



ESS230Ah LFP Cell

Specification and Performance Summary

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Contents

1. Summary
2. Electrical Performance
3. Abuse Test Results

1. Summary

Cell Specification

Parameters

Dimension, mm	174x200x54mm
Cell capacity @25°C, 1C, Ah	≥228
Nominal voltage, V	3.2
Nominal energy @ 25°C, 0.5C, Wh	729.6
Cell weight, g	4.2±0.30Kg
Energy density, Wh/kg	167
Energy density (withoutterminal) ,Wh/L	352
DCR (25°C,30s,50%SOC), mΩ	~0.40
Cycle life (25°C 0.5P/0.5P @80% Ret.)	~6000Cycle
Storage life (25°C 100% SOC @80% Ret.)	~15Year
Operating temperature (case dependent)	-30°C ~ 55°C
Storage temperature (case dependent)	-40°C~ 60°C



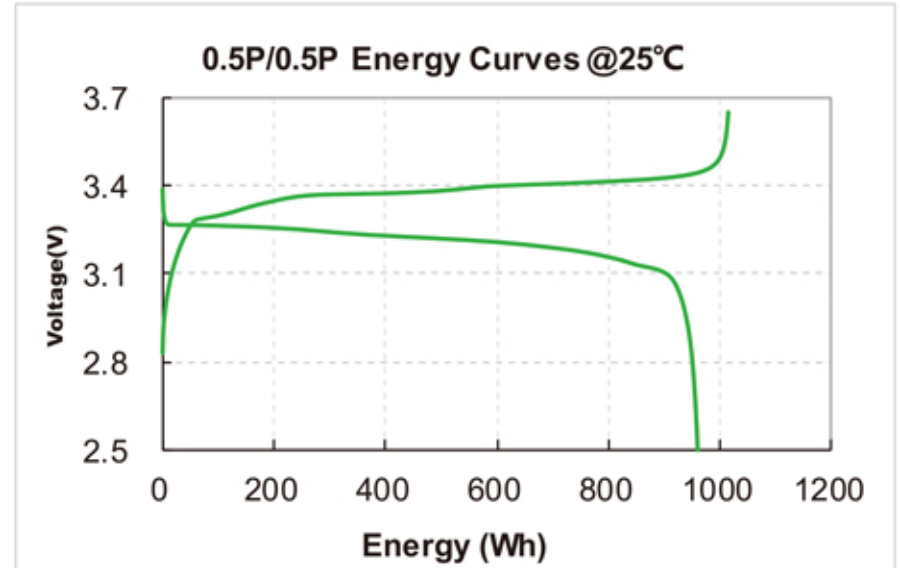
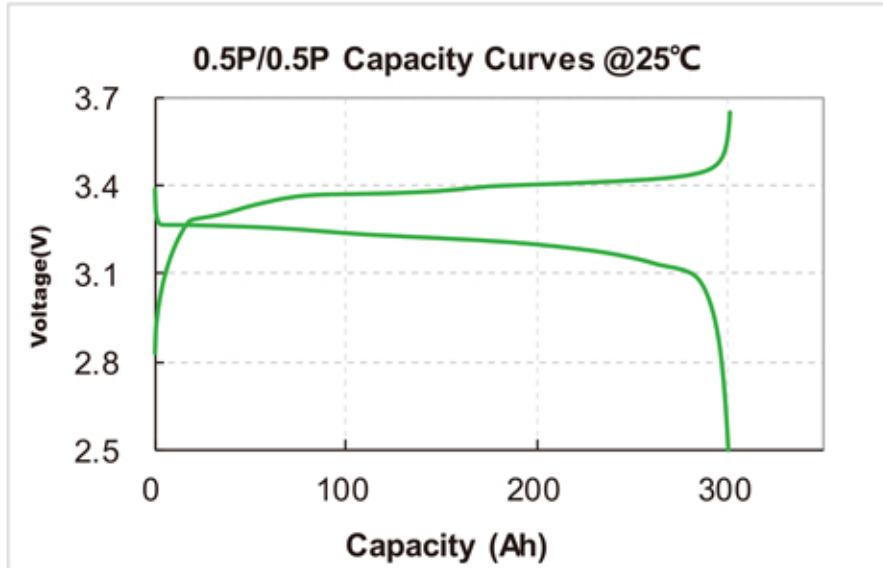
Item

