

Specification Approval Sheet

锂离子聚合物电池承认书

MODEL

型 号: IE-503450-NTC 1.0Ah

Typical Capacity

标 称 容 量: 1000mAh

Customer

客 户: _____

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1. MODIFIED LIST

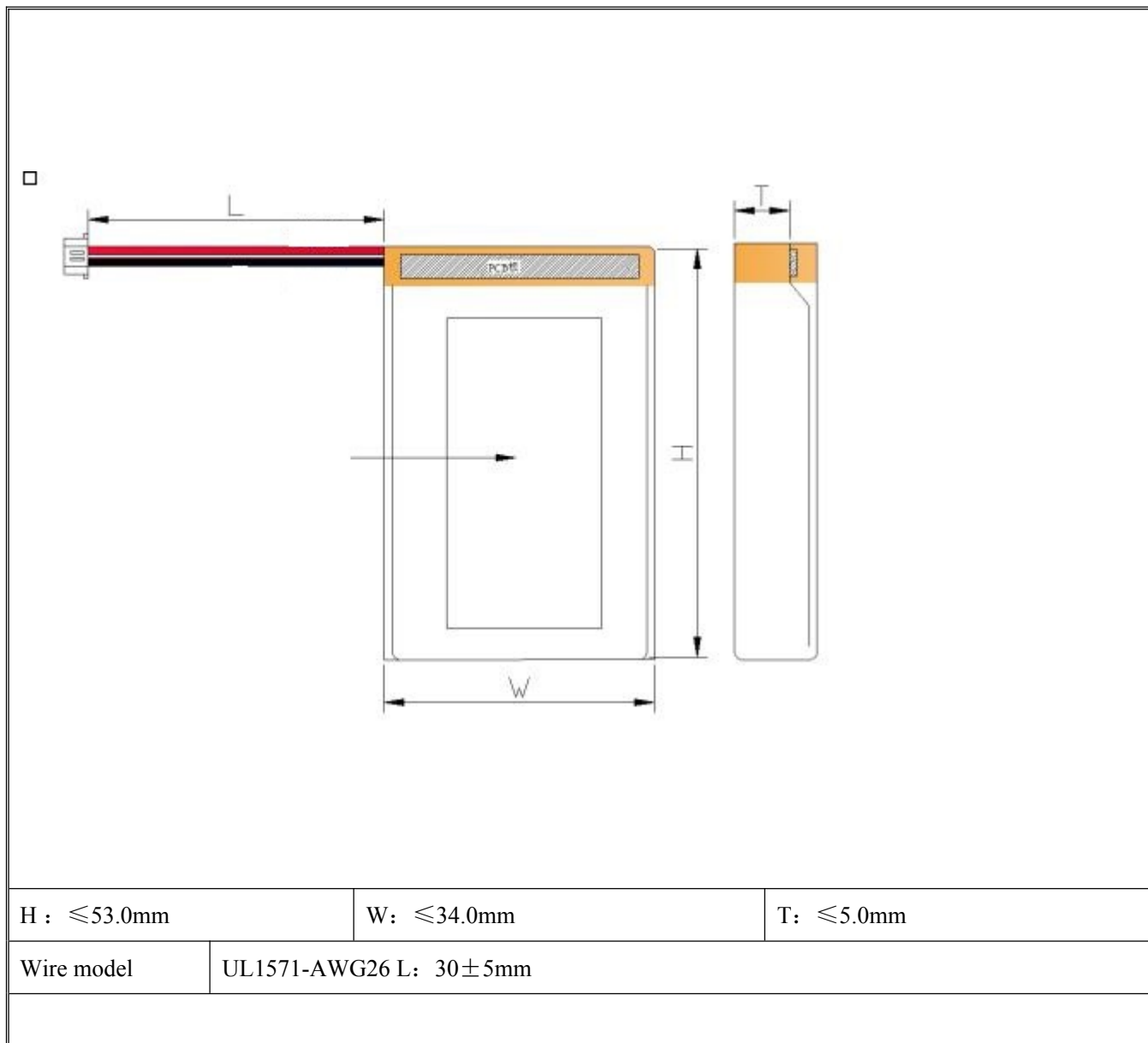
Product Modified Record List

Revision	Date	Mark	Modified content	Approved by
A0	2022-08-12			

1 .Scope

This specification describes the basic performance,technical requirement ,testing method ,warning and caution of the lithium ion Polymer rechargeable battery .

