of packaging, customer requirements packaging

工厂码: Factory code:

B: 为按照我公司常规生产的产品

Y: 为按照客户要求设计生产的产品

B: according to our company for routine production of products

Y: for in accordance with the customer's request to design and manufacture products

SYB标准品 SYB standard product

A.适用于回流焊
B.性能稳定,高可靠性
C.适用于高密度表面贴装
D.寿命85℃,2000H

A. applicable in soldering
B. stable performance, high reliability
C. suitable for high density SMT
D. life 2000H ℃, 85

适用温度范围 Applicable temperature range	-40~85℃
额定工作电压范围 Rated voltage range	6.3~50VDC
标称电容量范围 Nominal electric capacity range	0.1~1500UF
标称电容量允许偏差 Nominal electric capacity allow deviation	±20（120HZ/20℃）
漏电流 Leakage current	施加工作电压2分钟,LC≤0.01CV或3(UA)取较大值

损失角正切值 120HZ/20℃ Loss Angle tangent 120HZ / 20 ℃

工作电压 Working voltage	6.3V	10V	16V	25V	35V	50V
¢4~¢6.3	0.26	0.22	0.18	0.16	0.13	0.12
¢8~¢10	0.35	0.26	0.20	0.16	0.14	0.12

低温特性 阻抗比ZT/Z20(max) Low temperature characteristics Impedance ZT/Z20 than (Max)

UR(V)	6.3	10	16	25	35	50
Z-40℃/+20℃	8	6	4	4	3	3

高温负荷特性 Heat load characteristics

标称电容量变化率 Nominal electric capacity rate	初始值的20%以内 The initial value of 20%
损失角正切值 Loss Angle tangent	不大于规范值200% No greater than standard value 200%
漏电流值 Leakage current	不大于规范值 No greater than standard value

高温储存特性 Heat storage characteristics

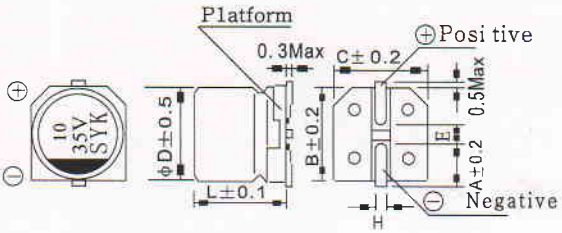
在85度的环境中存放1000小时后，恢复16H，电容器的CAP特性符合
CAP初始值的正负20%以内
DF不大于初始值的200%
LC不大于初始值的200%

In the environment of 85 degrees, capacitors store 1000 hours with the CAP,
CAP of initial values of plus or minus 20%
DF of initial values of not more than 200%
LC is not more than the initial value of 200%

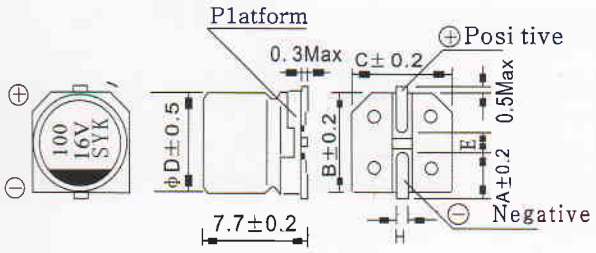
回流焊耐温特性 250度高温时间不超过30秒，在室温下恢复到正常温度后 Reflow temperature characteristics250 degrees heat timeNo more than 30 seconds, inRoom temperature returned to positive Often temperature after

标称电容量变化率 Nominal electric capacity rate	初始值的10%以内 Less than 10% of the initial value
损失角正切值 Loss Angle tangent	不大于规范值 No greater than standard value
漏电流值 Leakage current	不大于规范值 No greater than standard value

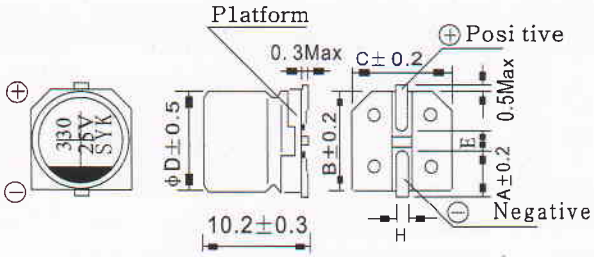
(φ4~ φ6.3)



(φ6.3×7.7)



(φ8～ φ10×10.2)



各规格部位尺寸 Various specifications place dimension drawing

部位代码 Site code	4*5.4	5*5.4	6.3*5.4	6.3*7.7	8*10.2	10*10.2
A	1.8	2.1	2.4	2.5	2.9	3.2
B	4.3	5.3	6.6	6.6	8.3	10.3
C	4.3	5.3	6.6	6.6	8.3	10.3
E	1.0	1.3	2.2	2.2	3.1	4.5
L	5.4	5.4	5.4	7.7	10.2	10.2
H	0.5—0.8				0.8~1.2	0.8~1.2

各规格尺寸及最大允许纹波电流 The size and the maximum permissible ripple current figure

WV / UF	6.3		10		16		25		35		50	
	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA
0.1											4*5.4	1.0
0.22											4*5.4	2.0
0.33											4*5.4	2.8
0.47											4*5.4	4.0
1.0											4*5.4	8.5
2.2											4*5.4	13
3.3									4*5.4	18	4*5.4	17
4.7							4*5.4	16	4*5.4	20	5*5.4	20
10					4*5.4	23	4*5.4	24	5*5.4	29	6.3*5.4	33
22	4*5.4	28	4*5.4	30	5*5.4	37	5*5.4	38	6.3*5.4	46	6.3*5.4	43
33	5*5.4	36	5*5.4	41	5*5.4	44	6.3*5.4	52	6.3*5.4	53	6.3*7.7	85
47	5*5.4	45	6.3*5.4	52	6.3*5.4	58	6.3*5.4	60	6.3*7.7	70	8*10.2	140
100	6.3*5.4	70	6.3*5.4	76	6.3*5.4	86	6.3*7.7	130	6.3*7.7/8*10.2	150/175	10*10.2	195
220	6.3*5.4	95	63.*7.7/6.3*5.4	150/110	6.3*7.7	150	8*10.2	232	10*10.2	265	10*10.2	415
330	6.3*7.7	150	8*10.2	240	8*10.2	270	10*10.2	305	10*10.2	324		
470	8*10.2	265	8*10.2	290	10*10.2	330	10*10.2	393				
1000	10*10.2	400	10*10.2	455								
1500	10*10.2	485										

