



# ANDCAP<sup>®</sup>

## COMPANY OUTLINE

### 公司概况

深圳安纳德科技有限公司是国内专业从事超级电容器研发、生产和销售的企业。

公司成立于2013年11月，拥有自己的品牌（**ANDCAP<sup>®</sup>**）、技术和标准，并拥有自主的超级电容器生产线，可以提供超级电容器（EDLC）及锂离子电容器（LIC）全系列产品，目前主要服务于三表（电表、水表、煤气表）、汽车电子、医疗设备、电力设备、物联网产品、玩具等领域，成立至今已累计为客户提供超级电容器产品5000余万只，得到各行业客户的一致好评。

公司的主要人员从事超级电容器行业20余年，在超级电容器技术及服务等方面积累了丰富的经验。

公司的超级电容器生产设备先进，自动化程度高，并已实现超级电容器的自动化检测，从而达到产品的一致性高，可靠性高。

公司的服务理念是：随时为客户提供专业的技术服务，长期为客户提供可靠的产品支持。

伴随着产品智能化及绿色储能行业的快速发展，赋予了超级电容器更大的应用空间，我们将不断推出更优质产品，在后备电源及储能领域为社会创造更大的价值。

Shenzhen Energy Technology Co.,Ltd. is a domestic enterprise specializing in the research and development, production, and sales of supercapacitors.

The company was established in November 2013, with its own brand (**ANDCAP<sup>®</sup>**), technology, and standards, as well as an independent supercapacitor production line. It can provide a full range of products for supercapacitors (EDLC) and lithium-ion capacitors (LIC). Currently, it mainly serves the fields of three meters (electricity meters, water meters, gas meters), automotive electronics, medical equipment, power equipment, Internet of Things products, toys, etc. Since its establishment, we have provided customers with over 50 million supercapacitor products and received unanimous praise from customers in various industries.

The main personnel of the company have been engaged in the supercapacitor industry for more than 20 years, accumulating rich experience in supercapacitor technology and services.

The company's supercapacitor production equipment is advanced and highly automated, and has achieved automated testing of supercapacitors, thereby achieving good product consistency and high reliability.

The company's service philosophy is to provide professional technical services to customers at any time and provide reliable product support for customers in the long term.

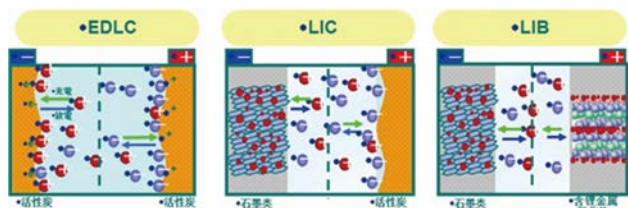
With the rapid development of product intelligence and green energy storage industry, supercapacitors have been given greater application space. We will continue to launch higher quality products and create greater value for society in the field of backup power and energy storage.

# 深圳安纳德科技有限公司 超级电容器介绍

## 一、超级电容器概念简介

超级电容器是一种新型高性能储能器件，介于传统电容器和二次电池之间，具有功率密度大、充电迅速、循环寿命长、工作温度范围宽、安全可靠、绿色环保等突出的优点，特别适合用于短时间高功率输出、快速充电、长寿命、能量回收等场合，妥善解决了储能设备高比功率和高比能量输出之间的矛盾，是21世纪理想的环保型储能器件之一。

超级电容器作为一种崭新的电源器件，其技术也在迅速的发展进步。目前超级电容器主要有双电层电容器(EDLC)、锂离子电容器(LIC)、赝电容电容器等。双电层电容器通过施加电压在正负极板上，电解液中正负离子在电场作用下，在正负极界面上形成双电层从而实现储能。锂离子电容器作为超级电容器领域中的一种新体系，以新型先进材料技术为基础，通过电化学计算，按照设计使用混合电极材料，在一个电解池中实现了锂离子电池和双电层电容器的原理和技术的结合，使其在保持高比功率、长寿命和快速充电特性的同时，大幅度提高了比能量，有效的填补了双电层超级电容器和锂离子电池之间的性能空白，表现出了良好的应用前景。



### 超级电容器储能机理

市场上主流的双电层电容器(EDLC)由于能量密度较低，一定程度上限制了其应用场合，因此不断追求更高的比能量已经成为推动超级电容器技术发展永恒的动力。开发有机混合型超级电容器新体系技术是提高比能量最有效的途径之一，锂离子电容器(LIC)就是其中的典型代表。

	EDLC	LIC	LIB
正极材料	活性炭	活性炭	LiMO
负极材料	活性炭	石墨/硬炭	石墨
电解液	有机溶剂	有机溶剂	有机溶剂
储能原理	离子吸附/脱附	正极: 同于 EDLC 负极: Li 离子反应	Li 离子反应
温度范围	-40~70℃	-25~70℃	-25~45℃
最大工作电压	2.3~2.7V	3.8~4.2V	3.7~4.2V
最大放电倍率	~1,000C	~500C	~50C
充放电次数	◎(50万次以上)	◎(5-50万次)	△(1000~2000次)
自放电	×	◎	◎
安全性	◎	◎	△
能量密度	△(5~7Wh/kg)	◎(10~90Wh/kg)	◎(~150Wh/kg)

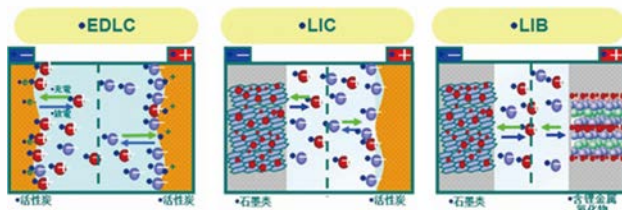
### 不同储能器件的性能对比

高比能量的锂离子电容器是目前超级电容器技术发展的最前沿和热门的方向，目前的研究开发和产业化主要集中在日本、韩国等国家，其中较为突出的包括日本旭化成电子、ACT、NEC、JM Energy、富士重工和太阳诱电等公司。

## 1.Introduction to the concept of supercapacitor

Supercapacitor is a type of new and high performance energy storage device ranging between the traditional capacitor and the secondary battery. It features high power density, fast charging, long cycle life, wide working temperature range, safe & reliable operation and clean & environment-friendly, especially applicable to those locations which need short-time/high-power output, fast charging, long lifetime and energy recovery. It has well solved the contradiction between the high specific power and high energy output of the energy storage equipment, known as one of the ideal environmentally-friendly energy storage devices of the 21st century.

As a kind of brand-new power supply device, the technology of the supercapacitors shows smooth and swift development. Supercapacitors include EDLC, LIC, and pseudo-capacitor, etc. Electrodes are applied voltage to form electric field, and positive and negative ions of electrolyte are separated to array compactly along positive and negative electrodes, respectively. Electric double layers are constructed, which achieve effective energy storage. As a new system in the supercapacitors field, the lithium-ion capacitor is based on the adoption of the new & advanced material technology, and uses the hybrid electrode material according to the design to realize the combination of principle & technology of the lithium-ion battery and supercapacitor in one electrolytic cell by electrochemical calculation. In this way, the features of high specific power, long lifetime and fast charging of the supercapacitors can be well maintained, and meanwhile the specific energy will be greatly enhanced with the performance blank between the double layer capacitor and lithium-ion battery effectively filled up, showing excellent application prospect.



### The energy storage mechanism of supercapacitor

At present, the mainstream product on the market is the electric double layer capacitor(EDLC). However, due to low energy density, its applications are to some extent limited. Therefore, to persistently pursue even higher specific energy has turned into the everlasting impetus to push forward the development of the supercapacitors technology, and the development of the new organic hybrid supercapacitors technology is one of the most effective ways to boost the specific energy. The lithium-ion capacitor (LIC) is a typical example.

	EDLC	LIC	LIB
Anode Material	Active Carbon	Active Carbon	LiMO
Cathode Material	Active Carbon	Graphite/Hard Charcoal	Graphite
Electrolyte	Organic Solvent	Organic Solvent	Organic Solvent
Energy Storage Mechanism	Ion adsorption/desorption	Anode: Same as EDLC Cathode: Li ion reaction	Li ion reaction
Temp. Range	-40~70℃	-25~70℃	-25~45℃
Max. Working Voltage	2.3~2.7V	3.8~4.2V	3.7~4.2V
Max. Discharge Rate	~1,000C	~500C	~50C
Number of Charge & Discharge	◎ (Over 500,000 cycles)	◎ (50,000~500,000 cycles)	△ (1000~2000 C/cycle)
Self Discharge	×	◎	◎
Safety	◎	◎	△
Energy Density	△(5~7Wh/kg)	◎(10~90Wh/kg)	◎(~150Wh/kg)

### Performance comparison of the Different Energy Storage Device

The lithium-ion capacitor with high specific energy is currently the forefront and orientation of the supercapacitors technology development, and the present R&D and industrialization are mostly concentrated in countries like Japan, Korea etc. including Asahi Kasei Electronics, ACT, NEC, JM Energy, Fuji Heavy Industries and Taiyo Yuden etc.

# 深圳安纳德科技有限公司 超级电容器介绍

## 二、 超级电容器的应用方向

锂离子电容器兼顾了高比功率和高比能量，具有优秀的快速充电和长寿命特性，代表超级电容器技术发展的最前沿。随着超级电容器技术和产业的成熟发展，不断催生更为广阔的应用市场空间。目前超级电容器的主要应用市场包括：

### (1) 电动汽车

锂离子电容器在混合动力轿车和大客车，以及纯电动公交车等电动汽车领域中具有巨大的市场价值。

众多知名汽车公司都对锂离子电容器产品进行了系统的检测和评估，非常看好锂离子电容器在混合动力轿车后续开发中的应用前景，未来将占据重要的市场份额。

### (2) 轨道交通

脱线运行是现代有轨电车的技术发展方向之一，国内外企业对此均予以高度重视。应用锂离子电容器作为电源，在保持合理重量和成本的前提下，在终点站一次快速充电即可满足全程脱线运营的要求，节约了大量的基建费用，具有显著的成本和性能优势。

### (3) 风电变桨

为保证风力变桨系统后备电源的可靠性，超级电容器由于其高功率、长寿命、宽工作温度范围、免维护等优势，已替代蓄电池在风力变桨系统后备电源得到广泛的应用。

### (4) 节能电梯

使用超级电容器，回收储存势能所转化的电能，下一工作循环时优先使用，实现节能；同时用作为电梯应急后备电源，能够大幅度提高电梯使用的安全性。

### (5) 高尔夫球车和 AGV

高尔夫球车和 AGV 使用锂离子电容器，电源体积、重量和成本更低，寿命更长，使用更方便，能够开拓崭新的应用模式。

### (6) DC 电路和智能三表等

超级电容器在智能三表、车载 DVR，行驶记录仪、手持 GPRS 设备、智能手机、平板电脑等电器中应用前景广泛。

### (7) 智能电网

超级电容器微电网中提供短时供电、电力调峰、改善微电网电能质量、提升微电源性能。

## 2.The Application Orientation of the supercapacitors

The lithium-ion capacitor combines the performance of specific power and energy together, and features excellent fast charging and long lifetime, and represents the forefront of the supercapacitors technology development. With the mature development of the supercapacitors technology and industry, the application market space becomes more and more wide. Presently, the major application markets of the supercapacitors include;

### (1) Electric automobiles

The lithium-ion capacitor is of tremendous market values in the area of hybrid power cars & coaches and pure electric buses. Some well-known car manufacturers have already conducted systematic testing and evaluation on the lithium-ion capacitor products. They will have a bright future in the follow-up development of hybrid power cars and take up an important market share.

### (2) Rail Transit

Off-line operation is one of the technical development directions of the modern tram, and enterprises both at home and abroad highly value this point. Under the premise of keeping the reasonable weight and cost, the adoption of the lithium-ion capacitors can satisfy the off-line operation requirement for the whole journey after a fast charging at the terminal station. Thus a great amount of infrastructure expenditure can be saved, and the remarkable cost/performance advantage demonstrated.

### (3) Blade pitch systems of the wind power

Supercapacitors proved to be superior to the incumbent battery systems, performing far beyond the batteries' limitations. They are particularly beneficial in that they maintain a high level of performance in cold temperatures, require little to no maintenance, and have a very long cycle and calendar life.

### (4) Energy-saving elevator

The adoption of the supercapacitors can recycle the stored potential energy into electricity to be firstly used in the next operation cycle. Thus, the energy-saving is realized. Meanwhile, it can also be used as an emergency back-up power supply of the elevator to greatly improve its safety performance.

### (5) Golf Cart and AGV

The golf cart and AGV using the lithium-ion capacitors make the power supply smaller in size, light in weight, lower in cost, longer in lifetime and easy to use. It is a brand new application model worthy to be developed.

### (6) DC Circuit and Smart Meters

The supercapacitors are widely used in electric appliances such as smart meter, mobile DVR, tachograph, hand-held GPRS equipment, smart phone and tablet PC etc.

### (7) Smart Grid

The supercapacitor microgrid provides short-time power supply, power peak having, improves the power quality of microgrid and improves the performance of microgrid power supply.

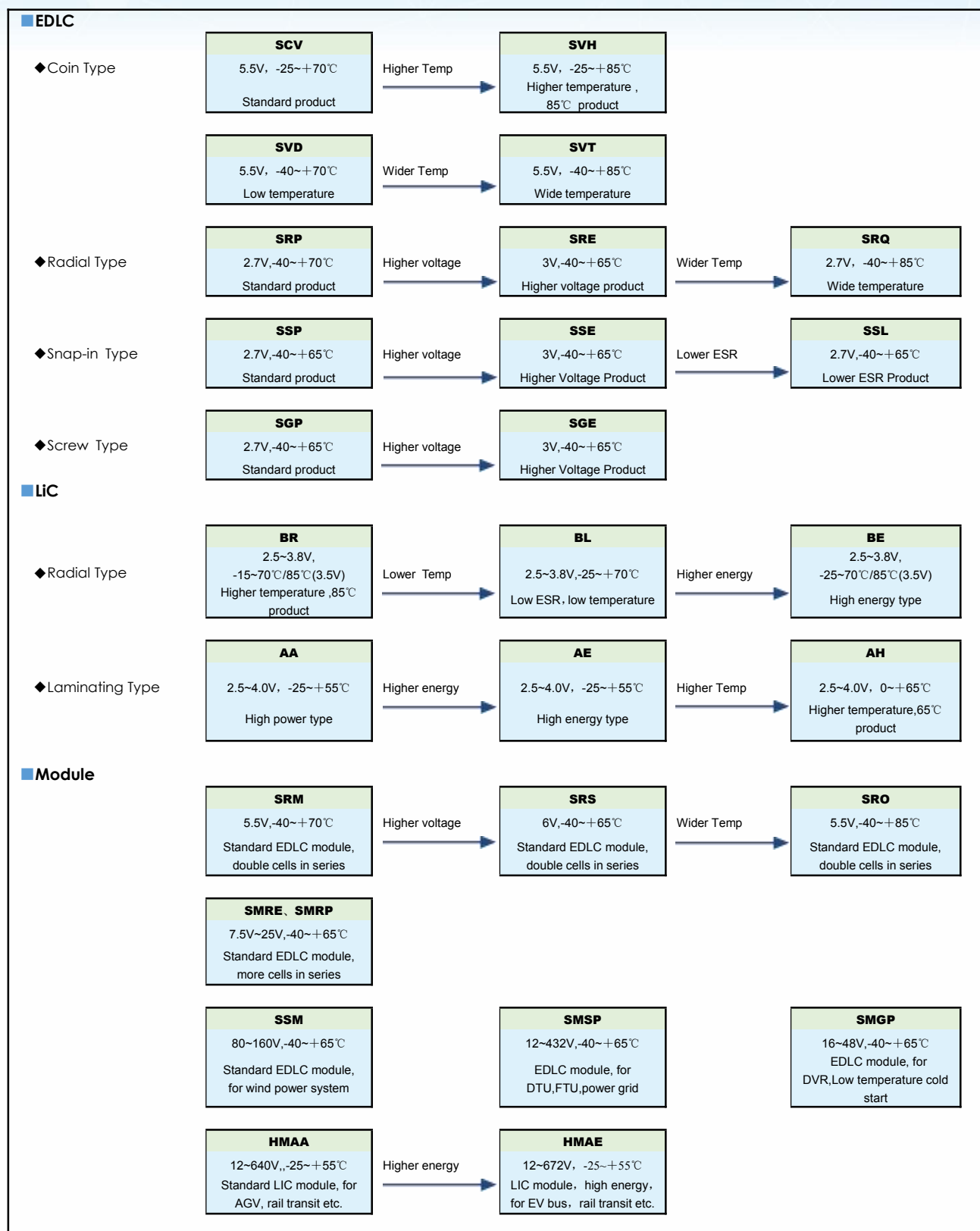
致力于成为最专业的超级电容器  
解决方案提供商。



# List of Super Capacitors 超级电容器目录

Series 型号	Feature 特性	Terminal Type 引出方式	Rated Voltage Range 标称电压范围 (V)	Nominal Capacitance Range 标称容量范围 (F)	Operating Temperature Range 工作温度范围 (°C)	Load Life 负荷寿命	Cycle Life 循环寿命 (Times)	Page 页码	
EDLC 双电层电容器	SCV	Standard product, for memory back-up 标准品, 用于后备记忆	Coin 扣式	5.5	0.1 ~ 1.5	-25 ~ +70	70°C, 1000h	500,000	5
	SVH	Higher temperature, 85°C product 高温, 85°C 品	Coin 扣式	5.5	0.1 ~ 1	-25 ~ +85	85°C, 1000h	500,000	7
	SVD	Low temperature 耐低温	Coin 扣式	5.5	0.1 ~ 1.5	-40 ~ +70	70°C, 1000h	500,000	9
	SVT	Wide temperature range 宽温度范围	Coin 扣式	5.5	0.1 ~ 1	-40 ~ +85	85°C, 1000h	500,000	11
	SRP	Standard product 标准品	Radial 引线式	2.7	0.3 ~ 180	-40 ~ +70	70°C, 1000h	500,000	13
	SRE	Higher Voltage product, 3V series 高压产品, 3V 系列	Radial 引线式	3	1 ~ 180	-40 ~ +65	65°C, 1000h	500,000	15
	SRQ	Higher temperature, 85°C product 高温, 85°C 品	Radial 引线式	2.7	1 ~ 50	-40 ~ +85	85°C, 1000h	500,000	17
	SSP	Standard product 标准品	Snap-in/Lug 焊针式/焊片式	2.7	100 ~ 800	-40 ~ +65	65°C, 1500h	500,000	19
	SSE	Higher Voltage product, 3V series 高压产品, 3V 系列	Snap-in/Lug 焊针式/焊片式	3	100 ~ 600	-40 ~ +65	65°C, 1000h	500,000	21
	SSL	Lower ESR 低 ESR	Snap-in/Lug 焊针式/焊片式	2.7	350 ~ 800	-40 ~ +65	65°C, 1500h	500,000	23
	SGP	Lower ESR, wide temperature range 低 ESR, 宽温	Screw 螺栓式	2.7	650 ~ 3400	-40 ~ +65	65°C, 1500h	1,000,000	25
	SGE	Higher Voltage product, 3V series 高压产品, 3V 系列	Screw 螺栓式	3	650 ~ 3400	-40 ~ +65	65°C, 1000h	1,000,000	27
Lithium Ion Capacitor 锂离子电容器	BR	Higher temperature, 85°C product 高温, 85°C 品	Radial 引线式	2.5 ~ 3.8	10 ~ 1000	-15 ~ +70/85 (3.5V)	70°C (85°C/3.5V), 1000h	500,000	29
	BL	Low ESR, low temperature 低内阻, 耐低温	Radial 引线式	2.5 ~ 3.8	10 ~ 500	-25 ~ +70	70°C, 1000h	250,000	31
	BE	High energy density 高能量密度	Radial 引线式	2.5 ~ 3.8	3 ~ 1400	-25 ~ +70/85 (3.5V)	70°C, 1000h	250,000	33
	AA	High power type 高功率型	Soft pack 软包式	2.5-4	1000-16000	-25-+55	55°C, 1000h	50,000	35
	AE	High energy type 高能量型	Soft pack 软包式	2.5-4	3000-20000	-25-+55	55°C, 1000h	50,000	37
	AH	Higher temperature, 65°C product 高温, 65°C 品	Soft pack 软包式	2.5-4	1000-16000	0-+65	65°C, 1000h	50,000	39
Module 模组	SRM	Standard EDLC module, Double cells in series, for AMR 标准 EDLC 模组, 两单体串联, 用于智能三表	Radial 引线式	5.5	0.07-50	-40-+70	70°C, 1000h	500,000	41
	SRS	Higher voltage EDLC module, Double cells in series, for AMR 高电压 EDLC 模组, 两单体串联, 用于智能三表	Radial 引线式	6	0.5-50	-40-+65	65°C, 1000h	500,000	43
	SRO	Higher temperature EDLC module, Double cells in series, for AMR 高温 EDLC 模组, 两单体串联, 用于智能三表	Radial 引线式	5.5	0.5-25	-40-+85	85°C, 1000h	500,000	45
	SROS	Higher temperature EDLC module, Double cells in series, Fully sealed, for AMR 高温 EDLC 模组, 两单体串联, 全密封, 用于智能三表	Radial 引线式	5.5	0.33-5	-40-+85	85°C, 1000h	500,000	47
	SMRE, SMRP	Standard EDLC module, for server backup power supply, smart three meters 标准 EDLC 模组, 单体多串联, 用于服务器后备电源、智能三表	Radial 引线式	7.5-25	0.33-10	-40-+65	65°C, 1000h	500,000	49
	SMSP	EDLC module, for FTU & DTU, Power grid backup supply, Automotive electronics EDLC 模组, 用于 FTU、DTU、电网后备电源、汽车电子	Module 模组式	12-800	7.5-180	-40-+65	65°C, 1500h	500,000	50
	SSM	Standard EDLC module, for wind power system EDLC 标准模组, 用于风力发电系统	Module 模组式	80-160	6-21.7	-40-+65	65°C, 1500h	500,000	51
	SMGP	DVR voltage sag power compensation system, Low temperature cold start power module DVR 电压暂降功率补偿, 低温冷启动电源模块	Module 模组式	16-48	165-500	-40-+65	65°C, 1500h	500,000	52
	HMAA	LIC module, high power, for AGV, power grid, elevator, rail transit etc. LIC 模组, 高功率型, 用于 AGV、电梯、电网、轨道交通等	Module 模组式	12-720	277-14000	-25-+55	55°C, 1000h	50,000	53
	HMAE	LIC module, high energy, for EV bus, rail transit etc. LIC 模组, 高能量型, 用于电动巴士、轨道交通等	Module 模组式	4.2-700	1190-900000	-25-+55	55°C, 1000h	50,000	55

