SWY 21700 5.0Ah 3C
Product Performance Introduction

Shineway

浙江深纬业科技有限公司

Shineway

Contents

01 Parameter Overview

Parameter Overview

Type			SWY 21700 5.0Ah 3C	
●	Capacity@0.2C	Nominal	5000	mAh
●		Minimum	4950	mAh
●	AC.IR	Typical	13	mΩ
●	Nominal Voltage	0.2C	3.6	V
●	Voltage Range	Charge	4.2	V
●		Discharge	2.5	V
●	Charge Current	Standard	2.5	A
●		Rapid	5.0	A
●	Temperature Condition (Cell Surface)	Charge	0~50	℃
●		Discharge	-20~80	℃
●	Discharge Current	Standard	2.5	A
●		Max. Continuous	15	A
●	Cycle	5A/15A(2.5-4.2V)	80%@300	cycles
●	Weight	Typical	65	g
●	GED	0.2C	265	Wh/kg
●	ED	0.2C	707	Wh/L

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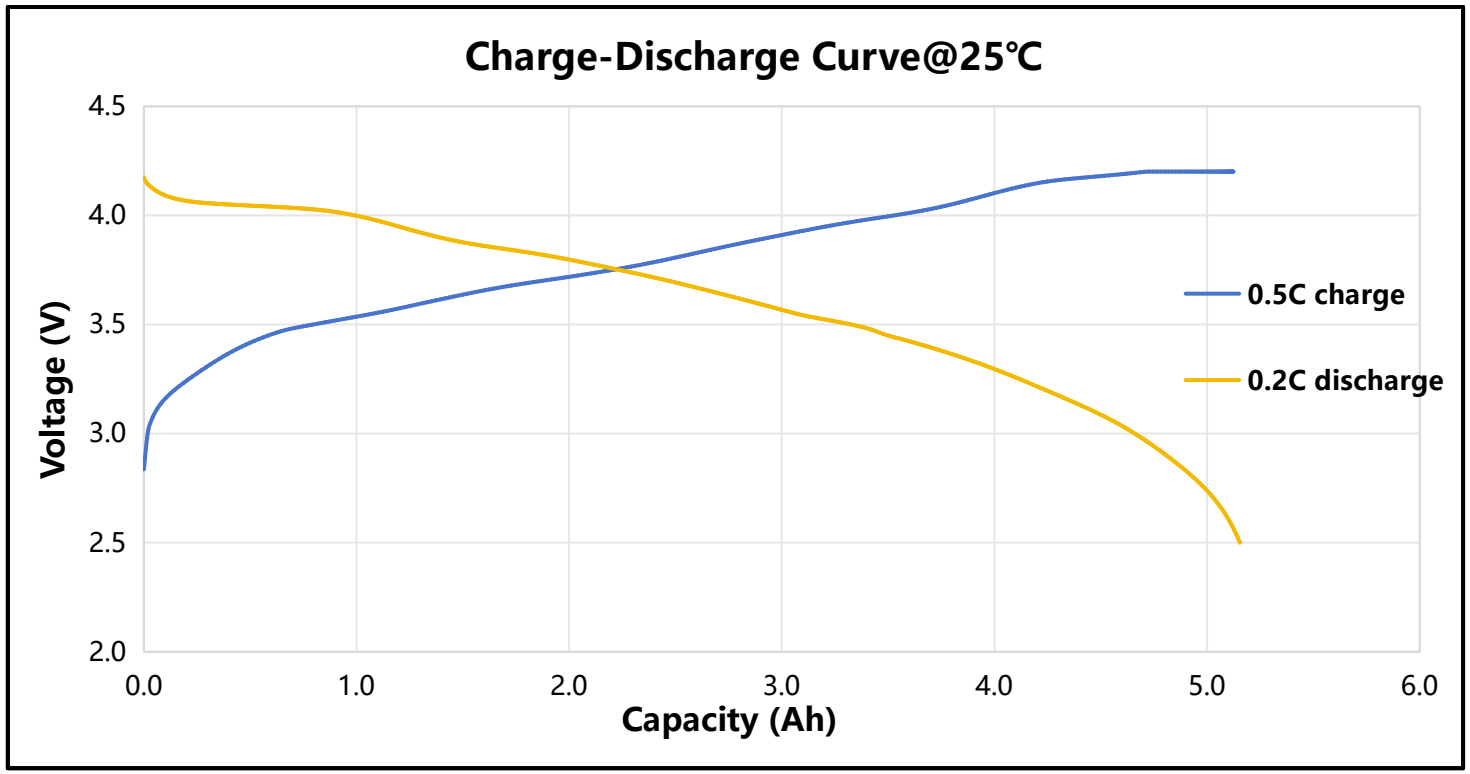
Electrical performance

Capacity@0.2C

Charge: CC(0.5C) to 4.2V, CV(4.2V) to 0.02C

Discharge: CC(0.2C) to 2.5V



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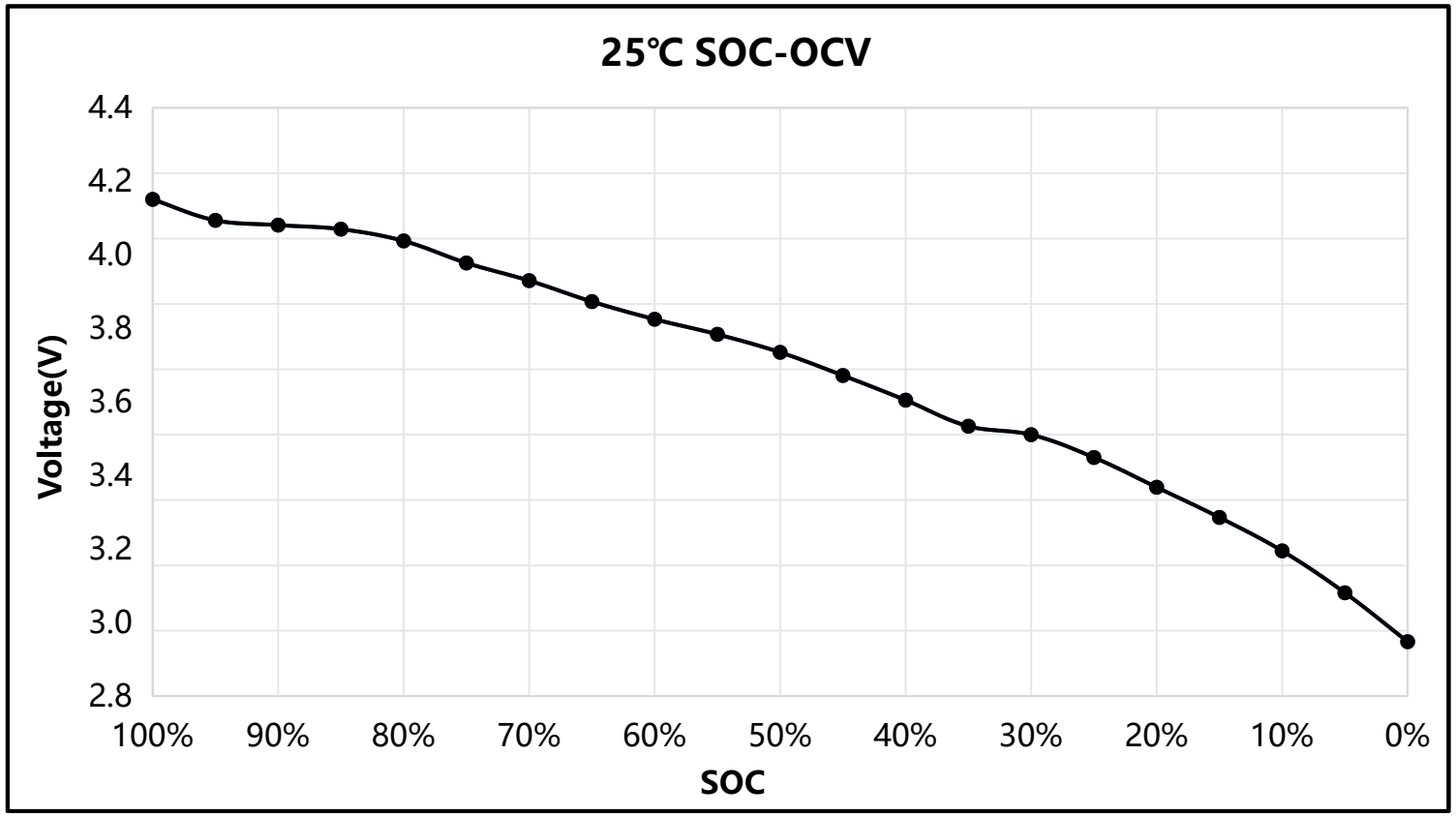
Discharge SOC-OCV @25℃

