

PolyCap



Conductive
Polymer
Aluminum
Solid Capacitors

導 | 電 | 高 | 分 | 子 | 型 | 固 | 態 | 鋁 | 電 | 解 | 電 | 容 | 器



Company profile

公司简介

柏瑞凯是一家专注于固态铝电容器研制、生产和销售的国家级高新技术企业，拥有完备而先进的固态铝电容器制造技术和生产线，产品系列齐全。产品工作电压范围涵盖2.5V~200V，最长工作寿命可达105°C/5000小时，最高工作温度可达135°C，技术指标居全球业界前列。当前生产规模居国内同行业之首，公司将持续扩大产能以应对日益增长的市场需求。柏瑞凯赣州工业园一期厂房预计将于2016年春季建成投产，届时柏瑞凯的生产能力将得到大幅提升。

公司不断研发新产品，以适应市场对固态电容各种新的需求，公司近期推出小型化、大容量固态电容，以及细长型超大容量高性能固态电容，以适应电源客户对小型化、大功率的应用要求。

公司高度重视科技创新，积极实施产品和制造技术创新，不断推出新产品，并保证产品技术指标和品质的持续提升以及成本持续下降，为市场持续提供富有竞争力的高性价比固态铝电容器产品。目前已有5项发明专利和20余项实用新型专利获得授权。另有20余项专利处于申请审核程序，公司立志打造具有较强创新动能的高科技民族品牌。

公司已建立起一套完整的质量管理体系和环境管理体系，先后通过ISO9001:2008质量管理体系认证和ISO14001:2004环境管理体系认证，所有产品均满足RoHS指令和REACH法规要求。公司貫徹精益求精、追求卓越的經營理念，依托優秀的產品性能、可靠的產品質量和優質的售前、售後服務在固態鋁電容器市場贏得一席之地，越来越多的国际知名企业成为我們忠實的用戶。

2013~2014年，公司先后引进招商科技集團投資有限公司、招科創新基金、天創資本、深圳市高新投创业投资有限公司等知名投资机构，机构投资人的引入极大地促进了公司的发展。

發展目標: 成為全球固態鋁電容器主要製造商之一

經營理念: 精益求精、追求卓越



Brief Introduction

Shenzhen PolyCap Electronics Technology Co., Ltd. is the National High-tech Enterprise. We specialized in R&D, manufacturing and sales of solid aluminum capacitor, own complete and advanced manufacturing technology and production lines as well as product series that including DIP type and SMD type. Product range covers 2.5V~200V, the longest working life up to 105°C /5000 hours, the highest working temperature of 135°C, the technical indicators are the forefront of the world. The production capacity is the largest in the homeland of China, we will continue to expand production capacity to meet the growing market demand. PolyCap Shenzhen Industrial Park plant will be completed and put into production in the spring of 2016, the production capacity will be increased dramatically.

PolyCap continue to develop new products to adapt to the market for a variety of solid state capacitors demand. The company recently launched a small, large capacity solid capacitors, as well as slender type large capacity high performance solid capacitors, in order to adapt to the power of the requirement of customer form in a variety of sizes and high-power.

Company attaches great importance to scientific and technological innovation, and actively implement the product and manufacturing technology innovation. Continue to develop new products to ensure that the product technical indicators and quality of continuous improvement and decline in costs, provide a competitive high cost solid aluminum capacitor products. There are 5 patents of invention and more than 20 patents for utility model licensing. There are more than 20 patents in the application review process. We are determined to create strong innovation momentum high-tech national brands.

We have established a complete set of quality management system and environmental management system, and have gained the ISO 9001:2008 and the ISO 14001:2004 Certificate. All our products can reach the requirements of RoHS and REACH.

We implement the business philosophy that excellence pursuit for excellence, relying on excellent product performance and reliable quality and excellent sales and after-sales service to win a place in the solid aluminum capacitor market. Currently we have accumulated a number of well-known international and domestic customers, and we believe more and more high quality customers will join the application of PolyCap products family.

During 2013~2014, PolyCap have introduced investment Technology Group Limited Company, attracting China Merchants Technology Investment Co., Ltd., China Merchants Technology Holdings Co., Ltd., Tianjin Venture Capital, Shenzhen HTI Group Co., Ltd. and other well-known investment institutions. The introduction of institutional investors has greatly competitive strength of the company.

Development Goals: To be one of the main solid aluminum capacitor manufacturers in the world

Business philosophy: Refinement, the pursuit of excellence



Modified record

修改说明

發行日期 Issue Date	修訂內容 Contents
Aug. 2015	1. 增加RT系列大容量细长型产品 1. Add RT series With Large Capacitance & Large Profile
	2. RL、RS和RN系列增加新规格和新尺寸 2. RL, RS and RN series increase new specifications and new dimensions
	3. 在加工方式上增加K脚和卧式 3. In the processing mode to increase the K type and horizontal
	4. 删除座板产品VG、VH和VS系列（单独成册） 4. Delete the SMD type products VG, VH and VS series (separate-another-book)

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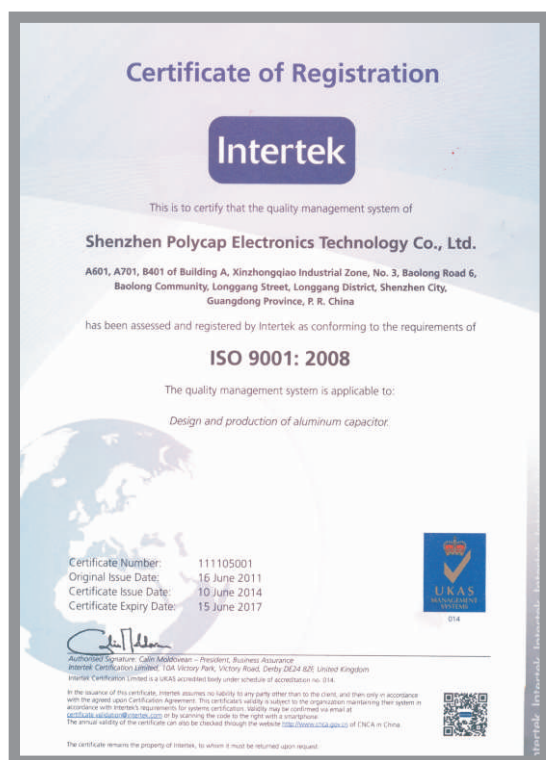
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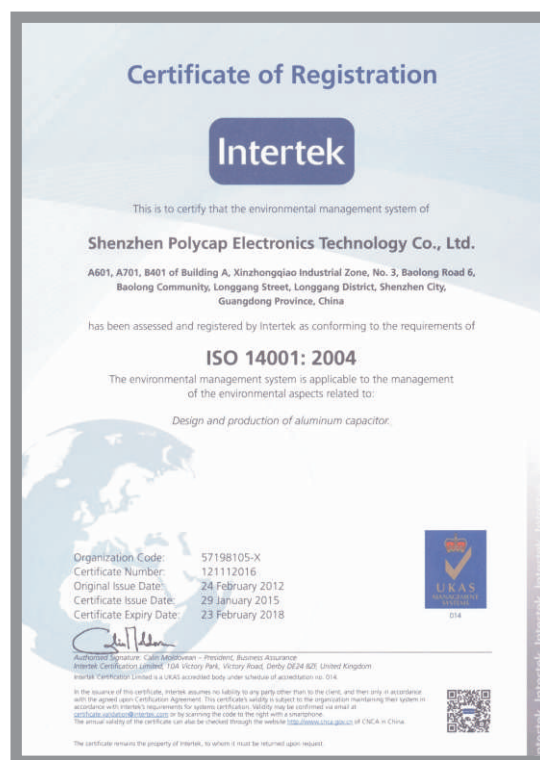
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ISO 9001:2008



ISO 14001:2004

Note : 1. Specification and dimensions in this catalog are subject to change without notice.
If necessary, drawing can be provided.
2. Catalog printed in Aug. 2015.

Products List

路線圖

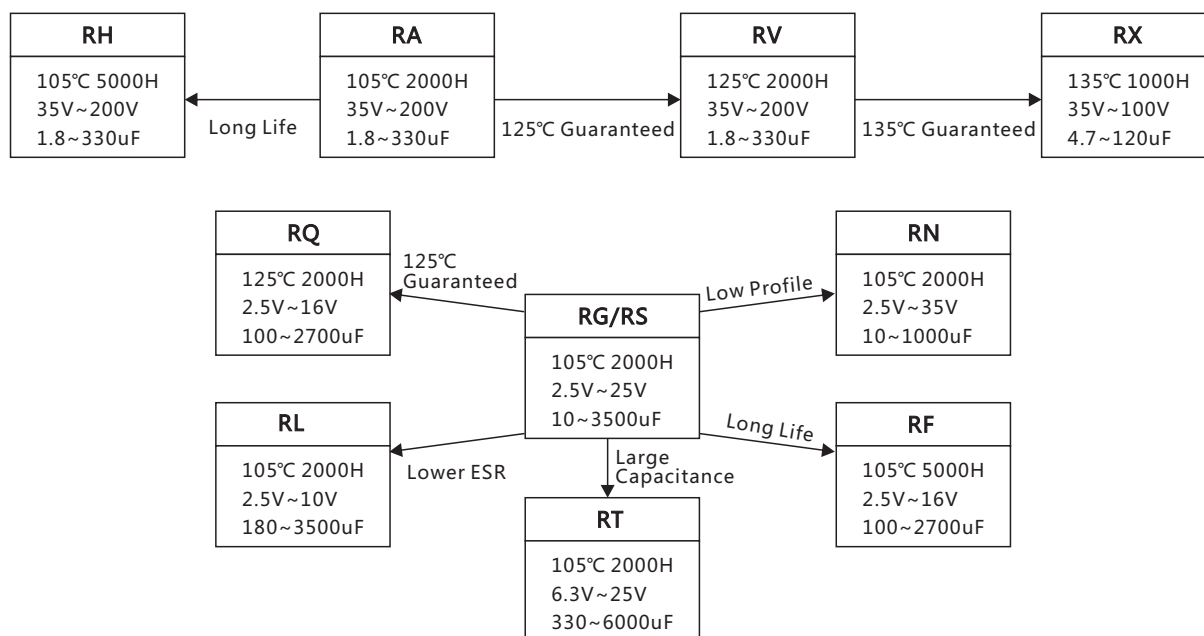
Conductive Polymer AL.E. Capacitors

Polycap Series (系列)	Type (類型)	Features(特性)						Operating Temperature Range (工作溫度)	Working Voltage (工作電壓)	Capacitance (電容量範圍)	Load Life /Hrs(壽命)	Page (頁數)
			Standard	Lower ESR	Low Profile	High Voltage	Large Capacitance					
RA	Radial	High Voltage & Low ESR (高壓低阻抗)	●			●		-55 to +105°C	35-200V	1.8~330uF	2000	13
RH	Radial	High Voltage & Long Life to 5000hrs (高壓長壽命5000H)				●		-55 to +105°C	35-200V	1.8~330uF	5000	15
RV	Radial	High Voltage & 125°C Guaranteed (高壓耐高溫125°C)				●		-55 to +125°C	35-200V	1.8~330uF	2000	17
RX	Radial	High Voltage & 135°C Guaranteed (高壓耐高溫135°C)				●		-55 to +135°C	35-100V	4.7~120uF	1000	19
UPDATE RL	Radial	Super low ESR (超低阻抗)		●				-55 to +105°C	2.5-12V	220~3500uF	2000	21
RG	Radial	Low ESR(2.5~10VDC) (低阻抗)	●					-55 to +105°C	2.5-12V	220~3500uF	2000	24
RS	Radial	Low ESR(16~25VDC) (低阻抗)	●					-55 to +105°C	16-25V	22~1200uF	2000	27
UPDATE RN	Radial	Low Profile (小尺寸)			●			-55 to +105°C	2.5-35V	10~1000uF	2000	30
RF	Radial	Long Life to 5000hrs (長壽命5000H)		●				-55 to +105°C	2.5-25V	100~2700uF	5000	35
RQ	Radial	125°C Guaranteed (耐高溫125°C)		●				-55 to +125°C	2.5-16V	100~2700uF	2000	37
NEW RT	Radial	Large Capacitance & Large Profile (大容量大尺寸)					●	-55 to +105°C	6.3-16V	330~6000uF	2000	39

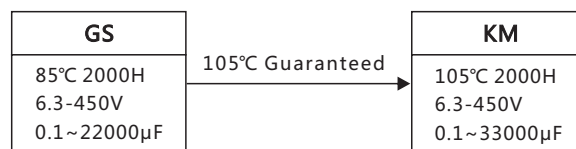
Liquid Aluminum Electrolytic Capacitors

Polycap Series (系列)	Type (類型)	Features (特性)	Operating Temperature Range (工作溫度)	Working Voltage (工作電壓)	Capacitance (電容量範圍)	Load Life /Hrs (壽命)	Page(頁數)
GS	Radial	Standard type (標準品)	-40 to +85°C	6.3-450V	0.1~22000μF	2000	51
KM	Radial	Guaranteed (耐高溫105°C)	-40 to +105°C	6.3-450V	0.1~33000	2000	54

Conductive Polymer AL.E. Capacitors Radial type



Liquid Aluminum Electrolytic Capacitors Radial type



Precautions And Guidelines

固態鋁電容器用戶指導書

POLYCAP is a solid aluminum capacitor with conductive polymer electrolyte. Please read the following points in order to take full advantages of the POLYCAP performance and to ensure the most stable quality possible.

Designing device circuits

1. Polarity

The POLYCAP is a polarized solid aluminum electrolytic capacitor. Do not apply either reverse voltages or AC voltages to the polarized capacitors, using reverse polarity may cause a short circuit. Refer to the catalog, product specifications or capacitor body to confirm the polarity prior to be used.

2. Circuits prohibited

The leakage current of conductive polymer solid aluminum capacitors may vary depending on thermal stresses. Please don't use solid capacitors in the following types of circuits:

- High-impedance voltage retention circuits.
- Coupling circuits
- Time constant circuits

In addition to the leakage current fluctuation, capacitance may also fluctuate depending on operational temperature and humidity. The fluctuation of the capacitance may cause problem if it is used as a time constant capacitor, which is extremely sensitive to the fluctuation of the capacitance. Do not use it as a time constant capacitor.

- Other circuits that are significantly affected by leakage current. If you want to use two or more POLYCAPs in a series connection, please contact us before use.

3. Applied voltage

Do not apply DC voltages exceeding the full rated voltage. The peak voltage of superimposed AC voltages (ripple voltages) on DC voltages must not exceed the full rated voltage. While there are specifications for surge voltages exceeding the rated voltage, usage conditions apply, and continued operation for extended periods of time under such conditions cannot be guaranteed. Use the within 20% of the rated voltage for applications which may cause the reverse voltage during the transient phenomena when the power is turned off or the source is switched.

4. Ripple current

Do not apply currents in excess of the rated ripple current. The superimposition of a large ripple current increases the rate of heating within the capacitor. This may reduce the service life of the capacitor or damage the capacitor.

5. Operating temperature

Do not use the POLYCAP capacitor at high temperatures (temperatures exceeding the maximum temperature for the capacitor category). Use of the capacitor outside of the maximum temperature for the capacitor category may decrease the service life of the capacitor.

6. Sudden charge and discharge

Do not use the POLYCAP capacitor in circuits where the capacitor is repetitively charged and discharged rapidly. Repetitive charging and discharging the capacitor rapidly may reduce the capacitance or may cause damage due to internal heating. Use of a protective circuit to ensure reliability is recommended when rush currents exceed 10A or the rush current is over 10 times of allowable ripple current of POLYCAP.

A protection resistor (1 kΩ) must be inserted to the circuit during the charge and discharge when measuring the leakage current.

7. Failures and life-span

The POLYCAP failure rate in use is based on the failure rate level in the specification requirements. Upper category temperature and category voltage adhere to JIS C 5003 Standard. The confidence level is 60% and the failure rate is 0.5% / 1,000 hours (applied rated voltage at category temperature). The failure modes mainly have 2 types as follows.

a) Contingency failure

The contingency failure mainly has short circuit. The phenomenon of a after short is as follows.

- In the event a short circuit causes the current to become relatively small (less than approximately 1A for φ10, less than approximately 0.5A for φ8 and less than approximately 0.2A for smaller than φ6.3), the POLYCAP itself will generate a little heat, but its appearance will not be affected even when electricity is supplied continuously. However, if the short circuit current value exceeds the mentioned values above, the temperature inside the POLYCAP will increase, the internal pressure is raised, rubber sealing is turned over, and odorous gas is released. In this case, keep your face and hands away from the area.
- The electrolyte, electrolytic paper, sealing rubber, and plastic spacer used in the POLYCAP are all combustible. If an extremely large electric current flows through the capacitor after shorting, the shorted part may spark, and in a worst case scenario, may ignite. Ensure safety by fully considering the design issues described below when using this capacitor in equipment where safety is a priority.

- Increase safety by using in conjunction with a protective circuit or protective equipment.
- Install measures such as redundant circuits so that the failure of a part of the equipment will not cause unstable operation.

b) Performance characteristic and failure (life-span)

POLYCAP characteristics can possibly change (capacitance reduction and ESR increase) within the specified range in specifications when it is used in the condition of rated voltage, electric and mechanical performance.

When life span exceeded the specified guarantee time of endurance and damp heat, electric characteristics might change and cause electrolyte insulation. This is called open circuit mode. It is recommended to use the capacitor at a lower temperature than the maximum temperature for the capacitor category.

c) General formula to estimate life time of polymer capacitor (all series)

Where:

Lx: Life expectancy [h]

L0: Catalogue life [h]

T0: Max Operating Temperature [°C]

Tx: Ambient Temperature [°C]

$$L_x = L_0 \times 10^{\frac{T_0 - T_x}{20}}$$

There is no need to apply a temperature-compensating coefficient for the ripple current in the solid capacitors which use conducting polymer as cathode. The self-heating temperature under application of rated ripple current is approx 20 °C in the conducting polymer capacitors, but the estimated life expectancy can be calculated without consideration of self-heating under application of the ripple current because of the excellent heat-proof characteristics of conductive polymer.

固態鋁電容器用戶指導書

8. Circuit design

Verify the following before designing the circuit:

- The electrical characteristics of the capacitor will vary depending on differences in temperature and frequency. Only design your circuit after verifying the scope of these factors.
- When connecting two or more capacitors in parallel, ensure that the design takes current balancing into account.
- When two or more capacitors are connected in series, variability in applied voltage may cause over-voltage conditions. Contact PolyCap before using capacitors connected in series.

9. Capacitor usage environmental restrictions

Do not use/expose capacitors to the following conditions:

- Oil, water, salty water, take care to avoid storage in damp locations.
- Direct sunlight
- Toxic gases such as hydrogen, sulfide, sulfuric acids, nitrous acids, chlorine and chlorine compounds, bromine and bromine compounds, ammonia, etc.
- Ozone, ultraviolet rays and radiation.
- Severe vibration or mechanical shock conditions beyond the limits advised in the product specification section of the catalog.

10. Capacitor mounting

- For the surface mount capacitor, design the copper pads on the PC board in accordance with the catalog or the product specification.
- For radial capacitors, design the terminal holes on the PC board to fit the terminal pitch of the capacitor.

11. Leakage current

Heat pressure from soldering and mechanical stress from transportation may cause the leakage current to become large. In such a case, leakage current will gradually decrease by applying voltage less than or equal to the rated voltage at a temperature within the upper category temperature. In case conditions to the upper category temperature, the nearer the applied voltage is to the rated voltage, the faster the leakage current recovery speed is.

Mounting precautions

1. Note

- For the surface mount capacitor, design the copper pads on the PC board in accordance with the catalog or the product specification.
- For radial capacitors, design the terminal holes on the PC board to fit the terminal pitch of the capacitor.
- Mount after checking the capacitance and the rated voltage.
- Mount after checking the polarity.
- Do not apply excessive external force to the lead terminal and the POLYCAP itself.
- Ensure that the soldering conditions meet the specifications recommended by PolyCap. Note that the leakage current may increase due to thermal stresses that occur during soldering, etc. Note that increased leakage currents gradually decrease when voltage is applied.

2. Soldering using a soldering iron:

- The soldering conditions (temperature and time) are within the ranges specified in the catalog or product specifications.
- The tip of the soldering iron does not come into contact with the capacitor itself.

3. Flow soldering

- Do not dip the body of a capacitor into the solder bath; only dip the terminals. The soldering must be done on the reverse side of PC board.
- Soldering conditions (preheat, solder temperature and dipping time) should be within the limits prescribed in the catalog or the product specifications.

In regards to flow soldering, be sure to solder within the following conditions.

	Temperature	Duration	Flow number
Preheating	125°C max. (ambient temperature)	120 sec. or less	Flow number 1 time
Soldering conditions	260°C max.	10+1 sec. or less	Twice or less

- Do not apply flux to any part of capacitors other than the terminals.
- Make sure the capacitors do not come into contact with any other components while soldering.

4. Handling after soldering

Do not apply any mechanical stress to the capacitor after soldering onto the PC board.

- Do not lean or twist the body of the capacitor after soldering the capacitors onto the PC board.
- Do not use the capacitors for lifting or carrying the assembly board.
- Do not hit or poke the capacitor after soldering to PC board. When stacking the assembly board, be careful that other components do not touch the aluminum electrolytic capacitors.
- Do not drop the assembled board.

5. Washing the PC boards

- Do not wash capacitors by using the following cleaning agents. Solvent resistant capacitors are only suitable for washing using the cleaning conditions prescribed in the catalog or the product specification. In particular, ultrasonic cleaning will accelerate damage to capacitors.

- Halogenated solvents; cause capacitors to fail due to corrosion.
- Alkaline system solvents; corrode (dissolve) an aluminum case.
- Petroleum system solvents; cause the rubber seal material to deteriorate.
- Xylene; causes the rubber seal material to deteriorate.
- Acetone; erases the markings.

- Verify the following points when washing capacitors.

- Monitor conductivity, pH, specific gravity and the water content of cleaning agents. Contamination adversely affects these characteristics.
- Be sure not to expose the capacitors under solvent rich conditions or keep capacitors inside a closed container. In addition, please dry the solvents sufficiently on the PC board and the capacitor with an air knife (temperature should be less than the maximum rated category temperature of the capacitor) for 10 minutes. Aluminum electrolytic capacitors can be characteristically and catastrophically damaged by halogen ions, particularly by chlorine ions, though the degree of the damage mainly depends upon the characteristics of the electrolyte and rubber seal material. When halogen ions come into contact with the capacitors, the foil corrodes when a voltage is applied. This corrosion causes an extremely high leakage current which results venting and an open circuit.

Storage and Disposal

1. Storage

The following conditions for storage are recommended.

- Store capacitors in a cool, dry place. Store at a temperature between 5 and 35 °C with a humidity of 75% or less. SMD products are sealed in a special laminated aluminum bag. Use all capacitors once the bag is opened. Return unused capacitors to the bag, and seal it with a zipper. Be sure to follow our recommendations for reflow soldering.
- Store the capacitors in a location free from direct contact with water, salt water, and oil.
- Store in a location where the capacitor is not exposed to toxic gas, such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine or chlorine compounds, bromine or other halogen gases, methyl bromide or other halogen compounds, ammonia, or similar.
- Store in a location where the capacitor is not exposed to ozone, ultraviolet radiation, or other radiation.
- It is recommended to store capacitors in the original packaging wherever possible.
- Do not store the POLYCAP in places susceptible to ozone, ultraviolet rays and radiation.

Type	Before unseal	After unseal
Radial lead type Bag packing product	Within 30 months after delivery (unopened condition)	Within 7 days from opening
Radial lead type Taping product	Within 24 months after delivery (unopened condition)	Within 7 days from opening

2. Disposal

Since the POLYCAP comprises solid organic compounds, various metals, resin, rubber, etc., treat it as industrial waste when disposing of it.

RoHS Compliance

POLYCAP is committed to comply with the European Union Restriction of Hazardous Substance (RoHS) Directive. We hereby guarantee that our products do not contain the following materials exceeding the content regulated in RoHS Directive.

