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**Type (类型):** 锂离子聚合物可充电电池**Model (型号):** **JYP553450 1100mAh /3.7V**

Customer Approval (客户确认)		
Checked By/Date 审 核/日 期	Approved By/Date 批 准/日 期	Company Stamp (公司印章)

LIYUAN BATTERY TECHNOLOGY (YICHUN) CO., LTD 力源电池科技（宜春）有限公司		
Prepared By/编 制	Approved By/批 准	Date/日 期
Xiang Wenbin	Ma Xujun	2025-09-04

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一. Scope 范围

This specification describes the structural ,performance,testing method,warning and caution of the Lithium Ion Polymer Battery.

LIYUAN BATTERY TECHNOLOGY (YICHUN) CO., LTD, this standard is applicable to the production of lithium-ion polymer batteries

范围：本标准描述了锂聚合物电池的结构设计，基本性能，测试方法和注意事项。

本标准适用于力源电池科技（宜春）有限公司生产的锂聚合物电池。

二. Structural Design 结构设计

2.1 Cell 电芯：JYP553450-1100mAh/3.7V（polymer 聚合物）

2.2 Cell Dimension 电芯尺寸：约 厚 5.5mm*宽 34.0mm*高 50.0mm（About thick 5.5 mm* wide 34.0mm* high 50.0mm）

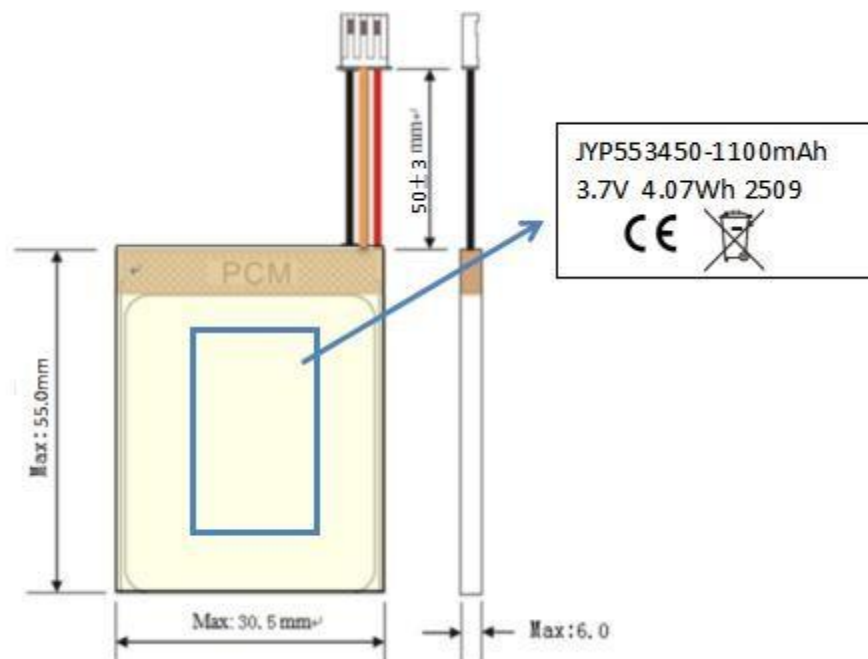
2.3 Model 电池组总体规格：JYP553450-1100mAh/3.7V

2.4 Dimension of Battery Pack(without case) 电池组尺寸：如下图示

2.5 Assembly Style 电池组合方式：1S

2.6 Shelf period 保质期：12 个月

2.7 reference drawing 参考图片



Unit 单位（mm）					
T（厚度）	Max:6.0	W（宽度）	Max:30.5	L（高度）	Max:55.0
L1（引线长度）	50±3mm		Plug Wire（插头线）	JST-PHR-3P 反向(黑黄红 1007#26 A WG，黄色 NTC 10KΩ)	

说明：

Model JYP553450-1100mAh/3.7V battery 1 monomer, polymer batteries of 1100mAh for added protection plates

电池组使用 1 支单体型号为 JYP553450-1100mAh/3.7V，容量为 1100mAh 的聚合物电芯加保护板组成

三. Basic Performance(Battery Pack) 基本性能(电池组)