测试条件 (mA.85℃.120HZ)

纹波电流频率补偿系数 Ripple frequency compensation coefficients

频率 frequency		50HZ	120HZ	300HZ	1KHZ	10KHZ
容量范围 Capacity range	0.1—47UF	0.80	1.00	1.20	1.30	1.50
	100—1500UF	0.80	1.00	1.10	1.15	1.20

SYK系列宽温标准品 SYK series wide temperature standard product

A.适用于回流焊
B.性能稳定,高可靠性
C.适用于高密度表面贴装
D.寿命–55℃–105℃,1000H

A. applicable in soldering
B. stable performance, high reliability
C. suitable for high density SMT
D. life – 55 ℃ – 105 ℃, 1000H

适用温度范围 Applicable temperature range	–55~105℃
额定工作电压范围 Rated voltage range	6.3~50VDC
标称电容量范围 Nominal electric capacity range	0.1~220UF
标称电容量允许偏差 Nominal electric capacity allow deviation	±20（120HZ/20℃）
漏电流 Leakage current	施加工作电压2分钟,LC≤0.01CV或3(UA)取较大值

损失角正切值 120HZ/20℃ Loss Angle tangent 120HZ / 20 ℃

工作电压 Working voltage	6.3V	10V	16V	25V	35V	50V
¢4~¢6.3	0.26	0.20	0.16	0.14	0.12	0.12

低温特性 阻抗比ZT/Z20(max) Low temperature characteristics Impedance ZT/Z20 than (Max)

UR(V)	6.3	10	16	25	35	50
Z-40/-20℃~z+20℃	8/4	6/3	4/2	4/2	3/2	3/2

高温负荷特性 Heat load characteristics

标称电容量变化率 Nominal electric capacity rate	初始值的20%以内 The initial value of 20%
损失角正切值 Loss Angle tangent	不大于规范值200% No greater than standard value 200%
漏电流值 Leakage current	不大于规范值 No greater than standard value

高温储存特性 Heat storage characteristics

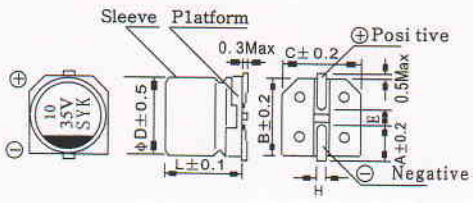
在105度的环境中存放1000小时后，恢复16H，电容器的CAP特性符合
CAP初始值的正负20%以内
DF不大于初始值的200%
LC不大于初始值的200%

In the environment of 105 degrees, capacitors store 1000 hours with the CAP,
CAP of initial values of plus or minus 20%
DF of initial values of not more than 200%
LC is not more than the initial value of 200%

回流焊耐温特性 250度高温时间不超过30秒，在室温下恢复到正常温度后 Reflow temperature characteristics250 degrees heat timeNo more than 30 seconds, inRoom temperature returned to positive Often temperature after

标称电容量变化率 Nominal electric capacity rate	初始值的10%以内 Less than 10% of the initial value
损失角正切值 Loss Angle tangent	不大于规范值 No greater than standard value
漏电流值 Leakage current	不大于规范值 No greater than standard value

(ϕ4~ ϕ6.3)



各规格部位尺寸 Various specifications place dimension drawing

部位代码 Site code	4*5.4	5*5.4	6.3*5.4 /6.3*7.7
A	1.8	2.1	2.4
B	4.3	5.3	6.6
C	4.3	5.3	6.6
E	1.0	1.3	2.2
L	5.4	5.4	5.4
H	0.5—0.8		

各规格尺寸及最大允许纹波电流 The size and the maximum permissible ripple current figure

WV / UF	6.3		10		16		25		35		50	
	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA
0.1											4*5.4	1.0
0.22											4*5.4	2.0
0.33											4*5.4	3.0
0.47											4*5.4	4.0
1.0											4*5.4	8.0
2.2											4*5.4	11
3.3											4*5.4	13
4.7					4*5.4	12	4*5.4	13	4*5.4	14	5*5.4	18
10					4*5.4	20	4*5.4/5*5.4	14/20	5*5.4	24	6.3*5.4	28
22	4*5.4	20	4*5.4/5*5.4	21/27	4*5.4/5*5.4	22/31	5*5.4/6.3*5.4	25/36	5*5.4/6.3*5.4	27/40	6.3*5.4	42
33	4*5.4/5*5.4	22/27	4*5.4/5*5.4	23/34	5*5.4/6.3*5.4	28/40	5*5.4/6.3*5.4	29/44	6.3*5.4	50	6.3*7.7	68
47	4*5.4/5*5.4	25/37	5*5.4/6.3*5.4	30/41	5*5.4/6.3*5.4	31/56	6.3*5.4	48	6.3*7.7	57		
100	5*5.4/6.3*5.4	39/57	6.3*5.4	53	6.3*5.4	75	6.3*7.7	56				
220	6.3*5.4	67	6.3*7.7	67	6.3*7.7	86						

测试条件 (mA.105℃.120HZ)

纹波电流频率补偿系数 Ripple frequency compensation coefficients

频率 frequency		50HZ	120HZ	300HZ	1KHZ	10KHZ
容量范围 Capacity range	0.1—220UF	0.70	1.00	1.20	1.30	1.50

SYC系列宽温长寿命 SYC series wide temperature long life

A.适用于回流焊
B.性能稳定,高可靠性
C.适用于高密度表面贴装
D.寿命–55℃–105℃,2000H

A. applicable in soldering
B. stable performance, high reliability
C. suitable for high density SMT
D. life – 55 ℃, 2000H ℃ – 105

