ENERGY VERY ENDURE

Super Pulse Cell Capacitor
Model SPC0920

1. Scope

This data sheet describes the mechanical design and performance of EVE (Super Pulse Cell Capacitor) model SPC0920, optimized for extreme temperatures, used in an ES battery system.

2. Mechanical characteristics

Physical:

Length	21.0 mm. max
Diameter	9.0 mm.max
Weight:	3.5 gr.max

3. Electrical characteristics

3.1 Discharge

Discharge capacity (at RT):

When charged to 3.67V:	30 A*sec
When charged to 3.90V:	45 A*sec
Discharged end current:	2.5V (discharge below 2.5V at RT and discharge below 2.0V at -40℃ may increase the SPC internal impedance)
Maximum discharge current:	Continuous: 150mA Pulse: 500mA

3.2 Charge (constant current)

Max. charge voltage:	3.95V
Max. chargeing current:	6 mA

3.3 Cell impedance: Less than 500 mOhm (at RT @ 1kHz)

3.4 Shelf life

Shelf life at different storage temperature to 80% of initial capacity.used in an ES battery system.

Temperature	SPC	SPC in ES battery system
RT	1 years	＞10 years
60℃	2 weeks	10 years
80℃	1 weeks	1 year

3.5 Self discharge in ES battery.

at RT: 2 μA

at 80℃: 5 μA

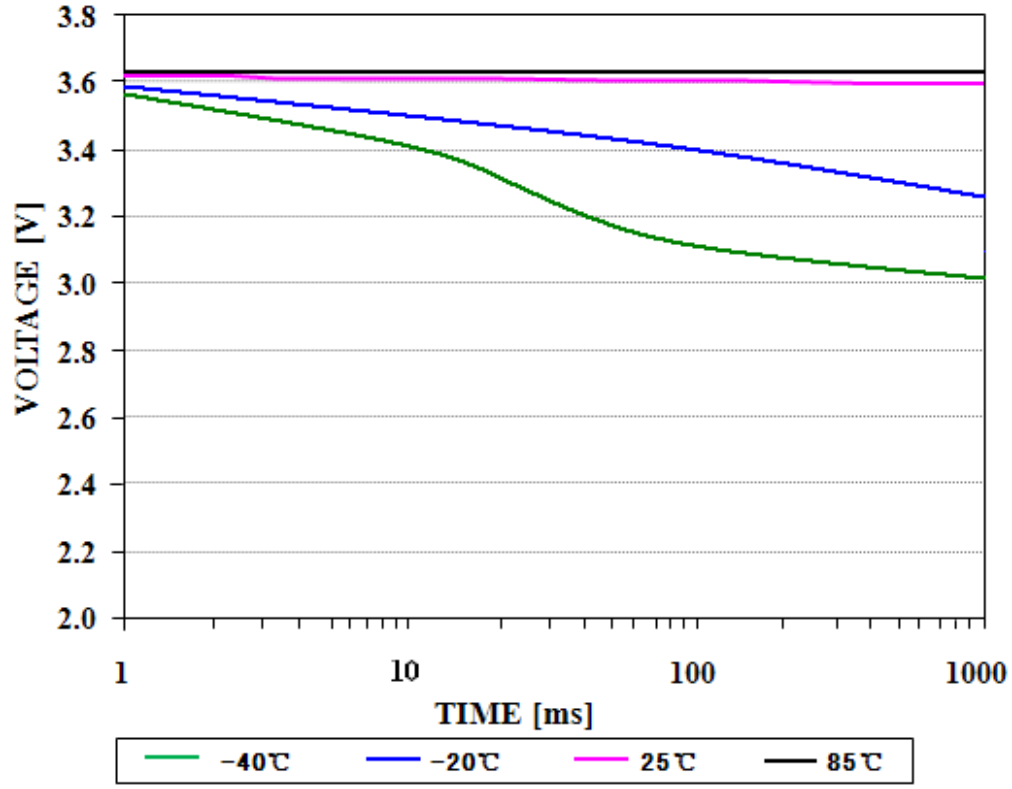
3.5 Number of charge-discharge cycles to 80% of initial capacity (DOD: Depth of Discharge.

