



# **KH 200Ah LFP Cell**

## **Specification and Performance Summary**



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# 1. Summary

Cell Specification	Parameters
Dimension, mm	54×200×173
Cell capacity @ 25°C, 0.5C, Ah	≥200
Nominal voltage, V	3.2
Nominal energy @ 25°C, 0.5C, Wh	640
Cell weight, kg	<4.01
Energy density, Wh/kg	160
Energy density, Wh/L	301
Max discharge current (25°C, 50%SOC, 30s)	400A
Continuous discharge current ( 25°C )	200A
Continuous charge current ( 25°C )	100A
Operating temperature (case dependent)	-30°C ~ 55°C
Storage temperature (case dependent)	-40°C ~ 60°C

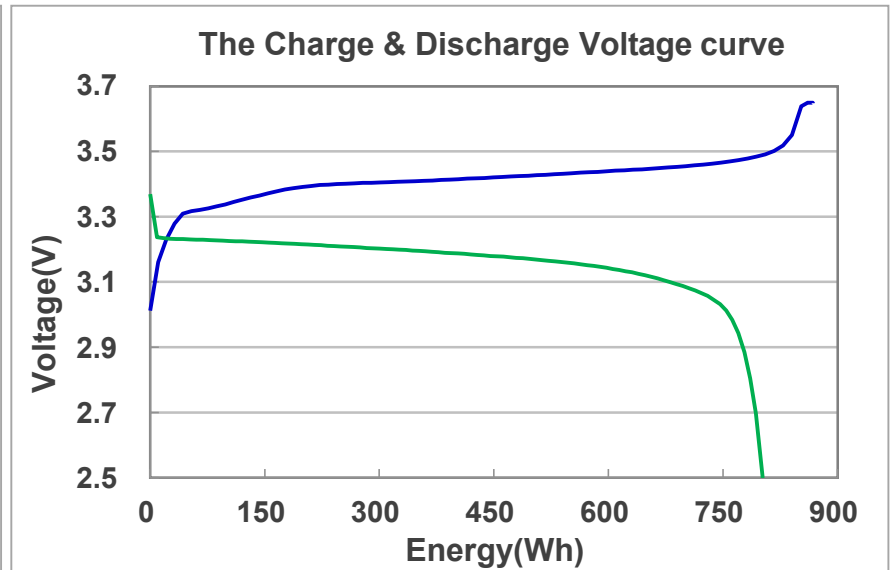
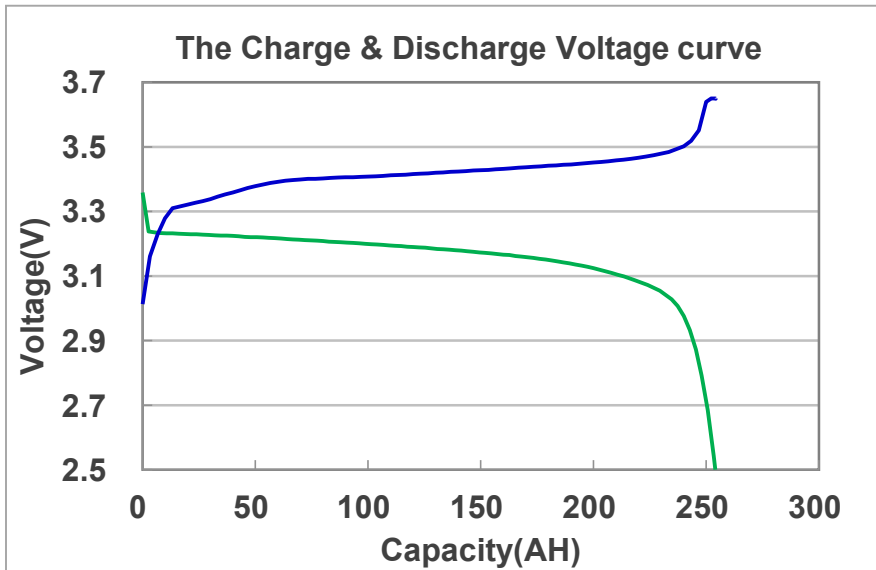


Item	GB/T31485-2015
Over charge	HL4
Drop	HL1
Nail	HL4
Crush	HL2
Hot box	HL3
Short	HL2
Heating (Heat shock)	HL2



