

Enterprise Profile

超级电容简介

超级电容器 (Super Capacitor, SC) 是一种具有法拉级静电容量的储能装置, 又叫双电层电容器 (Electric Double Layer Capacitor, EDLC, EC)、法拉电容 (Farad Capacitor)、黄金电容 (Gold Capacitor) 等。

超级电容器在储能装置中的地位

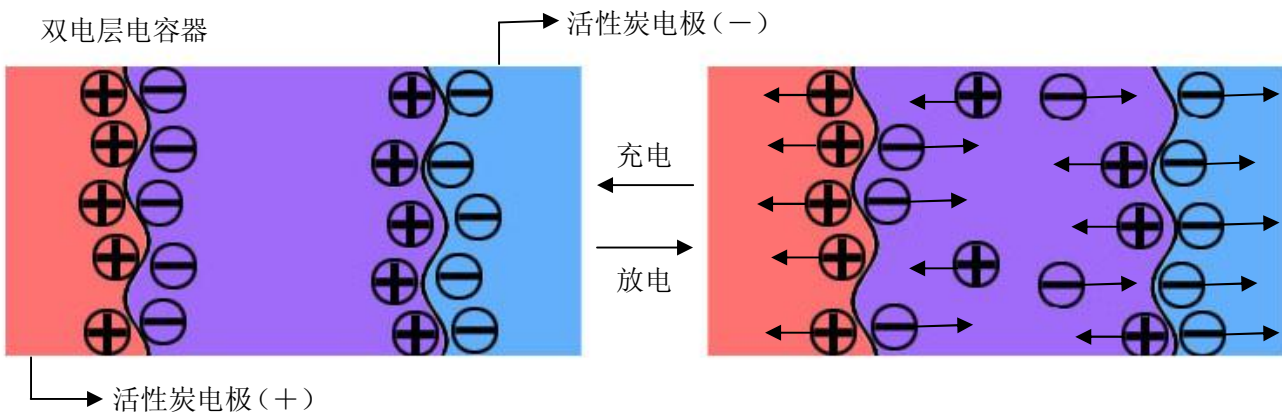
Super Capacitor in the energy storing device status

1mAh = ? F

- | | |
|---|--|
| <ul style="list-style-type: none"> ■ $Q = It = CV$ ■ Q 为电量, 单位库仑 C ■ I 为电流, 单位毫安 A ■ t 为时间, 单位小时 s ■ C 为静电容量, 单位法拉 F ■ V 为工作电压, 单位伏特 V ■ $C = It / V$ ■ 因此, mAh 和 F 之间的换算与电容器的工作电压有关。 ■ 忽略内阻的影响, 假设电容器工作电压为 1V, 则 1mAh = 3.6F; ■ 假设电容器工作电压为 2.5V, 则 1mAh = 1.44F; | <ul style="list-style-type: none"> ■ $Q = It = CV$ ■ Q power unit C, Coulomb ■ For the current I, A unit of Ma of ■ T is the time, s per hour ■ C is the capacitance, Fala F ■ V is the operating voltage, units of volts V ■ $C = It / V$ ■ Therefore, the working voltage of mAh and F between the conversion and capacitor related ■ Ignoring resistance effect, working voltage hothesis capacitors for 1V, 1mAh = 3.6F ■ Working voltage hypothesis capacitors for 2.5V, 1mAh = 1.44F |
|---|--|

双电层电容器原理示意图

Electric double layer capacitor schematic diagram





SRP 系列 SRP Lead type series

特性

圆柱外形结构、容量大、内阻低，符合 ROHS 要求；
超低内阻，快速充电/放电，提供瞬间大电流输出；

Features

Cylindrical structure, high capacitance, low ESR, compliance with ROHS lead-free requirement;
Low ESR, rapid charge-discharge performance, supply with instantaneous large current output;

