



CATL

240Ah ESS LFP Cell

Specification and Performance Summary

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1. Summary

Cell Specification

Parameters

Dimension, mm	71.5×173.9×207.3
Cell capacity @ 25°C, 0.5C, Ah	≥240
Nominal voltage, V	3.2
Nominal energy @ 25°C, 0.5C, Wh	768
Cell weight, g	<5200
Energy density, Wh/kg	150
Energy density, Wh/L	307
DCR (25°C,30s,50%SOC), mΩ	<0.45
Max Current (Charge),50% SOC,10s, 25°C	480A
Max Current (Discharge),50% SOC,10s, 25°C	720A
Operating temperature (case dependent)	-30°C ~ 55°C
Storage temperature (case dependent)	-40°C ~ 60°C



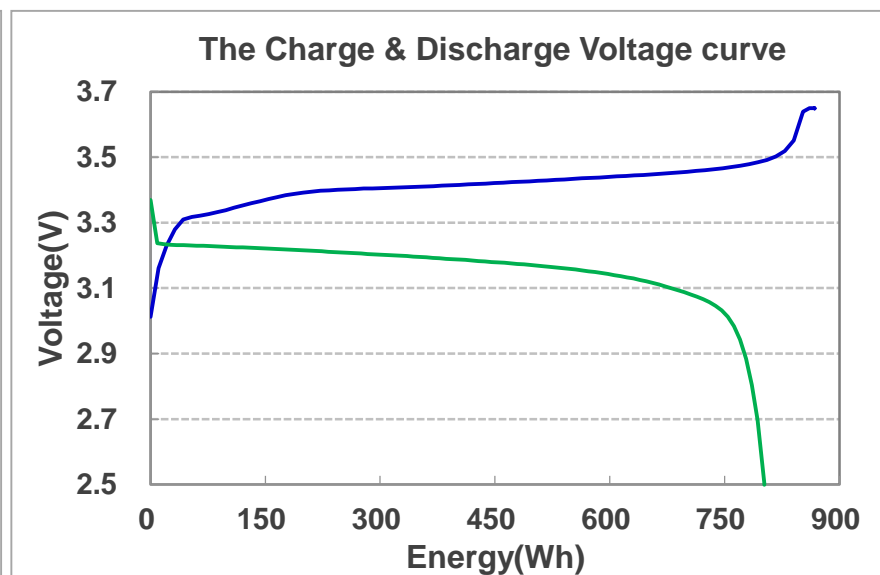
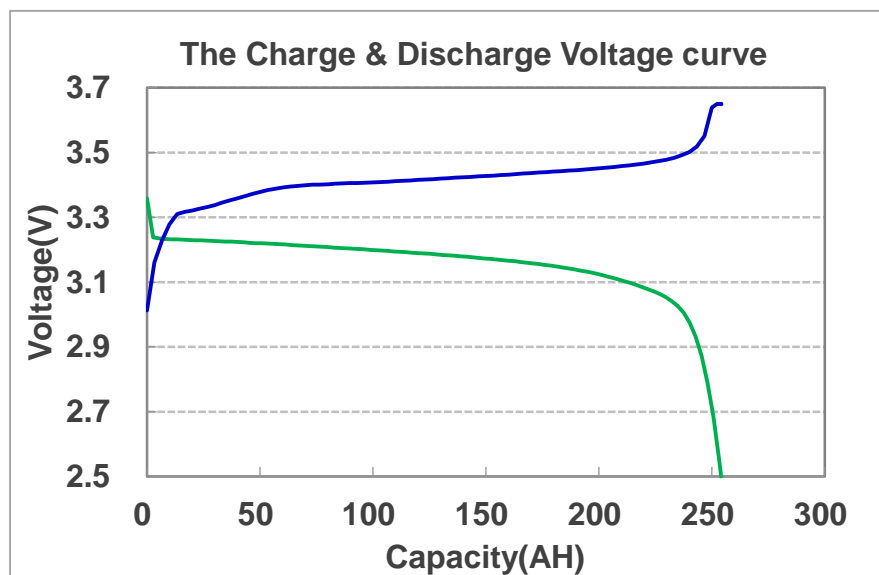
Item