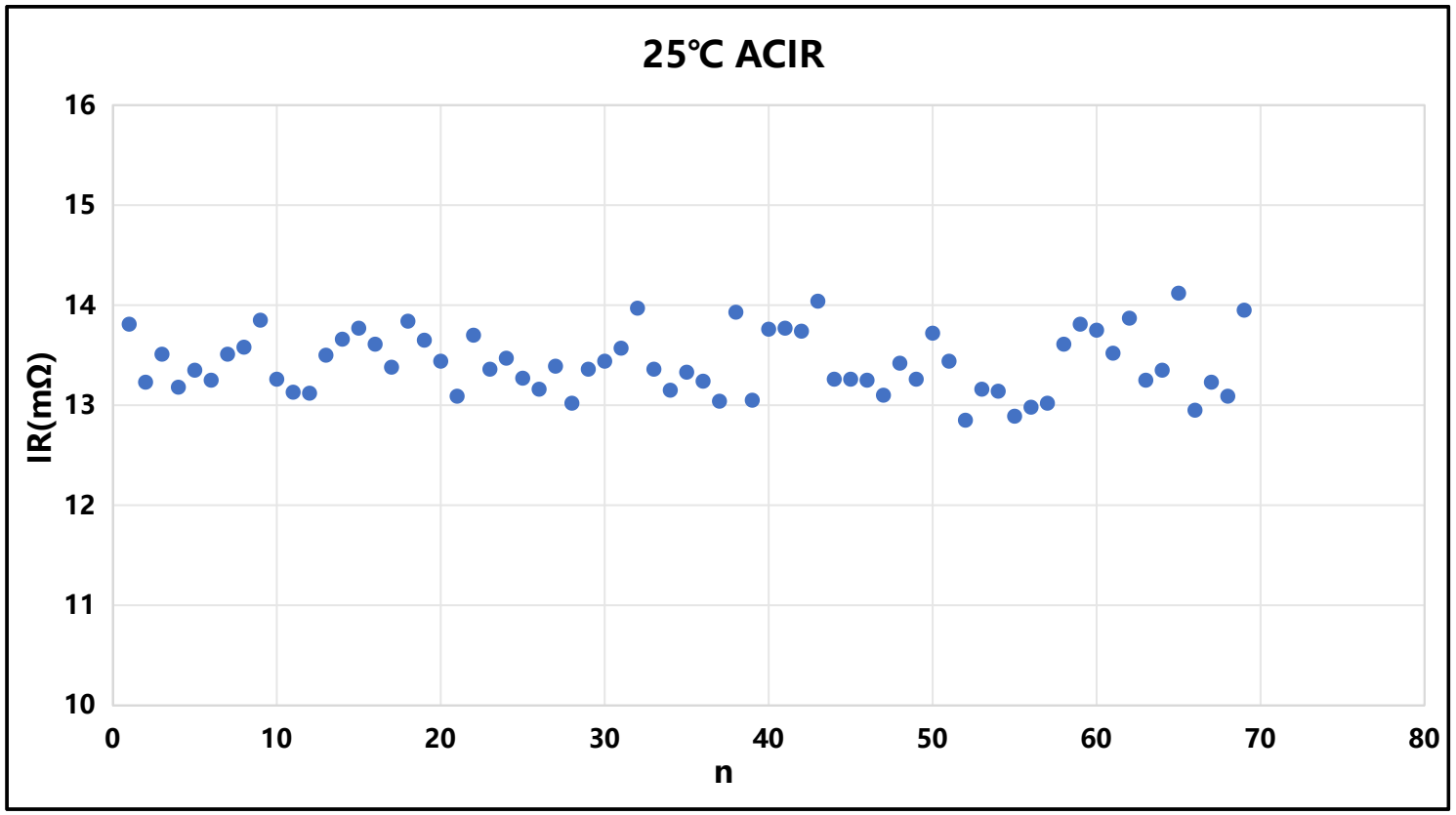
Charge: CC(0.2C) to 4.2V, CV(4.2V) to 0.02C @ 25℃

Discharge: CC(0.2C) 5% capacity@ 25℃, rest for 24h and take OCV, until voltage ≤2.5V



