100Ah ESV LFP Cell

Specification and Performance Summary

Prepared By: EVC

Contents

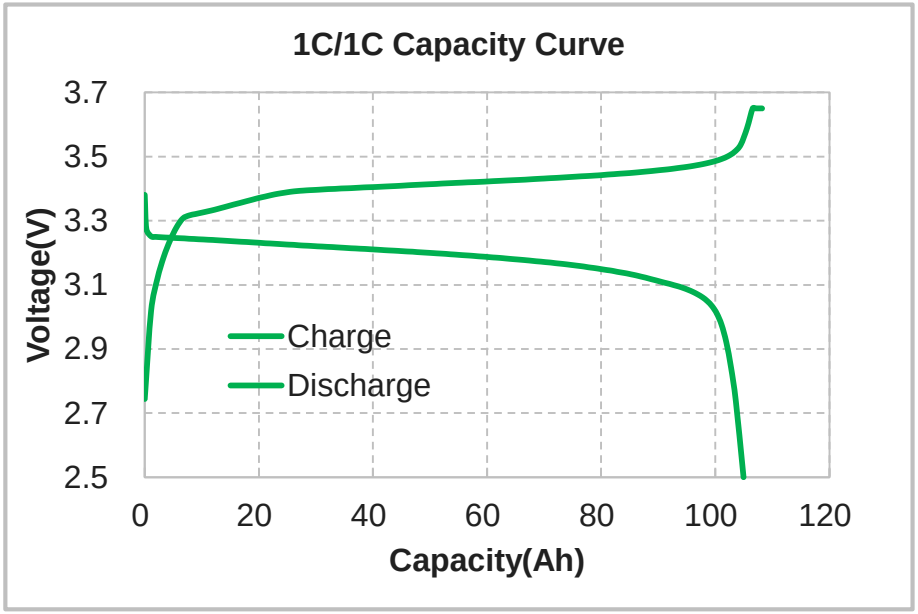
1. Summary

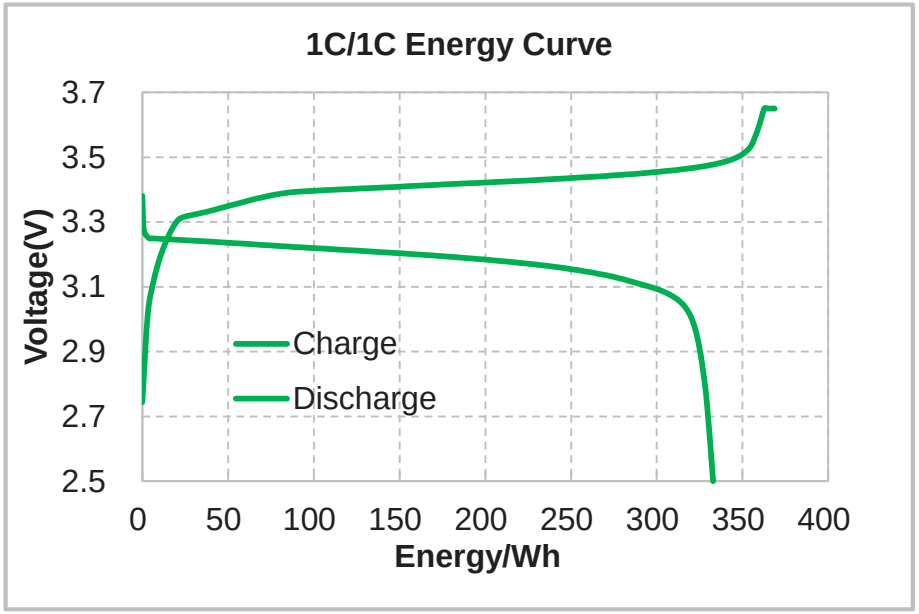
Cell Specification	Parameters
Dimension, mm	33×200×167
Cell capacity @ 25℃, 0.5C, Ah	≥100
Nominal voltage, V	3.2
Nominal energy @ 25℃, 0.5C, Wh	320
Cell weight, g	<2380
Energy density, Wh/kg	140
Energy density, Wh/L	281
Max discharge current (25℃, 50%SOC, 30s)	300A
Continuous discharge current （25℃）	100A
Continuous charge current （25℃）	100A
Operating temperature (case dependent)	-30°C ~ 55°C
Storage temperature (case dependent)	-40°C ~ 60°C

Item	GB/T31485-2015
Over charge	HL4
Drop	HL1
Nail	HL4
Crush	HL2
Hot box	HL3
Short	HL2
Heating (Heat shock)	HL2

2.1 Capacity & Energy

Test Condition: 25℃, 1.0C CC to 3.65V, 3.65V CV to 0.05C; Rest 5 min; 1.0C DC to 2.5V; Rest 5 min.