GB/T31485-2015

Nail	HL4
Crush	HL2
Hot box	HL4
Short	HL2
Over discharge	HL2
Overcharge	HL2
Heating (Heat shock)	HL2

2.1 Capacity & Energy

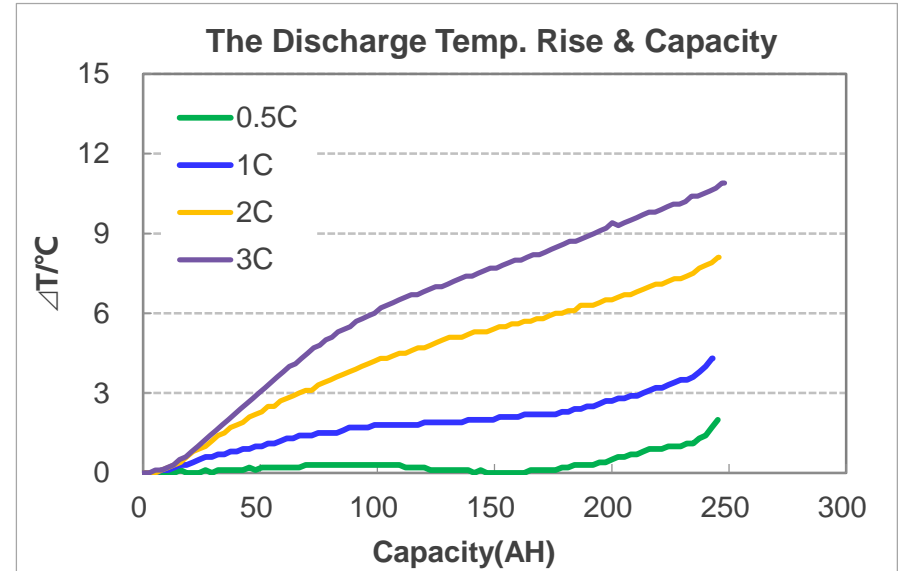
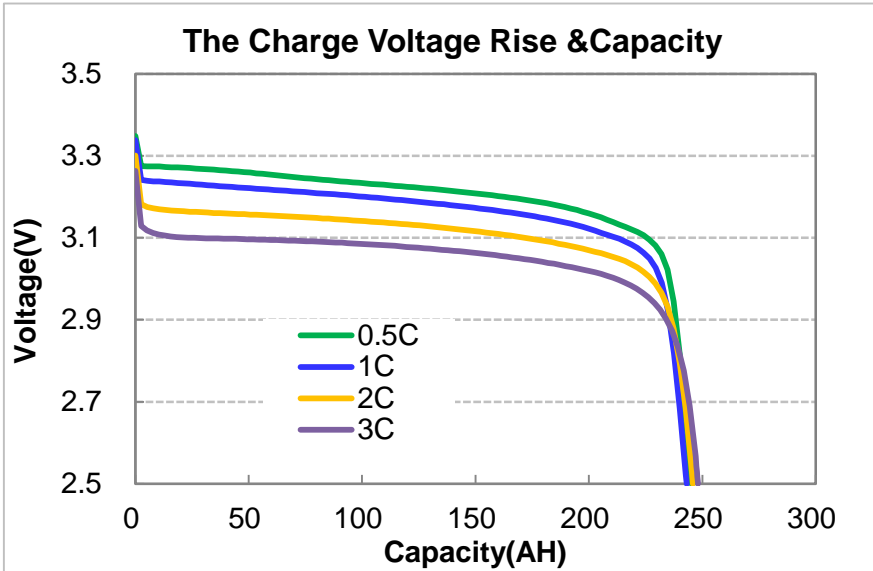
Test Condition: 25°C, 1C CC to 3.65V, 3.65V CV to 0.05C, Rest 5 min; 1C DC to 2.5V, Rest 5 min;