NO. 序号	Item 项目	Specification 规格		Remark 备注
1	Rated Capacity 额定容量	Nominal Capacity 标称容量	1100mAh	0.2C charge 0.2C discharge 0.2C 充电/0.2C 放电至终止
		Minimum Capacity 最小容量	1050mAh	
2	Nominal Voltage 标称电压	3.7V		Standard Output Nominal Voltage 电池组输出标称电压
3	Standard Charging Current 标准充电电流	0.2C= (220mA)		Ambient temperature 0~+45 °C 0.2C CC (constant current) charge to 4.2V/cell, then CV (constant voltage 4.2V/cell) charge till charge current decline to $\leq 0.02C$ 环境温度 0~+45°C 0.2C CC (恒流) 充电至 4.2V/cell, 再 CV (恒压 4.2V/cell) 充电直至充电电流 $\leq 0.02C$
4	Max. Charging Current 最大充电电流	1C= (1100mA)		Ambient temperature 0~+45 °C 3C CC (constant current) charge to 4.2V/cell, then CV (constant voltage 4.2V/cell) charge till charge current decline to $\leq 0.05C$ 环境温度 0~+45°C 3C CC (恒流) 充电至 4.2V/cell, 再 CV (恒压 4.2V/cell) 充电直至充电电流 $\leq 0.05C$
5	Charge Ending Voltage 充电截止电压	4.20V		
6	Standard Discharging Current 标准放电电流	0.2C= (220mA)		Ambient temperature -20°C~60°C Constant current 0.2C end voltage 2.75V/cell 环境温度 -20°C~60°C 持续电流: 0.2C 截止电压: 2.75V/cell
7	Max. discharge current 最大放电电流	1C= (1100mAh)		Ambient temperature -20°C~60°C Constant current 10A end voltage 2.75V/cell 环境温度 -20°C~60°C 持续电流: 1A 截止电压: 2.75V/cell
8	Discharge Ending Voltage 放电截止电压	2.75V		

9	Charging Time (Std.) 标准充电时间	Approx 6-8 hours 大约 6-8 小时	
10	Charging Time (Max.) 快速充电时间	Approx 1.2-1.5 hours 大约 1.2-1.5 小时	
11	Battery Weight 电池重量	About 约 24g	Include wires and packaging material 包括线材
12	Product Impedance 成品内阻	$\leq 160\text{m}\Omega$	AC Impedance 交流内阻 1KHz
13	Operating Temperature 工作温度	Charge(充电): $0 \sim 45^{\circ}\text{C}$ Discharge(放电): $-20 \sim 60^{\circ}\text{C}$	

四.Performance Data 性能参数表

4.1 Battery Pack Performance 电池组性能

NO. 序号	Item 项目	Criterion 标准	Test Method 测试方法
1	0.2C Capacity 0.2C 容量	$\geq 300\text{min}$	After standard charging, rest battery for 10min, then discharging at 0.2C to voltage 2.75V, recording the discharging time. 标准充饱电后,搁置 10 分钟,然后用 0.2C 电流放电至 2.75V, 所记录放电时间
2	CycleLife Characteristics 循环寿命特性	≥ 300 times	Constant current 0.2C charge to 4.2V, then constant voltage charge to current declines to 0.02C, rest 10min, constant current 0.2C discharge to 3.0V, rest 10min. Repeat above steps till continuously discharging capacity Higher than 80% of the Initial Capacities of the Cells 先用 0.2C 恒流充电至 4.2V, 再恒压 4.2V 充电直至充电电流 $\leq 0.02\text{C}$, 搁置 10 分钟,再用 0.2C 电流放电至 3.0V;又搁置 10 分钟,重复以上步骤,直到放电容量是初始容量的 80%
3	Capability of keeping electricity 荷电保持能力	$\geq 240\text{min}$	$25 \pm 2^{\circ}\text{C}$, After standard charging, rest the battery 28days, discharging at 0.2C to voltage 3.0V, recording the discharging time. 在 $25 \pm 2^{\circ}\text{C}$ 状态下,标准充饱电后,电芯搁置 28 天,然后用 0.2C 放电至 3.0V,所记录放电时间

Remark: Measurements are carried out at normal atmospheric pressure、ambient temperature $25 \pm 2^{\circ}\text{C}$ and relative humidity of $60 \pm 25\%$ without other specified condition. Accuracy of voltmeters and ammeters used in test is equal to or better than the grade 0.5.

