

SCP3000C0-0002R7STB

ULTRACAPACITOR CELL



SERIES SCP ULTRACAPACITOR CELL

Rev	Date	Valid from	Revision of historical records
1.0	01-Jan-18		
2.0	08-Apr-19	08-Apr-19	

SCOPE
SPECIFICATION FOR APPROVAL

FEATURES

- Low ESR, High power performance
- Over 1,000,000 duty cycles
- External threaded terminal **M12/M12**

APPLICATIONS

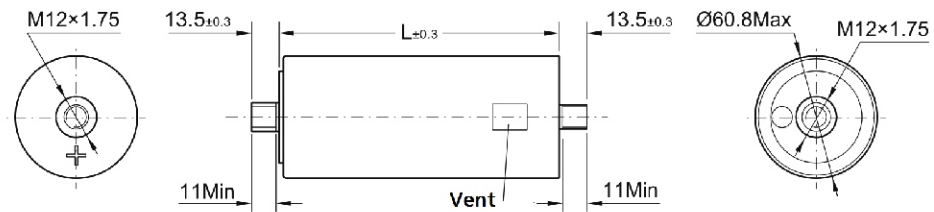
- EV/HEV
- Hybrid driven trains
- Mass transportation braking energy recovery system
- Heavy duty machinery
- Locomotive engine start system

CONSTRUCTION AND DIMENSIONS

1) Construction

Inside structure: wound anode and cathode electrode with separator
 Outside structure: aluminum case, insulating sleeve

2) Dimensions



PART NUMBER	DIMENSION(MM)		
	D(Max)	L1	L2
SCP3000C0-0002R7STB	60.8	138	

PART NUMBER NAMING SYSTEM

SCP	3000	C	0	-	0002	R	7	STB
Product Series	Nominal Capacitance (F)			Dash	Rated Voltage (V)		Terminal Design	
S	Single	3000	3000		0002	2	ST	External threaded
C	Cylindrical	C	Decimal		R	Decimal		
P	Power	0	0.0		7	0.7	B	Improved Part

ENVIRONMENTAL MANAGEMENT

All SPSCAP products are RoHS and Reach compliant.

GENERAL CHARACTERISTICS

Items	Specification
Rated Voltage (V DC)	2.7
Surge Voltage (V DC)	2.85
Operating Temp. (°C)	-40~+65
Rated Capacitance (F)	3000
Capacitance Tolerance	0%~+20%
ESR Max. (AC@1KHz, mΩ)	0.22
ESR Max. (DC, mΩ)	0.29
Maximum Continuous Current ($\Delta T=15^{\circ}\text{C}$, A)	128
Maximum Continuous Current ($\Delta T=40^{\circ}\text{C}$, A)	208
Maximum Peak Current (A) (1s)	2165
Max.LC (Room Temp. after 72hrs, mA)	5.2
Typical Thermal Resistance (Rth, Housing, °C/W)	3.2
Typical Thermal Capacitance (Cth, J/°C)	640
Weight (g)	545
Energy Stored (WH)	3.04

RELIABILITY SPECIFICATIONS

ITEM		SPECIFICATION		CONDITION
Temp. Characteristics	Capacitance	Step. 1	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. 2	Change within 5% of Initial Value	
	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		

MEASURING METHOD

1) Charge and Discharge procedure (Figure 1)

- A) Charge the capacitor using constant current I to rated voltage V_0
- B) Keep rated voltage 5 mins
- 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

$$C = I * T_1 / (V_1 - V_2)$$

C: Capacitance (F)

I: Constant Discharge Current (A)

T_1 : Discharge Time (S)

$V_1 - V_2$: Voltage Change (V)

3) DC ESR

$$DC\ ESR = \Delta V / I$$

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

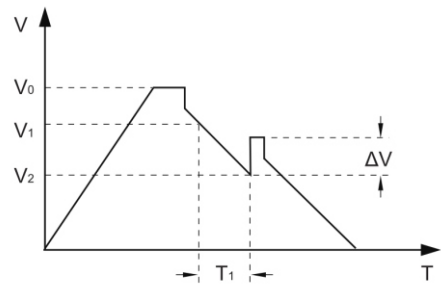


Figure 1

REMARK: SPSCAP EDLC SHOULD BE DISCHARGED WITH RESISTOR FOR AT LEAST 12 HOURS BEFORE MEASUREMENT OF CAPACITANCE OR ESR.

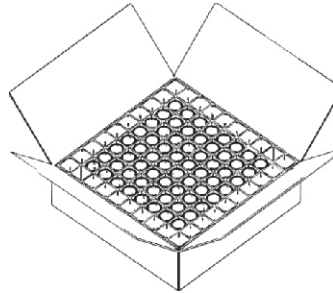
NOTES AND CAUTIONS

- 1) SPSCAP Ultracapacitors are polarised during production. Do not reverse polarity.
- 2) Do not exceed the rated voltage.
- 3) Do not disassemble the cell.
- 4) Ambient temperature greatly affects the lifetime of Ultracapacitors.
Cooling helps increasing the lifetime.
- 5) Storage under following conditions
Temp.: 15 ~ 35°C
Humidity: 40 ~ 75%RH
No-dust, non-acidic and/or non-alkaline atmosphere
Avoid direct sun light
- 6) Avoid mechanical impacts.
- 7) For applications under critical vibration condition please contact SPSCAP for support.

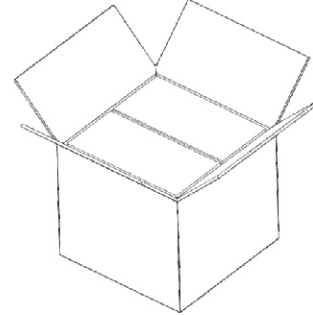
PACKING



X16



X2



Package Drawing

Part Number	Quantity (pcs)	Box Size (W × L × H) mm	Gross Weight (Kg)
SCP3000C0-0002R7STB	32	330×330×430	20.63

Product dimensions are for reference only unless otherwise identified. Product dimensions and specifications may change without notice.

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