ACIR@25℃

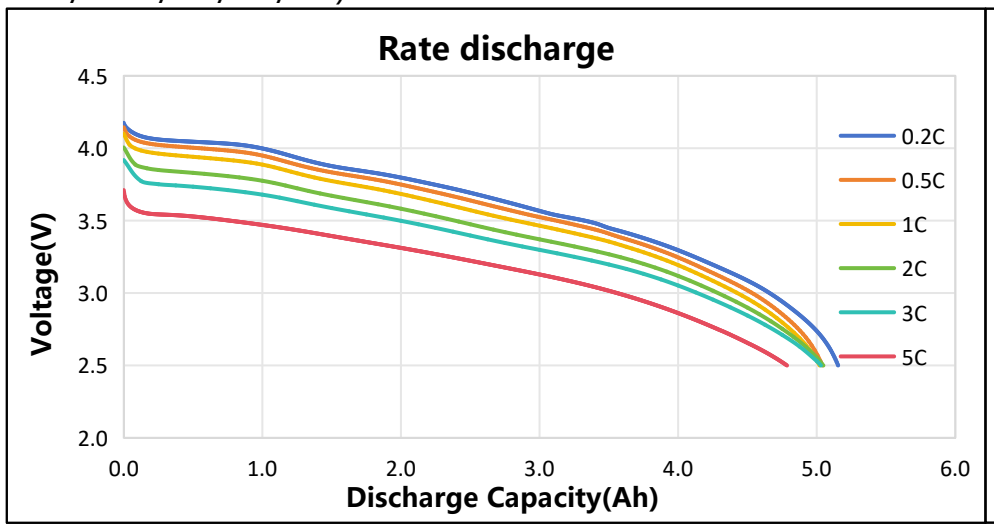
ACIR at 25˚C: 1kHz

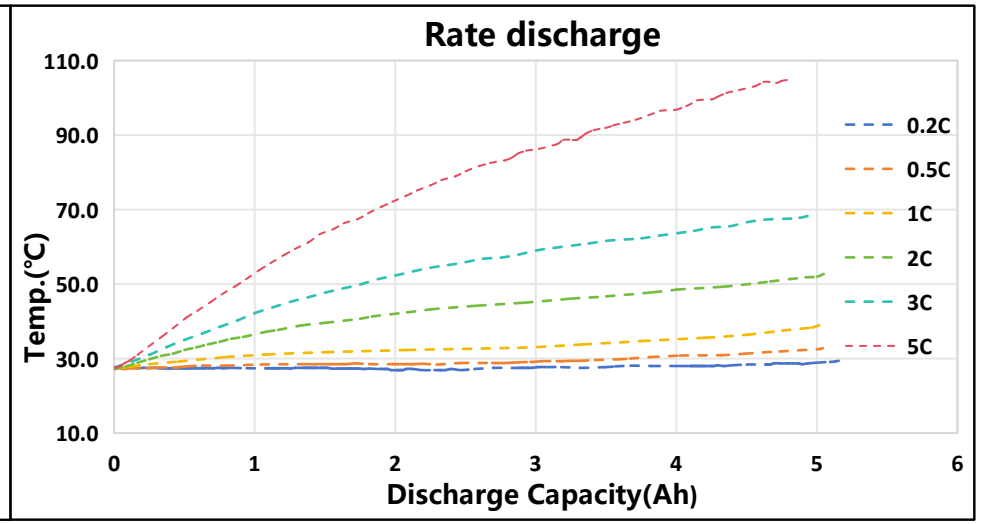


Rate Discharge @25℃

Charge: CC(0.5C) to 4.2V, CV(4.2V) to 0.02C

Discharge: CC(0.2C/0.5C/1C/3C/5C) to 2.5V



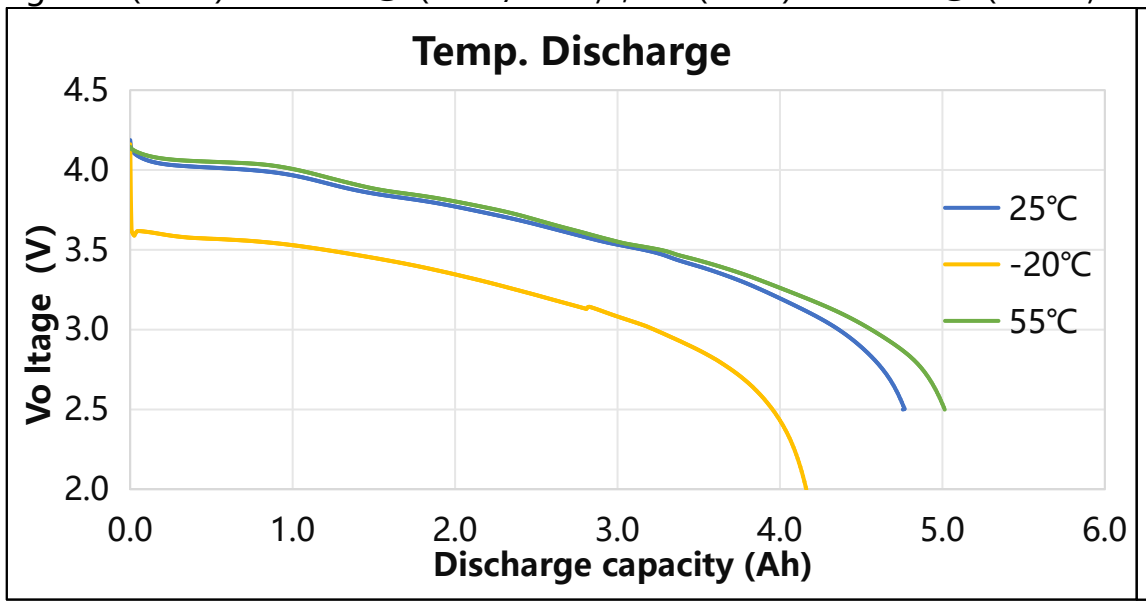


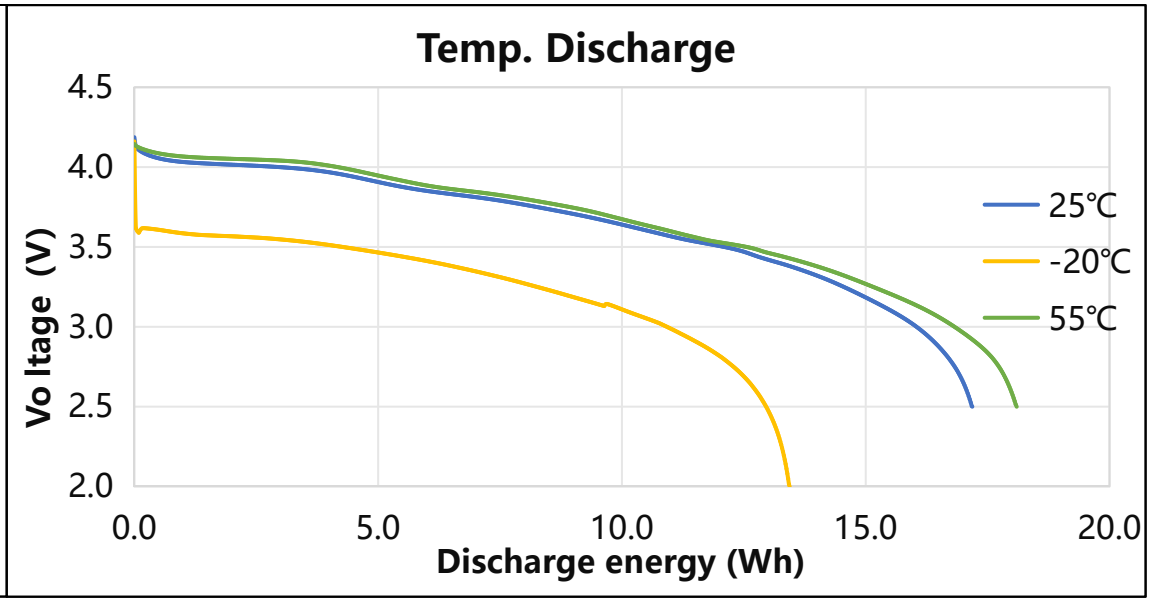
Rate Discharge						
Item	0.2C	0.5C	1C	2C	3C	5C
Discharge Capacity（Ah）	5.154	5.041	5.021	5.048	5.030	4.786
Discharge Capacity（%）	102.3%	100%	99.6%	100.1%	99.8%	94.9%
Discharge Energy（Wh）	18.54	17.98	17.63	17.25	16.82	15.27
Max.Surface Temp.（℃）	29.4	32.8	39.0	52.7	69.3	104.8
Temp. Raise（℃）	2.5	5.7	11.5	25.4	41.7	77.2