注: 如没有特殊要求测试应在 1 标准大气压、环境温度 $25 \pm 2^{\circ}\text{C}$ 、相对湿度 $60 \pm 25\%$ 条件下进行, 测试中所使用的电压表和电流表的精度等级 ≤ 0.5 。

4.2 Environment Characteristics 环境性能

NO. 序号	Item 项目	Criterion 标准	Test Method 测试方法
1	Temperature	-10°C : $\geq 50\%$	1. After standard charging.

	Characteristics 温度特性	25℃: 100% 55℃: ≥95%	2.Capacity comparison at each temperature, measured with constant discharge current 0.2 C with 2.75V cut-off. Percentage as an index of the capacity compared with 100% at 25℃ 1. 标准充饱电后。 2.在不同温度条件下,用 0.2 C 的电流恒流放电至截止电压 2.75V。以 25℃时放电容量为基准计算百分比。
2	Constant humidity and temperature 恒定湿热	No distortion No electrolytes leakage 不变形、不漏液, 放电时间≥150min	After standard charging, laying the battery 48h at 40±2℃, RH 93±2%. Recording 0.2C discharging time 电池标准充电后在 40±2℃, 相对湿度 93±2%环境中放置 48h, 用 0.2C 放电至截止电压 2.75V, 记录电池放电时间
3	Vibration Test 振动测试	No leakage 无泄漏 No fire 不起火	After standard charging, fixed the cell to vibration table and subjected to vibration cycling that the frequency is to be varied at the rate of 1Hz per minute between 10Hz and 55Hz, the excursion of the vibration is 1.6mm.The cell shall be vibrated for 30 minutes per axis of XYZ axes. 将标准充电后的电池固定在振动台上,沿 X、Y、Z 三个方向各振动 30 分钟,振幅 1.6 mm, 振动频率为 10Hz~55Hz, 每分钟变化为 1Hz。
4	Drop Test 跌落测试	No fire, no leakage. 无起火、无泄漏	The cell is to be dropped from a height of meter twice onto concrete ground. 将标准充电后的电池从 1 米高度跌落至混凝土地面 2 次

4.3 Safety Performance 安全性能

NO. 序号	Item 项目	Criterion 标准	Test Method 测试方法
1	Over charge testing 过充测试	No explosion, no fire, 不起火, 不爆炸	At 25±2℃, charging batteries with constant current 3C to voltage 4.6V, then with constant voltage 4.6V till current decline to 0A. Stop test till batteries' temperature 10℃ lower than max temperature. 在 25±2℃ 状态下,电芯用 3C 电流充电至 4.6V,然后恒压 4.6V 让电流下降接近 0A,监视电池温度变化,当电池温度下降一峰值低约 10℃时,停止实验.
2	Heating 热冲击	No explosion, no fire; 不爆炸,不起火;	Put the Cell in a circulating air oven, at a rate of (5 °C±2 °C) per minute to 130℃,and then placed fou 30 cminute at 130℃. 电池放置于热箱中,温度以 (5 °C±2 °C) /分钟的频率加热到 130 °C 并保持 30 分钟。
3	Short-circuit testing 短路测试	No fire or explosion. 不起火,不爆炸	At 25±2℃, After standard charging, connect batteries' anode and cathode by wire which impedance less than 50mΩ, Stop test till batteries' temperature 10℃ lower than max temperature. 在 25±2℃ 状态下,标准充电后,将电芯的正负极用一根小于 50mΩ 的导线连接,监视电芯温度变化,当电池温度下降到比峰值低约 10℃, 结束试验.

Remark: All safety and environmental tests should be conducted by the professional under the good safeguard. Otherwise the test possibly causes damage to the test equipment or the operator.

注：如需进行上述试验，均须在良好的安全措施保护下，由专业人员进行。否则可能会对试验设备和人身造成意外伤害！

五.PCM Specification 保护板规格

5.1 使用范围

This product is for single Li-ion battery over charge, over discharge protection, overload protection and short-circuit protection.

