

## Content

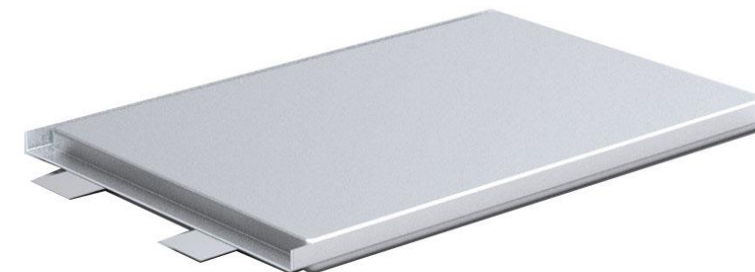
**01** LFP25Ah-Cell Electrical Performance

**02** LFP25Ah-Cell Safety Performance

# **LFP25Ah-Cell**

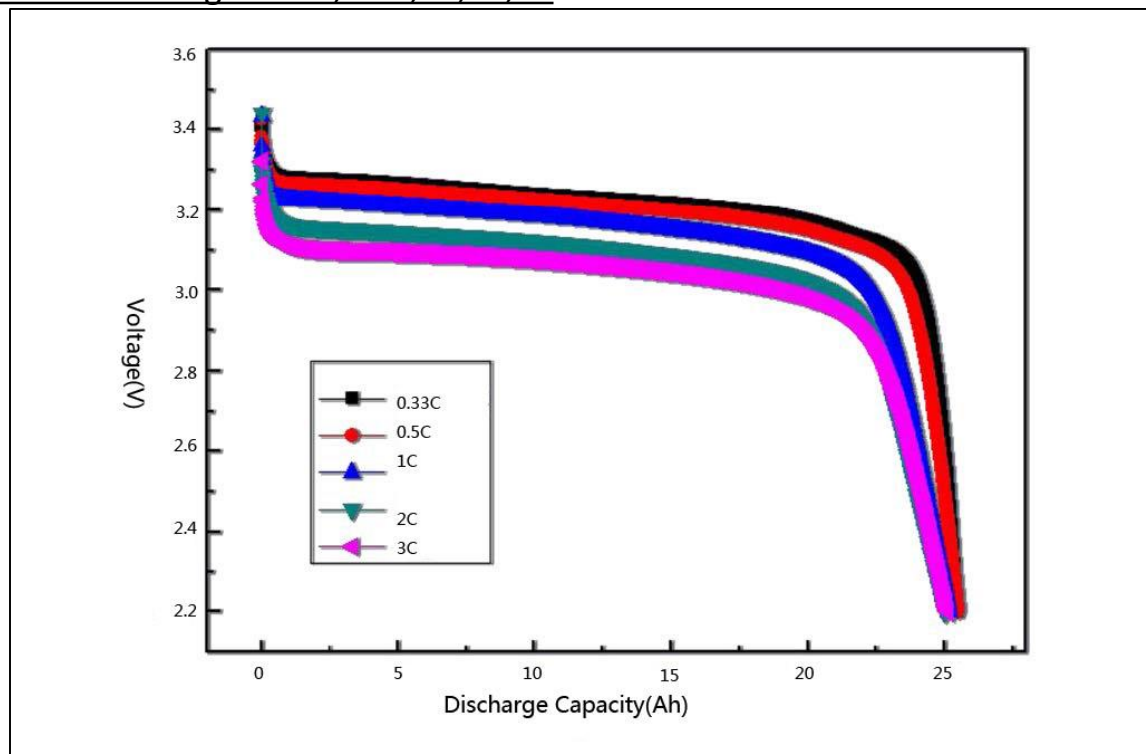
## **Electrical Performance**

No.	Cell Basic Performance		Parameter
1	Dimension(T*W*H)	without tabs	9.3mm*134mm*204mm
		with tabs	9.3mm*134mm*240mm
2	Min. capacity @25°C	0.33C	26Ah
		1C	25Ah
3	Nominal voltage @25°C	0.33C	3.20V
		1C	3.17V
4	Operating voltage		2.20V-3.65V
5	Impedance @25°C,1KZ		<1.5mOhm
6	Weight		0.51±0.02kg