Series Chart of Super Capacitors 超级电容器系列图表



COIN EDLC MODUSE: SCV SERIES 扣式 EDLC 模组: SCV 系列

Typical application 典型应用

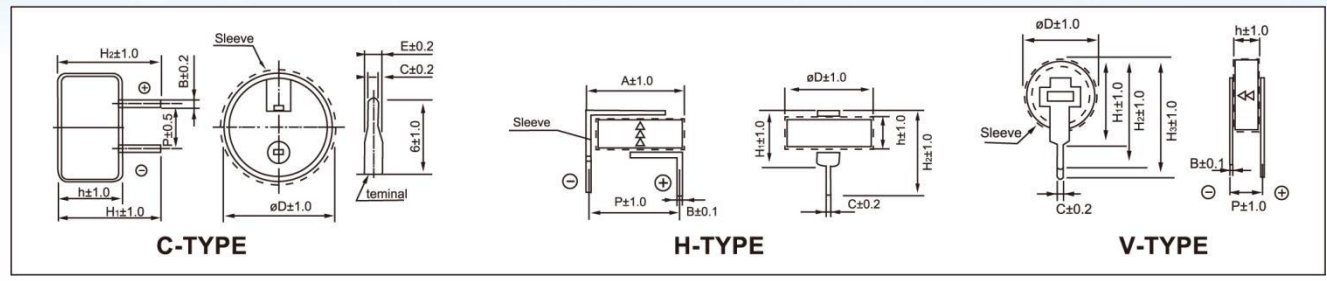
- Computer & peripherals  
计算机及外围设备
- DSL modems & routers DSL  
调制解调器和路由器
- Remote controller Boiler controller Automatic meter reader  
遥控器 锅炉控制器 自动抄表器
- Car audio Intelligent instrument  
汽车音响 智能仪器
- DVD/Blue ray recorder  
DVD/蓝光记录器
- Backup power supply of RTC  
时钟芯片后备电源



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	5.5V		
Operating Temperature Rang 工作温度范围	-25 ~+70°C		
Surge Voltage 浪涌电压	5.6 V		
Capacitance Range 容量范围	0.1~1.5 F		
Capacitance Tolerance 容差范围(25°C)	-20~+80%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -25°C to 70°C 在-25°C至70°C的温度范围内,应满足规范	Capacitance change 容量变化	Within 30% of the initial value at 25°C 在25°C时初始值的50%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 5 times of the initial specified value 不超过初始规定值的5倍
High Temperature Loaded 高温负荷	The specifications shall be met after 5V applied at 70°C for 1000 hours 在70°C下施加5V电压1000小时后,应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 5 times of the initial specified value 不超过初始规定值的5倍
High Temperature Storage 高温存储	The specifications shall be met after storage at 70°C for 1000 hours 在70°C下储存1000小时后,应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 5 times of the initial specified value 不超过初始规定值的5倍

COIN EDLC MODUSE: SCV SERIES 扣式 EDLC 模组: SCV 系列

■ Dimensions 尺寸



■ Ratings for SCV Series SCV 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 引出脚型	Rated Capacitance (25°C) 额定容量 (25°C)	ESR <sub>AC</sub> (1KHz) 交流内阻 (1KHz)	Leakage Current (72hrs) 漏电流 (72 小时)	Size 尺寸								P/N 部品号
				D	h	P	H <sub>1</sub>	H <sub>2</sub>	B	C	E	
(V)	(F)	(Ω)	(mA)	(mm)								-
5.5 (5.6) 5R5 C-TYPE	0.1	75	0.005	13.5	7.0	5.0	12.5	13.5	0.4	0.8	1.2	SCMDVC5R5104ZVC135007E
	0.22	75	0.005	13.5	7.0	5.0	12.5	13.5	0.4	0.8	1.2	SCMDVC5R5224ZVC135007E
	0.33	50	0.008	13.5	7.0	5.0	12.5	13.5	0.4	0.8	1.2	SCMDVC5R5334ZVC135007E
	0.47	50	0.008	13.5	7.0	5.0	12.5	13.5	0.4	0.8	1.2	SCMDVC5R5474ZVC135007E
	1.0	30	0.012	20.5	7.8	5.0	12.8	13.8	0.4	0.8	1.2	SCMDVC5R5105ZVC205007E
1.5	30	0.012	20.5	7.8	5.0	12.8	13.8	0.4	0.8	1.2	SCMDVC5R5155ZVC205007E	

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 引出脚型	Rated Capacitance (25°C) 额定容量 (25°C)	ESR <sub>AC</sub> (1KHz) 交流内阻 (1KHz)	Leakage Current (72hrs) 漏电流 (72 小时)	Size 尺寸								P/N 部品号
				D	h	P	H <sub>1</sub>	H <sub>2</sub>	A	B	C	
(V)	(F)	(Ω)	(mA)	(mm)								-
5.5 (5.6) 5R5 H-TYPE	0.1	75	0.005	11.5	4.8	10	6	9	12.5	0.2	0.8	SCMDVC5R5104ZVH115004E
	0.22	75	0.005	11.5	4.8	10	6	9	12.5	0.2	0.8	SCMDVC5R5224ZVH115004E
	0.33	50	0.008	11.5	4.8	10	6	9	12.5	0.2	0.8	SCMDVC5R5334ZVH115004E
	0.47	50	0.008	11.5	4.8	10	6	9	12.5	0.2	0.8	SCMDVC5R5474ZVH115004E
	1.0	30	0.012	19	4.8	20	7	9.5	20	0.2	1.0	SCMDVC5R5105ZVH190004E
1.5	30	0.012	19	4.8	20	7	9.5	20	0.2	1.0	SCMDVC5R5155ZVH190004E	

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 引出脚型	Rated Capacitance (25°C) 额定容量 (25°C)	ESR <sub>AC</sub> (1KHz) 交流内阻 (1KHz)	Leakage Current (72hrs) 漏电流 (72 小时)	Size 尺寸								P/N 部品号
				D	h	P	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	B	C	
(V)	(F)	(Ω)	(mA)	(mm)								-
5.5 (5.6) 5R5 V-TYPE	0.1	75	0.005	11.5	4.8	5	13	16.5	16.5	0.2	0.8	SCMDVC5R5104ZVV115004E
	0.22	75	0.005	11.5	4.8	5	13	16.5	16.5	0.2	0.8	SCMDVC5R5224ZVV115004E
	0.33	50	0.008	11.5	4.8	5	13	16.5	16.5	0.2	0.8	SCMDVC5R5334ZVV115004E
	0.47	50	0.008	11.5	4.8	5	13	16.5	16.5	0.2	0.8	SCMDVC5R5474ZVV115004E
	1.0	30	0.012	19	4.8	5	20.5	24.5	25.5	0.2	1.0	SCMDVC5R5105ZVV190004E
1.5	30	0.012	19	4.8	5	20.5	24.5	25.5	0.2	1.0	SCMDVC5R5155ZVV190004E	

## COIN EDLC MODULE: SVH SERIES 扣式 EDLC 模组: SVH 系列

## ■ Typical application 典型应用

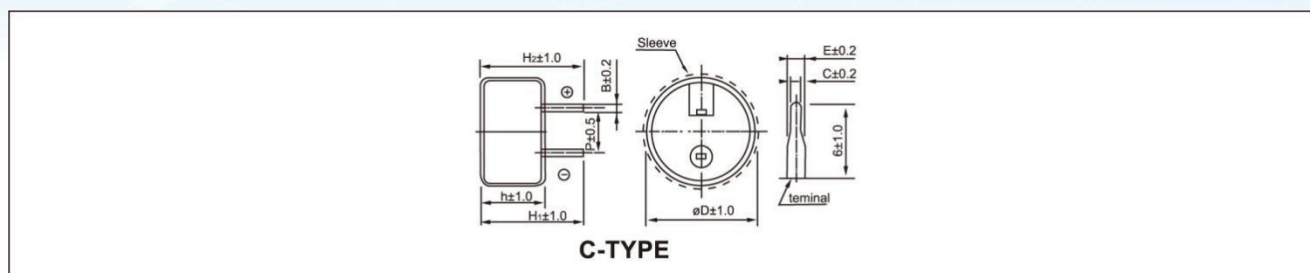
- Computer & peripherals, DSL modems & routers DSL  
计算机及外围设备、调制解调器和路由器
- Automatic meter reader, Rotary encoder  
自动抄表器、旋转编码器
- Car Navigation  
汽车导航
- Machine Controller, Breaker  
机器控制、断路器
- Backup power supply of RTC, Electric power meter  
时钟芯片后备电源、电能表



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	5.5V		
Operating Temperature Range 工作温度范围	-25 ~+85°C		
Surge Voltage 浪涌电压	5.6 V		
Capacitance Range 容量范围	0.1~1 F		
Capacitance Tolerance 容差范围(25°C)	-20~+80%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -25°C to 85°C 在-25°C至85°C的温度范围内,应满足规范	Capacitance change 容量变化	Within 50% of the initial value at 25°C 在25°C时初始值的50%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 5 times of the initial specified value 不超过初始规定值的5倍
High Temperature Loaded 高温负荷	The specifications shall be met after 5V applied at 85°C for 1000 hours 在85°C下施加5V电压1000小时后,应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 5 times of the initial specified value 不超过初始规定值的5倍
High Temperature Storage 高温存储	The specifications shall be met after storage at 85°C for 1000 hours 在85°C下储存1000小时后,应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 5 times of the initial specified value 不超过初始规定值的5倍

## COIN EDLC MODULE: SVH SERIES 扣式 EDLC 模组: SVH 系列

## ■ Dimensions 尺寸



## ■ Ratings for SVH Series SVH 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 引出脚型	Rated Capacitance (25°C) 额定容量 (25°C)	ESR <sub>AC</sub> (1KHz) 交流内阻 (1KHz)	Leakage Current (72hrs) 漏电流 (72 小时)	Size 尺寸								P/N 部品号
				D	h	P	H <sub>1</sub>	H <sub>2</sub>	B	C	E	
(V)	(F)	(Ω)	(mA)	(mm)								-
5.5 (5.6) 5R5 C-TYPE	0.1	75	0.005	13.5	9.0	5.0	14.5	15.5	0.4	0.8	1.2	SCMDVH5R5104ZVC135009E
	0.22	75	0.005	13.5	9.0	5.0	14.5	15.5	0.4	0.8	1.2	SCMDVH5R5224ZVC135009E
	0.33	50	0.008	13.5	9.0	5.0	14.5	15.5	0.4	0.8	1.2	SCMDVH5R5334ZVC135009E
	0.68	30	0.015	20.5	10	5.0	15	16	0.4	0.8	1.2	SCMDVH5R5684ZVC205010E
	1.0	30	0.015	20.5	10	5.0	15	16	0.4	0.8	1.2	SCMDVH5R5105ZVC205010E

COIN EDLC MODULE: SVD SERIES 扣式 EDLC 模组: SVD 系列

Typical application 典型应用

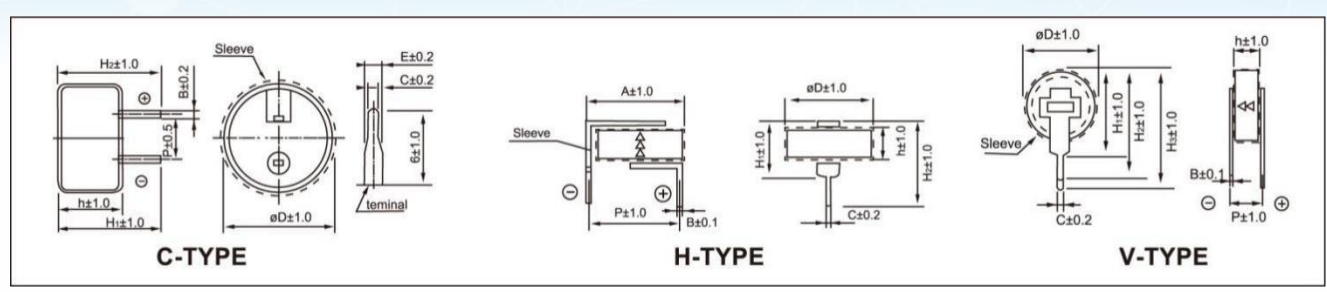
- Computer & peripherals  
计算机及外围设备
- DSL modems & routers DSL  
调制解调器和路由器
- Remote controller Boiler controller Automatic meter reader  
遥控器 锅炉控制器 自动抄表器
- Car audio Intelligent instrument  
汽车音响 智能仪器
- DVD/Blue ray recorder  
DVD/蓝光记录器
- Backup power supply of RTC



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	5.5V		
Operating Temperature Rang 工作温度范围	-40 ~+70℃		
Surge Voltage 浪涌电压	5.6 V		
Capacitance Range 容量范围	0.1~1.5 F		
Capacitance Tolerance 容差范围(25℃)	-20~+80%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40℃ to 70℃ 在-40℃至 70℃的温度范围内, 应满足规范	Capacitance change 容量变化	Within 50% of the initial value at 25℃ 在 25℃时初始值的 50%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 7 times of the initial specified value 不超过初始规定值的 7 倍
High Temperature Loaded 高温负荷	The specifications shall be met after 5V applied at 70℃ for 1000 hours 在 70℃下施加 5V 电压 1000 小时后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 5 times of the initial specified value 不超过初始规定值的 5 倍
High Temperature Storage 高温存储	The specifications shall be met after storage at 70℃ for 1000 hours 在 70℃下储存 1000 小时后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 5 times of the initial specified value 不超过初始规定值的 5 倍

COIN EDLC MODULE: SVD SERIES 扣式 EDLC 模组: SVD 系列

■ Dimensions 尺寸



■ Ratings for SVD Series SVD 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 引出脚型	Rated Capacitance (25°C) 额定容量 (25°C)	ESR <sub>AC</sub> (1KHz) 交流内阻 (1KHz)	Leakage Current (72hrs) 漏电流 (72 小时)	Size 尺寸								P/N 部品号
				D	h	P	H <sub>1</sub>	H <sub>2</sub>	B	C	E	
(V)	(F)	(Ω)	(mA)	(mm)								-
5.5 (5.6) 5R5  C-TYPE	0.1	75	0.005	13.5	7.0	5.0	12.5	13.5	0.4	0.8	1.2	SCMDVD5R5104ZVC135007E
	0.22	75	0.005	13.5	7.0	5.0	12.5	13.5	0.4	0.8	1.2	SCMDVD5R5224ZVC135007E
	0.33	50	0.008	13.5	7.0	5.0	12.5	13.5	0.4	0.8	1.2	SCMDVD5R5334ZVC135007E
	0.47	50	0.008	13.5	7.0	5.0	12.5	13.5	0.4	0.8	1.2	SCMDVD5R5474ZVC135007E
	1.0	30	0.012	20.5	7.8	5.0	12.8	13.8	0.4	0.8	1.2	SCMDVD5R5105ZVC205007E
1.5	30	0.012	20.5	7.8	5.0	12.8	13.8	0.4	0.8	1.2	SCMDVD5R5155ZVC205007E	

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 引出脚型	Rated Capacitance (25°C) 额定容量 (25°C)	ESR <sub>AC</sub> (1KHz) 交流内阻 (1KHz)	Leakage Current (72hrs) 漏电流 (72 小时)	Size 尺寸								P/N 部品号
				D	h	P	H <sub>1</sub>	H <sub>2</sub>	A	B	C	
(V)	(F)	(Ω)	(mA)	(mm)								-
5.5 (5.6) 5R5  H-TYPE	0.1	75	0.005	11.5	4.8	10	6	9	12.5	0.2	0.8	SCMDVD5R5104ZVH115004E
	0.22	75	0.005	11.5	4.8	10	6	9	12.5	0.2	0.8	SCMDVD5R5224ZVH115004E
	0.33	50	0.008	11.5	4.8	10	6	9	12.5	0.2	0.8	SCMDVD5R5334ZVH115004E
	0.47	50	0.008	11.5	4.8	10	6	9	12.5	0.2	0.8	SCMDVD5R5474ZVH115004E
	1.0	30	0.012	19	4.8	20	7	9.5	20	0.2	1.0	SCMDVD5R5105ZVH190004E
1.5	30	0.012	19	4.8	20	7	9.5	20	0.2	1.0	SCMDVD5R5155ZVH190004E	

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 引出脚型	Rated Capacitance (25°C) 额定容量 (25°C)	ESR <sub>AC</sub> (1KHz) 交流内阻 (1KHz)	Leakage Current (72hrs) 漏电流 (72 小时)	Size 尺寸								P/N 部品号
				D	h	P	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	B	C	
(V)	(F)	(Ω)	(mA)	(mm)								-
5.5 (5.6) 5R5  V-TYPE	0.1	75	0.005	11.5	4.8	5	13	16.5	16.5	0.2	0.8	SCMDVD5R5104ZVV115004E
	0.22	75	0.005	11.5	4.8	5	13	16.5	16.5	0.2	0.8	SCMDVD5R5224ZVV115004E
	0.33	50	0.008	11.5	4.8	5	13	16.5	16.5	0.2	0.8	SCMDVD5R5334ZVV115004E
	0.47	50	0.008	11.5	4.8	5	13	16.5	16.5	0.2	0.8	SCMDVD5R5474ZVV115004E
	1.0	30	0.012	19	4.8	5	20.5	24.5	25.5	0.2	1.0	SCMDVD5R5105ZVV190004E
1.5	30	0.012	19	4.8	5	20.5	24.5	25.5	0.2	1.0	SCMDVD5R5155ZVV190004E	

## COIN EDLC MODULE: SVT SERIES 扣式 EDLC 模组: SVT 系列

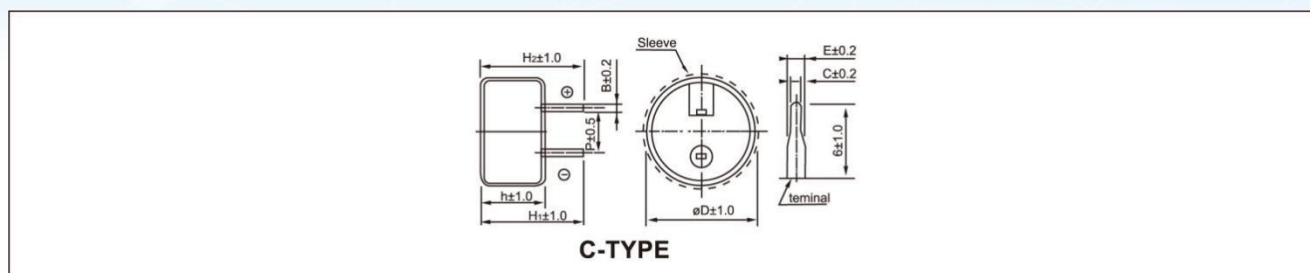
## ■ Typical application 典型应用

- Computer & peripherals, DSL modems & routers DSL  
计算机及外围设备、调制解调器和路由器
- Automatic meter reader, Rotary encoder  
自动抄表器、旋转编码器
- Car Navigation  
汽车导航
- Machine Controller, Breaker  
机器控制、断路器
- Backup power supply of RTC, Electric power meter  
时钟芯片后备电源、电能表



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	5.5V		
Operating Temperature Range 工作温度范围	-40 ~+85°C		
Surge Voltage 浪涌电压	5.6 V		
Capacitance Range 容量范围	0.1~1 F		
Capacitance Tolerance 容差范围(25°C)	-20~+80%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 85°C 在-40°C至85°C的温度范围内,应满足规范	Capacitance change 容量变化	Within 50% of the initial value at 25°C 在25°C时初始值的50%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 7 times of the initial specified value 不超过初始规定值的7倍
High Temperature Loaded 高温负荷	The specifications shall be met after 5V applied at 85°C for 1000 hours 在85°C下施加5V电压1000小时后,应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 5 times of the initial specified value 不超过初始规定值的5倍
High Temperature Storage 高温存储	The specifications shall be met after storage at 85°C for 1000 hours 在85°C下储存1000小时后,应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 5 times of the initial specified value 不超过初始规定值的5倍

## ■ Dimensions 尺寸



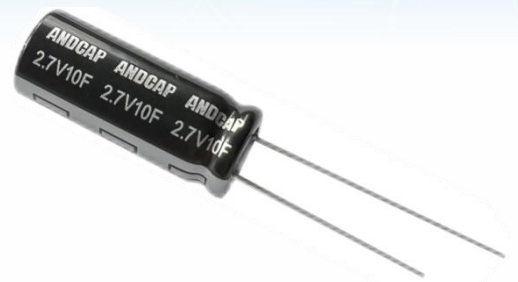
## ■ Ratings for SVT Series SVT 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 引出脚型	Rated Capacitance (25°C) 额定容量 (25°C)	ESR <sub>AC</sub> (1KHz) 交流内阻 (1KHz)	Leakage Current (72hrs) 漏电流 (72小时)	Size 尺寸								P/N 部品号
				D	h	P	H <sub>1</sub>	H <sub>2</sub>	B	C	E	
(V)	(F)	(Ω)	(mA)	(mm)								-
5.5 (5.6) 5R5 C-TYPE	0.1	75	0.005	13.5	9.0	5.0	14.5	15.5	0.4	0.8	1.2	SCMDVT5R5104ZVC135009E
	0.22	75	0.005	13.5	9.0	5.0	14.5	15.5	0.4	0.8	1.2	SCMDVT5R5224ZVC135009E
	0.33	50	0.008	13.5	9.0	5.0	14.5	15.5	0.4	0.8	1.2	SCMDVT5R5334ZVC135009E
	0.68	30	0.015	20.5	9.8	5.0	14.8	15.8	0.4	0.8	1.2	SCMDVT5R5684ZVC205009E
	1.0	30	0.015	20.5	9.8	5.0	14.8	15.8	0.4	0.8	1.2	SCMDVT5R5105ZVC205009E

**RADIAL EDLC CELL : SRP SERIES 引线式 EDLC 单体: SRP 系列**

**Typical application 典型应用**

- **Intelligent instruments: electronic meter, water meter, gas meter, hot meter**  
智能仪表: 国网电表、水表、燃气表、热表
- **Communication terminal: RTU/DTU, DTU, FTU, fault current indicator**  
通讯终端: 智能测控终端、智能配电终端、智能馈线终端、故障指示器
- **Consumer: Toys, robots, smart home, medical devices**  
消费类: 玩具、机器人、智能家居、医疗器械
- **Energy storage: server backup power, motor drive, brake, charging pile, security, fire protection**  
储能: 服务器备电、马达驱动、闸机、充电桩、安防、消防
- **Auto electronics: auto recorder, auto door control, audio control, auto diagnosis system, wireless charging**  
汽车电子: 汽车记录仪、汽车门控、音响控制、汽车诊断系统、无线充