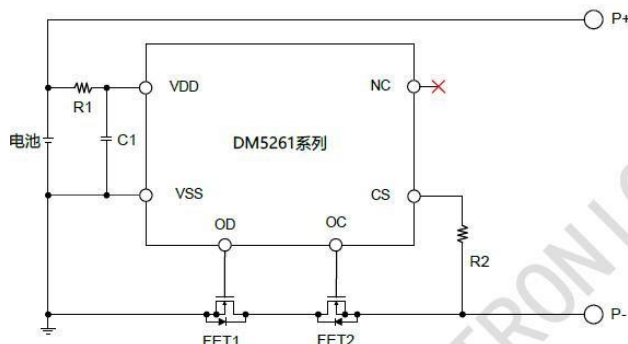
本产品用于单节锂离子电池组的过充电保护、过放电保护、过流保护及短路保护。

5.2 Electrical Characteristics(Normal temperature,Relative humidity≤90%)电气特性

Item 项目	Syol 符号	Content 内容	Criterion 标准
Over charge Protection 过充保护	VDET1	Over charge detection voltage 过充保护电压	4.28±0.05V
	tVDET1	Over charge detection delay time 过充保护延迟时间	160~200ms
	VREL1	Over charge release voltage 过充恢复电压	4.08±0.05V
Over discharge protection 过放保护	VDET2	Over discharge detection voltage 过放保护电压	2.4±0.10V
	tVDET2	Over discharge detection delay time 过放保护延迟时间	100ms(MAX)
	VREL2	Over discharge release voltage 过放恢复电压	2.9±0.10V
Over current protection 过流保护	VDET3	Over current detection voltage 过流保护电压	0.15±0.05
	IDP	Over current detection current 过流保护电流	2.0~5.0A
	tVDET3	Detection delay time 延迟时间	10ms(MAX)
		Release condition 恢复条件	Cut load
Short protection 短路保护		Detection condition 检测条件	Exterior short circuit
	TSHORT	Detection delay time 短路延时	600μs(MAX)

		Release condition 恢复条件	Cut short circuit
Interior resistance 内阻	RDS	Main loop electrify resistance 回路内阻	VC=4.2V; RDS≤60mΩ
Current consumption 工作消耗	IDD	Current consume in normal operation 工作消耗电流	6.0μA Max

5.3 Schematic circuit diagram 电路原理图



5.4 Battery BOM 电池物料清单

NO. 编号	Item 项目	Specification 规格型号	Q'ty 数量	Remark 备注
1	Cell/电芯	P553450 1100mAh	1	
2	PCB/保护板	JY-1S-2840(DW01+8205A *1+NTC 10K Ω)	1	
3	Wire/端子线/导线	JST-PHR-3 反向, 1007#26AWG	1	

六. Storage and Shipment Requirement 存储及运输要求

Temperature range for storage 储存温度范围	less than 1 month 一个月以内	-20~50℃	Percentage of recoverable capacity no less than 80% of the initial capacities 恢复容量不低于初始容量的 80%
	less than 3 month 三个月以内	-20~45℃	
Status of the cell as of ex-factory 电池出厂状态		The cell should be shipped in 30% charged state. In this case, OCV is not less than 3.7V. 电池出厂携带30%以上的电量,测试开路电压应在 3.7V 以上.	

Long-term storage battery (more than 3 months) to be placed in dry, cool place. And storage requirements are as follows.

The environment in which the temperature is 0~20℃ and the humidity is 65 ± 20%RH.

When not in use for a long time, the battery should be in half (half the capacity) state, and after 2-3 months, and use

Half capacity, so that the battery is not subject to long-term effective.

长期贮存的电池（超过 3 个月）须置于干燥、凉爽处。且贮存要求如下。

须置于温度为 0~20℃、湿度为 65±20%RH 的环境中。

长期不使用时,要让电池处于半电(一半容量)状态,并在2-3个月时间后重新充电,并使用一半容量,这样可以长期有效的保证电池性能。

七. Period of Warranty 保质期

The period of warranty is 12 months from the date of shipment. guarantees to give a replacement case of cells with defects proven due to manufacturing process instead of the customer's abuse and misuse.

电池保质期为出厂后 12 个月。承诺如果在保质期内由于电池本身的质量问题,本公司将负责进行调换,如果是由于用户误用或进行破坏性测试而产生的问题,恕不负责。

八. Caution in use 使用警告

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 at 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 battery 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 as 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.

九. **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, which will cause 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.

The batteries should be stored at room temperature, charged to about 30% to 50% of capacity. In case of over-discharge, batteries should be charged for one time every 3 months while storing and batteries should be discharge and charge after being stored more than a year in order to activate it and restore energy.

△ 电池应当在室温下存放,应充到 30%至 50%的电量。为防止电池过放,建议每 3 个月进行一次充电,如储存时间超过一年,建议每半年进行一次充、放电以激活电池。