Different Temp. Discharge @ 0.2C

Charge: CC(0.5C) to 4.2V, CV(4.2V) to 0.02C @ 25℃

Discharge: CC(0.2C) to 2.5V @ (25℃/55℃) , CC(0.2C) to 2.0V @ (-20℃)





Different Temp. Discharge			
Temperature (℃)	25℃	55℃	-20℃
Discharge Capacity (Ah)	4.757	5.011	4.134
Discharge Capacity (%)	100%	105.4%	87.5%
Discharge Energy (Wh)	17.19	18.10	13.44
Discharge Energy (%)	100%	105.3%	78.2%

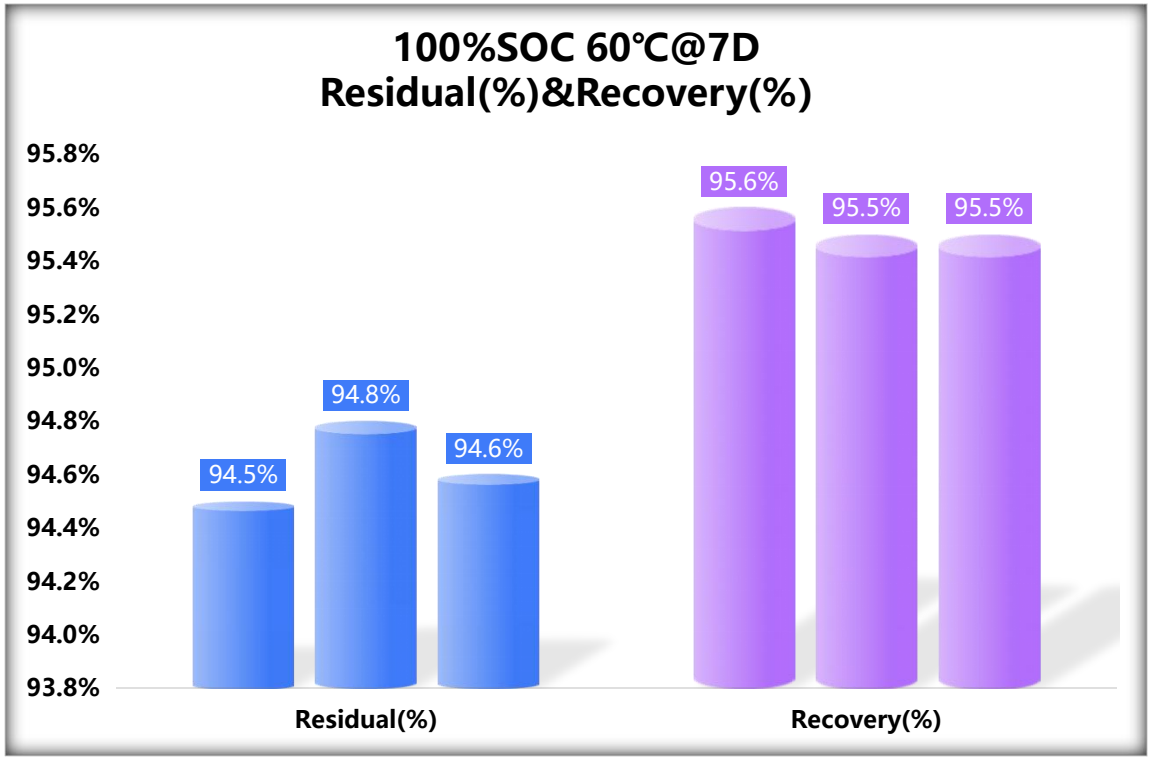
60℃ Storage （100%SOC)

Charged at standard charge method, store the testing cells at 60±2ºC for 7 days.

Charge: CC(0.5C) to 4.2V, CV(4.2V) to 0.02C

Discharge: CC(0.5C) to 2.5V

Item		1#	2#	3#
Before	IR(mΩ)	13.6	13.1	13.3
	Voltage(V)	4.165	4.161	4.164
	Capacity(Ah)	5.022	5.001	5.077
After	IR(mΩ)	13.1	13.6	13.8
	Voltage(V)	4.097	4.091	4.094
	Residual(Ah)	4.746	4.741	4.803
	Recovery(Ah)	4.801	4.776	4.849
Residual(%)		94.5%	94.8%	94.6%
Recovery(%)		95.6%	95.5%	95.5%



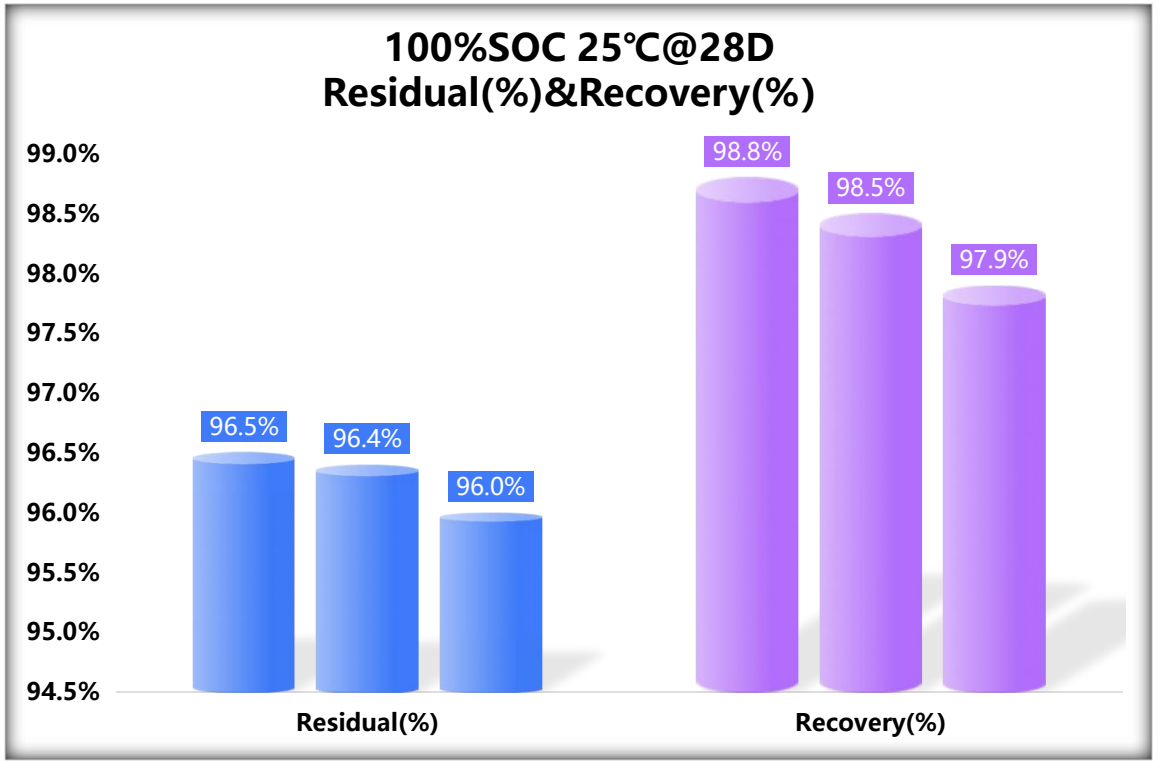
25℃ Storage （100%SOC)

Charged at standard charge method, store the testing cells at 25±2ºC for 28 days.