产品性能

Specifications

项目 Item	特性 Performance Characteristics	测试条件 (依据 IEC62391—1) According to IEC62391—1
工作温度范围 Working temperature range	-40°C ~ +65°C	
额定工作电压 Rated voltage	2.7V	
浪涌工作电压 Surge voltage	2.85V	
标称容量范围 Nominal capacitance range	0.35F ~ 3000F	
容量允许偏差 Capacitance tolerance	-20% ~ +80%	依据 IEC62391—1 要求 According to IEC62391—1
控制容量偏差 Controlled capacitance tolerance	-10% ~ +20%	
等效串联内阻 ESR	依据规定值 On the basis of the specified value	1KHz100mA 常温条件下测量 Measure@1KHz, 100Ma, room temperature
漏电流 Leakage current (24h, LC)	依据规定值 On the basis of the specified value	额定电压, 充电 24h Rated voltage, charging for 24h
耐久性 Loading life	+65°C下采用额定电压 1000 小时后, 电容器符合规定的限值 After 1000 hours' loading at rated voltage at 65°C, the capacitor shall meet the following requirement;	
	容量变化 Capacitance change	≤30%初始测试值 No more than 30% of the initial measured capacitance value
	等效串联内阻变化 ESR change	≤3 倍初始规定值 Not more than 3 times of the specified ESR value
	漏电流 Leakage Current	满足初始规定值 Meet the initial specified value
贮存寿命 Shelf life	+65°C下贮存 1000 小时后电容器符合规定的限值。 After storage for 1000 hours at +65°C, the capacitors shall meet the requirement of loading life above	



循环次数
Cycles

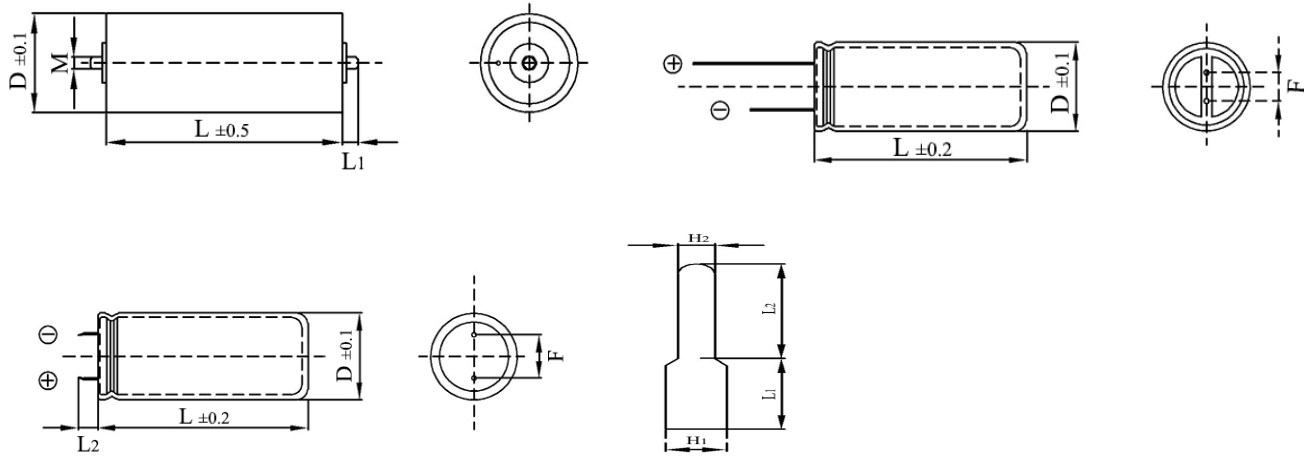
在+25℃下，用恒定电流使电容器在规定电压和半额定电压间循环充放电（ 5×10^5 次）
The capacitors shall be charged/discharged with constant current between the U_r and $1/2U_r$ maintained at 25℃ for 5×10^5 cycles.

