



深圳赛骄阳能源科技股份有限公司  
ShenZhenSaiJiaoYangEnergy&ScienceTechno  
logy CO.,Ltd

版本: A0  
电芯型号: 396172

# 锂电池规格书

## Product Specification

For Polymer Lithium-ion Batteries

聚合物锂离子电池产品规格书

Model Number: QZ01

产品型号: QZ01

Prepared By 编制	Verified By 审核	Approved By 批准

Customer Approval 客户方确认	Signature 签署	Date 日期
	Company name: 公司名称	
	Company Stamp: 盖章	

公司邮箱: SJY@sjyenergy.com 公司电话: 0755-89388689 0755-89388693 传真: 0755-89388681  
公司网址: www.sjyenergy.com 公司地址: 深圳市龙岗区龙岗街道宝龙社区工宝龙二路三号京能工业园2号厂房  
ADD: Bldg.#2, Jingneng Technological and Environmental Industrial Zone, Baolong2nd.Rd. Long`gang  
District, Shenzhen, 518116, China.



# 锂电池规格书

History of revision  
版本更改历史记录

Version 版本号	Date 更改时间	Event 更改内容
A0	2019-11-9	新版发行



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# 锂电池规格书

## 1. Scope 适用范围

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 396172 rechargeable battery cell, adapted for 396172 Digital products. 本规格书描述电池之标称参数、电气特性、安全性能、环境适应性及其实验和判定、使用说明和安全规程、质量评定及包装、标志、贮存、运输等。适用于采用 396172 电芯制成的配套电池。

## 2. Adopted Standard 引用标准

GB31241-2014 Portable electronic products with lithium ion batteries and battery safety requirements

GB31241-2014 便携式电子产品用锂离子电池和电池组安全要求。

## 3. Electrical Characteristics 电气特性

No 序号	Item 内容	Parameter 参数	Remark 备注
1	Rating Voltage 额定电压	3.80 V	
2	Capacity 标称容量	Typical: 2750mAh 典型: 2750mAh	According to the standard charging after full charge, constant current discharge 0.2C <sub>5</sub> A to 3.0V. 按标准充电方式充满电后, 以 0.2C <sub>5</sub> A 恒流放电到 3.0V
3	Charging Mode 充电方式	C. C/C. V. 恒流/恒压方式	Constant Current /Constant Voltage 恒流/恒压 视电池电压转换
4	Charge Cut-off Voltage 充电截止电压	4.35V±0.025V	
5	Charging Time 充电时间	Standard Charging 标准充电 (0.2C)	8Hours
		Fast Charging 快速充电 (0.5C)	3Hours
6	Discharge Cut-off Voltage 放电截止电压	3.0 V±0.05V	
7	Charging Current 充电电流	Standard Charging 0.2C 标准充电 0.2C	550mA (0.2C)
		Maximum Constant Charging Current 0.5C 最大持续充电电流 0.5C	1375mA (0.5C)



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8	Charging Temperature 充电温度	Charging / 充电	0~15°C: Max 0.2C CC to 4.35V, 4.35V CV to 0.02C) 15~50°C: Max0.5C CC to 4.35V, 4.35V CV to 0.02C)
9	Maximum Continuous Discharging Current 最大放电电流	1375mA (0.5C)	
10	Discharging /放电温度	-10~55°C	
11	Storage Condition (50% of fully charge state ) 存储条件 (带电量 50%)	1 个月内 -30~50°C -30~50°C for 1Month 6 个月内 -30~35°C -30~35°C for 6Months	

## 4. Battery Configuration 电池组成

No. 编号	Item 项目	Type 类型	Qty 数量
1	Cell 电芯	396172/2750mAh	1PCS
2	PCM 保护板	IC:R5478N227CD+8205*2 +13KNTC	1PCS
3	Shell 外壳	ABS+PC 框架+0.15mm 钢片	2SET
4	ID Resistor ID 电阻	无	/
5	NTC Resistor NTC 电阻	带线 3KΩ ±5%	1PCS