GB/T31485-2015

Over charge	HL3
Drop	HL2
Crush	HL2
Overdischarge	HL3
Short	HL2
Heating	HL3

2.1 Capacity & Energy

Test Condition: 25°C, 0.5P CP to 3.65V, Rest 30 min; 0.5P DP to 2.5V, Rest 30 min;

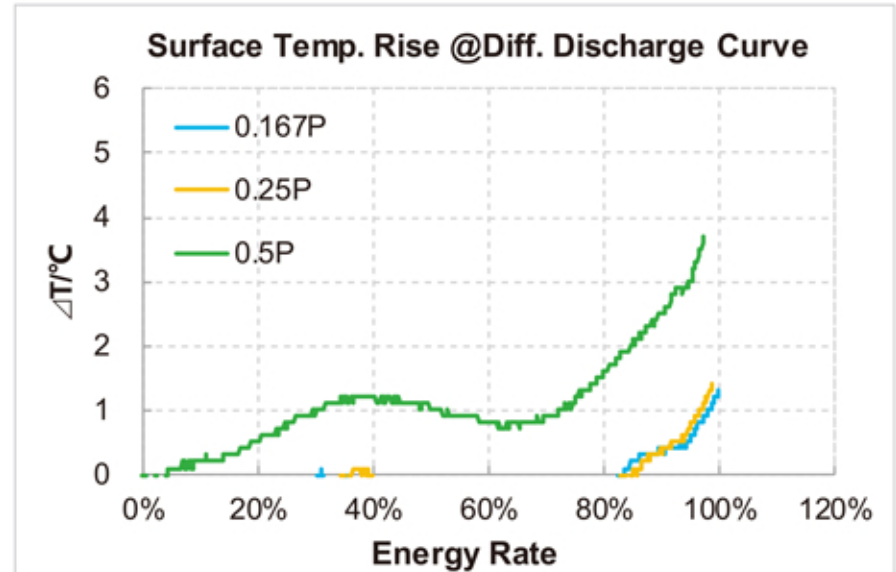
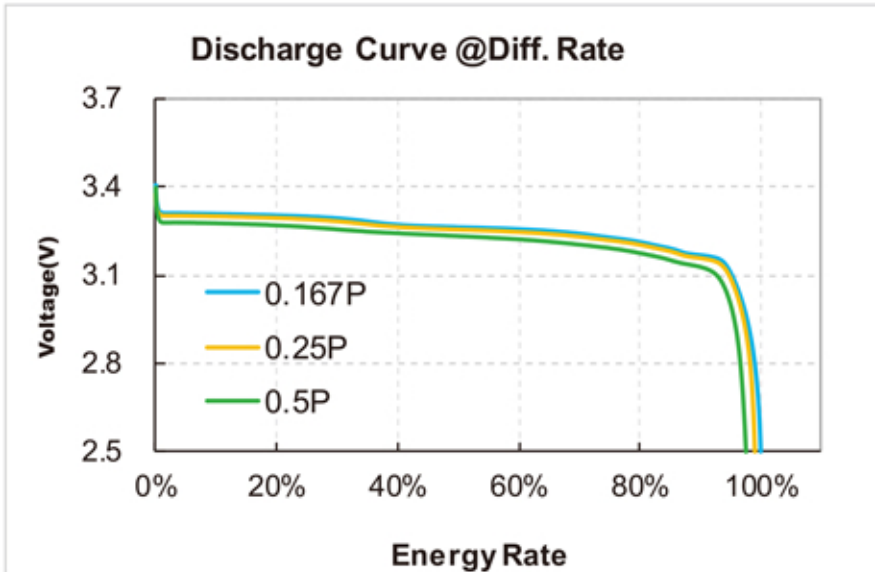


Minimum discharge capacity is 280Ah @25°C, 0.5P

Minimum discharge energy is 896Wh @25°C, 0.5P

2.2 Rate Discharge Energy @ 25°C

Test Condition: (1) Rest 30 min at 25°C; (2) 0.5P CP to 3.65V; (3) Rest 30min; (4) 0.25P CP to 3.65V ;(5) n*P DP to 2.5V(n=0.167,0.25,0.5); (5) Repeat step 1 to step 4 until all the rates are tested; (6) Rest 30min.