2. Initial Dimension



4.Specification

NO.	Item	Specifications	
4.1	Nominal capacity	1000mAh 0.2C Discharge	
4.2	Nominal voltage	3.7V	
4.3	Charge current	Standard Charge : 0.5C Rapid charge : 1.0C	
4.4	Standard Charging method	0.5C CC (constant current) charge to 4.2V,then CV(constant voltage 4.2V)charge till charge current decline to $\leq 0.01C$	
4.5	Charging time	Standard Charging Approx 3.5 hours Rapid charge Approx 2 .5hours	
4.6	Max.charge current	Constant Current 1.0C Constant Voltage 4.2V 0.01 C cut-off: 4.2V 0.01 C)	
4.7	Max.discharge current	Constant current 1.0 C end voltage 2.75V	
4.8	Standard Discharge Current	Constant current 0.2C end voltage 2.75V	
4.9	Discharge cut-off voltage	2.75V	
4.10	Charge cut-off Voltage	4.20V	
4.11	Initial Impedance	$\leq 220m\Omega$	
4.12	Operating temperature	Charging(充电): 10℃~45℃ Discharging(放电): -5℃~60℃	
4.13	Storage temperature	Less than 1 month 一个月以内	-20℃~55℃
		Less than 3 month 三个月以内	-20℃~40℃
		Less than 1 year 一年以内	0℃~25℃
4.14	Storage Humidity	$\leq 75\%$ RH	
4.15	Appearance	Without scratch,distortion,contamination and leakage	

4.16	Standard environmental condition	Temperature : 23±5℃ Humidity : 45-75%RH Atmospheric Pressure : 86-106 Kpa
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5 General Performance

No.	Item	Test Methods and Condition	Criteria
5.1	0.2C Capacity	After standard charging, laying the battery 5min, then discharging at 0.2C to voltage 2.75V, recording the discharging time.	≥300min
5.2	1C Capacity	After standard charging, laying the battery 5min, then discharging at 1C to voltage 2.75V, recording the discharging time.	≥57min
5.3	Cycle Life	Constant current 0.5C charge to 4.2V, then constant voltage charge to current declines to 0.01C, stay 5min , constant current 0.5C discharge to 2.75V , stay 10min. Repeat above steps till continuously discharging capacity Higher than 80% of the Initial Capacities of the Cells	≥300 times(次)
5.4	Capability of keeping electricity	20±5℃, After standard charging, laying the battery 28days, discharging at 0.2C to voltage 2.75V, recording the discharging time.	≥200min

6 Environment Performance 环境性能

No.	Item	Test Methods and Condition	Criteria
6.1	Discharge at high temperature	After standard charging, laying the Cells 4h at $60 \pm 2^{\circ}\text{C}$, then discharging at 1C to voltage 2.75V, recording the discharging time.	≥50min
6.2	Discharge at low temperature	After standard charging, laying the Cells 4h at $-10 \pm 2^{\circ}\text{C}$, then discharging at 0.2C to voltage 2.75V, recording the discharging time.	≥160min