## 5. Battery Performances Test Criterion 电池性能测试规范

### 5.1 Appearance 外观

Detect battery appearance, size, packaging, etc. 检测电池外观、尺寸、包装等

(1) Smooth surface, clean, no mechanical damage

表面平整, 清洁, 无机械损伤

(2) The battery does not bulge

电芯无鼓起

(3) No oxidation corrosion, displacement, stain, skew of metal contacts

金属触点无氧化锈蚀、移位、脏污、歪斜

(4) Coarse and fine deviation of printed fonts, inconsistency or ambiguity of incoming battery labels, colors, fonts, and recognition books and samples

印刷字体粗细均匀偏差, 来料电池标识, 颜色, 字体与承认书及样品不符或模糊不清

(5) There shall be no missing print/sawtooth/print/print/break/double image. Each battery shall have the following Chinese symbols: product name, model number, nominal voltage, rated capacity, charge limit, execution standard number, positive and negative Polarity, date of manufacture or batch number, manufacturer's name, trademark and cautionary statements, severity of the implementation of the standard number, site, zip code and contact telephone number in the packaging or instructions for use.

不得有漏印/锯齿/拖印/断字/双影象 每个电池上应有下列中文标志: 产品名称、型号、标称电压、额定容量、充电限制、执行标准编号、正负极性、制造日期或批号、制造厂名、商标和警示说明, 轻重允许将执行标准号、厂址、邮编和联系电话标志在包装或使用说明中。

(6) variegated spots and backgrounds are not allowed to occur



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杂色点、透底色不允许发生

(7) Deflection is not allowed (up to 25cm)

偏斜不允许发生(以 25cm 正视)

(8) Screen printing color does not allow color difference

网印底色不允许色差

(9) Ink is not allowed 溢墨不允许

(10). The incoming material can not be deformed, the sticker can not have obvious scratches, dirt, damage, sticking and other phenomena.

来料不可变形、贴纸不可有明显刮伤、脏污、破损、贴歪等现象。

## 5.2 Measurement Apparatus 测试设备

(1) Dimension Measuring Instrument 尺寸测量设备

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

测量尺寸的仪器的精度应不小于 0.01mm。

(2) Voltmeter 电压表

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

国家标准或更灵敏等级, 内阻不小于 10 K $\Omega$ /V。

(3) Ammeter 电流表

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

国家标准或更灵敏等级, 外部总内阻包括电流表和导线应小于 0.01 $\Omega$ 。

(4) Impedance Meter 内阻测试仪

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

内阻测试仪测试方法为交流阻抗法(AC 1kHz LCR)。

## 5.3 Testing Condition (unless otherwise specified) 测试条件(除非另作说明)

Temperature 20 $\pm$ 5 $^{\circ}$ C, Relative humidity: 60 $\pm$ 20%, Atmosphere pressure: 86~106Kpa.

温度: 20 $\pm$ 5 $^{\circ}$ C, 相对湿度: 60 $\pm$ 20%, 大气压强: 86~106Kpa。

## 5.4 Electrochemical performance characteristics 电性能

No. 序号	Item 项目	Testing Method 测试方法	Requirements 标准
1	Standard Charge 标准充电	0.2C constant current charge to 4.35V, then constant Voltage until the charge current decrease to 0.02C. 0.2C <sub>5</sub> A 恒流充电至 4.35V, 再 4.35V 恒压至 0.02C <sub>5</sub> A	
2	Rated Capacity 标称容量	CC-CV at 4.35V at room temp. (23 $\pm$ 2 $^{\circ}$ C), rest for 0.5-1 hrs then discharge at a constant current of 0.2C to 3.0V, testing will be terminated by either 5 cycles or any one discharge time exceeds 7950mAh 在环境温度为 (23 $\pm$ 2) $^{\circ}$ C 的条件下完全充电后静置 0.5~1 小时, 以 0.2C <sub>5</sub> A 放电至 3.0V, 可循环 5 次, 当有一次放电容量达到 5150mAh, 即可停止。	$\geq$ 2750mAh