# 2.1 Capacity & Energy

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



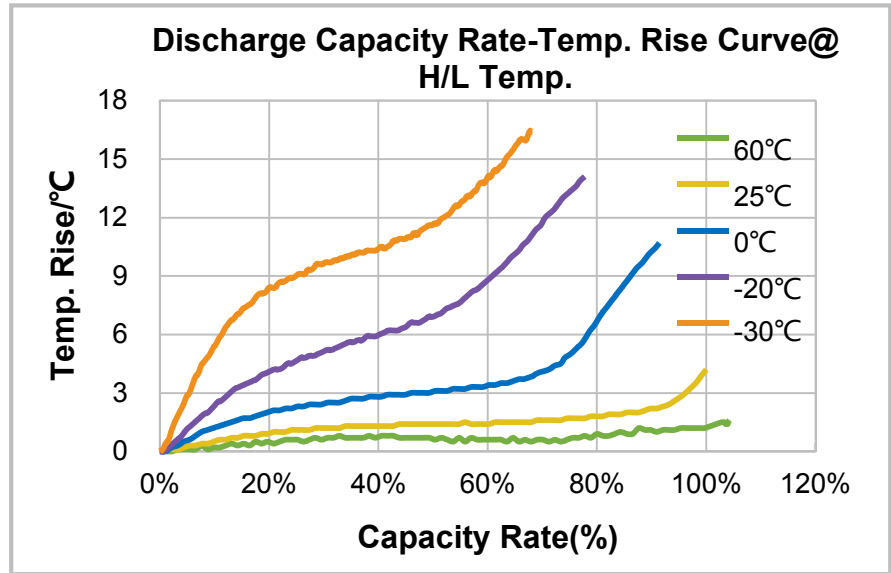
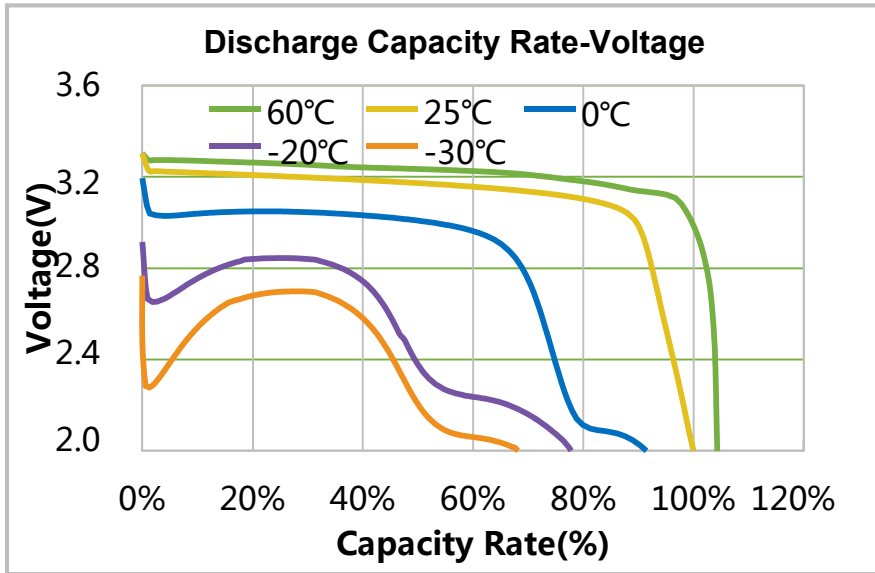
- ◆ Minimum discharge capacity is 200Ah @25°C, 1.0C.
- ◆ Minimum discharge energy is 640Wh @25°C, 1.0C.