适用温度范围 Applicable temperature range	–55~105℃
额定工作电压范围 Rated voltage range	6.3~100VDC
标称电容量范围 Nominal electric capacity range	4.7~1500UF
标称电容量允许偏差 Nominal electric capacity allow deviation	±20（120HZ/20℃）
漏电流 Leakage current	施加工作电压2分钟,LC≤0.01CV或3(UA)取较大值

损失角正切值 120HZ/20℃ Loss Angle tangent 120HZ / 20 ℃

工作电压 Leakage Working voltage	6.3V	10V	16V	25V	35V	50V	63V	100V
损失角正切 Loss Angle tangent	0.26	0.20	0.16	0.14	0.12	0.12	0.12	0.12

低温特性 阻抗比ZT/Z20(max) Low temperature characteristics Impedance ZT/Z20 than (Max)

UR(V)	6.3	10	16	25	35	50	63	100
Z–25/–40℃/+20℃	4/8	3/6	2/4	2/4	2/3	2/3	3/4	3/4

高温负荷特性 Heat load characteristics

标称电容量变化率 Nominal electric capacity rate	初始值的20%以内 The initial value of 20%
损失角正切值 Loss Angle tangent	不大于规范值200% No greater than standard value 200%
漏电流值 Leakage current	不大于规范值 No greater than standard value

高温储存特性 Heat storage characteristics

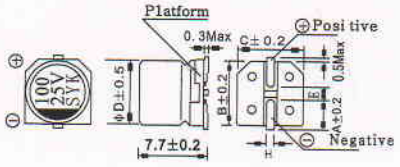
在105度的环境中存放1000小时后，恢复16H，电容器的CAP特性符合
CAP初始值的正负20%以内
DF不大于初始值的200%
LC不大于初始值的200%

In the environment of 105 degrees, capacitors store 1000 hours with the CAP,
CAP of initial values of plus or minus 20%
DF of initial values of not more than 200%
LC is not more than the initial value of 200%

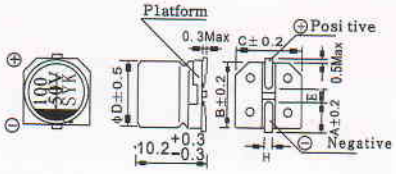
回流焊耐温特性 250度高温时间不超过30秒，在室温下恢复到正常温度后 Reflow temperature characteristics250 degrees heat timeNo more than 30 seconds, inRoom temperature returned to positive Often temperature after

标称电容量变化率 Nominal electric capacity rate	初始值的10%以内 Less than 10% of the initial value
损失角正切值 Loss Angle tangent	不大于规范值 No greater than standard value
漏电流值 Leakage current	不大于规范值 No greater than standard value

(φ6.3×7.7)



(φ8~ φ10×10.2)



各规格部位尺寸 Various specifications place dimension drawing

部位代码 Site code	6.3*7.7	8*10.2	10*10.2
A	2.5	2.9	3.2
B	6.6	8.3	10.3
C	6.6	8.3	10.3
E	2.2	3.1	4.5
L	7.7	10.2	10.2
H	0.5---0.8	0.8---1.2	

各规格尺寸及最大允许纹波电流 The size and the maximum permissible ripple current figure

WV / UF	6.3		10		16		25	
	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA
100							6.3*7.7	91
220	6.3*7.7	105	6.3*7.7	110	6.3*7.7/8*10.2	105/150	8*10.2	175
330	6.3*7.7	110	8*10.2	196	8*10.2	195	8*10.2/10*10.2	220/240
470	8*10.2	210	8*10.2	210	8*10.2/10*10.2	230/295	10*10.2	280
1000	8*10.2/10*10.2	230/300	10*10.2	315	10*10.2	340		
1500	10*10.2	315						
WV / UF	35		50		63		100	
	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA
4.7							6.3*7.7	35
10							6.3*7.7/8*10.2	35/77
22			6.3*7.7	51	6.3*7.7	39	10*10.2	133
33			6.3*7.7	60	6.3*7.7/8*10.2	49/98	10*10.2	140
47	6.3*7.7	70	6.3*7.7/8*10.2	75/120	6.3*7.7	112		
100	6.3*7.7/8*10.2	84/120	8*10.2/10*10.2	140/170	8*-10.2/10*10.2	119/160		
220	8*10.2/10*10.2	190/220	10*10.2	220	10*10.2	196		
330	10*10.2	245						
470	10*10.2	280						

测试条件 mA,105℃,120Hz

Test conditions, 105 ℃, mA 120Hz

SYZ高频低阻系列 SYZ high frequency low resistance series

A.适用于回流焊，低阻抗品
B.性能稳定,高可靠性
C.适用于高密度表面贴装
D.寿命–55℃–105℃,1000H
E.极低阻抗品

A. apply to reflow, low impedance product
B. stable performance, high reliability
C. suitable for high density SMT
D. life – 55 ℃ – 105 ℃, 1000H
E. is extremely low impedance product

适用温度范围 Applicable temperature range	–55~105℃
额定工作电压范围 Rated voltage range	6.3~50VDC
标称电容量范围 Nominal electric capacity range	1.0~1500UF
标称电容量允许偏差 Nominal electric capacity allow deviation	±20（120HZ/20℃）
漏电流 Leakage current	施加工作电压2分钟,LC≤0.01CV或3(UA)取较大值

损失角正切值 120HZ/20℃ Loss Angle tangent 120HZ / 20 ℃

工作电压 Working voltage	6.3V	10V	16V	25V	35V	50V
损失角正切 Loss Angle tangent	0.22	0.19	0.16	0.14	0.12	0.10

低温特性 阻抗比ZT/Z20(max) Low temperature characteristics Impedance ZT/Z20 than (Max)