7	Max. continuous charge current(10°C~45°C)		1C
8	Max. continuous discharge current		3C
9	Weight energy density @25°C,0.33C		>160Wh/kg
10	Cycle life @0.5C/1C, 0%-100%SOC		≥5000cycles
11	Operating Temperature(charge)		0°C~45°C
12	Operating Temperature(discharge)		-20°C~55°C
13	Storage Temperature		-20°C~45°C



Items	GB/T 31485-2015
Over-Charge	Pass
Nail penetration	Pass
Hotbox	Pass
Short	Pass

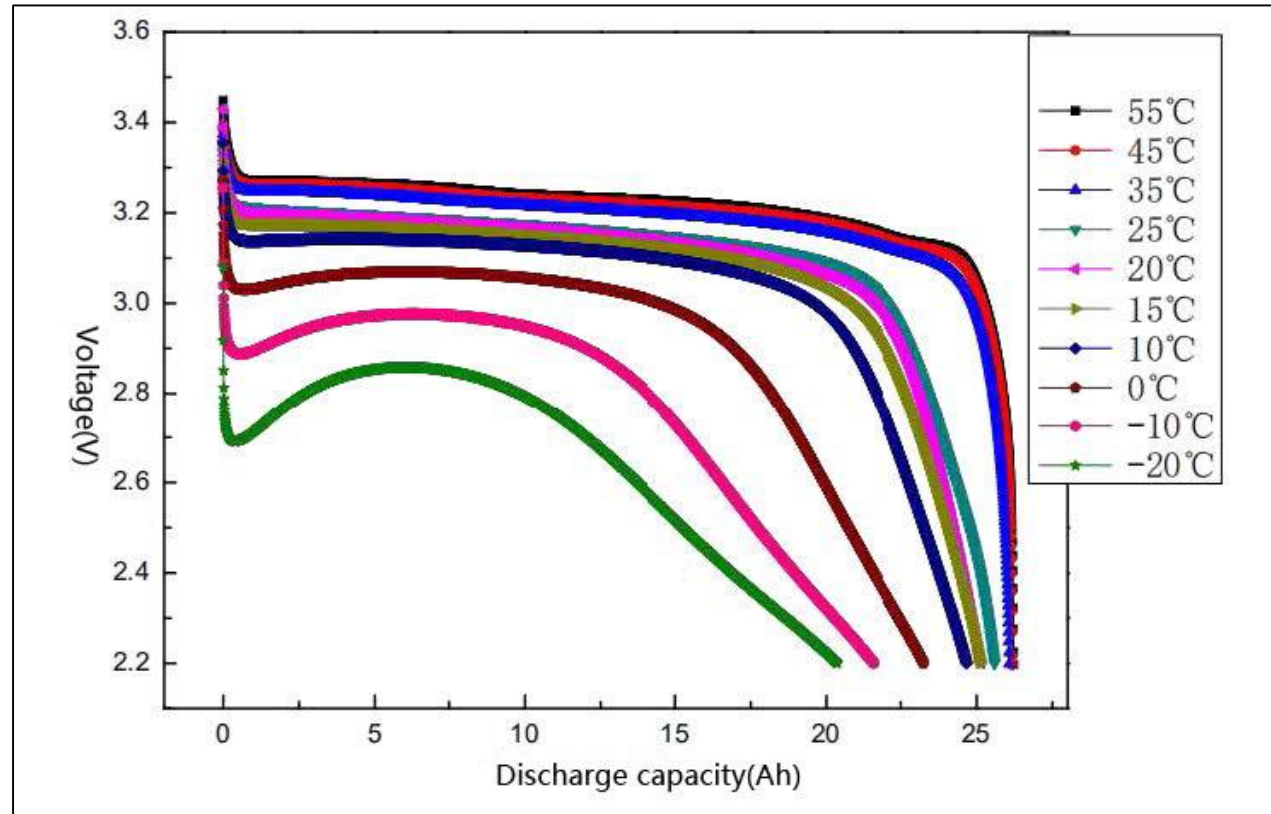
◆ Test Procedures: 25°C, continuous discharge 0.33C,0.5C,1C,2C,3C