## 2.2 High & Low Temp. Capability

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

**Discharge Condition:** 1C DC to 2.5V

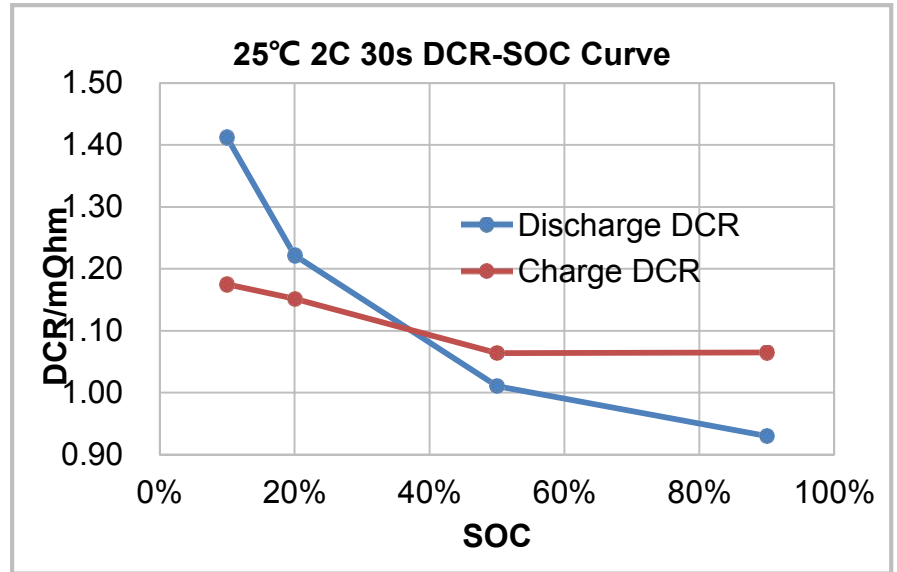
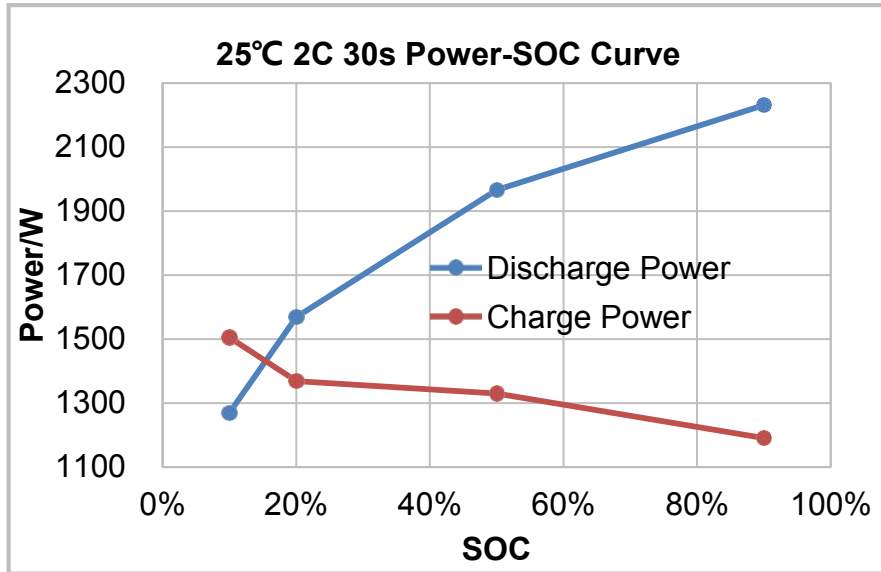


### High/Low Temp Discharge Performance

Temp. (°C)	25	60	0	-20	-30
Capacity Retention	100%	103%	91%	78%	68%
Temp. Rise(°C)	4.2	1.6	10.7	14.1	16.4

## 2.3 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.



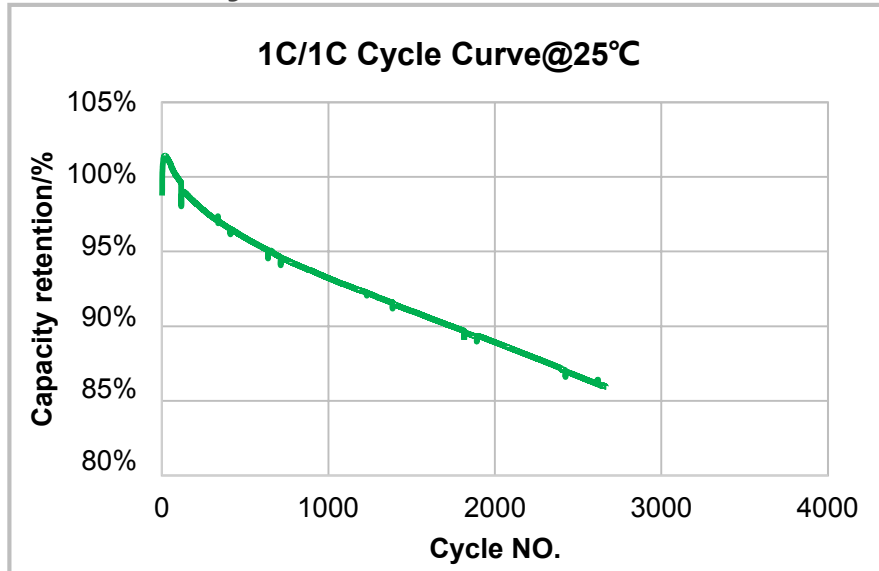
- ◆ 30s Pulse discharge @ 25°C, 50% SOC, DCR is 1.01mOhm ;
- ◆ 30s Pulse charge @ 25°C, 50% SOC, DCR is 1.06 mOhm.