Lead(Pb)	≤1000ppm
Mercury(Hg)	≤1000ppm
Cadmium(Cd)	≤100ppm
Hexavalent Chromium, Cr ⁶⁺	≤1000ppm
Polybrominated Biphenyls(PBBs)	≤1000ppm
Polybrominated Diphenyl Ethers(PBDEs)	≤1000ppm

Halogen Free Compliance

The products identified in the catalogue, and the homogeneous subcomponents, do not contain any of the

Substance	Maximum Limit
Bromine(Br)	900 ppm
Chlorine(Cl)	900 ppm
Total concentration of Chlorine(Cl) + Bromine(Br)	1500 ppm

Precautions And Guidelines 固態鋁電容器用戶指導書

電路設計

重要預知事項

1. 極性

固態鋁電容器具有正負極之分，不要反接固態鋁電容器，反接固態鋁電容器可以導致漏電流的急劇增加或者使用壽命的降低。

2. 電路設計

請在確認以下內容的基礎上進行電路設計。隨著溫度及頻率的变化，電容器的電氣性能會隨之变化。請在確認這些变化以後進行電路的设计。

- a) 當并聯2個以上電容器時，請在设计電路時考慮電流的平衡；
- b) 當串聯2個以上的，電容器時，因加載電壓存在差异，有可能加載過電壓，請使用時諮詢我們；
- c) 請勿在電容器的周圍以及印刷配線板的背面安裝發熱。

3. 被禁止使用的電路

即使客戶嚴格按照我們所給定的焊接條件安裝固態鋁電容器，固態鋁電容器的漏電流也可能會升高，甚至大幅度升高。高溫無負載測試、高溫高濕無負載測試、溫度急變測試等都可能導致漏電流的增大。因此，請不要將固態鋁電容器應用於對漏電流敏感的電路中。

- 比如：
- a) 高阻抗電路；
 - b) 耦合電路；
 - c) 時間常數電路。

4. 工作電壓

- a) 直流電壓與紋波峰值電壓的總和不得超過額定工作電壓；
- b) 當直流電壓比較低的時候，反向紋波峰值電壓不能超過額定工作電壓的10%；
- c) 對於25v以上產品，當環境溫度超過85℃時，請降壓使用固態鋁電容器，溫度每上升10℃，施加於產品上的電壓請下降10%。

5. 請依據規格書中規定的電容特性選擇合適的固態電容器。

- a) 切勿超電壓使用，即便是短時間的過電壓都可能導致固態電容器的短路；
- b) 使用的環境溫度必須在規格書中規定的範圍內；
- c) 切勿給固態電容器施加超過額定的紋波電流值，過大的紋波電流會導致電容器內部發熱過量，從而會導致產品提前失效甚至短路。

6. 瞬時充放電：瞬時充放電可能會導致固態鋁電容器短路或漏電流增大，因此請在下列情形下設計保護電路：

- a) 衝擊電流大於10A；
- b) 衝擊電流大於10倍允許紋波電流值。另外，在測試產品漏電流時，請設置一個1kΩ的保護電阻。

7. 失效模式與壽命

失效模式：

- a) 偶然失效：主要由電路的短路導致，當短路電路中的電流超過1A，電容器內部溫度將會上升，內部壓力增大，封口橡膠將可能會凸起甚至開啟，電容器會釋放出有害氣體，這時請離開這個場合；
- b) 壽命失效：長期使用後，固態鋁電容器的特性會發生衰減，比如容量下降、ESR上升等，當使用時間超過額定壽命，電容器的特性劣化，並可導致電解質絕緣，這稱為開路失效模式。
- c) 固態電容壽命計算公式

$$L_x = L_0 \times 10^{\frac{T_0 - T_x}{20}}$$

式中：

Lx: 實際使用溫度下的預期壽命 [h]

L0: 最高額定工作溫度下的額定壽命 [h]

T0: 最高額定工作溫度 [°C]

Tx: 實際使用時的環境溫度 [°C]

特別提醒

1. 漏電流：

焊接熱和來源於運輸途中的機械應力都可導致電容器的漏電流增大，但是，給產品施加不超過額定工作電壓的直流電壓會逐漸降低漏電流，在不超過額定工作電壓和工作上限溫度的前提下，施加的電壓越高、環境溫度越高，漏電流下降速度越快。

2. 電容器的絕緣性：

電容器外的絕緣鍍膜或絕緣膠管層並不是絕對絕緣的，另外，鋁殼與負極引出線間不絕緣。安裝的時候，請務必將鋁殼、正負導針及PC板印刷圖完全隔離開。

3. 工作環境限制：

請不要在以下環境中使用固態鋁電容器：

- a) 水、鹽水、油可以直接滴落的地方，以及容易發生收縮的電路板；
- b) 有害氣體（H₂S、硫酸、硝酸、氨氣、鹽酸等）聚集的場合；
- c) 紫外線、放射性射線、臭氧等輻射的場合。

4. PCB板設計：

- a) 不要把固態電容器安裝於熱源元件周圍或其上面；
- b) PCB板上的安裝孔位直徑和間距要與電容器導針的直徑和針距相匹配。

5. 並聯電路：

當固態電容器與另一個（液體）電容器並聯時，由於固態電容器具有低得多的ESR值，因此，可能會有很大的紋波電流施加在固態電容器上，這種情況下，一定要謹慎選擇電容器的規格。

6. 固態鋁電容器的電性能會受頻率波動的影響，設計電路的時候要考慮這一因素。

7. 在雙面PCB板上安裝固態鋁電容器的時候，請不要在連接前後PCB板的穿孔處安裝固態鋁電容器。

安裝前的準備

1. 焊接：請按照SPEC.中規定的焊接條件進行焊接，否則，將可能導致外絕緣層的破損、漏電流的急劇增大以及容量的下降；

2. 安裝前的注意事項：

- a) 請不要重新使用已經被安裝使用過的固態鋁電容器；
- b) 固態鋁電容器儲存時間久了會導致漏電流的增大，這時，可以給電容器進行一次電壓處理，推薦的處理條件為：60~70°C額定電壓1小時，並給電容器串聯1kΩ保護電阻。

3. 安裝：

- a) 仔細核對電容器的容量和工作電壓；
- b) 請注意電容器的極性；
- c) 請注意勿將固態鋁電容器跌落於地面，跌落的電容器請勿使用；
- d) 不要使固態鋁電容器變形；
- e) 安裝前請檢查電容器導針型號是否與PCB板上的孔直徑和間距相匹配，當使用自動插入機安裝時，請不要使用太大的插入力；
- f) 請關注由自動插入和安裝機、產品檢查儀器等產生的震動強度不要太大；
- g) 不要施加額外的外部力量給電容器導針和電容器本身。

4. 當使用電烙鐵焊接時：

- a) 請按照電容器規格書的規定設置焊接條件（溫度、時間）；
- b) 當固態鋁電容器的導針型號與PCB板不相匹配，不得不對導針進行處理時，請在焊接前處理，以便在焊接後不會在固態鋁電容器上留下應力；
- c) 焊接時，不要給固態鋁電容器額外的應力；
- d) 當用電烙鐵從電路板上移除一個安裝不佳的固態鋁電容器時，請確認電烙鐵已經完全將焊錫熔化，然後才能取下固態鋁電容器，以免給固態鋁電容器留下應力；
- e) 不要將電烙鐵的頭部接觸到固態鋁電容器；
- f) 焊接後，固態鋁電容器的漏電流可能會有所增大，施加電壓後，漏電流會逐漸降低。

5. 波峰焊

- a) 請不要將固態鋁電容器淹沒在焊錫中焊接，請在PCB板安裝固態鋁電容器的對立面焊接；
- b) 請按照電容器規格書的規定設置焊接條件（溫度、時間）；
- c) 焊接後，固態鋁電容器的漏電流可能會有所增大，施加電壓後，漏電流會逐漸降低；

固態鋁電容器用戶指導書

- e) 焊接時請注意電路板上其他元件不要接觸到固態鋁電容器或掉落到固態鋁電容器上；
f) 當使用極端不正常的焊接工藝時，可能會導致固態鋁電容器的容量下降或損害電容器的其他特性。

推薦使用下列焊接工藝：

	溫度	時間	次數
預處理條件	≤125°C	≤120秒	1次
焊接條件	260°C max.	10秒	≤2次

6. 焊接後的注意事項

- a) 當固態鋁電容器完成焊接後，請不要使用外力傾斜、彎曲、扭曲它；
b) 請不要抓住固態鋁電容器來移動PCB板；
c) 當堆放焊接有固態鋁電容器的PCB板時，請不要將固態鋁電容器互相接觸或接觸到其他元件；
d) 不要讓焊接在PCB板上的固態鋁電容器承受外力。

7. PCB板的清洗：

請選用乙醇類清洗劑，並注意以下條件：

- a) 使用浸沒方式和超聲波清洗時，請不要超過2分鐘；
b) 清洗溫度須低於60°C；
c) 請注意清洗劑帶來的污染問題；
d) 清洗結束後，請用低於額定工作溫度以下的熱空氣進行乾燥。

8. 其他注意事項：

- a) 不要用手直接接觸固態鋁電容器的引出線；
b) 不要使用導體接通固態鋁電容器的正負極，不要讓固態鋁電容器接觸導電性溶液（如酸和堿的水溶液）；

存儲與處置

1. 儲存條件

- a) 不要將固態鋁電容器儲存在高溫高濕環境中，較好的儲存溫度為5~35°C，濕度為75%以下；
b) 要使固態鋁電容器保持好的可焊性，請不要開啟出廠包裝，並且，儲存期限不要超過1年；
c) 僅僅在安裝前打開包裝，並一次性安裝全部產品，如果有產品剩餘，則請放回包裝袋並封好袋口。各類型產品的存儲期限請參考下表：

產品類型	開啟包裝前	開啟包裝後
插件型（袋裝品）	30個月	7天
插件型（貼平包裝）	24個月	7天

- d) 不要將固態鋁電容器儲存於有害氣體環境。

2. 廢棄品處置

因為固態鋁電容器包含有一些固體有機物、一些金屬物質以及樹脂材料等，因此請當做工業廢料處置廢棄的固態鋁電容器。

有害物質限用指令(RoHS)

柏瑞凱產品符合歐盟對有害物質限制使用之規定要求，我們保證我們的產品中不包含超出下表RoHS指令規定的各物質含量範圍：

鉛(Pb)	≤1000ppm
汞(Hg)	≤1000ppm
鎘(Cd)	≤100ppm
六價鉻, Cr6+	≤1000ppm
多溴聯苯(PBBs)	≤1000ppm
多溴聯苯醚(PBDEs)	≤1000ppm

無鹵申明

柏瑞凱產品滿足下表所列鹵素含量限制：

物質名稱	Maximum Limit
溴(Br)	900 ppm
氯(Cl)	900 ppm
鹵素總量(Cl + Br)	1500 ppm

RA series

High voltage Low ESR (35v~200v)

It's a super high working voltage series.

Suitable for use with power, industrial device, etc.

Lead free-flow is supported.

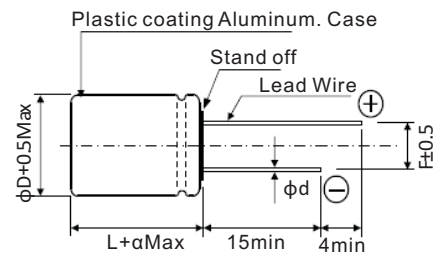
RA系列為耐高壓固態鋁電容器，具有高頻低阻抗特性，適合用於電源電路及工業電子設備。可滿足無鉛焊條件。



Specifications

Items	Characteristics	
Operating Temp Range	-55°C ~ +105°C	
Capacitance Range	1.8~330μF	
Capacitance Tolerance	M : ±20%	
Rated Voltage Range	35V ~200V DC	
Dissipation Factor At 120Hz, 20°C	Not to exceed the value specified	
Leakage Current	≤0.2CV (μA, after 2 minutes)	
ESR(100K~300KHz)	Not to exceed the value specified	
Endurance 105°C 2000h At Rated voltage	Capacitance Change	Within ±20% of the value before test
	Leakage current	Not to exceed the value specified
	ESR	Not to exceed 150% of the value specified
	Dissipation Factor	Not to exceed 150% of the value specified
Moisture Resistance Stored At 60°C, RH90~95%, 2000h	Capacitance Change	Within ±20% of the value before test
	Leakage Current	Not to exceed the value specified
	ESR	Not to exceed 150% of the value specified
	Dissipation Factor	Not to exceed 150% of the value specified

Dimensions



Unit:mm

φD×L	φD +0.5max.	α	F ±0.5	φd ±0.05
6.3×8	6.3	1.0	2.5	0.6
8×8	8.0	1.0	3.5	0.6
8×11.5	8.0	1.0	3.5	0.6
10×12.5	10.0	1.0	5.0	0.6

Size List

CAP/μF \ RV/v (SV)	35 (41)	50 (57.5)	63 (73)	80 (92)	100 (115)	160 (184)	200 (230)
1.8						8×8	10×12.5
3.3						8×8	10×12.5
4.7				6.3×8	8×8	10×12.5	10×12.5
10	6.3×8	6.3×8	6.3×8	6.3×8	8×8 / 8×11.5	10×12.5	
15	6.3×8	6.3×8	6.3×8	8×8	10×12.5		
22	6.3×8	6.3×8 / 8×8	8×8	8×11.5 / 10×12.5	10×12.5		
33	6.3×8 / 8×8	8×8 / 8×11.5	8×8 / 8×11.5	10×12.5			
39	6.3×8 / 8×8	8×8 / 8×11.5	8×11.5 / 10×12.5	10×12.5			
47	6.3×8 / 8×8 / 8×11.5	8×8 / 8×11.5	8×11.5 / 10×12.5	10×12.5			
56	6.3×8 / 8×8 / 8×11.5	8×11.5 / 10×12.5	8×11.5 / 10×12.5				
68	6.3×8 / 8×8 / 8×11.5	8×11.5 / 10×12.5	10×12.5				
82	8×8 / 8×11.5 / 10×12.5	10×12.5	10×12.5				
100	8×11.5 / 10×12.5	10×12.5					
220	10×12.5						
330	10×12.5						

RA series

Characteristics List

W.V. (V)	Capacitance (μF)	L.C. (μA,2min)	tgδ (120Hz,20℃)	ESR (mΩ,100kHz)	Rated Ripple Current(mA,r.m.s)	Size ΦD×L (mm)	Part Number
35	10	300	0.12	45	2000	6.3×8	RA100M035E080□□
	15	300	0.12	45	2000	6.3×8	RA150M035E080□□
	22	300	0.12	45	2000	6.3×8	RA220M035E080□□
	33	300	0.12	45	2000	6.3×8	RA330M035E080□□
	33	300	0.12	35	2600	8×8	RA330M035F080□□
	39	300	0.12	45	2000	6.3×8	RA390M035E080□□
	39	300	0.12	35	2600	8×8	RA390M035F080□□
	47	329	0.12	45	2000	6.3×8	RA470M035E080□□
	47	329	0.12	35	2600	8×8	RA470M035F080□□
	47	329	0.12	30	2980	8×11.5	RA470M035F115□□
	56	392	0.12	45	2000	6.3×8	RA560M035E080□□
	56	392	0.12	35	2600	8×8	RA560M035F080□□
	56	392	0.12	30	2980	8×11.5	RA560M035F115□□
	68	476	0.12	45	2000	6.3×8	RA680M035E080□□
	68	476	0.12	35	2600	8×8	RA680M035F080□□
	68	476	0.12	30	2980	8×11.5	RA680M035F115□□
	82	574	0.12	35	2600	8×8	RA820M035F080□□
	82	574	0.12	30	2980	8×11.5	RA820M035F115□□
	82	574	0.12	28	3800	10×12.5	RA820M035G125□□
	100	700	0.12	30	2980	8×11.5	RA101M035F115□□
	100	700	0.12	28	3800	10×12.5	RA101M035G125□□
	220	1540	0.12	28	3800	10×12.5	RA221M035G125□□
	330	2310	0.12	28	3800	10×12.5	RA331M035G125□□
50	10	300	0.12	45	2000	6.3×8	RA100M050E080□□
	15	300	0.12	45	2000	6.3×8	RA150M050E080□□
	22	300	0.12	45	2000	6.3×8	RA220M050E080□□
	22	300	0.12	45	2600	8×8	RA220M050F080□□
	33	330	0.12	45	2600	8×8	RA330M050F080□□
	33	330	0.12	45	2700	8×11.5	RA330M050F115□□
	39	390	0.12	45	2600	8×8	RA390M050F080□□
	39	390	0.12	45	2700	8×11.5	RA390M050F115□□
	47	470	0.12	45	2600	8×8	RA470M050F080□□
	47	470	0.12	45	2700	8×11.5	RA470M050F115□□
	56	560	0.12	45	2700	8×11.5	RA560M050F115□□
	56	560	0.12	45	2900	10×12.5	RA560M050G125□□
	68	680	0.12	45	2700	8×11.5	RA680M050F115□□
	68	680	0.12	45	2900	10×12.5	RA680M050G125□□
	82	820	0.12	45	2900	10×12.5	RA820M050G125□□
	100	1000	0.12	45	2900	10×12.5	RA101M050G125□□
63	10	300	0.12	45	1700	6.3×8	RA100M063E080□□
	15	300	0.12	45	1700	6.3×8	RA150M063E080□□
	15	300	0.12	45	1900	8×8	RA150M063F080□□
	22	300	0.12	45	1900	8×8	RA220M063F080□□
	22	300	0.12	45	2700	8×11.5	RA220M063F115□□
	33	415.8	0.12	45	1900	8×8	RA330M063F080□□
	33	415.8	0.12	45	2700	8×11.5	RA330M063F115□□
	39	491.4	0.12	45	2700	8×11.5	RA390M063F115□□
	39	491.4	0.12	45	2900	10×12.5	RA390M063G125□□
	47	592.2	0.12	45	2700	8×11.5	RA470M063F115□□
	47	592.2	0.12	45	2900	10×12.5	RA470M063G125□□
	56	705.6	0.12	45	2700	8×11.5	RA560M063F115□□
	56	705.6	0.12	45	2900	10×12.5	RA560M063G125□□
	68	1033.2	0.12	45	2900	10×12.5	RA680M063G125□□
	82	1033.2	0.12	45	2900	10×12.5	RA820M063G125□□
	4.7	300	0.12	45	1700	6.3×8	RA47M080E080□□
80	10	300	0.12	45	1700	6.3×8	RA100M080E080□□
	15	300	0.12	45	1900	8×8	RA150M080F080□□
	22	352	0.12	45	2700	8×11.5	RA220M080F115□□
	22	352	0.12	45	2900	10×12.5	RA220M080G125□□
	33	528	0.12	45	2900	10×12.5	RA330M080G125□□
	39	624	0.12	45	2900	10×12.5	RA390M080G125□□
	47	752	0.12	45	2900	10×12.5	RA470M080G125□□
100	4.7	300	0.12	45	1700	8×8	RA47M100F080□□
	10	300	0.12	45	1700	8×8	RA100M100F080□□
	10	300	0.12	45	1900	8×11.5	RA100M100F115□□
	15	300	0.12	45	2700	10×12.5	RA150M100G125□□
	22	440	0.12	45	2900	10×12.5	RA220M100G125□□
160	1.8	300	0.12	80	800	8×8	RA1R8M160F080□□
	3.3	300	0.12	80	800	8×8	RA3R3M160F080□□
	4.7	300	0.12	80	1200	10×12.5	RA4R7M160G125□□
	10	320	0.12	80	1200	10×12.5	RA100M160G125□□
200	1.8	300	0.12	150	500	10×12.5	RA1R8M200G125□□
	3.3	300	0.12	150	500	10×12.5	RA3R3M200G125□□
	4.7	300	0.12	150	500	10×12.5	RA4R7M200G125□□

Frequency Coefficient for Ripple Current

Frequency	120Hz≤freq.<1KHz	1KHz≤freq.<10KHz	10KHz≤freq.<100KHz	100KHz≤freq.<300KHz
Coefficient	0.05	0.3	0.7	1

RH series

High voltage
Long Life to 5000hrs
(35v~200v)



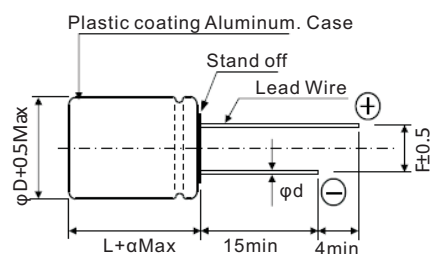
It's a super high working voltage and super long life series.
Suitable for use with LED lighting, power, industrial device, etc.
Lead free-flow is supported.

RH系列為長壽命耐高壓固態鋁電容器，5000小時超長壽命，具有高頻低阻抗特性，適合用於LED照明設備，電源電路及工業電子設備。可滿足無鉛焊條件。

Specifications

Items	Characteristics	
Operating Temp Range	-55°C ~ +105°C	
Capacitance Range	1.8~330μF	
Capacitance Tolerance	M : ±20%	
Rated Voltage Range	35V ~200V DC	
Dissipation Factor At 120Hz, 20°C	Not to exceed the value specified	
Leakage Current	≤0.2CV (μA, after 2 minutes)	
ESR(100K~300KHz)	Not to exceed the value specified	
Endurance 105°C 5000h At Rated voltage	Capacitance Change	Within ±20% of the value before test
	Leakage current	Not to exceed the value specified
	ESR	Not to exceed 150% of the value specified
	Dissipation Factor	Not to exceed 150% of the value specified
Moisture Resistance Stored At 60°C, RH90~95%,2000h	Capacitance Change	Within ±20% of the value before test
	Leakage Current	Not to exceed the value specified
	ESR	Not to exceed 150% of the value specified
	Dissipation Factor	Not to exceed 150% of the value specified

Dimensions



Unit:mm

φD×L	ΦD +0.5max.	α	F ±0.5	Φd ±0.05
6.3×8	6.3	1.0	2.5	0.6
8×8	8.0	1.0	3.5	0.6
8×11.5	8.0	1.0	3.5	0.6
10×12.5	10.0	1.0	5.0	0.6

Size List

CAP/μF \ RV/v (SV)	35 (41)	50 (57.5)	63 (73)	80 (92)	100 (115)	160 (184)	200 (230)
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3.3						8×8	10×12.5
4.7				6.3×8	8×8	10×12.5	10×12.5
10	6.3×8	6.3×8	6.3×8	6.3×8	8×8 / 8×11.5	10×12.5	
15	6.3×8	6.3×8	6.3×8	8×8	10×12.5		
22	6.3×8 / 8×8	6.3×8 / 8×8	8×8 / 8×11.5	8×11.5 / 10×12.5	10×12.5		
33	8×8	8×8 / 8×11.5	8×11.5 / 10×12.5	10×12.5			
39	8×8 / 8×11.5	8×8 / 8×11.5	8×11.5 / 10×12.5	10×12.5			
47	8×8 / 8×11.5	8×11.5 / 10×12.5	10×12.5	10×12.5			
56	8×11.5 / 10×12.5	8×11.5 / 10×12.5	10×12.5				
68	8×11.5 / 10×12.5	10×12.5	10×12.5				
82	8×11.5 / 10×12.5	10×12.5	10×12.5				
100	8×11.5 / 10×12.5	10×12.5					
220	10×12.5						
330	10×12.5						

RH series

Characteristics List

W.V. (V)	Capacitance (μ F)	L.C. (μ A,2min)	tg δ (120Hz,20°C)	ESR (m Ω ,100kHz)	Rated Ripple Current(mA,r.m.s)	Size Φ D×L (mm)	Part Number
35	10	300	0.12	45	2000	6.3×8	RH100M035E080□□
	15	300	0.12	45	2000	6.3×8	RH150M035E080□□
	22	300	0.12	45	2000	6.3×8	RH220M035E080□□
	22	300	0.12	35	2600	8×8	RH220M035F080□□
	33	300	0.12	35	2600	8×8	RH330M035F080□□
	39	300	0.12	35	2600	8×8	RH390M035F080□□
	39	300	0.12	30	2980	8×11.5	RH390M035F115□□
	47	329	0.12	35	2600	8×8	RH470M035F080□□
	47	329	0.12	30	2980	8×11.5	RH470M035F115□□
	56	392	0.12	30	2980	8×11.5	RH560M035F115□□
	56	392	0.12	28	3800	10×12.5	RH560M035G125□□
	68	476	0.12	30	2980	8×11.5	RH680M035F115□□
	68	476	0.12	28	3800	10×12.5	RH680M035G125□□
	82	574	0.12	30	2980	8×11.5	RH820M035F115□□
	82	574	0.12	28	3800	10×12.5	RH820M035G125□□
	100	700	0.12	30	2980	8×11.5	RH101M035F115□□
	100	700	0.12	28	3800	10×12.5	RH101M035G125□□
	220	1540	0.12	28	3800	10×12.5	RH221M035G125□□
50	330	2310	0.12	28	3800	10×12.5	RH331M035G125□□
	10	300	0.12	45	2000	6.3×8	RH100M050E080□□
	15	300	0.12	45	2000	6.3×8	RH150M050E080□□
	22	300	0.12	45	2600	8×8	RH220M050F080□□
	33	330	0.12	45	2600	8×8	RH330M050F080□□
	33	330	0.12	45	2700	8×11.5	RH330M050F115□□
	39	390	0.12	45	2600	8×8	RH390M050F080□□
	39	390	0.12	45	2700	8×11.5	RH390M050F115□□
	47	470	0.12	45	2700	8×11.5	RH470M050F115□□
	47	470	0.12	45	2900	10×12.5	RH470M050G125□□
	56	560	0.12	45	2700	8×11.5	RH560M050F115□□
	56	560	0.12	45	2900	10×12.5	RH560M050G125□□
	68	680	0.12	45	2900	10×12.5	RH680M050G125□□
	82	820	0.12	45	2900	10×12.5	RH820M050G125□□
	100	1000	0.12	45	2900	10×12.5	RH101M050G125□□
63	10	300	0.12	45	1700	6.3×8	RH100M063E080□□
	15	300	0.12	45	1700	6.3×8	RH150M063E080□□
	22	300	0.12	45	2600	8×8	RH220M063F080□□
	22	300	0.12	45	2700	8×11.5	RH220M063F115□□
	33	415.8	0.12	45	2700	8×11.5	RH330M063F115□□
	33	415.8	0.12	45	2900	10×12.5	RH330M063G125□□
	39	491.4	0.12	45	2700	8×11.5	RH390M063F115□□
	39	491.4	0.12	45	2900	10×12.5	RH390M063G125□□
	47	491.4	0.12	45	2900	10×12.5	RH470M063G125□□
	56	705.6	0.12	45	2900	10×12.5	RH560M063G125□□
	68	856.8	0.12	45	2900	10×12.5	RH680M063G125□□
	82	1033.2	0.12	45	2900	10×12.5	RH820M063G125□□
80	4.7	300	0.12	45	1700	6.3×8	RH4R7M080E080□□
	10	300	0.12	45	1700	6.3×8	RH100M080E080□□
	15	300	0.12	45	1900	8×8	RH150M080F080□□
	22	352	0.12	45	2700	8×11.5	RH220M080F115□□
	22	352	0.12	45	2900	10×12.5	RH220M080G125□□
	33	528	0.12	45	2900	10×12.5	RH330M080G125□□
	39	624	0.12	45	2900	10×12.5	RH390M080G125□□
	47	752	0.12	45	2900	10×12.5	RH470M080G125□□
100	4.7	300	0.12	45	1700	8×8	RH4R7M100F080□□
	10	300	0.12	45	1700	8×8	RH100M100F080□□
	10	300	0.12	45	1900	8×11.5	RH100M100F115□□
	15	300	0.12	45	2700	10×12.5	RH150M100G125□□
	22	440	0.12	45	2900	10×12.5	RH220M100G125□□
160	1.8	300	0.12	80	800	8×8	RH1R8M160F080□□
	3.3	300	0.12	80	800	8×8	RH3R3M160F080□□
	4.7	300	0.12	80	1200	10×12.5	RH4R7M160G125□□
	10	320	0.12	80	1200	10×12.5	RH100M160G125□□
200	1.8	300	0.12	150	500	10×12.5	RH1R8M200G125□□
	3.3	300	0.12	150	500	10×12.5	RH3R3M200G125□□
	4.7	300	0.12	150	500	10×12.5	RH4R7M200G125□□

Frequency Coefficient for Ripple Current

Frequency	120Hz≤freq.<1KHz	1KHz≤freq.<10KHz	10KHz≤freq.<100KHz	100KHz≤freq.<300KHz
Coefficient	0.05	0.3	0.7	1

RV series

High voltage 125°C Guaranteed (35v~200v)

This series has advanced characteristics in resistance to heat compared with the RA series.