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	2.7V		
Operating Temperature Range 工作温度范围	-40 ~ +70°C (-40 ~ +85°C@2.3V)		
Surge Voltage 浪涌电压	2.85V		
Capacitance Range 容量范围	0.3 ~180 F		
Capacitance Tolerance 容差范围 (25°C)	-10 ~+30%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 70°C 在-40°C至 70°C温度范围内, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value at 25°C 在 25°C时初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的 4 倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 70°C for 1000 hours 在 70°C温度下, 以额定电压恒压 1000h 后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的 4 倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 70°C for 1000 hours 在 70°C温度下, 不加电压储存 1000h 后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
Cycle Life 循环寿命	The specifications shall be met after 500,000 cycles at 25°C, cycle of charge/discharge from V <sub>R</sub> to 1/2V <sub>R</sub> 在 25°C温度下, V <sub>R</sub> ~ 1/2V <sub>R</sub> 充放电循环 500,000 次后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍

RADIAL EDLC CELL : SRP SERIES 引线式 EDLC 单体: SRP 系列

■ Dimensions 尺寸

ΦD	4	5	6.3	8	10	12	12.5	16	18	22
p	1.6	2.0	3.5	3.5	5.0			7.5		10
Φd	0.45	0.5		0.6			0.8		1.0	
α	1	1.5			2.0				3.5	

■ Ratings for SRP Series SRP 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Cap. 25°C 额定容量 25°C	Impedance 内阻		Leakage Current 漏电流(72hrs)	Size 尺寸 ΦDxL	Weight 重量	P/N 产品代码
		ESR <sub>DC</sub> 直流内阻	ESR <sub>AC</sub> 交流内阻 (1KHz)				
(v)	(F)	(mΩ)	(mΩ)	(mA)	(mm)	(g)	-
2.7 (2.85) 2R7	0.3	3400	1700	0.004	4 x 10	0.35	SCCDPR2R7304QRH040010EP
	0.35	1200	600	0.004	5 x 12	0.35	SCCDPR2R7354QRH050012EP
	0.5	900	450	0.005	5 x 12	0.40	SCCDPR2R7504QRH050012EP
	0.8	700	350	0.006	6.3x 12	0.66	SCCDPR2R7804QRH063012EP
	1	825	550	0.005	4 x 25	0.52	SCCDPR2R7105QRH040025EP
	1	400	200	0.008	8 x 12	0.85	SCCDPR2R7105QRH080012EP
	1	400	200	0.008	8 x 14	0.90	SCCDPR2R7105QRH080014EP
	1.2	680	450	0.006	4 x 35	0.65	SCCDPR2R7125QRH040035EP
	2	280	140	0.010	8 x 12	1.00	SCCDPR2R7205QRH080012EP
	2	280	140	0.010	8 x 14	1.00	SCCDPR2R7205QRH080014EP
	3	150	75	0.012	8 x 20	1.40	SCCDPR2R7305QRH080020EP
	3.3	150	75	0.014	8 x 20	1.43	SCCDPR2R7335QRH080020EP
	5	180	90	0.016	8x 25	1.70	SCCDPR2R7505QRH080025EP
	5	120	60	0.016	10 x 20	2.10	SCCDPR2R7505QRH100020EP
	7	130	65	0.020	10 x 20	2.20	SCCDPR2R7705QRH100020EP
	7	110	55	0.020	10 x 25	2.70	SCCDPR2R7705QRH100025EP
	10	90	45	0.030	10 x 25	2.80	SCCDPR2R7106QRH100025EP
	10	80	40	0.030	10 x 30	3.20	SCCDPR2R7106QRH100030EP
	10	80	40	0.030	12.5 x 20	3.40	SCCDPR2R7106QRH125020EP
	10	80	40	0.030	12.5 x 25	3.60	SCCDPR2R7106QRH125025EP
	15	60	30	0.045	12.5 x 25	4.30	SCCDPR2R7156QRH125025EP
	20	50	25	0.060	16x20	5.90	SCCDPR2R7206QRH160020ET
	25	44	22	0.080	16 x 25	7.40	SCCDPR2R7256QRH160025ET
	30	36	18	0.100	16x30	8.40	SCCDPR2R7306QRH160030EP
	40	36	18	0.120	16x35	9.90	SCCDPR2R7406QRH160035ET
	50	32	16	0.140	18 x 40	13.6	SCCDPR2R7506QRH180040ET
	60	32	16	0.140	18 x 40	13.6	SCCDPR2R7606QRH180040ET
70	36	18	0.200	18 x 50	16.9	SCCDPR2R7706QRH180050ET	
100	36	18	0.300	18 x 60	16.9	SCCDPR2R7107QRH180060ET	
100	32	16	0.300	22x45	22.5	SCCDPR2R7107QRH220045EP	
120	32	16	0.300	22x45	22.5	SCCDPR2R7127QRH220045EP	
180	32	16	0.900	22x55	27.0	SCCDPR2R7187QRH220055EP	

## RADIAL EDLC CELL: SRE SERIES 引线式 EDLC 单体: SRE 系列

## Typical application 典型应用

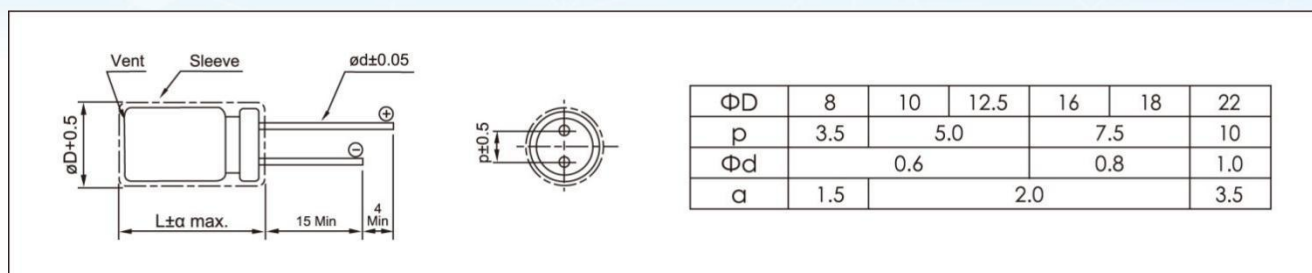
- Intelligent instruments: electronic meter, water meter, gas meter, hot meter  
智能仪表: 国网电表、水表、燃气表、热表
- Communication terminal: RTU/DTU, DTU, FTU, fault current indicator  
通讯终端: 智能测控终端、智能配电终端、智能馈线终端、故障指示器
- Consumer: Toys, robots, smart home, medical devices  
消费类: 玩具、机器人、智能家居、医疗器械
- Auto electronics: auto recorder, auto door control, audio control, auto diagnosis system, wireless charging  
汽车电子: 汽车记录仪、汽车门控、音响控制、汽车诊断系统、无线充
- Energy storage: server backup power, motor drive, brake, charging pile, security, fire protection  
储能: 服务器备电、马达驱动、闸机、充电桩、安防、消防



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	3V		
Operating Temperature Range 工作温度范围	-40 ~ +65°C (-40 ~ +85°C @2.5V)		
Surge Voltage 浪涌电压	3.2V		
Capacitance Range 容量范围	1 ~ 180 F		
Capacitance Tolerance 容差范围 (25°C)	-10 ~ +30%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 65°C 在-40°C至65°C温度范围内, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value at 25°C 在25°C时初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 65°C for 1000 hours 在65°C温度下, 以额定电压恒压1000h后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 65°C for 1000 hours 在65°C温度下, 不加电压储存1000h后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍
Cycle Life 循环寿命	The specifications shall be met after 500,000 cycles at 25°C, cycle of charge/discharge from V <sub>R</sub> to 1/2V <sub>R</sub> 在25°C温度下, V <sub>R</sub> ~ 1/2V <sub>R</sub> 充放电循环500,000次后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍

## RADIAL EDLC CELL: SRE SERIES 引线式 EDLC 单体: SRE 系列

## ■ Dimensions 尺寸



## ■ Ratings for SRE Series SRE 系列额定值

$U_R$ (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Cap. 25°C 额定容量 25°C	Impedance 内阻		Leakage Current 漏电流(72hrs)	Size 尺寸 $\Phi D \times L$	Weight 重量	P/N 产品代码
		$ESR_{DC}$ 直流内阻	$ESR_{AC}$ 交流内阻 (1KHz)				
(v)	(F)	(m $\Omega$ )	(m $\Omega$ )	(mA)	(mm)	(g)	-
3 (3.2) 3R0	1	800	400	0.010	8 x 14	0.9	SCCDER3R0105QRH080014EP
	2	320	160	0.012	8 x 14	1.0	SCCDER3R0205QRH080014EP
	3	160	80	0.014	8 x 20	1.4	SCCDER3R0305QRH080020EP
	3.3	160	80	0.014	8 x 20	1.4	SCCDER3R0335QRH080020EP
	5	190	95	0.014	8 x 25	1.7	SCCDER3R0505QRH080025EP
	5	160	80	0.020	10 x 20	2.2	SCCDER3R0505QRH100020EP
	7	120	60	0.030	10 x 25	2.7	SCCDER3R0705QRH100025EP
	10	180	90	0.045	10 x 25	2.8	SCCDER3R0106QRH100025EP
	10	100	50	0.045	10 x 30	3.2	SCCDER3R0106QRH100030EP
	15	70	35	0.055	12.5 x 25	4.3	SCCDER3R0156QRH125025EP
	20	56	28	0.070	12.5 x 30	5.2	SCCDER3R0206QRH125030EP
	25	50	25	0.100	16 x 25	7.4	SCCDER3R0256QRH160025ET
	30	36	18	0.100	16 x 30	8.40	SCCDER3R0306QRH160030ET
	50	40	20	0.350	18 x 40	13.8	SCCDER3R0506QRH180040ET
	60	40	20	0.400	18 x 40	13.3	SCCDER3R0606QRH180040ET
	70	40	20	0.450	16 x 50	16.9	SCCDER3R0706QRH160050ET
	100	36	18	0.550	22 x 45	22.5	SCCDER3R0107QRH220045EP
	180	32	16	0.900	22 x 55	27.0	SCCDER3R0187QRH220055EP

## RADIAL EDLC CELL : SRQ SERIES 引线式 EDLC 单体: SRQ 系列

## Typical application 典型应用

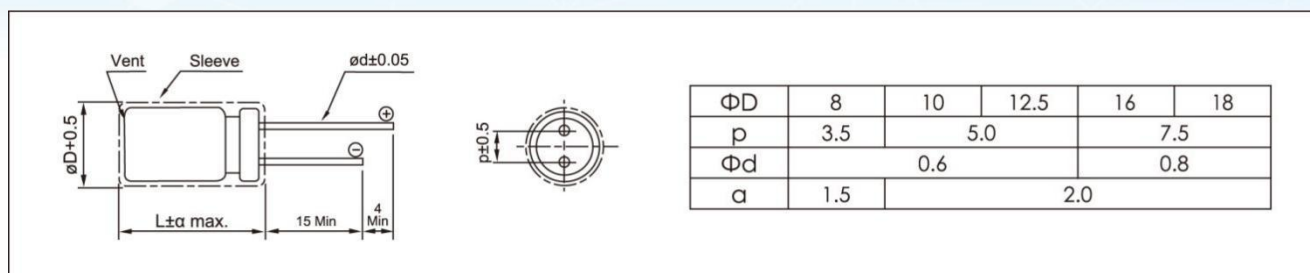
- Intelligent instruments: electronic meter, water meter, gas meter, hot meter  
智能仪表: 国网电表、水表、燃气表、热表
- Communication terminal: RTU/DTU, DTU, FTU, fault current indicator  
通讯终端: 智能测控终端、智能配电终端、智能馈线终端、故障指示器
- Consumer: Toys, robots, smart home, medical devices  
消费类: 玩具、机器人、智能家居、医疗器械
- Auto electronics: auto recorder, auto door control, audio control, auto diagnosis system, wireless charging  
汽车电子: 汽车记录仪、汽车门控、音响控制、汽车诊断系统、无线充
- Energy storage: server backup power, motor drive, brake, charging pile, security, fire protection  
储能: 服务器备电、马达驱动、闸机、充电桩、安防、消防



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	2.7V		
Operating Temperature Range 工作温度范围	-40 ~ +85°C		
Surge Voltage 浪涌电压	2.85V		
Capacitance Range 容量范围	1 ~ 50 F		
Capacitance Tolerance 容差范围 (25°C)	-10 ~ +30%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 85°C 在-40°C至85°C温度范围内, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value at 25°C 在25°C时初始值的30%以内
		ESR <sub>ac</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 85°C for 1000 hours 在85°C温度下, 以额定电压恒压1000h后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>ac</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 85°C for 1000 hours 在85°C温度下, 不加电压储存1000h后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>ac</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍
Cycle Life 循环寿命	The specifications shall be met after 500,000 cycles at 25°C, cycle of charge/discharge from V <sub>R</sub> to 1/2V <sub>R</sub> 在25°C温度下, V <sub>R</sub> ~ 1/2V <sub>R</sub> 充放电循环500,000次后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>ac</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍

## RADIAL EDLC CELL : SRQ SERIES 引线式 EDLC 单体: SRQ 系列

## ■ Dimensions 尺寸



## ■ Ratings for SRQ Series SRQ 系列额定值

$U_R$ (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Cap. 25°C 额定容量 25°C	Impedance 内阻		Leakage Current 漏电流(72hrs)	Size 尺寸 $\Phi D \times L$	Weight 重量	P/N 产品代码
		$ESR_{DC}$ 直流内阻	$ESR_{AC}$ 交流内阻 (1KHz)				
(v)	(F)	(m $\Omega$ )	(m $\Omega$ )	(mA)	(mm)	(g)	-
2.7 (2.85) 2R7	1	800	400	0.008	8 x 14	0.9	SCCDQR2R7105QRH080014EP
	2	320	160	0.010	8 x 14	1.0	SCCDQR2R7205QRH080014EP
	3	160	80	0.012	8 x 20	1.4	SCCDQR2R7305QRH080020EP
	3.3	160	80	0.012	8 x 20	1.4	SCCDQR2R7335QRH080020EP
	5	160	80	0.016	10 x 20	2.2	SCCDQR2R7505QRH100020EP
	7	120	60	0.020	10 x 25	2.7	SCCDQR2R7705QRH100025EP
	10	180	90	0.030	10 x 25	2.8	SCCDQR2R7106QRH100025EP
	10	100	50	0.030	10 x 30	3.2	SCCDQR2R7106QRH100030EP
	10	100	50	0.030	12.5 x 20	3.4	SCCDQR2R7106QRH125020EP
	15	70	35	0.045	12.5 x 25	4.3	SCCDQR2R7156QRH125025EP
	20	56	28	0.006	12.5 x 30	5.2	SCCDQR2R7206QRH125030EP
	25	50	25	0.080	16 x 25	7.4	SCCDQR2R7256QRH160025ET
	50	40	20	0.140	18 x 40	13.8	SCCDQR2R7506QRH180040ET

# LUG/SNAP-IN EDLC CELL: SSP SERIES 焊针式/焊片式 EDLC 单体: SSP 系列

## Typical application 典型应用

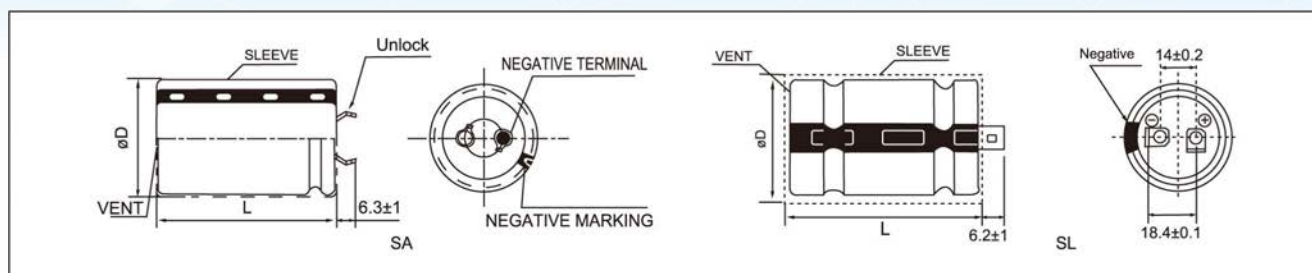
- Backup power supply of fan pitch control system  
风机变桨控制系统的后备电源
- Energy storage system of construction machinery  
工程机械储能系统
- Electric tool  
电动工具
- Industrial standby power supply  
工业备用电源
- AGV on-board power supply  
AGV 车载电源



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	2.7V		
Operating Temperature Range 工作温度范围	-40 ~+65°C (-40 ~+85°C@2.3V)		
Surge Voltage 浪涌电压	2.85V		
Capacitance Range 容量范围	100~800 F		
Capacitance Tolerance 容差范围 (25°C)	-10~+30%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 65°C 在-40°C至65°C温度范围内, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value at 25°C 在25°C时初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 65°C for 1500 hours 在65°C温度下, 以额定电压恒压1500h后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 70°C for 1000 hours 在70°C温度下, 不加电压储存1000h后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
Cycle Life 循环寿命	The specifications shall be met after 500,000 cycles at 25°C, cycle of charge/discharge from V <sub>R</sub> to 1/2V <sub>R</sub> 在25°C温度下, V <sub>R</sub> ~ 1/2V <sub>R</sub> 充放电循环500,000次后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍

## LUG/SNAP-IN EDLC CELL: SSP SERIES 焊针式/焊片式 EDLC 单体: SSP 系列

## ■ Dimensions 尺寸



## ■ Ratings for SSP Series SSP 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Cap. 25°C 额定容量 25°C	Impedance 内阻		Leakage Current 漏电流(72hrs)	Size 尺寸 ΦD×L	Weight 重量	P/N 产品代码
		ESR <sub>DC</sub> 直流内阻	ESR <sub>AC</sub> 交流内阻 (1KHz)				
(V)	(F)	(mΩ)	(mΩ)	(mA)	(mm)	(g)	-
2.7 (2.85) 2R7	100	12	8	0.3	22 x 45	21	SCCDPS2R7107QSA220045E
	120	12	8	0.3	22 x 45	21	SCCDPS2R7127QSA220045E
	160	12	8	0.5	22x 55	30	SCCDPS2R7167QSA220055E
	150	11	7	0.5	25 x 50	30	SCCDPS2R7157QSA250050E
	200	10	6	0.7	30 x 50	36	SCCDPS2R7207QSA300050ES
	220	10	6	0.7	30 x 50	39	SCCDPS2R7227QSA300050ES
	240	9	5	0.7	30 x 50	40	SCCDPS2R7247QSA300050ES
	350	3.5	3	1.0	35 x 60	73	SCCDPS2R7357QSL350060ES
	400	3.2	2.8	1.0	35 x 60	73	SCCDPS2R7407QSL350060ES
	470	3.5	3	1.3	35 x 60	73	SCCDPS2R7477QSL350060ES
	500	3.4	2.9	1.3	35 x 67	76	SCCDPS2R7507QSL350067ES
	600	3	2.5	1.5	35 x 70	90	SCCDPS2R7607QSL350070ES
800	3	2.5	2	40 x 70	120	SCCDPS2R7807QSL400070ES	

LUG/SNAP-IN EDLC CELL:SSE SERIES 焊针式/焊片式 EDLC 单体: SSE 系列

Typical application 典型应用

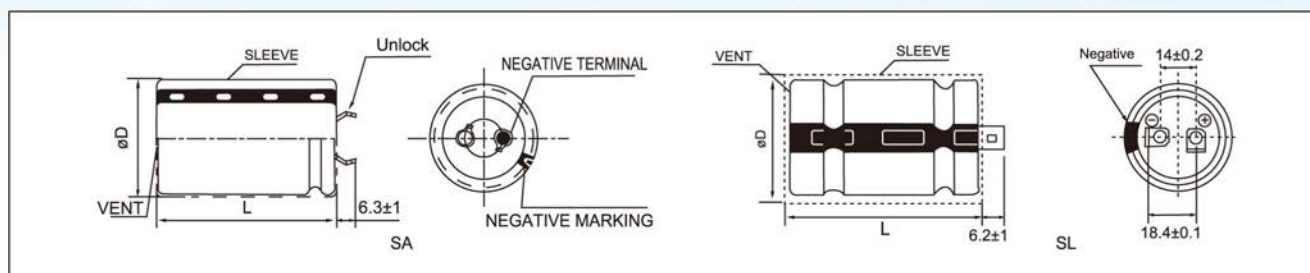
- Backup power supply of fan pitch control system  
风机变桨控制系统的后备电源
- Energy storage system of construction machinery  
工程机械储能系统
- Electric tool  
电动工具
- Industrial standby power supply  
工业备用电源
- AGV on-board power supply  
AGV 车载电源



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	3V		
Operating Temperature Range 工作温度范围	-40 ~+65°C (-40 ~+85°C@2.5V)		
Surge Voltage 浪涌电压	3.15V		
Capacitance Range 容量范围	100~600 F		
Capacitance Tolerance 容差范围 (25°C)	-10~+30%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 65°C 在-40°C至65°C温度范围内, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value at 25°C 在25°C时初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 65°C for 1000 hours 在65°C温度下, 以额定电压恒压1000h后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 70°C for 1000 hours 在70°C温度下, 不加电压储存1000h后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
Cycle Life 循环寿命	The specifications shall be met after 500,000 cycles at 25°C, cycle of charge/discharge from V <sub>R</sub> to 1/2V <sub>R</sub> 在25°C温度下, V <sub>R</sub> ~1/2V <sub>R</sub> 充放电循环500,000次后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍

## LUG/SNAP-IN EDLC CELL: SSE SERIES 焊针式/焊片式 EDLC 单体: SSE 系列

## ■ Dimensions 尺寸



## ■ Ratings for SSE Series SSE 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Cap. 25°C 额定容量 25°C	Impedance 内阻		Leakage Current 漏电流(72hrs)	Size 尺寸 ΦD×L	Weight 重量	P/N 产品代码
		ESR <sub>DC</sub> 直流内阻	ESR <sub>AC</sub> 交流内阻 (1KHz)				
(V)	(F)	(mΩ)	(mΩ)	(mA)	(mm)	(g)	-
3 (3.15) 3R0	100	12	8	0.3	22 x 45	21	SCCDES3R0107QSA220045E
	120	12	8	0.3	22 x 45	21	SCCDES3R0127QSA220045E
	160	12	8	0.5	22 x 55	30	SCCDES3R0167QSA220055E
	150	11	7	0.5	25 x 50	30	SCCDES3R0157QSA250050E
	200	10	6	0.7	30 x 50	36	SCCDES3R0207QSA300050ES
	220	11	7	0.7	30 x 50	39	SCCDES3R0227QSA300050ES
	240	11	7	0.7	30 x 50	40	SCCDES3R0247QSA300050ES
	350	3.6	3.1	1.0	35 x 60	73	SCCDES3R0357QSL350060ES
	400	3.3	2.9	1.2	35 x 60	73	SCCDES3R0407QSL350060ES
	470	3.6	3.1	1.3	35 x 60	73	SCCDES3R0477QSL350060ES
	500	3.5	3	1.3	35 x 67	76	SCCDES3R0507QSL350067ES
	600	3	2.5	1.5	35 x 70	90	SCCDES3R0607QSL350070ES