UR(V)	6.3	10	16	25	35	50
Z–25℃/+20℃	2	2	2	2	2	2
Z–40℃/+20℃	3	3	3	3	3	3
Z–55℃/+20℃	4	4	4	3	3	3

高温负荷特性 Heat load characteristics

标称电容量变化率 Nominal electric capacity rate	初始值的正负20%以内小于或等于16V初始值的正负25%以内 The initial value plus or minus 20% less than or equal to the positive and negative 25% 16V within the initial value
损失角正切值 Loss Angle tangent	不大于规范值200% No greater than standard value 200%
漏电流值 Leakage current	不大于规范值 No greater than standard value

高温储存特性 Heat storage characteristics

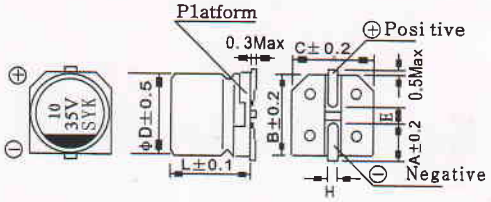
在105度的环境中存放1000小时后，恢复16H，电容器的CAP特性符合
CAP初始值的正负20%以内
DF不大于初始值的200%
LC不大于初始值的200%

In the environment of 105 degrees, capacitors store 1000 hours with the CAP,
CAP of initial values of plus or minus 20%
DF of initial values of not more than 200%
LC is not more than the initial value of 200%

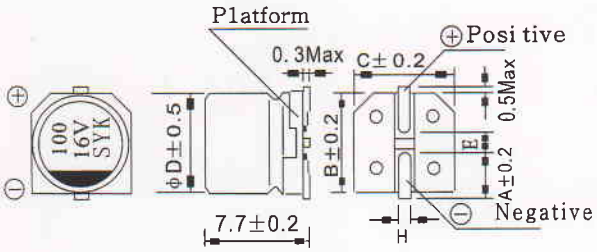
回流焊耐温特性 250度高温时间 不超过30秒，在室温下恢复到正常温度后 Reflow temperature characteristics250 degrees heat timeNo more than 30 seconds, inRoom temperature returned to positive Often temperature after

标称电容量变化率 Nominal electric capacity rate	初始值的10%以内 Less than 10% of the initial value
损失角正切值 Loss Angle tangent	不大于规范值 No greater than standard value
漏电流值 Leakage current	不大于规范值 No greater than standard value

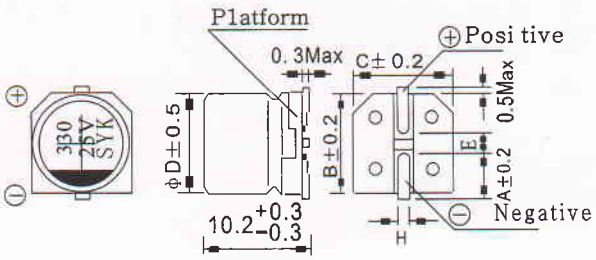
(φ4～ φ6.3)



(φ6.3×7.7)



(φ8～ φ10×10.2)



各规格部位尺寸 Various specifications place dimension drawing

尺寸 size	4*5.4	5*5.4	6.3*5.4	6.3*7.7	8*10.2	10*10.2
部位尺寸代码 Place dimension code	M	N	P	Q	R	S
A	1.8	2.1	2.4	2.5	2.9	3.2
B	4.3	5.3	6.6	6.6	8.3	10.3
C	4.3	5.3	6.6	6.6	8.3	10.3
E	1.0	1.3	2.2	2.2	3.1	4.5
L	5.4	5.4	5.4	7.7	10.2	10.2
H	0.5—0.8				0.8~1.2	0.8~1.2

各规格尺寸最大允许纹波电流及阻抗值 Each size maximum permissible ripple current and impedance values

电压 voltage	6.3			10			16			25			35			50		
容量 capacity	D*Lmm	阻抗Ω	mA	D*Lmm	阻抗Ω	mA	D*Lmm	阻抗Ω	mA	D*Lmm	阻抗Ω	mA	D*Lmm	阻抗Ω	mA	D*Lmm	阻抗Ω	mA
1.0																M	2.9	60
2.2																M	2.9	60
3.3																M	2.9	60
4.7										M	1.8	80	M	1.8	80	N	1.52	85
10							M	1.8	80	M	1.8	80	N	0.76	150	P	0.88	165
22	M	1.8	80	M	1.8	80	N	0.76	150	P	0.44	230	P	0.44	230	Q	0.68	185
33	N	0.76	150	N	0.76	150	P	0.44	230	P	0.44	230	P	0.44	230	Q	0.68	185
47	N	0.76	150	P	0.44	230	P	0.44	230	Q	0.34	280	Q	0.34	280	R	0.34	300
100	P	0.44	230	Q	0.34	280	Q	0.34	280	Q	0.34	280	R	0.17	450	S	0.18	670
150	P	0.44	230	Q	0.34	280	Q	0.34	280	R	0.17	450	S	0.09	670	S	0.18	670
220	Q	0.34	280	Q	0.34	280	R	0.17	450	R	0.17	450	S	0.09	670	S	0.18	670
330	Q	0.34	280	R	0.17	450	R	0.17	450	S	0.09	670	S	0.09	670			
470	R	0.17	450	R	0.17	450	S	0.09	670	S	0.09	670						
1000	S	0..9	670	S	0.09	670												
1500	S	0.09	670															

测试条件 mA,105℃,120Hz Ω,20℃,100kHz

SYD系列宽温低漏电产品 SYD series wide temperature low leakage current products

A.适用于回流焊，低漏电SMD型
B.性能稳定,高可靠性
C.适用于高密度表面贴装
D.寿命-55℃-105℃,2000H

A. apply to reflow, low leakage SMD type
B. stable performance, high reliability
C. suitable for high density SMT
D. life – 55 ℃, 2000H ℃ – 105

适用温度范围 Applicable temperature range	-55~105℃
额定工作电压范围 Rated voltage range	6.3~50VDC
标称电容量范围 Nominal electric capacity range	0.1~220UF
标称电容量允许偏差 Nominal electric capacity allow deviation	±20（120HZ/20℃）
漏电流 Leakage current	施加工作电压2分钟,LC≤0.002CRUR(UA)或0.4(UA)取较大值