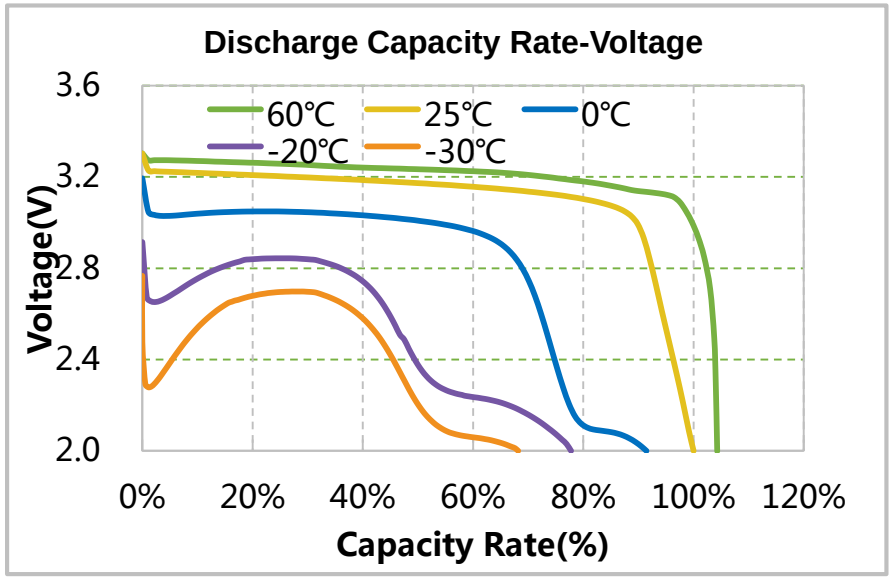


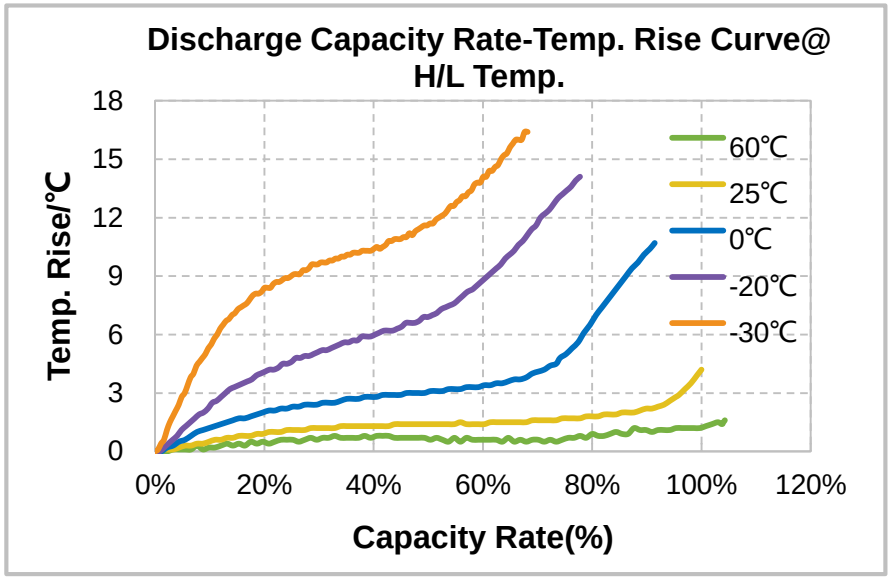
- Minimum discharge capacity is 100Ah @25℃, 1.0C.
- Minimum discharge energy is 320Wh @25℃, 1.0C.