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4	Cycle (23°C) 循环寿命 (23°C)	At 23 ± 2 °C ambient temperature, With 0.2C charging and discharging, between each cycle for 3 minutes, in this way for 1000 Cycle. 在23°C±2°C的环境温度下, 用0.2C 充电和放电, 每次循环之间搁置3分钟, 循环1000周。	Remaining capacity ≥ 80% Nominal capacity. 剩余容量 ≥ 80% 标称容量 Shell deformation, 壳体变形 ≤ 0.15mm
5	Internal Impedance 内阻	Internal impedance is measured on a 50% charged battery at 1KHz AC at ambient temperature (23±2) °C. 环境温度 (23±2) °C, 电池荷电 50% 状态时以 1KHz 交流电测得的内部阻抗。	≤ 100 mΩ
6	Capacity Retention 荷电保持能力	After fully charged (23 ± 2) in the 28 days of storage environment temperature, discharge at 0.2C5A to 3.0V. Then according to the standard charging mode, and then discharge at 0.2C5A to 3.0V. 完全充电后在 (23±2) °C 的环境中储存 28 天, 以 0.2C5A 放电至 3.0V。然后按标准充电方式充电后, 再以 0.2C5A 放电至 3.0V。	Remaining capacity ≥ 85% initial capacity. 放电容量 ≥ 85% 标称容量 recovery capacity ≥ 90% initial capacity 恢复容量 ≥ 90% 标称容量
7	60°C Discharge 60°C 放电	Fully charge cells, store them at (60±2) °C for 4 hours, then discharge the cells to 3.0V at 0.2C. 完全充电后的电池放入 (60±2) °C 的高温箱中恒温 4h 后, 以 0.2C5A 电流恒流放电至 3.0V。	Discharge capacity ≥ 95% initial capacity 放电容量 ≥ 95% 标称容量
8	-20°C Discharge -20°C 放电	After the fully charged battery is put into (-20±2) °C, it can be normally turned on. After the constant temperature in the cold box for 4 hours, 1.5A current is discharged to 3.0V with constant current. 完全充电后的电池放入 (-20±2) °C, 能正常开机, 低温箱中恒温 4h 后, 1.5A 电流恒流放电至 3.0V。	Can boot normally 能正常开机 Discharge Time ≥ 1H 放电时间 ≥ 1 小时
9	0°C Discharge 0°C 放电	Fully charge cells, store them at (0±2) °C for 4 hours, then discharge the cells to 3.0V at 0.2C5A. 完全充电后的电池放入 (0±2) °C 的高温箱中恒温 4h 后, 以 0.2C5A 电流恒流放电至 3.0V。	Discharge capacity ≥ 85% initial capacity 放电容量 ≥ 85% 标称容量
10	The factory voltage 出厂电压	Check open circuit voltage (OCV) of cells prior to the delivery to customers 出货之后检验	3.90V-4.00V

## 5.5 Safety & Reliability characteristic 安全和环境性能

The cell has passed the certification: UL1642、IEC62133、CQC and UN38.3

The battery has passed the certification: UL2054、IEC62133、CQC and UN38.3

电芯已通过 UL1642、IEC62133、CQC 和 UN38.3 认证。

成品电池已通过 UL2054、IEC62133、CQC 和 UN38.3 认证。





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## 5.6 Battery Reliability 成品环境适应性