Suitable for use in device reliability.

Lead free-flow is supported.

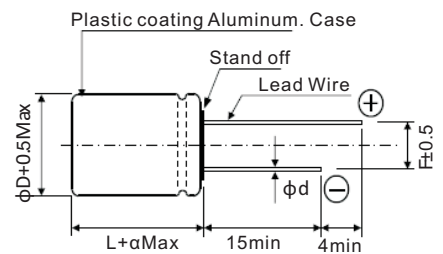
RV系列為耐高溫高壓固態鋁電容器，具有優異的熱穩定性，可承受125°C環境溫度。適合用於提高電子設備的可靠度。可滿足無鉛焊條件。



Specifications

Items	Characteristics
Operating Temp Range	-55°C ~ +125°C
Capacitance Range	1.8~330μF
Capacitance Tolerance	M : ±20%
Rated Voltage Range	35V ~200V DC
Dissipation Factor At 120Hz, 20°C	Not to exceed the value specified
Leakage Current	≤0.2CV (μA, after 2 minutes)
ESR(100K~300KHz)	Not to exceed the value specified
Endurance 125°C 2000h At Rated voltage	Capacitance Change Within ±20% of the value before test
	Leakage current Not to exceed the value specified
	ESR Not to exceed 150% of the value specified
	Dissipation Factor Not to exceed 150% of the value specified
Moisture Resistance Stored At 60°C, RH90~95%, 2000h	Capacitance Within ±20% of the value before test
	Leakage Current Not to exceed the value specified
	ESR Not to exceed 150% of the value specified
	Dissipation Factor Not to exceed 150% of the value specified

Dimensions



Unit:mm

ΦD×L	ΦD +0.5max.	α	F ±0.5	Φd ±0.05
6.3×8	6.3	1.0	2.5	0.6
8×8	8.0	1.0	3.5	0.6
8×11.5	8.0	1.0	3.5	0.6
10×12.5	10.0	1.0	5.0	0.6

Size List

RV/v (SV) CAP/μF	35 (41)	50 (57.5)	63 (73)	80 (92)	100 (115)	160 (184)	200 (230)
1.8						8×8	10×12.5
3.3						8×8	10×12.5
4.7				6.3×8	8×8	10×12.5	10×12.5
10	6.3×8	6.3×8	6.3×8	6.3×8	8×8 / 8×11.5	10×12.5	
15	6.3×8	6.3×8	6.3×8	8×8	10×12.5		
22	6.3×8 / 8×8	6.3×8 / 8×8	8×8 / 8×11.5	8×11.5 / 10×12.5	10×12.5		
33	8×8	8×8 / 8×11.5	8×11.5 / 10×12.5	10×12.5			
39	8×8 / 8×11.5	8×8 / 8×11.5	8×11.5 / 10×12.5	10×12.5			
47	8×8 / 8×11.5	8×11.5 / 10×12.5	10×12.5	10×12.5			
56	8×11.5 / 10×12.5	8×11.5 / 10×12.5	10×12.5				
68	8×11.5 / 10×12.5		10×12.5				
82	8×11.5 / 10×12.5	10×12.5	10×12.5				
100	8×11.5 / 10×12.5	10×12.5					
220	10×12.5						
330	10×12.5						

RV series

Characteristics List

W.V. (V)	Capacitance (μF)	L.C. (μA,2min)	tgδ (120Hz,20℃)	ESR (mΩ,100kHz)	Rated Ripple Current		Size ΦD×L(mm)	Part Number
					100KHz(mA,r.m.s)			
					105℃<Tx≤125℃	Tx≤105℃		
35	10	300	0.12	45	1150	2000	6.3×8	RV100M035E080□□
	15	300	0.12	45	1150	2000	6.3×8	RV150M035E080□□
	22	300	0.12	45	1150	2000	6.3×8	RV220M035E080□□
	22	300	0.12	35	1500	2600	8×8	RV220M035F080□□
	33	300	0.12	35	1500	2600	8×8	RV330M035F080□□
	39	300	0.12	35	1500	2600	8×8	RV390M035F080□□
	39	300	0.12	30	1720	2980	8×11.5	RV390M035F115□□
	47	329	0.12	35	1500	2600	8×8	RV470M035F080□□
	47	329	0.12	30	1720	2980	8×11.5	RV470M035F115□□
	56	392	0.12	30	1720	2980	8×11.5	RV560M035F115□□
	56	392	0.12	28	2190	3800	10×12.5	RV560M035G125□□
	68	476	0.12	30	1720	2980	8×11.5	RV680M035F115□□
	68	476	0.12	28	2190	3800	10×12.5	RV680M035G125□□
	82	574	0.12	30	1720	2980	8×11.5	RV820M035F115□□
	82	574	0.12	28	2190	3800	10×12.5	RV820M035G125□□
	100	700	0.12	30	1720	2980	8×11.5	RV101M035F115□□
	100	700	0.12	28	2190	3800	10×12.5	RV101M035G125□□
	220	1540	0.12	28	2190	3800	10×12.5	RV221M035G125□□
330	2310	0.12	28	2190	3800	10×12.5	RV331M035G125□□	
50	10	300	0.12	45	1150	2000	6.3×8	RV100M050E080□□
	15	300	0.12	45	1150	2000	6.3×8	RV150M050E080□□
	22	300	0.12	45	1150	2000	6.3×8	RV220M050E080□□
	22	300	0.12	45	1500	2600	8×8	RV220M050F080□□
	33	330	0.12	45	1500	2600	8×8	RV330M050F080□□
	33	330	0.12	45	1550	2700	8×11.5	RV330M050F115□□
	39	390	0.12	45	1500	2600	8×8	RV390M050F080□□
	39	390	0.12	45	1550	2700	8×11.5	RV390M050F115□□
	47	470	0.12	45	1550	2700	8×11.5	RV470M050F115□□
	47	470	0.12	45	1670	2900	10×12.5	RV470M050G125□□
	56	560	0.12	45	1550	2700	8×11.5	RV560M050F115□□
	56	560	0.12	45	1670	2900	10×12.5	RV560M050G125□□
	68	680	0.12	45	1670	2900	10×12.5	RV680M050G125□□
	82	820	0.12	45	1670	2900	10×12.5	RV820M050G125□□
	100	1000	0.12	45	1670	2900	10×12.5	RV101M050G125□□
	10	300	0.12	45	980	1700	6.3×8	RV100M063E080□□
	15	300	0.12	45	980	1700	6.3×8	RV150M063E080□□
	63	22	300	0.12	45	1500	2600	8×8
22		300	0.12	45	1550	2700	8×11.5	RV220M063F115□□
33		415.8	0.12	45	1550	2700	8×11.5	RV330M063F115□□
33		415.8	0.12	45	1670	2900	10×12.5	RV330M063G125□□
39		491.4	0.12	45	1550	2700	8×11.5	RV390M063F115□□
39		491.4	0.12	45	1670	2900	10×12.5	RV390M063G125□□
47		491.4	0.12	45	1670	2900	10×12.5	RV470M063G125□□
56		705.6	0.12	45	1670	2900	10×12.5	RV560M063G125□□
68		856.8	0.12	45	1670	2900	10×12.5	RV680M063G125□□
82		1033.2	0.12	45	1670	2900	10×12.5	RV820M063G125□□
80	4.7	300	0.12	45	980	1700	6.3×8	RV47M080E080□□
	10	300	0.12	45	980	1700	6.3×8	RV100M080E080□□
	15	300	0.12	45	1090	1900	8×8	RV150M080F080□□
	22	352	0.12	45	1550	2700	8×11.5	RV220M080F115□□
	22	352	0.12	45	1670	2900	10×12.5	RV220M080G125□□
	33	528	0.12	45	1670	2900	10×12.5	RV330M080G125□□
	39	624	0.12	45	1670	2900	10×12.5	RV390M080G125□□
	47	752	0.12	45	1670	2900	10×12.5	RV470M080G125□□
100	4.7	300	0.12	45	980	1700	8×8	RV47M100F080□□
	10	300	0.12	45	980	1700	8×8	RV100M100F080□□
	10	300	0.12	45	1090	1900	8×11.5	RV100M100F115□□
	15	300	0.12	45	1550	2700	10×12.5	RV150M100G125□□
160	22	440	0.12	45	1670	2900	10×12.5	RV220M100G125□□
	1.8	300	0.12	80	460	800	8×8	RV1R8M160F080□□
	3.3	300	0.12	80	460	800	8×8	RV3R3M160F080□□
	4.7	300	0.12	80	690	1200	10×12.5	RV4R7M160G125□□
	10	320	0.12	80	690	1200	10×12.5	RV100M160G125□□
200	1.8	300	0.12	150	280	500	10×12.5	RV1R8M200G125□□
	3.3	300	0.12	150	280	500	10×12.5	RV3R3M200G125□□
	4.7	300	0.12	150	280	500	10×12.5	RV4R7M200G125□□

Frequency Coefficient for Ripple Current

Frequency	120Hz≤freq.<1KHz	1KHz≤freq.<10KHz	10KHz≤freq.<100KHz	100KHz≤freq.<300KHz
Coefficient	0.05	0.3	0.7	1

RX series

High voltage 135°C Guaranteed (35v~100v)

This series has advanced characteristics in resistance to heat compared with the RV series.

Suitable for use in device reliability.

Lead free-flow is supported.

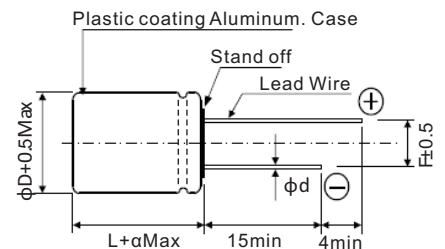
RX系列為耐高溫高壓固態鋁電容器，具有優異的熱穩定性，可承受135°C環境溫度，壽命為1000小時。可滿足無鉛焊條件。



Specifications

Items	Characteristics	
Operating Temp Range	-55°C ~ +135°C	
Capacitance Range	4.7~120μF	
Capacitance Tolerance	M : ±20%	
Rated Voltage Range	35V ~100V DC	
Dissipation Factor At 120Hz, 20°C	Not to exceed the value specified	
Leakage Current	≤0.2CV (μA, after 2 minutes)	
ESR(100K~300KHz)	Not to exceed the value specified	
Endurance 135°C 1000h At Rated voltage	Capacitance Change	Within ±20% of the value before test
	Leakage current	Not to exceed the value specified
	ESR	Not to exceed 150% of the value specified
	Dissipation Factor	Not to exceed 150% of the value specified
Moisture Resistance Stored At 60°C, RH90~95%, 2000h	Capacitance	Within ±20% of the value before test
	Leakage Current	Not to exceed the value specified
	ESR	Not to exceed 150% of the value specified
	Dissipation Factor	Not to exceed 150% of the value specified

Dimensions



Unit:mm

φD×L	ΦD +0.5max.	α	F ±0.5	Φd ±0.05
6.3×8	6.3	1.0	2.5	0.6
8×8	8.0	1.0	3.5	0.6
8×11.5	8.0	1.0	3.5	0.6
10×12.5	10.0	1.0	5.0	0.6

Size List

RV/v (SV) CAP/μF	35 (41)	50 (57.5)	63 (73)	80 (92)	100 (115)
4.7					8×8
10	6.3×8	6.3×8	6.3×8	6.3×8	8×18 / 8×11.5
15	6.3×8	6.3×8	6.3×8	8×8	10×12.5
22	6.3×8 / 8×8	8×8	8×8	8×11.5 / 10×12.5	10×12.5
33	8×8	8×8	8×8/8×11.5	10×12.5	
39	8×8/8×11.5	8×8/8×11.5	8×11.5/10×12.5	10×12.5	
47	8×8/8×11.5	8×8/8×11.5	10×12.5	10×12.5	
56	8×11.5/10×12.5	8×11.5/10×12.5	10×12.5		
68	8×11.5/10×12.5	10×12.5	10×12.5		
82	10×12.5	10×12.5	10×12.5		
100	10×12.5				
120	10×12.5				

RX series

Characteristics List

W.V. (V)	Capacitance (μF)	L.C. (μA,2min)	tgδ (120Hz,20℃)	ESR (mΩ,100kHz)	Rated Ripple Current	Allowable ripple current	Size ΦD×L(mm)	Part Number
					100KHz(mA,r.m.s)			
					105℃<T _x ≤135℃	T _x ≤105℃		
35	10	300	0.12	45	754	2000	6.3×8	RX100M035E080□□
	15	300	0.12	45	754	2000	6.3×8	RX150M035E080□□
	22	300	0.12	45	754	2000	6.3×8	RX220M035E080□□
	22	300	0.12	35	981	2600	8×8	RX220M035F080□□
	33	300	0.12	35	981	2600	8×8	RX330M035F080□□
	39	300	0.12	35	981	2600	8×8	RX390M035F080□□
	39	300	0.12	30	1124	2980	8×11.5	RX390M035F115□□
	47	329	0.12	35	981	2600	8×8	RX470M035F080□□
	47	329	0.12	30	1124	2980	8×11.5	RX470M035F115□□
	56	392	0.12	30	1124	2980	8×11.5	RX560M035F115□□
	56	392	0.12	28	1433	3800	10×12.5	RX560M035G125□□
	68	476	0.12	30	1124	2980	8×11.5	RX680M035F115□□
	68	476	0.12	28	1433	3800	10×12.5	RX680M035G125□□
	82	574	0.12	30	1124	2980	8×11.5	RX820M035F115□□
	82	574	0.12	28	1433	3800	10×12.5	RX820M035G125□□
	100	700	0.12	30	1124	2980	8×11.5	RX101M035F115□□
	100	700	0.12	28	1433	3800	10×12.5	RX101M035G125□□
	120	840	0.12	28	1433	3800	10×12.5	RX121M035G125□□
50	10	300	0.12	45	754	2000	6.3×8	RX100M050E080□□
	15	300	0.12	45	754	2000	6.3×8	RX150M050E080□□
	22	300	0.12	45	981	2600	8×8	RX220M050F080□□
	33	330	0.12	45	981	2600	8×8	RX330M050F080□□
	33	330	0.12	45	1018	2700	8×11.5	RX330M050F115□□
	39	390	0.12	45	1018	2700	8×11.5	RX390M050F115□□
	39	390	0.12	45	1094	2900	10×12.5	RX390M050G125□□
	47	470	0.12	45	1094	2900	10×12.5	RX470M050G125□□
	56	560	0.12	45	1094	2900	10×12.5	RX560M050G125□□
82	820	0.12	45	1094	2900	10×12.5	RX820M050G125□□	
63	10	300	0.12	45	641	1700	6.3×8	RX100M063E080□□
	15	300	0.12	45	716	1900	8×8	RX150M063F080□□
	22	300	0.12	45	1018	2700	8×11.5	RX220M063F115□□
	22	300	0.12	45	1094	2900	10×12.5	RX220M063G125□□
	33	415.8	0.12	45	1094	2900	10×12.5	RX330M063G125□□
	39	491.4	0.12	45	1094	2900	10×12.5	RX390M063G125□□
	47	491.4	0.12	45	1094	2900	10×12.5	RX470M063G125□□
	56	705.6	0.12	45	1094	2900	10×12.5	RX560M063G125□□
	82	1033.2	0.12	45	1094	2900	10×12.5	RX820M063G125□□
80	4.7	300	0.12	45	641	1700	6.3×8	RX47M080E080□□
	10	300	0.12	45	641	1700	6.3×8	RX100M080E080□□
	15	300	0.12	45	716	1900	8×8	RX150M080F080□□
	22	352	0.12	45	1018	2700	8×11.5	RX220M080F115□□
	22	352	0.12	45	1094	2900	10×12.5	RX220M080G125□□
	33	528	0.12	45	1094	2900	10×12.5	RX330M080G125□□
	39	624	0.12	45	1094	2900	10×12.5	RX390M080G125□□
	47	752	0.12	45	1094	2900	10×12.5	RX470M080G125□□
	4.7	300	0.12	45	641	1700	8×8	RX47M100F080□□
100	10	300	0.12	45	641	1700	8×8	RX100M100F080□□
	10	300	0.12	45	716	1900	8×11.5	RX100M100F115□□
	15	300	0.12	45	1018	2700	10×12.5	RX150M100G125□□
	22	440	0.12	45	1094	2900	10×12.5	RX220M100G125□□

Frequency Coefficient for Ripple Current

Frequency	120Hz≤freq.<1KHz	1KHz≤freq.<10KHz	10KHz≤freq.<100KHz	100KHz≤freq.<300KHz
Coefficient	0.05	0.3	0.7	1

RL series

Super low ESR large ripple current

It's a super low ESR & large permissible ripple current series based on our RG and RS series.

Suitable for use with motherboard, servers, VGA, etc.

Lead free-flow is supported.

RL系列具有超低ESR和超大紋波電流，適合用于電腦主機板、伺服器、顯卡等。

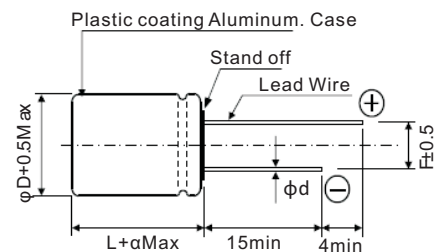
更有小型化產品適合與新型高速CPU配合使用，使得電路小型化。



Specifications

Items	Characteristics
Operating Temp Range	-55°C ~ +105°C
Capacitance Range	220~3500μF
Capacitance Tolerance	M : ±20%
Rated Voltage Range	2.5V ~ 12V DC
Dissipation Factor At 120Hz, 20°C	Not to exceed the value specified
Leakage Current	≤0.2CV (μA, after 2 minutes)
ESR(100K~300KHz)	Not to exceed the value specified
Endurance 105°C, 2000h At Rated voltage	Capacitance Within ±20% of the value before test
	Leakage current Not to exceed the value specified
	ESR Not to exceed 150% of the value specified
	Dissipation Factor Not to exceed 150% of the value specified
Moisture Resistance Stored At 60°C, RH90~95%, 2000h	Capacitance Within ±20% of the value before test
	Leakage Current Not to exceed the value specified
	ESR Not to exceed 150% of the value specified
	Dissipation Factor Not to exceed 150% of the value specified

Dimensions



Unit:mm

φD×L	ΦD +0.5max.	α	F ±0.5	Φd ±0.05
6.3×8	6.3	1.0	2.5	0.6
6.3×9	6.3	1.0	2.5	0.6
6.3×11	6.3	1.0	2.5	0.6
8×8	8.0	1.0	3.5	0.6
8×11.5	8.0	1.0	3.5	0.6
10×12.5	10.0	1.0	5.0	0.6

Size List

RV/v (SV)	2.5 (2.8)	4 (4.6)	6.3 (7.2)	7.5 (8.6)	10 (11.5)	12 <i>New</i> (13.8)
CAP/μF						
220					6.3×8	6.3×8
270			6.3×8	6.3×8	6.3×8	6.3×8
330			6.3×8	6.3×8	6.3×8/8×8	6.3×8
390			6.3×8/8×8	6.3×8/8×8	6.3×11/8×8	6.3×8
470			6.3×8/8×8	6.3×8/8×8	6.3×11/8×8	6.3×8/6.3×9
560	6.3×8	6.3×8/8×8	6.3×8/8×8	6.3×8/8×8	8×8/8×11.5	6.3×8/6.3×9
680	6.3×8/8×8	8×8/8×11.5	6.3×8/8×8	6.3×9/6.3×11/8×8	8×8/8×11.5	8×8/8×11.5
820	6.3×8/8×8	8×8/8×11.5	6.3×8/6.3×9/6.3×11/8×8	6.3×11/8×8/8×11.5	8×8/8×11.5/10×12.5	8×11.5/10×12.5
1000	8×8/8×11.5	8×8/8×11.5	6.3×11/8×8/8×11.5	8×11.5/10×12.5	8×11.5/10×12.5	8×11.5/10×12.5
1200	8×8/8×11.5	8×11.5/10×12.5	6.3×11/8×8/8×11.5	8×11.5/10×12.5	10×12.5	10×12.5
1500	8×11.5	8×11.5/10×12.5	8×8/8×11.5/10×12.5	10×12.5	10×12.5	
2000	10×12.5	8×11.5/10×12.5	8×11.5/10×12.5			
2500	10×12.5	10×12.5	10×12.5			
2700	10×12.5	10×12.5	10×12.5			
3000	10×12.5	10×12.5	10×12.5			
3300	10×12.5	10×12.5	10×12.5			
3500	10×12.5					