2.5 High & Low Temp. Capability

Charge Condition: XX℃，1C CC to 3.65V，3.65V CV to 0.05C

Discharge Condition: 1C DC to 2.5V

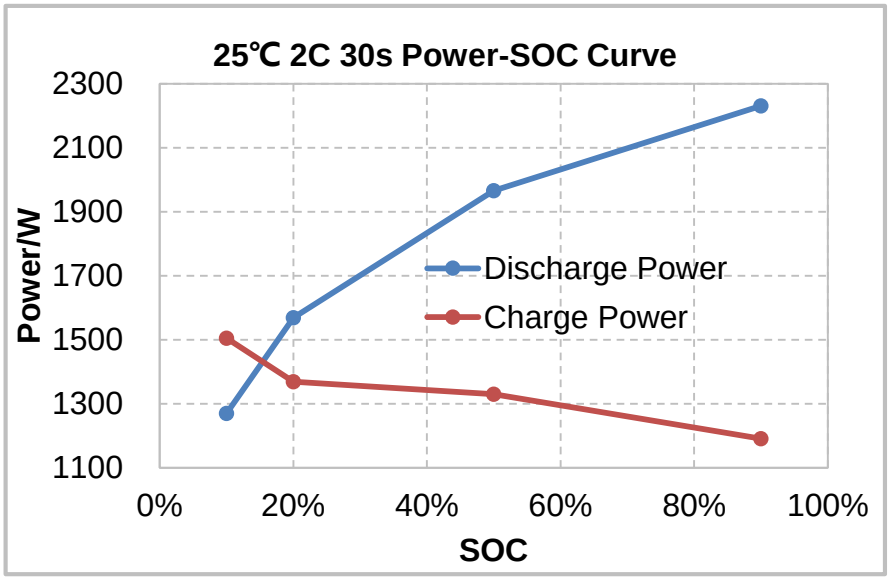


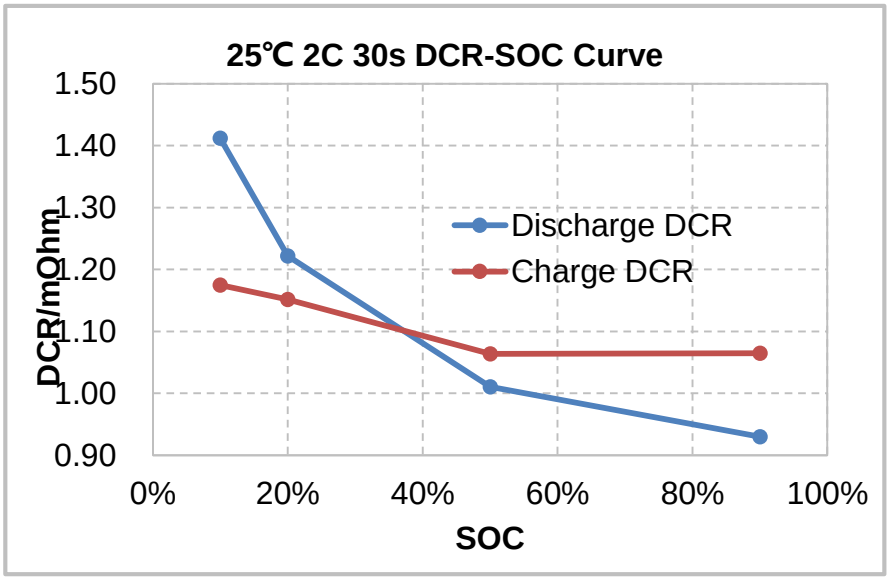


High/Low Temp Discharge Performance					
Temp. (℃)	25	60	0	-20	-30
Capacity Retention	100%	103%	91%	78%	68%
Temp. Rise(℃)	4.2	1.6	10.7	14.1	16.4

2.6 Internal Resistance (DCR) & HPPC Power

Test Condition: 2C DC/CC 30s；The power is calculated from DCR based on Freedom Bus/Car method, discharge cut off voltage 2.5V, charge cut off voltage 3.65V.