容量变化
Capacitance change
等效串联内阻变化
ESR change
漏电流
Leakage Current

$\leq 30\%$ 初始测试值
No more than 30% of the initial measured capacitance value
 ≤ 3 倍初始规定值
Not more than 3 times of the specified ESR value
满足初始规定值
Meet the initial specified value

标准产品外型尺寸图

Shape of standard product



标准产品规定值及尺寸

Standard product and dimensions

型号 Part number	额定电压 (V) Rated Voltage	容量 (F) Capacitance	最大内阻 (mΩ) MAX, ESR, (1 kHz)	24h 漏电流 (μA)	ΦD×L ±0.5 (mm)	F±0.5 (mm)
SRP2R7L354	2.7	0.35	600	5	5×12	2
SRP2R7L504	2.7	0.5	600	5	6.3×12	2.5
SRP2R7L105	2.7	1	350	10	8×13	3.5
SRP2R7L205	2.7	2	150	10	8×20	3.5
SRP2R7L305	2.7	3	100	10	8×20	3.5
SRP2R7L335	2.7	3.3	100	10	10×20	5
SRP2R7L475	2.7	4.7	80	15	12.5×21	5
SRP2R7L805	2.7	8	65	20	12.5×21	5
SRP2R7L106	2.7	10	60	30	12.5×26	5
SRP2R7L156	2.7	15	50	40	16×26	7.5
SRP2R7L206	2.7	20	40	60	16×34	7.5
SRP2R7L306	2.7	30	30	70	16×34	7.5
SRP2R7L506	2.7	50	30	100	18×42	8
SRP2R7L606	2.7	60	20	120	18×42	8



SRP2R7S107	2.7	100	20	260	22×45	10
SRP2R7S127	2.7	120	20	350	25×54	10
SRP2R7S157	2.7	150	20	500	25×54	10
SRP2R7S227	2.7	220	15	700	35×60	10
SRP2R7S367	2.7	360	15	1000	35×60	10
SRP2R7S407	2.7	400	15	1000	35×60	10
SRP2R7B108	2.7	1000	0.8	2.5mA	60×75	M12
SRP2R7B208	2.7	2000	0.4	5.0mA	60×100	M12
SRP2R7B308	2.7	3000	0.35	7.0mA	60×138	M12

SRE 系列 SRE Lead type series

特性

圆柱外形结构、容量大、内阻低，符合 ROHS 要求；
充放电循环寿命长；超低漏电流，快速充电/放电。
适合与电池配合使用；

Features

Cylindrical structure, high capacitance, low ESR, compliance with ROHS lead-free requirement;
Long cycle life, low leakage current, suitable for used with battery;