Rate	Discharge capacity(Ah)	Discharge ratio(%)	Temperature rise at discharge(°C)
0.33C	25.46	101.64	2.56
0.5C	25.39	101.37	4.69
1C	25.05	100	9.68
2C	24.9	99.39	16.74
3C	24.13	99.72	21.64

# Discharge performance at high & low temperature

◆ **Test Procedures:** charge at 0.33C at 25 ° C, and then discharge 1C at 55 ° C, 45 ° C, 35 ° C, 25 ° C, 20 ° C, 15 ° C, 10 ° C, 0 ° C, -10 ° C, -20 ° C.



Series No.	Temperature(°C)	55	45	35	25	20	15	10	0	-10	-20
Cell#4	Discharge capacity(Ah)	26.18	26.18	26.07	25.59	25.14	25.12	24.67	23.25	21.55	20.34
	Capacity retention rate(%)	102.46	102.29	101.89	100.00	98.26	98.15	96.39	90.85	84.23	79.51

# SOC discharge test data(WS-LFP25AH-3.2V)

◆ **Test Procedures:** Voltage and internal resistance after standing at 25 °C discharge for 4 hours.

Discharge rate	Initial capacity	5%		10%		15%		20%		25%		30%		35%		40%		45%		50%	
		Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR
0.2C	26.9268	3.3309	1.19	3.3298	1.18	3.3280	1.17	3.3304	1.17	3.3290	1.16	3.3290	1.18	3.3274	1.16	3.3017	1.17	3.2919	1.16	3.2908	1.16
	26.5867	3.3309	1.20	3.3299	1.19	3.3208	1.19	3.3304	1.18	3.3290	1.17	3.3291	1.18	3.3281	1.17	3.3017	1.18	3.2927	1.19	3.2910	1.18
0.33c	25.8847	3.3314	1.21	3.3306	1.20	3.3298	1.20	3.3295	1.17	3.3296	1.18	3.3293	1.18	3.3242	1.19	3.2993	1.17	3.2925	1.18	3.2903	1.18
	26.3502	3.3316	1.19	3.3308	1.18	3.3299	1.17	3.3295	1.16	3.3296	1.17	3.3293	1.17	3.3282	1.16	3.3056	1.16	3.2939	1.17	3.2914	1.16
0.5C	25.7841	3.3309	1.17	3.3302	1.19	3.3297	1.17	3.3289	1.17	3.3289	1.17	3.3288	1.17	3.3272	1.17	3.3033	1.18	3.2946	1.16	3.2922	1.16
	25.9799	3.3310	1.21	3.3302	1.22	3.3298	1.21	3.3289	1.21	3.3289	1.20	3.3288	1.20	3.3363	1.17	3.3035	1.20	3.2951	1.19	3.2925	1.21
0.8C	25.4083	3.3312	1.22	3.3303	1.24	3.3299	1.22	3.3289	1.20	3.3290	1.22	3.3288	1.21	3.3322	1.21	3.3004	1.21	3.2940	1.21	3.2920	1.22
	25.2937	3.3311	1.20	3.3302	1.22	3.3299	1.17	3.3288	1.17	3.3288	1.18	3.3288	1.18	3.3262	1.18	3.3048	1.19	3.2955	1.19	3.2928	1.20
1C	25.9824	3.3322	1.16	3.3299	1.17	3.3295	1.14	3.3295	1.16	3.3294	1.16	3.3298	1.16	3.3275	1.14	3.3051	1.17	3.2968	1.17	3.2934	1.18
	25.8863	3.3320	1.20	3.3299	1.16	3.3294	1.15	3.3293	1.17	3.3292	1.17	3.3298	1.15	3.3280	1.16	3.3068	1.15	3.2975	1.16	3.2937	1.17
1.5C	26.1368	3.3320	1.18	3.3304	1.20	3.3303	1.37	3.3301	1.19	3.3292	1.19	3.3291	1.17	3.3285	1.20	3.3085	1.19	3.2983	1.18	3.2953	1.16
	25.2415	3.3319	1.20	3.3303	1.20	3.3302	1.16	3.3300	1.19	3.3291	1.19	3.3289	1.19	3.3285	1.19	3.3050	1.19	3.2972	1.19	3.2941	1.20
2C	25.8749	3.3326	1.22	3.3313	1.24	3.3305	1.20	3.3306	1.20	3.3305	1.22	3.3299	1.20	3.3243	1.20	3.3009	1.21	3.2959	1.20	3.2937	1.20
	26.4486	3.3328	1.18	3.3313	1.19	3.3305	1.17	3.3306	1.19	3.3306	1.18	3.3302	1.19	3.3286	1.18	3.3052	1.18	3.2974	1.19	3.2948	1.18
3C	26.1817	3.3329	1.21	3.3308	1.20	3.3304	1.20	3.3311	1.23	3.3296	1.22	3.3296	1.23	3.3277	1.21	3.3083	1.23	3.2989	1.25	3.2960	1.24
	26.1904	3.3320	1.21	3.3308	1.22	3.3304	1.21	3.3312	1.20	3.3297	1.21	3.3297	1.21	3.3277	1.22	3.3077	1.20	3.2986	1.23	3.2959	1.21