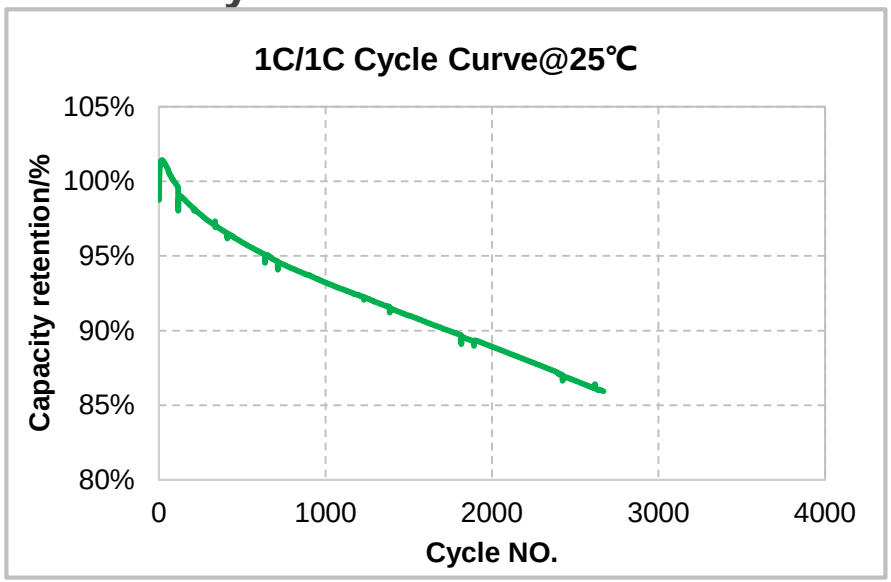


- 30s Pulse discharge@ 25℃, 50% SOC, DCR is 1.01mOhm；
- 30s Pulse charge @ 25℃, 50% SOC, DCR is 1.06 mOhm.