# LUG/SNAP-IN EDLC CELL: SSL SERIES 焊针式/焊片式 EDLC 单体: SSL 系列

## Typical application 典型应用

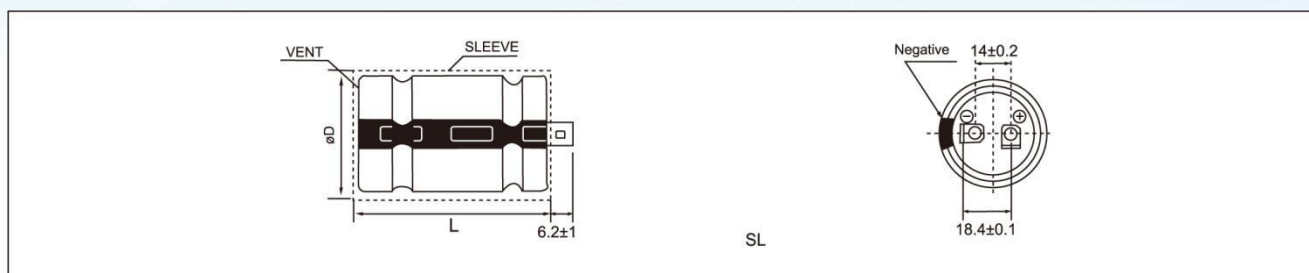
- PaSSLnger car power supply system  
乘用车电源系统
- Energy storage system of construction machinery  
工程机械储能系统
- Industrial standby power supply  
工业备用电源
- AGV on-board power supply  
AGV 车载电源
- Microgrid energy storage  
微网储能



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	2.7V		
Operating Temperature Range 工作温度范围	-40 ~+65°C (-40 ~+85°C@2.3V)		
Surge Voltage 浪涌电压	2.85V		
Capacitance Range 容量范围	350~800 F		
Capacitance Tolerance 容差范围 (25°C)	-10~+30%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 65°C 在-40°C至 65°C温度范围内, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value at 25°C 在 25°C时初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 65°C for 1500 hours 在 65°C温度下, 以额定电压恒压 1500h 后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 70°C for 1000 hours 在 70°C温度下, 不加电压储存 1000h 后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
Cycle Life 循环寿命	The specifications shall be met after 500,000 cycles at 25°C, cycle of charge/discharge from V <sub>R</sub> to 1/2V <sub>R</sub> 在 25°C温度下, V <sub>R</sub> ~ 1/2V <sub>R</sub> 充放电循环 500,000 次后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍

## LUG/SNAP-IN EDLC CELL: SSL SERIES 焊针式/焊片式 EDLC 单体: SSL 系列

## ■ Dimensions 尺寸



## ■ Ratings for SSL Series SSL 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Cap. 25°C 额定容量 25°C	Impedance 内阻		Leakage Current 漏电流(72hrs)	Size 尺寸 ΦDxL	Weight 重量	P/N 产品代码
		ESR <sub>DC</sub> 直流内阻	ESR <sub>AC</sub> 交流内阻 (1KHz)				
(V)	(F)	(mΩ)	(mΩ)	(mA)	(mm)	(g)	-
2.7 (2.85) 2R7	350	2.8	2.3	1.0	35 x 60	73	SCCDLS2R7357QSL350060ES
	800	2.7	2.2	1.5	40 x 70	120	SCCDLS2R7807QSL400070ES

## SCREW EDLC CELL: SGP SERIES 螺栓式 EDLC 单体: SGP 系列

## ■ Typical application 典型应用

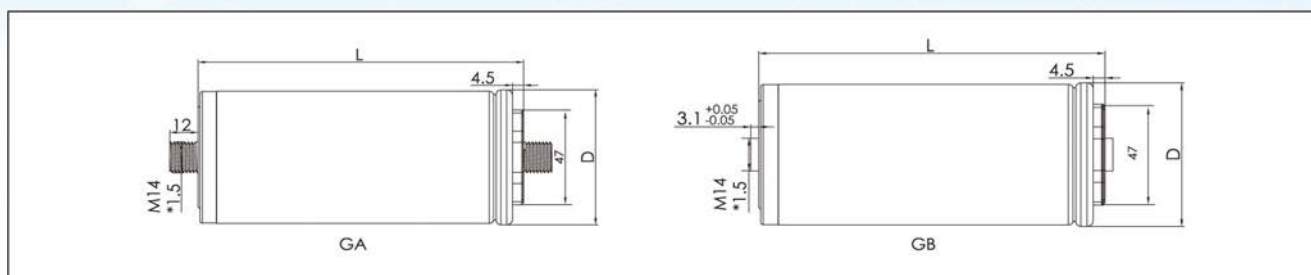
- Subway energy storage system  
地铁线路储能系统
- Start power module of passenger car  
乘用车启动电源模块
- Backup power supply for fan rotor control system  
风机变桨控制系统的后备电源
- Energy storage system for construction machinery  
工程机械储能系统
- Micro network storage  
微网储能



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	2.7V		
Operating Temperature Range 工作温度范围	-40 ~ +65°C		
Surge Voltage 浪涌电压	2.85V		
Capacitance Range 容量范围	650 ~ 3400 F		
Capacitance Tolerance 容差范围 (25°C)	0 ~ +20%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 65°C 在-40°C至65°C温度范围内, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value at 25°C 在25°C时初始值的20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 65°C for 1500 hours 在65°C温度下, 以额定电压恒压1500h后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 70°C for 1000 hours 在70°C温度下, 不加电压储存1000h后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
Cycle Life 循环寿命	The specifications shall be met after 1,000,000 cycles at 25°C, cycle of charge / discharge from V <sub>R</sub> to 1/2V <sub>R</sub> 在25°C温度下, V <sub>R</sub> ~ 1/2V <sub>R</sub> 充放电循环1,000,000次后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍

## SCREW EDLC CELL: SGP SERIES 螺栓式 EDLC 单体: SGP 系列

## ■ Dimensions 尺寸



## ■ Ratings for SGP Series SGP 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Cap. 25℃ 额定容量 25℃	ESR <sub>DC</sub> 直流内阻	Leakage Current 漏电流 (72hrs)	Maximum Continuous Current 最大持续电流 (Δt=15℃)	Maximum Continuous Current 最大持续电流 (Δt=40℃)	Size 尺寸 ΦD×L	Weight 重量	P/N 产品代码
(V)	(F)	(mΩ)	(mA)	(A)	(A)	(mm)	(g)	-
2.7 (2.85) 2R7	650	0.8	1.5	54	88	61*52	160	SCCDPG2R7657RGB610052E
								SCCDPG2R7657RGA610052E
	1200	0.58	2.7	70	110	61*74	260	SCCDPG2R7128RGB610074E
								SCCDPG2R7128RGA610074E
	1500	0.47	3	84	140	61*85	280	SCCDPG2R7158RGB610085E
								SCCDPG2R7158RGA610085E
	2000	0.35	4.2	110	170	61*102	360	SCCDPG2R7208RGB610102E
								SCCDPG2R7208RGA610102E
	3000	0.29	5.2	130	210	61*138	510	SCCDPG2R7308RGB610138E
								SCCDPG2R7308RGA610138E
	3400	0.28	10	130	210	61*138	513	SCCDPG2R7348RGB610138E
								SCCDPG2R7348RGA610138E

## SCREW EDLC CELL: SGE SERIES 螺栓式 EDLC 单体: SGE 系列

## ■ Typical application 典型应用

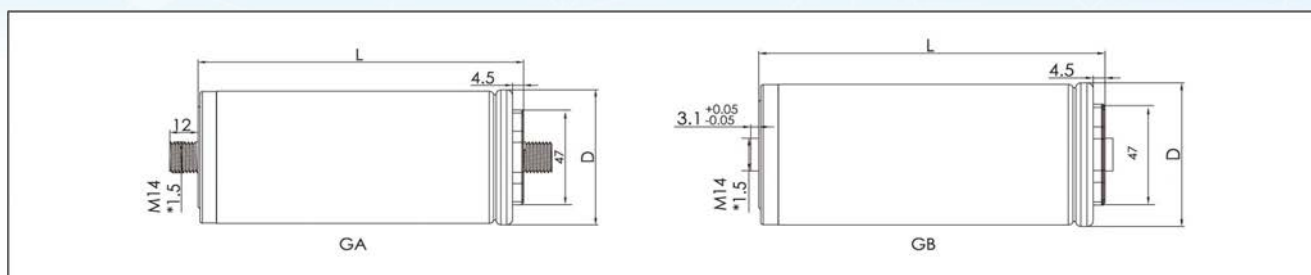
- Subway energy storage system  
地铁线路储能系统
- Start power module of passenger car  
乘用车启动电源模块
- Backup power supply for fan rotor control system  
风机变桨控制系统的后备电源
- Energy storage system for construction machinery  
工程机械储能系统
- Micro network storage  
微网储能



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	3.0V		
Operating Temperature Range 工作温度范围	-40 ~ +65°C		
Surge Voltage 浪涌电压	3.15V		
Capacitance Range 容量范围	650 ~ 3400 F		
Capacitance Tolerance 容差范围 (25°C)	0 ~ +20%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 65°C 在 -40°C 至 65°C 温度范围内, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value at 25°C 在 25°C 时初始值的 20% 以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 65°C for 1000 hours 在 65°C 温度下, 以额定电压恒压 1000h 后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的 20% 以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 70°C for 1000 hours 在 70°C 温度下, 不加电压储存 1000h 后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的 20% 以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
Cycle Life 循环寿命	The specifications shall be met after 1,000,000 cycles at 25°C, cycle of charge/discharge from V <sub>R</sub> to 1/2V <sub>R</sub> 在 25°C 温度下, V <sub>R</sub> ~ 1/2V <sub>R</sub> 充放电循环 1,000,000 次后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的 20% 以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍

SCREW EDLC CELL: SGE SERIES 螺栓式 EDLC 单体: SGE 系列

■ Dimensions 尺寸



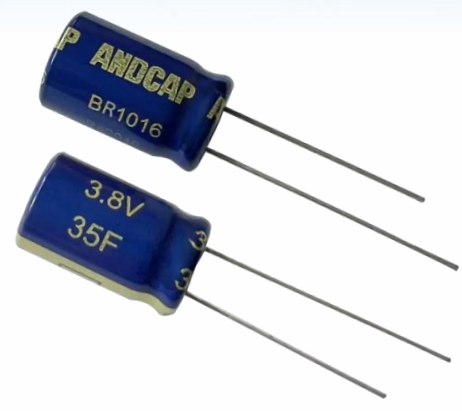
■ Ratings for SGE Series SGE 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Cap. 25°C 额定容量 25°C	ESR <sub>DC</sub> 直流内阻	Leakage Current 漏电流 (72hrs)	Maximum Continuous Current 最大持续电流 (Δt=15°C)	Maximum Continuous Current 最大持续电流 (Δt=40°C)	Size 尺寸 ΦD×L	Weight 重量	P/N 产品代码
(V)	(F)	(mΩ)	(mA)	(A)	(A)	(mm)	(g)	-
3 (3.15) 3R0	650	0.79	3	54	88	61*52	160	SCCDEG3R0657RGB610052E
								SCCDEG3R0657RGA610052E
	1200	0.55	5	73	110	61*74	260	SCCDEG3R0128RGB610074E
								SCCDEG3R0128RGA610074E
	1500	0.47	7	83	140	61*85	280	SCCDEG3R0158RGB610085E
								SCCDEG3R0158RGA610085E
	2000	0.36	8	102	170	61*102	360	SCCDEG3R0208RGB610102E
								SCCDEG3R0208RGA610102E
	3000	0.27	12	130	210	61*138	510	SCCDEG3R0308RGB610138E
								SCCDEG3R0308RGA610138E
	3400	0.24	15	140	225	61*138	513	SCCDEG3R0348RGB610138E
								SCCDEG3R0348RGA610138E

# RADIAL LIC CELL: BR SERIES 引线式 LIC 单体: BR 系列

## Typical application 典型应用

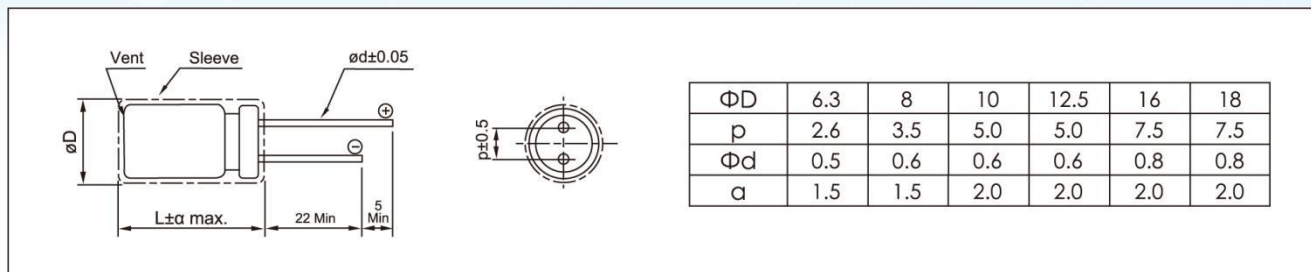
- Smart Meter: water meter, gas meter, hot meter  
智能仪表: 水表、气表、热表
- Scanner  
扫描枪
- Electric Tools  
电动工具
- Wireless charging smart home remote control  
无线充智能家用遥控器
- Backup power: IoT Power, Server backup power, ETC  
后备电源: 物联网电源、服务器后备电源、ETC



Items 项目	Characteristics 特性		
Rated Max. Operating Voltage 额定最高工作电压	3.8V		
Rated Min. Operating Voltage 额定最低工作电压	2.5V		
Min. Allowable Operating Voltage 最低允许工作电压	2.2V		
Operating Temperature Range 工作温度范围	-15 ~+70°C/85°C(3.5V)		
Surge Voltage 浪涌电压	4.2V		
Capacitance Range 容量范围	10~1000 F		
Capacitance Tolerance 容差范围 (20°C)	-20~+20% / -10~+30%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -15°C to 70°C -15°C~70°C温度范围内, 应满足规范	Capacitance Change 容量变化	Within 50% of the initial value at 25°C 在 25°C 时初始值的 50% 以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 10 times of the initial specified value at 25°C 不超过 25°C 时初始规定值的 10 倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 70°C for 1000 hours 在 70°C 以额定电压恒压 1000h 后, 应满足规范	Capacitance Change 容量变化	Within 30% of the initial value 在初始值的 30% 以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
High Temperature Storage 高温存储	The specifications shall be met after storage at 70°C for 1000 hours 在 70°C 储存 1000h 后, 应满足规范	Capacitance Change 容量变化	Within 30% of the initial value 在初始值的 30% 以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
Cycle Life 循环寿命	The specifications shall be met after 500,000 cycles at 25°C, cycle of charge/discharge from 3.8~2.5V 在 25°C, 3.8~2.5V 充放电循环 500000 次后, 应满足规范	Capacitance Change 容量变化	Within 30% of the initial value 在初始值的 30% 以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍

RADIAL LIC CELL: BR SERIES 引线式 LIC 单体: BR 系列

■ Dimensions 尺寸



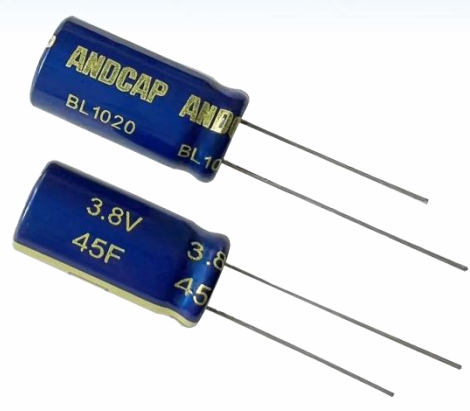
■ Ratings for BR Series BR 系列额定值

U <sub>r</sub> (Surge Voltage) 浪涌电压 Code	Rated Cap. 额定容量 25℃	Impedance 内阻		Rated. Current 额定电流	Max. Current 最大电流 (≤3sec)	Leakage Current 漏电流	Size 尺寸 ΦD×L	P/N 部品号
		ESR <sub>DC</sub> 直流内阻	ESR <sub>AC</sub> 交流内阻 (1KHz)					
(v)	(F)	(mΩ)	(mΩ)	(A)	(A)	(μA)	(mm)	
3.8 (4.2) 3R8	10	1800	500	0.05	0.5	2.0	8*14	SCCHBR3R8106MRH080014E
	12	1800	500	0.05	0.5	2.0	8*14	SCCHBR3R8126MRH080014E
	13	1800	600	0.065	0.65	2.1	6.3*22	SCCHBR3R8136MRH063022E
	20	1200	350	0.125	0.8	2.5	8*20	SCCHBR3R8206QRH080020E
	25	1200	350	0.125	0.8	2.5	8*20	SCCHBR3R8256MRH080020E
	30	900	250	0.15	0.9	3.0	8*25	SCCHBR3R8306MRH080025E
	30	900	250	0.15	1.0	3.0	10*16	SCCHBR3R8306MRH100016E
	35	900	250	0.15	1.0	3.0	10*16	SCCHBR3R8356QRH100016E
	45	700	200	0.25	1.8	4.5	10*20	SCCHBR3R8456QRH100020E
	50	700	200	0.25	1.8	4.5	10*20	SCCHBR3R8506MRH100020E
	65	480	120	0.35	3.0	5.0	10*25	SCCHBR3R8656QRH100025E
	70	480	120	0.35	3.0	5.0	10*25	SCCHBR3R8706MRH100025E
	100	450	100	0.55	4.5	6.5	10*30	SCCHBR3R8107MRH100030E
	120	400	90	0.6	5.0	7.0	12.5*25	SCCHBR3R8127MRH125025E
	220	240	60	1.1	8.0	12.0	16*25	SCCHBR3R8227MRH160025E
	500	120	40	2.75	20	35.0	18*40	SCCHBR3R8507QRH180040E
1000	50	25	5	30	60.0	18*60	SCCHBR3R8108MRH180060E	

# RADIAL LIC CELL:BL SERIES 引线式 LIC 单体: BL 系列

## Typical application 典型应用

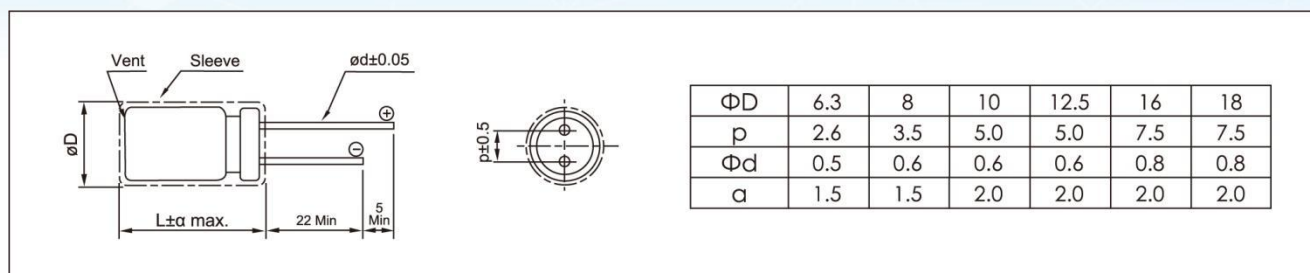
- Smart Meter: water meter, gas meter, hot meter  
智能仪表: 水表、气表、热表
- Scanner  
扫描枪
- Electric Tools  
电动工具
- Electric equipment  
电力设备
- Driving recorder  
行车记录仪
- Wireless charging smart home remote control  
无线充智能家用遥控器
- Backup power: IoT Power, Server backup power, ETC  
后备电源: 物联网电源、服务器后备电源、ETC



Items 项目	Characteristics 特性		
Rated Max. Operating Voltage 额定最高工作电压	3.8V		
Rated Min. Operating Voltage 额定最低工作电压	2.5V		
Min. Allowable Operating Voltage 最低允许工作电压	2.2V		
Operating Temperature Range 工作温度范围	-25 ~+70°C		
Surge Voltage 浪涌电压	4.2V		
Capacitance Range 容量范围	10~500 F		
Capacitance Tolerance 容差范围(20°C)	-20~+20% / -10~+30%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -25°C to 70°C -25°C~70°C温度范围内, 应满足规范	Capacitance Change 容量变化	Within 50% of the initial value at 25°C 在 25°C时初始值的 50%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 10 times of the initial specified value at 25°C 不超过 25°C时初始规定值的 10 倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 70°C for 1000 hours 在 70°C以额定电压恒压 1000h 后, 应满足规范	Capacitance Change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
High Temperature Storage 高温存储	The specifications shall be met after storage at 70°C for 1000 hours 在 70°C储存 1000h 后, 应满足规范	Capacitance Change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
Cycle Life 循环寿命	The specifications shall be met after 250,000 cycles at 25°C, cycle of charge / discharge from 3.8~2.5V 在 25°C, 3.8~2.5V 充放电循环 250000 次后, 应满足规范	Capacitance Change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍

## RADIAL LIC CELL:BL SERIES 引线式 LIC 单体: BL 系列

## ■ Dimensions 尺寸



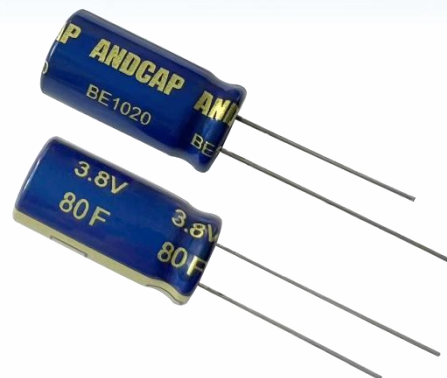
## ■ Ratings for BL Series BL 系列额定值

$U_R$ (Surge Voltage) 浪涌电压 Code	Rated Cap. 额定容量 25°C	Impedance 内阻		Rated. Current 额定电流	Max. Current 最大电流 ( $\leq 3\text{sec}$ )	Leakage Current 漏电流	Size 尺寸 $\phi D \times L$	P/N 部品号
		$ESR_{DC}$ 直流内阻	$ESR_{AC}$ 交流内阻 (1KHz)					
(V)	(F)	(m $\Omega$ )	(m $\Omega$ )	(A)	(A)	( $\mu A$ )	(mm)	
3.8 (4.2) 3R8	10	1500	500	0.05	0.5	3.0	8*14	SCCHBL3R8106MRH080014E
	12	1500	500	0.05	0.5	3.0	8*14	SCCHBL3R8126MRH080014E
	13	1200	500	0.065	0.65	3.1	6.3*22	SCCHBL3R8136MRH063022E
	20	650	300	0.125	0.8	3.3	8*20	SCCHBL3R8206QRH080020E
	25	650	300	0.125	0.8	3.3	8*20	SCCHBL3R8256MRH080020E
	30	700	250	0.15	0.9	4.0	8*25	SCCHBL3R8306MRH080025E
	30	550	250	0.15	1.0	4.0	10*16	SCCHBL3R8306MRH100016E
	35	550	250	0.15	1.0	4.0	10*16	SCCHBL3R8306QRH100016E
	45	450	200	0.25	1.8	6.0	10*20	SCCHBL3R8456QRH100020E
	50	450	200	0.25	1.8	6.0	10*20	SCCHBL3R8506MRH100020E
	65	250	100	0.35	3.0	8.0	10*25	SCCHBL3R8656QRH100025E
	70	250	100	0.35	3.0	8.0	10*25	SCCHBL3R8706MRH100025E
	100	220	90	0.55	4.5	10.0	10*30	SCCHBL3R8107MRH100030E
	120	200	80	0.6	5.0	12.0	12.5*25	SCCHBL3R8127MRH125025E
	220	100	60	1.1	8.0	25.0	16*25	SCCHBL3R8227MRH160025E
	500	80	40	2.75	20	65	18*40	SCCHBL3R8507MRH180040E