RL series

Characteristics List

W.V. (V)	Capacitance (μF)	L.C. (μA,2min)	tgδ (120Hz,20℃)	ESR (mΩ,100kHz)	Rated Ripple Current(mA,r.m.s)	Size ΦD×L (mm)	Part Number
2.5	560	280	0.08	7	5600	6.3×8	RL561M2R5E080□□
	680	340	0.08	7	5600	6.3×8	RL681M2R5E080□□
	680	340	0.08	7	6100	8×8	RL681M2R5F080□□
	820	410	0.08	7	5600	6.3×8	RL821M2R5E080□□
	820	410	0.08	7	6100	8×8	RL821M2R5F080□□
	1000	500	0.08	7	6100	8×8	RL102M2R5F080□□
	1000	500	0.08	7	6100	8×11.5	RL102M2R5F115□□
	1200	600	0.08	7	6100	8×8	RL122M2R5F080□□
	1200	600	0.08	7	6100	8×11.5	RL122M2R5F115□□
	1500	750	0.08	7	6100	8×11.5	RL152M2R5F115□□
	2000	1000	0.08	7	6640	10×12.5	RL202M2R5G125□□
	2500	1250	0.08	7	6640	10×12.5	RL252M2R5G125□□
	2700	1350	0.08	7	6640	10×12.5	RL272M2R5G125□□
	3000	1500	0.08	7	6640	10×12.5	RL302M2R5G125□□
	3300	1650	0.08	7	6640	10×12.5	RL332M2R5G125□□
4	560	448	0.08	8	5600	6.3×8	RL561M004E080□□
	560	448	0.08	7	6100	8×8	RL561M004F080□□
	680	544	0.08	7	6100	8×8	RL681M004F080□□
	680	544	0.08	7	6100	8×11.5	RL681M004F115□□
	820	656	0.08	7	6100	8×8	RL821M004F080□□
	820	656	0.08	7	6100	8×11.5	RL821M004F115□□
	1000	800	0.08	7	6100	8×8	RL102M004F080□□
	1000	800	0.08	7	6100	8×11.5	RL102M004F115□□
	1200	960	0.08	7	6100	8×11.5	RL122M004F115□□
	1200	960	0.08	7	6640	10×12.5	RL122M004G125□□
	1500	1200	0.08	7	6100	8×11.5	RL152M004F115□□
	1500	1200	0.08	7	6640	10×12.5	RL152M004G125□□
	2000	1600	0.08	7	6100	8×11.5	RL202M004F115□□
	2500	2000	0.08	7	6640	10×12.5	RL252M004G125□□
	2700	2160	0.08	7	6640	10×12.5	RL272M004G125□□
6.3	3000	2400	0.08	7	6640	10×12.5	RL302M004G125□□
	3300	2640	0.08	7	6640	10×12.5	RL332M004G125□□
	270	340.2	0.08	8	5600	6.3×8	RL271M6R3E080□□
	330	415.8	0.08	8	5600	6.3×8	RL331M6R3E080□□
	390	491.4	0.08	8	5600	6.3×8	RL391M6R3E080□□
	390	491.4	0.08	7	6100	8×8	RL391M6R3F080□□
	470	592.2	0.08	8	5600	6.3×8	RL471M6R3E080□□
	470	592.2	0.08	7	6100	8×8	RL471M6R3F080□□
	560	705.6	0.08	8	5600	6.3×8	RL561M6R3E080□□
	560	705.6	0.08	7	6100	8×8	RL561M6R3F080□□
	680	856.8	0.08	8	5600	6.3×8	RL681M6R3E080□□
	680	856.8	0.08	7	6100	8×8	RL681M6R3F080□□
	820	1033.2	0.08	8	5600	6.3×8	RL821M6R3E080□□
	820	1033.2	0.08	8	5600	6.3×9	RL821M6R3E090□□
	820	1033.2	0.08	7	5800	6.3×11	RL821M6R3E110□□
7.5	820	1033.2	0.08	7	6100	8×8	RL821M6R3F080□□
	1000	1260	0.08	7	5800	6.3×11	RL102M6R3E110□□
	1000	1260	0.08	7	6100	8×8	RL102M6R3F080□□
	1000	1260	0.08	7	6100	8×11.5	RL102M6R3F115□□
	1200	1512	0.08	7	5800	6.3×11	RL122M6R3E110□□
	1200	1512	0.08	7	6100	8×8	RL122M6R3F080□□
	1200	1512	0.08	7	6100	8×11.5	RL122M6R3F115□□
	1500	1890	0.08	7	6100	8×8	RL122M6R3F080□□
	1500	1890	0.08	7	6100	8×11.5	RL152M6R3F115□□
	1500	1890	0.08	7	6640	10×12.5	RL152M6R3G125□□
	2000	2520	0.08	7	6100	8×11.5	RL202M6R3F115□□
	2000	2520	0.08	7	6640	10×12.5	RL202M6R3G125□□
	2500	3150	0.08	7	6640	10×12.5	RL252M6R3G125□□
	2700	3402	0.08	7	6640	10×12.5	RL272M6R3G125□□
	3000	3780	0.08	7	6640	10×12.5	RL302M6R3G125□□
7.5	3300	4158	0.08	7	6640	10×12.5	RL332M6R3G125□□
	270	405	0.08	8	5600	6.3×8	RL271M7R5E080□□
	330	495	0.08	8	5600	6.3×8	RL331M7R5E080□□
	390	585	0.08	8	5600	6.3×8	RL391M7R5E080□□
	390	585	0.08	7	6100	8×8	RL391M7R5F080□□
	470	705	0.08	8	5600	6.3×8	RL471M7R5E080□□
	470	705	0.08	7	6100	8×8	RL471M7R5F080□□
	560	840	0.08	8	5600	6.3×8	RL561M7R5E080□□
	560	840	0.08	7	6100	8×8	RL561M7R5F080□□
	680	1020	0.08	8	5600	6.3×9	RL681M7R5E090□□
	680	1020	0.08	7	5800	6.3×11	RL681M7R5E110□□
	680	1020	0.08	7	6100	8×8	RL681M7R5F080□□
	820	1230	0.08	7	5800	6.3×11	RL821M7R5E110□□
	820	1230	0.08	7	6100	8×8	RL821M7R5F080□□
	820	1230	0.08	7	6100	8×11.5	RL821M7R5F115□□
	1000	1500	0.08	7	6100	8×11.5	RL102M7R5F115□□

RL series

W.V. (V)	Capacitance (μ F)	L.C. (μ A, 2min)	tg δ (120Hz, 20°C)	ESR (m Ω , 100kHz)	Rated Ripple Current(mA, r.m.s)	Size Φ D×L (mm)	Part Number
7.5	1000	1500	0.08	7	6640	10×12.5	RL102M7R5G125□□
	1200	1800	0.08	7	6100	8×11.5	RL122M7R5F115□□
	1200	1800	0.08	7	6640	10×12.5	RL122M7R5G125□□
	1500	2250	0.08	7	6100	10×12.5	RL152M7R5G125□□
10	220	440	0.08	8	5600	6.3×8	RL221M010E080□□
	270	540	0.08	8	5600	6.3×8	RL271M010E080□□
	330	660	0.08	8	5600	6.3×8	RL331M010E080□□
	330	660	0.08	7	6100	8×8	RL331M010F080□□
	390	780	0.08	7	5800	6.3×11	RL391M010E110□□
	390	780	0.08	7	6100	8×8	RL391M010F080□□
	470	940	0.08	7	5800	6.3×11	RL471M010E110□□
	470	940	0.08	7	6100	8×8	RL471M010F080□□
	560	1120	0.08	7	6100	8×8	RL561M010F080□□
	560	1120	0.08	7	6100	8×11.5	RL561M010F115□□
	680	1360	0.08	7	6100	8×8	RL681M010F080□□
	680	1360	0.08	7	6100	8×11.5	RL681M010F115□□
	820	1640	0.08	7	6100	8×8	RL821M010F080□□
	820	1640	0.08	7	6100	8×11.5	RL821M010F115□□
	820	1640	0.08	7	6640	10×12.5	RL821M010G125□□
	1000	2000	0.08	7	6100	8×11.5	RL102M010F115□□
	1000	2000	0.08	7	6640	10×12.5	RL102M010G125□□
	1200	2400	0.08	7	6640	10×12.5	RL122M010G125□□
	1500	3000	0.08	7	6640	10×12.5	RL152M010G125□□
12	220	528	0.08	9	5600	6.3×8	RL221M012E080□□
	270	648	0.08	9	5600	6.3×8	RL271M012E080□□
	330	792	0.08	9	5600	6.3×8	RL331M012E080□□
	390	936	0.08	9	5600	6.3×8	RL391M012E080□□
	470	1128	0.08	9	5600	6.3×8	RL471M012E080□□
	470	1128	0.08	9	5800	6.3×9	RL471M012E090□□
	560	1344	0.08	9	5600	6.3×8	RL561M012E080□□
	560	1344	0.08	9	5800	6.3×9	RL561M012E090□□
	680	1632	0.08	7	6100	8×8	RL681M012F080□□
	680	1632	0.08	7	6100	8×11.5	RL681M012F115□□
	820	1968	0.08	7	6100	8×11.5	RL821M012F115□□
	820	1968	0.08	7	6640	10×12.5	RL821M012G125□□
	1000	2400	0.08	7	6100	8×11.5	RL102M012F115□□
	1000	2400	0.08	7	6640	10×12.5	RL102M012G125□□
	1200	2880	0.08	7	6640	10×12.5	RL122M012G125□□

Frequency Coefficient for Ripple Current

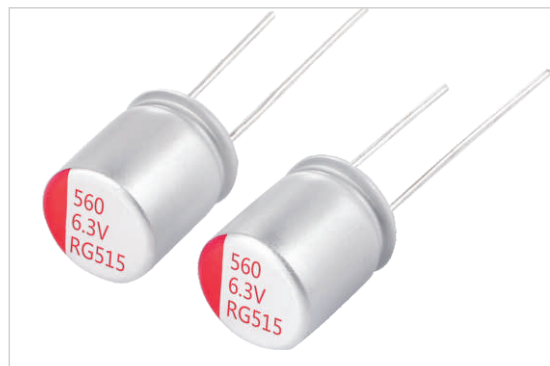
Frequency	120Hz≤freq.<1KHz	1KHz≤freq.<10KHz	10KHz≤freq.<100KHz	100KHz≤freq.<300KHz
Coefficient	0.05	0.3	0.7	1

RG series

Super low ESR large ripple current

It's a low ESR & large permissible ripple current series.
Suitable for use with DC-DC converts, voltage regulators,
motherboard, servers, VGA, etc.
Lead free-flow is supported.

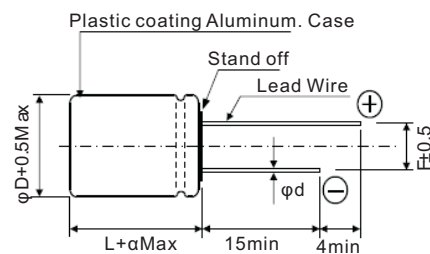
RG系列具有低ESR和大紋波電流，適合用于DC-DC轉換器、電壓調節器、電腦主機板和顯卡等。
更有小型化產品適合用于新型高速電路，使得電路小型化。



Specifications

Items	Characteristics
Operating Temp Range	-55°C ~ +105°C
Capacitance Range	220~3500μF
Capacitance Tolerance	M : ±20%
Rated Voltage Range	2.5V ~12V DC
Dissipation Factor At 120Hz, 20°C	Not to exceed the value specified
Leakage Current	≤0.2CV (μA, after 2 minutes)
ESR(100K~300KHz)	Not to exceed the value specified
Endurance 105°C, 2000h At Rated voltage	Capacitance Within ±20% of the value before test
	Leakage current Not to exceed the value specified
	ESR Not to exceed 150% of the value specified
	Dissipation Factor Not to exceed 150% of the value specified
Moisture Resistance Stored At 60°C, RH90~95%, 2000h	Capacitance Within ±20% of the value before test
	Leakage Current Not to exceed the value specified
	ESR Not to exceed 150% of the value specified
	Dissipation Factor Not to exceed 150% of the value specified

Dimensions



Unit:mm

φD×L	φD +0.5max.	α	F ±0.5	φd ±0.05
6.3×8	6.3	1.0	2.5	0.6
6.3×9	6.3	1.0	2.5	0.6
6.3×11	6.3	1.0	2.5	0.6
8×8	8.0	1.0	3.5	0.6
8×11.5	8.0	1.0	3.5	0.6
10×12.5	10.0	1.0	5.0	0.6

Size List

RV/v CAP/μF (SV)	2.5 (2.8)	4 (4.6)	6.3 (7.2)	7.5 (8.6)	10 (11.5)	12 ^{New} (13.8)
220					6.3×8	6.3×8
270			6.3×8	6.3×8	6.3×8	6.3×8
330			6.3×8	6.3×8	6.3×8 / 8×8	6.3×8
390			6.3×8 / 8×8	6.3×8 / 8×8	6.3×11/8×8	6.3×8
470			6.3×8 / 8×8	6.3×8 / 8×8	6.3×11/8×8	6.3×8/6.3×9
560	6.3×8	6.3×8 / 8×8	6.3×8 / 8×8	6.3×8 / 8×8	8×8/8×11.5	6.3×8/6.3×9
680	6.3×8 / 8×8	8×8 / 8×11.5	6.3×8/8×8	6.3×9/6.3×11/8×8	8×8/8×11.5	8×8/8×11.5
820	6.3×8 / 8×8	8×8 / 8×11.5	6.3×8/6.3×9/6.3×11/8×8	6.3×11/8×8/8×11.5	8×8/8×11.5/10×12.5	8×11.5/10×12.5
1000	8×8/8×11.5	8×8 / 8×11.5	6.3×11/8×8/8×11.5	8×11.5 / 10×12.5	8×11.5/10×12.5	8×11.5/10×12.5
1200	8×8/8×11.5	8×11.5 / 10×12.5	6.3×11/8×8/8×11.5	8×11.5 / 10×12.5	10×12.5	10×12.5
1500	8×11.5	8×11.5 / 10×12.5	8×8/8×11.5/10×12.5	10×12.5	10×12.5	
2000	10×12.5	8×11.5 / 10×12.5	8×11.5/10×12.5			
2500	10×12.5	10×12.5	10×12.5			
2700	10×12.5	10×12.5	10×12.5			
3000	10×12.5	10×12.5	10×12.5			
3300	10×12.5	10×12.5	10×12.5			
3500	10×12.5					

Characteristics List

W.V. (V)	Capacitance (μ F)	L.C. (μ A, 2min)	tg δ (120Hz, 20°C)	ESR (m Ω , 100kHz)	Rated Ripple Current(mA, r.m.s)	Size Φ D×L (mm)	Part Number
2.5	560	280	0.08	11	4500	6.3×8	RG561M2R5E080□□
	680	340	0.08	11	4500	6.3×8	RG681M2R5E080□□
	680	340	0.08	9	5200	8×8	RG681M2R5F080□□
	820	410	0.08	11	4500	6.3×8	RG821M2R5E080□□
	820	410	0.08	9	5200	8×8	RG821M2R5F080□□
	1000	500	0.08	9	5200	8×8	RG102M2R5F080□□
	1000	500	0.08	9	5200	8×11.5	RG102M2R5F115□□
	1200	600	0.08	9	5200	8×8	RG122M2R5F080□□
	1200	600	0.08	9	5200	8×11.5	RG122M2R5F115□□
	1500	750	0.08	9	5200	8×11.5	RG152M2R5F115□□
	2000	1000	0.08	9	5600	10×12.5	RG202M2R5G125□□
	2500	1250	0.08	9	5600	10×12.5	RG252M2R5G125□□
	2700	1350	0.08	9	5600	10×12.5	RG272M2R5G125□□
	3000	1500	0.08	9	5600	10×12.5	RG302M2R5G125□□
	3300	1650	0.08	9	5600	10×12.5	RG332M2R5G125□□
	3500	1750	0.08	9	5600	10×12.5	RG352M2R5G125□□
4	560	448	0.08	11	4500	6.3×8	RG561M004E080□□
	560	448	0.08	9	5200	8×8	RG561M004F080□□
	680	544	0.08	9	5200	8×8	RG681M004F080□□
	680	544	0.08	9	5200	8×11.5	RG681M004F115□□
	820	656	0.08	9	5200	8×8	RG821M004F080□□
	820	656	0.08	9	5200	8×11.5	RG821M004F115□□
	1000	800	0.08	9	5200	8×8	RG102M004F080□□
	1000	800	0.08	9	5200	8×11.5	RG102M004F115□□
	1200	960	0.08	9	5200	8×11.5	RG122M004F115□□
	1200	960	0.08	9	5600	10×12.5	RG122M004G125□□
	1500	1200	0.08	9	5200	8×11.5	RG152M004F115□□
	1500	1200	0.08	9	5600	10×12.5	RG152M004G125□□
	2000	1600	0.08	9	5200	8×11.5	RG202M004F115□□
	2000	1600	0.08	9	5600	10×12.5	RG202M004G125□□
	2500	2000	0.08	9	5600	10×12.5	RG252M004G125□□
	2700	2160	0.08	9	5600	10×12.5	RG272M004G125□□
	3000	2400	0.08	9	5600	10×12.5	RG302M004G125□□
	3300	2640	0.08	9	5600	10×12.5	RG332M004G125□□
6.3	270	340.2	0.08	11	4500	6.3×8	RG271M6R3E080□□
	330	415.8	0.08	11	4500	6.3×8	RG331M6R3E080□□
	390	491.4	0.08	11	4500	6.3×8	RG391M6R3E080□□
	390	491.4	0.08	9	5200	8×8	RG391M6R3F080□□
	470	592.2	0.08	11	4500	6.3×8	RG471M6R3E080□□
	470	592.2	0.08	9	5200	8×8	RG471M6R3F080□□
	560	705.6	0.08	11	4500	6.3×8	RG561M6R3E080□□
	560	705.6	0.08	9	5200	8×8	RG561M6R3F080□□
	680	856.8	0.08	11	4500	6.3×8	RG681M6R3E080□□
	680	856.8	0.08	9	5200	8×8	RG681M6R3F080□□
	820	1033.2	0.08	11	4500	6.3×8	RG821M6R3E080□□
	820	1033.2	0.08	10	4500	6.3×9	RG821M6R3E090□□
	820	1033.2	0.08	9	4500	6.3×11	RG821M6R3E110□□
	820	1033.2	0.08	9	5200	8×8	RG821M6R3F080□□
	1000	1260	0.08	9	4500	6.3×11	RG102M6R3E110□□
	1000	1260	0.08	9	5200	8×8	RG102M6R3F080□□
	1000	1260	0.08	9	5200	8×11.5	RG102M6R3F115□□
	1200	1512	0.08	9	4500	6.3×11	RG122M6R3E110□□
	1200	1512	0.08	9	5200	8×8	RG122M6R3F080□□
	1200	1512	0.08	9	5200	8×11.5	RG122M6R3F115□□
	1500	1890	0.08	9	5200	8×8	RG152M6R3F080□□
	1500	1890	0.08	9	5200	8×11.5	RG152M6R3F115□□
	1500	1890	0.08	9	5600	10×12.5	RG152M6R3G125□□
	2000	2520	0.08	9	5200	8×11.5	RG202M6R3F115□□
	2000	2520	0.08	9	5600	10×12.5	RG202M6R3G125□□
	2500	3150	0.08	9	5600	10×12.5	RG252M6R3G125□□
	2700	3402	0.08	9	5600	10×12.5	RG272M6R3G125□□
	3000	3780	0.08	9	5600	10×12.5	RG302M6R3G125□□
	3300	4158	0.08	9	5600	10×12.5	RG332M6R3G125□□
7.5	270	405	0.08	11	4500	6.3×8	RG271M7R5E080□□
	330	495	0.08	11	4500	6.3×8	RG331M7R5E080□□
	390	585	0.08	11	4500	6.3×8	RG391M7R5E080□□
	390	585	0.08	9	5200	8×8	RG391M7R5F080□□
	470	705	0.08	11	4500	6.3×8	RG471M7R5E080□□
	470	705	0.08	9	5200	8×8	RG471M7R5F080□□
	560	840	0.08	11	4500	6.3×8	RG561M7R5E080□□
	560	840	0.08	9	5200	8×8	RG561M7R5F080□□
	680	1020	0.08	9	4500	6.3×11	RG681M7R5E110□□
	680	1020	0.08	9	5200	8×8	RG681M7R5F080□□
	820	1230	0.08	9	4500	6.3×11	RG821M7R5E110□□
	820	1230	0.08	9	5200	8×8	RG821M7R5F080□□
	820	1230	0.08	9	5200	8×11.5	RG821M7R5F115□□
	1000	1500	0.08	9	5200	8×11.5	RG102M7R5F115□□

RG series

W.V. (V)	Capacitance (μ F)	L.C. (μ A,2min)	tg δ (120Hz,20°C)	ESR (m Ω ,100kHz)	Rated Ripple Current(mA,r.m.s)	Size Φ D×L (mm)	Part Number
7.5	1000	1500	0.08	9	5600	10×12.5	RG102M7R5G125□□
	1200	1800	0.08	9	5200	8×11.5	RG122M7R5F115□□
	1200	1800	0.08	9	5600	10×12.5	RG122M7R5G125□□
	1500	2250	0.08	9	5600	10×12.5	RG152M7R5G125□□
10	220	440	0.08	11	4500	6.3×8	RG221M010E080□□
	270	540	0.08	11	4500	6.3×8	RG271M010E080□□
	330	660	0.08	11	4500	6.3×8	RG331M010E080□□
	330	660	0.08	9	5200	8×8	RG331M010F080□□
	390	780	0.08	9	4500	6.3×11	RG391M010E110□□
	390	780	0.08	9	5200	8×8	RG391M010F080□□
	470	940	0.08	9	4500	6.3×11	RG471M010E110□□
	470	940	0.08	9	5200	8×8	RG471M010F080□□
	560	1120	0.08	9	5200	8×8	RG561M010F080□□
	560	1120	0.08	9	5200	8×11.5	RG561M010F115□□
	680	1360	0.08	9	5200	8×8	RG681M010F080□□
	680	1360	0.08	9	5200	8×11.5	RG681M010F115□□
	820	1640	0.08	9	5200	8×8	RG821M010F080□□
	820	1640	0.08	9	5200	8×11.5	RG821M010F115□□
	820	1640	0.08	9	5600	10×12.5	RG821M010G125□□
	1000	2000	0.08	9	5200	8×11.5	RG102M010F115□□
	1000	2000	0.08	9	5600	10×12.5	RG102M010G125□□
	1200	2400	0.08	9	5600	10×12.5	RG122M010G125□□
	1500	3000	0.08	9	5600	10×12.5	RG152M010G125□□
12	220	528	0.08	11	4500	6.3×8	RG221M012E080□□
	270	648	0.08	11	4500	6.3×8	RG271M012E080□□
	330	792	0.08	11	4500	6.3×8	RG331M012E080□□
	390	936	0.08	11	4500	6.3×8	RG391M012E080□□
	470	1128	0.08	11	4500	6.3×8	RG471M012E080□□
	470	1128	0.08	10	4500	6.3×9	RG471M012E090□□
	560	1344	0.08	11	4500	6.3×8	RG561M012E080□□
	560	1344	0.08	10	4500	6.3×9	RG561M012E090□□
	680	1632	0.08	9	5200	8×8	RG681M012F080□□
	680	1632	0.08	9	5200	8×11.5	RG681M012F115□□
	820	1968	0.08	9	5200	8×11.5	RG821M012F115□□
	820	1968	0.08	9	5600	10×12.5	RG821M012G125□□
	1000	2400	0.08	9	5200	8×11.5	RG102M012F115□□
	1000	2400	0.08	9	5600	10×12.5	RG102M012G125□□
	1200	2880	0.08	9	5600	10×12.5	RG122M012G125□□

Frequency Coefficient for Ripple Current

Frequency	120Hz≤freq.<1KHz	1KHz≤freq.<10KHz	10KHz≤freq.<100KHz	100KHz≤freq.<300KHz
Coefficient	0.05	0.3	0.7	1

RS series

Super low ESR large ripple current

It's a low ESR & large permissible ripple current series.
Suitable for use with DC-DC converts, voltage regulators,
motherboard, servers, VGA, etc.
Lead free-flow is supported.