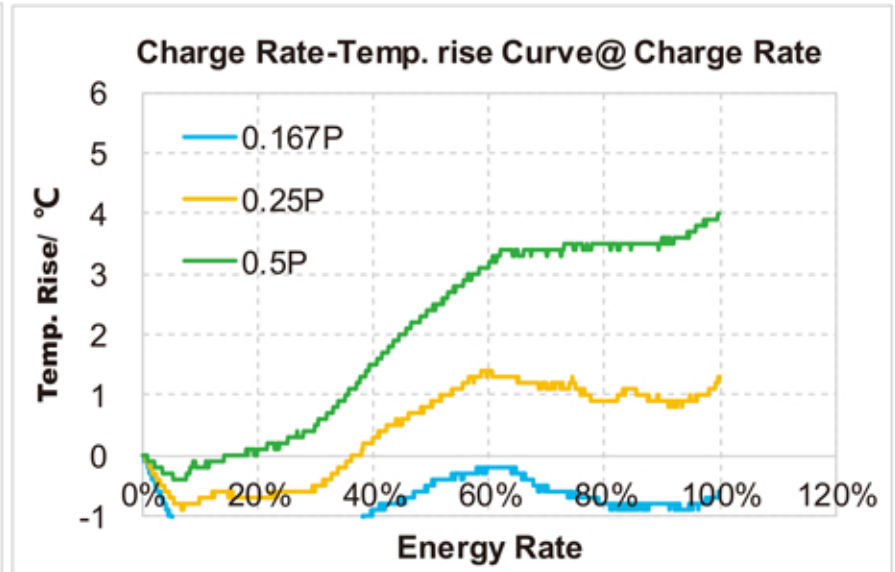
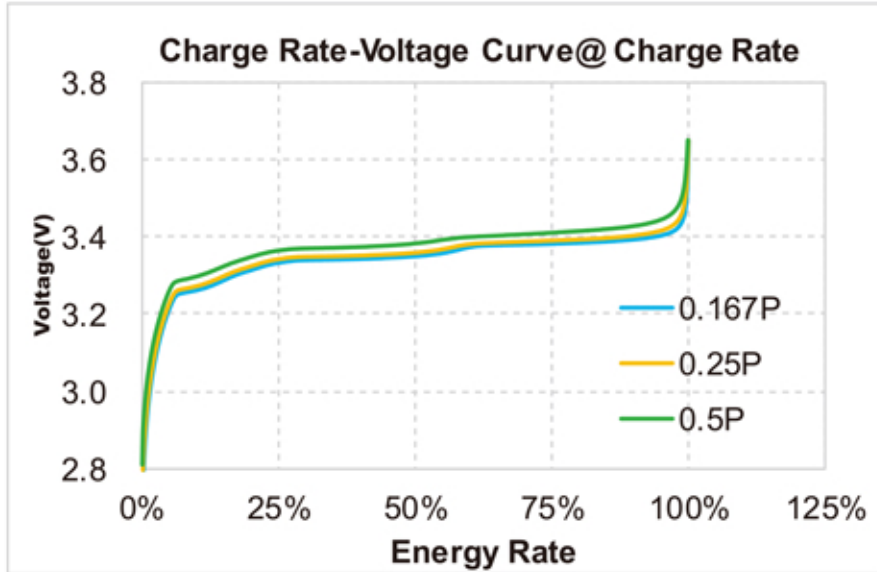


Rate Discharge Performance			
Rate	0.167P	0.25P	0.5P
Energy Rate	100.0%	99.03%	97.55%
Temp. Rise(°C)	1.3	1.4	3.7

2.3 Rate Charge Energy @ 25°C

Test Condition: Charge condition: n*P CP to 3.65V, (n=0.167,0.25,0.5)