损失角正切值 120HZ/20℃
Loss Angle tangent 120HZ / 20 ℃

工作电压 Working voltage	6.3V	10V	16V	25V	35V	50V
¢4~¢6.3	0.30	0.24	0.20	0.18	0.16	0.14

低温特性 阻抗比ZT/Z20(max)
Low temperature characteristics Impedance ZT/Z20 than (Max)

UR(V)	6.3	10	16	25	35	50
Z-40/-20℃~z+20℃	10/4	8/3	6/2	4/2	3/2	3/2

高温负荷特性 Heat load characteristics

标称电容量变化率 Nominal electric capacity rate	初始值的30%以内 Initial values within the 30%
损失角正切值 Loss Angle tangent	不大于规范值200% No greater than standard value 200%
漏电流值 Leakage current	不大于规范值200% No greater than standard value 200%

高温储存特性 Heat storage characteristics

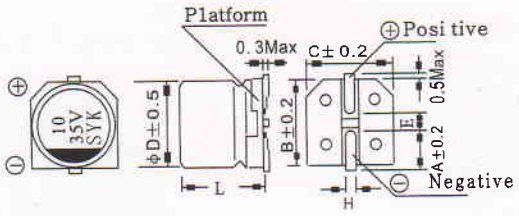
在105℃的环境中存放1000小时后，恢复16小时候后，
CAP初始值的正负20%以内
DF不大于初始值的150%
LC不大于初始值的200%

In 105 ℃ environment, storage in 1000 hours after 16 hours after,
CAP of initial values of plus or minus 20%
No greater than the initial value of DF 150%
LC is not more than the initial value of 200%

回流焊耐温特性 250度高温时间不超过30秒，在室温下恢复到正常温度后
Reflow temperature characteristics250 degrees heat timeNo more than 30 seconds, inRoom temperature returned to positive Often temperature after

标称电容量变化率 Nominal electric capacity rate	初始值的10%以内 Less than 10% of the initial value
损失角正切值 Loss Angle tangent	不大于规范值 No greater than standard value
漏电流值 Leakage current	不大于规范值 No greater than standard value

(φ4～ φ6.3×6.0)



各规格部位尺寸 Various specifications place dimension drawing

部位代码 Site code	4*5.4	5*5.4	6.3*5.4
A	1.8	2.1	2.4
B	4.3	5.3	6.6
C	4.3	5.3	6.6
E	1.0	1.3	2.2
L	5.4	5.4	5.4
H	0.5—0.8		

各规格尺寸及最大允许纹波电流 The size and the maximum permissible ripple current

电压 voltage	6.3		10		16		25		35		50	
容量 capacity	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA
0.1											4*5.4	1.0
0.22											4*5.4	2.0
0.33											4*5.4	3.0
0.47											4*5.4	4.0
1.0											4*5.4	8.0
2.2											4*5.4	11
3.3											4*5.4	13
4.7							4*5.4	13	4*5.4	14	6.3*5.4	20
10			5*5.4	27	4*5.4	20	6.3*5.4	24	6.3*5.4	29	6.3*5.4	33
22	4*5.4	23	6.3*5.4	37	6.3*5.4	37	6.3*5.4	36	6.3*5.4	46		
33	6.3*5.4	37	6.3*5.4	41	6.3*5.4	40	6.3*5.4	44				
47	6.3*5.4	40	6.3*5.4	48	6.3*5.4	56						
100	6.3*5.4	57										

Test conditions (105 ℃. 120HZ j (mA)
测试条件 (mA.105℃.120HZ)

纹波电流频率补偿系数 Ripple frequency compensation coefficients

频 率 Frequency rate		50HZ	120HZ	300HZ	1KHZ	10KHZ
容量范围 Capacity range	0.1—220UF	0.70	1.00	1.17	1.36	1.50

SYS双极性系列 SYS dual polarity series

A.适用于回流焊
B.性能稳定,高可靠性
C.适用于高密度表面贴装
D.寿命–40℃–85℃,1000H
E.双极性

A. applicable in soldering
B. stable performance, high reliability
C. suitable for high density SMT
D. life – 55 ℃ – 105 ℃, 1000H
E. dual polarity

适用温度范围 Applicable temperature range	–40~85℃
额定工作电压范围 Rated voltage range	6.3~50VDC
标称电容量范围 Nominal electric capacity range	0.1~100UF
标称电容量允许偏差 Nominal electric capacity allow deviation	±20（120HZ/20℃）
漏电流 Leakage current	施加工作电压2分钟,LC≤0.01CV或3(UA)取较大值

损失角正切值 120HZ/20℃ Loss Angle tangent 120HZ / 20 ℃

工作电压 Working voltage	6.3V	10V	16V	25V	35V	50V
损失角正切 Loss Angle tangent	0.24	0.20	0.17	0.17	0.15	0.15

低温特性 阻抗比ZT/Z20(max) Low temperature characteristics Impedance ZT/Z20 than (Max)

UR(V)	6.3	10	16	25	35	50
Z–25℃/+20℃	4	3	2	2	2	2
Z–40℃/+20℃	8	6	4	4	3	3

高温负荷特性+105度加电压1000H，每250小时换向一次，常温下恢复16H High temperature load characteristics + 105 Degrees 1000H, voltage Every 250 hours commutation time, Under normal temperature 16H recovery

标称电容量变化率 Nominal electric capacity rate	初始值的正负20%以内 The initial value plus or minus 20%
损失角正切值 Loss Angle tangent	不大于规范值200% No greater than standard value 200%
漏电流值 Leakage current	不大于规范值 No greater than standard value

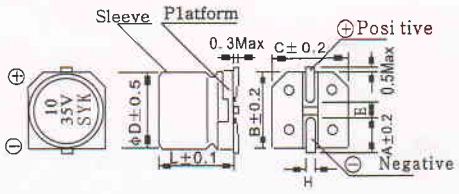
高温储存特性 Heat storage characteristics

在85度的环境中存放1000小时后，恢复16H，电容器的CAP特性符合
CAP初始值的正负20%以内
DF不大于初始值的200%
LC不大于初始值的200%

In the environment of 85 degrees, capacitors store 1000 hours with the CAP,
CAP of initial values of plus or minus 20%
DF of initial values of not more than 200%
LC is not more than the initial value of 200%

