

SPECIFICATION FOR APPROVAL

PRODUCT: SPSCAP

SERIES: SCP

MODEL: SCP5000C0-0002R7WLH

Rev: 1.0

Prepared	Checked	Approved
Li Jing	Wang Jinyong	Jing Ge

Supreme Power Solutions Co., Ltd.
Room 425, Tailai Business Mansion, No.88, Nongda South Rd,
Haidian District, Beijing, P.R. China
TEL: +86-400-600-7891
FAX: +86-10-61272268
Email: info@spscap.com

Contents

1. Scope	3
2. Construction and Dimensions	3
1) Construction.....	3
2) Dimensions	3
3. Part Number Naming System	3
4. General Characteristics Specifications	4
5. Reliability Specifications	5
6. Measuring Method	6
1) Charge and Discharge procedure	6
2) Capacitance	6
3) DC ESR	6
4) AC ESR.....	6
7. Environmental Management	6
8. Cautions for Use	7
9. Packing.....	7

1. Scope

These are the specifications of SPSCAP (Electric Double Layer Capacitor) which you are using, please review this document and approve it.

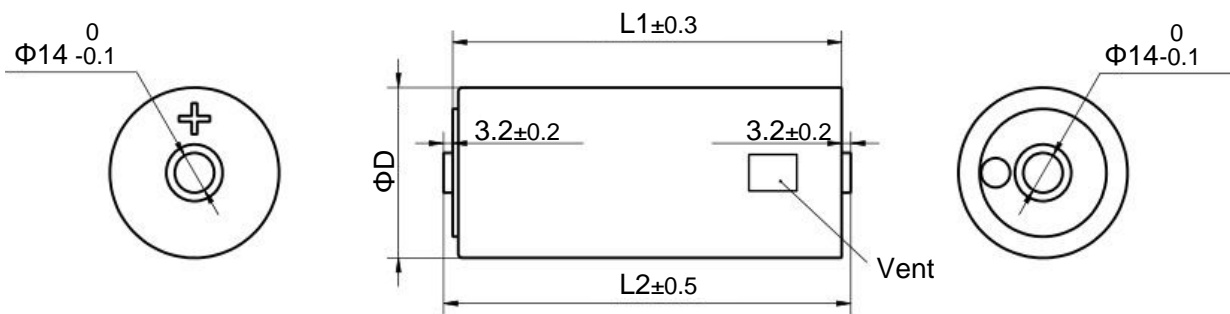
2. Construction and Dimensions

1) Construction

Inside structure: wound anode and cathode electrode with separator

Outer structure: aluminum case, insulating sleeve

2) Dimensions



Part Number	Dimension(mm)		
	D(Max.)	L1	L2
SCP5000C0-0002R7WLH	60.8	203.5	209.9

3. Part Number Naming System

SCP	5000	C	0	-	0002	R	7	WLH	
Product Series		Nominal Capacitance (F)		Dash	Rated Voltage (V)		Terminal Design		
S	Single	5000	5000		0002	2	WL	Welding Laser	
C	Cylindrical	C	Decimal		R	Decimal		Improved Part	
P	Power	0	0.0		7	0.7	H		

4. General Characteristics Specifications

Items	Specification
Rated Voltage (V DC)	2.7
Surge Voltage (V DC)	2.85
Operating Temp. (°C)	-40 ~ +65
Rated Capacitance (F)	5000
Capacitance Tolerance	-10% ~ +20%
ESR Max. (AC@1KHz, mΩ)	0.21
ESR Max. (DC, mΩ)	0.28
Maximum Continuous Current ($\Delta T=15^{\circ}\text{C}$, A)	154
Maximum Continuous Current ($\Delta T=40^{\circ}\text{C}$, A)	250
Maximum Peak Current (A) (1s)	2812
Max.LC (Room Temp. after 72hrs, mA)	13.0
Typical Thermal Resistance (R_{th} , Housing, °C/W)	2.3
Typical Thermal Capacitance (C_{th} , J/°C)	930
Weight (g)	795
Energy Stored (WH)	5.06

5. Reliability Specifications

Item		Specification		Condition
Temp. Characteristics	Capacitance	Step. 2	Change within 5% of Initial Value	Step 1: +25±2°C,1h Step 2: +65±2°C,1h Step 3: -25±2°C,1h Step 4: -40±2°C,1h
	ESR		Less than 150% of spec Value	
	Capacitance	Step. 3	Change within 5% of Initial Value	
	ESR		Less than 150% of spec Value	
	Capacitance	Step. 4	Change within 5% of Initial Value	
	ESR		Less than 150% of spec Value	
Vibration Test	Capacitance	Initial Value		ISO16750-3 Table 14
	ESR	Initial Value		
	Appearance	Not Marked Defect		
Thermal Cycle	Capacitance	Initial Value		Temp.: -40°C ~ +65°C Cycle times: 6 Test Time (One Cycle) : -40°C 2hrs,+65°C 2hrs,Temp change 2hrs
	ESR	Initial Value		
	Appearance	Not Marked Defect		
Humidity Test	Capacitance	Change within 20% of Initial Value		Temp.: +40±2°C Humidity: 90-95%RH Test Time: 240±8hrs
	ESR	Less than 200% of spec Value		
	Appearance	Not Marked Defect		
DC Life	Capacitance	Change within 20% of Initial Value		Temp.: +65±2°C Voltage: 2.7V Time: 1,500hrs
	ESR	Less than 200% of spec Value		
	Appearance	Not Marked Defect		
Shelf Life	Capacitance	Change within 20% of Initial Value		Temp.: +70±2°C Time: 1,000hrs
	ESR	Less than 200% of spec Value		
	Appearance	Not Marked Defect		
Cycle Life	Capacitance	Change within 20% of Initial Value		Temp.: +25±2°C Cycles times: 1,000,000
	ESR	Less than 200% of spec Value		
	Appearance	Not Marked Defect		