Charge: CC(0.5C) to 4.2V, CV(4.2V) to 0.02C

Discharge: CC(0.5C) to 2.5V

Item		1#	2#	3#
Before	IR(mΩ)	13.0	13.0	13.0
	Voltage(V)	4.176	4.178	4.175
	Capacity(Ah)	5.084	5.051	5.074
After	IR(mΩ)	13.1	13.2	13.1
	Voltage(V)	4.101	4.106	4.102
	Residual(Ah)	4.906	4.869	4.871
	Recovery(Ah)	5.023	4.975	4.967
Residual(%)		96.5%	96.4%	96.0%
Recovery(%)		98.8%	98.5%	97.9%



85℃ Storage （100%SOC)

Charged at standard charge method, store the testing cells at 85±2ºC for 3 days.

Charge: CC(0.5C) to 4.2V, CV(4.2V) to 0.02C

NO.	Before		After		△IR(mΩ)	△V(V)
	IR(mΩ)	Voltage(V)	IR(mΩ)	Voltage(V)		
1#	12.8	4.174	15.3	4.067	2.5	0.107
2#	12.6	4.174	15.1	4.073	2.5	0.101
3#	12.7	4.175	14.9	4.070	2.2	0.105
4#	12.5	4.177	14.7	4.068	2.2	0.109
5#	12.9	4.179	15.5	4.068	2.6	0.111
6#	12.5	4.177	14.9	4.070	2.4	0.107
7#	12.7	4.179	15.4	4.068	2.7	0.111
8#	12.7	4.179	15.0	4.074	2.3	0.105
9#	12.9	4.178	15.6	4.067	2.7	0.111
10#	12.5	4.179	14.7	4.065	2.2	0.114

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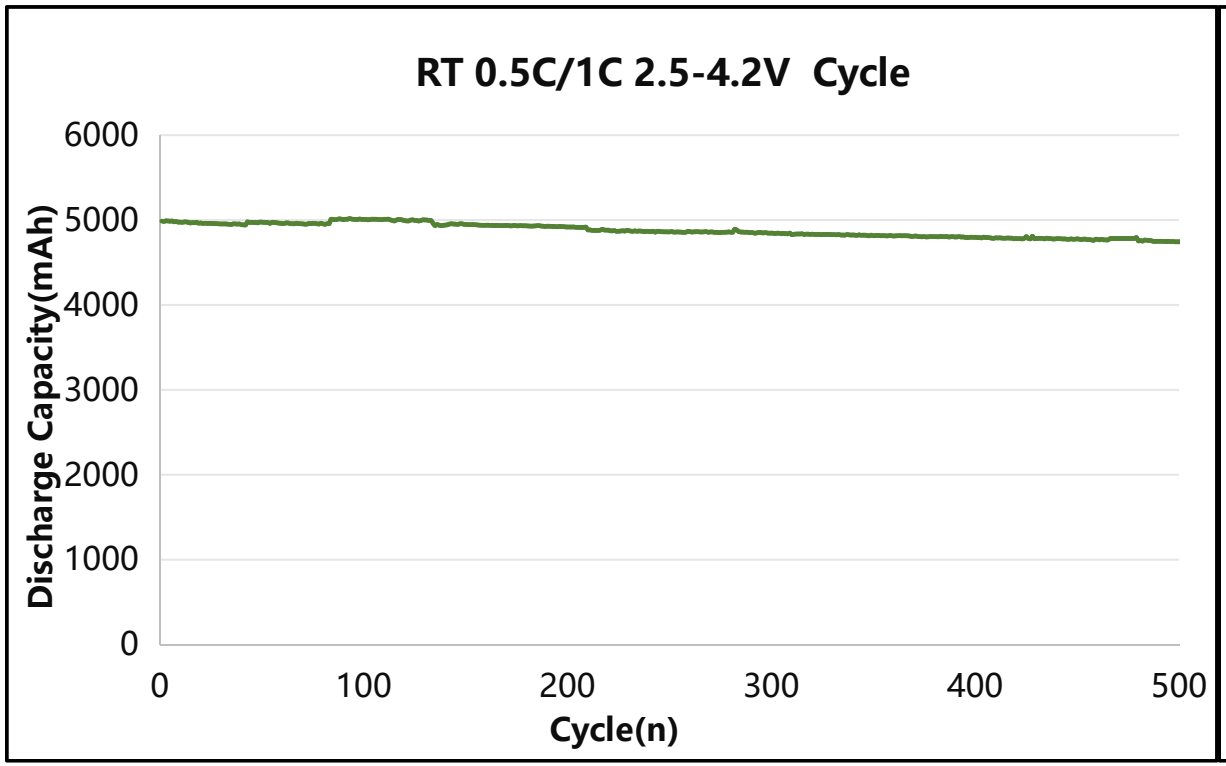
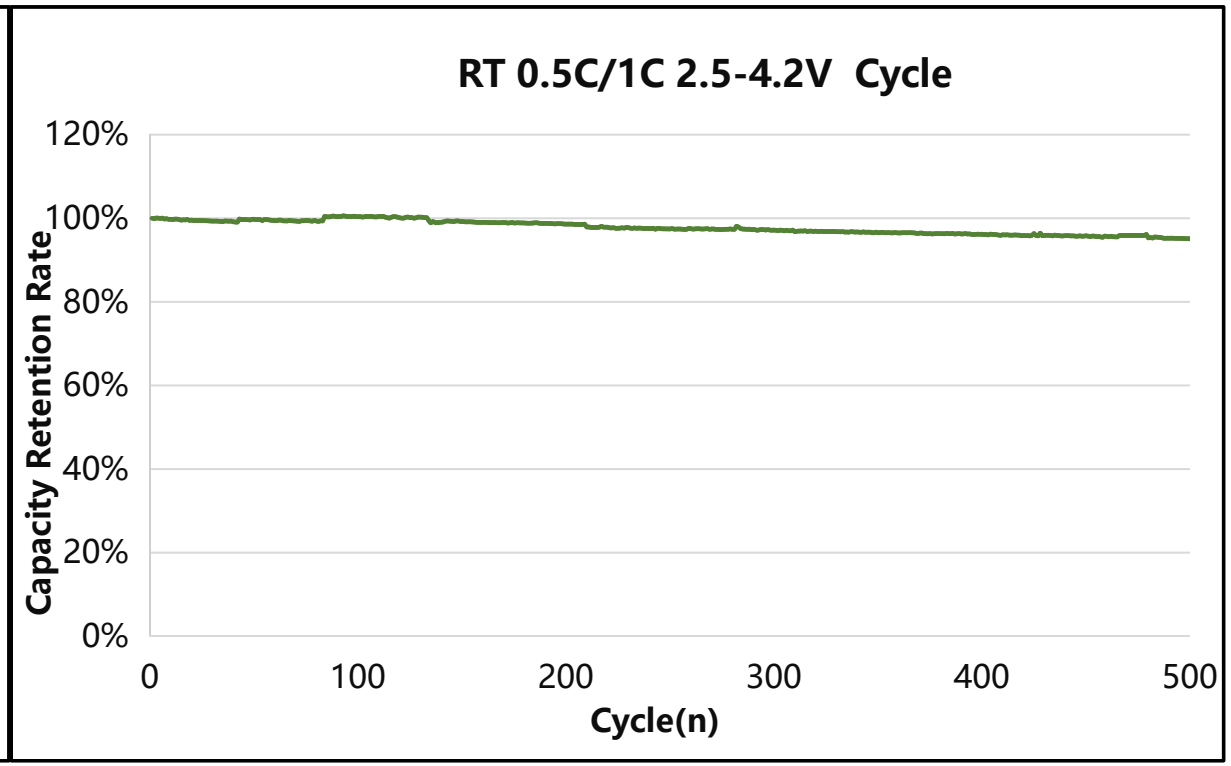
Cycle Test