回流焊耐温特性 250度高温时间不超过30秒，在室温下恢复到正常温度后 Reflow temperature characteristics250 degrees heat timeNo more than 30 seconds, inRoom temperature returned to positive Often temperature after

标称电容量变化率 Nominal electric capacity rate	初始值的10%以内 Less than 10% of the initial value
损失角正切值 Loss Angle tangent	不大于规范值 No greater than standard value
漏电流值 Leakage current	不大于规范值 No greater than standard value



各规格部位尺寸图 Various specifications place dimension drawing

尺寸 size	4*5.4	5*5.4	6.3*5.4	6.3*7.7
部位尺寸代码 Place dimension code	M	N	P	Q
A	1.8	2.1	2.4	2.4
B	4.3	5.3	6.6	6.6
C	4.3	5.3	6.6	6.6
E	1.0	1.3	2.2	2.2
L	5.4	5.4	5.4	7.5—7.9
H	0.5—0.8			

各规格尺寸及最大允许纹波电流图 The size and the maximum permissible ripple current figure

电压 voltage	6.3		10		16		25		35		50	
容量 capacity	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA	尺寸MM	mA
0.1											4*5.4	1.0
0.22											4*5.4	2.0
0.33											4*5.4	2.8
0.47											4*5.4	4.0
1.0											4*5.4	8.4
2.2									4*5.4	8.4	5*5.4	13
3.3							5*5.4	12	5*5.4	16	5*5.4	17
4.7					4*5.4	12	5*5.4	16	5*5.4	18	6.3*5.4	20
10			4*5.4	17	5*5.4	33	6.3*5.4	27	6.3*5.4	29	6.3*7.7	36
22	5*5.4	28	6.3*5.4	33	6.3*5.4	37	6.3*7.7	50	6.3*7.7	54		
33	6*5.4	37	6.3*5.4	41	6.3*5.4	49	6.3*7.7	61				
47	6*5.4	45	6.3*7.7	61	6.3*7.7	75						
100	6.3*7.7	82										

Rated ripple current(mA.85℃.120HZ)

纹波电流频率补偿系数 Ripple frequency compensation coefficients

频 率 Frequency rate	50HZ	120HZ	300HZ	1KHZ	10KHZ
系 数 Department number	0.80	1.00	1.17	1.30	1.50

应用指引

1、极性

铝电解电容器是有极性的。所以在使用之前要确认极性、切勿错置极性。如果错置极性，会造成漏电流增加并导致短路。

2、电压

工作电压不要超出额定电压，否则会增大漏电流。可能会由地内部升温而损坏电容器。直流电压和纹波电压的峰值之和不得超过额定电压。

3、温度

要在额定温度范围内使用，如果超出温度范围会导致电气特性变差，这种潜在的损害可能会导致电容器的失效。

使用时不仅要关注外界环境温度，还要考虑元器件内部可能导致的温度升高。

4、纹波电流

要在允许的纹波电流范围内使用。纹波电流超出额定值，会引起电容器发热，漏电流增大，减少使用寿命。

5、电容器的存放

电容器在防潮和阳光不会直射的环境中存放，存放环境温度以5~30℃为宜、相对温度低于60%RH为宜。为保持良好的焊接性能，请在本公司出厂状态下保管电容器，并尽量在开封后一次用完，如有剩余。请重新装回包装袋中，用胶带封住开封部位。储存壹年以上的电容器，在使用之前应进行烘干处理，并接1KΩ串联电阻，逐渐施加直流电压至额定工作电压，保持额定电压1小时，然后再使用。

6、电容器的测量

急速充放电引超的冲击电流会造成漏电流的增加、甚至短路，为此电容器漏电流串联1KΩ保护电阻，逐步施加至额定电压，测试其他各项参数应串联1KΩ电阻使电容器充分放电后再进行测量。

7、电容器的安装

(1)确认规格(静电容量及额定电压等)及极性后，再安装；
(2)变形电容器不要安装；
(3)电容器正、负极间距与电路板孔距必须吻合；
(4)自动插入机的机械手力量不宜过大；
(5)焊接条件(温度、时间、次数)必须按规定说明执行；
(6)不要将电容器本身浸入焊锡溶液中；
(7)焊接时，不要让其它产品倒下碰到电容器上；
(8)请勿施加过度外力于引线及端子上，请勿板动已经焊接在PC板上的电容器。
(9)另外，不要重复回流焊超过两次。

8、电容器应尽量避免在下列环境下使用

(1)直接与水、盐或油接触；
(2)暴露在阳光直射下；
(3)高温或高温的环境；
(4)充满有害化学气体的环境；
(5)酸碱环境；
(6)过度振动或冲击的环境。

1, polar

Aluminum electrolytic capacitors are polarized. So be sure before using Identify polarity, not misplaced polarity. If you misplaced polarity, will cause leakage Flow increase and cause a short circuit.

2, voltage

Do not exceed rated voltage supply voltage, otherwise it will increase the leakage current. To an internal temperature may be damaged by the capacitor. DC voltage and ripple The peak voltage shall not exceed the rated voltage.

3, the temperature

To the rated temperature range, if out of temperature range will Lead to deterioration of electrical characteristics, this potential may cause capacitor damage Device failure.

Used not only to pay attention to environmental temperature, but also consider ELEMENTS Internal parts may cause the temperature.

4, the ripple current

To allow the ripple current range. Ripple current beyond the Rating, the capacitor will cause fever, leakage current increase and reduce the use of Life.