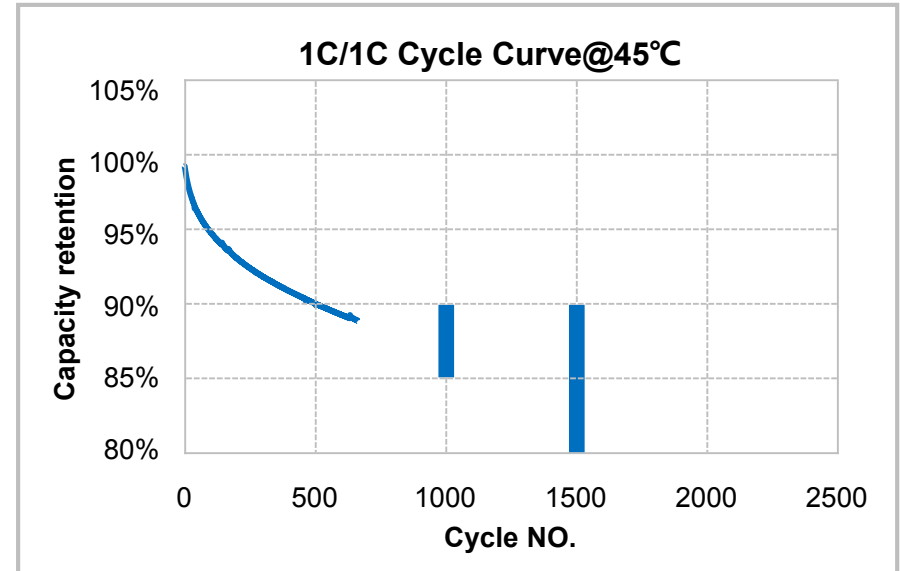
## 2.4 Cycle Life

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

- **25°C Cycle Life**



- **45°C Cycle Life**



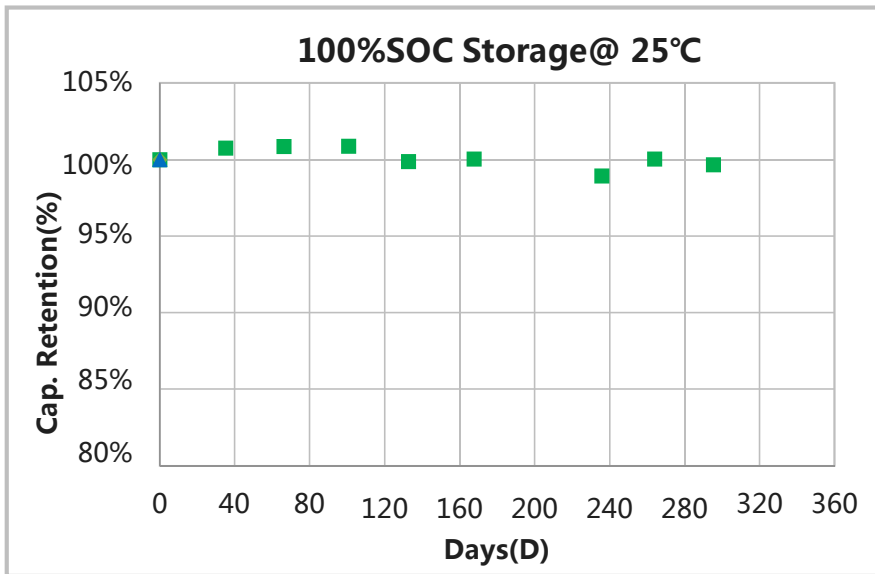
- ◆ 80% reversible capacity retention is still tested
- ◆ Prediction of cycle life @25°C is 3800cycle
- ◆ Prediction of cycle life @45°C is 2000cycle