	100% DOD	10% DOD	1% DOD
Charged to 3.67V	1000	10000	100000
Charged to 3.90V	800	8000	80000

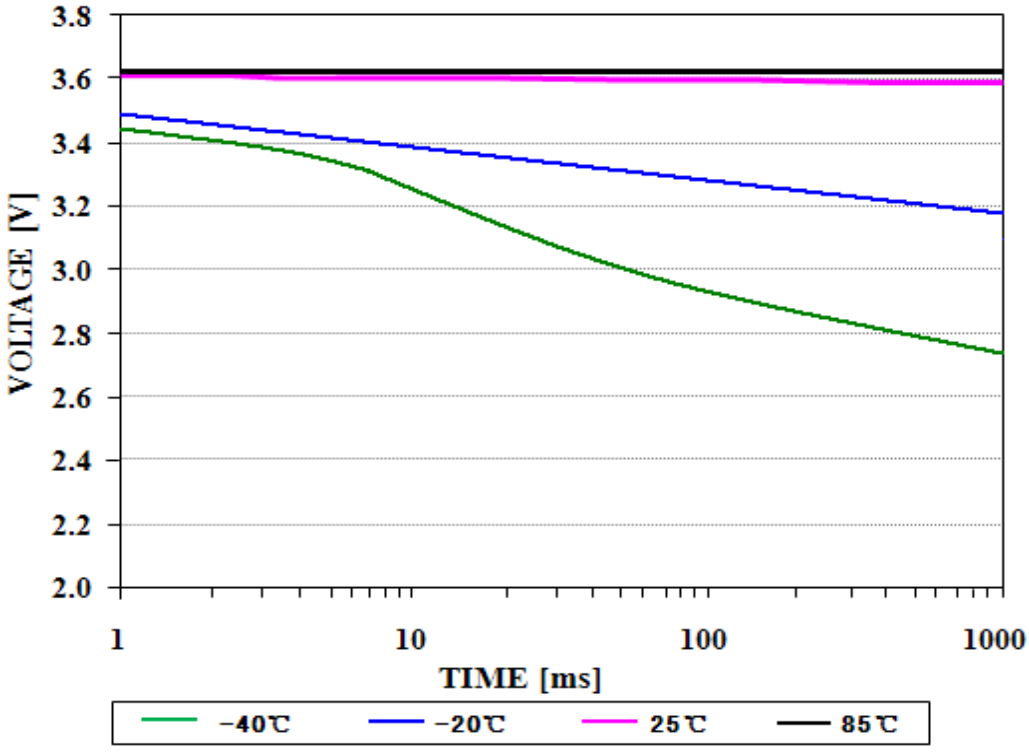
DOD(Depth of Discharge)

3.7 Performance Data

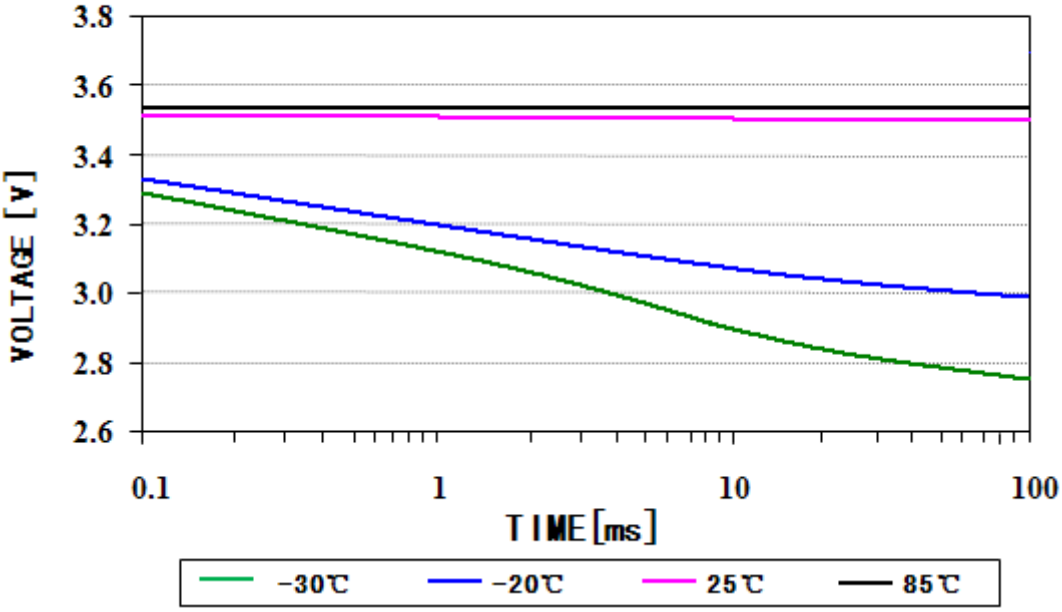
Voltage curves for SPC0920 at Li/$SOCl_2$ potential (3.67V), 45mA