		标准充电后, 在 $-10\pm 2^{\circ}\text{C}$ 条件下贮存 4h, 然后用 0.2C 放电至 2.75V, 所记录放电时间.	
		After standard charging, laying the Cells 4h at $10\pm 2^{\circ}\text{C}$, then discharging at 0.2C to voltage 2.75V, recording the discharging time. 标准充电后, 在 $10\pm 2^{\circ}\text{C}$ 条件下贮存 4h, 然后用 0.2C 放电至 2.75V, 所记录放电时间.	$\geq 280\text{min}$
6.3	Thermal shock 热冲击	Put the battery in the oven. The temperature of the oven is to be raised at $5\pm 2^{\circ}\text{C}$ per minute to a temperature of $130\pm 2^{\circ}\text{C}$ and remains 10 minutes. 将电池放进烘箱内, 以 $5\pm 2^{\circ}\text{C}/\text{min}$ 速度升高烘箱内温度至 $130\pm 2^{\circ}\text{C}$ 后, 恒温 10min.	No fire, no smoke 不起火, 不冒烟

7 Safe Characteristic 安全性能

No.	Item 项目	Test Methods and Condition 测试方法和条件	Criteria 标准
7.1	Over discharge testing/ NOPCM 过放测试/没有保护板	At $23\pm 5^{\circ}\text{C}$, According to the requirements of standard charge, the battery will be discharge to cut-off voltage, then connect with external load of 30 ohm for 24 hours. 在 $23\pm 5^{\circ}\text{C}$ 状态下, 按标准放电的要求放电至终止电压后, 外接 30Ω 负载放电 24 小时.	No fire, no smoke, no leakage. 无起火, 无冒烟, 无泄液
7.2	Short-circuit testing/NO PCM 短路测试/没有保护板	At $23\pm 5^{\circ}\text{C}$, After standard charging, connect batteries' anode and cathode by wire which impedance less than $50\text{m}\Omega$, keep 6h. 在 $23\pm 5^{\circ}\text{C}$ 状态下, 标准充电后, 将电池的正负极用一根小于 $50\text{m}\Omega$ 的导线连接, 放置 6 小时.	No smoke or fire 不 起火, 不冒烟

※ Above testing of safe characteristic must be with protective equipment.(安全性能测试应在有保护措施下进行)