产品性能

Specifications

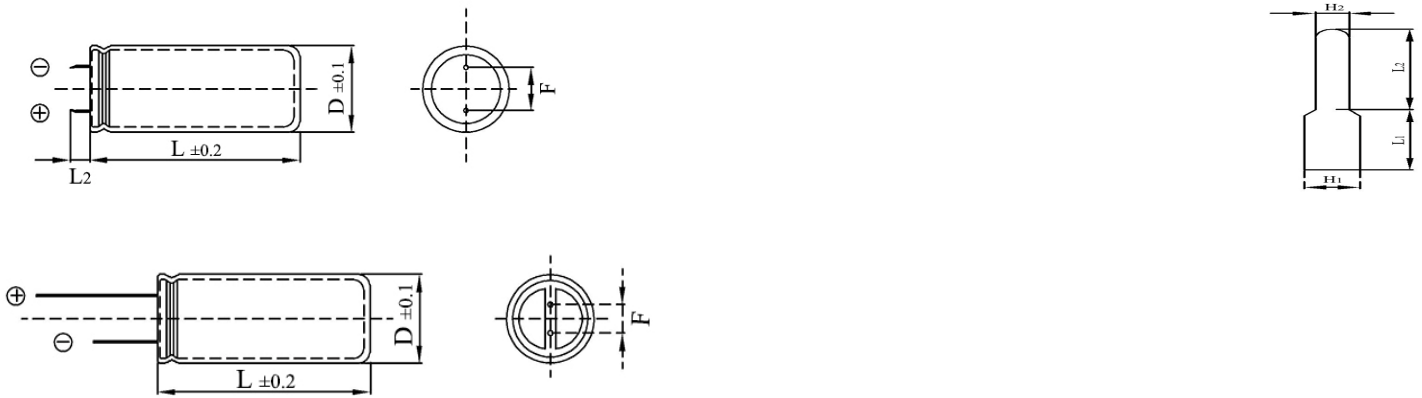
项目 Item	特性 Performance Characteristics	测试条件 (依据 IEC62391—1) According to IEC62391—1
工作温度范围 Working temperature range	-25℃ ~ +70℃	
额定工作电压 Rated voltage	2.5V	
浪涌工作电压 Surge voltage	2.75V	
标称容量范围 Nominal capacitance range	0.35F ~ 400F	
容量允许偏差 Capacitance tolerance	-20% ~ +80%	依据 IEC62391—1 要求 According to IEC62391—1
控制容量偏差 Controlled capacitance tolerance	-10% ~ +20%	
等效串联内阻 ESR	依据规定值 On the basis of the specified value	1KHz100mA 常温条件下测量 Measure 1KHz, 100Ma, room temperature
漏电流 Leakage current (24h, LC)	依据规定值 On the basis of the specified value	额定电压, 充电 24h Rated voltage, charging for 24h
耐久性 Loading life	+70℃下采用额定电压 1000 小时后, 电容器符合规定的限值 After 1000 hours' loading at rated voltage at 70℃, the capacitor shall meet the following requirement;	



	容量变化 Capacitance change	≤30%初始测试值 No more than 30% of the initial measured capacitance value
	等效串联内阻变化 ESR change	≤3 倍初始规定值 Not more than 3 times of the specified ESR value
	漏电流 Leakage Current	满足初始规定值 Meet the initial specified value
贮存寿命 Shelf life	+70℃下贮存 1000 小时后电容器符合规定的限值。 After storage for 1000 hours at +70℃, the capacitors shall meet the requirement of loading life above	
循环次数 Cycles	在+25℃下, 用恒定电流使电容器在规定电压和半额定电压间循环充放电 (5×10^5 次) The capacitors shall be charged/discharged with constant current between the U_r and $1/2U_r$ maintained at 25℃ for 5×10^5 cycles.	
	After removing the current at room temperature, they meet the following requirement;	
	容量变化 Capacitance change	≤30%初始测试值 No more than 30% of the initial measured capacitance value
	等效串联内阻变化 ESR change	≤3 倍初始规定值 Not more than 3 times of the specified ESR value
	漏电流 Leakage Current	满足初始规定值 Meet the initial specified value

标准产品外型尺寸图

Shape of standard product



标准产品规定值及尺寸

Standard product and dimensions

型号 Part number	额定电压 (V) Rated Voltage	容量 (F) Capacitance	最大内阻 (mΩ) MAX, ESR, (1 kHz)	24h 漏电流 (μA)	ΦD×L ±0.5 (mm)	F±0.5 (mm)
SRE2R5L354	2.5	0.35	1000	5	5×12	2
SRE2R5L504	2.5	0.5	1000	5	6.3×12	2.5
SRE2R5L105	2.5	1	400	5	8×13	3.5
SRE2R5L205	2.5	2	250	10	8×20	3.5
SRE2R5L305	2.5	3	200	15	8×20	3.5