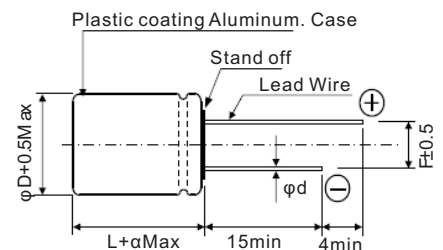
RS系列具有低ESR和大紋波電流，適合用于DC-DC轉換器、電壓調節器、電腦主機板和顯卡等。
更有小型化產品適合用于新型高速電路，使得電路小型化。



Specifications

Items	Characteristics
Operating Temp Range	-55°C ~ +105°C
Capacitance Range	22~1200μF
Capacitance Tolerance	M : ±20%
Rated Voltage Range	16V ~25V DC
Dissipation Factor At 120Hz, 20°C	Not to exceed the value specified
Leakage Current	≤0.2CV (μA, after 2 minutes)
ESR(100K~300KHz)	Not to exceed the value specified
Endurance 105°C, 2000h At Rated voltage	Capacitance Within ±20% of the value before test
	Leakage current Not to exceed the value specified
	ESR Not to exceed 150% of the value specified
	Dissipation Factor Not to exceed 150% of the value specified
Moisture Resistance Stored At 60°C, RH90~95%,2000h	Capacitance Within ±20% of the value before test
	Leakage Current Not to exceed the value specified
	ESR Not to exceed 150% of the value specified
	Dissipation Factor Not to exceed 150% of the value specified

Dimensions



Unit:mm

φD×L	ΦD +0.5max.	α	F ±0.5	Φd ±0.05
6.3×8	6.3	1.0	2.5	0.6
6.3×9	6.3	1.0	2.5	0.6
6.3×11	6.3	1.0	2.5	0.6
8×8	8.0	1.0	3.5	0.6
8×11.5	8.0	1.0	3.5	0.6
10×8	10.0	1.0	5.0	0.6
10×10	10.0	1.0	5.0	0.6
10×12.5	10.0	1.0	5.0	0.6

Size List

CAP/μF \ RV/v (SV)	16 (18.4)	20 (23)	25 (27.5)
22			6.3×8
39		6.3×8	6.3×8
47	6.3×8	6.3×8	6.3×8
68	6.3×8	6.3×8	6.3×11/8×8
82	6.3×8	6.3×11/8×8	6.3×11/8×8
100	6.3×8	6.3×11/8×8	6.3×11/8×8/ 8×11.5
150	6.3×8	8×8/8×11.5	8×11.5/10×8/10×10/10×12.5
180	6.3×8	8×11.5/10×8/10×10	8×11.5/10×8/10×10/10×12.5
220	6.3×8/6.3×9/8×8	8×11.5/10×8/10×10/10×12.5	8×11.5/10×8/10×10/10×12.5
270	6.3×8/6.3×9/6.3×11/8×8	10×8/10×10/10×12.5	10×8/10×10/10×12.5
330	6.3×9/6.3×11/8×8/8×11.5	10×8/10×10/10×12.5	10×8/10×10/10×12.5
390	6.3×11/8×8/8×11.5/10×8/10×10	10×10/10×12.5	10×10/10×12.5
470	6.3×11/8×8/8×11.5/10×8/10×10/10×12.5	10×12.5	10×12.5
560	8×11.5/10×8/10×10/10×12.5		
680	10×10/10×12.5		
820	10×12.5		
1000	10×12.5		
1200	10×12.5		

RS series

Characteristics List

W.V. (V)	Capacitance (μF)	L.C. (μA,2min)	tgδ (120Hz,20℃)	ESR (mΩ,100kHz)	Rated Ripple Current(mA,r.m.s)	Size ΦD×L (mm)	Part Number
16	47	300	0.10	18	2900	6.3×8	RS470M016E080□□
	68	300	0.10	18	2900	6.3×8	RS680M016E080□□
	82	300	0.10	18	2900	6.3×8	RS820M016E080□□
	100	320	0.10	15	2900	6.3×8	RS101M016E080□□
	150	480	0.10	15	2900	6.3×8	RS151M016E080□□
	180	576	0.10	15	2900	6.3×8	RS181M016E080□□
	220	704	0.12	15	2900	6.3×8	RS221M016E080□□
	220	704	0.12	13	3500	6.3×9	RS221M016E090□□
	220	704	0.12	11	4500	8×8	RS221M016F080□□
	270	864	0.12	15	2900	6.3×8	RS271M016E080□□
	270	864	0.12	13	3500	6.3×9	RS271M016E090□□
	270	864	0.12	13	3500	6.3×11	RS271M016E110□□
	270	864	0.12	12	4500	8×8	RS271M016F080□□
	330	1056	0.12	13	3500	6.3×9	RS331M016E090□□
	330	1056	0.12	13	3500	6.3×11	RS331M016E110□□
	330	1056	0.12	12	4500	8×8	RS331M016F080□□
	330	1056	0.12	11	4800	8×11.5	RS331M016F115□□
	390	1248	0.12	13	3500	6.3×11	RS391M016E110□□
	390	1248	0.12	12	4500	8×8	RS391M016F080□□
	390	1248	0.12	11	4800	8×11.5	RS391M016F115□□
	390	1248	0.12	11	4800	10×8	RS391M016G080□□
	390	1248	0.12	11	4800	10×10	RS391M016G100□□
	470	1504	0.12	13	3500	6.3×11	RS471M016E110□□
	470	1504	0.12	13	3500	8×8	RS471M016E110□□
	470	1504	0.12	12	4500	8×11.5	RS471M016F080□□
	470	1504	0.12	11	4800	10×8	RS471M016F115□□
	470	1504	0.12	11	4800	10×10	RS471M016G080□□
	470	1504	0.12	11	4800	10×12.5	RS471M016G100□□
	560	1792	0.12	11	4800	10×8	RS561M016F115□□
	560	1792	0.12	11	4800	10×10	RS561M016G080□□
	560	1792	0.12	11	4800	10×12.5	RS561M016G100□□
	560	1792	0.12	11	5100	10×10	RS561M016G125□□
	680	2176	0.12	11	4800	10×12.5	RS681M016G100□□
	680	2176	0.12	11	5100	10×12.5	RS681M016G125□□
	820	2624	0.12	11	5100	10×12.5	RS821M016G125□□
	1000	3200	0.12	11	5100	6.3×8	RS102M016G125□□
	1200	3840	0.12	11	5100	6.3×8	RS122M016G125□□
20	33	300	0.10	25	2100	6.3×8	RS330M020E080□□
	39	300	0.10	25	2100	6.3×8	RS390M020E080□□
	47	300	0.10	25	2100	6.3×11	RS470M020E080□□
	68	300	0.10	20	2100	8×8	RS680M020E080□□
	82	328	0.10	20	2900	6.3×11	RS820M020E110□□
	82	328	0.12	18	3500	8×8	RS820M020F080□□
	100	400	0.10	20	2900	8×8	RS101M020E110□□
	100	400	0.12	18	3500	8×11.5	RS101M020F080□□
	150	600	0.12	18	3500	8×11.5	RS151M020F080□□
	150	600	0.12	15	4100	10×8	RS151M020F115□□
	180	720	0.12	15	4100	10×10	RS181M020F115□□
	180	720	0.12	15	4500	8×11.5	RS181M020G080□□
	180	720	0.12	15	4500	10×8	RS181M020G100□□
	220	880	0.12	15	4100	10×10	RS221M020F115□□
	220	880	0.12	15	4500	10×12.5	RS221M020G080□□
	220	880	0.12	15	4500	10×8	RS221M020G100□□
	220	880	0.12	15	4900	10×10	RS221M020G125□□
	270	1080	0.12	15	4500	10×12.5	RS271M020G080□□
	270	1080	0.12	15	4500	10×8	RS271M020G100□□
	270	1080	0.12	15	4900	10×10	RS271M020G125□□
	330	1320	0.12	15	4500	10×12.5	RS331M020G080□□
	330	1320	0.12	15	4500	10×10	RS331M020G100□□
	330	1320	0.12	15	4900	10×12.5	RS331M020G125□□
	390	1560	0.12	15	4500	10×12.5	RS391M020G100□□
	390	1560	0.12	15	4900	6.3×8	RS391M020G125□□
	470	1880	0.12	15	4900	6.3×8	RS471M020G125□□
25	22	300	0.10	25	2100	6.3×8	RS220M025E080□□
	33	300	0.10	25	2100	6.3×8	RS330M025E080□□
	39	300	0.10	25	2100	6.3×11	RS390M025E080□□
	47	300	0.10	25	2100	8×8	RS470M025E080□□
	68	340	0.10	20	2900	6.3×11	RS680M025E110□□
	68	340	0.12	18	3500	8×8	RS680M025F080□□
	82	410	0.10	20	2900	6.3×11	RS820M025E110□□
	82	410	0.12	18	3500	8×8	RS820M025F080□□
	100	500	0.12	20	2900	8×11.5	RS101M025E110□□
	100	500	0.12	18	3500	8×11.5	RS101M025F080□□
	100	500	0.12	15	4100	10×8	RS101M025F115□□
	150	750	0.12	15	4100	10×10	RS151M025F115□□
	150	750	0.12	15	4500	8×11.5	RS151M025G080□□
	150	750	0.12	15	4500	10×8	RS151M025G100□□

RS series

W.V. (V)	Capacitance (μ F)	L.C. (μ A, 2min)	tg δ (120Hz, 20°C)	ESR (m Ω , 100kHz)	Rated Ripple Current(mA, r.m.s)	Size Φ D×L (mm)	Part Number
25	180	900	0.12	15	4100	10×10	RS181M025F115□□
	180	900	0.12	15	4500	10×12.5	RS181M025G080□□
	180	900	0.12	15	4500	8×11.5	RS181M025G100□□
	180	900	0.12	15	4900	10×8	RS181M025G125□□
	220	1100	0.12	15	4100	10×10	RS221M025F115□□
	220	1100	0.12	15	4500	10×12.5	RS221M025G080□□
	220	1100	0.12	15	4500	10×8	RS221M025G100□□
	220	1100	0.12	15	4900	10×10	RS221M025G125□□
	270	1080	0.12	15	4500	10×12.5	RS271M025G080□□
	270	1080	0.12	15	4500	10×8	RS271M025G100□□
	270	1080	0.12	15	4900	10×10	RS271M025G125□□
	330	1320	0.12	15	4500	10×12.5	RS331M025G080□□
	330	1320	0.12	15	4500	10×10	RS331M025G100□□
	330	1320	0.12	15	4900	10×12.5	RS331M025G125□□
	390	1560	0.12	15	4500	10×12.5	RS391M025G100□□
	390	1560	0.12	15	4900	10×12.5	RS391M025G125□□
	470	1880	0.12	15	4900	10×12.5	RS471M025G125□□

Frequency Coefficient for Ripple Current

Frequency	120Hz≤freq.<1KHz	1KHz≤freq.<10KHz	10KHz≤freq.<100KHz	100KHz≤freq.<300KHz
Coefficient	0.05	0.3	0.7	1

RN series

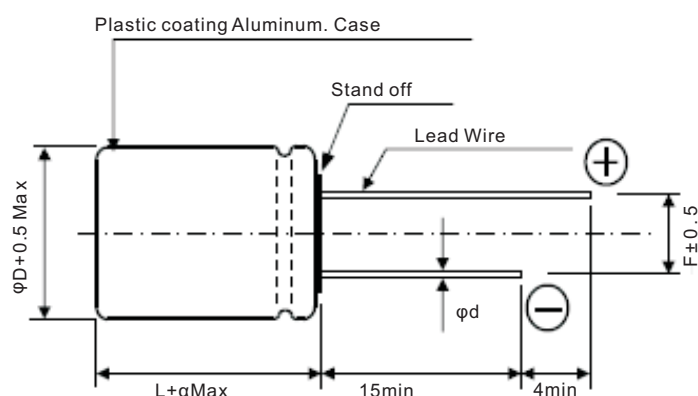
Low Profile Low ESR

Low profile. Low ESR at high frequency RVnge &.Large permissible ripple current.

小尺寸產品，適合小型化電子設備。



Dimensions



Unit:mm

$\phi D \times L$	ϕD +0.5max.	α	F ±0.5	ϕd ±0.05
4×5	4	1.0	1.5	0.45
5×5	5	1.0	2.0	0.45
5×6	5	1.0	2.0	0.45
5×7	5	1.0	2.0	0.45
5×8	5	1.0	2.0	0.45
5×9	5	1.0	2.0	0.5
5.5×9	5.5	1.0	2.0	0.5
5.5×11	5.5	1.0	2.0	0.5
6.3×5	6.3	1.0	2.5	0.5
6.3×7	6.3	1.0	2.5	0.6

Specifications

Items	Characteristics	
Operating Temp. Range	-55°C ~ +105°C	
Capacitance Range	10 ~ 1000μF	
Capacitance Tolerance	M : ±20%	
Rated Voltage Range	2.5V ~ 35V DC	
Dissipation Factor At 120Hz, 20°C	Not to exceed the value specified	
Leakage Current	Not to exceed the value specified (μA, after 2 minutes)	
ESR(100K~300KHz)	Not to exceed the value specified	
Endurance 105°C 2000h At Rated voltage	Capacitance Change	Within ±20% of the value before test
	Leakage current	Not to exceed the value specified
	ESR	Not to exceed 150% of the value specified
	Dissipation Factor	Not to exceed 150% of the value specified
Moisture Resistance Stored At 60°C, RH90~95%, 2000h	Capacitance Change	Within ±20% of the value before test
	Leakage Current	Not to exceed the value specified
	ESR	Not to exceed 150% of the value specified
	Dissipation Factor	Not to exceed 150% of the value specified

Size List

RV/v (SV) CAP/μF	2.5 (2.8)	4 (4.6)	6.3 (7.2)	7.5 (8.6)
10				
15				
22				
33				
39				
47				
68				
82				
100	4×5 / 5×5	5×5	6.3×5	6.3×5
150	5×5 / 6.3×5	6.3×5	5×6 / 6.3×5	5×6 / 6.3×5
180	5×5 / 6.3×5	6.3×5	5×6 / 6.3×5	5×7 / 6.3×5
220	5×5 / 6.3×5	5×8 / 6.3×7	5×6 / 5×7 / 6.3×5	5×7 / 6.3×5
270	6.3×5 / 6.3×7	5×8 / 6.3×7	5×6 / 5×7 / 5×8 / 6.3×5	5×7 / 5×8 / 6.3×5
330	5×8 / 6.3×7	5×8 / 6.3×7	5×6 / 5×7 / 5×8 / 6.3×5 / 6.3×7	5×9 / 6.3×7
390	5×8 / 6.3×7	5×8 / 6.3×7	5×9 / 6.3×5 / 6.3×7	5×9 / 6.3×7
470	5×8 / 6.3×7	5×9 / 6.3×7	5.5×9 / 5.5×11 / 6.3×7	5.5×9 / 5.5×11 / 6.3×7
500	5×8 / 6.3×7	5×9 / 6.3×7	5.5×9 / 5.5×11 / 6.3×7	5.5×9 / 5.5×11 / 6.3×7
560	5×8 / 6.3×7	5×9 / 6.3×7	5.5×11 / 6.3×7	5.5×11
680	5.5×11 / 6.3×7	5.5×11 / 6.3×7	5.5×11 / 6.3×7	
820	5.5×11 / 6.3×7	5.5×11 / 6.3×7	5.5×11	
1000	5.5×11			

RV/v (SV) CAP/μF	10 (11.5)	12 (13.8)	16 (18.4)	20 (23)	25 (27.5)	35 (41)
10	4×5	4×5	5×5	5×5	6.3×5	6.3×5
15	4×5	4×5	5×5	6.3×5	6.3×5	6.3×5
22	4×5	4×5	5×5	6.3×5 / 6.3×7	5×8 / 6.3×7	5×8 / 6.3×7
33	5×5 / 6.3×5	5×5 / 6.3×5	6.3×5	5×8 / 6.3×7	5×8 / 6.3×7	5.5×11
39	5×5 / 6.3×5	5×5 / 6.3×5	6.3×5	5×8 / 6.3×7	5.5×9 / 6.3×7	
47	6.3×5	6.3×5	6.3×5	5×8 / 6.3×7	5.5×11 / 6.3×7	
68	6.3×5	6.3×5	5×8 / 6.3×5	5.5×11		
82	6.3×5	6.3×5	5×8 / 6.3×5			
100	6.3×5	6.3×5	5×8 / 6.3×5 / 6.3×7			
150	5×8 / 6.3×7	5×8 / 6.3×7	5×9 / 6.3×7			
180	5×8 / 6.3×7	5×8 / 6.3×7	5.5×11			
220	5×8 / 6.3×7	5×8 / 6.3×7	5.5×11			
270	5×9 / 6.3×7	5×9 / 6.3×7				
330	5.5×9 / 6.3×7	5.5×9 / 6.3×7				
390	5.5×11	5.5×11				
470						
500						
560						
680						
820						
1000						

Characteristics List

W.V. (V)	Capacitance (μ F)	L.C. (μ A,2min)	tg δ (120Hz,20°C)	ESR (m Ω ,100kHz)	Rated Ripple Current(mA,r.m.s)	Size Φ D×L (mm)	Part Number
2.5	100	300	0.08	30	1670	4×5	RN101M2R5B050□□
	100	300	0.08	25	1970	5×5	RN101M2R5C050□□
	150	300	0.08	25	1970	5×5	RN151M2R5C050□□
	150	300	0.08	18	2690	6.3×5	RN151M2R5E050□□
	180	300	0.08	25	1970	5×5	RN181M2R5C050□□
	180	300	0.08	18	2690	6.3×5	RN181M2R5E050□□
	220	300	0.08	30	2200	5×5	RN221M2R5C050□□
	220	300	0.08	18	2690	6.3×5	RN221M2R5E050□□
	270	300	0.08	18	2690	6.3×5	RN271M2R5E050□□
	270	300	0.08	12	3100	6.3×7	RN271M2R5E070□□
	330	300	0.08	15	3100	5×8	RN331M2R5C080□□
	330	300	0.08	12	3100	6.3×7	RN331M2R5E070□□
	390	300	0.08	15	3100	5×8	RN391M2R5C080□□
	390	300	0.08	12	3100	6.3×7	RN391M2R5E070□□
	470	300	0.08	15	3100	5×8	RN471M2R5C080□□
	470	300	0.08	12	3100	6.3×7	RN471M2R5E070□□
	560	300	0.08	15	3100	5×8	RN561M2R5C080□□
	560	300	0.08	12	3100	6.3×7	RN561M2R5E070□□
	680	300	0.08	12	3100	5.5×11	RN681M2R5C110□□
	680	300	0.08	12	3100	6.3×7	RN681M2R5E070□□
4	820	300	0.08	12	3100	5.5×11	RN821M2R5C110□□
	820	300	0.08	12	3100	6.3×7	RN821M2R5E070□□
	1000	300	0.08	12	3100	5.5×11	RN102M2R5C110□□
	100	300	0.08	30	1970	5×5	RN101M004C050□□
	150	300	0.08	18	2690	6.3×5	RN151M004E050□□
	180	300	0.08	18	2690	6.3×5	RN181M004E050□□
	220	300	0.08	15	2690	5×8	RN221M004E052□□
	220	300	0.08	12	2690	6.3×7	RN221M004E070□□
	270	300	0.08	15	2690	5×8	RN271M004E052□□
	270	300	0.08	12	2690	6.3×7	RN271M004E070□□
	330	300	0.08	15	2690	5×8	RN331M004C080□□
	330	300	0.08	12	2690	6.3×7	RN331M004E070□□
	390	300	0.08	15	2690	5×8	RN391M004C080□□
	390	300	0.08	12	2690	6.3×7	RN391M004E070□□
	470	300	0.08	12	2690	5×9	RN471M004C090□□
	470	300	0.08	12	2690	6.3×7	RN471M004E070□□
	500	300	0.08	12	2690	5×9	RN501M004C090□□
	500	300	0.08	12	2690	6.3×7	RN501M004E070□□
	560	300	0.08	12	2690	5×9	RN561M004C090□□
	560	300	0.08	12	2690	6.3×7	RN561M004E070□□
6.3	680	300	0.08	12	3100	5.5×11	RN681M004C110□□
	680	300	0.08	12	2690	6.3×7	RN681M004E070□□
	820	300	0.08	12	2690	5.5×11	RN821M004C110□□
	820	300	0.08	12	2690	6.3×7	RN821M004E070□□
	100	300	0.08	18	2690	6.3×5	RN101M6R3E050□□
	150	300	0.08	18	2690	5×6	RN151M6R3C060□□
	150	300	0.08	18	2690	6.3×5	RN151M6R3E050□□
	180	300	0.08	18	2690	5×6	RN181M6R3C060□□
	180	300	0.08	18	2690	6.3×5	RN181M6R3E050□□
	220	300	0.08	18	2690	5×6	RN221M6R3C060□□
	220	300	0.08	15	3100	5×7	RN221M6R3C070□□
	220	300	0.08	18	2690	6.3×5	RN221M6R3E050□□
	270	300	0.08	18	2690	5×6	RN271M6R3C060□□
	270	300	0.08	15	3100	5×7	RN271M6R3C070□□
	270	300	0.08	15	3100	5×8	RN271M6R3C080□□
	270	300	0.08	18	2690	6.3×5	RN271M6R3E050□□
	330	300	0.08	18	2690	5×6	RN331M6R3C060□□
	330	300	0.08	15	3100	5×7	RN331M6R3C070□□
	330	300	0.08	15	3100	5×8	RN331M6R3C080□□
	330	300	0.08	18	2690	6.3×5	RN331M6R3E050□□
	330	300	0.08	12	3100	6.3×7	RN331M6R3E070□□
	390	300	0.08	12	3100	5×9	RN391M6R3C090□□
	390	300	0.08	18	2690	6.3×5	RN391M6R3E050□□
	390	300	0.08	12	3100	6.3×7	RN391M6R3E070□□
	470	300	0.08	12	3100	5.5×9	RN471M6R3C090□□
	470	300	0.08	12	3100	5.5×11	RN471M6R3C110□□
	470	300	0.08	12	3100	6.3×7	RN471M6R3E070□□
	500	300	0.08	12	3100	5.5×9	RN501M6R3C090□□
	500	300	0.08	12	3100	5.5×11	RN501M6R3C110□□
	500	300	0.08	12	3100	6.3×7	RN501M6R3E070□□
	560	705.6	0.08	12	3100	5.5×11	RN561M6R3C110□□
	560	705.5	0.08	12	3100	6.3×7	RN561M6R3E070□□
	680	856.8	0.08	12	3100	5.5×11	RN681M6R3C110□□
	680	856.8	0.08	12	3100	6.3×7	RN681M6R3E070□□
	820	1033.2	0.08	12	3100	5.5×11	RN821M6R3C110□□