a: Cell Cycle @ 25℃

Charge: CC(0.5C) to 4.2V, CV(4.2V) to 0.05C

Discharge: CC(1.0C) to 2.5V

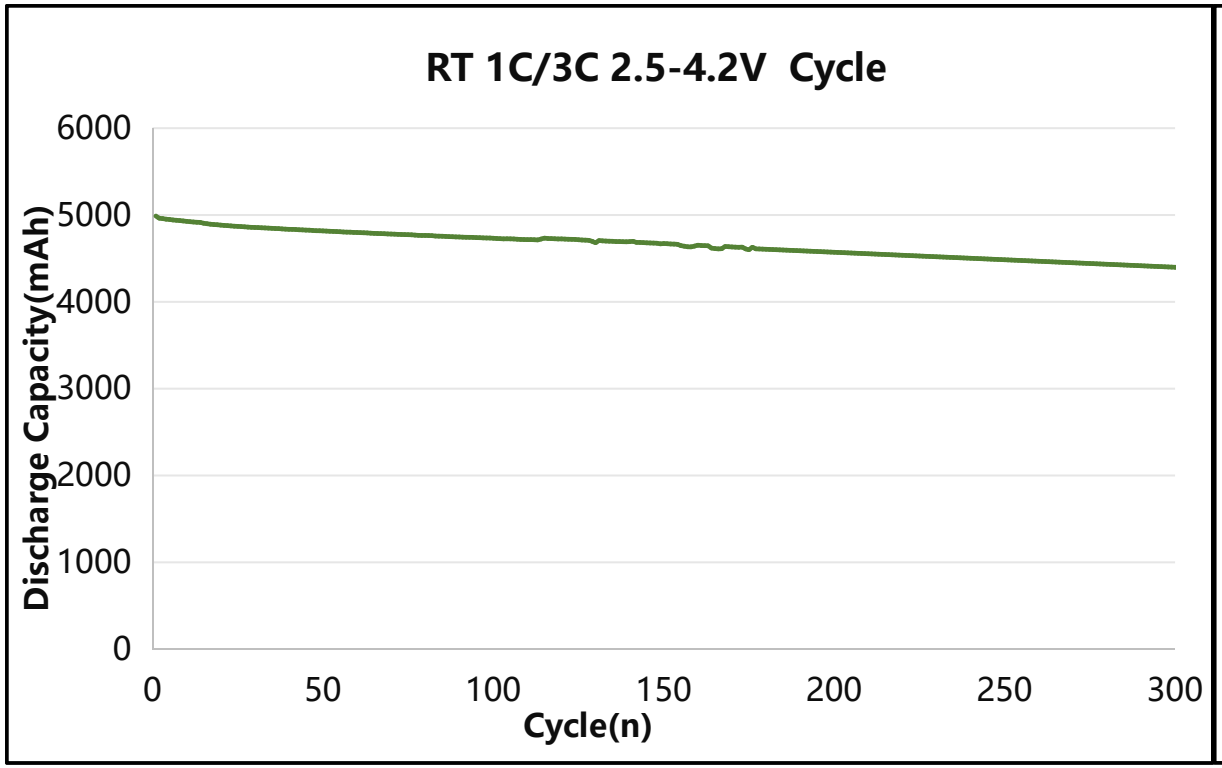


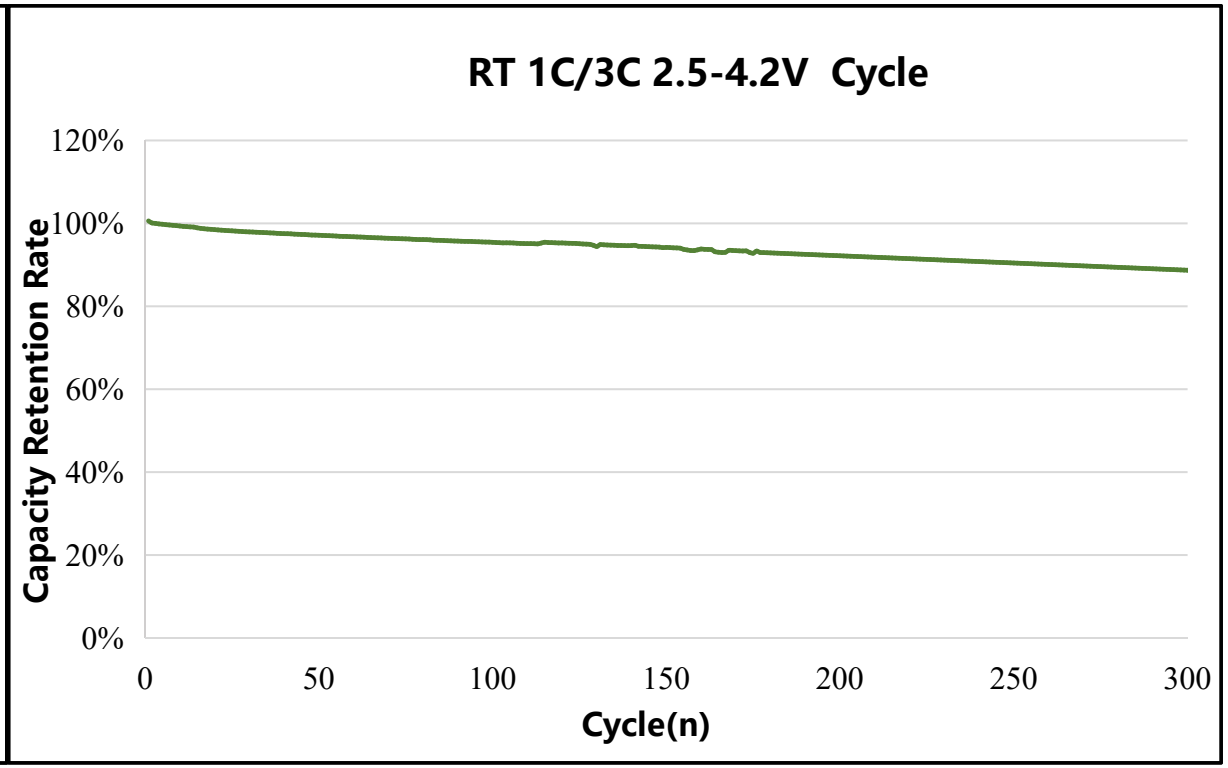


b: Cell Cycle @ 25℃

Charge: CC(1.0C) to 4.2V, CV(4.2V) to 0.02C

Discharge: CC(3.0C) to 2.5V





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Safety Test

Safety Test Summary

No.	Test Item	No.	Voltage Before Testing (V)	Max. Temp (℃)	Criterion	Result
1	1C 10V Over charge	1	2.962	88.8	No fire, No explosion	PASS
		2	2.960	89.9	No fire, No explosion	PASS
		3	2.964	84.9	No fire, No explosion	PASS
2	25℃ 80mΩ Short Circuit	1	4.178	135.1	No fire, No explosion	PASS
		2	4.177	136.9	No fire, No explosion	PASS
		3	4.178	132.8	No fire, No explosion	PASS
3	130℃ 30min Hot box	1	4.176	136.7	No fire, No explosion	PASS
		2	4.175	139.3	No fire, No explosion	PASS
		3	4.176	134.0	No fire, No explosion	PASS
4	Forced discharge	1	2.962	70.8	No fire, No explosion	PASS