8. Protection circuit (保护电路)

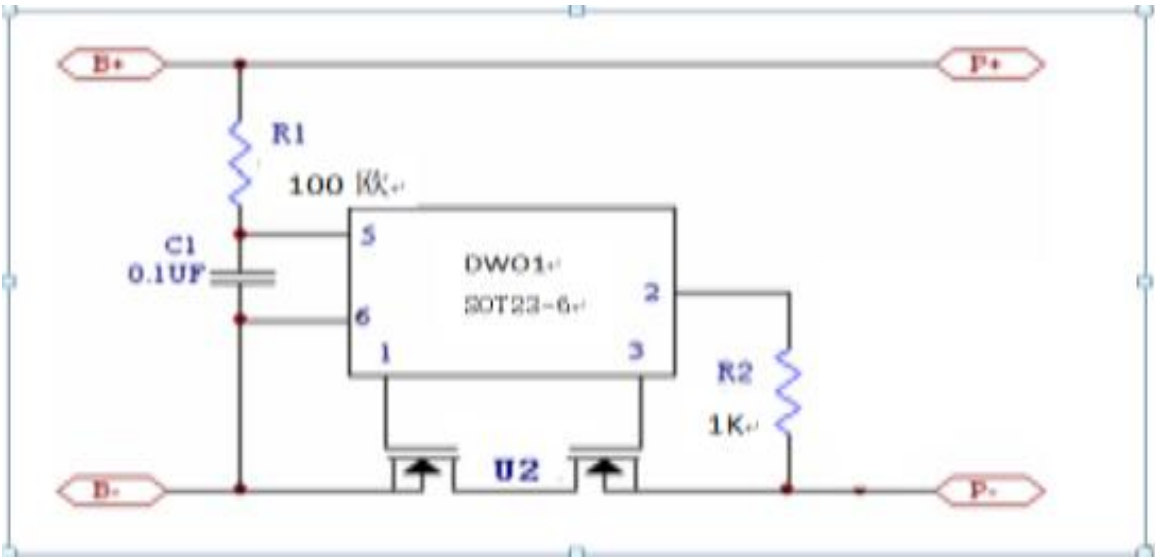
8.1 Electrical characteristics 电气特性

T_{opt}=25℃

Item 项目	Symbol 符号	Content 详细内容	Criterion 标准
Over charge Protection 过充保护	V _{DET1}	Over charge detection voltage 过充电检测电压	4.28±0.05V
	tV _{DET1}	Over charge detection delay time 过充电检测延迟时间	80~200ms
	V _{REL1}	Over charge release voltage 过充电解除电压	4.08±0.05V
Over discharge protection 过放保护	V _{DET2}	Over discharge detection voltage 过放电检测电压	2.4±0.1V
	tV _{DET2}	Over discharge detection delay time 过放电检测延迟时间	40~120ms
Over current protection 过流保护	V _{DET3}	Over current detection voltage 过电流检测电压	0.15±0.025V
	I _{DP}	Over current detection current 过电流保护电流	1.5A~4.0A
	tV _{DET3}	Detection delay time 检测延迟时间	5.0~20.0ms
		Release condition 保护解除条件	Cut load 断开负载
Short protection 短路保护		Detection condition 保护条件	Exterior short circuit 外部电路短路
	T _{SHORT}	Detection delay time 检测延迟时间	≤500us
		Release condition 保护解除条件	Cut short circuit 断开短路电路
Interior resistance 内阻	R _{DS}	Main loop electrify resistance 主回路通态电阻	V _c =4.2V; R _{DS} ≤70mΩ
Current consumption 消耗电流	I _{DD}	Current consume in normal operation 工作时电路内部消耗	2.0μA Type 6.0μA Max

8.2 Parts list 元件清单

NO.	Location 元件编号	Part name 元件名称	Specification 元件规格	Pack type 封装式	Q' ty 数量	Environment 环境
U1	贴片保护 IC	DW01	SOT23-6	1	/	ROHS
U2	贴片 MOSFET	8205	TSSOP-6	1	/	ROHS
R1	贴片电阻	100 Ω , 5%, 1/10W	0603	1	/	ROHS
R2	贴片电阻	1K Ω , 5%, 1/10W	0603	1	/	ROHS
C1	贴片电容	0.1 μ F, -20%+80%, 1/10W	0402	1	/	ROHS
PCB	PCB		26*3.5 $\pm$ 0.1mm	1	/	ROHS
镍片	镍片		3*2.5	2	/	ROHS



9.Warnings 警告

To prevent the possibility of the battery from leaking,heating,fire please observe the following precautions:

为防止电池可能发生的泄漏,发热,起火,请注意以下预防措施:

The soft aluminum packing foil is very easily damaged by sharp edge parts such as Ni-tabs,pins and needles .Do not strike battery with any sharp edge parts.

☆ 电池外包装膜易被镍片,尖针等尖锐部件损伤,禁止用尖锐部件碰伤电池.

Do not immerse the battery in water and seawater

☆ 严禁将电池浸入海水或水中.

Do not use and leave the battery near a heat source as fire or heater

☆ 禁止将电池在热高温源旁,如火,加热器等使用设备.

When recharging,use the battery charger specifically for that purpose

☆ 充电时请选用锂离子电池专用充电器.

Do not reverse the position and negative terminals

☆ 禁止颠倒正负极使用电池

Do not connect the battery to an electrical outlet

☆ 禁止将电池直接接入电源插座

Do not discard the battle in fire or heat it

☆ 禁止将电池丢入火或加热器中

The battery tabs are not so stubborn especially for aluminum tab.Do not bend tab.

☆ 电池极耳的机械强度不坚固,特别是铝极耳,禁止弯折.

Do not short-circuit the battery by directly connecting the positive and negative terminal with metal object such wire

☆ 禁止用金属直接将电池的正负极进行短路连接.