- ◆ Minimum discharge capacity is 240Ah @25°C, 1C
- ◆ Minimum discharge energy is 768Wh @25°C, 1C

2.2 Rate Discharge Capability @ 25°C

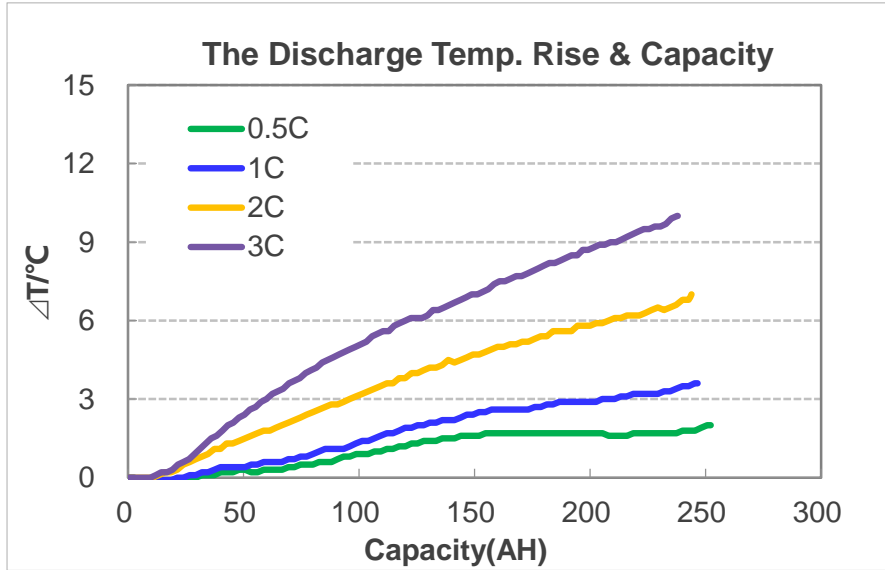
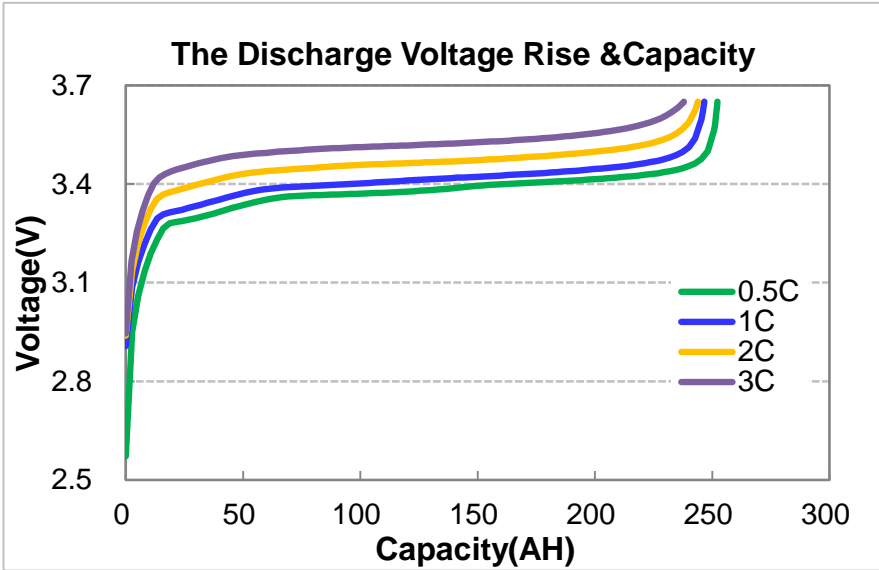
Test Condition: (1) Rest 30 min at 25°C; (2) 1C CC to 3.65V, 3.65V CV to 0.05C; (3) Rest 5min; (4) n*C DC to 2.5V(n=1,2,3); (5) Repeat step 1 to step 4 until all the rates are tested; (6) Rest 5min.



