

**PRODUCT
SPECIFICATION**

DOC NO.: WM0254-PBOC-014
REV. : 1.00
SHEET : 1OF16

Specification Approval Sheet

Customer Name 客户名称: _____

Customer Model 客户型号: _____

Customer P/N 客户编号: WM0254

Product Model 产品型号: 853438

REC P/N 聚和源编号: _____

Prepared by 制作	Checked by 审核	Approved by 批准
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Customer Approved	Test by 测试	Checked by 审核	Approved by 批准
客户承认 (Stamp) (盖章)			

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1. Scope

The specification shall be applied to Lithium-ion Polymer (LIP) rechargeable battery pack.

Reference standard

GB/T 18287-2013、IEC/EN61960、UL1642

2. Product basic information

Items	Parameter	
Battery model	853438	
Design scheme	S-8261DAX-M6T1U +ET8205A	
Nominal voltage	3.7V	
Minimum capacity	1300mAh(0.2C discharge 放电)	
Typical capacity	1360mAh(0.2C discharge 放电)	
Charging voltage	4.2V	
Discharging cut-off voltage	3.0V	
Standard charging	0.2 /4.2V	
Max charging	1.0C /4.2V	
Standard discharging	0.2C/3.0V	
Max discharging	1.0C/3.0V	
Weight	Appr: 25.0g	
Shipment voltage	3.90±0.05V	
Battery pack impedance	≤170mΩ	
Max charge current	0° C~10° C 0.2C max	
	10° C~20° C 0.5C max	
	20° C~45° C 1.0C max	
Max discharge current	-20° C~0° C 0.2C max	
	0° C~25° C 0.5C max	
	25° C~60° C 1.0C max	
Operating temperature	Charging: 0°C ~ 45°C	
	Discharging: -20°C ~60°C	
Storage (At 50% SOC andspecified temp, recoverablecapacity in % vs time.)	-10°C~25°C	(12 months, ≥85%)
	-10°C ~45°C	(6 months, ≥85%)
	-10°C~55°C	(1 month, ≥90%)
	20±5°C is the recommended storage temperature	
Visual Inspection	There should not be any remarkable scratches, cracks,	

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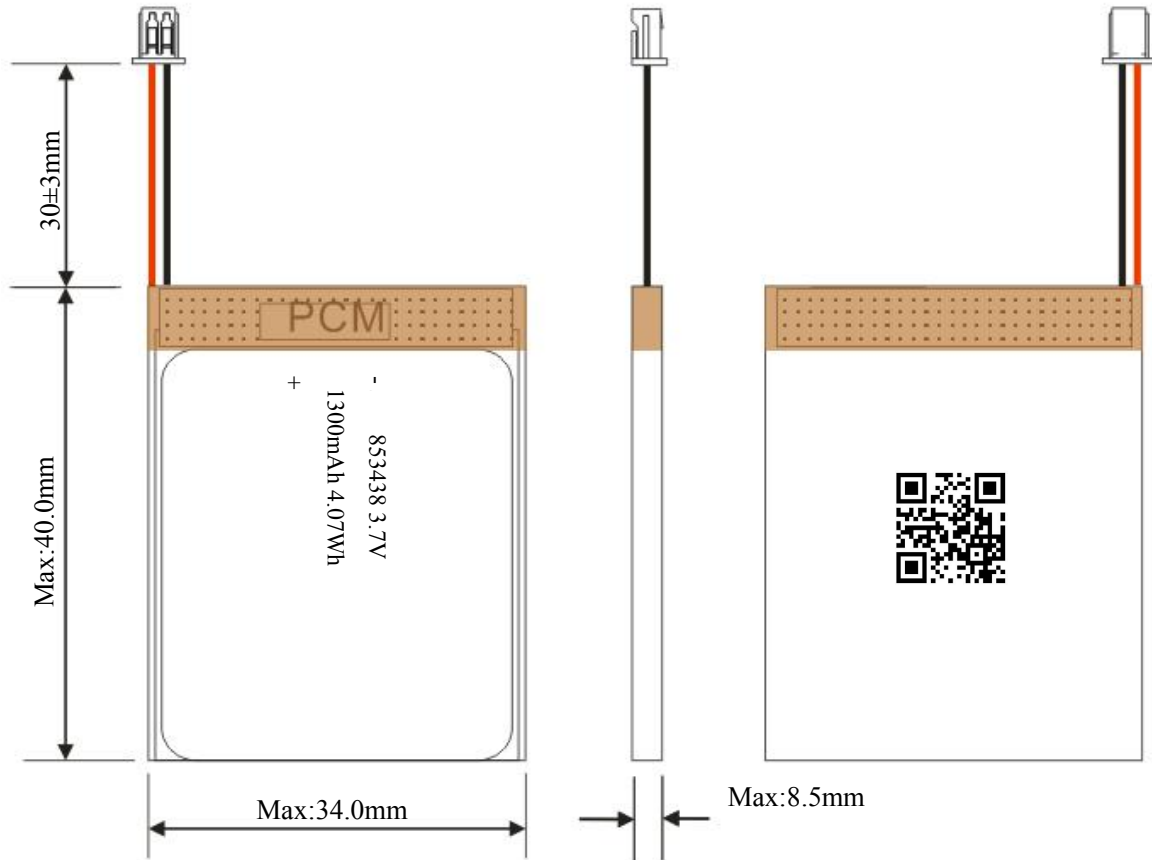
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bolts,cauterization, deformations, swelling , leakage and so on on the surface of the cell.