SRE2R5L335	2.5	3.3	200	20	10×20	5
SRE2R5L475	2.5	4.7	180	25	12.5×21	5
SRE2R5L805	2.5	8	140	40	12.5×21	5
SRE2R5L106	2.5	10	100	40	12.5×26	5
SRE2R5L156	2.5	15	80	60	16×26	7.5
SRE2R5L206	2.5	20	60	60	16×34	7.5
SRE2R5L306	2.5	30	30	70	16×34	7.5
SRE2R5L506	2.5	50	25	100	18×42	8
SRE2R5L606	2.5	60	20	120	18×42	8
SRE2R5S107	2.5	100	20	260	22×45	10
SRE2R5S127	2.5	120	20	350	25×54	10
SRE2R5S157	2.5	150	20	500	25×54	10
SRE2R5S227	2.5	220	15	700	35×60	10
SRE2R5S367	2.5	360	15	1000	35×60	10
SRE2R5S407	2.5	400	15	1000	35×60	10

SMP 模组系列 SMP Module series

特性

内部串联结构、容量大、内阻低，符合 ROHS 要求；
充放电循环寿命长；超低漏电流，适合与电池配合使用；
全密封产品适合潮湿环境下使用；

Features

Internal tandem structure, high capacitance, low ESR, compliance with ROHS requirement;
Long cycle life, low leakage current, suitable for used with battery;
Used in damp environment with whole sealing structure;

产品性能

Specifications

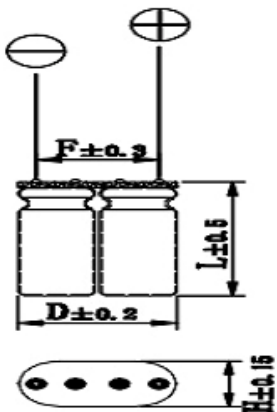
项目 Item	特性 Performance Characteristics	测试条件 (依据 IEC62391—1) According to IEC62391—1
工作温度范围 Working temperature range	-40℃ ~ +65℃	
额定工作电压 Rated voltage	5.5V—7.5V	
浪涌工作电压 Surge voltage	6.5V—8.5V	
标称容量范围 Nominal capacitance range	0.22F ~ 5.0F	
容量允许偏差 Capacitance tolerance	-20% ~ +80%	依据 IEC62391—1 要求 According to IEC62391—1
控制容量偏差 Controlled capacitance tolerance	-10% ~ +20%	



等效串联内阻 ESR	依据规定值 On the basis of the specified value	1KHz100mA 常温条件下测量 Measure 1KHz, 100Ma, room temperature
漏电流 Leakage current (24h, LC)	依据规定值 On the basis of the specified value	额定电压, 充电 24h Rated voltage, charging for 24h
耐久性 Loading life	+65℃下采用额定电压 1000 小时后, 电容器符合规定的限值 After 1000 hours' loading at rated voltage at 65℃, the capacitor shall meet the following requirement;	
	容量变化 Capacitance change	≤30%初始测试值 No more than 30% of the initial measured capacitance value
	等效串联内阻变化 ESR change	≤3 倍初始规定值 Not more than 3 times of the specified ESR value
	漏电流 Leakage Current	满足初始规定值 Meet the initial specified value
贮存寿命 Shelf life	+65℃下贮存 1000 小时后电容器符合规定的限值。 After storage for 1000 hours at +70℃, the capacitors shall meet the requirement of loading life above	
循环次数 Cycles	在+25℃下, 用恒定电流使电容器在规定电压和半额定电压间循环充放电 (5×10^5 次) The capacitors shall be charged/discharged with constant current between the U_r and $1/2U_r$ maintained at 25℃ for 5×10^5 cycles.	
	After removing the current at room temperature, they meet the following requirement;	
	容量变化 Capacitance change	≤30%初始测试值 No more than 30% of the initial measured capacitance value
	等效串联内阻变化 ESR change	≤3 倍初始规定值 Not more than 3 times of the specified ESR value
	漏电流 Leakage Current	满足初始规定值 Meet the initial specified value