Do not transport and store the battery together with metal objects such as necklaces,hairpins etc.

☆ 禁止将电池与金属,如发夹,项链等一起运输或贮存.

Do not strike or throw the battery.

☆ 禁止敲击或抛掷,踩踏电池等.

Do not directly solder the battery and pierce the battery with a nail or other sharp object.

☆ 禁止直接焊接电池和用钉子或其它利器刺穿电池.

10. Cautions 注意

Do not use or leave the battery at very high temperature (for example,at strong direct sunlight or a vehicle in extremely hot conditions).Otherwise,it can overheat or fire or its performance will be degenerate and its service life will be decreased.

△ 禁止在高温下(直热的阳光下或很热的汽车中)使用或放置电池,否则可能会引起电池过热,起火或功能失效,从而导致电池寿命减短.

Do not use it in a location where static electricity is great, otherwise, the safety devices may be damaged ,causing hidden trouble of safety.

△ 禁止在强静电和强磁场的地方使用,否则易破坏电池安全保护装置,带来不安全隐患.

If the battery leaks, and the electrolyte get into the eyes. Do not rub eyes, instead, rinse the eyes, with clean running water, and immediately seek medical attention. Otherwise, eye injury can result.

△ 如果电池发生泄漏,电解液进入眼睛,请不要揉擦,应用清水冲洗眼睛,并立即送医院治疗,否则会伤害眼睛.

If the battery gives off an odor, generates heat, becomes discolored or deformed, or in any way appear abnormal during use, recharging or storage, immediately remove it from the device or battery charge and stop using it.

△ 如果电池在使用或贮存中发出异味,发热,变色,变形,或者是在充电过程中出现任何异常现象,立即将电池从充电器或装置中移开,并停止使用.

In case the battery terminals are dirt, clean the terminals with a dry cloth before use. Otherwise power failure or charge failure may occur due to the poor connection with the instrument.

△ 如果电池弄脏,使用前应用干布抹净,否则可能会因接触不良而影响性能失效.

Be aware discharged battery may cause fire or smoke, tape the terminals to insulate them.

△ 废弃之电池应用绝缘纸包住电极,以防起火,冒烟.

If the battery is stored for a long time, the battery storage should be 3.75V and the battery is to be stored in a condition , Temperature $23\pm5^{\circ}\text{C}$, Humidity 45-75%RH

△ 长期贮存的电池(超过 3 个月)须置于干燥、凉爽处。贮存电压为 3.75V 且贮存环境要求.温度在 $23\pm5^{\circ}\text{C}$ 湿度在 45-75%RH

11.Period of Warranty 保质期

The period of warranty is one year from the date of shipment. Wanneng battery guarantees to give a replacement in case of battery with defects proven due to manufacturing process instead of the customers abuse and misuse.

电池的保质期从出货之日算起为一年。如果证明电池的缺陷是在我们公司制造过程中造成的而不是客户滥用或错误使用造成, 本公司负责退换电池。

12. Others 其它事项

12.1. The customer is requested to contact Wanneng battery in advance, if and when the customer needs other applications or operating conditions than those described in this document. Additional experimentation may be required to verify performance and safety under such conditions.

客户若需要将电池用于超出文件规定以外的设备，或在文件规定以外的使用条件下使用电池，应事先联系万能电池，因为需要进行特定的实验测试以核实电池在该使用条件下的性能及安全性。

12.2. Wanneng battery will take no responsibility for any accident when the battery is used under other conditions than those described in this Document.

对于在超出文件规定以外的条件下使用电池而造成的任何意外事故，万能电池概不负责。

12.3. Wanneng battery will inform, in a written form, the customer of improvement(s) regarding proper use and handing of the battery, if it is deemed necessary.

如有必要，万能电池会以书面形式告之客户有关正确操作使用电池的改进措施。

12.4. Any matters that this specification does not cover should be conferred between the customer and Wanneng battery

任何本说明书中未提及的事项，须经双方协商确定。