3. Battery Outline Drawing



BOM (Bill of materials)

NO.	Material Name	Specification	Qty	Remark
1	cell	853438/1300mAh/3.7V	1	RoHS
2	Protection board	PCB2236A	1	RoHS
3	Wire	Red Wire UL3302#26	1	RoHS
		Black Wire UL3302#26	1	RoHS
4	Connector	Molex51021-2P	1	RoHS

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4. Electrical characteristics

No.	Items	Test Method	Criteria
1	Standard Charge	Charging the cell initially with constant current at 0.2C and then with constant voltage at 4.2V till charge current declines to 0.02C.	N.A
2	Minimal Capacity	The capacity means the discharge capacity of the cell, which is measured with discharge current of 0.2C with 3.0V cut-off voltage after the standard charge	≥1300mAh
3	Charge/Discharge Cycle	The capacity on 0.2C discharge shall be measured after 500 cycles Of 0.2C charge and discharge at 23±2°C.	Capacity≥80%
4	Retention Capability	After full charging, storing the battery 28 days with 20 ± 5°C condition , and then staying 1 hours with discharge current of 0.2C till 3.0V cut-off voltage.	Capacity≥85%

※ Typical capacity

The capacity means the average discharge capacity of the cell, which is measured with discharge current of 0.2C with 3.0V cut-off voltage after the standard charge at 23±2°C environment temperature, unit: mAh

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5. Condition adapting characteristics

No.	Items	Test Method	Criteria
1	Constant temperature and Humidity	After standard charging, put cell into the box that the temperature is $40\pm 2^{\circ}\text{C}$ and the humidity ranges between 90~95% for 48hours, then put it at $23\pm 2^{\circ}\text{C}$ for 2hours, then discharge with current of 0.2C to the cut-off voltage.	No distortion, no rust, no leakage, no venting, no rupture, no fire, no explosion, the discharge time is not less than 3hrs.
2	High Temperature Performance Test	After full charging, put the cell into box with high temperature of $55^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 2h, then discharge with current of 1.0C to the cut-off voltage.	No distortion, no rupture, no fire, no smoke or leakage Discharge time $\geq 51\text{min}$
3	Low Temperature Performance Test	After full charging, put the cell into box with low temperature of $-10 \pm 2^{\circ}\text{C}$ for 16~24h, then discharge with current of 0.2C to the cut-off voltage.	No distortion, no rupture, no fire, smoke or leakage Discharge time $\geq 3\text{h}$