# SOC charge test data(WS-LFP25AH-3.2V)

◆ **Test Procedures:** Voltage and internal resistance after standing at 25 °C charge for 4 hours.

Charge Rate	Initial capacity	5%		10%		15%		20%		25%		30%		35%		40%		45%		50%	
		Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR
0.33C	26.3015	3.1520	1.19	3.2204	1.19	3.2361	1.17	3.2681	1.19	3.2896	1.18	3.3018	1.19	3.3050	1.19	3.3055	1.19	3.3060	1.19	3.3059	1.20
	25.7892	3.1543	1.18	3.2206	1.19	3.2376	1.19	3.2680	1.20	3.2894	1.21	3.3017	1.20	3.3048	1.22	3.3054	1.21	3.3058	1.21	3.3057	1.22

55%		60%		65%		70%		75%		80%		85%		90%		95%		100%	
Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR	Voltage	IR
3.3083	0.95	3.3103	1.06	3.3305	1.07	3.3413	1.03	3.3415	1.06	3.3412	1.06	3.3394	1.07	3.3396	1.10	3.3390	1.10	3.3394	1.09
3.3080	1.19	3.3099	1.27	3.3318	1.29	3.3411	1.26	3.3413	1.31	3.3410	1.31	3.3393	1.31	3.3396	1.32	3.3379	1.35	3.3353	1.34

◆ **Test Procedures:**

- a) The single cell will be charged to 3.65V at 1C constant current and constant voltage;
- b) Keep storage at 55 °C ± 2 °C for 7 days;
- c) Discharge at a constant current of 1C to 2.2V at room temperature;
- d) Charge to 3.65V with 1C constant current and constant voltage at normal temperature;
- e) Discharge to 2.2V with 1C constant current at normal temperature.

Capacity retention rate and recovery rate at 55 °C for 7 days								
No.	Initial capacity(Ah)	Capacity retention(Ah)	Retention rate(%)	Recovery capacity(Ah)	Recovery rate(%)	Voltage drop(mV)	Expansion rate(%)	IR increase(%)
Cell1#	25.21	25.67	92.06	24.64	97.75	38.00	0.44	2.88
Cell2#	23.21	23.58	91.86	24.96	97.16	35.00	0.42	3.08



◆ **Test Procedures:**

- a) The single cell will be charged to 3.65V at 1C constant current and constant voltage;
- b) Keep storage at 25 °C ± 2 °C for 28 days;
- c) Discharge at a constant current of 1C to 2.2V at room temperature;
- d) Charge to 3.65V with 1C constant current and constant voltage at normal temperature;
- e) Discharge to 2.2V with 1C constant current at normal temperature.