## RADIAL LIC CELL: BE SERIES 引线式 LIC 单体: BE 系列

## Typical application 典型应用

- Smart Meter: water meter, gas meter, hot meter  
智能仪表: 水表、气表、热表
- Scanner  
扫描枪
- Electric Tools  
电动工具
- Electric equipment  
电力设备
- Driving recorder  
行车记录仪
- Wireless charging smart home remote control  
无线充电家用遥控器
- Backup power: IoT Power, Server backup power, ETC  
后备电源: 物联网电源、服务器后备电源、ETC



Items 项目	Characteristics 特性		
Rated Max. Operating Voltage 额定最高工作电压	3.8V		
Rated Min. Operating Voltage 额定最低工作电压	2.5V		
Min. Allowable Operating Voltage 最低允许工作电压	2.2V		
Operating Temperature Range 工作温度范围	-25 ~ +70°C/85°C(3.5V)		
Surge Voltage 浪涌电压	4.2V		
Capacitance Range 容量范围	3~1400 F		
Capacitance Tolerance 容差范围(20°C)	-20~+20% / 0~+50% / -20~+50%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -25°C to 70°C -25°C~70°C温度范围内, 应满足规范	Capacitance Change 容量变化	Within 50% of the initial value at 25°C 在 25°C时初始值的 50%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 10 times of the initial specified value at 25°C 不超过 25°C时初始规定值的 10 倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 70°C for 1000 hours 在 70°C以额定电压恒压 1000h 后, 应满足规范	Capacitance Change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
High Temperature Storage 高温存储	The specifications shall be met after storage at 70°C for 1000 hours 在 70°C储存 1000h 后, 应满足规范	Capacitance Change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
Cycle Life 循环寿命	The specifications shall be met after 250,000 cycles at 25°C, cycle of charge / discharge from 3.8~2.5V 在 25°C, 3.8~2.5V 充放电循环 250000 次后, 应满足规范	Capacitance Change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍

RADIAL LIC CELL: BE SERIES 引线式 LIC 单体: BE 系列

■ Dimensions 尺寸

ΦD	6.3	8	10	12.5
p	2.6	3.5	5.0	5.0
Φd	0.5	0.6	0.6	0.6
a	1.5	1.5	2.0	2.0

■ Ratings for BE Series BE 系列额定值

U <sub>R</sub> (Surge Voltage) 浪涌电压 Code	Rated Cap. 额定容量 25℃ (F)	Impedance 内阻		Rated Current 额定电流 (A)	Max. Current 最大电流 (≤3sec) (A)	Leakage Current 漏电流 (μA)	Size 尺寸 ΦD×L (mm)	P/N 部品号
		ESR <sub>DC</sub> 直流内阻 (mΩ)	ESR <sub>AC</sub> 交流内阻 (1KHz) (mΩ)					
(V)	(F)	(mΩ)	(mΩ)	(A)	(A)	(μA)	(mm)	
3.8 (4.2) 3R8	3	9000	4000	0.015	0.1	1.8	5*12	SCCHBE3R8305MRH050012E
	8	2600	1200	0.04	0.25	2.0	6.3*12	SCCHBE3R8805SRH063012E
	20	1000	450	0.11	0.7	3.5	6.3*22	SCCHBE3R8206TRH063022E
	25	900	400	0.125	0.8	2.5	8*14	SCCHBE3R8256MRH080014E
	40	550	250	0.2	1.2	3.2	8*20	SCCHBE3R8406MRH080020E
	55	450	200	0.275	1.8	5.0	8*25	SCCHBE3R8556MRH080025E
	50	450	200	0.275	1.8	5.0	10*16	SCCHBE3R8506TRH100016E
	60	400	200	0.3	2.0	8.0	12.5*13	SCCHBE3R8607MRH125013E
	80	250	120	0.425	3.5	8.0	10*20	SCCHBE3R8806MRH100020E
	100	220	90	0.55	4	9.0	10*25	SCCHBE3R8107MRH100025E
	150	140	70	0.75	6	15.0	10*30	SCCHBE3R8157MRH100030E
	200	135	65	1	6	18.0	12.5*25	SCCHBE3R8207MRH125025E
	300	100	50	1.5	10	30.0	12.5*35	SCCHBE3R8307MRH125035E
	350	90	45	1.75	11	35.0	12.5*40	SCCHBE3R8357MRH125040E
	400	80	45	2	12	70.0	12.5*45	SCCHBE3R8407MRH125045E
	450	60	40	2.25	15	70.0	16*30	SCCHBE3R8457MRH160030E
	850	70	35	4.25	28	70.0	18*40	SCCHBE3R8857MRH180040E
	1000	65	30	5	30	100.0	18*50	SCCHBE3R8108TRH180050E
1400	50	20	7	40	120.0	18*60	SCCHBE3R8148MRH180060E	

SOFT PACK LIC CELL: AA SERIES 软包式 LIC 单体: AA 系列

Typical application 典型应用

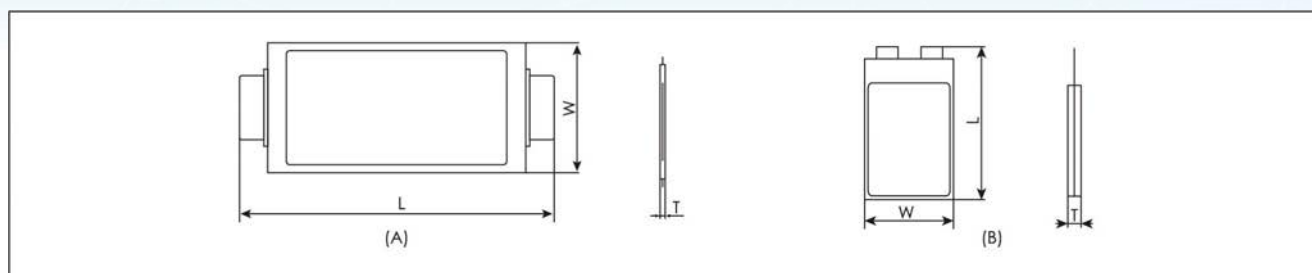
- Rail transit 轨道交通
- Smart power grids 智能电网
- Tunnel locomotive, mining locomotive 隧道机车、矿用机车
- Port truck 码头车
- Pure electric bus 纯电动公交车
- Energy saving elevator 节能电梯
- Electric tools 电动工具
- Emergency UPS 应急后备电源
- Hybrid power driven engineering machinery and harbor machinery 混合动力工程机械及港口机械
- Ferry, sightseeing car, golf cart, AGV and RGV 渡轮、观光车、高尔夫球车、AGV 及 RGV
- Wind power, solar and other renewable energy storag 风电、光伏等可再生能源储能
- Other high power and high energy applications 其他对功率和能量要求比较高的工况应用



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	2.5V~4.0V		
Operating Temperature Range 工作温度范围	-25 ~+55℃		
Surge Voltage 浪涌电压	4.35V		
Capacitance Range 容量范围	1000~16000 F		
Capacitance Tolerance 容差范围 (25℃)	-20~+20%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -25℃ to 55℃ 在-25℃至 55℃温度范围内, 应满足规范	Capacitance Change 容量变化	Within 50% of the initial value at 25℃ 在 25℃时初始值的 50%以内
		ESR <sub>AC</sub> Change 交流内阻变化	Not more than 4 times of the initial specified value at 25℃ 不超过 25℃时初始规定值的 4 倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 55℃ for 1000 hours 在 55℃温度下, 以额定电压恒压 1000h 后, 应满足规范	Capacitance Change 容量变化	Within 20% of the initial value 在初始值的 20%以内
		ESR <sub>AC</sub> Change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 55℃ for 1000 hours 在 55℃温度下, 储存 1000h 后, 应满足规范	Capacitance Change 容量变化	Within 20% of the initial value 在初始值的 20%以内
		ESR <sub>AC</sub> Change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
Cycle Life 循环寿命	The specifications shall be met after 50,000 cycles at 25℃, cycle of charge/discharge from 2.5~4.0V 在 25℃温度下, 2.5~4.0V 充放电循环 50000 次后, 应满足规范	Capacitance Change 容量变化	Within 20% of the initial value 在初始值的 20%以内
		ESR <sub>AC</sub> Change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍

## SOFT PACK LIC CELL: AA SERIES 软包式 LIC 单体: AA 系列

## ■ Dimensions 尺寸



## ■ Ratings for AA Series AA 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Capacitance 额定容量 25℃ (F)	Storage Energy 储存能量 25℃ (Wh)	Impedance 内阻		Rated Current 额定电流 (A)	Self-discharge 自放电(72hrs) (V)	Dimension 尺寸 (L*W*T) (mm)	P/N 产品代码
			ESR <sub>DC</sub> 直流内阻 (mΩ)	ESR <sub>AC</sub> 交流内阻 (1KHz) (mΩ)				
4.0 (4.35) 4R0	1000	1.36	≤20	≤9	5	≥3.92	100 x 71 x 3.0 (B)	SCCHAA4R0108M
	2000	2.92	≤10	≤6	10	≥3.92	100 x 71 x 5.5 (B)	SCCHAA4R0208M
	3200	4.65	≤6.5	≤3.2	16	≥3.92	100 x 60 x 9.0 (B)	SCCHAA4R0328M
	6000	8.10	≤3.5	≤2.5	30	≥3.92	300 x 123 x 3.5 (A)	SCCHAA4R0608M
	7200	10.3	≤2.1	≤1.8	36	≥3.92	176 x 115 x 7.7 (A)	SCCHAA4R0728M
	10000	13.20	≤1.8	≤1.2	50	≥3.92	300 x 123 x 5.2 (A)	SCCHAA4R0109M
	16000	22.00	≤1.5	≤1.2	50	≥3.92	300 x 123 x 8.0 (A)	SCCHAA4R0169M

SOFT PACK LIC CELL: AE SERIES 软包式 LIC 单体: AE 系列

Typical application 典型应用

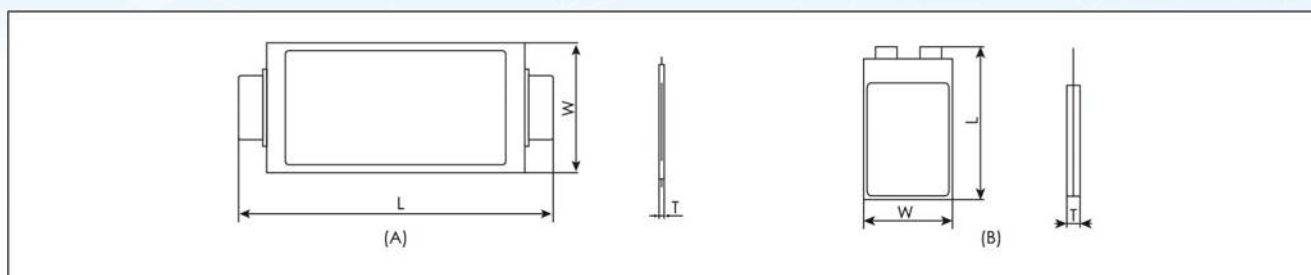
- Rail transit 轨道交通
- Smart power grids 智能电网
- Tunnel locomotive, mining locomotive 隧道机车、矿用机车
- Port truck 码头车
- Pure electric bus 纯电动公交车
- Energy saving elevator 节能电梯
- Emergency UPS 应急后备电源
- Electric tools 电动工具
- Ferry, sightseeing car, golf cart, AGV and RGV 渡轮、观光车、高尔夫球车、AGV 及 RGV
- Hybrid power driven engineering machinery and harbor machinery 混合动力工程机械及港口机械
- Wind power, solar and other renewable energy storag 风电、光伏等可再生能源储能
- Other high power and high energy applications 其他对功率和能量要求比较高的工况应用



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	2.5V~4.0V		
Operating Temperature Range 工作温度范围	-25 ~+55℃		
Surge Voltage 浪涌电压	4.35V		
Capacitance Range 容量范围	3000~20000 F		
Capacitance Tolerance 容差范围 (25℃)	-20~+20%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -25℃ to 55℃ 在-25℃至 55℃温度范围内, 应满足规范	Capacitance Change 容量变化	Within 50% of the initial value at 25℃ 在 25℃时初始值的 50%以内
		ESR <sub>AC</sub> Change 交流内阻变化	Not more than 4 times of the initial specified value at 25℃ 不超过 25℃时初始规定值的 4 倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 55℃ for 1000 hours 在 55℃温度下, 以额定电压恒压 1000h 后, 应满足规范	Capacitance Change 容量变化	Within 20% of the initial value 在初始值的 20%以内
		ESR <sub>AC</sub> Change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 55℃ for 1000 hours 在 55℃温度下, 储存 1000h 后, 应满足规范	Capacitance Change 容量变化	Within 20% of the initial value 在初始值的 20%以内
		ESR <sub>AC</sub> Change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
Cycle Life 循环寿命	The specifications shall be met after 50,000 cycles at 25℃, cycle of charge/discharge from 2.5~4.0V 在 25℃温度下, 2.5~4.0V 充放电循环 50000 次后, 应满足规范	Capacitance Change 容量变化	Within 20% of the initial value 在初始值的 20%以内
		ESR <sub>AC</sub> Change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍

## SOFT PACK LIC CELL: AE SERIES 软包式 LIC 单体: AE 系列

## ■ Dimensions 尺寸



## ■ Ratings for AE Series AE 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Capacitance 额定容量 25°C (*)	Storage Energy 储存能量 25°C	Impedance 内阻		Rated Current 额定电流	Self-discharge 自放电 (72hrs)	Dimension 尺寸 (L*W*T)	P/N 产品代码
			ESR <sub>DC</sub> 直流内阻	ESR <sub>AC</sub> 交流内阻 (1KHz)				
(V)	(F)	(Wh)	(mΩ)	(mΩ)	(A)	(V)	(mm)	
4.0 (4.35) 4R0	3000	5.95	≤6.5	≤3.5	8	≥3.92	100 x 60 x 9.2 (B)	SCCHAE4R0308M
	10000	18.5	≤2.5	≤1.5	25	≥3.92	300 x 123 x 5.2 (A)	SCCHAE4R0109M
	15000	30.0	≤1.5	≤1.2	37.5	≥3.92	300 x 123 x 8.2 (A)	SCCHAE4R0159M
	17000	34.0	≤1.2	≤1.2	42.5	≥3.92	300 x 123 x 8.3 (A)	SCCHAE4R0179M
	20000	42.0	≤1.1	≤1.0	50	≥3.92	300 x 123 x 10.8 (A)	SCCHAE4R0209M

\*Refer to 《Ultra-capacitor for electric vehicles QC/T-741-2014》 for the test method of rated cap.

\*额定容量的测试方法参见《车用超级电容器 QC/T-741-2014》

SOFT PACK LIC CELL: AH SERIES 软包式 LIC 单体: AH 系列

Typical application 典型应用

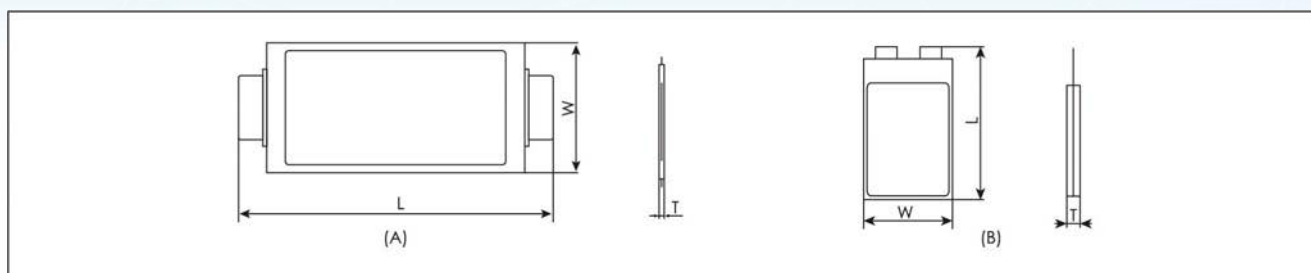
- Rail transit 轨道交通
- Port truck 码头车
- Smart power grids 智能电网
- Pure electric bus 纯电动公交车
- Energy saving elevator 节能电梯
- Tunnel locomotive, mining locomotive 隧道机车、矿用机车
- Medical power supplies (Portable X-ray machine) 医疗器械电源 (便携式 x 光机)
- Ferry, sightseeing car, golf cart ,AGV and RGV 渡轮、观光车、高尔夫球车、AGV 及 RGV
- Backup power (computer, server, UPS) 后备电源 (电脑、服务器、UPS)
- Hybrid power driven engineering machinery and harbor machinery 混合动力工程机械及港口机械
- Wind power, solar and other renewable energy storag 风电、光伏等可再生能源储能
- Other high power, high energy and high temperature applications 其他对功率、能量和温度要求比较高的工况应用



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	2.5V~4.0V		
Operating Temperature Range 工作温度范围	0 ~+65°C		
Surge Voltage 浪涌电压	4.35V		
Capacitance Range 容量范围	1000~16000 F		
Capacitance Tolerance 容差范围 (25°C)	-20~+20%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from 0°C to 65°C 在 0°C 至 65°C 温度范围内, 应满足规范	Capacitance Change 容量变化	Within 50% of the initial value at 25°C 在 25°C 时初始值的 50% 以内
		ESR <sub>AC</sub> Change 交流内阻变化	Not more than 4 times of the initial specified value at 25°C 不超过 25°C 时初始规定值的 4 倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 65°C for 1000 hours 在 65°C 温度下, 以额定电压恒压 1000h 后, 应满足规范	Capacitance Change 容量变化	Within 20% of the initial value 在初始值的 20% 以内
		ESR <sub>AC</sub> Change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 65°C for 1000 hours 在 65°C 温度下, 储存 1000h 后, 应满足规范	Capacitance Change 容量变化	Within 20% of the initial value 在初始值的 20% 以内
		ESR <sub>AC</sub> Change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
Cycle Life 循环寿命	The specifications shall be met after 50,000 cycles at 25°C, cycle of charge/discharge from 2.5~4.0V 在 25°C 温度下, 2.5~4.0V 充放电循环 50000 次后, 应满足规范	Capacitance Change 容量变化	Within 20% of the initial value 在初始值的 20% 以内
		ESR <sub>AC</sub> Change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍

## SOFT PACK LIC CELL: AH SERIES 软包式 LIC 单体: AH 系列

## ■ Dimensions 尺寸



## ■ Ratings for AE Series AH 系列额定值

U <sub>r</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Capacitance 额定容量 25℃ (F)	Storage Energy 储存能量, 25℃ (Wh)	Impedance 内阻		Rated Current 额定电流 (A)	Self-discharge 自放电 (72hrs) (V)	Dimension 尺寸 (L*W*T) (mm)	P/N 产品代码
			ESR <sub>DC</sub> 直流内阻 (mΩ)	ESR <sub>AC</sub> 交流内阻 (1KHz) (mΩ)				
4.0 (4.35) 4R0	1000	1.36	≤25	≤11.5	5	≥3.92	100 x 71 x 3.0 (B)	SCCHAH4R0108M
	2000	2.92	≤11.5	≤6.5	10	≥3.92	100 x 71 x 5.5 (B)	SCCHAH4R0208M
	3200	4.65	≤7.0	≤4.0	16	≥3.92	100 x 60 x 9.0 (B)	SCCHAH4R0328M
	6000	8.10	≤4.5	≤3.5	30	≥3.92	300 x 123 x 3.5 (A)	SCCHAH4R0608M
	10000	13.20	≤2.2	≤1.5	50	≥3.92	300 x 123 x 5.2 (A)	SCCHAH4R0109M
	16000	22.00	≤1.8	≤1.4	50	≥3.92	300 x 123 x 8.0 (A)	SCCHAH4R0169M

# RADIAL EDLC MODULE:SRM SERIES 引线式 EDLC 模组:SRM 系列

## Typical application 典型应用

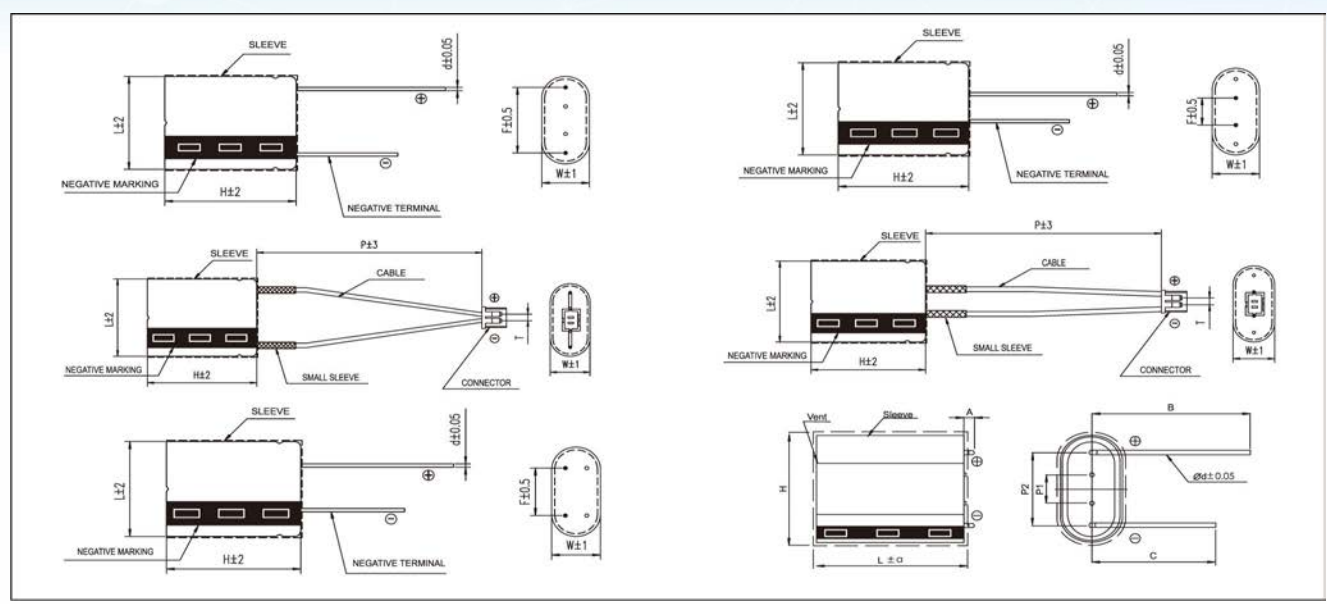
- Intelligent instruments: electronic meter, water meter, gas meter  
智能仪表：国网电表、水表、燃气表
- Communication terminal: RTU/DTU, DTU, FTU, fault current indicator  
通讯终端：智能测控终端、智能配电终端、智能馈线终端、故障指示器
- Auto electronics: auto recorder, auto door control, audio control, auto diagnosis system, wireless charging  
汽车电子：汽车记录仪、汽车门控、音响控制、汽车诊断系统、无线充
- Energy storage: server backup power, motor drive, brake, charging pile, security, fire protection  
储能：服务器备电、马达驱动、闸机、充电桩、安防、消防
- Consumer: Toys, robots, smart home, medical devices  
消费类：玩具、机器人、智能家居、医疗器械