Rate Discharge Performance				
Rate	0.5C	1C	2C	3C
Capacity	100%	99%	100%	101%

2.3 Rate Charge Capability @ 25°C

Test Condition: Charge condition: *C CC to 3.65V
 Discharge condition: 1C DC to 2.5V

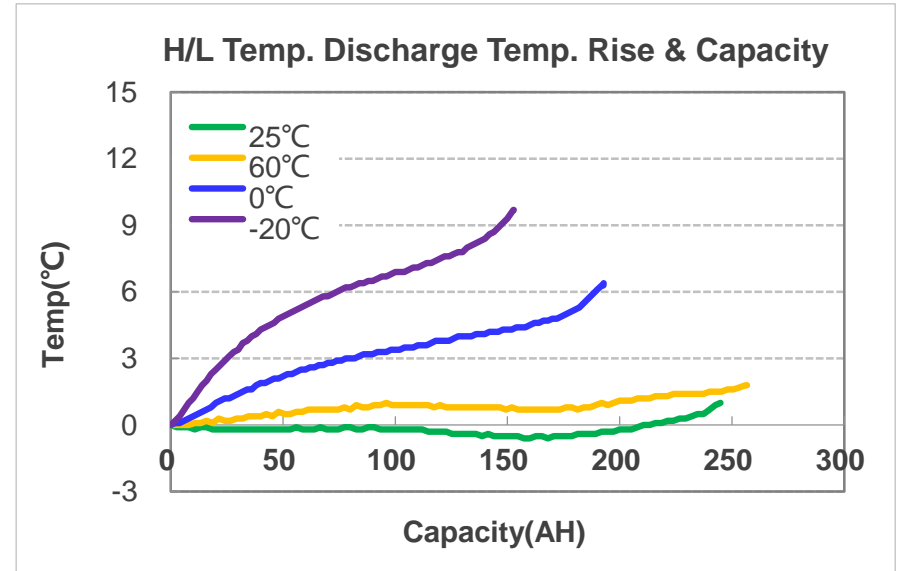
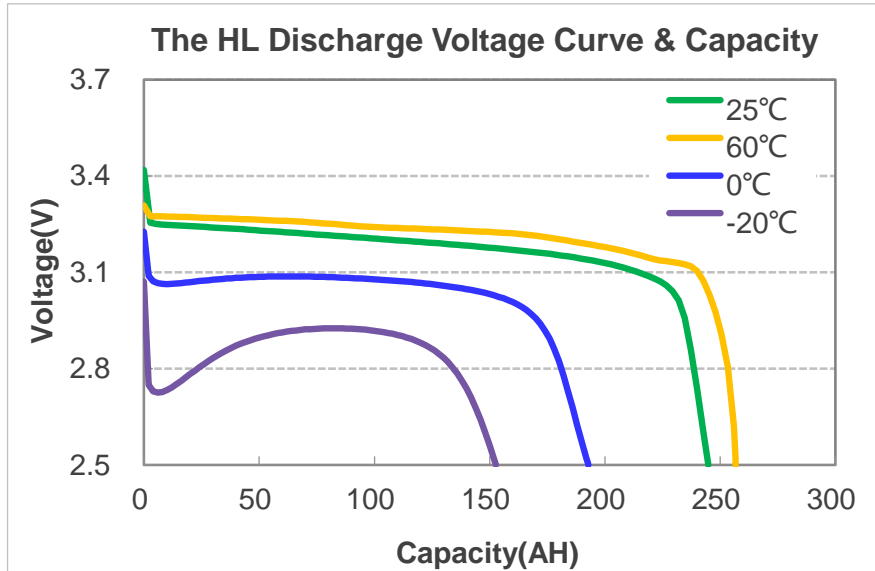