标准产品外型尺寸图

Shape of standard product



标准产品规定值及尺寸

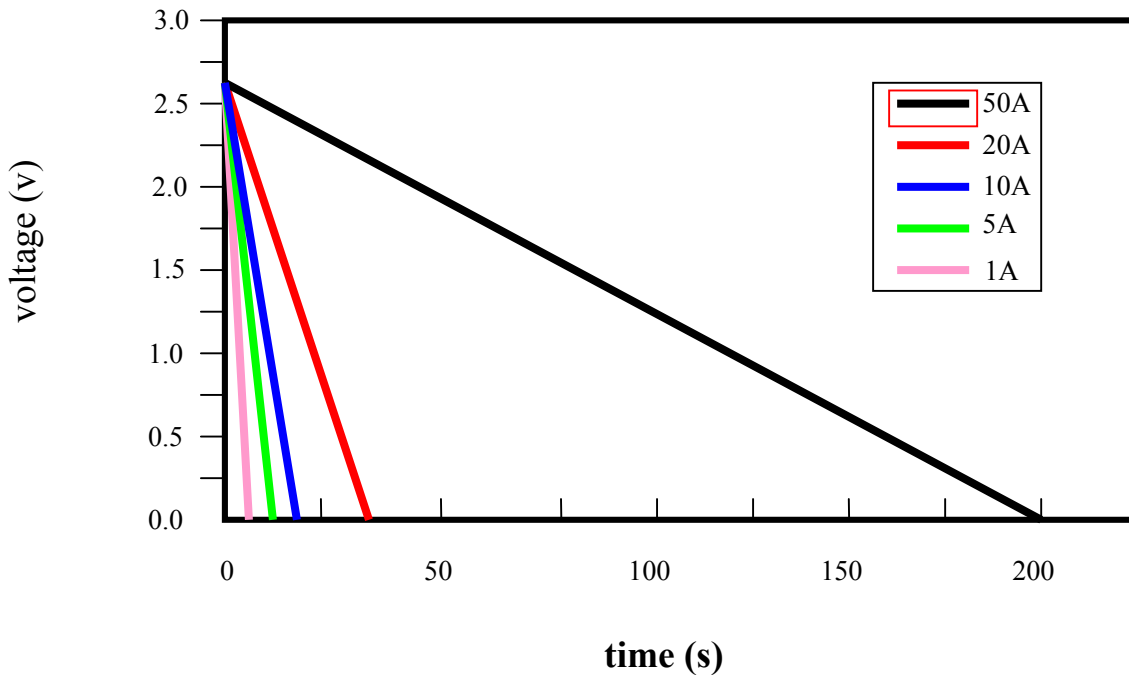
Standard product and dimensions



型号 Part number	额定电压 (V) Rated Voltage	容量 (F) Capacitance	最大内阻 (mΩ) MAX, ESR, (1 kHz)	24h 漏电流 (μA)	ΦD×H×L ±0.5 (mm)	F±0.5 (mm)
SMP5R5M224	5.5	0.22	1200	5	13×7×14	9
SMP5R5M474	5.5	0.47	700	10	17×9×16	12
SMP5R5M105	5.5	1.0	400	10	17×9×22	12
SMP5R5M155	5.5	1.5	250	10	17×9×22	12
SMP5R5M205	5.5	2.0	150	15	26×13×23	18
SMP5R5M405	5.5	4.0	150	20	26×13×23	18
SMP5R5M505	5.5	5.0	120	20	26×13×28	18
SMP7R5M334	7.5	0.33	1200	10	25×9×16	13
SMP7R5M105	7.5	1.0	400	10	25×9×22	13
SMP7R5M155	7.5	1.5	350	15	39×13×23	21
SMP7R5M255	7.5	2.5	300	15	39×13×23	21
SMP5R0M224	5.0	0.22	1800	5	13×7×14	9
SMP5R0M474	5.0	0.47	1000	10	17×9×16	12
SMP5R0M105	5.0	1.0	600	10	17×9×22	12
SMP5R0M155	5.0	1.5	500	10	17×9×22	12
SMP5R0M205	5.0	2.0	360	15	26×13×23	18
SMP5R0M405	5.0	4.0	300	15	26×13×23	18
SMP5R0M505	5.0	5.0	250	20	26×13×28	18