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	5.5V		
Operating Temperature Range 工作温度范围	-40 ~ +70°C (-40 ~ +85°C@4.6V)		
Surge Voltage 浪涌电压	5.7V		
Capacitance Range 容量范围	0.07 ~ 50F		
Capacitance Tolerance 容差范围 (25°C)	-10 ~ +30%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 70°C 在-40°C至70°C温度范围内，应满足规范	Capacitance change 容量变化	Within 30% of the initial value at 25°C 在25°C时初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 70°C for 1000 hours 在70°C温度下，以额定电压恒压1000h后，应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 70°C for 1000 hours 在70°C温度下，不加电压储存1000h后，应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
Cycle Life 循环寿命	The specifications shall be met after 500,000 cycles at 25°C, cycle of charge/discharge from V <sub>R</sub> to 1/2V <sub>R</sub> 在25°C温度下，V <sub>R</sub> ~ 1/2V <sub>R</sub> 充放电循环500,000次后，应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍

RADIAL EDLC MODULE: SRM SERIES 引线式 EDLC 模组: SRM 系列

■ Dimensions 尺寸



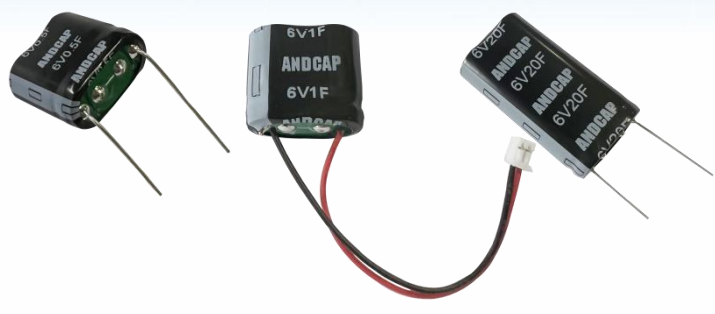
■ Ratings for SRM Series SRM 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Capacitance 额定容量 25°C	Impedance 内阻		Leakage Current 漏电流 (72hrs)	Size 尺寸 (L x W x H)	Pin spacing 引脚间距 (F)	Wire diameter 引线直径 (d)	P/N 产品代码
		ESR <sub>DC</sub> 直流内阻	ESR <sub>AC</sub> 交流内阻 (1KHz)					
(V)	(F)	(mΩ)	(mΩ)	(mA)	(mm)	(mm)	(mm)	-
5.5 (5.7) 5R5	0.07	1250	500	0.003	11 x 5.5 x 12	7.5/3.5	0.5	SCMDMR5R5703ZRH051112ET0H0P075A
	0.1	2400	1200	0.006	11 x 5.5 x 13	7.5/3.5	0.5	SCMDMR5R5104ZRH051113ET0H0P075A
	0.22	1800	900	0.005	11 x 5.5 x 14	7.5/3.5	0.5	SCMDMR5R5224QRH051114ET0H0P075A
	0.33	1400	700	0.006	13 x 6.5 x 14	8.8/4.2	0.5	SCMDMR5R5334QRH061314ET0H0P088A
	0.5	820	420	0.008	17 x 8.5 x 16	12/5.0	0.6	SCMDMR5R5504QRH081716ET0H0P120A
	1	500	260	0.01	17 x 8.5 x 16	12/5.0	0.6	SCMDMR5R5105QRH081716ET0H0P120A
	1.5	320	170	0.012	17 x 8.5 x 22	12/5.0	0.6	SCMDMR5R5155QRH081722ET0H0P120A
	2.5	380	200	0.016	17 x 8.5 x 27	12/5.0	0.6	SCMDMR5R5255QRH081727ET0H0P120A
	2.5	260	140	0.016	21 x 11x 22	15.5/5.5	0.6	SCMDMR5R5255QRH112122ET0H0P155A
	3.5	340	180	0.02	17 x 8.5x 32	12/5.0	0.6	SCMDMR5R5355QRH081732ET0H0P120A
	3.5	280	150	0.02	21x 11x 22	15.5/5.5	0.6	SCMDMR5R5355QRH112122ET0H0P155A
	3.5	240	130	0.02	21 x11x27	15.5/5.5	0.6	SCMDMR5R5355QRH112127ET0H0P155A
	5	200	110	0.03	21 x11x 27	15.5/5.5	0.6	SCMDMR5R5505QRH112127ET0H0P155A
	5	180	100	0.03	26 x 13 x 23	18/8	0.6	SCMDMR5R5505QRH132623ET0H0P180A
	5	180	100	0.03	21 x 11 x 33	15.5/5.5	0.6	SCMDMR5R5505QRH112133ET0H0P155A
	5	180	100	0.03	26 x 13 x 27	18/8	0.6	SCMDMR5R5505QRH132627ET0H0P180A
	8	140	80	0.045	26 x 13 x 27	18/8	0.6	SCMDMR5R5805QRH132627ET0H0P180A
	8	140	80	0.045	26 x 13 x 33	18/8	0.6	SCMDMR5R805QRH132633ET0H0P180A
	10	120	70	0.06	33 x 17 x 24	24/9	0.8	SCMDMR5R5106QRH173324ET0H0P240A
	10	120	70	0.06	26 x 13 x 27	24/9	0.8	SCMDMR5R5106QRH173329ET0H0P240A
	10	140	80	0.06	26 x 13 x 33	18/8	0.6	SCMDMR5R5106QRH132633ET0H0P180A
	12	108	64	0.08	33 x 17 x 29	24/9	0.8	SCMDMR5R5126QRH173329ET0H0P240A
	15	92	56	0.1	33 x 17 x 35	24/9	0.8	SCMDMR5R5156QRH173335ET0H0P240A
18	92	56	0.12	33 x 17 x 35	24/9	0.8	SCMDMR5R5186QRH173339ET0H0P240A	
20	92	56	0.12	33 x 17 x 39	24/9	0.8	SCMDMR5R5206QRH173339ET0H0P240A	
25	84	52	0.14	37 x 18 x 43	26/11	0.8	SCMDMR5R5256QRH183743ET0H0P260A	
35	92	56	0.2	37 x 18 x 53	26/11	0.8	SCMDMR5R5356QRH183753ET0H0P260A	
50	84	52	0.3	37 x 18 x 61	26/11	0.8	SCMDMR5R5506QRH183761ET0H0P260A	

RADIAL EDLC MODULE: SRS SERIES 引线式 EDLC 模组: SRS 系列

Typical application 典型应用

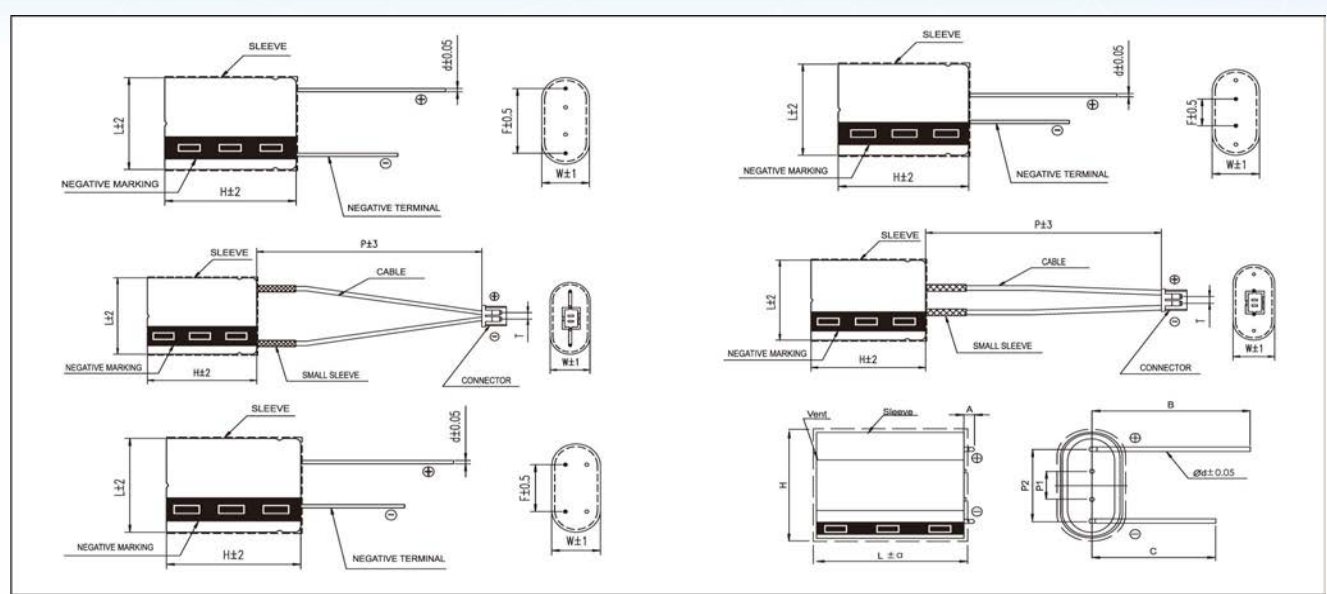
- Intelligent instruments: electronic meter, water meter, gas meter  
智能仪表: 国网电表、水表、燃气表
- Communication terminal: RTU/DTU, DTU, FTU, fault current indicator  
通讯终端: 智能测控终端、智能配电终端、智能馈线终端、故障指示器
- Auto electronics: auto recorder, auto door control, audio control, auto diagnosis system, wireless charging  
汽车电子: 汽车记录仪、汽车门控、音响控制、汽车诊断系统、无线充
- Energy storage: server backup power, motor drive, brake, charging pile, security, fire protection  
储能: 服务器备电、马达驱动、闸机、充电桩、安防、消防
- Consumer: Toys, robots, smart home, medical devices  
消费类: 玩具、机器人、智能家居、医疗器械



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	6V		
Operating Temperature Range 工作温度范围	-40 ~ +65°C (-40 ~ +85°C@5V)		
Surge Voltage 浪涌电压	6.4V		
Capacitance Range 容量范围	0.5 ~ 50F		
Capacitance Tolerance 容差范围 (25°C)	-10 ~ +30%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 65°C 在-40°C至65°C温度范围内, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value at 25°C 在25°C时初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 65°C for 1000 hours 在65°C温度下, 以额定电压恒压1000h后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 65°C for 1000 hours 在65°C温度下, 不加电压储存1000h后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍
Cycle Life 循环寿命	The specifications shall be met after 500,000 cycles at 25°C, cycle of charge/discharge from V <sub>R</sub> to 1/2V <sub>R</sub> 在25°C温度下, V <sub>R</sub> ~ 1/2V <sub>R</sub> 充放电循环500,000次后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍

RADIAL EDLC MODULE: SRS SERIES 引线式 EDLC 模组: SRS 系列

■ Dimensions 尺寸



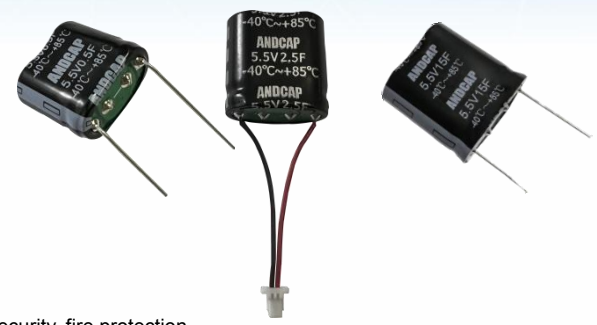
■ Ratings for SRS Series SRS 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Cap. 25°C 额定容量 25°C	Impedance 内阻		Leakage Current 漏电流 (72hrs)	Size 尺寸	Pin spacing 引脚间距	Wire diameter 引线直径	P/N 产品代码
		ESR <sub>DC</sub> 直流内阻	ESR <sub>AC</sub> 交流内阻 (1KHz)					
(v)	(F)	(mΩ)	(mΩ)	(mA)	(mm)	(mm)	(mm)	-
6.0 (6.4) 6R0	0.5	1600	800	0.01	8.5 x 17 x 16	12/5.0	0.6	SCMDSR6R0504QRH081716ET0H0P120A
	1	660	340	0.012	8.5 x 17 x 16	12/5.0	0.6	SCMDSR6R0105QRH081716ET0H0P120A
	1.5	340	180	0.014	8.5 x 17 x 22	12/5.0	0.6	SCMDSR6R0155QRH081722ET0H0P120A
	2.5	780	400	0.02	8.5 x 17 x 27	12/5.0	0.6	SCMDSR6R0255QRH081727ET0H0P120A
	2.5	340	180	0.02	11 x 21 x 22	15.5/5.5	0.6	SCMDSR6R0255QRH112122ET0H0P155A
	3.5	420	220	0.03	8.5 x 17 x 32	12/5.0	0.6	SCMDSR6R0355QRH081732ET0H0P120A
	3.5	340	180	0.03	11 x 21 x 22	15.5/5.5	0.6	SCMDSR6R0355QRH112122ET0H0P155A
	3.5	260	140	0.03	11x21x27	15.5/5.5	0.6	SCMDSR6R0355QRH112127ET0H0P155A
	5	380	200	0.045	11 x 21 x 27	15.5/5.5	0.6	SCMDSR6R0505QRH112127ET0H0P155A
	5	220	120	0.045	13 x 26 x 23	18/8	0.6	SCMDSR6R0505QRH132623ET0H0P180A
	5	220	120	0.045	11 x 21 x 33	15.5/5.5	0.6	SCMDSR6R0505QRH112133ET0H0P155A
	5	220	120	0.045	13 x 26 x 27	18/8	0.6	SCMDSR6R0505QRH132627ET0H0P180A
	7.5	160	90	0.055	13 x 26 x 27	18/8	0.6	SCMDSR6R0755QRH132627ET0H0P180A
	7.5	160	90	0.055	13 x 26 x 33	18/8	0.6	SCMDSR6R0755QRH132633ET0H0P180A
	10	132	76	0.055	17 x 33 x 24	24/9	0.8	SCMDSR6R0106QRH173324ET0H0P240A
	10	132	76	0.07	13 x 26 x 27	18/8	0.6	SCMDSR6R0106QRH132627ET0H0P180A
	10	132	76	0.07	13 x 26 x 33	18/8	0.6	SCMDSR6R0106QRH132633ET0H0P180A
	12.5	120	70	0.1	17x 33 x 29	24/9	0.8	SCMDSR6R0126QRH173329ET0H0P240A
	15	120	70	0.12	17 x 33 x 35	24/9	0.8	SCMDSR6R0156QRH173335ET0H0P240A
	17.5	104	62	0.15	17 x 33 x 35	24/9	0.8	SCMDSR6R0176QRH173335ET0H0P240A
20	104	62	0.25	17 x 33 x 39	24/9	0.8	SCMDSR6R0206QRH173339ET0H0P240A	
25	100	60	0.35	18 x 37 x 43	26/11	0.8	SCMDSR6R0256QRH183743ET0H0P260A	
35	100	60	0.45	18 x 37 x 53	26/11	0.8	SCMDSR6R0356QRH183753ET0H0P260A	
50	92	56	0.55	18 x 37 x 61	26/11	0.8	SCMDSR6R0506QRH183761ET0H0P260A	

# RADIAL EDLC MODULE: SRO SERIES 引线式 EDLC 模组: SRO 系列

## Typical application 典型应用

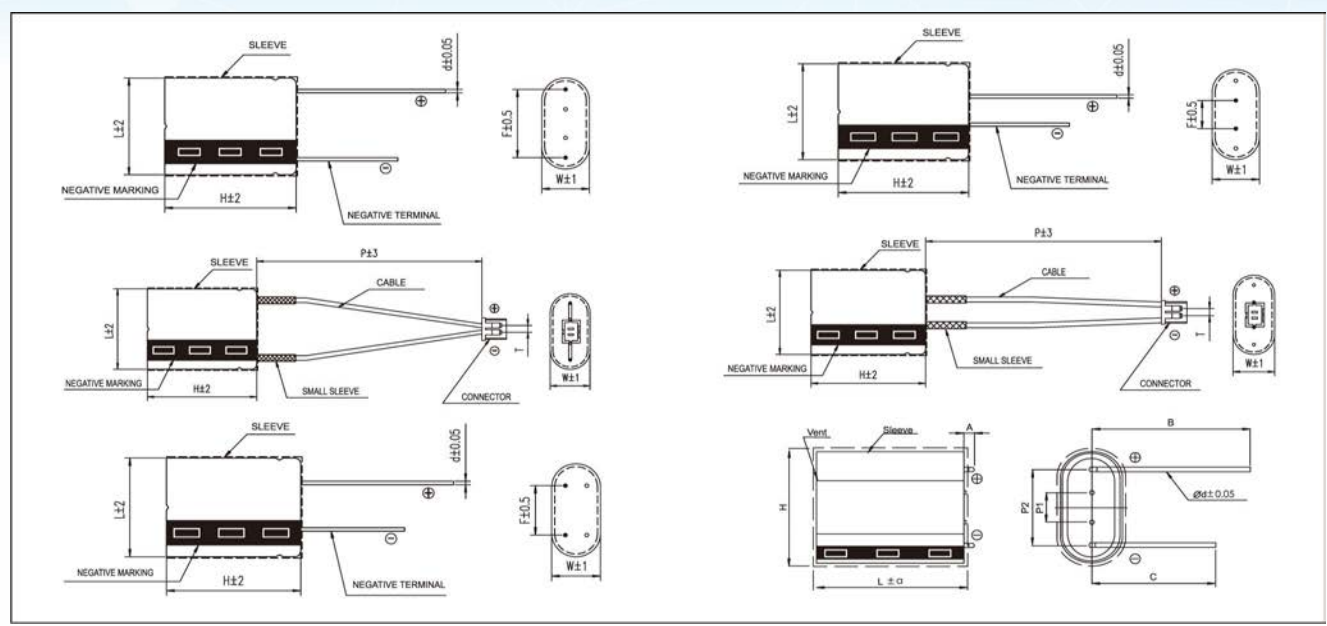
- Intelligent instruments: electronic meter, water meter, gas meter  
智能仪表: 国网电表、水表、燃气表
- Communication terminal: RTU/DTU, DTU, FTU, fault current indicator  
通讯终端: 智能测控终端、智能配电终端、智能馈线终端、故障指示器
- Auto electronics: auto recorder, auto door control, audio control, auto diagnosis system, wireless charging  
汽车电子: 汽车记录仪、汽车门控、音响控制、汽车诊断系统、无线充
- Energy storage: server backup power, motor drive, brake, charging pile, security, fire protection  
储能: 服务器备电、马达驱动、闸机、充电桩、安防、消防
- Consumer: Toys, robots, smart home, medical devices  
消费类: 玩具、机器人、智能家居、医疗器械



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	5.5V		
Operating Temperature Range 工作温度范围	-40 ~ +85°C		
Surge Voltage 浪涌电压	5.7V		
Capacitance Range 容量范围	0.5 ~ 25F		
Capacitance Tolerance 容差范围 (25°C)	-10 ~ +30%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 85°C 在-40°C至 85°C温度范围内, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value at 25°C 在 25°C时初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的 4 倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 85°C for 1000 hours 在 85°C温度下, 以 5.0V 恒压 1000h 后, 应满足	Capacitance change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的 4 倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 85°C for 1000 hours 在 85°C温度下, 不加电压储存 1000h 后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的 4 倍
Cycle Life 循环寿命	The specifications shall be met after 500,000 cycles at 25°C, cycle of charge/discharge from V <sub>R</sub> to 1/2V <sub>R</sub> 在 25°C 温度下, V <sub>R</sub> ~ 1/2V <sub>R</sub> 充放电循环 500,000 次后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的 30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的 4 倍