No. 序号	Item 项目	Test Method 测试方法	Requirements 标准
1	Drop Test 跌落测试	1.5M marble, 1.8M board fall no abnormal 1.5M 大理石, 1.8M 木板跌落无异常	No leakage, no smoke, no explosion and no fire 不泄露、不冒烟, 不起火, 不爆炸
2	thermal shock test 热冲击	After the standard charge, put the battery pack into the dryer. Trunk to $5 \pm 2 \text{ }^\circ\text{C}$ / min speed up High in the oven temperature to $130 \pm 2 \text{ }^\circ\text{C}$ , constant temperature 10min 标准充电后, 将电池组放进烘箱内, 以 $5 \pm 2 \text{ }^\circ\text{C}/\text{min}$ 速度升高烘箱内温度至 $130 \pm 2 \text{ }^\circ\text{C}$ , 恒温 10min.	No leakage, no smoke, no explosion and no fire 不泄露、不冒烟, 不起火, 不爆炸
3	Low temperature storage 低温储存	Use a standard charging method to put the fully charged batteries into the chamber temperature reached $-40 \pm 3 \text{ }^\circ\text{C}$ within 30min shelved 72H; remove the cell at ambient temperature of $23 \pm 3 \text{ }^\circ\text{C}$ placed 2H visual cell appearance, and then 0.2C current to the termination voltage. 用标准充电方法将充满电的电池放入, 试验箱温度在 30min 内达到 $-40 \pm 3 \text{ }^\circ\text{C}$ 环境中搁置 72H; 将电芯取出在环境温度 $23 \pm 3 \text{ }^\circ\text{C}$ 的条件下放置 2H 目测电芯外观, 再以 0.2C 电流放至终止电压。	Cell pack appearance should be no obvious deformation, rust, smoke and explosion, discharge time not less than 3H. 电池外观应无明显变形、泄漏、冒烟和爆炸, 放电时间不低于 3H。
4	High temperature storage 高温存储	Charge the fully charged batteries with a standard charging method. The temperature of the chamber should reach $70 \pm 3 \text{ }^\circ\text{C}$ within 30 min. Leave it in the environment for 24 hours. Remove the cell and leave it at ambient temperature of $23 \pm 3 \text{ }^\circ\text{C}$ for 2 h to visually inspect the appearance of the cell. 用标准充电方法将充满电的电芯放入, 试验箱温度在 30min 内达到 $70 \pm 3 \text{ }^\circ\text{C}$ 环境中搁置 72H; 将电芯取出在环境温度 $23 \pm 3 \text{ }^\circ\text{C}$ 的条件下放置 2H 目测电芯外观	The battery should be no crack, rust, deformation, fire, smoke and normal charge-discharge function. 电池外观应无明显变形、锈蚀、冒烟、起火和爆炸, 充放电功能正常
5	Constant Wet Heat 恒定湿热	The prototype is connected to the battery and is in the state of startup. The prototype is set to maximum brightness and volume to the maximum, running 3D mark6, and put into the test box with room temperature. At first, the sample is preheated at $60 \text{ }^\circ\text{C}$ in the box (room), and then humidified when the temperature is stable, so as to prevent the condensate from occurring on the sample. Shelve for 72 hours at 95% relative humidity. The relative humidity in the test box is reduced to $(50+3)\%$ and the temperature drops to a certain value within the limit range of the normal test atmosphere condition. Conduct inspection after 2 hours of recovery. 将样机与电池连接, 处于开机状态, 样机设定亮度最大, 音量调至最大, 运行 3D mark6, 放入具有室温的试验箱内。首先在箱(室)内 $60 \text{ }^\circ\text{C}$ 条件下预热, 当样品达到温度稳定后, 再加湿, 以防止在样品上产生凝结水。在相对湿度调到 95% 条件下搁置 72 小时。把试验箱内的相对湿度降低到 $(50+3)\%$ , 温度下降到正常的试验大气条件极限范围内	The battery should be no crack, rust, deformation, fire, smoke and normal charge-discharge function. 电池外观应无明显变形、锈蚀、冒烟、起火和爆炸, 充放电功能正常