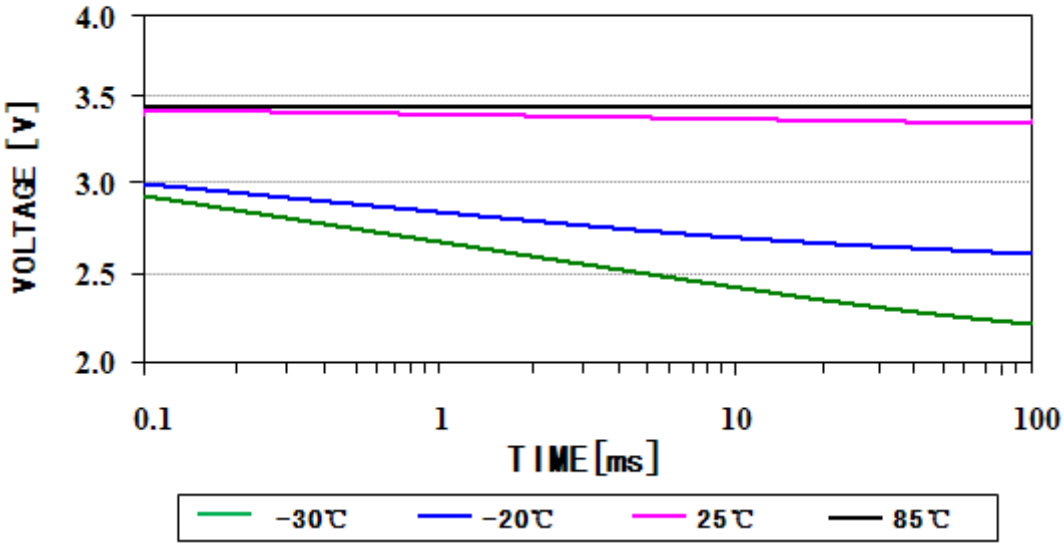
Voltage curves for SPC0920 at Li/$SOCl_2$ potential (3.67V), 70mA

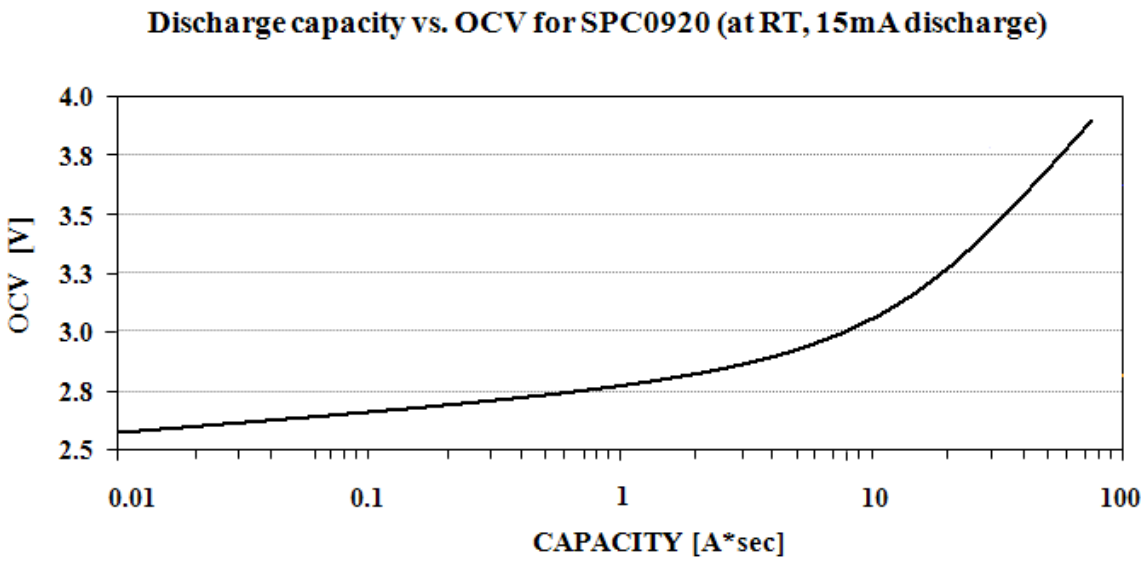


Voltage curves for SPC0920 at Li/$SOCl_2$ potential (3.67V), 200mA



Voltage curves for SPC0920 at Li/$SOCl_2$ potential (3.67V), 420mA





3.8 Safety tests:

The SPC successfully passed the folowong safets:

- Short circuit at RT and 55℃
- Compression
- Impact
- Overcharge
- High temperature exposure
- Shock and vibration
- Nail penatratio
- Forced discharge

EVE Batteries performed the tests according to UL 1642 specification for lithium batteries.

The SPC is not restricted for air transportation.

3.9 Safety tests:

Test Item	SPC0920 used Independently	SPC0920 in ES battery system
Operating Temperature	-30℃ to 60℃	-40℃ to 85℃
Storage Temperature	-30℃ to 60℃	-30℃ to 60℃

Warning:

● The SPC0920 is designed for use in a ES battery system or in low charge current as specified only.

● The SPC0920 may explode or violently vent if over-charge above 4.4V.

● Do not charge the SPC1530 higher than 4.1 V, over discharge, short circuit, heat above 100℃, incinerate or expose content to water.

● Charging the SPC0920 at above 3.95 V may lead to capacity loss and / or