RN series

W.V. (V)	Capacitance (μF)	L.C. (μA, 2min)	tgδ (120Hz, 20°C)	ESR (mΩ, 100kHz)	Rated Ripple Current(mA, r.m.s)	Size ΦD×L (mm)	Part Number
7.5	100	300	0.08	18	2690	6.3×5	RN101M7R5E050□□
	150	300	0.08	18	2690	5×6	RN151M7R5C060□□
	150	300	0.08	18	2690	6.3×5	RN151M7R5E050□□
	180	300	0.08	15	3100	5×7	RN181M7R5C070□□
	180	300	0.08	18	2690	6.3×5	RN181M7R5E050□□
	220	300	0.08	15	3100	5×8	RN221M7R5C080□□
	220	300	0.08	12	3100	6.3×7	RN221M7R5E070□□
	270	300	0.08	15	3100	5×7	RN271M7R5C070□□
	270	300	0.08	15	3100	5×8	RN271M7R5C080□□
	270	300	0.08	18	2690	6.3×5	RN271M7R5E050□□
	330	300	0.08	12	3100	5×9	RN331M7R5C090□□
	330	300	0.08	12	3100	6.3×7	RN331M7R5E070□□
	390	300	0.08	12	3100	5×9	RN391M7R5C090□□
	390	300	0.08	12	3100	6.3×7	RN391M7R5E070□□
	470	300	0.08	12	3100	5.5×9	RN471M7R5C090□□
	470	300	0.08	12	3100	5.5×11	RN471M7R5C110□□
	470	300	0.08	12	3100	6.3×7	RN471M7R5E070□□
	500	300	0.08	12	3100	5.5×9	RN501M7R5C090□□
	500	300	0.08	12	3100	5.5×11	RN501M7R5C110□□
	500	300	0.08	12	3100	6.3×7	RN501M7R5E070□□
	560	840	0.08	12	3100	5.5×11	RN561M7R5C110□□
10	10	300	0.08	45	1200	4×5	RN100M010B050□□
	15	300	0.08	45	1200	4×5	RN150M010B050□□
	22	300	0.08	45	1200	4×5	RN220M010B050□□
	33	300	0.08	45	1670	5×5	RN330M010C050□□
	33	300	0.08	18	2200	6.3×5	RN330M010E050□□
	39	300	0.08	45	1670	5×5	RN390M010C050□□
	39	300	0.08	18	2200	6.3×5	RN390M010E050□□
	47	300	0.08	18	2200	6.3×5	RN470M010E050□□
	68	300	0.08	18	2200	6.3×5	RN680M010E050□□
	82	300	0.08	30	2200	6.3×5.2	RN820M010E052□□
	100	300	0.08	18	2200	6.3×5	RN101M010E050□□
	150	300	0.08	15	3100	5×8	RN151M010C080□□
	150	300	0.08	12	3100	6.3×7	RN151M010E070□□
	180	300	0.08	15	3100	5×8	RN181M010C080□□
	180	300	0.08	12	3100	6.3×7	RN181M010E070□□
	220	300	0.08	15	3100	5×8	RN221M010C080□□
	220	300	0.08	12	3100	6.3×7	RN221M010E070□□
	270	300	0.08	12	3100	5×9	RN271M010C090□□
	270	300	0.08	12	3100	6.3×7	RN271M010E070□□
	330	300	0.08	12	3100	5.5×9	RN331M010C090□□
	330	300	0.08	12	3100	6.3×7	RN331M010E070□□
	390	300	0.08	12	3100	5.5×11	RN391M010C110□□
12	10	300	0.08	45	1200	4×5	RN100M012B050□□
	15	300	0.08	45	1200	4×5	RN150M012B050□□
	22	300	0.08	45	1200	4×5	RN220M012B050□□
	33	300	0.08	45	1670	5×5	RN330M012C050□□
	33	300	0.08	18	2200	6.3×5	RN330M012E050□□
	39	300	0.08	45	1670	5×5	RN390M012C050□□
	39	300	0.08	18	2200	6.3×5	RN390M012E050□□
	47	300	0.08	18	2200	6.3×5	RN470M012E050□□
	68	300	0.08	18	2200	6.3×5	RN680M012E050□□
	100	300	0.08	18	2200	6.3×5	RN101M012E050□□
	150	300	0.08	15	3100	5×8	RN151M012C080□□
	150	300	0.08	12	3100	6.3×7	RN151M012E070□□
	180	300	0.08	15	3100	5×8	RN181M012C080□□
	180	300	0.08	12	3100	6.3×7	RN181M012E070□□
	220	300	0.08	15	3100	5×8	RN221M012C080□□
	220	300	0.08	12	3100	6.3×7	RN221M012E070□□
	270	300	0.08	12	3100	5×9	RN271M012C090□□
	270	300	0.08	12	3100	6.3×7	RN271M012E070□□
	330	300	0.08	12	3100	5.5×9	RN331M012C090□□
	330	300	0.08	12	3100	6.3×7	RN331M012E070□□
	390	300	0.08	12	3100	5.5×11	RN391M012C110□□
16	10	300	0.12	30	1670	5×5	RN100M016C050□□
	15	300	0.12	30	1670	5×5	RN150M016C050□□
	22	300	0.12	30	1670	5×5	RN220M016C050□□
	33	300	0.12	25	2200	6.3×5	RN330M016E050□□
	39	300	0.12	25	2200	6.3×5	RN390M016E050□□
	47	300	0.12	25	2200	6.3×5	RN470M016E050□□
	68	300	0.12	20	2690	5×8	RN680M016C080□□
	68	300	0.12	25	2200	6.3×5	RN680M016E050□□
	82	300	0.12	20	2690	5×8	RN820M016C080□□
	82	300	0.12	25	2200	6.3×5	RN820M016E050□□
	100	300	0.12	20	2690	5×8	RN101M016C080□□
	100	300	0.12	25	2200	6.3×5	RN101M016E050□□
	100	300	0.12	20	2690	6.3×7	RN101M016E070□□
	150	300	0.12	20	2690	5×9	RN151M016C090□□
	150	300	0.12	20	2690	6.3×7	RN151M016E070□□
	180	300	0.12	18	3100	5.5×11	RN181M016C110□□
	220	300	0.12	18	3100	5.5×11	RN221M016C110□□

RN series

W.V. (V)	Capacitance (μ F)	L.C. (μ A,2min)	tg δ (120Hz,20°C)	ESR (m Ω ,100kHz)	Rated Ripple Current(mA,r.m.s)	Size Φ D×L (mm)	Part Number
20	10	300	0.12	30	2200	5×5	RN100M020C050□□
	15	300	0.12	25	2200	6.3×5	RN150M020E050□□
	22	300	0.12	25	2200	6.3×5	RN220M020E050□□
	22	300	0.12	20	2670	6.3×7	RN220M020E070□□
	33	300	0.12	25	2670	5×8	RN330M020C080□□
	33	300	0.12	20	2670	6.3×7	RN330M020E070□□
	39	300	0.08	25	2670	5×8	RN390M020C080□□
	39	300	0.12	25	2670	6.3×7	RN390M020E070□□
	47	300	0.12	25	2670	5×8	RN470M020C080□□
	47	300	0.12	25	2670	6.3×7	RN470M020E070□□
25	68	300	0.12	20	2690	5.5×11	RN470M020C110□□
	10	300	0.12	30	2200	6.3×5	RN100M025E050□□
	15	300	0.12	30	2200	6.3×5	RN150M025E050□□
	22	300	0.12	25	2670	5×8	RN220M025C080□□
	22	300	0.12	25	2670	6.3×7	RN220M025E070□□
	33	300	0.12	25	2670	5×8	RN330M025C080□□
	33	300	0.12	25	2670	6.3×7	RN330M025E070□□
	39	300	0.12	25	2670	5.5×9	RN390M025C090□□
	39	300	0.12	25	2670	6.3×7	RN390M025E070□□
	47	300	0.12	25	2690	5.5×11	RN470M025C110□□
35	47	300	0.12	25	2670	6.3×7	RN470M025E070□□
	10	300	0.12	45	2200	6.3×5	RN100M035E050□□
	15	300	0.12	45	2200	6.3×5	RN150M035E050□□
	22	300	0.12	30	2670	5×8	RN220M035C080□□
	22	300	0.12	30	2670	6.3×7	RN220M035E070□□
	33	300	0.12	30	2690	5.5×11	RN330M035C110□□

Frequency Coefficient for Ripple Current

Frequency	120Hz≤freq.<1KHz	1KHz≤freq.<10KHz	10KHz≤freq.<100KHz	100KHz≤freq.<300KHz
Coefficient	0.05	0.3	0.7	1

RF series

Super long life to 5000hrs

It's a super long life series based on our RL series.

Suitable for use with long duration electronic device, motherboard, servers, VGA, etc.

Lead free-flow is supported.

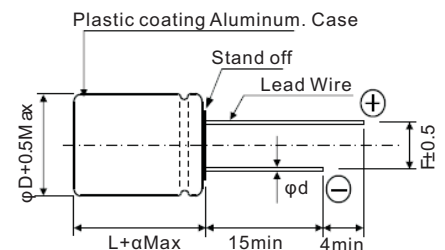
RF系列具有5000小時超長壽命，以及超低ESR和超大紋波電流，適合用於長時間工作的電子設備、電腦主機板、伺服器、顯卡等。



Specifications

Items	Characteristics	
Operating Temp. Range	-55°C ~ +105°C	
Capacitance Range	100 ~ 2700μF	
Capacitance Tolerance	M : ±20%	
Rated Voltage Range	2.5V ~ 16V DC	
Dissipation Factor At 120Hz, 20°C	Not to exceed the value specified	
Leakage Current	≤0.02CV (μA, after 2 minutes)	
ESR(100K~300KHz)	Not to exceed the value specified	
Endurance 105°C 5000h At Rated voltage	Capacitance Change	Within ±20% of the value before test
	Leakage current	Not to exceed the value specified
	ESR	Not to exceed 150% of the value specified
	Dissipation Factor	Not to exceed 150% of the value specified
Moisture Resistance Stored At 60°C, RH90~95%, 2000h	Capacitance Change	Within ±20% of the value before test
	Leakage Current	Not to exceed the value specified
	ESR	Not to exceed 150% of the value specified
	Dissipation Factor	Not to exceed 150% of the value specified

Dimensions



Unit:mm

φD×L	ΦD +0.5max.	α	F ±0.5	Φd ±0.05
6.3×8	6.3	1.0	2.5	0.6
6.3×11	6.3	1.0	2.5	0.6
8×8	8.0	1.0	3.5	0.6
8×11.5	8.0	1.0	3.5	0.6
10×12.5	10.0	1.0	5.0	0.6

Size List

RV/v (SV)	2.5 (2.8)	4 (4.6)	6.3 (7.2)	10 (11.5)	16 (18.4)
CAP/μF					
100					6.3×8
180					6.3×8
220					6.3×11/8×8
270					8×8/8×11.5
330					8×11.5 / 10×12.5
390					8×11.5 / 10×12.5
470			6.3×8	8×8	8×11.5 / 10×12.5
560		6.3×8	6.3×8/8×8	8×8	10×12.5
680		8×8	6.3×8/ 8×8	8×11.5	10×12.5
820	6.3×8	8×8	8×8/8×11.5	8×11.5 / 10×12.5	10×12.5
1000	8×8	8×8	8×8/8×11.5	10×12.5	
1200	8×8	8×11.5 / 10×12.5	8×11.5 / 10×12.5	10×12.5	
1500	8×11.5	10×12.5	10×12.5		
2000	10×12.5	10×12.5			
2500	10×12.5				

RF series

Characteristics List

W.V. (V)	Capacitance (μ F)	L.C. (μ A,2min)	tg δ (120Hz,20°C)	ESR (m Ω ,100kHz)	Rated Ripple Current(mA,r.m.s)	Size Φ D×L (mm)	Part Number
2.5	820	410	0.08	8	5600	6.3×8	RF821M2R5E080□□
	1200	600	0.08	7	6100	8×8	RF122M2R5F080□□
	1500	750	0.08	7	6100	8×11.5	RF152M2R5F115□□
	2000	1000	0.08	7	6640	10×12.5	RF202M2R5G125□□
	2500	1250	0.08	7	6640	10×12.5	RF252M2R5G125□□
	2700	1350	0.08	7	6640	10×12.5	RF272M2R5G125□□
4	560	448	0.08	8	5600	6.3×8	RF561M004E080□□
	680	544	0.08	7	6100	8×8	RF681M004F080□□
	820	656	0.08	7	6100	8×8	RF821M004F080□□
	1000	800	0.08	7	6100	8×8	RF102M004F080□□
	1200	960	0.08	7	6100	8×11.5	RF122M004F115□□
	1200	960	0.08	7	6640	10×12.5	RF122M004G125□□
	1500	1200	0.08	7	6640	10×12.5	RF152M004G125□□
	2000	1600	0.08	7	6640	10×12.5	RF202M004G125□□
6.3	470	592.2	0.08	8	5600	6.3×8	RF471M6R3E080□□
	560	705.6	0.08	8	5600	6.3×8	RF561M6R3E080□□
	680	856.8	0.08	8	5600	6.3×8	RF681M6R3E080□□
	820	1033.2	0.10	7	6100	8×8	RF821M6R3F080□□
	820	1033.2	0.10	7	6100	8×11.5	RF821M6R3F115□□
	1000	1260	0.10	7	6100	8×8	RF102M6R3F080□□
	1000	1260	0.10	7	6100	8×11.5	RF102M6R3F115□□
	1200	1512	0.10	7	6100	8×11.5	RF122M6R3F115□□
	1200	1512	0.10	7	6640	10×12.5	RF122M6R3G125□□
	1500	1890	0.10	7	6640	10×12.5	RF152M6R3G125□□
10	470	940	0.08	7	6100	8×8	RF471M010F080□□
	560	1120	0.10	7	6100	8×8	RF561M010F080□□
	680	1360	0.10	7	6100	8×11.5	RF681M010F115□□
	820	1640	0.10	7	6100	8×11.5	RF821M010F115□□
	820	1640	0.10	7	6640	10×12.5	RF821M010G125□□
	1000	2000	0.10	7	6640	10×12.5	RF102M010G125□□
	1200	2400	0.10	7	6640	10×12.5	RF122M010G125□□
16	100	320	0.12	12	2900	6.3×8	RF101M016E080□□
	180	576	0.12	13	2900	6.3×8	RF181M016E080□□
	220	704	0.12	13	3500	6.3×11	RF221M016E110□□
	270	864	0.12	13	4100	8×8	RF271M016F080□□
	330	1056	0.12	13	5600	8×11.5	RF331M016F115□□
	330	1056	0.12	12	6100	10×12.5	RF331M016G125□□
	390	1248	0.12	13	5600	8×11.5	RF391M016F115□□
	390	1248	0.12	12	6100	10×12.5	RF391M016G125□□
	470	1504	0.12	13	5600	8×11.5	RF471M016F115□□
	470	1504	0.12	12	6100	10×12.5	RF471M016G125□□
	560	1792	0.12	12	6100	10×12.5	RF561M016G125□□
	680	2176	0.12	12	6100	10×12.5	RF681M016G125□□
	820	2624	0.12	12	6100	10×12.5	RF821M016G125□□

Frequency Coefficient for Ripple Current

Frequency	120Hz≤freq.<1KHz	1KHz≤freq.<10KHz	10KHz≤freq.<100KHz	100KHz≤freq.<300KHz
Coefficient	0.05	0.3	0.7	1

RQ series

125°C Guaranteed

This series has advanced characteristics in resistance to heat compared with the RG series. Suitable for use in increasing device reliability.

Lead free-flow is supported.

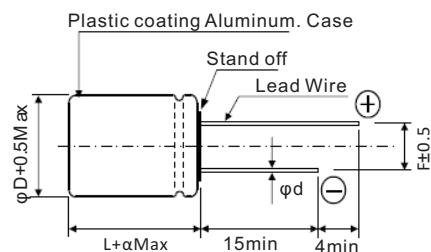
RQ系列具有優異的熱穩定性，可承受125°C環境溫度，適用於提高電子設備的可靠度。



Specifications

Items	Characteristics	
Operating Temp. Range	-55°C ~ +125°C	
Capacitance Range	100 ~ 2700μF	
Capacitance Tolerance	M : ±20%	
Rated Voltage Range	2.5V ~ 16V DC	
Dissipation Factor At 120Hz, 20°C	Not to exceed the value specified	
Leakage Current	≤0.02CV (μA, after 2 minutes)	
ESR(100K~300KHz)	Not to exceed the value specified	
Endurance 125°C 2000h At Rated voltage	Capacitance Change	Within ±20% of the value before test
	Leakage current	Not to exceed the value specified
	ESR	Not to exceed 150% of the value specified
	Dissipation Factor	Not to exceed 150% of the value specified
Moisture Resistance Stored At 60°C, RH90~95%, 2000h	Capacitance Change	Within ±20% of the value before test
	Leakage Current	Not to exceed the value specified
	ESR	Not to exceed 150% of the value specified
	Dissipation Factor	Not to exceed 150% of the value specified

Dimensions



Unit:mm

φD×L	ΦD +0.5max.	α	F ±0.5	φd ±0.05
6.3×8	6.3	1.0	2.5	0.6
6.3×11	6.3	1.0	2.5	0.6
8×8	8.0	1.0	3.5	0.6
8×11.5	8.0	1.0	3.5	0.6
10×12.5	10.0	1.0	5.0	0.6

Size List

CAP/μF \ RV/v (SV)	2.5 (2.8)	4 (4.6)	6.3 (7.2)	10 (11.5)	16 (18.4)
100					6.3×8
180					6.3×8
220					6.3×11
270					8×8/8×11.5
330					8×11.5 / 10×12.5
390					8×11.5 / 10×12.5
470			6.3×8	8×8	8×11.5 / 10×12.5
560		6.3×8	6.3×8/8×8	8×8	10×12.5
680		8×8	6.3×8/ 8×8	8×11.5	10×12.5
820	6.3×8	8×8	8×8/8×11.5	8×11.5 / 10×12.5	10×12.5
1000	8×8	8×8	8×8/8×11.5	10×12.5	
1200	8×8	8×11.5 / 10×12.5	8×11.5 / 10×12.5	10×12.5	
1500	8×11.5	10×12.5	10×12.5		
2000	10×12.5	10×12.5			
2500	10×12.5				
2700	10×12.5				

RQ series

Characteristics List

W.V. (V)	Capacitance (μF)	L.C. (μA,2min)	tgδ (120Hz,20℃)	ESR (mΩ,100kHz)	Rated Ripple Current	Allowable ripple current	Size ΦD×L(mm)	Part Number
					100KHz(mA,r.m.s)			
					105℃<Tx≤125℃	Tx≤105℃		
2.5	820	410	0.08	8	1770	5600	6.3×8	RQ821M2R5E080□□
	1200	600	0.08	7	1929	6100	8×8	RQ122M2R5F080□□
	1500	750	0.08	7	1929	6100	8×11.5	RQ152M2R5F115□□
	2000	1000	0.08	7	2100	6640	10×12.5	RQ202M2R5G125□□
	2500	1250	0.08	7	2100	6640	10×12.5	RQ252M2R5G125□□
	2700	1350	0.08	7	2100	6640	10×12.5	RQ272M2R5G125□□
4	560	448	0.08	8	1770	5600	6.3×8	RQ561M004E080□□
	680	544	0.08	7	1929	6100	8×8	RQ681M004F080□□
	820	656	0.08	7	1929	6100	8×8	RQ821M004F080□□
	1000	800	0.08	7	1929	6100	8×8	RQ102M004F080□□
	1200	960	0.08	7	1929	6100	8×11.5	RQ122M004F115□□
	1200	960	0.08	7	2100	6640	10×12.5	RQ122M004G125□□
	1500	1200	0.08	7	2100	6640	10×12.5	RQ152M004G125□□
	2000	1600	0.08	7	2100	6640	10×12.5	RQ202M004G125□□
6.3	470	592.2	0.08	8	1770	5600	6.3×8	RQ471M6R3E080□□
	560	705.6	0.08	8	1770	5600	6.3×8	RQ561M6R3E080□□
	680	856.8	0.08	8	1770	5600	6.3×8	RQ681M6R3E080□□
	820	1033.2	0.10	7	1929	6100	8×8	RQ821M6R3F080□□
	820	1033.2	0.10	7	1929	6100	8×11.5	RQ821M6R3F115□□
	1000	1260	0.10	7	1929	6100	8×8	RQ102M6R3F080□□
	1000	1260	0.10	7	1929	6100	8×11.5	RQ102M6R3F115□□
	1200	1512	0.10	7	2100	6640	10×12.5	RQ122M6R3G125□□
	1500	1890	0.10	7	2100	6640	10×12.5	RQ152M6R3G125□□
10	470	940	0.08	7	1929	6100	8×8	RQ471M010F080□□
	560	1120	0.10	7	1929	6100	8×8	RQ561M010F080□□
	680	1360	0.10	7	1929	6100	8×11.5	RQ681M010F115□□
	820	1640	0.10	7	1929	6100	8×11.5	RQ821M010F115□□
	820	1640	0.10	7	2100	6640	10×12.5	RQ821M010G125□□
	1000	2000	0.10	7	2100	6640	10×12.5	RQ102M010G125□□
	1200	2400	0.10	7	2100	6640	10×12.5	RQ122M010G125□□
16	100	320	0.12	12	920	2900	6.3×8	RQ101M016E080□□
	180	576	0.12	13	920	2900	6.3×8	RQ181M016E080□□
	220	704	0.12	13	1106	300	6.3×11	RQ221M016E110□□
	270	864	0.12	13	1771	5600	8×11.5	RQ271M016F115□□
	330	1056	0.12	13	1771	5600	8×11.5	RQ331M016F115□□
	330	1056	0.12	12	1929	6100	10×12.5	RQ331M016G125□□
	390	1248	0.12	13	1771	5600	8×11.5	RQ391M016F115□□
	390	1248	0.12	12	1929	6100	10×12.5	RQ391M016G125□□
	470	1504	0.12	13	1771	5600	8×11.5	RQ471M016F115□□
	470	1504	0.12	12	1929	6100	10×12.5	RQ471M016G125□□
	560	1792	0.12	12	1929	6100	10×12.5	RQ561M016G125□□
	680	2176	0.12	12	1929	6100	10×12.5	RQ681M016G125□□
	820	2624	0.12	12	1929	6100	10×12.5	RQ821M016G125□□

Frequency Coefficient for Ripple Current

Frequency	120Hz $\leq$ freq.<1KHz	1KHz $\leq$ freq.<10KHz	10KHz $\leq$ freq.<100KHz	100KHz $\leq$ freq.<300KHz
Coefficient	0.05	0.3	0.7	1

RT series

Large Capacitance Large Profile

This series has advanced characteristics in resistance to heat compared.

Suitable for use in increasing device reliability.

RT系列是大容量大尺寸产品，具有优异的热稳定性。

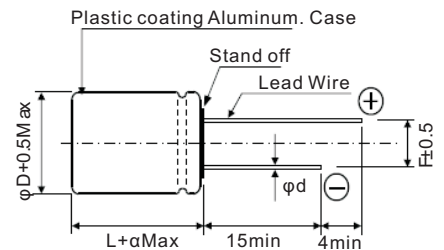
適合用於服务器电源等。



Specifications

Items	Characteristics	
Operating Temp. Range	-55°C ~ +105°C	
Capacitance Range	330 ~ 6000μF	
Capacitance Tolerance	M : ±20%	
Rated Voltage Range	6.3V ~ 25V DC	
Dissipation Factor At 120Hz, 20°C	Not to exceed the value specified	
Leakage Current	≤0.02CV or 300(μA) whichever is grester. (after 2 minutes)	
ESR(100K~300KHz)	Not to exceed the value specified	
Endurance 105°C 2000h At Rated voltage	Capacitance Change	Within ±20% of the value before test
	Leakage current	Not to exceed the value specified
	ESR	Not to exceed 150% of the value specified
	Dissipation Factor	Not to exceed 150% of the value specified
Moisture Resistance Stored At 60°C, RH90~95%, 2000h	Capacitance Change	Within ±20% of the value before test
	Leakage Current	Not to exceed the value specified
	ESR	Not to exceed 150% of the value specified
	Dissipation Factor	Not to exceed 150% of the value specified

Dimensions



Unit:mm

φD×L	ΦD +0.5max.	α	F ±0.5	Φd ±0.05
6.3×15	6.3	1.0	2.5	0.6
6.3×18	6.3	1.0	2.5	0.6
8×16	8.0	1.0	3.5	0.6
8×18	8.0	1.0	3.5	0.6
8×15	8.0	1.0	3.5	0.6
8×16	8.0	1.0	3.5	0.6
8×18	8.0	1.0	3.5	0.6
8×20	8.0	10	3.5	0.6
10×15	10.0	1.0	5.0	0.6
10×16	10.0	10	5.0	0.6
10×18	10.0	1.0	5.0	0.6
10×20	10.0	10	5.0	0.6

Size List

CAP/μF	RV/v (SV)	6.3 (7.2)	10 (11.5)	16 (18.4)	20 (20.3)	25 (28.7)
330					8×15	8×15
390					8×15/8×16	8×15/8×16
470				6.3×15	8×16/10×15	8×16/10×15
560				6.3×15	8×18/10×16	8×18/10×16
680				6.3×18/8×15	8×18/10×16	10×18
820			6.3×15	8×15/8×16	10×18/10×20	10×20
1000			6.3×18/8×15	8×16/10×15	10×20	
1200		6.3×15	8×15/8×16	8×18/10×16		
1500		6.3×15	8×16/10×15	8×20/10×18		
2000		6.3×18/8×15	8×20/10×16	10×20		
2200		8×16/10×15	10×18/10×20	10×20		
2500		8×16/10×15	10×18/10×20			
2700		8×16/10×15	10×20			
3000		8×18/10×15	10×20			
3500		8×20/10×16				
4000		10×16/10×18				
5000		10×18/10×20				
6000		10×20				