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6. Cell safety performance

No.	Items	Test Method	Criteria
1	Cell Overcharge	After discharge to limit voltage, charged at constant current of 3C and constant voltage of 4.6V, While voltage reaches to the max ,if charging continued over 7 hours or temperature is 20% less than the top , close the test .	No explosion and no fire.
2	External Short-circuit Test	Cell terminals are short-circuited to discharged state less than 0.1V or longer time with a resistance of 50mΩ or less. Tests are to be conducted at room temperature.	No explosion and no fire.
3	Over-Discharge Test	Cell is discharged at a current of 1C rate for 2.5 hours. (If current stops by safety or passive circuit on the battery, test is finished.).	No explosion and nofire.
4	Crush Test	Crush between two flat plates. Applied force is about 13kN.	No explosion and nofire.
5	Impact Test	Impact between bar (15.8mm diameter) and 9.1Kg falling material (at a height of 6.1cm). Bar is laid across the center of the test sample	No explosion and nofire.

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6	Drop	After standard charging, the cell is to be dropped from a height of 1.2meter onto a thickness of 20mm board, dropped once in the positive and negative directions of three mutually perpendicular X Y Z axes	Noleakage, no smoke, nofire , no explosion.
7	Vibration Test	Fixed the fully charged cell to vibration table and subjected tovibration cycling that the frequency is to be varied at the rate of1Hz per minute between 10Hz and 55Hz, the excursion of thevibration is 0.8mm. The cell shall be vibrated for 90 ~100minutes per axis of XYZ axes.	No explosion, no fire. no leakage.
8	Heating	After standard charging, put cell in the baking oven and start , the temperature of the oven is to be raised at a rate of $5\pm 2^{\circ}\text{C}$ per minute to a temperature of $130\pm 2^{\circ}\text{C}$, remain for 30minutes at that temperature	No explosion and nofire.

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7. Battery safety performance

1	Overcharge protection	After battery charge finished, then charge the battery for 8 hours with a power which can provide 2 times more than nominal voltage and $2C_5A$ current.	No fire, no explosion. The electrical properties of
2	Over discharge protection	After the battery is fully charged, discharge at $20\pm 5^\circ C$ conditions with $0.2C_5A$ until the battery voltage drops to the overdischarge voltage, then discharge with a 30Ω resistor for 24 hours.	No fire, no explosion. The electrical properties of normal.
3	Shortprotection	After the full charging of the battery, please perform the 500 cycle tests in the following orders: a, Short cut the anode and cathode of the battery b, After the short circuit protection, let the battery stand for on e minute. The total resistance of the external short-circuit is $80m\Omega \pm 20m\Omega$; If the battery is discharged off on the process, please re-charge the battery and repeat the steps of a and b	During the every cycl of t he battery, the function of short-circuit protection of t he PCM will work

8. Others

Any matters that this specification doesn't cover should be conferred between the customer and BE-Power GmbH.

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9. Testing requirements

9.1 Battery test environment

Temperature 23±2°C

Relative humidity 60± 20% RH

Atmospheric pressure 大 86~106 KPa

9.2 Measuring instrumentation requirements

Voltage instrumentation requirements: Measuring the voltage meter accuracy no less than 0.5 magnitude

Current instrumentation requirements: Measuring the current meter accuracy no less than 0.5 magnitude

Time instrumentation requirements: Measuring the time meter accuracy no less than 0.1%

Temperature instrumentation requirements: Measuring the temperature meter accuracy no less than 0.5 °C

Impedance instrumentation requirements: Measuring impedance should by sinusoidal alternating (1 KHZ) test

10. Electrical Characteristics

10.1 Battery charge/discharge

10.1.1 Full charged definition

With charging voltage 4.2V, current 0.2C continued to charge the battery pack, when charging current drops to 0.02C charging is terminated, shall be full charged.