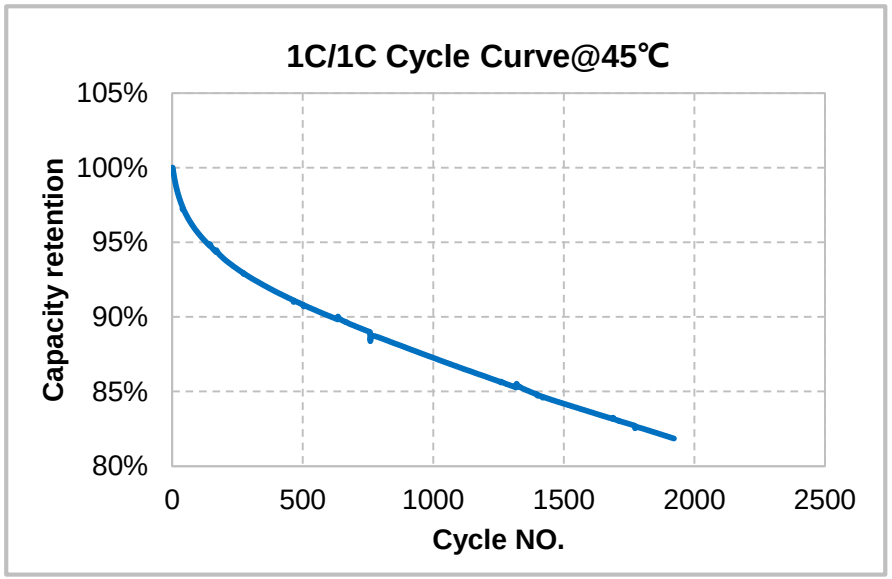
2.8 Cycle Life

Test Condition : 25℃ & 45℃ , 2.5V~3.65V(100%DOD), 1C/1C Cycle

- **25℃ Cycle Life**



- **45℃ Cycle Life**

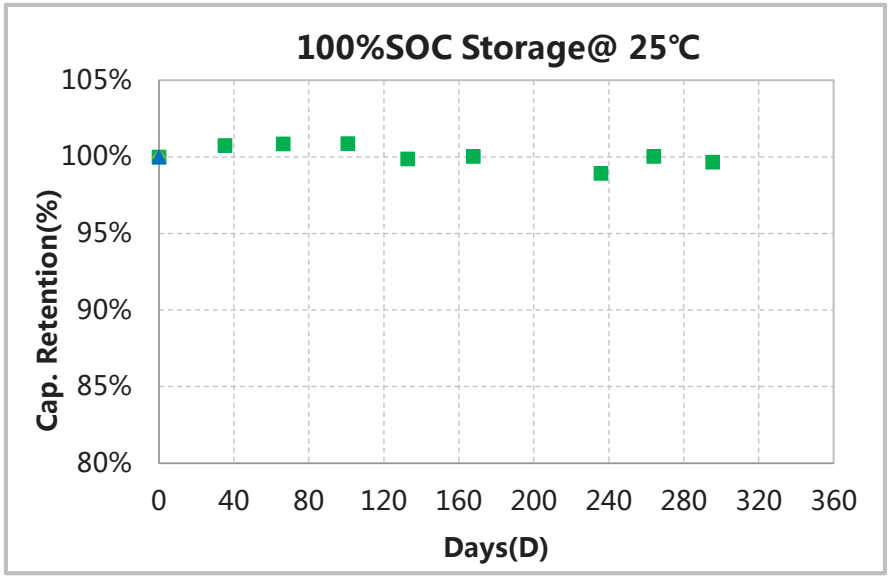


- 80% reversible capacity retention is still tested
- Prediction of cycle life @25℃ is 3800cycle
- Prediction of cycle life @45℃ is 2000cycle

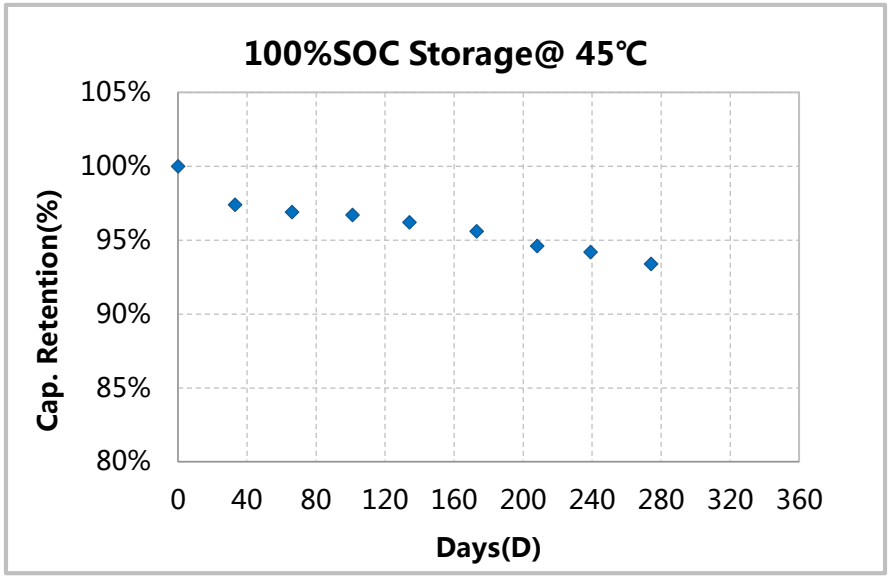
2.9 Storage Life

Test Condition : 25℃ , 100% SOC Storage, and monitor the reversible capacity retention.