RT series

Characteristics List

W.V. (V)	Capacitance (μF)	L.C. (μA,2min)	tgδ (120Hz,20℃)	ESR (mΩ,100kHz)	Rated Ripple Current(mA,r.m.s)	Size ΦD×L (mm)	Part Number
6.3	1200	300	0.08	9	5800	6.3×15	RT122M6R3E150
	1500	300	0.08	9	5800	6.3×15	RT152M6R3E150
	2000	300	0.08	9	5800	6.3×18	RT202M6R3E180
	2000	300	0.08	9	6700	8×15	RT202M6R3F150
	2200	300	0.08	9	6700	8×16	RT222M6R3F160
	2200	300	0.08	9	7000	10×15	RT222M6R3G150
	2500	315	0.08	9	6700	8×16	RT252M6R3F160
	2500	315	0.08	9	7000	10×15	RT252M6R3G150
	2700	340.2	0.08	9	6700	8×16	RT272M6R3F160
	2700	340.2	0.08	9	7000	10×15	RT272M6R3G150
	3000	378	0.08	9	6700	8×18	RT302M6R3F180
	3000	378	0.08	9	7000	10×15	RT302M6R3G150
	3500	441	0.08	9	7100	8×20	RT352M6R3F200
	3500	441	0.08	9	7000	10×16	RT352M6R3G160
	4000	504	0.08	9	7000	10×16	RT402M6R3G160
	4000	504	0.08	9	7500	10×18	RT402M6R3G180
	5000	630	0.08	9	7500	10×18	RT502M6R3G180
	5000	630	0.08	9	7700	10×20	RT502M6R3F200
	6000	756	0.08	9	7700	10×20	RT602M6R3G200
	820	300	0.08	9	5800	6.3×15	RT821M010E150
10	1000	300	0.08	9	5800	6.3×18	RT102M010E180
	1000	300	0.08	9	6700	8×15	RT102M010F150
	1200	300	0.08	9	6700	8×15	RT122M010F150
	1200	300	0.08	9	6700	8×16	RT122M010F160
	1500	300	0.08	9	6700	8×16	RT152M010F160
	1500	300	0.08	9	7000	10×15	RT152M010G150
	2000	400	0.08	9	7100	8×20	RT202M010F200
	2000	400	0.08	9	4800	10×16	RT202M010G160
	2200	440	0.08	9	7500	10×18	RT222M010G180
	2200	440	0.08	9	7700	10×20	RT222M010G200
	2500	500	0.08	9	7500	10×18	RT252M010G180
	2500	500	0.08	9	7700	10×20	RT252M010G200
	2700	540	0.08	9	7700	10×20	RT272M010G200
	3000	600	0.08	9	7700	10×20	RT302M010G200
	470	300	0.10	13	5600	6.3×15	RT471M016E150
	560	300	0.10	13	5600	6.3×15	RT561M016E150
16	680	300	0.10	13	5600	6.3×18	RT681M016E180
	680	300	0.10	11	6700	8×15	RT681M016F150
	820	300	0.10	11	6700	8×15	RT821M016F150
	820	300	0.10	11	6700	8×16	RT821M016F160
	1000	320	0.10	11	6700	8×16	RT102M016F160
	1000	320	0.10	11	6700	10×15	RT102M016G150
	1200	384	0.10	11	6700	8×18	RT122M016F180
	1200	384	0.10	9	7000	10×16	RT122M016G160
	1500	480	0.10	9	6700	8×18	RT152M016F180
	1500	480	0.10	9	7700	10×20	RT152M016G200
	2000	640	0.10	9	7700	10×20	RT202M016G200
	2200	704	0.10	9	7700	10×20	RT222M016G200
20	330	132	0.12	15	6700	8×15	RT331M020F150
	390	156	0.12	15	6700	8×15	RT391M020F150
	390	156	0.12	15	6700	8×16	RT391M020F160
	470	188	0.12	15	6700	8×16	RT471M020F160
	470	188	0.12	15	6700	10×15	RT471M020G150
	560	224	0.12	13	6700	8×18	RT561M020F180
	560	224	0.12	13	7000	10×16	RT561M020G160
	680	272	0.12	13	6700	8×18	RT681M020F180
	680	272	0.12	13	7000	10×16	RT681M020G160
	820	328	0.12	13	7500	10×18	RT821M020G180
	820	328	0.12	13	7700	10×20	RT821M020G200
	1000	400	0.12	13	7700	10×20	RT102M020G200
25	330	165	0.12	15	6700	8×15	RT331M025F150
	390	195	0.12	15	6700	8×15	RT391M025F150
	390	195	0.12	15	6700	8×16	RT391M025F160
	470	235	0.12	15	6700	8×16	RT471M025F160
	470	235	0.12	15	6700	10×15	RT471M025G150
	560	280	0.12	13	6700	8×18	RT561M025F180
	560	280	0.12	13	7000	10×16	RT561M025G160
	680	340	0.12	13	7500	10×18	RT681M025G180
	820	410	0.12	13	7700	10×20	RT821M025G200

Frequency Coefficient for Ripple Current

Frequency	120Hz≤freq.<1KHz	1KHz≤freq.<10KHz	10KHz≤freq.<100KHz	100KHz≤freq.<300KHz
Coefficient	0.05	0.3	0.7	1

Part Number System

编码-加工

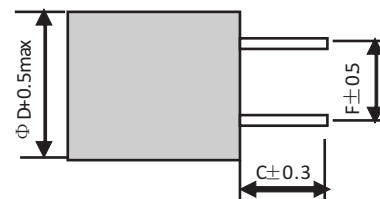
1. POLYCAP Explanation of Part Number (Radial Type)

Series name	Rated capacitance	Capacitance tolerance	Rated voltage	Case diameter	Case length	Taping or forming of terminal code
R L	8 2 1	M	2 R 5	F	0 8 0	C C
Example						
RA Series RH Series RV Series RX Series RL Series RG Series RS Series RN Series RF Series RQ Series RT Series	Rated Cap.(μF) Code	Tol.% Code	Rated Volt.(v) Code	Dia (mm) Code	Len. (mm) Code	Taping or lead terminal wire process code. None suffix for regular length lead type products
	4.7 4R7	±20 M	2.5 2R5	4 B	5 050	
	10 100	±10 H	6.3 6R3	5/5.5 C	6 060	
	33 330	±5 Z	10 010	6.3 E	7 070	
	100 101	+20	16 016	8 F	8 080	
	820 821	~-5 T	25 025	10 G	11 110	
	1000 102		35 035		11.5 115	
	2700 272		50 050		12.5 125	
			63 063		15 150	
			100 100		18 180	
			160 160		20 200	

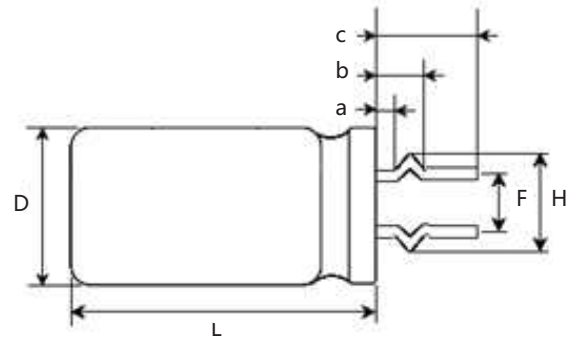
2. POLYCAP Radial lead terminal process

1) Specifications for lead terminal cutting

Lead terminal cutting code	Cutting size(L/mm)	Applicable case size(D/mm)
CI	2.2	
CA	2.5	
CJ	2.8	Φ4
CB	3.0	Φ5
CC	3.2	Φ5.5
CD	3.3	Φ6.3
CE	3.5	Φ8
CF	4.0	Φ10
CG	5.0	
CH	6.0	

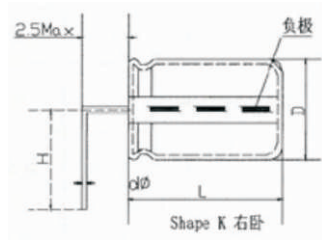
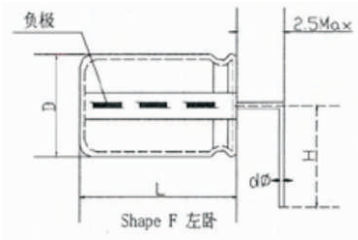


Shape A (lead cutting)



Shape B (lead cutting and crimping)

lead cutting and crimping code	H±0.5	a±0.5	b±0.5	c±0.5
BA	4.5	1.0	4.0	7.5
BB	4.5	1.0	4.0	8.0
BC	4.5	1.0	4.0	9.5



Shape F左卧code	Shape K右卧code	H±0.5
FA	KA	6.3
FB	KB	8.0
FC	KC	10.0

Shape F、K (lead cutting and bending)

2) POLYCAP Specifications for Taping

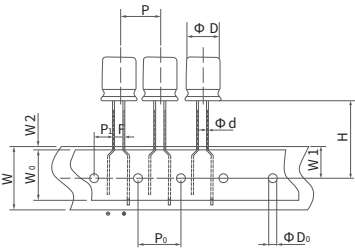


Fig-1(Φ5 ~ Φ8)

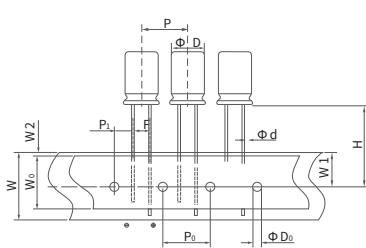


Fig-2(Φ10)

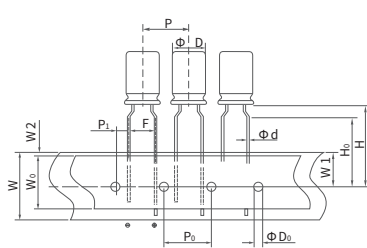


Fig-3(Φ5 ~ Φ8)



Code	D	L	d	P	P0	P1	F	W	W0	W1	W2	H	D0	△h
Tol.	±0.5	±1.0	±0.02	±1.0	±0.2	±0.7	±0.5	±0.5	Min	±0.5	Max	0.75 -0.5	±0.2	Max
Item	5	5-7(+1)	0.45	12.7	12.7	4.6	2.0	18	11	9	1.5	18.5	4.1	1
		9-11(+1.5)					2.5							
	5.5	5-7(+1)	0.5	12.7	12.7	4.6	2.5	18	11	9	1.5	18.5	4.1	1
		9-11(+1.5)					3.0							
	6.3	5(+1)	0.5	12.7	12.7	4.6	2.5	18	11	9	1.5	18.5	4.1	1
		7(+1)	0.6				3.5							
		9-11(+1.5)	0.6				5.0							
	8	8(+1)	0.6	12.7	12.7	4.6	3.5	18	12	9	1.5	18.5	4.1	1
		11(+1.5)					5.0							
	10	12.5(+1.5)	0.6	12.7	12.7	3.85	5.0	18	12	9	1.5	18.5	4.1	1

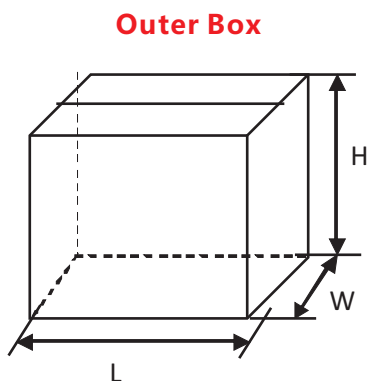
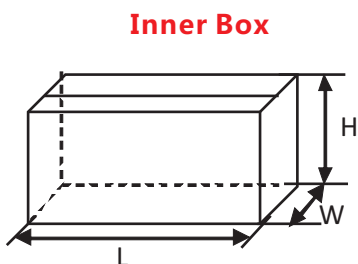
Taping code	Taping size(F/mm)	Applicable case size(ΦD/mm)
TA	2.0	Φ5
TB	2.5	Φ5,Φ6.3
TC	3.5	Φ6.3,Φ8,Φ10
TD	5.0	Φ6.3,Φ8,Φ10
TR	Taping and Reel	

Package Specifications for Radial Type

包裝規格

Bulk Package Quantity

Case Size (mm)	Radial Package			Cutting Package		
	Bag/PCS	Inner Box/PCS	Outer Box/PCS	Bag/PCS	Inner Box/PCS	Outer Box/PCS
Φ4x5	1000	10000	60000	1000	10000	60000
Φ5x5	1000	10000	60000	1000	10000	60000
Φ5x6	800	8000	48000	1000	10000	60000
Φ5x7	600	6000	36000	800	8000	48000
Φ5x8	600	6000	36000	800	8000	48000
Φ5x9	600	6000	36000	800	8000	48000
Φ5.5x9	600	6000	36000	800	8000	48000
Φ5.5x11	600	6000	36000	800	8000	48000
Φ6.3x5	800	8000	48000	1000	10000	60000
Φ6.3x7	600	6000	36000	800	8000	48000
Φ6.3x8	600	6000	36000	800	8000	48000
Φ6.3x11	600	6000	36000	800	8000	48000
Φ8x8	400	4000	24000	500	5000	30000
Φ8x11.5	300	3000	18000	400	4000	24000
Φ8x15	200	2000	12000	300	3000	18000
Φ8x16	200	2000	12000	300	3000	18000
Φ8x18	200	2000	12000	300	3000	18000
Φ8x20	150	1500	9000	200	2000	12000
Φ10x8	200	2000	12000	300	3000	18000
Φ10x10	200	2000	12000	300	3000	18000
Φ10x12.5	150	1500	9000	200	2000	12000
Φ10x15	150	1500	9000	200	2000	12000
Φ10x16	150	1500	9000	200	2000	12000
Φ10x18	100	1000	6000	150	1500	9000
Φ10x20	100	1000	6000	150	1500	9000



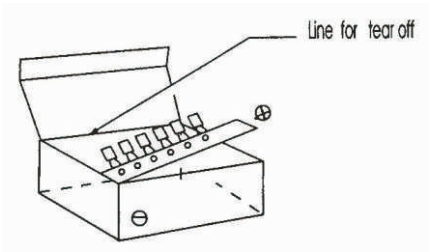
Box size

Box	L	W	A
Inner box	340	245	110
Outer box	500	350	340

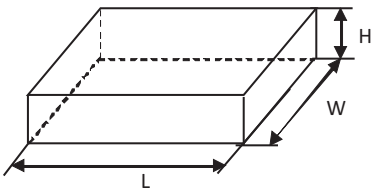
Taping Package
Quantity

Case Size (mm)	Ammo Package	
	Inner Box/PCS	Outer Box/PCS
Φ4x5	2500	30000
Φ5x5	2500	30000
Φ5x6	2000	24000
Φ5x7	2000	24000
Φ5x8	2000	24000
Φ5x9	2000	24000
Φ5.5x9	2000	24000
Φ5.5x11	2000	24000
Φ6.3x5	1800	21600
Φ6.3x7	1800	21600
Φ6.3x8	1800	21600
Φ6.3x11	1800	21600
Φ8x8	1000	12000
Φ8x11.5	1000	12000
Φ8x15	1000	12000
Φ8x16	1000	12000
Φ8x18	800	9600
Φ8x20	800	9600
Φ10x8	700	8400
Φ10x10	700	8400
Φ10x12.5	700	8400
Φ10x15	700	8400
Φ10x16	600	7200
Φ10x18	600	7200
Φ10x20	600	7200

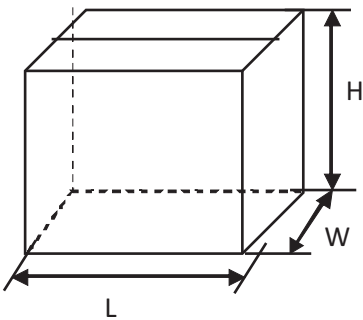
Ammo Package



Inner Box/PCS



Outer Box/PCS



Box size

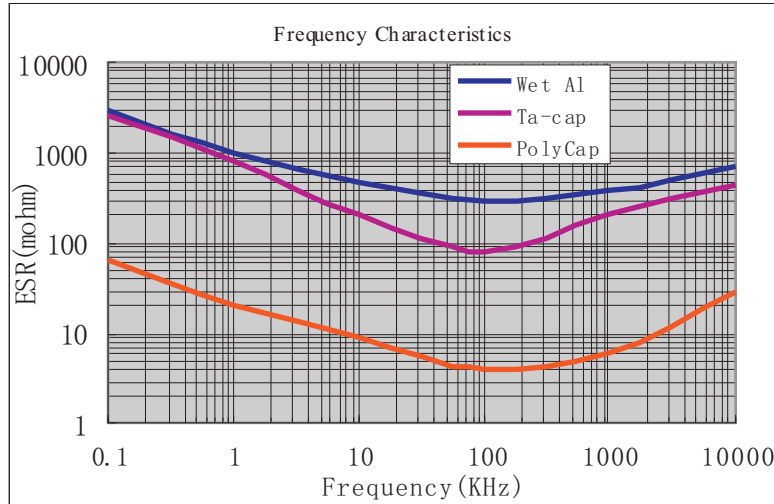
Box	L	W	A
Inner box	340	245	55
Outer box	500	350	340

Features of PolyCap

特征

1. POLYCAP has very low ESR.

a) Frequency characteristics of ESR shows an ideal curve.



Best suited to use as de-coupling capacitor for removing noise like ripple, spike, digital, static and audio.

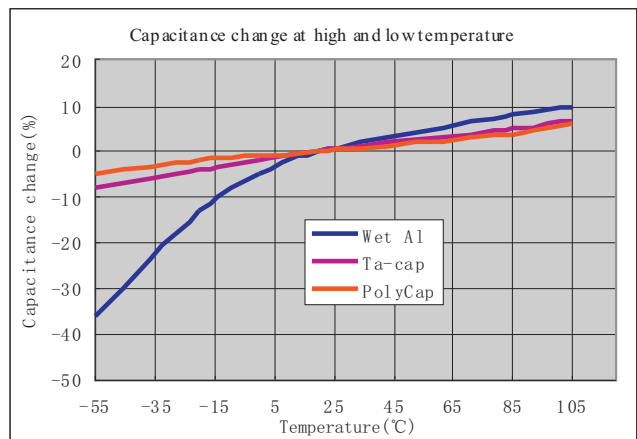
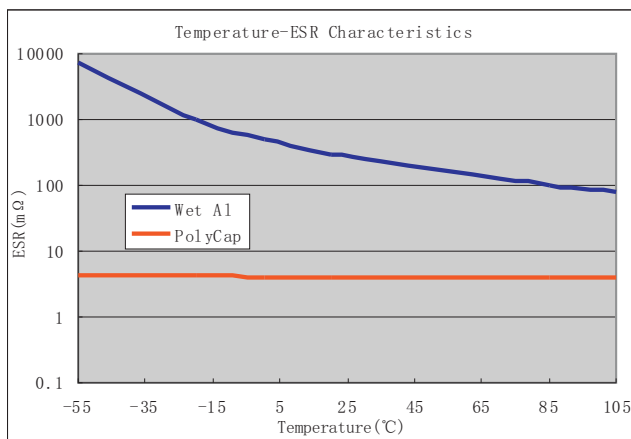
b) Large ripple current was permitted to flow.

Best suited for miniaturization, using as smoothing capacitor of switching power supply.

c) Able to charge and discharge rapidly.

Best suited for use as back-up capacitor in a circuit where large current is consumed at high-speed.

2. ESR and capacitance of POLYCAP are rare dependent on temperature.



Best suited for devices that have low temperature specification (0 deg or less)

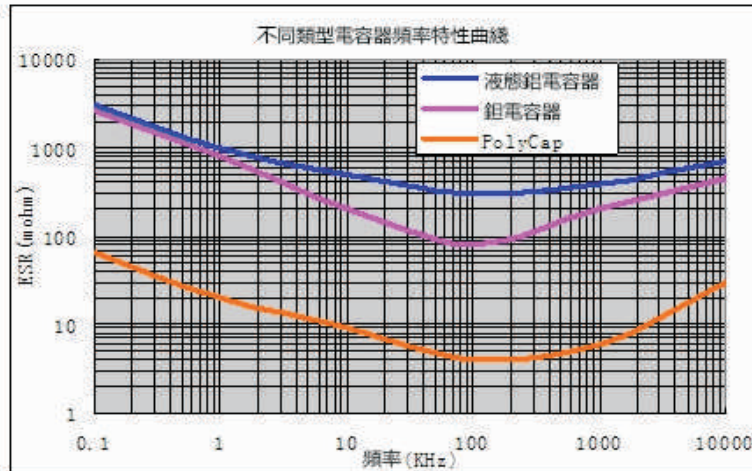
3. POLYCAP has long life. The presumptive lifetime of POLYCAP is about 10 times by 20°C reduction.

Best suited for industrial devices that shall be used for a long period.

POLYCAP的主要特性和應用

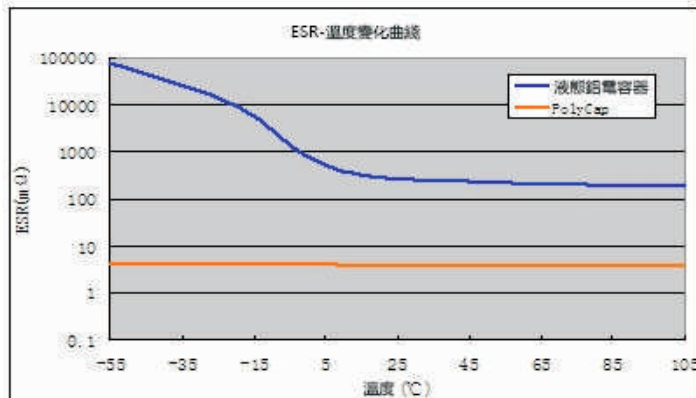
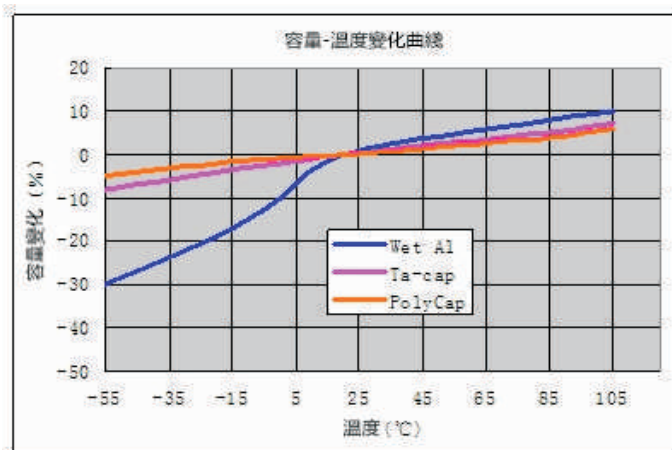
主要特性：

1、POLYCAP具有極低ESR值



- 可以承受更大的紋波電流；
- 可以快速充放電。

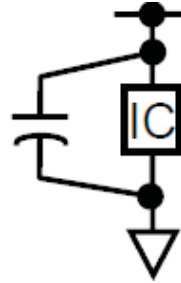
2、POLYCAP的容量和ESR值幾乎不隨溫度而改變，低溫特性優良



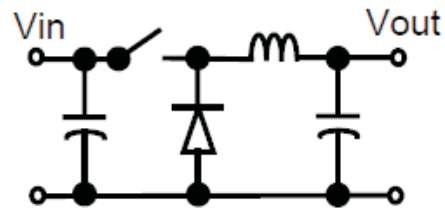
3、POLYCAP的使用壽命長，85°C壽命可達20,000~50,000小時。

基於POLYCAP以上特性，其主要應用領域總結為：

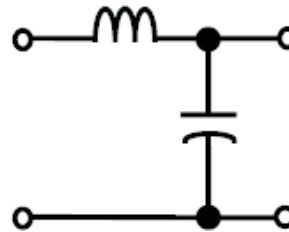
儲能
旁路



輸入、輸出
平滑電容器



Lc濾波，或者只用
polycap替代L+C



固態鋁電容器應用優勢分析

-----與液態鋁電容器及鉭電容器的比較

1. 固態鋁電容器的濾除紋波能力分析

對於開關電源，電路的小型化是未來發展方向，因此，盡可能減少電路中使用電容器的數量和體積。下面比較高頻電路中不同環境溫度下電容器的濾除紋波能力，實驗採用的電路如圖1。

使用一般的降壓型開關電源，在環境溫度分別為25℃和-25℃時，輸出平滑電容器C分別使用POLYCAP固態鋁電容器、Low ESR型液態鋁電容器、Low ESR型鉭電容器，比較這三種情況的輸出紋波電壓，以便評價這三種電容器的濾除紋波能力。

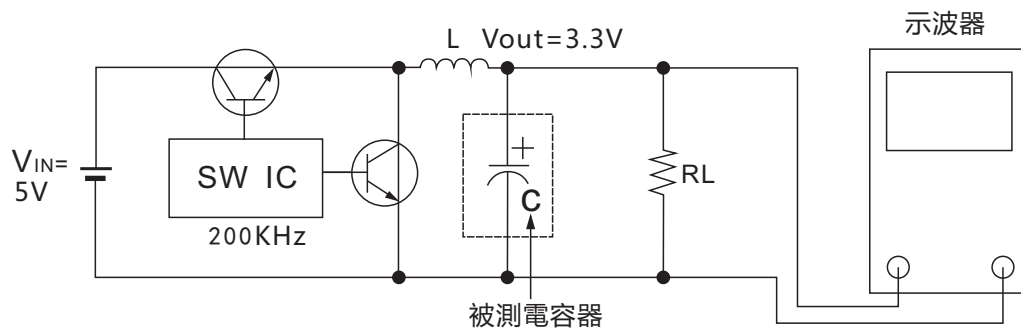


圖1 實驗電路圖

(一) 實驗方法：

- (1) 圖1中的被測電容器使用POLYCAP固態鋁電容器6.3V220UF(Φ6.3mm×7mm)，測試各環境溫度時的紋波電壓；
- (2) 在對應的環境溫度下，選擇Low ESR型液態鋁電容器和Low ESR鉭電容器，使得輸出的紋波電壓達到上述使用固態電容器時的測試值。

(二) 實驗結果：

表1 在環境溫度為25℃、-25℃和75℃時各電容器的濾除紋波能力比較

環境溫度-25℃

電容器類別	POLYCAP 固態電容	Low ESR 液態電容	Low ESR 鉭電容
電容器規格	6.3V220UF	6.3V820UF	10V220UF
電容器尺寸(mm)	Φ6.3×7	Φ10×10	7.3×4.3
紋波電壓值	21.6mV	22.1mV	22.8mV
電容器在電路上的貼裝面積比	1	7.16	1.45
電容器數量	1	3	2