10.1.2 Full discharged definition

Standard discharge current 0.2 C for continuous discharge, when the voltage drops to discharge cut-off voltage 3.0V discharge is terminated, shall be full discharged.

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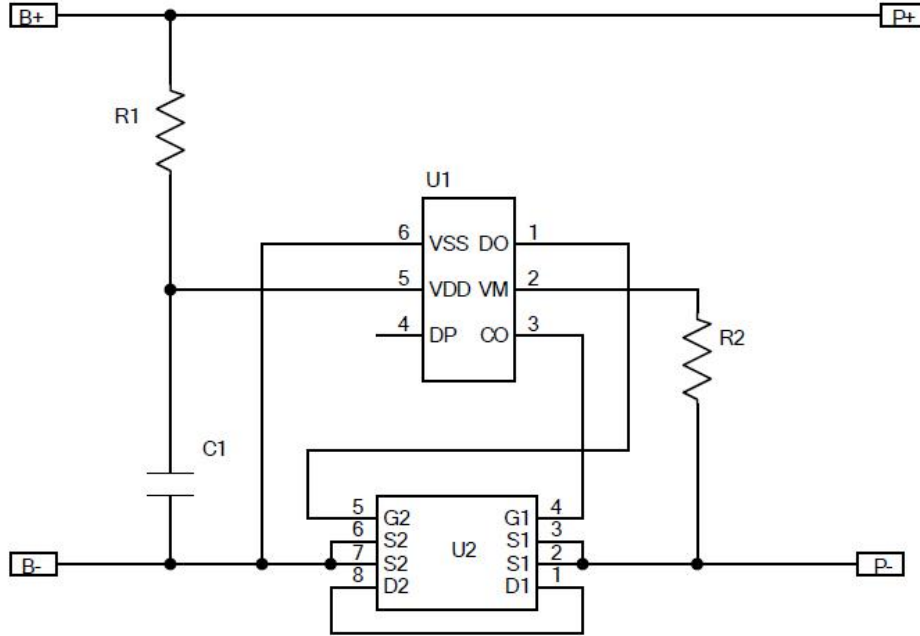
11. Electric Protect Features

Item	Syol	Content	Criterion
Over charge Protection	V _{DET1}	Over charge detection voltage	4.28V ± 0.035V
	T _{VDET1}	Over charge detection delay time	1.3s (MAX)
	V _{REL1}	Over charge release voltage	4.08V ± 0.1V
Over discharge protection	V _{DET2}	Over discharge detection voltage	2.8V ± 0.08V
	T _{VDET2}	Over discharge detection delay time	167ms (MAX)
	V _{REL2}	Over discharge release voltage	3.0±0.10V
Over current protection 过	V _{DET3}	Over current detection voltage	100mV ± 15mV
	I _{DP}	Over current detection current	MIN: 1.5A MAX: 4.5A
	T _{VDET3}	Detection delay time	11ms (MAX)
	/	Release condition	Cut load
Short protection	/	Detection condition	Exterior short circuit
	T _{SHORT}	Detection delay time	367 μs (MAX)
	/	Release condition	Cut short circuit
Interior resistance	R _{DS}	Main loop electrify resistance	B-至 P- R _{DS} ≤ 70mΩ
Current consumption 工作消耗	I _{DD}	Current consume in normal operation	MIN: 0.3Ma MAX: 7.0Ma
0V Prohibition /allowance		allowance	/

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12. Schematic circuit diagram



13. PCB Parts List

Item	Part Name	Description	QTY	Footprint	Supplier	Remark
1	U1	S-8261DAX-M6T 1U	1pcs	SOT-23-6	ABLIC	
2	U2	ET8205A	1pcs	TSSOP-8	YIYUAN	
3	PCB	PCB2236A		/	Any approved vendor	B+ B-