6. Measuring Method

1) Charge and Discharge procedure

(figure 6-1)

- A) Charge the capacitor using constant current I to rated voltage V_0
- B) Keep rated voltage 5 min
- C) Discharge the capacitor using constant current I to half rated voltage, record discharge time T_1 during voltage change from V_1 to V_2
- D) Rest 2-5s, record voltage change ΔV
- E) Discharge it to a very low voltage around 0.01V
- F) $V_1=85\% V_0$ $V_2=50\% V_0$

2) Capacitance

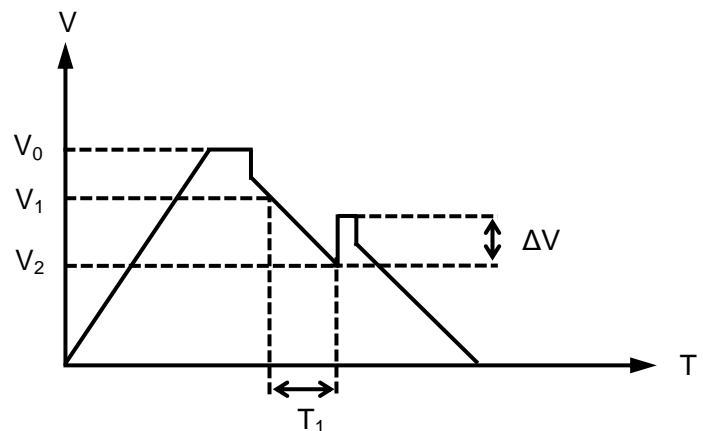
$$C = I \cdot T_1 / (V_1 - V_2)$$

C: Capacitance (F)

I: Constant Discharge Current (A)

T_1 : Discharge Time (S)

$V_1 - V_2$: Voltage Change (V)



6-1

3) DC ESR

$$\text{DC ESR} = \Delta V / I$$

DC ESR: DC Equivalent Series Resistance (Ω)

ΔV : Voltage Change (V)

I: Constant Discharge Current (A)

4) AC ESR

Measure AC ESR using LCR meter

Frequency: 1KHz

Voltage: fully discharge

REMARK: SPSCAP CAPACITORS SHOULD BE DISCHARGED WITH RESISTOR FOR 12 HOURS OR MORE BEFORE EACH TIME MEASUREMENT OF CAPACITANCE OR ESR.

7. Environmental Management

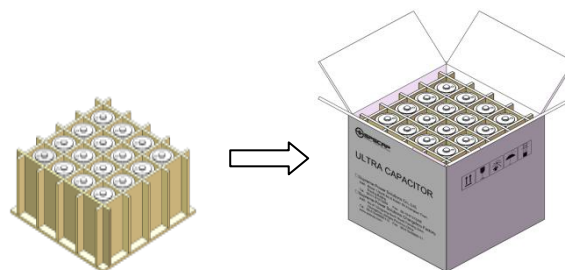
All SPSCAP products are RoHS compliant product.

8. Cautions for Use

Please notice below points when you start use SPSCAP.

- 1) The SPSCAP gets polarity through aging/testing process before it is packed, so please mount it in accordance with its polarity to maintain the best condition;
- 2) Please only apply SPSCAP at rated voltage. If you apply more than rated voltage, capacitor will be damaged or broken due to electrolyte inside will be electrolyzed;
- 3) Ambient temperature greatly affects the lifetime of the capacitor, by reducing the temperature by 10°C, lifetime can be approximately doubled;
- 4) Storage: In long term storage, please store SPSCAP in following condition:
 - Temp.: 15 ~ 35°C
 - Humidity: 40 ~ 75 %RH
 - No-dust, non-acidic and/or non-alkaline atmosphere
 - Avoid direct sun light
- 5) Do not disassemble SPSCAP. It contains electrolyte;
- 6) Avoid serious mechanical impacts onto capacitor, such as force or twist capacitor;
- 7) Please contact us if you want to subject SPSCAP to severe vibrating conditions exceeding rated specification;
- 8) Please contact us if you want to connect a certain number of single capacitor to make a module;
- 9) Over-rated voltage may be applied to a single SPSCAP in series connection due to the deviation of capacitance and ESR of each SPSCAP. Please inform us if you are using SPSCAP in series connection and please design so as not to apply over-rated voltage to each capacitor, and use SPSCAP from same date code/lot.

9. Packing



Package Drawing

Part Number	Quantity (pcs)	Box Size (W × L × H) mm	Gross Weight (Kg)
SCP5000C0-0002R7WLH	16	330×330×280	15.72