環境溫度=25℃

電容器類別	POLYCAP 固態電容	Low ESR 液態電容	Low ESR 鉭電容
電容器規格	6.3V220UF	6.3V820UF	10V220UF
電容器尺寸(mm)	Φ6.3×7	Φ10×10	7.3×4.3
紋波電壓值	21.9mV	22.5mV	23.2mV
電容器在電路上的貼裝面積比	1	7.16	1.45
電容器數量	1	3	2

環境溫度=75℃

電容器類別	POLYCAP 固態電容	Low ESR 液態電容	Low ESR 鉭電容
電容器規格	6.3V220UF	6.3V820UF	10V220UF
電容器尺寸(mm)	Φ6.3×7	Φ10×10	7.3×4.3
紋波電壓值	22.3mV	21.8mV	23.0mV
電容器在電路上的貼裝面積比	1	7.16	1.45
電容器數量	1	3	2

由以上實驗結果可見：1pcs固態鋁電容器的濾除紋波能力大約相當於2pcs鉭電容器和2~7pcs大容量液態鋁電容器。因此，固態鋁電容器可以顯著地使得電路小型化，並可保證電路在不同溫度下保持穩定運行。

2. 固態鋁電容器在低通濾波電路中的應用

數字電路中的電源容易產生噪聲，因此在數字電路中需要進行低通濾波，以防止高頻噪聲進入模擬電路。

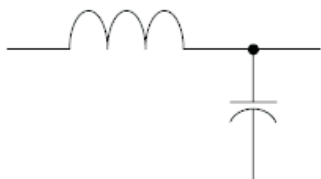


圖2 Lc濾波

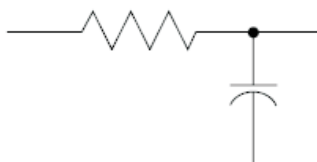
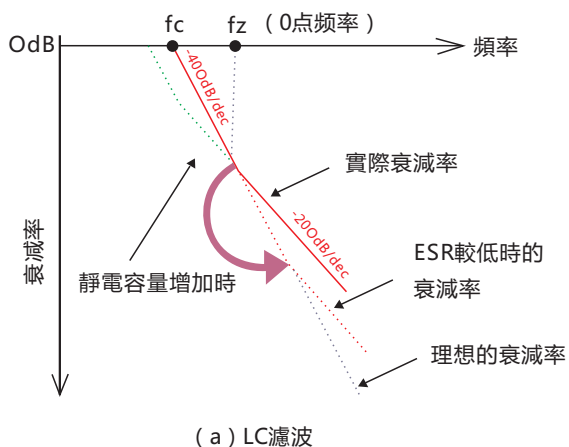
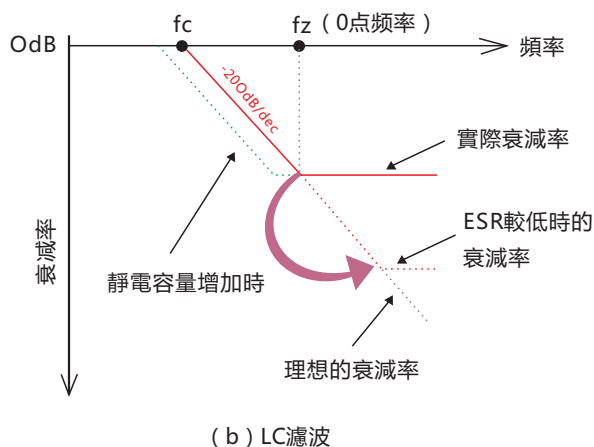


圖3 Rc濾波

低通濾波電路中的電容器的ESR在很大程度上影響著衰減效果，電容器的ESR越低，越接近理想的衰減率，由於固態鋁電容器的ESR非常小，因此固態鋁電容器在低通濾波電路中的應用具有明顯的優勢。



(a) LC濾波



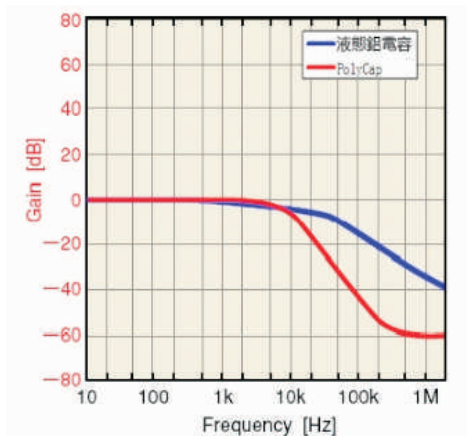
(b) LC濾波

圖4 實際衰減率

以下，用相同規格的兩種電容器比較低通濾波效果：

- (a) POLYCAP固態鋁電容器16V100UF，ESR實測值12mΩ；
- (b) 液態鋁電容器16V100UF，ESR實測值689mΩ。結果如圖5所示：

(1) LC濾波(L=10uH)



(2) LC濾波(L=10uH)

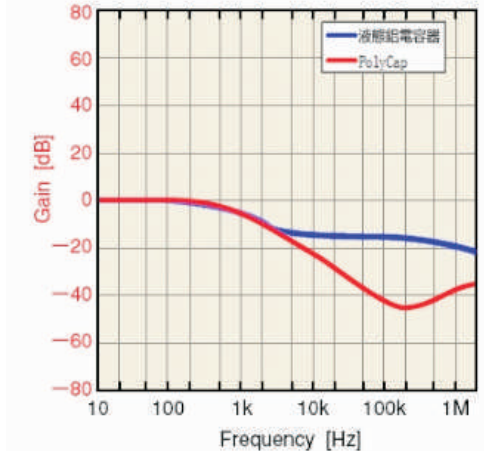


圖5 兩種電容器的低通濾波效果比較

上圖可見，在高頻區域，固態鋁電容器的衰減效果遠優於液態鋁電容器。

3.固態鋁電容器在LED電路中的應用

超長使用壽命和節能是LED照明最大的特點，但在實際應用中，LED燈的壽命卻由於各種因素引起早期失效。當前市場上LED驅動電源模塊的壽命大大低於燈泡壽命，造成LED燈泡的壽命被嚴重浪費。而LED驅動電源模塊的壽命則很大程度上受制於濾波電容器的使用壽命不夠，傳統的液態電解質電容器有如下難以克服的弱點：電解液導電性不佳而引起電容器高頻特性差和紋波溫升過大，導致電容器濾波效果差和使用壽命降低；

- ① 電解液在低溫下導電性急劇降低導致電容量急劇降低和阻抗急劇增大，導致LED燈低溫啟動困難；
- ② 電解液具有揮發性，長期使用尤其是高溫長期使用會隨著電解液的揮發而使得電容器的電性能快速劣化；
- ③ 電解液材料的化學穩定性、電解液成分對鋁箔的侵蝕等因素，也會制約液態電容器的使用壽命。

LED燈對驅動電源的要求主要體現在以下幾個方面：

- ① LED燈的超長壽命特點，要求驅動電源也要具備長期可靠的使用壽命；
- ② LED驅動電源以恒流為主，為降低LED溫升及頻閃，要求電源提供高頻穩定的直流電流；
- ③ 戶外LED除以上要求外，還需要電源具備低溫啟動的特性，要求在低溫嚴寒條件下能夠正常啟動；
- ④ 對於LED內置驅動電源，有的工作溫度可達95℃以上，要求驅動電源能夠在高溫環境下穩定工作；
- ⑤ 隨著LED產業的發展，LED電源追求輕薄的特點，要求電路小型化、扁平化。

POLYCAP固態電容器依靠固體導電聚合物作為電解質導電，其導電機理是依靠電子導電，具有導電性好、穩定性好、電解質無揮發等顯著優點。因此，固態鋁電容器具有高頻低阻、可以通過大紋波電流、長壽命、溫度特性優良、高可靠度等優異性能。POLYCAP固態電容可以為LED驅動電源的如上需求提供完善的解決方案。

高可靠、長壽命的LED驅動電源對於電子元器件直接的要求是：電子元器件具備耐高溫、長壽命、高頻低阻抗、優異的溫度特性及較小的體積。以下通過測試試驗數據對比，可以看出POLYCAP固態電容具有傳統液態鋁電解電容器無法媲美的優點。

POLYCAP固態電容採用固體導電高分子材料作為電解質，固體電解質沒有揮發性，在使用時不容易消耗，工作溫度每降低20℃，固態電容壽命可增加10倍；

POLYCAP的壽命計算公式為：

$$L_{\text{固}} = L_0 \times 10^{\frac{T_0 - T_X}{20}}$$

液態鋁電容器的壽命計算公式為：

$$L_{\text{液}} = L_0 \times 2^{\frac{T_0 - T_X}{10}}$$

根據以上2個公式，假設額定壽命同為105℃/5,000小時，固態和液態電容器的實際工作壽命推算值如下表：

表1固態和液態電容器的實際工作壽命比較

POLYCAP(固態鋁電容器)		Wet Al.E.capacitor(液態鋁電容器)	
105℃	5,000h	105℃	5,000h
95℃	15,000h	95℃	10,000h
85℃	50,000h	85℃	20,000h

不間斷使用可達5.7年！完全可以匹配LED燈的壽命。

根據目前的公開資料，LED燈的保證壽命超過30,000小時，因此要求其電源電路也具有與此匹配的長壽命設計，傳統的液態鋁電容器不能滿足這樣的壽命要求，而POLYCAP固態電容卻是很好的選擇。

GS series

85°C Standard

High CV value, guarantee 2000 hrs life at 85°C.

Suitable for use in electronic circuits in colour TV receiver, video coder etc.



Specifications

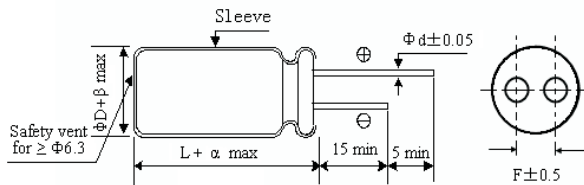
Items	Performance Characteristics												
Temperature Range	-40℃ ~ +85℃							-25℃ ~ +85℃					
Rate Voltage Range	6.3~100VDC							160~450VDC					
Capacitance Range	0.1~22000μF												
Capacitance Tolerance	±20%(120Hz, +20℃)												
Leakage current (+20℃,max.)	I≤0.01CV或3(μA)							I≤0.02CV+30(μA)					
	After 2 minutes, whichever is greater measured with rated working voltage applied												
Dissipation factor(tgδ)	Working Voltage(VDC)		6.3	10	16	25	35	50	63	100	160~140	450	
	D.F. (%) max.		28	24	20	16	14	12	10	8	15	20	
	For capacitance>1000μF , Add 2% per another 1000μF (120Hz , +20℃)												
Low Temperature Characteristics(120Hz)	Impedance ratio max.												
	Working Voltage(VDC)		6.3	10	16	25	35	50	63	100	160~140	160~140	450
	Z-25℃/ Z+20℃		5	4	3	2	2	2	2	2	3	6	15
	Z-40℃/ Z+20℃		12	10	8	5	4	3	3	3	-	-	-
	For capacitance>1000μF , Add 0.5 per another 1000μF For Z-25℃/ Z+20℃,Add 1.0 per another 1000μF For Z-40℃/ Z+20℃												
Load Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2000 hours at 85℃												
	Capacitance change		≤ ±20% of the initial value										
	D.F.(tgδ)		≤200% of the initial specified value										
	D.F.(tgδ)		≤The initial specified value										
Shelf Life	After storing the capacitors under no load at 85℃ for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20℃, they shall meet the specified values for the load life characteristics listed above.												
Others	JISC-5101(IEC 60384)												

Frequency Multipliers

μF \ Hz		50	120	300	1K	10K~
6.3~100WV	~47	0.75	1.00	1.35	1.57	2.00
	68~470	0.80	1.00	1.23	1.34	1.50
	≥560	0.85	1.00	1.10	1.13	1.15
160~450WV	≤150	0.70	1.00	1.25	1.40	1.60
	≥220	0.75	1.00	1.10	1.13	1.15

Dimensions

Unit:mm



ΦD	5	6.3	8	10	13	16	18	22	25
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0	12.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8	0.8	1.0
α	$(L < 20) + 1.5$				$(L \geq 20) + 2.0$				
β	$(D < 20) + 0.5$				$(D \geq 20) + 1.0$				

GS series Standard Ratings

Voltage	6.3V		10V		16V		25V	
Cap(μF)	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current
10							5×11	54
22							5×11	73
33							5×11	98
47					5×11	115	5×11	126
100	5×11	135	5×11	140	5×11	175	6.3×11	211
220	5×11	220	5×11	230	6.3×11	290	8×12	370
330	6.3×11	297	6.3×11	322	6.3×11	350	8×12	453
470	6.3×11	360	6.3×11	384	8×12	499	10×12	628
680	8×12	503	8×12	546	10×12	690	10×17	826
1000	8×12	610	10×12	791	10×15	928	10×20	1094
1500	10×12	780	10×17	875	10×20	1025	13×20	1210
2200	10×17	890	10×20	1226	13×20	1555	13×25	1800
3300	10×20	1350	13×20	1685	13×25	1990	16×25	2304
4700	13×20	1822	13×25	2103	16×25	2487	16×30	2854
6800	13×25	1930	16×25	2606	16×30	3010	16×40	3528
							18×35	3546
10000	16×25	2760	16×30	2960	16×35	3490		
15000	16×35	2860	16×40	3100				
22000	18×40	3400						

Max Allowable Ripple Current (mA,rms) at 85°C 120Hz, Case Size $\Phi D \times L$ (mm)

Voltage	35V		50V		63V		100V	
Cap(μF)	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current
0.1			5×11	1.3				
0.15			5×11	1.5				
0.22			5×11	2.9				
0.33			5×11	4.3				
0.47			5×11	6.2			5×11	10
1.0			5×11	13			5×11	24
2.2			5×11	28			5×11	37
3.3			5×11	35			5×11	45
4.7	5×11	35	5×11	48			5×11	55
10	5×11	53	5×11	71	5×11	76	5×11	76
22	5×11	90	5×11	106	5×11	113	6.3×11	135

GS series

Voltage	35V		50V		63V		100V	
Cap(μF)	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current
33	5×11	110	5×11	130	6.3×11	159	8×12	187
47	5×11	138	6.3×11	177	6.3×11	190	10×12	259
68	6.3×11	160	6.3×11	210	8×12	220	10×17	290
100	6.3×11	231	8×12	306	8×12	321	10×20	453
220	8×12	405	10×12	506	10×17	615	13×20	742
330	10×12	576	10×17	706	10×20	823	13×25	987
470	10×17	753	10×20	811	13×20	1153	16×25	1394
680	10×20	988	13×20	988	13×25	1512	16×30	1400
1000	13×20	1407	13×25	1715	16×25	2037	18×35	1995
2200	16×25	2134	16×30	2320	18×35	2300		
3300	16×30	2338	18×35	3218	18×40	2500		
4700	18×35	3400	18×40	3336				
5600	18×40	3411						
6800	18×40	3500						

Max Allowable Ripple Current (mA,rms) at 85°C 120Hz, Case Size ΦD×L(mm)

Voltage	160V		200V		250V		350V	
Cap(μF)	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current
3.3					8×12	46	8×12	48
4.7			8×12	53	8×12	56	8×12	63
6.8	8×12	66	8×12	72	10×13	76	10×13	78
10	8×12	81	10×13	94	10×17	103	10×17	115
22	10×17	151	10×17	163	10×20	175	13×20	185
33	10×20	202	10×20	210	13×20	230	13×25	250
47	13×20	255	13×20	270	13×25	295	16×25	330
68	13×20	335	13×25	350	16×25	380	16×30	400
100	13×25	422	16×25	483	16×30	515	18×30	530
150	16×25	560	16×30	580	18×30	673	18×40	720
220	16×30	760	18×30	810	18×40	825		
330	18×35	890	18×35	940				

Voltage	400V		450V					
Cap(μF)	Case Size	Ripple Current	Case Size	Ripple Current				
2.2	8×12	38	8×12	39				
3.3	8×12	52	10×13	54				
4.7	8×12	58	10×13	64				
	10×13	67	10×17	72				
6.8	10×13	72	10×17	80				
	10×17	80	10×20	86				
10	10×17	112	10×20	103				
	10×20	120	13×20	120				
22	13×20	197	13×25	190				
33	16×20	275	16×25	270				
47	16×25	350	16×30	340				
68	16×30	420	18×30	430				
100	18×35	580						
150	18×40	720						

Max Allowable Ripple Current (mA,rms) at 85°C 120Hz, Case Size ΦD×L(mm)

Above size is the standard size for our product. If you need special size please contact our Salesman

KM series



105°C Standard Features

Rated working voltage range 6.3 to 100V DC/160 to 450V DC at operation

temperature range -40 to +105°C/-25 to +105°C.

This series is for communication equipments, switching power supply, industrial measuring instruments, automotive electric products, etc

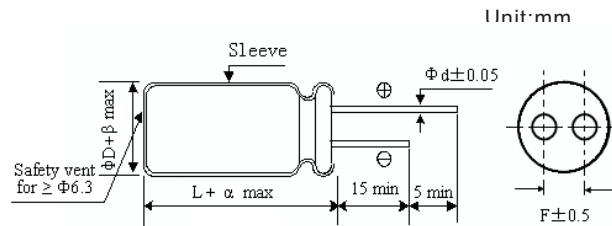
Specifications

Items	Performance Characteristics																					
Temperature Range	-40°C ~ +105°C							-25°C ~ +105°C														
Rate Voltage Range	6.3~100VDC							160~450VDC														
Capacitance Range	0.1~33000μF																					
Capacitance Tolerance	±20%(120Hz, +20°C)																					
Leakage current (+20°C, max.)	I≤0.01CV或3(μA)							I≤0.02CV+30(μA)														
	After 2 minutes, whichever is greater measured with rated working voltage applied																					
Dissipation factor(tgδ)	Working Voltage(VDC)											6.3	10	16	25	35	50	63	100	160~400	450	
	D.F. (%) max.											26	22	18	16	14	12	10	8	15	20	
	For capacitance>1000μF , Add 2% per another 1000μF (120Hz , +20°C)																					
Low Temperature Characteristics(120Hz)	Impedance ratio max.																					
	Working Voltage(VDC)											6.3	10	16	25	35	50	63	100	160~250	350~400	450
	Z-25°C/ Z+20°C											5	4	3	2	2	2	2	2	3	6	15
	Z-40°C/ Z+20°C											10	8	6	4	3	3	3	3	-	-	-
	For capacitance>1000μF , Add 0.5 per another 1000μF For Z-25°C/ Z+20°C, Add 1.0 per another 1000μF For Z-40°C/ Z+20°C																					
Load Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 105°C																					
	Capacitance change											≤ ±20% of the initial value										
	D.F.(tgδ)											≤200% of the initial specified value										
	D.F.(tgδ)											≤The initial specified value										
Shelf Life	After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the load life characteristics listed above.																					
Others	JISC-5101(IEC 60384)																					

Frequency Multipliers

Hz		50	120	300	1K	10K~
µF	~47	0.75	1.00	1.35	1.57	2.00
	68~470	0.80	1.00	1.23	1.34	1.50
	≥560	0.85	1.00	1.10	1.13	1.15
160~450VV	≤150	0.70	1.00	1.25	1.40	1.60
	≥220	0.75	1.00	1.10	1.13	1.15

Dimensions



Unit:mm

ΦD	5	6.3	8	10	13	16	18	22	25
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0	12.5
Φd	0.5	0.5	0.5	0.6	0.6	0.8	0.8	0.8	1.0
α	(L < 20) + 1.5						(L = 20) + 2.0		
β	(D < 20) + 0.5						(D = 20) + 1.0		

KM series Standard Ratings

Voltage	6.3V		10V		16V		25V	
Cap(μF)	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current
4.7							5×11	26
10					5×11	35	5×11	38
22			5×11	49	5×11	54	5×11	57
33	5×11	54	5×11	60	5×11	64	5×11	75
47	5×11	65	5×11	70	5×11	80	5×11	84
68	5×11	70	5×11	75	5×11	99	5×11	92
100	5×11	95	5×11	105	5×11	125	6.3×11	159
220	5×11	153	5×11	170	6.3×11	213	8×12	285
330	6.3×11	216	6.3×11	239	8×12	315	8×12	340
470	6.3×11	258	6.3×11	285	8×12	366	10×12	471
680	8×12	365	8×12	408	10×12	480	10×17	620
1000	8×12	443	10×12	571	10×15	680	10×20	821
2200	10×17	740	10×20	886	13×20	1108	13×20/13×25	1176/1314
3300	10×20	1032	13×20	1205	13×25	1389	16×25	1646
4700	13×20	128	13×25	1492	16×25	1740	16×30	2012
6800	13×25	1554	16×25	1824	16×30	2081	16×35	2308
10000	16×25	1897	16×30	1980	16×35	2379	18×35	2500
15000	16×30	2188	16×40	2180	18×35	2600		
22000	18×35	2400	18×40	2407				
33000	18×40	2555						

Voltage	35V		50V		63V		100V	
Cap(μF)	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current
0.1/0.15			5×11	1/1.5				
0.22			5×11	3				
0.33			5×11	4				
0.47			5×11	7			5×11	10
1.0			5×11	13			5×11	16
2.2			5×11	20			5×11	23
3.3			5×11	30			5×11	34
4.7	5×11	28	5×11	37	5×11	40	5×11	40
10	5×11	41	5×11	54	5×11	59	6.3×11	61
22	5×11	67	5×11	79	5×11	79	6.3×12	92
33	5×11	80	5×11	101	6.3×11	122	8×12	144
47	5×11	101	6.3×11	133	6.3×11	146	10×12	199
68					8×12	155	10×17	240
100	6.3×11	168	8×12	229	10×12	251	10×20	349
220	8×12	294	10×15	509	10×20	504	13×25	662
330	10×12	419	10×17	589	13×20	688	13×25	800
470	10×17	547	10×20	707	13×20	810	16×25	990
680	10×20	682	13×20	923	13×25	1160	16×30	1289
1000	13×20	1023	13×25	1287	16×25	1448	18×40	2020
2200	16×25	1497	16×35	1884	18×35	1781		
3300	16×30	1808	18×35	2167				
4700	18×35	2335						
6800	18×40	2400						

Max Allowable Ripple Current (mA,rms) at 85°C 120Hz, Case Size ΦD×L(mm)

KM series

Voltage	160V		200V		250V		350V	
Cap(μF)	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current	Case Size	Ripple Current
3.3					8×12	35	8×12	40
4.7	8×12	41	8×12	43	8×12	45	10×13	52
6.8	8×12	49	8×12	51	10×13	60	10×13	65
10	10×13	70	10×13	72	10×17	80	10×17	85
22	10×17	115	10×17	120	10×20	125	13×20	150
33	10×20	150	10×20	152	13×20	175	13×25	210
47	13×20	215	13×20	220	13×25	236	16×25	280
68	13×25	280	13×25	290	16×25	320	16×30	370
100	13×25	350	16×25	390	16×30	420	18×35	520
150	16×25	480	16×30	530	18×30	550	18×40	650
220	16×30	630	18×30	680	18×40	750		
330	18×35	850	18×40					

Voltage	400V		450V					
Cap(μF)	Case Size	Ripple Current	Case Size	Ripple Current				
2.2	8×12	32	8×12	35				
3.3	8×12	40	10×13	45				
4.7	8×12	48	8×16	52				
	10×13	56	10×17	60				
6.8	10×13	68	10×17	76				
	10×17	76	10×20	82				
10	10×17	88	10×20	95				
	10×20	95	13×20	110				
22	13×25	170	16×20	180				
33	16×20	230	16×25	250				
47	16×25	310	18×25	320				
68	16×30	400	18×30	420				
100	18×35	560	18×40	580				

Max Allowable Ripple Current (mA,rms) at 85°C 120Hz, Case Size ΦD×L(mm)

Above size is the standard size for our product. If you need special size please contact our Salesman

Package Specifications

Case Diameter	Case Length	Bag/PCS	Inner Box/PCS	Outer Box/PCS
Φ8	H≤12	500	5000	20000
	12<H≤14	300	3000	12000
	14<H≤16	250	2500	10000
Φ10	H≤20	200	2000	8000
Φ13	H≤20	100	1000	4000
	20<H<30	100	800	3200
Φ16	H≤22	100	800	3200
	22<H<40	50	400	1600
Φ18	H≤22	100	800	3200
	22<H<40	50	400	1600
Φ22	H<27	30	240	960
	27≤H<40	25	200	800
Φ25	H<27	30	240	960
	27≤H<40	25	200	800



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