- **25℃ storage performance**



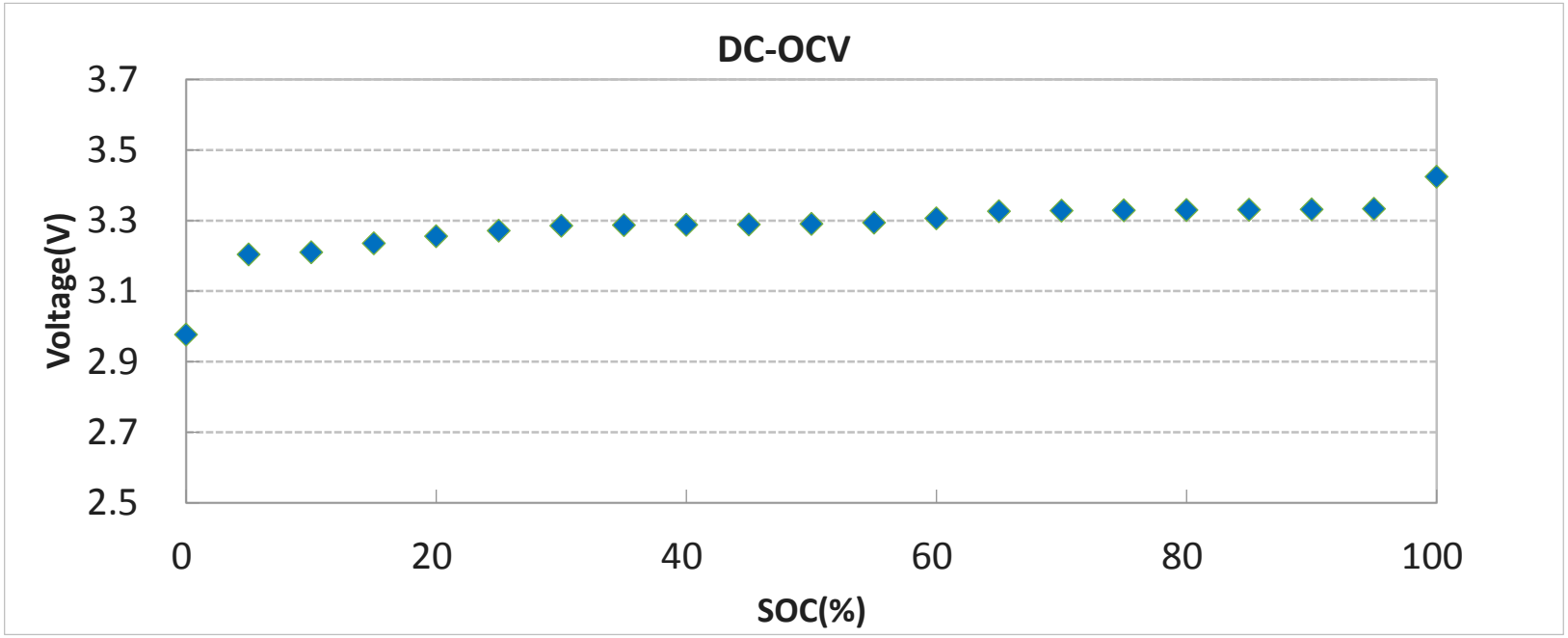
- **45℃ storage performance**



- ~99.0% reversible capacity retention @ 25℃, 295days ;
- ~93.4% reversible capacity retention @ 45℃, 274days

2.10 DC OCV-SOC Curve

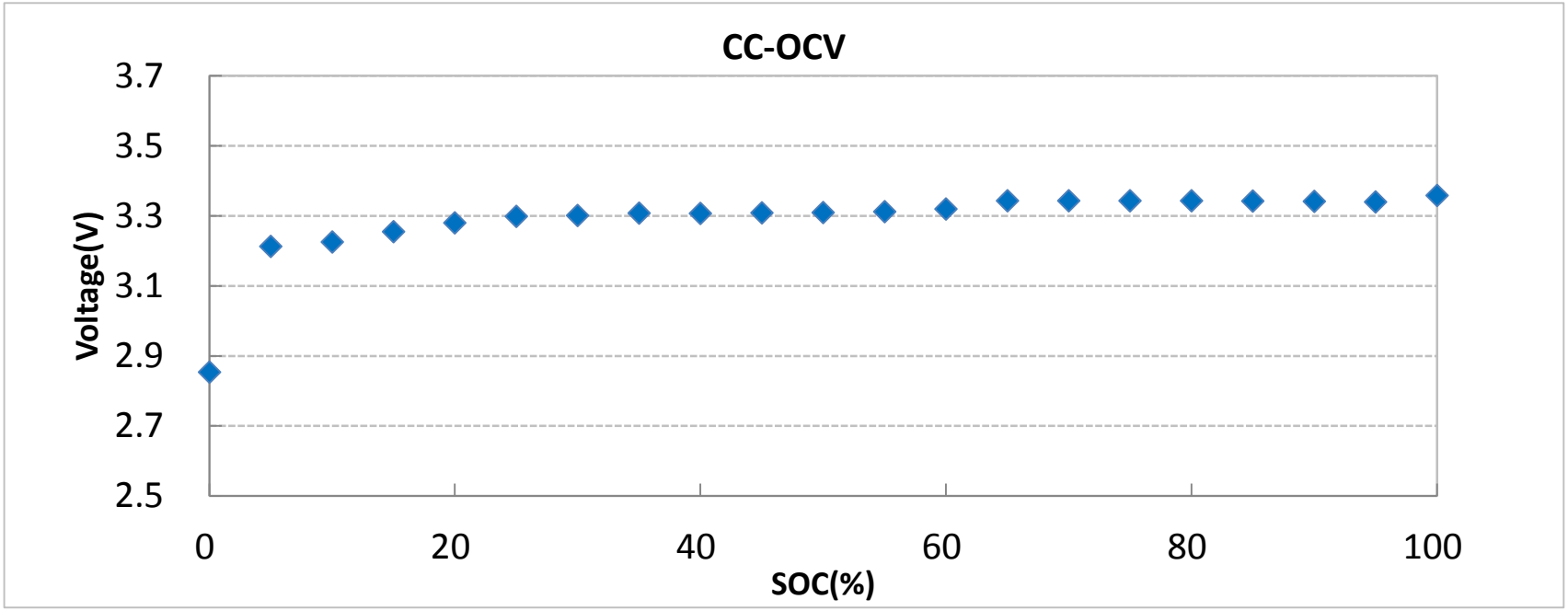
口测试条件：25℃，1C CC to 3.65V, CV to 0.05C; Stand by 3h, OCV test, 0.1C DC to 95%SOC, Rest 3h test OCV； Test OCV per 5% SOC.