5, the storage capacitor

Capacitors in the moisture and direct sunlight will not be stored in the environment, save Put the ambient temperature is appropriate to 5 ~ 30 ℃, relative humidity below 60% RH to Appropriate. In order to maintain good welding performance, the factory in the state of the Company Storage capacitor, and try to run out after opening, if any surplus. Please re-install back to the bag, sealed with tape Kaifeng site. Storage One Years or more capacitors, the drying should be carried out before use, and then 1KΩ series resistance, DC voltage is applied gradually to the rated voltage, Maintain the rated voltage of 1 hour before using.

6, capacitor measurement

Cited the rapid charge and discharge currents over the impact of the increase in leakage current, Or short circuit, this capacitor leakage current protection resistor in series 1KΩ, by Step voltage applied to test other parameters should be power series 1KΩ The capacitor to fully discharge before resistance measurements.

7, the installation of capacitors

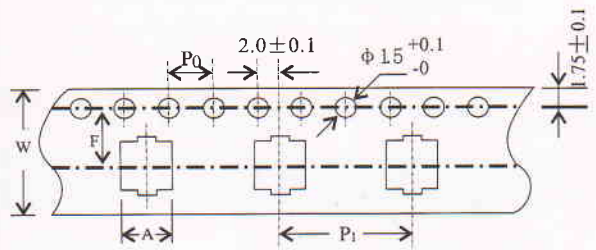
(1) to confirm specification (capacitance and rated voltage) and polarity, then install;
(2) Do not install capacitors deformation;
(3) capacitor positive and negative space to be consistent with the circuit board pitch;
(4) Automatic insertion machine manipulator force is not too large;
(5) Welding conditions (temperature, time, frequency) must be provided instructions;
(6) Do not solder the capacitor itself immersed in the solution;
(7) When welding, do not let down the other products hit the capacitor;
(8) Do not apply excessive force on the lead and the terminal, do not board action is
Capacitors soldered on PC board.
(9) Also, do not repeat the reflow soldering more than twice.

8, capacitors should be avoided in the following environments

(1) directly with water, salt or oil contact;
(2) exposure to direct sunlight;
(3) high temperature or high temperature conditions;
(4) full of harmful chemical gas environment;
(5) acid-base environment;
(6) excessive vibration or shock environments.

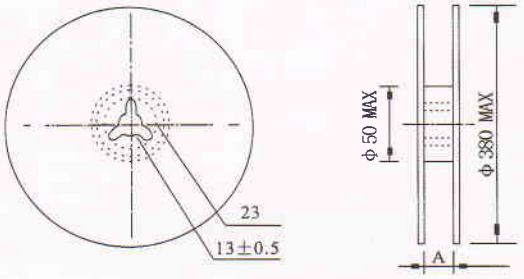
For SMD Type Of Aluminum Electrolytic Capacitor

Carrier tape 包装载带尺寸



Specifications	W ±0.30	A	B	P_1 ±0.10	F ±0.10	t_2
φ4x5.4	12.0	4.7	4.7	8.0	5.5	5.8
φ5x5.4	12.0	6.0	6.0	12.0	5.5	5.8
φ6.3x5.4	16.0	7.0	7.0	12.0	7.5	5.8
φ6.3x7.7	16.0	7.0	7.0	12.0	7.5	8.3
φ8x6.2	16.0	8.7	8.7	12.0	7.5	6.8
φ8x10.2	24.0	8.7	8.7	16.0	11.5	11.0
φ10x10.2	24.0	10.7	10.7	16.0	11.5	11.0

Reel 包装纸盘尺寸

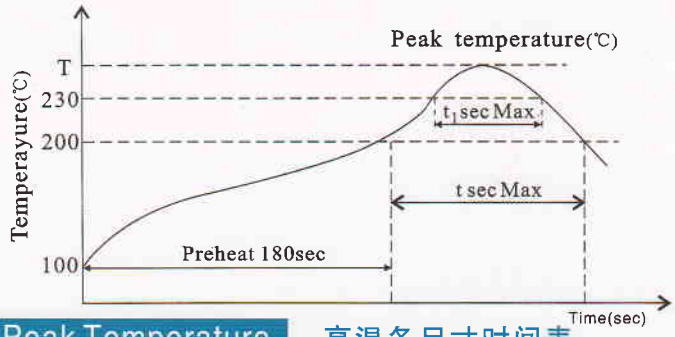


φ	Quantity/Reel
4x5.4	2000pcs
5~6.3x5.4~7.7	1000pcs
8x6.2	1000pcs
8~10x10.2	500pcs

mm

φD	4	5	6.3	8	10
A	14	14	18	26	26

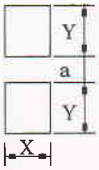
Temperature/Time prafile 高温曲线图



Allowable Range of Peak Temperature 高温各尺寸时间表

Size	T(℃)	t(second)	t_1(second)
φ4~φ6.3	250	90	40
φ8	240	90	30
φ10	240	90	30

Recommended land size 推荐各尺寸浸焊膏面积



Size	X	Y	A
φ4	1.6	2.6	1.0
φ5	1.6	3.0	1.4
φ6.3	1.6	3.5	2.1
φ8	2.5	3.5	3.0
φ10	2.5	4.0	4.0

- ◆Preheat shall be dade at 100℃~200℃ and for maximum 180 econds.
- ◆The temperature at capacitor top shall not exceed +250℃.
- ◆The duration for over +200 temperature at capacitor top shall not exceed 90 seconds.
- ◆If capacitors are subject to the conditions other than the allowable range of reflow,please contact to us.