RADIAL EDLC MODULE: SRO SERIES 引线式 EDLC 模组: SRO 系列

Dimensions 尺寸



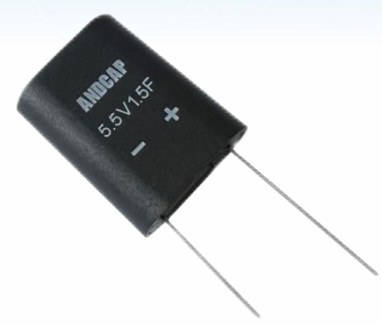
Ratings for SRO Series SRO 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Capacitance 额定容量 25°C (F)	Impedance 内阻		Leakage Current 漏电流 (72hrs) (mA)	Size 尺寸 (L x W x H) (mm)	Pin spacing 引脚间距 (F) (mm)	Wire diameter 引线直径 (d) (mm)	P/N 产品代码
		ESR <sub>DC</sub> 直流内阻 (mΩ)	ESR <sub>AC</sub> 交流内阻 (1KHz) (mΩ)					
(v)	(F)	(mΩ)	(mΩ)	(mA)	(mm)	(mm)	(mm)	-
5.5 (5.7) 5R5	0.5	1600	800	0.01	17 x 8.5 x 16	12/5.0	0.6	SCMDOR5R5504QRH081716ET0H0P120A
	1	660	340	0.012	17 x 8.5 x 16	12/5.0	0.6	SCMDOR5R5105QRH081716ET0H0P120A
	1.5	340	180	0.014	17 x 8.5 x 22	12/5.0	0.6	SCMDOR5R5155QRH081722ET0H0P120A
	2.5	780	400	0.02	17 x 8.5 x 27	12/5.0	0.6	SCMDOR5R5255QRH081727ET0H0P120A
	2.5	340	180	0.02	21 x 11x 22	15.5/5.5	0.6	SCMDOR5R5255QRH112122ET0H0P155A
	3.5	420	220	0.03	17 x 8.5x 32	12/5.0	0.6	SCMDOR5R5355QRH081732ET0H0P120A
	3.5	340	180	0.03	21x 11x 22	15.5/5.5	0.6	SCMDOR5R5355QRH112122ET0H0P155A
	3.5	260	140	0.03	21 x11 x27	15.5/5.5	0.6	SCMDOR5R5355QRH112127ET0H0P155A
	5	380	200	0.045	21 x11 x27	15.5/5.5	0.6	SCMDOR5R5505QRH112127ET0H0P155A
	5	220	120	0.045	26 x 13 x 23	18/8	0.6	SCMDOR5R5505QRH132623ET0H0P180A
	5	220	120	0.045	21 x 11 x 33	15.5/5.5	0.6	SCMDOR5R5505QRH112133ET0H0P155A
	5	220	120	0.045	26 x 13 x 27	18/8	0.6	SCMDOR5R5505QRH132627ET0H0P180A
	8	160	90	0.055	26 x 13 x 27	18/8	0.6	SCMDOR5R5805QRH132627ET0H0P180A
	8	160	90	0.055	26 x 13 x 33	18/8	0.6	SCMDOR5R5805QRH132633ET0H0P180A
	10	132	76	0.055	33 x 17 x 24	24/9	0.8	SCMDOR5R5106QRH173324ET0H0P240A
	10	132	76	0.07	26 x 13 x 27	18/8	0.6	SCMDOR5R5106QRH132627ET0H0P180A
	10	132	76	0.07	26 x 13 x 33	18/8	0.6	SCMDOR5R5106QRH132633ET0H0P180A
	12	120	70	0.1	33 x 17 x 29	24/9	0.8	SCMDOR5R5126QRH173329ET0H0P240A
	15	120	70	0.12	33 x 17 x 35	24/9	0.8	SCMDOR5R5156QRH173335ET0H0P240A
	18	104	62	0.15	33 x 17 x 35	24/9	0.8	SCMDOR5R5186QRH173335ET0H0P240A
20	104	62	0.25	33 x 17 x 39	24/9	0.8	SCMDOR5R5206QRH173339ET0H0P240A	
25	100	60	0.35	37 x 18 x 43	26/11	0.8	SCMDOR5R5256QRH183743ET0H0P260A	

RADIAL EDLC MODULE: SRO SEALING SERIES 引线式 EDLC 模组: SRO 密封系列

Typical application 典型应用

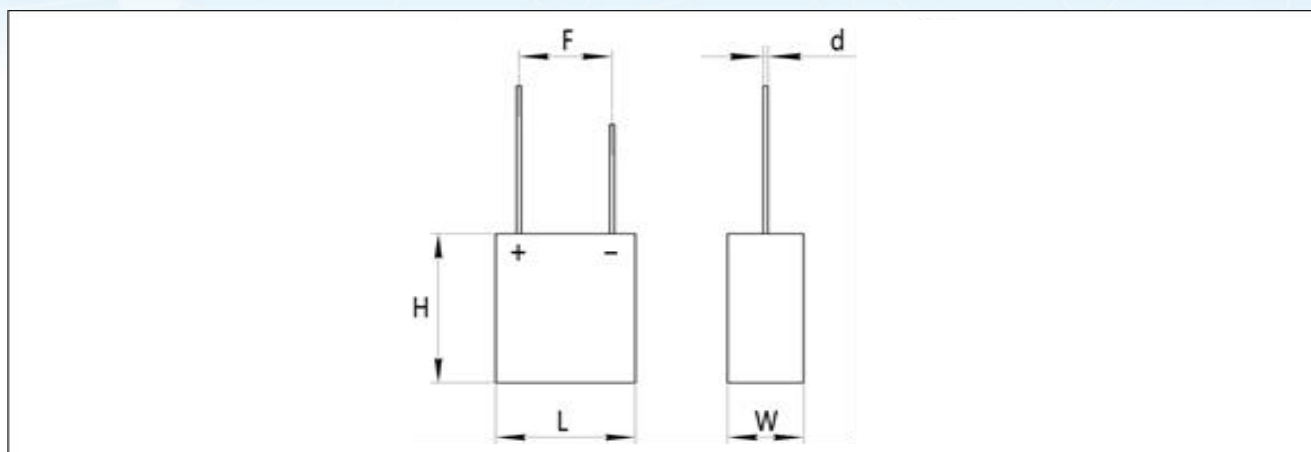
- Intelligent instruments: electronic meter, water meter, gas meter  
智能仪表: 国网电表、水表、燃气表
- Communication terminal: RTU/DTU, DTU, FTU, fault current indicator  
通讯终端: 智能测控终端、智能配电终端、智能馈线终端、故障指示器
- Auto electronics: auto recorder, auto door control, audio control, auto diagnosis system, wireless charging  
汽车电子: 汽车记录仪、汽车门控、音响控制、汽车诊断系统、无线充
- Energy storage: server backup power, motor drive, brake, charging pile, security, fire protection  
储能: 服务器备电、马达驱动、闸机、充电桩、安防、消防
- Consumer: Toys, robots, smart home, medical devices  
消费类: 玩具、机器人、智能家居、医疗器械



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	5.5V		
Operating Temperature Range 工作温度范围	-40 ~ +85°C		
Surge Voltage 浪涌电压	5.7V		
Capacitance Range 容量范围	0.33 ~ 5F		
Capacitance Tolerance 容差范围 (25°C)	-10 ~ +30%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 85°C 在-40°C至85°C温度范围内, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value at 25°C 在25°C时初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 85°C for 1000 hours 在85°C温度下, 以5.0V恒压1000h后, 应满足	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 85°C for 1000 hours 在85°C温度下, 不加电压储存1000h后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍
Cycle Life 循环寿命	3The specifications shall be met after 500,000 cycles at 25°C, cycle of charge/discharge from V <sub>R</sub> to 1/2V <sub>R</sub> 在25°C温度下, V <sub>R</sub> ~ 1/2V <sub>R</sub> 充放电循环500,000次后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的4倍

## RADIAL EDLC MODULE: SRO SEALING SERIES 引线式 EDLC 模组: SRO 密封系列

## ■ Dimensions 尺寸



## ■ Ratings for SRO Sealing Series SRO 密封系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Capacitance 额定容量 25°C	Impedance 内阻		Leakage Current 漏电流 (72hrs)	Size 尺寸 (L x W x H)	Pin spacing 引脚间距 (F)	Wire diameter 引线直径 (d)	P/N 产品代码
		ESR <sub>DC</sub> 直流内阻	ESR <sub>AC</sub> 交流内阻 (1KHz)					
(V)	(F)	(mΩ)	(mΩ)	(mA)	(mm)	(mm)	(mm)	-
5.5 (5.7) 5R5	0.33	1420	720	0.006	15.3 x 9 x 16.5	8.8/4.2	0.5	SCMDOR5R5334MRH091516ET0H0P088A
	0.5	1600	800	0.008	18.5 x 10.5 x 18.5	12/5.0	0.6	SCMDOR5R5504QRH101818ET0H0P120A
	1	660	340	0.010	18.5 x 10.5 x 18.5	12/5.0	0.6	SCMDOR5R5105QRH101818ET0H0P120A
	1.5	340	180	0.016	18.5 x 10.5 x 23.5	12/5.0	0.6	SCMDOR5R5155QRH101823ET0H0P120A
	1.5	340	180	0.014	22.5 x 12.5 x 20.5	15.5/5.5	0.6	SCMDOR5R5155QRH122220ET0H0P155A
	2.5	340	180	0.02	22.5 x 12.5 x 24.5	15.5/5.5	0.6	SCMDOR5R5255QRH122224ET0H0P155A
	3.5	340	180	0.03	22.5 x 12.5 x 24.5	15.5/5.5	0.6	SCMDOR5R5355QRH122224ET0H0P155A
	5	380	200	0.045	22.5 x 12.5 x 28.5	15.5/5.5	0.6	SCMDOR5R5505QRH122228ET0H0P155A

RADIAL EDLC MODULE: SMRE, SMRP SERIES 引线式 EDLC 模组: SMRE, SMRP 系列

Typical application 典型应用

- Server backup power  
服务器后备电源
- Communication terminal: RTU/DTU, DTU, FTU, fault current indicator  
通讯终端: 智能测控终端、智能配电终端、智能馈线终端、故障指示器
- Auto electronics: auto recorder, auto door control, audio control, auto diagnosis system, wireless charging  
汽车电子: 行车记录仪、汽车门控、音响控制、汽车诊断系统、无线充



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	7.5-25V		
Operating Temperature Range 工作温度范围	-40 ~ +65°C		
Capacitance Range 容量范围	0.33 ~ 10F		
Capacitance Tolerance 容差范围 (25°C)	-10 ~ +30%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 65°C 在-40°C至65°C温度范围内, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value at 25°C 在25°C时初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 70°C for 1000 hours 在65°C温度下, 以5.0V恒压1000h后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 70°C for 1000 hours 在70°C温度下, 不加电压储存1000h后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
Cycle Life 循环寿命	The specifications shall be met after 500,000 cycles at 25°C, cycle of charge/discharge from V <sub>R</sub> to 1/2V <sub>R</sub> 在25°C温度下, V <sub>R</sub> ~ 1/2V <sub>R</sub> 充放电循环500,000次后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍

Ratings for SMRE、SMRP Series SMRE、SMRP 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Capacitance 额定容量 25°C (*)	ESR <sub>DC</sub> 直流内阻	Leakage Current 漏电流(72hrs)	Max. Peak Current (1s) 峰值电流	Size 尺寸 (LxWxH)	Weight 重量	P/N 产品代码
(V)	(F)	(mΩ)	(mA)	(A)	(mm)	(g)	-
7.5	3	290	0.03	6	39 x 13 x 27	20	SCMDPR7R5305QA
12.5	0.65	770	0.014	2.7	43 x 9.5 x 22	8	SCMDPR012654QA
13.5	8	350	0.25	14	64 x 13 x 51	50	SCMDER013805QA
25	10	340	0.3	28	100 x 40 x 63	230	SCMDPR025106QA

\* Customer products are available on request.

# LUG/SNAP-IN EDLC MODULE: SMSP SERIES 焊针式/焊片式 EDLC 模组: SMSP 系列

## Typical application 典型应用

- Energy controller backup power  
能源控制器后备电源
- Smart grid backup power supply  
电网后备电源
- Special vehicle power supply  
特种车辆电源



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	5.4-800V		
Operating Temperature Range 工作温度范围	-40 ~ +65°C		
Capacitance Range 容量范围	7.5 ~ 180F		
Capacitance Tolerance 容差范围 (25°C)	-10 ~ +30%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 65°C 在-40°C至65°C温度范围内, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value at 25°C 在25°C时初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 65°C for 1000 hours 在65°C温度下, 以额定电压恒压1500h后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 70°C for 1000 hours 在70°C温度下, 不加电压储存1000h后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
Cycle Life 循环寿命	The specifications shall be met after 500,000 cycles at 25°C, cycle of charge/discharge from V <sub>R</sub> to 1/2V <sub>R</sub> 在25°C温度下, V <sub>R</sub> ~ 1/2V <sub>R</sub> 充放电循环500,000次后, 应满足规范	Capacitance change 容量变化	Within 30% of the initial value 在初始值的30%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍

## Ratings for SMSP Series SMSP 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Capacitance 额定容量 25°C (*)	ESR <sub>DC</sub> 直流内阻	Leakage Current 漏电流(72hrs)	Max. Peak Current (1s) 峰值电流	Size 尺寸 (LxWxH)	Weight 重量	P/N 产品代码
(v)	(F)	(mΩ)	(mA)	(A)	(mm)	(Kg)	-
5.4	165	10	2	3	62x 36 x61	0.1	SCMDES5R4167RA
12	30	70	0.3	58	93 x 29 x50	0.13	SCMDPS012306QA
	40	55	0.5	75	103 x 31 x52	0.15	SCMDPS012406QA
27	180	30	1.8	380	400 x 140 x92	6.5	SCMDPS027187QA
64	19.5	100	1.0	220	435 x 72 x68	2.5	SCMDPS064196QA
432	7.5	105	2.7	930	650 x 520 x205	56	SCMDPS432755QA
800	9.3	120	6	1900	600 x 700 x1800	250	SCMDPS800935QA

\* Customer products are available on request.

## LUG/SNAP-IN EDLC MODULE:SSM SERIES 焊针式/焊片式 EDLC 模组:SSM 系列

## Typical application 典型应用

- Backup power supply for fan rotor system  
风机变桨系统后备电源
- Energy storage system of construction machinery  
工程机械储能系统
- Industrial standby power supply  
工业备用电源
- AGV on-board power supply  
AGV 车载电源



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	80-160V		
Operating Temperature Range 工作温度范围	-40 ~ +65°C		
Capacitance Range 容量范围	6 ~ 21.7F		
Capacitance Tolerance 容差范围 (25°C)	0 ~ +20%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 65°C 在-40°C至65°C温度范围内, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value at 25°C 在25°C时初始值的20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 65°C for 1000 hours 在65°C温度下, 以额定电压恒压1000h后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 70°C for 1000 hours 在70°C温度下, 不加电压储存1000h后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
Cycle Life 循环寿命	The specifications shall be met after 500,000 cycles at 25°C, cycle of charge/discharge from V <sub>R</sub> to 1/2V <sub>R</sub> 在25°C温度下, V <sub>R</sub> ~ 1/2V <sub>R</sub> 充放电循环500,000次后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍

## Ratings for SSM Series SSM 系列额定值

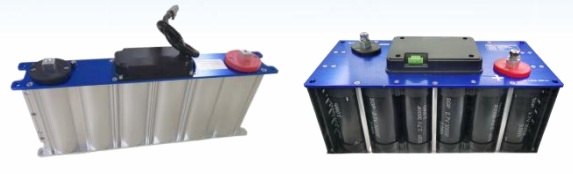
U <sub>R</sub> (Surge Voltage) Code 额定电压(浪涌电压) 代码	Rated Capacitance 额定容量 25°C (*)	ESR <sub>DC</sub> 直流内阻	Leakage Current 漏电流(72hrs)	Max. Peak Current (1s) 峰值电流	Size 尺寸 (LxWxH)	Weight 重量	P/N 产品代码
(V)	(F)	(mΩ)	(mA)	(A)	(mm)	(Kg)	-
80	21.7	70	60	440	465 x 150 x207	9.5	SCMDPS080216RA
85	20.6	75	60	400	400x148x213	11	SCMDPS085206RA
90	9.6	130	30	220	305 x 112 x270	7.5	SCMDPS090965RA
	11.1	130	30	220	305 x 112 x270	7.5	SCMDPS090116RA
	13	130	30	220	305 x 112 x270	7.5	SCMDPS090136RA
	19.4	75	60	440	410 x 150 x211	11	SCMDPS090196RA
125	7.2	200	30	220	390x190x80	5.5	SCMDPS125725RA
160	6	240	30	220	379 x 251 x83	6.5	SCMDPS160605RA
	10	220	30	320	420 x 90 x300	9	SCMDPS160106RA
	12	220	30	320	480 x 90 x336	11.5	SCMDPS160126RA
	13	220	30	320	480x90x336	14	SCMDPS160136RA
	13	160	30	360	428x105x300	14	SCMDPS160136RA

\* Customer products are available on request.

# SCREW EDLC MODULE: SMGP SERIES 螺栓式 EDLC 模组: SMGP 系列

## Typical application 典型应用

- DVR voltage sag power compensation system DVR 电压暂降功率补偿
- Low temperature cold start power module 低温冷启动电源模块
- Hybrid electric vehicle 混合动力汽车
- Rail 轨道交通
- Heavy industrial equipment 重型工业设备
- UPS system UPS 系统



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	16-48V		
Operating Temperature Range 工作温度范围	-40 ~ +65°C		
Capacitance Range 容量范围	165 ~ 500F		
Capacitance Tolerance 容差范围 (25°C)	-10 ~ +30%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -40°C to 65°C 在-40°C至65°C温度范围内, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value at 25°C 在25°C时初始值的20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 65°C for 1000 hours 在65°C温度下, 以额定电压恒压1500h后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 70°C for 1000 hours 在70°C温度下, 不加电压储存1000h后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍
Cycle Life 循环寿命	The specifications shall be met after 500,000 cycles at 25°C, cycle of charge/discharge from V <sub>R</sub> to 1/2V <sub>R</sub> 在25°C温度下, V <sub>R</sub> ~ 1/2V <sub>R</sub> 充放电循环500,000次后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的2倍

## Ratings for SMGP Series SMGP 系列额定值

U <sub>R</sub> (Surge Voltage) Code 额定电压 (浪涌电压) 代码	Rated Capacitance 额定容量 25°C (*)	ESR <sub>DC</sub> 直流内阻	Leakage Current 漏电流(72hrs)	Max. Peak Current (1s) 峰值电流	Size 尺寸 (LxWxH)	Weight 重量	P/N 产品代码
(V)	(F)	(mΩ)	(mA)	(A)	(mm)	(Kg)	-
16	500	2	5.2	1900	68 x 418 x 179	5.5	SCMDPG016507RA
27	300	2.5	5.2	1900	174 x 330 x 240	7	SCMDPG027307RA
48	165	6	5.2	1900	418 x 194 x 179	13.5	SCMDPG048167RA

\* Customer products are available on request.

# SOFT PACK LIC MODULE:HMAA SERIES 软包式 LIC 模组:HMAA 系列

## Typical application 典型应用

- Smart grid primary frequency modulation 智能电网一次调频系统
- Energy feedback system 能量回馈系统
- Tunnel locomotive,mining locomotive 隧道机车、矿用机车
- Port truck 码头车
- Pure electric bus 纯电动公交车
- Ferry, sightseeing car, golf cart, AGV and RGV 渡轮、观光车、高尔夫球车、AGV 及 RGV
- Energy saving elevator 节能电梯
- Hybrid power driven engineering machinery and harbor machinery 混合动力工程机械及港口机械
- Emergency UPS 应急后备电源
- Electric tools 电动工具
- Wind power, solar and other renewable energy storage 风电、光伏等可再生能源储能



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	12-720V		
Operating Temperature Range 工作温度范围	-25 ~ +55°C		
Capacitance Range 容量范围	277 ~ 14000F		
Capacitance Tolerance 容差范围 (25°C)	-20 ~ +20%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -25°C to 55°C 在-25°C至 55°C温度范围内, 应满足规范	Capacitance change 容量变化	Within 50% of the initial value at 25°C 在 25°C时初始值的 50%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的 4 倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 55°C for 1000 hours 在 55°C温度下, 以额定电压恒压 1000h 后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的 20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 55°C for 1000 hours 在 55°C温度下, 不加电压储存 1000h 后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的 20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
Cycle Life 循环寿命	The specifications shall be met after 50,000 cycles at 25°C, cycle of charge/discharge from 2.5 ~ 4V 在 25°C温度下, 2.5 ~ 4V 充放电循环 50,000 次后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的 20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍

## SOFT PACK LIC MODULE:HMAA SERIES 软包式 LIC 模组:HMAA 系列

## Ratings for HMAA Series HMAA 系列额定值

## HMAA Modules HMAA 模组

$U_R$ 额定电压	$U_{min}$ 最低电压	Rated Capacitance 25°C/额定容量 (*)	$ESR_{DC}$ 直流内阻	Rated Current 额定电流	Size 尺寸 (LxWxH)	Weight 重量	P/N 产品代码
(v)	(v)	(F)	(mΩ)	(A)	(mm)	(Kg)	-
12	7.5	10600	4	100	320 x 140 x 105	5	SCMHAA012109MA
32	20	12000	5	300	650x160x345	27	SCMHAA032129MA
64	43	400	80	32	458 x 228 x 75	6.4	SCMHAA064407MA
136	90	277	100	50	305 x 138 x415	17.5	SCMHAA136277MA

## HMAA System HMAA 系统

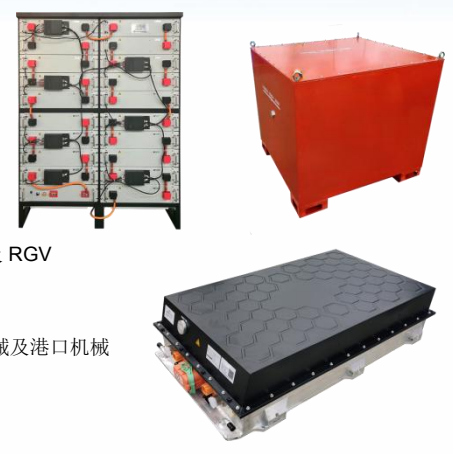
$U_R$ 额定电压	$U_{min}$ 最低电压	Rated Cap. 25°C/额定容量 (*)	$ESR_{DC}$ 直流内阻	Rated Current 额定电流	Size 尺寸 (LxWxH)	Weight 重量	P/N 产品代码
(v)	(v)	(F)	(mΩ)	(A)	(mm)	(Kg)	-
56	35	14000	5	1000	802 x 725 x 471	665	SCMHAA056149MA
600	375	400	100	300	950 x 600 x2350	980	SCMHAA600407MA
640	400	1250	30	1000	2872 x 1450 x865	2500	SCMHAA640128MA
720	460	520	110	300	1500 x 650 x2520	1325	SCMHAA720527MA

\*Customer products are available on request.