Enterprise Profile

超级电容产品的特性曲线



超级电容放电特性曲线 (以 2.4V100F 为例)
Super capacitor discharge characteristic curve (100F)



>>>SRT 扣式系列 Product Profile

特性

较宽的使用温度 25°C~70°C;
充放电循环寿命长,漏电流低,适合时钟芯片数据保持;
多种结构安装时可选择 V、H、C 型;

推荐应用领域

COMS、RAM、VCR、收音机、电视、电话、智能仪器仪表理想的后备电源、玩具等;

产品性能

Features

Wide work temperature range from -25°C to+70°C;
Long cycle life, low leakage current, low leakage current,
Suitable for clock chip data retention;
Selectable solder type of V,H,c;

Recommended applications

Back-up power for CMOS,RAM,VCR,Radio,TV,phone,
intelligent instruments etc Power for toys etc;

Specifications

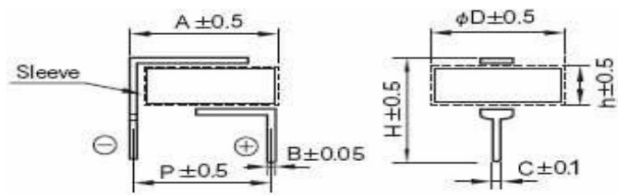
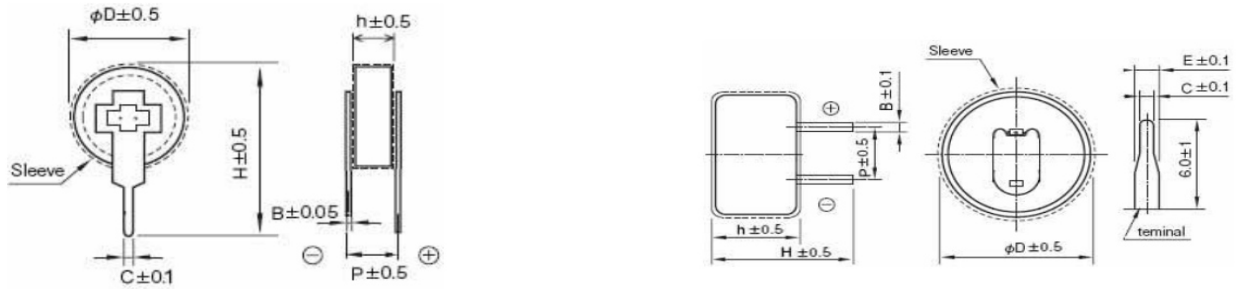
项目 Item	特性 Performance Characteristics	测试条件 (依据 IEC62391—1) According to IEC62391—1
工作温度范围 Working temperature range	-25°C ~ +70°C	
额定工作电压 Rated voltage	5.5V	
浪涌工作电压 Surge voltage	6.5V	
标称容量范围 Nominal capacitance range	0.1F ~ 4.0F	
容量允许偏差 Capacitance tolerance	-20% ~ +80%	依据 IEC62391—1 要求 According to IEC62391—1
控制容量偏差 Controlled capacitance tolerance	-10% ~ +20%	
等效串联内阻 ESR	依据规定值 On the basis of the specified value	1KHz100mA 常温条件下测量 Measure 1KHz, 100Ma, room temperature
漏电流 Leakage current (24h, LC)	依据规定值 On the basis of the specified value	额定电压, 充电 24h Rated voltage, charging for 24h
耐久性 Loading life	容量变化 Capacitance change	≤30%初始测试值 No more than 30% of the initial measured capacitance value
	等效串联内阻变化 ESR change	≤3 倍初始规定值 Not more than 3 times of the specified ESR value
	漏电流 Leakage Current	满足初始规定值 Meet the initial specified value
	外观 Appearance	无漏液和机械损伤 No leakage and mechanical injury
温度特性	+25±2°C 电容器符合规定的限值。	