1.忽略纹波電流時的壽命推算

一般而言，铝电解电容器的寿命与周旧的环境温度有很大的关系，其寿命可以由以下公式计算

$$L=L_0 x 2^{(\frac{T_0-T}{10})} \text{------ (1)}$$

其中， L：温度T时的寿命
LO：温度T0时的寿命

与温度比较，降压使用对电容器的寿命影响很小，可忽略不计。

2.考慮紋波電流時壽命的推算

叠加纹波电流．由于内部等效串连电阻(Es R)引起发热，从而影响电容器的使用寿命，产生的热量可由下公式计算

$$P=I^2R \text{ ------ (2)}$$

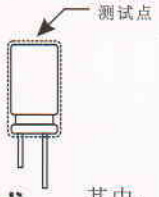
其巾， I：纹波电流[Arms)
R：等效串联电阻(Ω

由于发热引起的温升

$$\triangle T=\frac{I^2R}{A\cdot H} \text{ ------ (3)}$$

其中， △T：电容器中心的温升(℃)
I：纹波电流(Arms)
R：ESRfQI
A：电容器的表衙积(cm2)
H：散热系数(1.5-2.OxlO-3Wcm2×℃)

上面公式(3)显示电容器的温度上升与纹波电流的平方以及等效串联电阻EsR成正比，与电容器的表面积成反比，因此，纹波电流的大小决定着产生热量的大小，且影响其使用寿命，电容器的类型以及使用条件影响着八T值的大小，一般情况下八T<5℃，下图表示纹波电流引起的温升的测量点



測試結果：

(1)考慮到環境溫度和紋波電流時的壽命公式

$$L=L_0 x 2^{(\frac{T_0-T}{10})} xK^{(\frac{-\triangle T}{10})} \text{ ------ (4)}$$

其中，L。直流工作电压下的使用寿命
(K=2，纹波电流允许的范围内)
(k=4，超过纹波电流范围时)
To最高使用温度
T：工作温度
△T：中心温升

(2)電容器工作在額定的紋波電流和上限溫度時，電容器的壽命可通過轉化(4)式得到，如下：

$$L=L_0 x 2^{(\frac{T_0-T}{10})} xK^{(\frac{\triangle T_0-\triangle T}{10})} \text{ ------ (5)}$$

其中，L。：工作在额定纹波电流和最高工作温度下的寿命(h
△T"=最高工作温度下的电容器中心容许温升。

(3)考慮紋波電流，環境溫度時可由(5)式得到下式

$$L=L_0 x 2^{(\frac{T_0-T}{10})} xK^{[1-(\frac{I}{I_0})^2]\ x\ \frac{\triangle T_0}{10}} \text{ ------ (6)}$$

其中，I_0：最高工作温度卜的额定纹波电流(Arms)
I：叠加的纹波电流(Arms)

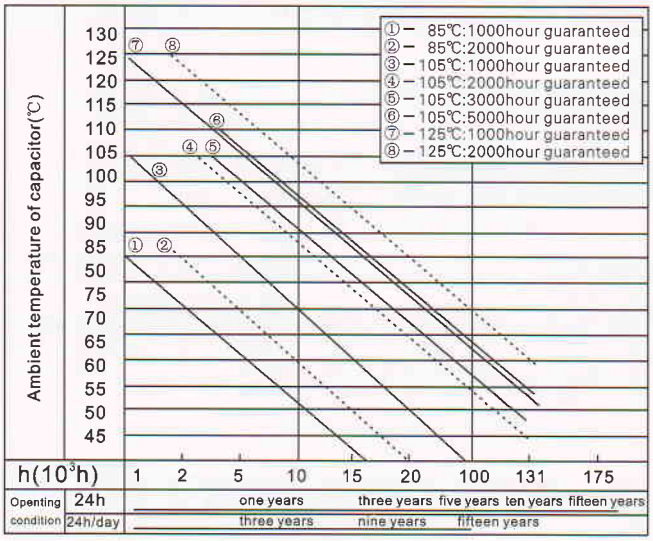
由于直接测量电容器的内部温升存在着困难，下表列出了表面温度和内邵核心温度的换算关系。

表2—1

直徑	~10	12.5~16	18	22	25	30	35
中心/表面	1.1	1.2	1.25	1.3	1.4	1.6	1.65

壽命的推算公式，原則上適用于周圍環境溫度爲+40℃最高工作溫度範圍內，但由于封口材料的老化等因素，實際的推算壽命時間一般最大爲15年。

(图2—1寿命推算曲线)



產品應用
Product Application

通信設備
Communication

網絡電子
Net Electronics

汽車電子
Car Electronics

家用電子
Domestic Electronics

工業電子
Industry Electronics

目前在网络、通信、军事、工业控制以及汽车電子、家電電子等所有電子领域的新一代整機中几乎全部采用了SMD技术，SMD已成为21世纪電子信息产业的支柱技术之一。

而本公司生產的V—CHIP即立式片式铝電解電容器便是一种薄型、无引线、高可靠、性能稳定能够满足整機高密度组装之表面贴装技术(SMD)的超小型電子元件。

目前其廣泛应用于通信(如无绳電話、航天通讯、程控交换機等)，网絡電子(如PC、電源逋配器、打印機、LCD、掃描儀、充電器等)，汽车電子(如車载電話、汽车音響、DVD、電子喷油系统、全球定位系统等)，家用電子(如数字電视、機顶盒、数码相機、遥控器等)，工業電子(如開關電源、逆變器、監控器、變频器、數控設備、激光加工等)。

可以预料的是随着電子技术日新月异的發展，贴片型鋁電解電容器的應用领域仍在不斷拓宽，终将在SMD铝電解電容器家族中大放异彩!

SMT(surface mounting technology)has already become one pillar of Electronic information industries in 21 st century, it is used in almost all the electronic field: internet, telecommunication, military offairs, industrialcontrol, car electronics, etc.

Our V-CH IP TYPE, Aluminum Electrolytic Capacitor, is a subminiature electronics component which is thin, without lead, high reliability, stable performance and can definely meet the requirement of SMT.

Nowadays, it is widely used in communication (such as phones,Telecommumicaton, SPC Echange, etc),net electronics (such as PC, Power adapter, Printer, LCD, Scanners, Chargers, etc), car eletronics (such as Car Telephones, CarAcoustics, DVD, Electronic Blow System, GPS), domestic electronics (such as Digital TV ,Set-top Boxes, Digital Cameras, Remote control unit),industry electronics (such as switching Mode Power Supply, Inverters, Monitor, Frequency Changer, CNC Equipement, Laser Processing, etc).

What we can presuppose is that with the advancements of electronical technology, V-CH IP TYPE Aluminum Electrolytic Capacitors will be used more widely and they must be standing under the spotlight in some day.

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