SOFT PACK LIC MODULE:HMAE SERIES 软包式 LIC 模组:HMAE 系列

Typical application 典型应用

- Smart grid primary frequency modulation 智能电网一次调频系统
- Energy feedback system 能量回馈系统
- Tunnel locomotive,mining locomotive 隧道机车、矿用机车
- Port truck 码头车
- Pure electric bus 纯电动公交车
- Ferry, sightseeing car, golf cart, AGV and RGV 渡轮、观光车、高尔夫球车、AGV 及 RGV
- Energy saving elevator 节能电梯
- Hybrid power driven engineering machinery and harbor machinery 混合动力工程机械及港口机械
- Emergency UPS 应急后备电源
- Electric tools 电动工具
- Wind power, solar and other renewable energy storage 风电、光伏等可再生能源储能



Items 项目	Characteristics 特性		
Rated Voltage 额定电压	4.2-700V		
Operating Temperature Range 工作温度范围	-25 ~ +55℃		
Capacitance Range 容量范围	1190 ~ 900000F		
Capacitance Tolerance 容差范围 (25℃)	-20 ~ +20%		
Temperature Characteristics 温度特性	The specifications shall be met at category temperature range from -25℃ to 55℃ 在-25℃至 55℃温度范围内, 应满足规范	Capacitance change 容量变化	Within 50% of the initial value at 25℃ 在 25℃时初始值的 50%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 4 times of the initial specified value 不超过初始规定值的 4 倍
High Temperature Loaded 高温负荷	The specifications shall be met after rated voltage applied at 55℃ for 1000 hours 在 55℃温度下, 以额定电压恒压 1000h 后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的 20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
High Temperature Storage 高温储存	The specifications shall be met after storage at 55℃ for 1000 hours 在 55℃温度下, 不加电压储存 1000h 后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的 20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍
Cycle Life 循环寿命	The specifications shall be met after 50,000 cycles at 25℃, cycle of charge/discharge from 2.5 ~ 4V 在 25℃温度下, 2.5 ~ 4V 充放电循环 50,000 次后, 应满足规范	Capacitance change 容量变化	Within 20% of the initial value 在初始值的 20%以内
		ESR <sub>AC</sub> change 交流内阻变化	Not more than 2 times of the initial specified value 不超过初始规定值的 2 倍

## SOFT PACK LIC MODULE:HMAE SERIES 软包式 LIC 模组:HMAE 系列

## ■ Ratings for HMAE Series HMAE 系列额定值

## HMAE Modules HMAE 模组

U <sub>R</sub> 额定电压	U <sub>min</sub> 最低电压	Rated Cap. 25°C/额定容量 (*)	ESR <sub>DC</sub> 直流内阻	Rated Current 额定电流	Size 尺寸 (LxWxH)	Weight 重量	P/N 产品代码
(v)	(v)	(F)	(mΩ)	(A)	(mm)	(Kg)	-
4.2	2.5	900000	1	2000	286 x210 x1020	50	SCMHAE4R29010MA
56	35	7500	5	262	610 x910 x170	85	SCMHAE056758MA
72	45	8300	5	375	975x 695 x 162	115	SCMHAE072838MA
84	52.5	5710	6.5	300	900x 570 x 160	110	SCMHAE084578MA

## HMAE System HMAE 系统

U <sub>R</sub> 额定电压	U <sub>min</sub> 最低电压	Rated Capacitance 25°C/额定容量 (*)	ESR <sub>DC</sub> 直流内阻	Rated Current 额定电流	Size 尺寸 (LxWxH)	Weight 重量	P/N 产品代码
(v)	(v)	(F)	(mΩ)	(A)	(mm)	(Kg)	-
650	405	1480	20	600	1500 x 1250 x 1950	1790	SCMHAE650148MA
650	405	2100	18	850	1500 x 1350 x 1950	1980	SCMHAE650218MA
700	490	1190	30	500	1500 x 1150 x 2060	2250	SCMHAE700118MA

\*Customer products are available on request.

## TECHNICAL NOTES of EDLC EDLC 技术说明

## ■ TECHNICAL NOTES of EDLC

## 1. General Description of Electric Double Layer Capacitors

## 1-1. Operating Principle

By externally applying a voltage below a certain voltage to the boundary, higher charges can be accumulated. Charge and discharge of capacitor utilize adsorption and desorption of ions to the ionic adsorption layer (electric double layer) formed on the electrode surface of the activated carbon used for electrodes. The capacitors have electric charges oriented at the very short distance on boundary of electrolyte and electrodes what is called the "electric double layer capacitor."

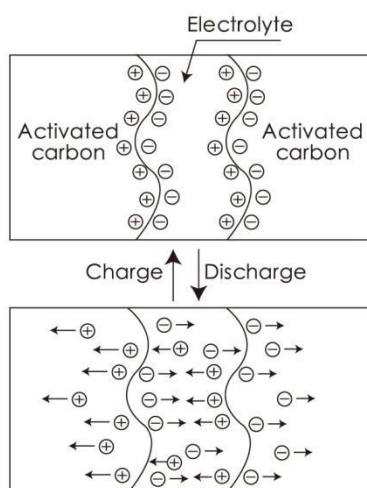


Fig. 1

## 1-2. Advantages and Disadvantages of Electric Double Layer Capacitor

EDLC differs from rechargeable batteries, not causing chemical reaction, with surface of activated carbon with energy accumulation by ionic physical attachment only, therefore it holds the characteristics stated below;

## ■ Advantages

- (1) Small size and capacitance in farads(F) available by utilizing the activated carbon electrode with a large surface area
- (2) With low degradation, million cycles of charge-discharge and long life is possible
- (3) With a high power density, rapid (high current) charge-discharge is possible
- (4) Ease of maintenance
- (5) Environment-friendly without using heavy metal for its structure material

## ■ Disadvantages

- (1) Low energy density
- (2) Series connection is required when used with a low resistance of voltage at a high voltage
- (3) Cannot be used in AC circuits

## 1、双电层电容器的基本概要

## 1-1、工作原理

在额定电压范围内，通过外部施加电压使得电荷在界面积聚。电容的充放电通过在活性炭电极表面形成的离子吸附界面(双电层)处 离子的吸附和脱附来实现。利用电解液和电极的界面之间相隔的距离 极其短，电荷在界面处集中排列从而形成物理储电的电容，称为“双电层电容”。

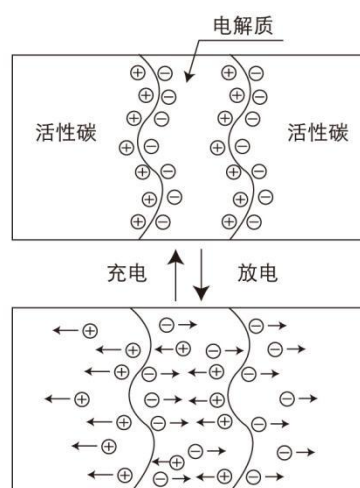


图. 1

## 1-2、EDLC 的特点

EDLC 不同于二次电池，不发生化学反应，利用活性炭表面离子的物理吸附实现储能，因此具有以下特征：

## ■ 优势：

- (1) 利用活性炭的比表面获得小体积和大容量
- (2) EDLC 劣化缓慢，具有长寿命和上百万次的循环寿命
- (3) 具有高输出功率特性，实现快速充放电
- (4) 易于维护
- (5) 构成材料中没有使用重金属元素，环境友好

## ■ 劣势：

- (1) 低能量密度
- (2) 由于单体电压低，在高电压使用时需要多只串联。
- (3) 不能使用在 AC 电路中。

## TECHNICAL NOTES of EDLC EDLC 技术说明

**2. Description of life expectancy**

Generally, the life of Electric Double Layer Capacitors is largely affected by the ambient temperature and operating voltage. The expected life is approximated by the equation as shown below:

2.7V EDLC:

$$L = L_0 \times 3.25^{\frac{T_0 - T}{10}} \times 1.52^{\frac{V_0 - V}{0.1}}$$

3V EDLC:

$$L = L_0 \times 3.1^{\frac{T_0 - T}{10}} \times 1.58^{\frac{V_0 - V}{0.1}}$$

Where:

- L : Expected lifetime at temperature T
- L<sub>0</sub> : Lifetime at temperature T<sub>0</sub>
- T : Expected working temperature
- T<sub>0</sub> : Upper category temperature
- V : Actual working voltage
- V<sub>0</sub> : Upper rated working voltage

**3. Handling Precautions and Guidelines**

For safety application, please contact company directly for any technical specifications, handling precautions and guidelines critical to application.

**3-1. Precautions****(1) Prohibition of disassembly**

The disassembling may generate internal short circuit in the cell, which may cause gassing, leakage, explosion, or other problems. Electrolyte is harmful: In case the electrolyte comes into contact with the skin, or eyes, physicians shall flush the electrolyte immediately with fresh water and medical advice is to be sought.

**(2) Prohibition of dumping of cells into fire**

These may cause explosion of the cells, which is very dangerous and is prohibited.

**(3) Prohibition of cells immersion into liquid.**

The cells shall never be soaked with liquids such as water, seawater, drinks such as juices, coffee or others.

**(4) Prohibition of use of damaged cells.**

The cells might be damaged during shipping by shock. If any abnormal features of the cells are found such as damages in the cell package, smelling of an electrolyte, an electrolyte leakage and others, the cells shall never be used any more. The Cells with a smell of the electrolyte or leakage shall be placed away from fire to avoid firing or explosion.

**2、寿命估算**

一般来说，环境温度和工作电压对 EDLC 的寿命影响很大。其理论估算寿命的计算公式参照如下：

2.7V 双电层电容器：

$$L = L_0 \times 3.25^{\frac{T_0 - T}{10}} \times 1.52^{\frac{V_0 - V}{0.1}}$$

3V 双电层电容器：

$$L = L_0 \times 3.1^{\frac{T_0 - T}{10}} \times 1.58^{\frac{V_0 - V}{0.1}}$$

其中：

- L: T 温度下理论寿命
- L<sub>0</sub>: 最高额定工作温度的工作寿命
- T: 实际工作温度
- T<sub>0</sub>: 最高额定工作温度
- V: 实际工作电压
- v: 最高额定工作电压

**3、使用注意事项和使用手册**

为了确保安全，当设计的设备需使用电容时，请与公司联系咨询电容的技术规格以及使用要求。

**3-1、注意事项****(1) 禁止拆卸**

拆卸电容器可能产生内部短路，导致产气，电解液泄漏。电解液有害，如果电解液接触皮肤或者眼睛，应该立即用清水冲洗并且寻求医生的治疗。

**(2) 禁止将电容器投入火中**

将电容器投入火中可能导致爆炸，这种行为是非常危险，是被禁止的。

**(3) 禁止将电容器浸没于液体中**

电容器不允许被浸泡在液体中，例如水，盐水，饮料例如果汁，咖啡或者其它。

**(4) 禁止使用已经损坏的电容器**

如果使用前发现电容的外包装破裂，闻到电解液的气味，电解液泄漏或者其它非正常情况，请勿继续使用。

## TECHNICAL NOTES of EDLC EDLC 技术说明

## 3-2. Handling Guidelines

(1) It is not suitable that cell is used under such conditions: AC circuit and wave filtering.

## (2) Voltage

Work voltage of cell should not exceed Max. Work voltage of cell during using. Otherwise, will shorten shelf life, even cause swelling, leakage or crack.

## (3) Polarity

Please check the polarity before using. If working under reverse polarity, cell will not only shorten shelf life, but also heavy damage, such as swelling, electrolyte leakage etc.

## (4) Environment

Work temperature will have an influence on life of cell. As usual, higher work temperature will shorten life. So, it is better that cell works under as possible as low environmental temperature.

Work temperature of cell should consider internal environmental temperature in the unit and temperature rise when cell works.

## (5) IR drop

When main power sources shut down, cell will change into work mode from failure mode, at the same time, OCV will decrease due to IR drop. So please choose proper product type according to impedance specified in product datasheet and applied current.

## (6) Cells in series connection

When cells in series connection for higher work voltage, it should be assured that work voltage of any single cell must not exceed Max. work voltage of single cell, otherwise, will shorten shelf life, even cause swelling, leakage or crack.

## (7) Soldering

Heat shock will decrease electric performance of cell, even cause swelling, leakage or crack.

Manual soldering temperature should not exceed 350°C, soldering time should not exceed 4s. Wave soldering temperature should not exceed 260°C, soldering time should not exceed 5s, while preheating temperature should be limited to less than 100°C and maximum preheating time of 60 seconds for PC boards 0.8mm or thicker.

Unless the EDLC is specifically rated to withstand reflow soldering temperature, please don't use reflow soldering, infrared heating and air heating methods on the EDLC.

## 3-2、使用指导

(1) 不可用于以下场合：不能用于交流线路中；不能用于滤波。

## (2) 电压

使用过程中，电容器的工作电压不能超过其最大工作电压。否则，将缩短其使用寿命，甚至导致气胀，泄露，或者开裂。

## (3) 极性

使用前一定要检查电容器的极性，电容长时间在相反的极性下工作，不仅会缩短其使用寿命，而且可能导致严重的损毁，例如导致气胀，电解液泄漏等。

## (4) 环境

电容的寿命会受到工作温度的影响，一般而言，电容的工作环境温度越高，其寿命越短。因此，应使电容的工作温度在最大容许温度下尽可能地降低。

工作温度应该同时考虑工作环境温度以及工作时电容内部产生的温升。

## (5) IR 压降

在主电源关闭时，电容将从电源失效检验模式转为后备电源工作模式，此时由于瞬间启动电流及电容内阻将导致开路电压下降。请根据相关产品介绍中所列出的阻抗和使用电流确定正确的产品型号。

## (6) 电容串联

当多个单体电容串联使用以提高工作电压时，必须确保每只单体电容两端的电压不超过其最大工作电压，否则，将缩短其使用寿命，甚至导致气胀，泄露，或者开裂。

## (7) 焊接

热冲击会影响电容的电性能，甚至会导致电容的鼓气、漏液以及开裂。

手工焊的温度建议低于 350°C，焊接持续时间少于 4s。波峰焊的温度建议低于 260°C，焊接持续时间少于 5s，其中预热温度应低于 100°C，最多给 PCB 预热 60s，浸锡达 0.8mm 或更厚。

除非 EDLC 有明确的额定耐回流焊接温度，否则不应使用 EDLC 使用回流焊，而应使用红外线或空气加热方式。

## TECHNICAL NOTES OF LIC LIC 技术说明

## ■ TECHNICAL NOTES of LIC

## 1. Operating Principle

As a new system in the super capacitor field, the lithium-ion capacitor is based on the adoption of the new & advanced material technology, and uses the hybrid electrode material according to the design to realize the combination of principle & technology of the lithium-ion battery and super capacitor in one electrolytic cell by electrochemical calculation. In this way, the features of high specific power, long lifetime and fast charging of the super capacitor can be well maintained, and meanwhile the specific energy will be greatly enhanced with the performance blank between the double layer capacitor and lithium-ion battery effectively filled up, showing excellent application prospect. Lithium Ion Capacitors are hybrid capacitors that use a carbon-based material as the negative electrode. Just as in a conventional EDLC, they use activated carbon for the positive electrode.

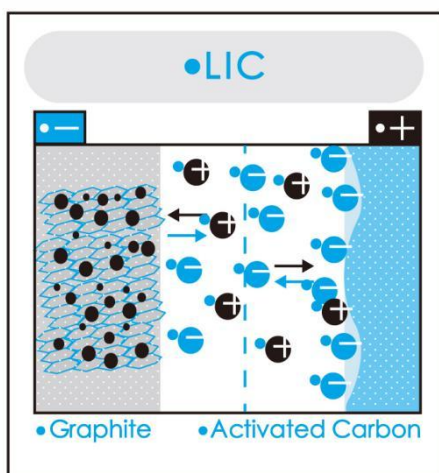


Fig. 1

## 2. Features

- (1) High working voltage: 4.0/3.8V
- (2) High energy density: 10~90Wh/Kg
- (3) Fast charge/discharge at high current: 3~15min
- (4) Low self discharge: 2~10%/3 months
- (5) Long life: 50000~500,000 charge/discharge cycles
- (6) Wide operation temperature range: -25~55&65°C (Soft pack)/70&85°C (Al can)
- (7) High safety/reliability

## 3. Application

## (1) Electric Vehicle

The lithium-ion capacitor is of tremendous market values in the area of hybrid power cars & coaches and pure electric buses. Some well-known car manufacturers have already conducted systematic testing and evaluation on the lithium-ion capacitor products. The conclusion they have drawn shows that to compare with the present batteries in use, the lithium-ion capacitor possesses significant performance advantages, and will have a bright future in the follow-up development of hybrid power cars and take up an important market share.

## 1、工作原理

锂离子电容器作为超级电容器领域中的一种新体系，以采用新型先进材料技术为基础，通过电化学计算，按照设计使用混合电极材料，在一个电解池中实现了锂离子电池和双电层电容器的原理和技术的结合，使其在保持双电层电容器高比功率、长寿命和快速充电特性的同时，大幅度提高了比能量，有效的填补了双电层超级电容器和锂离子电池之间的性能空白，表现出了良好的应用前景。锂离子电容器是一种混合型电容器，其使用碳基材料为负极，而正极与普通的双电层电容器一样，使用活性炭材料。

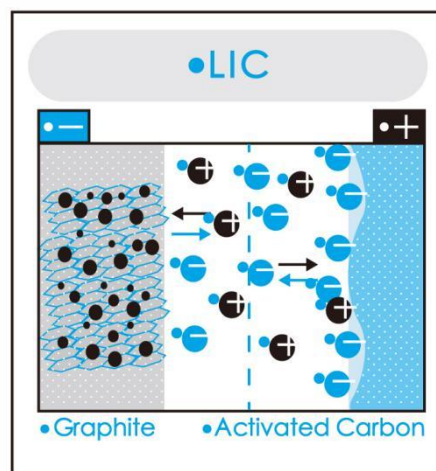


图. 1

## 2、特点

- (1) 高工作电压：4.0/3.8V
- (2) 高能量密度：10~90Wh/Kg
- (3) 大电流快速充放电：3~15min
- (4) 低自放电：2~10%/3个月
- (5) 长寿命：5~50万次充放电循环
- (6) 宽工作温度范围：-25~55&65°C (软包)/70&85°C (铝壳)
- (7) 高安全性与高可靠性

## 3、应用

## (1) 电动汽车

锂离子电容器在混合动力轿车和大客车，以及纯电动公交车等电动汽车领域中具有巨大的市场价值。众多知名汽车公司都对锂离子电容器产品进行了系统的检测和评估，认为与目前使用的电池相比，锂离子电容器具有显著的性能优势，非常看好锂离子电容器在混合动力轿车后续开发中的应用前景，未来将占据重要的市场份额。

## TECHNICAL NOTES OF LIC LIC 技术说明

**(2) Rail Transit**

Off-line operation is one of the technical development directions of the modern tram, and enterprises both at home and abroad highly value this point. Under the premise of keeping the reasonable weight and cost, the adoption of the lithium-ion capacitors can satisfy the off-line operation requirement for the whole journey after a fast charging at the terminal station. Thus a great amount of infrastructure expenditure can be saved, and the remarkable cost/performance advantage demonstrated.

**(3) Hybrid power driven engineering machinery and harbor machinery**

The engineering machinery and harbor machinery have the common problem of low engine energy efficiency, and are unable to recover the regenerated energy. The hybrid power driven engineering machinery and harbor machinery using the lithium-ion capacitors take the full advantage of the characteristics of the lithium-ion capacitor, and are of very high energy-saving rate and excellent cost performance.

**(4) Energy-saving elevator**

The adoption of the Li-on capacitors can recycle the stored potential energy into electricity to be firstly used in the next operation cycle. Thus, the energy-saving is realized. Meanwhile, it can also be used as an emergency back-up power supply of the elevator to greatly improve its safety performance.

**(5) Golf Cart and AGV**

The golf cart and AGV using the lithium-ion capacitors make the power supply smaller in size, light in weight, lower in cost, longer in lifetime and easy to use. It is a brand new application model worthy to be developed.

**(6) Electric Tools**

The fast charging electric tools need the combination of high power and energy, long lifetime, excellent safety performance and consistency. The adoption of the lithium-ion capacitor will further improve the performance of the fast charging electric tools, and prolong the lifetime and reduce the cost. It is of a very broad market prospect.

**(7) DC Circuit and Smart Meters**

Compared with EDLC, the lithium-ion capacitor can offer much higher capacitance. Therefore, it will have a very bright future, and be widely used in electric appliances such as smart meter, mobile DVR, tachograph, hand-held GPRS equipment, and ETC etc.

**4. Handling Precautions and Guidelines**

For safety application, please contact company directly for any technical specifications, handling precautions and guidelines critical to application.

**4.1 Precautions****(1) Prohibition of disassembly**

The disassembling may generate internal short circuit in the cell, which may cause gassing, leakage, explosion, or other problems. Electrolyte is harmful: In case the electrolyte comes into contact with the skin, or eyes, physicians shall flush the electrolyte immediately with fresh water and medical advice is to be sought.

**(2) Prohibition of dumping of cells into fire**

These may cause explosion of the cells, which is very dangerous and is prohibited.

**(3) Prohibition of cells immersion into liquid.**

The cells shall never be soaked with liquids such as water, seawater, drinks such as juices, coffee or others.

**(4) Prohibition of use of damaged cells.**

The cells might be damaged during shipping by shock. If any abnormal features of the cells are found such as damages in the cell package, smelling of an electrolyte, an electrolyte leakage and others, the cells shall never be used any more. The Cells with a smell of the electrolyte or a leakage shall be placed away from fire to avoid firing or explosion.

**(2) 轨道交通**

脱线运行是现代有轨电车的技术发展方向之一，国内外企业对此均予以高度重视。应用锂离子电容器作为电源，在保持合理重量和成本的前提下，在终点站一次快速充电即可满足全程脱线运营的要求，节约了大量的基建费用，具有显著的成本和性能优势。

**(3) 混合动力工程机械及港口机械**

工程机械和港口机械普遍出现发动机能量效率低下，具备能量回收的条件。混合动力工程机械及港口机械充分利用了锂离子电容器的特性，具有优秀的节能效率和高性价比。

**(4) 节能电梯**

使用锂离子电容器，回收储存势能所转化的电能，下一工作循环时优先使用，实现节能；同时用作为电梯应急后备电源，能够大幅度提高电梯使用的安全性。

**(5) 高尔夫球车及 AGV**

高尔夫球车和 AGV 使用锂离子电容器，电源体积、重量和成本更低，寿命更长，使用更方便，能够开拓崭新的应用模式。

**(6) 电动工具**

快充式电动工具需要电源兼顾高功率和高能量、长寿命、高安全性和高一致性等，使用超级电容器能进一步提高快充式电动工具使用性能、延长寿命、降低成本，具有非常广阔的市场前景。

**(7) 直流电路和智能仪表**

相比双电层电容器，锂离子电容器能提供更高的容量。因此，它具有更广阔的应用前景，如智能仪表、车载 DVR、行驶记录仪、手持 GPRS 设备、ETC 等电器。

**4、使用注意事项和使用指导**

为了确保安全，当设计的设备需使用电容时，请与公司联系咨询电容的技术规格以及使用要求。

**4-1、注意事项****(1) 禁止拆卸**

拆卸电容器可能产生内部短路，导致产气，电解液泄漏。电解液有害，如果电解液接触皮肤或者眼睛，应该立即用清水冲洗并且寻求医生的治疗。

**(2) 禁止将电容器投入火中**

将电容器投入火中可能导致爆炸，这种行为是非常危险，是被禁止的。

**(3) 禁止将电容器浸没于液体中**

电容器不允许被浸泡在液体中，例如水，盐水，饮料例如果汁，咖啡或者其它。

**(4) 禁止使用已经损坏的电容器**

如果使用前发现电容的外包装破裂，闻到电解液的气味，电解液泄漏或者其它非正常情况，请勿继续使用。

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## Innovation And Tradition

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**深圳安纳德科技有限公司 Shenzhen Energy Technology Co.,Ltd.**

地址：深圳市龙岗区吉华街道布龙路208号

A D D: No. 208, Bulong Road, Jihua Street, Longgang District, Shenzhen

电话(Phone) :+86-755-22307977 传真(Fax) :+86-755-22307976

邮箱(E-mail) :yudq@andcap.net 网址(Web) : www.andcap.net