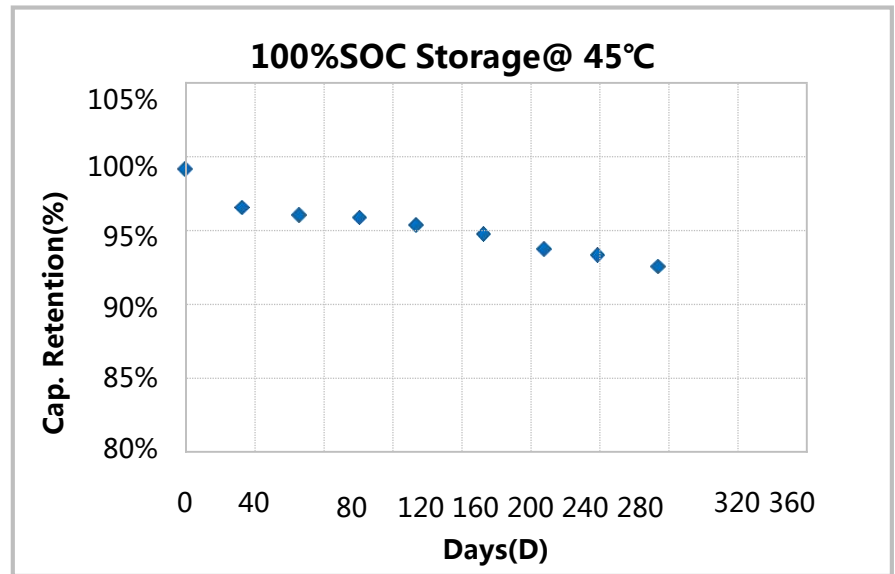
## 2.5 Storage Life

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

- **25°C storage performance**



- **45°C storage performance**



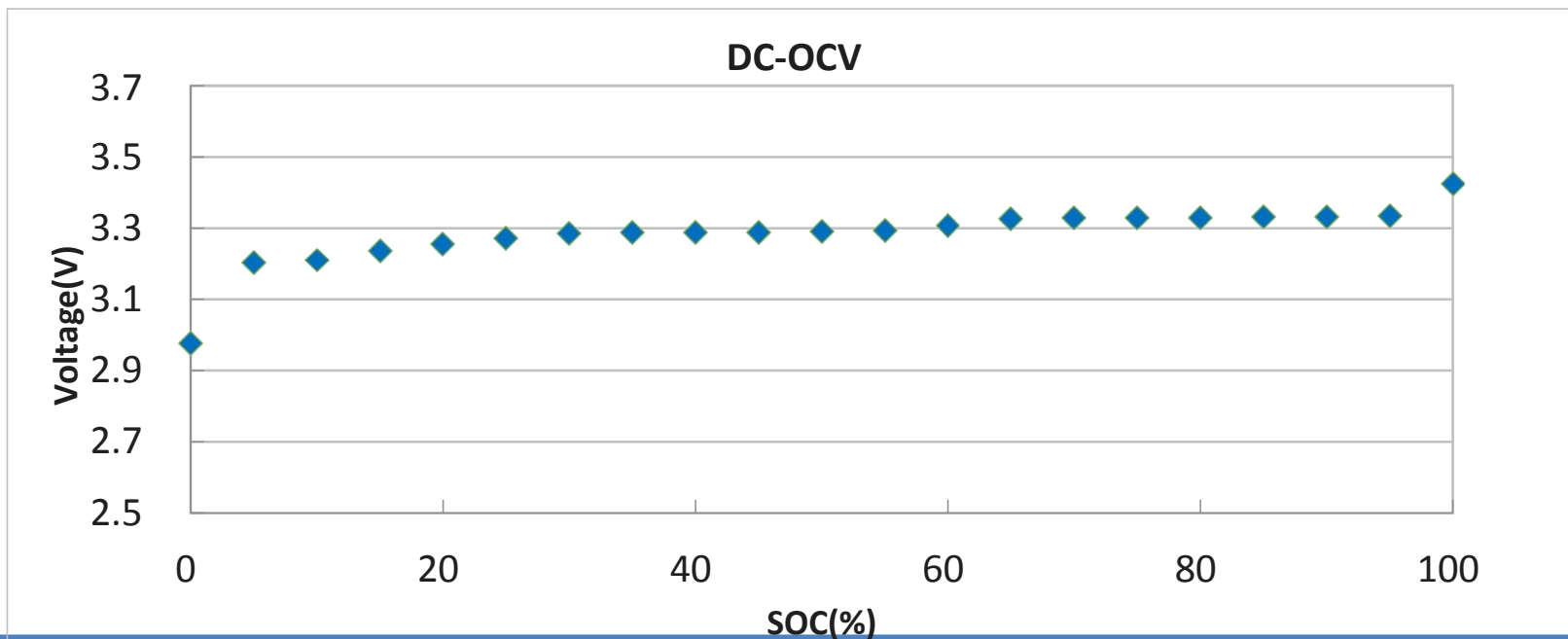
- ◆ ~99.0% reversible capacity retention @ 25°C, 295days ;
- ◆ ~93.4% reversible capacity retention @ 45°C, 274days