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		的某个值。恢复 2H 后进行检验。	
6	Alternating moist heat 交变湿热	Hydrothermal of alternating The test environment is as follows low temperature $-20^{\circ}\text{C}$ $3^{\circ}\text{C}$ and high temperature and high humidity $65+2^{\circ}\text{C} / 95\%$ . The product was placed at 12 hours at low temperature $-20^{\circ}\text{C}$ $3^{\circ}\text{C}$ and $65.2^{\circ}\text{C} / 95\%$ high temperature and high humidity respectively. The product was recalculated for 3 times and then carries out inspection after returning to normal temperature for 2 hours. 测试环境设置为: 低温 $-20^{\circ}\text{C}+3^{\circ}\text{C}$ 和高温高湿 $65+2^{\circ}\text{C}/95\%$ 。产品于关机状态下, 低温 $-20^{\circ}\text{C}+3^{\circ}\text{C}$ 和高温高湿 $65+2^{\circ}\text{C}/95\%$ 各放置 12H, 循环 3 次, 回常温 2H 后进行检验。	The battery should be no crack, rust, deformation, fire, smoke and normal charge-discharge function. 电池外观应无明显变形、锈蚀、冒烟、起火和爆炸, 充放电功能正常
7	Bare Metal Falling 裸机跌落	After the battery is connected with the prototype, the prototype puts into standby state, and the naked machine drop experiment is carried out. Execution order and requirements: six faces or four angles, drop order, battery cover, bottom, left, top, right, LCD, left lower, upper left and lower right; free drop to test platform at 1.2m above ground. 电池与样机连接后开机, 将样机处于待机收星状态, 执行裸机跌落实验。执行顺序及要求: 六个面/四个角, 跌落顺序为: 电池盖面→底部→左侧部→顶部→右侧部→LCD 面→左下角→左上角→右上角→右下角; 距地面 1.2m 高自由跌落至试验平台上	The battery should be no crack, deformation, fire, smoke and normal charge-discharge function. 电池无开裂、变形、起火、冒烟、充放电功能正常
8	Battery Plugging and Unplugging 电池插拔	The test machine is shut down. Follow the normal procedure, insert the battery, and then remove the battery, so repeatedly installed. A total of 1000 tests will be performed, every 100 times check it is normal. 测试机台处于关机状态。按正常步骤, 插入装上电池, 然后取下电池, 如此反复安装。测试共需执行 1000 次, 其中每 100 次检查开机是否正常。	The battery should be no crack, deformation, fire, smoke and normal charge-discharge function. 电池无开裂、变形、起火、冒烟、充放电功能正常
9	Random Vibration 随机振动	Displacement (peak: $0.54\text{mm} \pm 15\%$ , frequency is 10500Hz, acceleration is $100.0\text{m} / \text{s}^2$ ) Scanning speed: 0.5 oct/ sweep method and time: one sweep time 4 hours; Sweep direction: X, Y and Z three axes 位移(峰值): $0.54\text{mm} \pm 15\%$ 频率: 10~500Hz, 加速度: $100.0\text{m}/\text{s}^2$ 扫频速度: 0.5 oct/分扫频方法及时间: 一次扫频时间 4 小时; 扫频方向: X、Y、Z 三个轴向	The battery should be no crack, deformation, fire, smoke and normal charge-discharge function. 电池无开裂、变形、起火、冒烟、充放电功能正常
10	Sweep Test 扫频试验	The scan range is 10-2000 hertz and speeds up to $39\text{m} / \text{s}^2$ at a speed doubling rate per minute. The application factors include the common vibration point $Q \geq 5$ , and then the locking time of 5 minutes at the common vibration point. 扫描范围 10 赫兹至 2000 赫兹以 1 倍频/分钟的速度扫描加速为 $39\text{m}/\text{s}^2$ 。应用因素包括共振点 $Q \geq 5$ , 在共振点的闭锁时间 5 分钟	The battery should be no crack, deformation, fire, smoke and normal charge-discharge function. 电池无开裂、变形、起火、冒烟、充放电功能正常
11	Impact 冲击	Shutdown state: peak acceleration should be $A_m=30\text{g}$ , single impact time should be $S=6\text{ms} / \text{XYZ}$ axis 6 times, open state:	No leakage, no smoke, no explosion and no



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	peak acceleration Am=11g, single impact time S=6Ms (Z axis impact test only, and then impact times 6 times) 关机状态:峰值加速度 Am=30g, 单次冲击时间 S=6ms (XYZ 轴各 6 次), 开机状态:峰值加速度 Am=11g, 单次冲击时间 S=6ms (只进行 Z 轴冲击测试, 冲击次数 6 次)	fire 不泄露、不冒烟, 不起火, 不爆炸
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## 6. Shipment 运输

The battery should be packed in cartons under the condition of half capacity 20-70% 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.