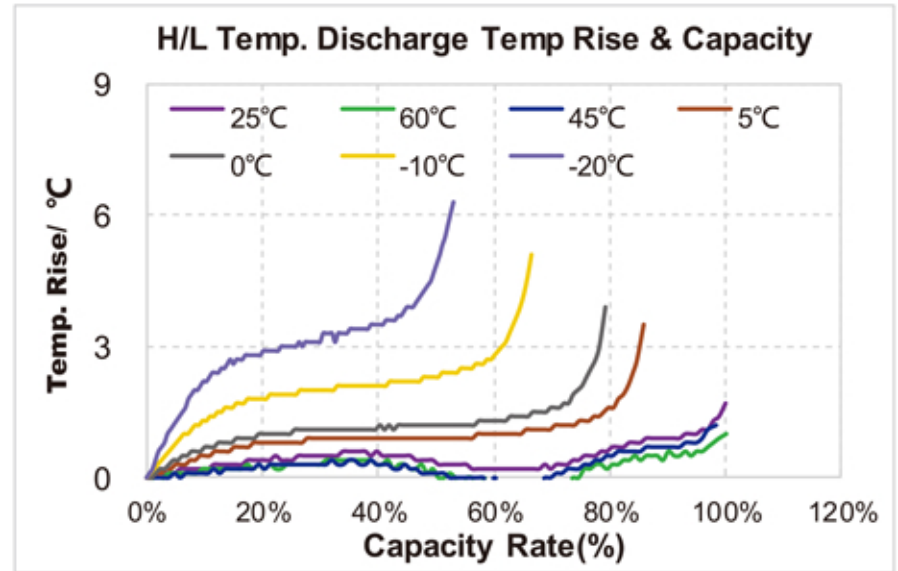
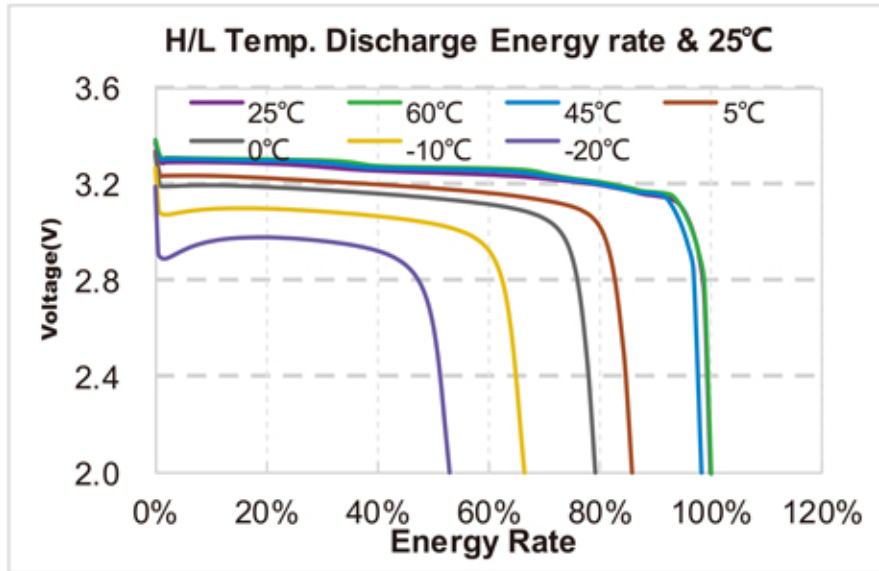
Discharge condition: 0.5P DP to 2.5V



Rate Discharge Performance			
Rate	0.167P	0.25P	0.5P
Energy Rate	100%	99.84%	99.94%
Temp. Rise(°C)	0	1.3	4.0