Rate Discharge Performance				
Rate	0.5C	1C	2C	3C
Capacity	100%	98%	96%	94%

2.5 High & Low Temp. Capability

Charge Condition: 25°C , 1C CC to 3.65V , 3.65V CV to 0.05C

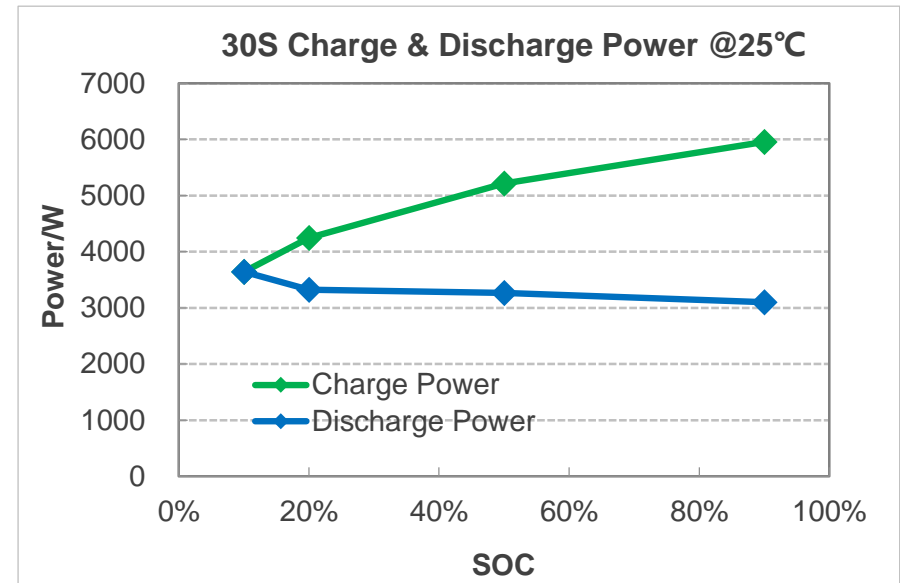
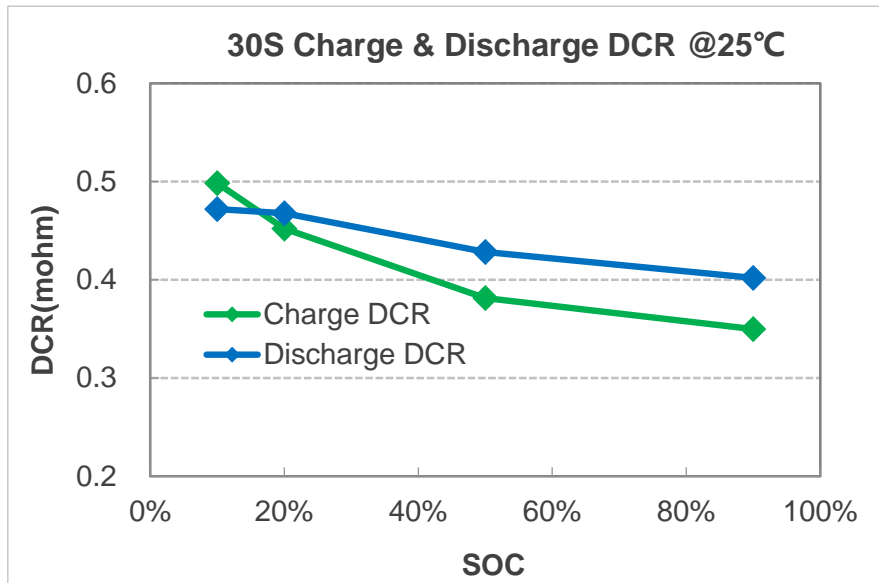
Discharge Condition: 1C DC to 2.0V



High/Low Temp Discharge Performance				
Temp.	25°C	60°C	0°C	-20°C
Capacity	100.0%	104.6%	79.8%	63.4%