Temperature characteristics	+25±2℃ capacitor in accordance with the provisions of the limited value	
	容量变化 Capacitance change	满足初始值±20% To satisfy the initial value of ±20%
	等效串联内阻变化 ESR change	满足初始规定值 Meet the initial specified value
	漏电流 Leakage Current	满足初始规定值 Meet the initial specified value
	+70±2℃电容器符合规定的限值。 +70±2℃ capacitor in accordance with the provisions of the limited value	
	容量变化 Capacitance change	≤30%初始测试值 No more than 30% of the initial measured capacitance value
	等效串联内阻变化 ESR change	≤初始规定值 Not more than of the specified ESR value
	漏电流 Leakage Current	≤规定值4倍 Not more than 4 times of the initial specified LC value
	-25±2℃电容器符合规定的限值。 -25±2℃ capacitor in accordance with the provisions of the limited value	
	容量变化 Capacitance change	满足±20%的范围内 Meet the range of ±20%
	等效串联内阻变化 ESR change	满足初始规定值 Meet the initial specified value
	漏电流 Leakage Current	满足初始规定值 Meet the initial specified value
高低温循环特性 Temperature cycle	容量变化 Capacitance change	满足初始值±20% To satisfy the initial value of ±20%
	等效串联内阻变化 ESR change	满足初始规定值 Meet the initial specified value
	漏电流 Leakage Current	满足初始规定值 Meet the initial specified value
	外观 Appearance	无漏液和机械损伤 No leakage and mechanical injury
-25±℃---常温(normal)---+70±2℃---常温(normal) 循环次数5次 5 cycles		
循环次数 Cycles	容量变化 Capacitance change	满足初始值±20% To satisfy the initial value of ±20%
	等效串联内阻变化 ESR change	≤3倍初始值 Not more than 3 times of the specified ESR value
	漏电流 Leakage Current	≤初始测量值 Not more than the initial specified value
	外观 Appearance	无漏液和机械损伤 No leakage and mechanical injury

标准产品外型尺寸图

Shape of standard product



标准产品规定值及尺寸

Standard product and dimensions

型号 Part number	额定电压 (V) Rated Voltage	容量 (F) Capacitance	最大内阻 (mΩ) MAX ESR, 1kHz, (1 kHz)	24h 漏电流 (μA)	ΦD×H ±0.5 (mm)	P±0.5 (mm)
SCE5R5V104	5.5	0.1	50	5	11.5×12.5	5
SCE5R5V224	5.5	0.22	40	5	11.5×12.5	5
SCE5R5V334	5.5	0.33	40	8	11.5×12.5	5
SCE5R5V474	5.5	0.47	20	8	11.5×12.5	5
SCE5R5V105	5.5	1.0	15	10	19.5×20.5	5
SCE5R5V155	5.5	1.5	10	10	19.5×20.5	5
SCE5R5V405	5.5	4.0	10	15	24.8×26	5
SCE5R5H104	5.5	0.1	50	5	11.5×4.5	11
SCE5R5H224	5.5	0.22	40	5	11.5×4.5	11
SCE5R5H334	5.5	0.33	40	8	11.5×4.5	11
SCE5R5H474	5.5	0.47	20	8	11.5×4.5	11
SCE5R5H105	5.5	1.0	15	10	19.5×6.5	19.5
SCE5R5H155	5.5	1.5	10	10	19.5×6.5	19.5
SCE5R5H405	5.5	4.0	10	15	24.8×6.7	24.8
SCE5R5C104	5.5	0.1	50	5	13.5×6.5	5
SCE5R5C224	5.5	0.22	40	5	13.5×6.5	5
SCE5R5C334	5.5	0.33	40	8	13.5×6.5	5
SCE5R5C474	5.5	0.47	20	8	13.5×6.5	5
SCE5R5C105	5.5	1.0	15	10	21×7.5	5
SCE5R5C155	5.5	1.5	10	10	21×7.5	5