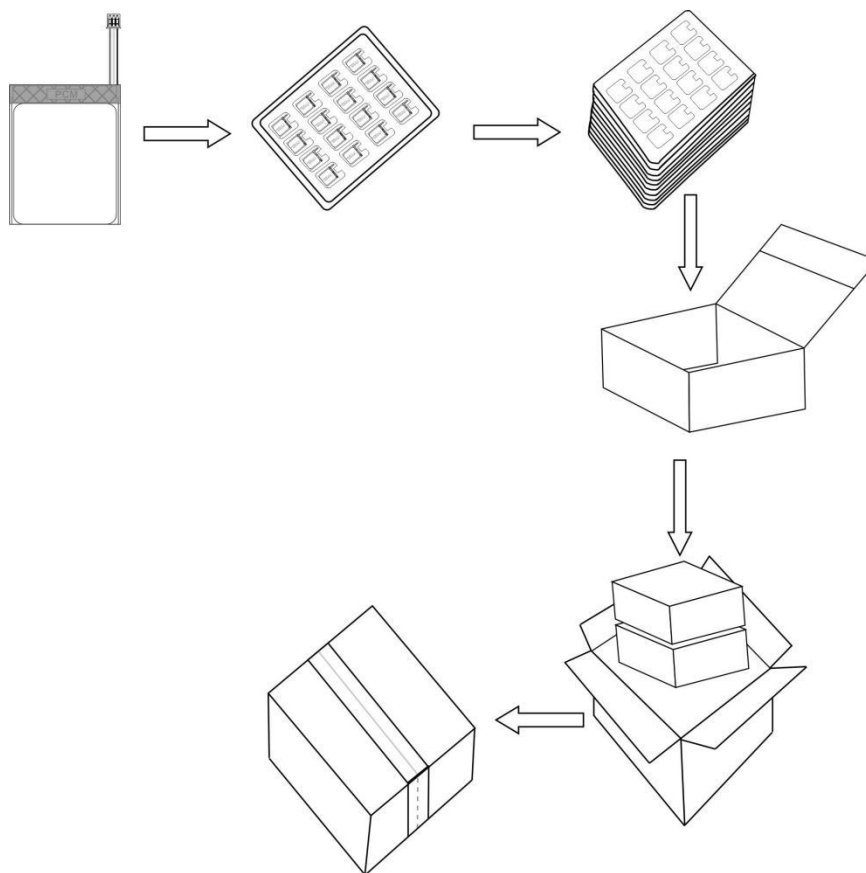
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14. Package



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15. Battery Precautions and Safety Instructions

Please be sure to take to comply with the specifications and the following precautions to use with batteries, did not follow the specifications for the operation caused any accidents, BE-POwer GmbH will not accept any responsibility.

- Guarantee to keep the battery in good repair in 12 months from the shipment.
- Please use 0.5C current to charge up 60% capacity after the battery placed 3 months.
- Before Use the battery, carefully read the instruction manual and battery labels on the surface.
- Need to use the original battery charger, and should be placed in a dry ventilated place.
- Such as long-term when not in use, the battery charger to charge state half full, remove the battery from the device and separated, to avoid metal contact with the battery, causing short-circuit or damage to the phenomenon.
- In use or during storage, battery found there has been high fever, leakage, odor, distortion and other anomalies, please stop using it immediately and stay away from the battery.
- Do not short-circuit the battery positive and negative, and careful not to allow the battery to moisture, to avoid danger.
- Using, keep away from heat, High pressure place, and do not beat, hit the battery.
- Battery end of life should be immediately removed from the equipment, Please properly handle security of spent batteries, do not put into fire or water.

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Customer Inquiry

1. IF clientele ratify specification and showpiece, please sign back specification to BE-Power GmbH in 1 week.

2. The customer is requested to write down your information and contact BE-Power GmbH in advance, if and when the customer needs applications or operating conditions other than those described in this document BE-Power GmbH could design and build such products according to your special request

	Special Request	Criteria
1		
2		
3		
4		
5		
6		

Company Name : Signature : Date: