Specifications

Product Name	Li-Po battery
Product Model	103450
Description	3.7V/1S1P/2000mAh

Prepared By/Date	Checked By/Date	Approved By/Date
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Customer Approval		
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History of revision

Version	Date	Event
A0	2020-05-08	First draft

Contents

1. Scope

This description defines the general requirements for the battery's rating parameter, electrical requirement, safety requirement, environmental compatibility, test and judgment, usage instructions, safety regulation, quality evaluation and packaging, marking, storage, shipment and handling, which cellular phone battery with 103450/1S1P/2000mAh rechargeable battery cell, adapted for Digital products.

2. Adopted Standard

GB/T18287-2013, The People's Republic of China General Regulations of Lithium Ion Battery for Cellular Phone.
GB/T 18287-2013

3. Electrical Characteristics

No	Item	Parameter		Remark
1	Rating Voltage	3.7V		
2	Capacity	2000mAh		0.2C discharge after full charge。
3	Charge Voltage	4.20±0.05V		
4	Impedance	300mΩ （Max）		
5	Charging Mode	C.C/C.V.		Constant Current /Constant Voltage
6	Charging Method	Standard Charging 0.2C		Charging Current400mA
		Fast Charging 0.5C		Charging Current 1000mA
	Discharging Method	Standard Discharging 0.5C		Discharging Current 1000mA
		Fast Discharging 1C		Discharging Current 2000mA
7	Charging Time	Standard Charging	6Hours	
		Fast Charging	3Hours	
8	End of Discharge	2.4V		

	Voltage		
9	Overcharge Voltage	4.28±0.025V	
10	Over Discharge Cut Off Voltage	3.0±0.05V	
11	Over Current	1.5-4A	
12	Short Circuit	Recover after removing the short circuit load	
13	Operating Consumption Current	7uA (Max)	
14	Operating Temperature	Charging 0~45℃ Discharging -20~60℃	
15	Storage Temperature	1 month -20~60℃ 3 month -20~45℃ 1 year -20~25℃	Storage capacity should be 40%~50% full charge capacity
16	NTC Resistor	/	/
17	ID Resistor	/	
18	Cycle Life	≥500 cycle	capacity≥70%
19	ESD Test	Contact discharge ± 4KV, air discharge ±8KV	

4. Battery Configuration

No.	Item	Type	Qty	
1	Cell	103450/1S1P/500mAh	1	
2	PCM	Battery protection IC +8205	2	
3	Conductor	UL1007-26#AWG Red/Black	1	

5. Battery Performances Test Criterion

5.1 Appearance

There shall be no such defect as scratch, flaw, crack, rust, leakage, which may adversely affect commercial value of battery.

5.2 Measurement Apparatus

（1）Dimension Measuring Instrument

The dimension measurement shall be implemented by instruments with equal or more precision scale of 0.01mm.

（2）Voltmeter

Standard class specified in the national standard or more sensitive class having inner impedance not less than 10 KΩ/V.

（3）Ammeter

Standard class specified in the national standard or more sensitive class. Total external resistance including ammeter and wire is less than 0.01Ω.

（4）Impedance Meter

Impedance shall be measured by a sinusoidal alternating current method(AC 1kHz LCR meter).

5.3 Testing Condition (unless otherwise specified)

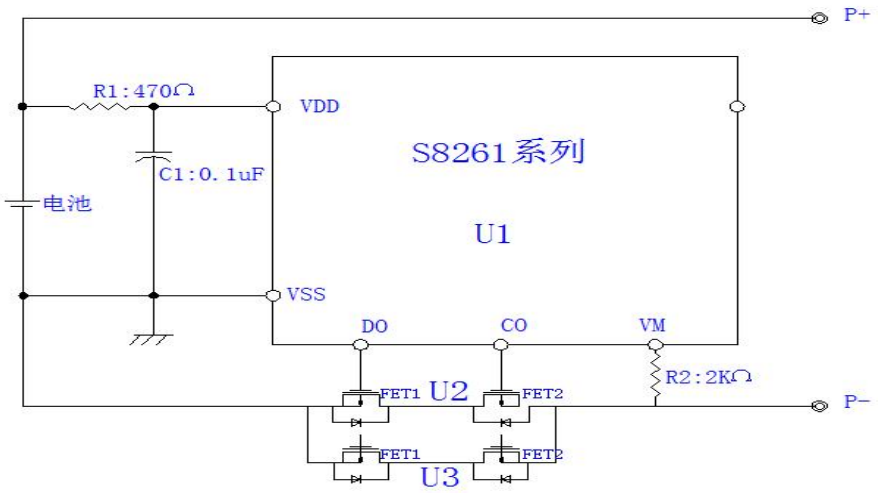
Temperature 20℃±5℃，Relative humidity：60±20%，Atmosphere pressure: 86～106Kpa.

6. Protection Circuit

6.1 PCM BOM

NO	CODE	Name	Spec	Unit	Qty
1	U1	Seiko IC	G3J	PCS	1
2	U2	MOSFET	8205 SOT-23-6	PCS	1
3	F1	PTC	TLC-PSMD075	PCS	1
4	R1\R2	Resistor	SMD 330Ω ±5% 0603	PCS	1
5	R3\R4	Resistor	SMD 470Ω ±5% 0603	PCS	1
6	C1\C2	Capacitor	0.1uf -20%/+80% 16V X5R 0603	PCS	1
7	PCB	PCB	2-layer board, green paint, white lettering	PCS	1
8					

6.2 Schematic of the PCB



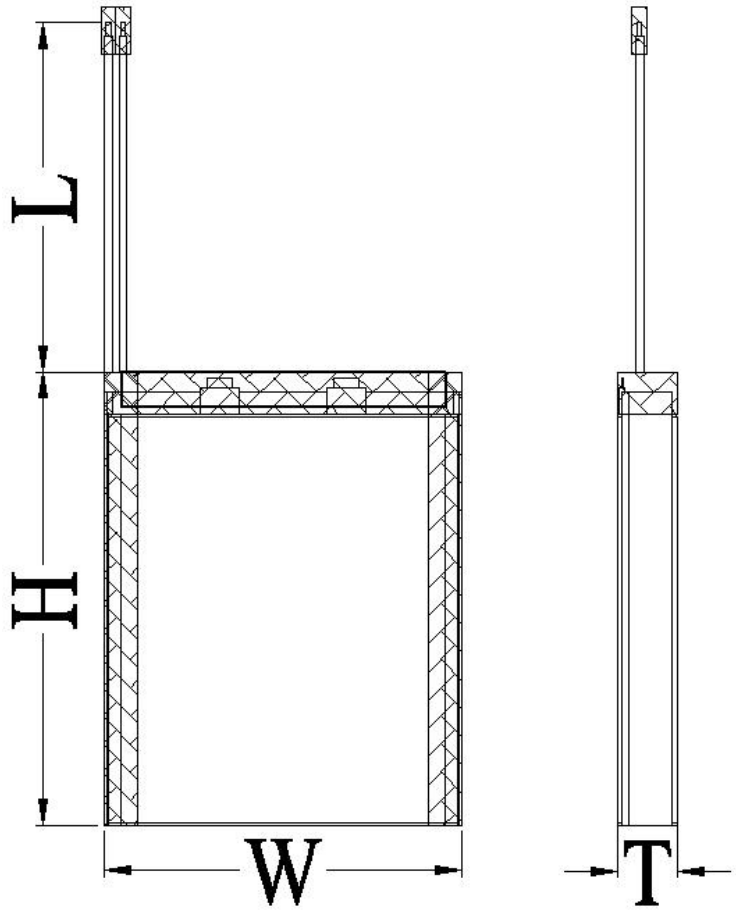
6.3 PCM Parameter

Item	Symbol	Content	Criterion
Over charge Protection	VDET1	Over charge detection voltage	4.28±0.025V
	tVDET1	Over charge detection delay time	1.2s
	VREL1	Over charge release voltage	4.08±0.05V
Over discharge protection	VDET2	Over discharge detection voltage	3.0±0.05V
	tVDET2	Over discharge detection delay time	144ms

Over current protection	IDP	Over current detection current	2.5A～4.5A
	tVDET3	Over current Detection delay time	10ms
		Release condition	Cut load
Short protection		Detection condition	Exterior short circuit
	TSHORT	Detection delay time	≤320us
		Release condition	Cut short circuit
Interior resistance	RDS	Main loop electrify resistance	RDS≤60mΩ
Current consumption	IDD	Current consume in normal operation	7.0 μA Max
Current consumption	IDD	Current consume in normal operation	0.1 μA Max
Recommended operating current		Maximum continuous charge/discharge current	3.0A
Recommended operating temperature		Operating temperature	-10~60
0VCharge		Is it possible to charge 0V battery	YES
Short circuit recovery		Is it possible to charge a 0V battery	YES
Sleep function		Is there a sleep function?	YES

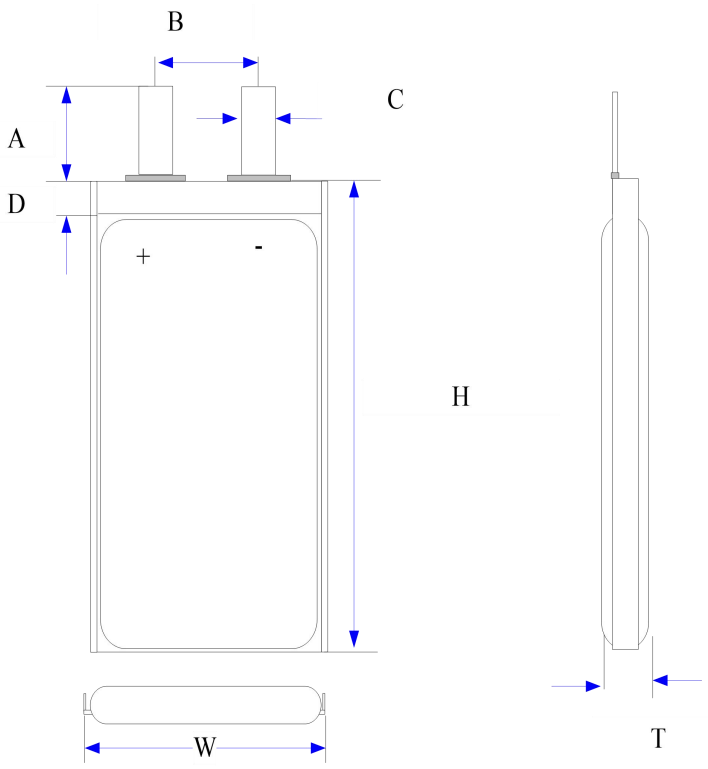
7. Engineering drawings (Unit: mm)

7.1 Product 2D chart



H	W	T	L	terminal
MAX:50.5mm	MAX:34.5mm	MAX:10.2mm	100±5.0mm	JST/XHR-2P
CODE	- HR103450 3.7V 2000mAh 7.4Wh + yyyymmdd			

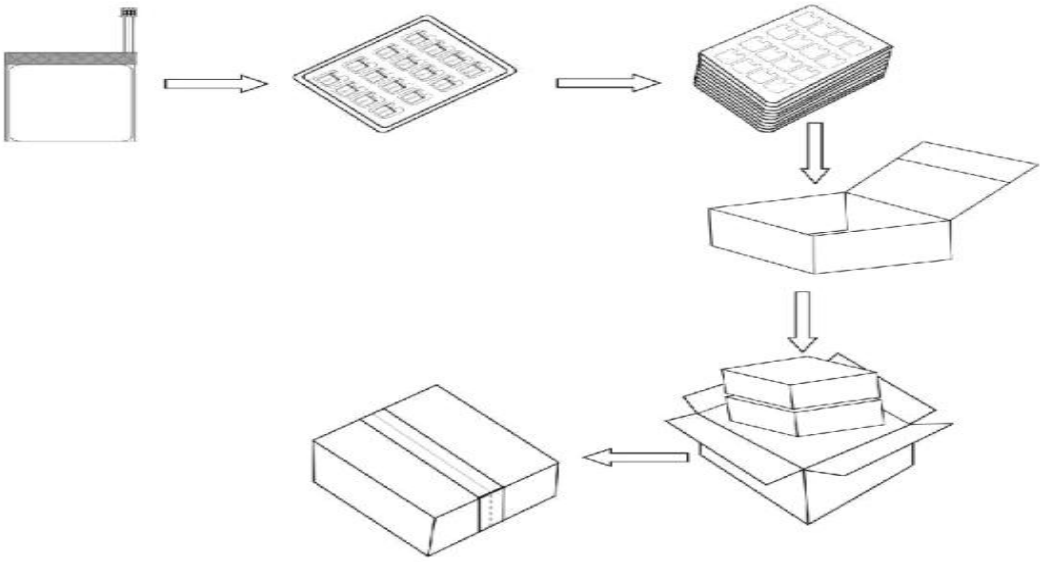
7.2 Cell Drawing



Item	Size
Battery thickness T	Max：10.2
Battery width W	Max：34.5
Battery height H	Max：50.5
Pole ear exposed length A	7±1.5
Pole ear center distance B	16.0±1.5
Pole ear width C	4.0±0.2
Top seal width	3.5±0.5
Folding method	Double hem

8. Packing method

The outer packaging must clearly indicate the product name, model, quantity, gross weight, manufacturer, contact address, and production date. Additionally, the packaging and transportation markings should comply with the GB-191-800 standard.



9. Shipment

The battery should be packed in cartons under the condition of half capacity 20-50% for shipment. The violent vibration,impaction or squeezing should be avoided in the transport process; neither is exposed in the sunlight nor rain. The batteries shall be shipped by normal transportation such as by road, by train, by ocean or by air.

10. Storage

The battery storage shall be in the clean and dry ventilation room at the temperature of -5～35℃ and shall keep out of fire or heat and avoid touching corrosion elements. The batteries shall be charged every 6 months during storage. Both the stored cells in the process of the battery and the batteries in delivery shall be “first come, first use”. The battery storage period is 12 months when into the warehouse. Batteries expired must have a thorough check. Only the applicable batteries can be dispatched to the purchaser; the inapplicable ones shall be rechecked, if it remains, the purchaser shall have the right to dispose bad ones.

11. Appendix

11.1 Instructions and Safety Requirement

11.1.1 Recommending Usage

1 Please read the battery instructions and the label on its surface before use.

2 Use the battery indoors under normal condition，temperature：（20±5）℃，absolute humidity：65±20%.

3 When in use, the battery shall be kept out of heat、high voltage and avoided children’s touching. Do not drop the battery.

4 Use the compatible charger. Do not put the battery into the charger over 24hours。

5 Do not touch contacts together. Do not demolish or assembly the battery by yourself. Do not put the battery in the damp place to avoid danger.

6 When the battery was stored for a long period, put it well in its half capacity. Do not wrap it with conduct material to avoid the damage caused by the direct contact between the metal and battery. Keep the battery in day places.

7 Well disposed the disused battery. Do not put it into fire or water.

11.1.2 Hazard Warning

1 Forbid Disassemble Batteries

The battery has protective component and circuit internally to avoid danger. Mishandling such as improper disassembly will destroy

its protective function and make it heat, smoke, distort or burning.

2 Forbid Short-circuit Batteries

Do not touch the plus and minus contacts with metals. Do not put the battery with metal element together in either storage or movement. If the battery is short-circuit, it carries magnified current，which will cause damage and make the battery heat, smoke, distort or burning.

3 Forbid heat and burn the battery

If heating or burning the battery, it will caused the isolated element in the battery dissolved, protection function stopped or the electrode burning, over heated, which will make the battery heat, smoke, distort or burning.

4 To avoid use the battery near the heat

Do not use the battery near the fire and stove, or over 80℃, and over heating will cause the battery internal short-circuit and make it heat, smoke, distort or burning.

5 Forbid bathing the battery

Do not dampen the battery, or even immerse it in the water, which will cause internal protection circuit and its function lost or abnormal chemical reactions, which will lead to heating, smoking, distortion or burning.

6 Avoid charging near fire or in the sunlight

Otherwise, it will cause internal protection circuit and its function lost or abnormal chemical reactions, which will lead to heating, smoking, distortion or burning.

7 Danger in using non-indicated chargers in

Charging in abnormal condition, the battery will cause internal protection circuit and its function lost or abnormal chemical reactions, which will lead to heating, smoking, distortion or burning.

8 Forbid Damage Battery

Do not allow damage the battery with the metals gouged, forged or dropped etc.， otherwise, it will cause over-heated, distort, smoke or burning, even in danger.

9 Forbid directly welding on the battery

Over-heated will cause the isolated element dissolved in the battery and losing protective function its cycle life, even will cause over-heated, distort, smoke or burning.

10 Forbid directly charging on the power socket or car kit cigarette

High voltage and amplified current will damage the battery and reduce its cycle life, even will cause over-heated, distort, smoke or burning.

11 Do not use this battery for other equipment

Impropriety usage will damage the battery and reduce its cycle life, even will cause over-heated, distort, smoke or burning.

12 Do not touch the leak-out battery

The leak-out electrolyte will cause the skin uncomfortable. If it drops into eyes, do not rob the eyes but wash in time, and go to hospital for treatment.

11.1.3 Warning

1 This battery cannot mix with disposal or twice- recycled batteries in use. Otherwise, for its abnormal charge and discharge, it will cause over-heated, distort, smoke or burning.

2 Keep the battery out of children’s reach and prevent them biting or swallowing the battery.

3 Do not insert the battery onto the charger for a long time If charging beyond the normal time, the battery is still in the charger, please stop charging. The abnormal charging will cause battery over-heated, distort, smoke or burning.

4 Do not put into microwave stove or any other pressure apparatus. Take the battery away from the cellular phone or the charger if it is instant heated or leak-out (or odors) and depose it. The bad battery will causes over-heated, smoke or burning.

11.1.4 Cautions

1 Notice

The battery shall be prevented to be exposed in effulgence so as not to cause over-heated, distort, smoke and weaken its performance and cycle life.

2 Electro Static-free

There is a protective circuit inside the battery to prevent contingency. Do not use the battery in the Electro static circumstances, (above 800V), for it is easily destroyed the circuit board so that the battery doses not work and causes over-heated, distort, smoke or burning.

3 Discharging Temperature Range

Recommended discharging temperature range is 0-40℃, beyond which it will result in decadence of the battery performance and shortness of its life.

4 Read carefully the manual before use or whenever in need.

5 Charging Method

Use the special chargers in the recommended charging method to charge the battery.

6 First Usage

When you use the battery for its first time, do not put it into the cellular phone or any other equipment once you find it in unusual conditions such as uncleanness or odors. The battery should be returned to the vendor.

7 Children Use

When Children use the battery, they should be under their parents' instructions and superintend in use.

8 Avoid Children's Touch

Battery should keep out of the place where children in reach. Prevent children taking the battery out of the charger or the cellular phone to play.

9 To avoid the leak-out liquid be exposed to the skin or clothes. If touched, please wash by clean water so as not to cause the skin uncomfortable

10 Consultation

When you buy the battery, please note how to contact with the vendors, so that you may get in touch with vendors for consultation whenever in need.

11 Guarantee period

Guarantee is one year since it is out of the factory. Life time:500 cycles。Any damage by incorrect use and not quality problem, even in its guarantee period, free service won't be provided by the manufacture.

12 Safety Usage Guarantee

If the battery is used on other instruments, please contact with your manufacturer for how to get the best performance, at least consult its maximum current, fast charge and special application.

11.2 Quality Evaluation Programme

Quality evaluation composes of authoritative check and quality consistence check. Authoritative check is carried out on design decision, emended design and production decision. It should be confirmed by both Purchaser and Vendor on sampling proposal, check project, sequence and judgment etc., which in principle, should be all included. Quality consistence check should be divided into lot by lot check-up and periodical check-up, as to test the quality steadiness during the products in production (refer to GB2828—1987 standard)。The detailed check-ups compose of appearance, internal resistance, rating capacity or 1C5A discharging capacity etc.

11.3 Environment Protection

This product accord with ROHS requirement.

11.4 Others

All the above are the agreed the battery descriptions and test regulation between Purchaser and Vendor. It can be carried out if there is no any new written agreement or modification notice occurred.