2.6 Internal Resistance (DCR) & HPPC Power

Test Condition: Discharge@ 500A DC 30s, Charge@ 375A CC 30s



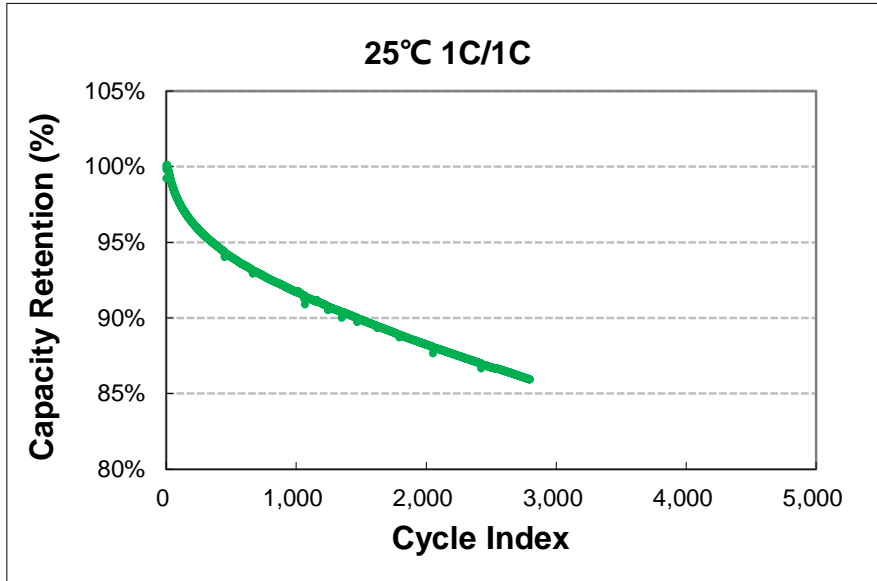
1. DCR for 30s pulse discharge is 0.38mohm@25°C, 50%SOC
2. DCR for 30s pulse charge is 0.43mohm@25°C, 50%SOC
3. 30s Pulse discharge power is 5214W@ 25°C, 50% SOC
4. 30s Pulse charge power is 3268W@ 25°C, 50% SOC

Note: Power is calculated from DCR based on Freedom Bus/Car method, Discharge cut off voltage \geq 2.5V, charge cut-off voltage \leq 3.65V