Capacity retention rate and recovery rate at 25 °C for 28 days

No.	Initial capacity(Ah)	Capacity retention(Ah)	Retention rate(%)	Recovery capacity(Ah)	Recovery rate(%)	Voltage drop(mV)	Expansion rate(%)	IR increase(%)
Cell1#	26.73	26.18	97.93	26.37	98.64	24.00	0.26	2.09
Cell2#	26.40	25.96	98.33	26.15	99.05	21.00	0.29	1.87

# LFP25Ah-Cell Safety Performance

# Over charge test(WS-LFP25AH-3.2V)

- ◆ **Test Procedures:** 25°C, 100%SOC, 1C CC 1h(200%SOC) or 1C CC to 5.50V(1.5 times of 3.65V).

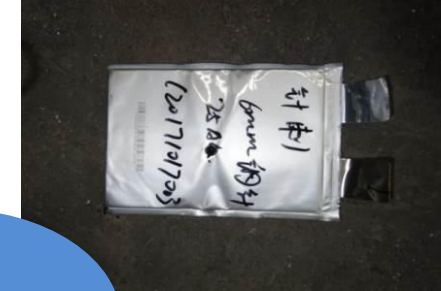
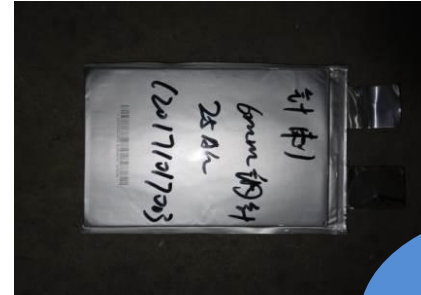


Over charge



# Nail penetration test(WS-LFP25AH-3.2V)

- ◆ Test Procedures: 25°C, 100%SOC,  $\phi$ 5mm- $\phi$ 8mm high temperature resistant steel needle, at 25  $\pm$  5) mm/s speed.

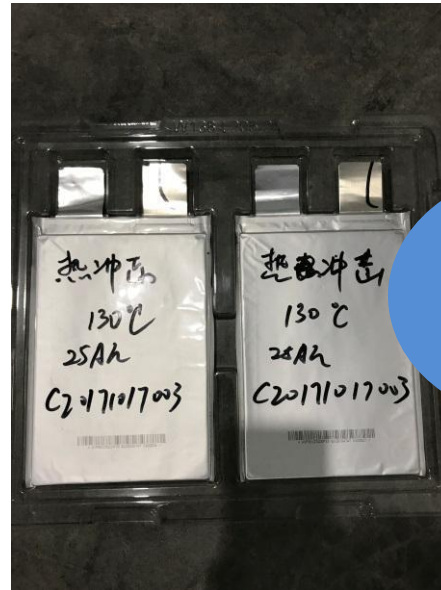


Nail  
penetration



# Hot box test(WS-LFP25AH-3.2V)

- ◆ **Test Procedures:** 25°C, 100%SOC, Heating from RT to 130°C at the rate of 5°C/min, keep 130°C for 30min.

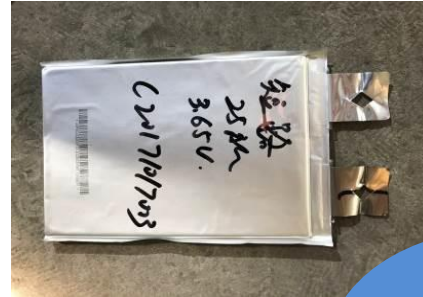


Hot box



# Short circuit test(WS-LFP25AH-3.2V)

- ◆ **Test Procedures:** 25°C, 100%SOC, External resistance less than 5mohm, hold short circuit for 10min.



Short circuit



# Thank you