DC OCV-SOC Data																				
SOC	100%	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%	5%	0%
Voltage/V	3.425	3.333	3.332	3.331	3.330	3.329	3.328	3.326	3.306	3.294	3.291	3.289	3.288	3.287	3.286	3.272	3.256	3.236	3.211	3.204	2.977

2.10 CC OCV-SOC Curve

□ 测试条件：25℃ , 1C DC to 2.5V; Stand by 5min; 0.05C DC to 2.5V; Stand by 3h, OCV test, 0.1C CC to 5%SOC, Rest 3h test OCV ； Test OCV per 5% SOC.



CC OCV-SOC Data																					
SOC	0%	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%
Voltage/V	2.853	3.212	3.225	3.254	3.280	3.298	3.301	3.307	3.307	3.308	3.309	3.312	3.319	3.343	3.343	3.343	3.342	3.342	3.341	3.339	3.358

3.1 Abuse Test Results

Item	Testing Item	Testing condition (According to GB/T 31485-2015)	Hazard level
1	Over charge	-100%SOC, RT -1C charge 1h or voltage of one of cells reaches 1.5 times of charged ended voltage	HL4
2	Drop	-100%SOC, RT; -1.5 m height to concrete floor with both terminal downward, 1h observation	HL1
3	Nail	-100%SOC, RT -Nail diameter:5~8mm; Velocity:25±5mm/s, through the cell	HL4
4	Crush	-100%SOC, RT, -Crush head: 75mm, Crush to 30% displacement or 0V or the crush force reaches to 200KN	HL2
5	Hot box	-100%SOC, RT -Heating from RT to 130±2°C at the rate 5°C/min. Keep the temperature for 120min	HL3
6	Short	-100%SOC, RT -External resistance<5mohm, hold short circuit for 10min	HL2
7	Heating (Heat shock)	-100%SOC, RT -Heating from RT to 130±2°C at the rate 5°C/min. Keep the temperature for 30min	HL2

3.2 EUCAR Hazard Level Description

Hazard Level	Description	Classification Criteria & Effects
0	No effect	No effect ,No loss of functionality.
1	Passive protection activated	No defect; no leakage; no venting, fire or flame; no rupture; no explosion; no exothermic reaction or thermal runaway. cell reversibly damaged. Repair of protection device needed.
2	Defect/Damage	No leakage; no venting, fire, or flame; no rupture; no explosion; no exothermic reaction or thermal runaway. cell irreversibly damaged. repair needed.
3	Leakage Δmass<50%	no venting, fire, or flame; no rupture; no explosion; Weight loss<50% of electrolyte weight(electrolyte=solvent+salt)
4	Venting Δmass>=50%	no fire or flame; no rupture; no explosion; Weight loss>=50% of electrolyte weight(electrolyte=solvent+salt)
5	Fire or Flame	no rupture; no explosion (i.e., no flying parts)
6	Rupture	no explosion, but flying parts of active mass
7	Explosion	Explosion(i.e., disintegration of the cell)


Thanks !