2.5 High & Low Temp. Energy

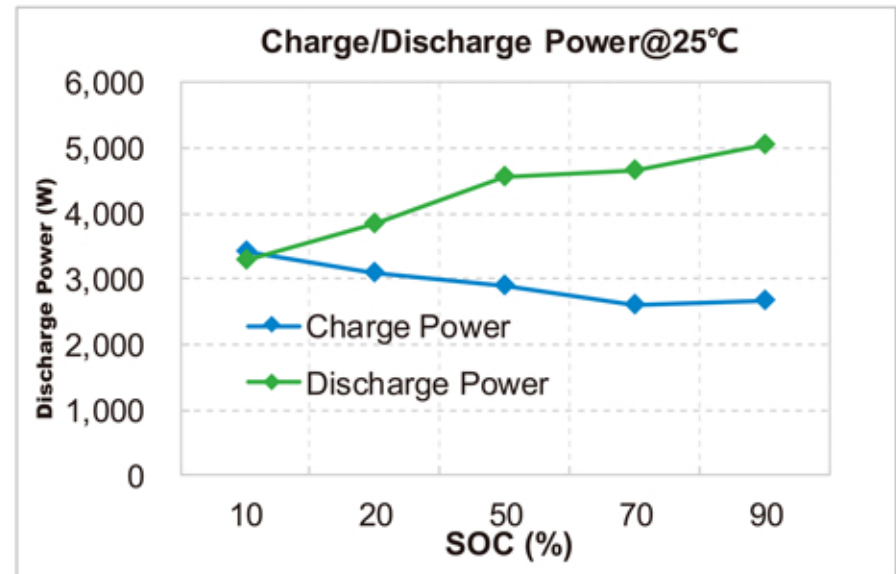
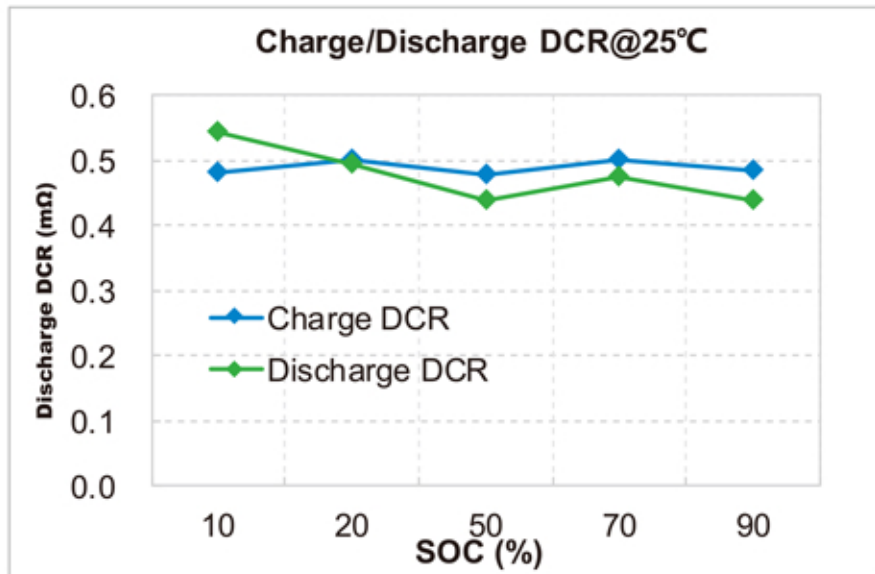
Test Condition: XX°C , 0.25P CP to 3.65V (XX=25°C, 60°C, 45°C, 5°C, 0°C, -10°C, -20°C,); Discharge condition:0.25P DP to 2.0V



High/Low Temp Discharge Performance							
Temp. (°C)	25°C	60°C	45°C	5°C	0°C	-10°C	-20°C
Energy Rate	100.0%	100.1%	98.4%	86.0%	79.3%	66.5%	53.0%
Temp. Rise(°C)	1.7	1.0	1.2	3.5	3.9	5.1	6.3

2.6 Internal Resistance (DCR) & HPPC Power

Test Condition: Discharge@ 560A DC 30s, Charge@ 420A CC 30s



1. DCR for 30s pulse discharge is 0.44mohm@25°C, 50%SOC
2. DCR for 30s pulse charge is 0.48mohm@25°C, 50%SOC
3. 30s Pulse discharge power is 4541W@ 25°C, 50% SOC
4. 30s Pulse charge power is 2905W@ 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

3.1 Abuse Test Results

Item	Testing Item	Testing condition (According to GBT 36276-2018)	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	HL3
2	Drop	-100%SOC, RT; -1.5 m height to concrete floor with both terminal downward, 1h observation	HL2
3	Crush	-100%SOC, RT, -Crush head: 75mm, Crush to 30% displacement or 0V or the crush force reaches to 13KN	HL2
4	Over discharge	-100%SOC, RT -1C discharge 1.5h or voltage of one of cells falls down and reaches 0V	HL2
5	Short	-100%SOC, RT -External resistance<5mohm, hold short circuit for 10min	HL2
6	Heating	-100%SOC, RT -Heating from RT to $130 \pm 2^{\circ}\text{C}$ at the rate $5^{\circ}\text{C}/\text{min}$. Keep the temperature for 30min	HL3

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 modern urban development. The scene features a mix of high-rise residential towers, mid-rise commercial buildings, and large industrial-style structures. The development is interspersed with green spaces, including parks and landscaped areas. A prominent road or transit corridor runs through the center of the site. The overall aesthetic is clean and futuristic, with a soft, hazy atmosphere. The word "Thanks !" is overlaid in the center in a bold, blue font.

Thanks !