		2	2.963	72.5	No fire, No explosion	PASS
		3	2.965	72.1	No fire, No explosion	PASS
5	Crush	1	4.176	24.6	No fire, No explosion	PASS
		2	4.173	25.1	No fire, No explosion	PASS
		3	4.176	25.2	No fire, No explosion	PASS

No.	Test Item	No.	Voltage Before Testing (V)	After Testing (V)	Criterion	Result
6	Free full	10 pcs	4.175-4.178	4.157-4.158	No fire, No explosion, No leakage	PASS

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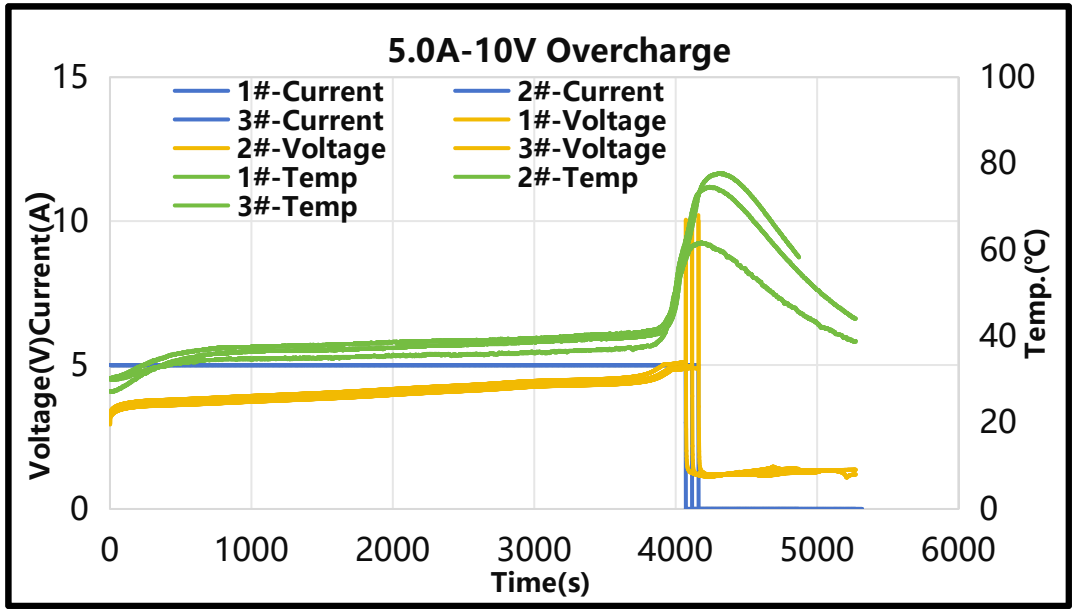
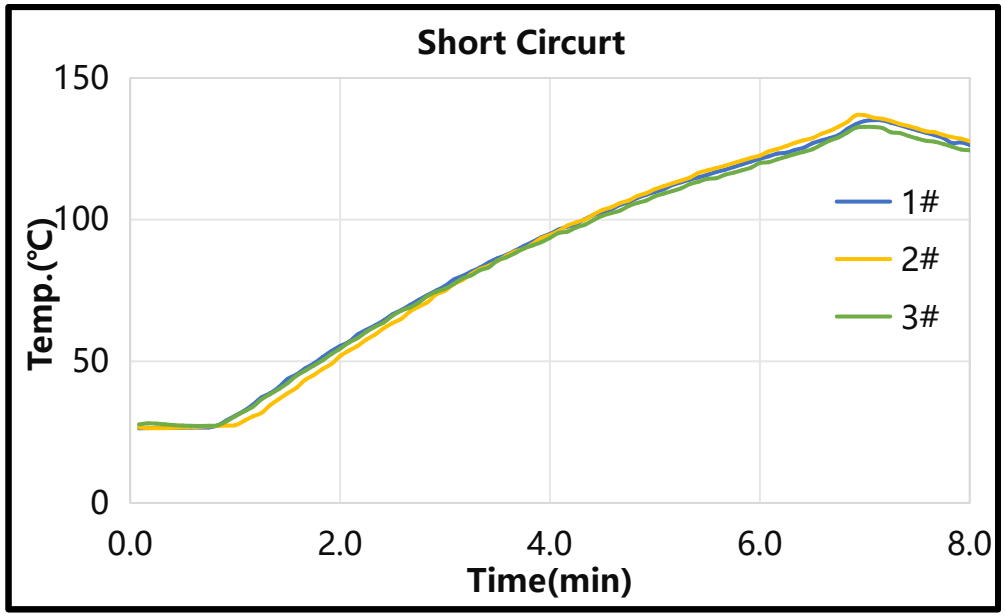
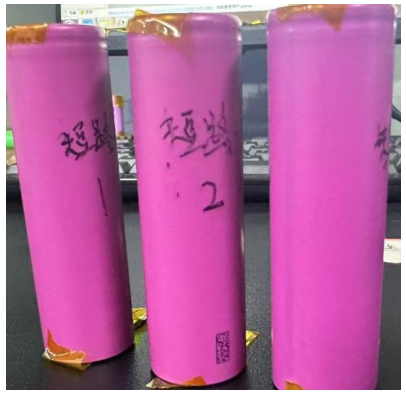
Overcharge （1C 10V） Cell State: 0%SOC（CC(0.5C) to 2.5V）					
Test: Cell CC charge at 1C to 10V until voltage at 10V or the time of charge to 90min					
Criterion: No fire, No explosion					
No.	OCV/V	IR/mΩ	Max. Temp./℃	Result	Judgment
1	2.962	13.4	88.8	No fire, No explosion	PASS
2	2.960	13.6	89.9	No fire, No explosion	PASS
3	2.964	13.4	84.9	No fire, No explosion	PASS