## 2.6 DC OCV-SOC Curve

测试条件：25°C，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.



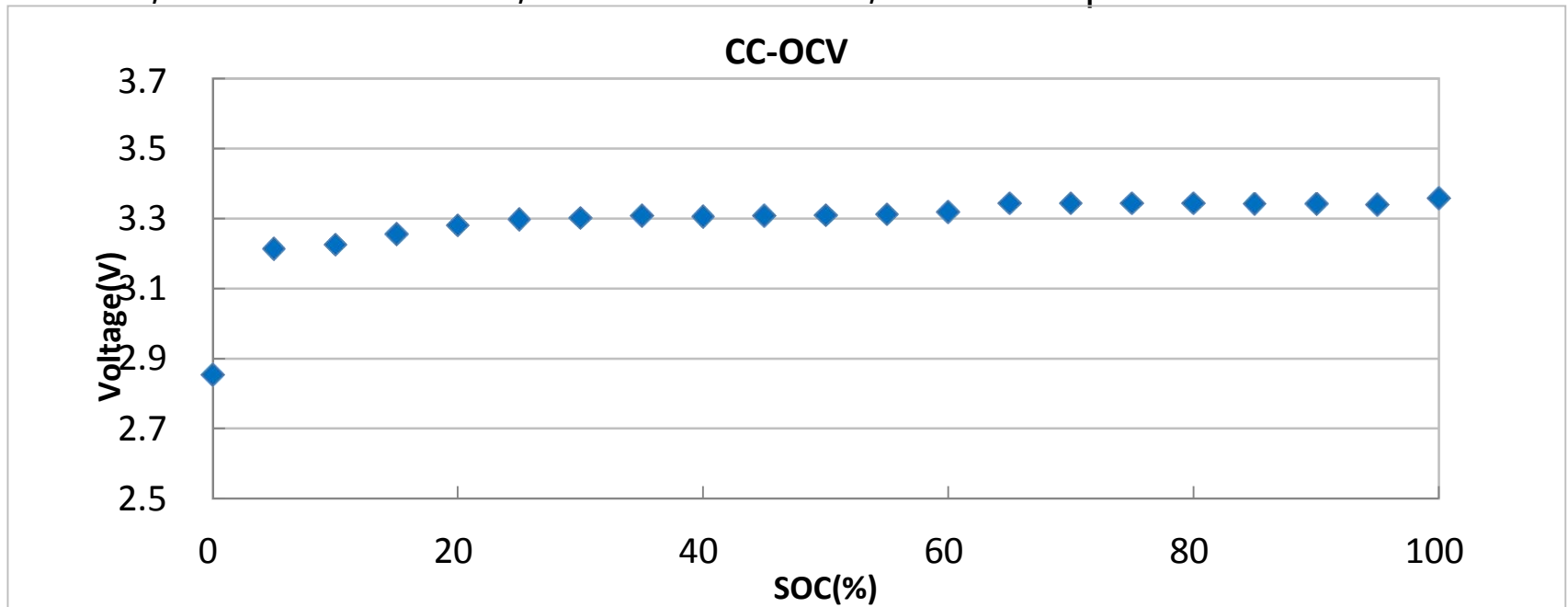
DC OCV-SOC Data

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



## 2.7 CC OCV-SOC Curve

□ 测试条件 : 25°C , 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 $\Delta\text{mass} < 50\%$	no venting, fire, or flame; no rupture; no explosion; Weight loss $< 50\%$ of electrolyte weight(electrolyte=solvent+salt)
4	Venting $\Delta\text{mass} \geq 50\%$	no fire or flame; no rupture; no explosion; Weight loss $\geq 50\%$ 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 !**