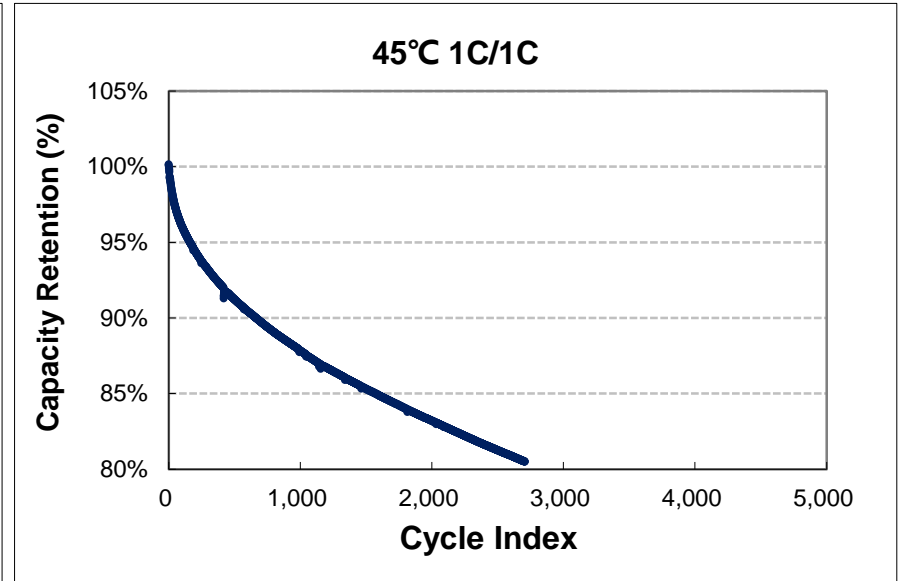
2.8 Cycle Life

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

- **25°C Cycle Life**



- **45°C Cycle Life**

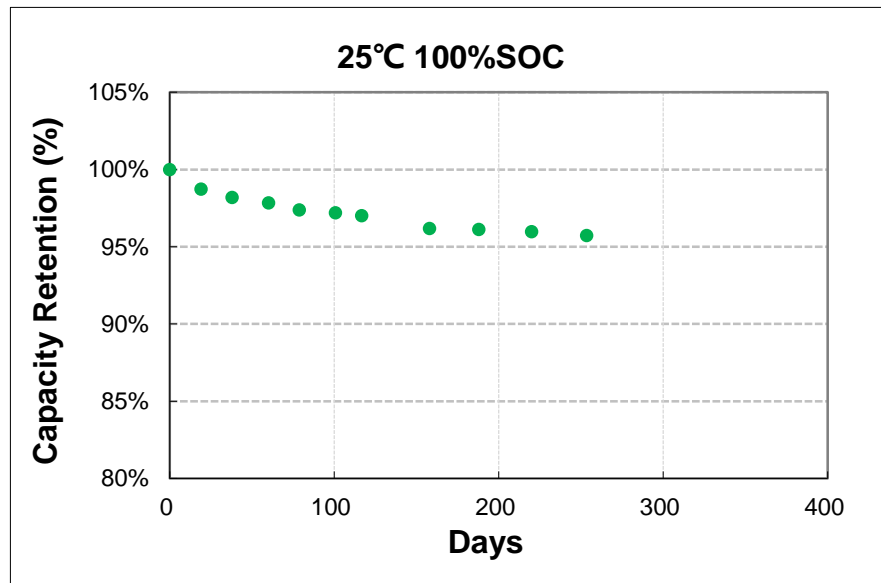


- ◆ 25°C 80% reversible capacity retention is still tested ;
- ◆ 45°C 80% reversible capacity retention ~2700Cycle ;

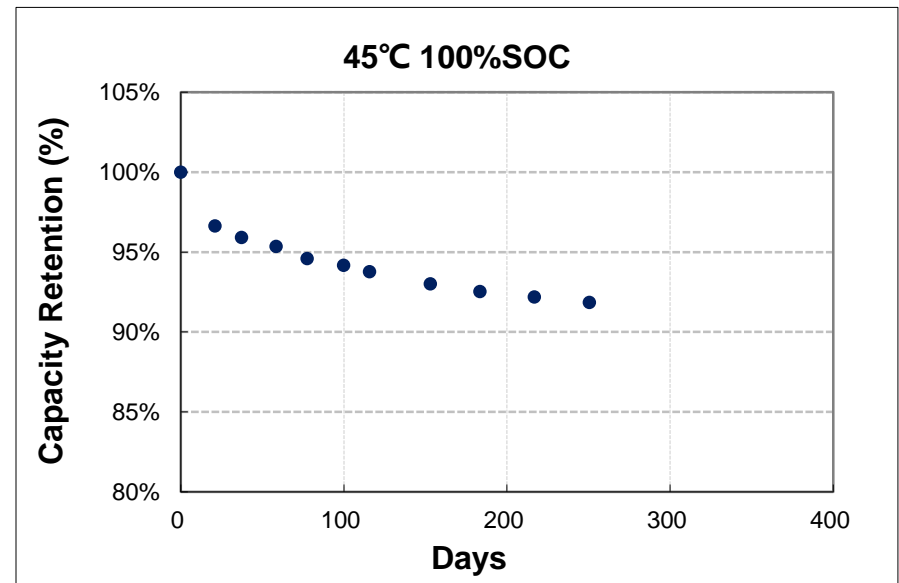
2.9 Storage Life

Test Condition : 25°C/45°C , 100% SOC Storage, and monitor the reversible capacity retention.

- **25°C storage performance**



- **45°C storage performance**



- ◆ ~95% reversible capacity retention @ 25°C, 253 days
- ◆ ~91% reversible capacity retention @ 45°C, 250 days

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	HL2
2	Over discharge	-100%SOC, RT -1C DC 90min, rest 60min	HL2
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	HL2
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)

An aerial architectural rendering of a city development project. The scene features a river on the left side, with several high-rise apartment buildings along its banks. In the center and right, there are large industrial or commercial buildings with flat roofs, interspersed with smaller residential structures and green spaces. A prominent road or highway runs diagonally across the middle of the development. The overall atmosphere is bright and slightly hazy, suggesting a clear day. The text "Thanks !" is overlaid in the center in a bold, blue font.

Thanks !