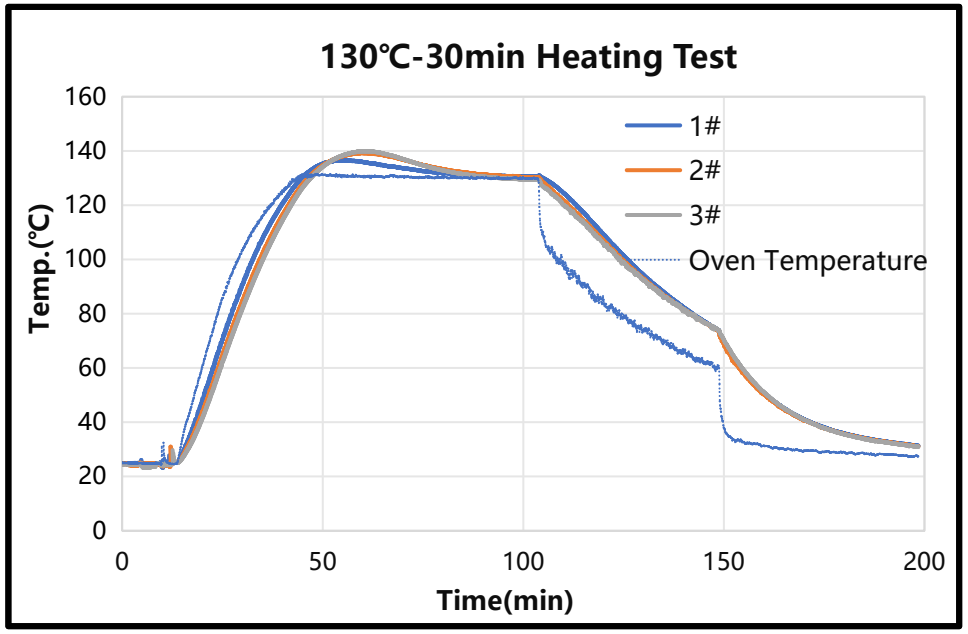
Before	After
	

25℃ 80mΩ Short Circuit Cell State: 100%SOC（CC(0.5C) to 4.2V， CV(4.2V) to 0.02C）					
Test: Cell is short-circuited with a wire of 80 mΩ at 25℃					
Criterion: No fire, No explosion					
No.	OCV/V	IR/mΩ	Max. Temp./℃	Result	Judgment
1	4.178	13.6	135.1	No fire, No explosion	PASS
2	4.177	13.5	136.9	No fire, No explosion	PASS
3	4.178	13.6	132.8	No fire, No explosion	PASS



Before	After
	

130℃ Hot Box Cell State: 100%SOC（CC(0.5C) to 4.2V， CV(4.2V) to 0.02C）					
Test: Cell is heated to 130℃ at a rate of 5℃/min and kept at 130℃ for 30min					
Criterion: No fire, No explosion					
No.	OCV/V	IR/mΩ	Max. Temp./℃	Result	Judgment
1	4.176	13.6	136.7	No fire, No explosion	PASS
2	4.175	13.6	139.3	No fire, No explosion	PASS
3	4.176	13.4	134.0	No fire, No explosion	PASS



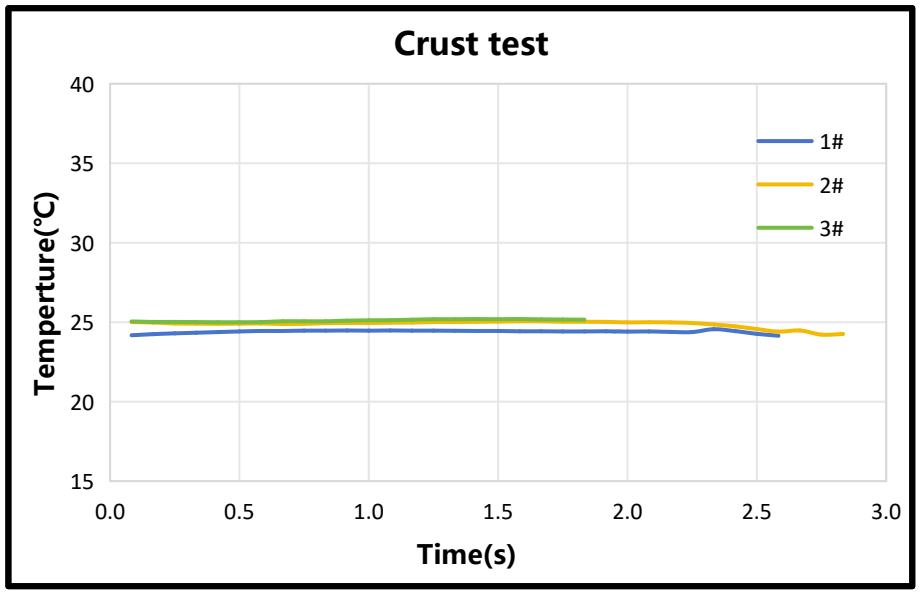
Before	After
	

Forced discharge

Forced discharge Cell State: 0%SOC（CC(0.2C) to 2.5V）						
Test: Reverse charge until the time of charge ≥90 min						
Criterion: No fire, No explosion						
No.	OCV/V	IR/mΩ	OCV ′/V	IR′ /mΩ	Max. Temp./℃	Judgment
1	2.962	13.5	0	14.3	70.8	PASS
2	2.963	13.2	0	14.2	72.5	PASS
3	2.965	13.4	0	14.4	72.1	PASS

Before	After
	

Crush Cell State: 100%SOC（CC(0.5C) to 4.2V， CV(4.2V) to 0.02C）					
Test: Cell is crushed between two flat surfaces till crushing force is approximately 13KN.					
Criterion: No fire, No explosion					
No.	OCV/V	IR/mΩ	Max. Temp./℃	Result	Judgment
1	4.176	13.6	24.6	No fire, No explosion	PASS
2	4.173	13.7	25.1	No fire, No explosion	PASS
3	4.176	13.6	25.2	No fire, No explosion	PASS



Before	After
	

Crush Cell State: 100%SOC（CC(0.5C) to 4.2V， CV(4.2V) to 0.02C）				
Test: Drop the positive and negative terminals of the battery downward from a height of 1.0 meters onto the cement floor freely.				
Criterion: No fire, No explosion， No leakage				
No.	OCV/V	IR/mΩ	Result	Judgment
1	4.175	13.4	No fire, No explosion， No leakage	PASS
2	4.176	13.7	No fire, No explosion， No leakage	PASS
3	4.177	13.4	No fire, No explosion， No leakage	PASS
4	4.177	13.6	No fire, No explosion， No leakage	PASS
5	4.178	13.5	No fire, No explosion， No leakage	PASS
6	4.177	13.5	No fire, No explosion， No leakage	PASS
7	4.176	13.6	No fire, No explosion， No leakage	PASS
8	4.176	13.7	No fire, No explosion， No leakage	PASS
9	4.175	13.6	No fire, No explosion， No leakage	PASS
10	4.175	13.4	No fire, No explosion， No leakage	PASS

05

Certification

Certification	Status
BIS(IS 16046:2018)	Completed
CB IEC62133	Completed
CCC	Completed
CE	Completed
PSE	Completed
UL1642	Completed
UN38.3	Completed

Shineway

To a great partnership!

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