电池应在半荷电状态 20-70%充电状态下包装成箱进行运输, 在运输过程中应防止剧烈振动、冲击或挤压, 防止日晒雨淋, 应适用汽车、火车、轮船、飞机等普通运输工具。

## 7. Storage 贮存

The battery storage shall be in the clean and dry ventilation room at the temperature of  $-5\sim 35^{\circ}\text{C}$  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.

电池应贮存在环境温度 $-5\sim 35^{\circ}\text{C}$ 的清洁、干燥通风的室内, 应避免与蚀性物质接触, 应远离火源及热源。电池贮存过程中每六个月充电一次。电池的加工过程中使用库存电芯和电池交货出库时, 均应该遵循“先进先出”的原则; 电池从入库之日起, 保存期限为 12 个月, 超过贮存期限的产品必须重新进行逐批检查, 合格后才能交付订货方, 逐批检查不合格的按再提交检查的批处理, 若仍然不合格, 将由订货方决定处置。

## 8. Package and Marking 包装与标志

### 8.1 Package 包装

According to the attachment.

包装箱外应标明产品名称、型号、数量、毛重、制造厂商及联络地址、出厂日期, 还应有“小心轻放”、“怕湿”、“向上”等必要标志; 其包装储运的标志应符合 GB-191-2000 的规定。

### 8.2 Marking 标志

Every battery shall have the following Chinese characters: Product、type、rating voltage 3.8V、rating capacity、contacts plus or minus and warnings、produce date、lot No.、manufacturer、(or the marks of the above characters)。

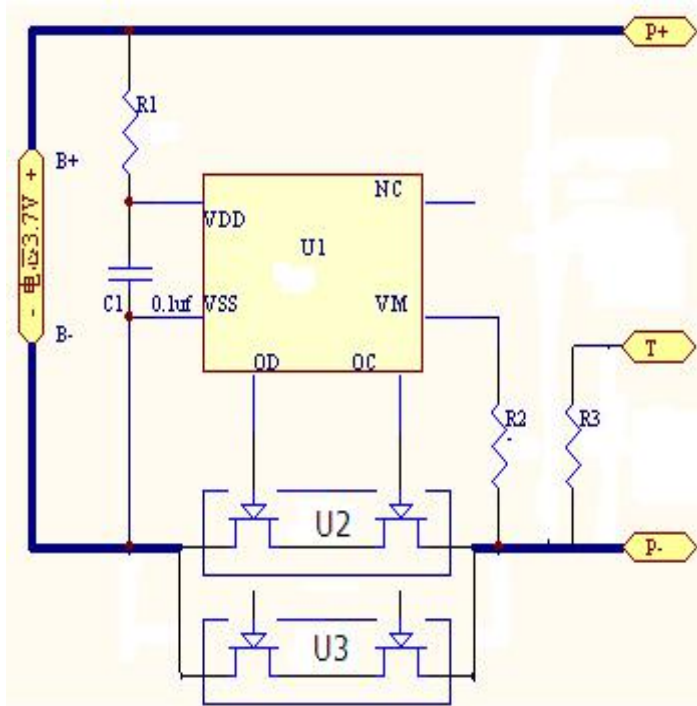
每个电池上应有下列中文标志: 产品名称、型号、标称电压、标称容量、正负极性商标和警示说明、以及制造日期、批号、制造厂名、(或包括以上数据的串号)。



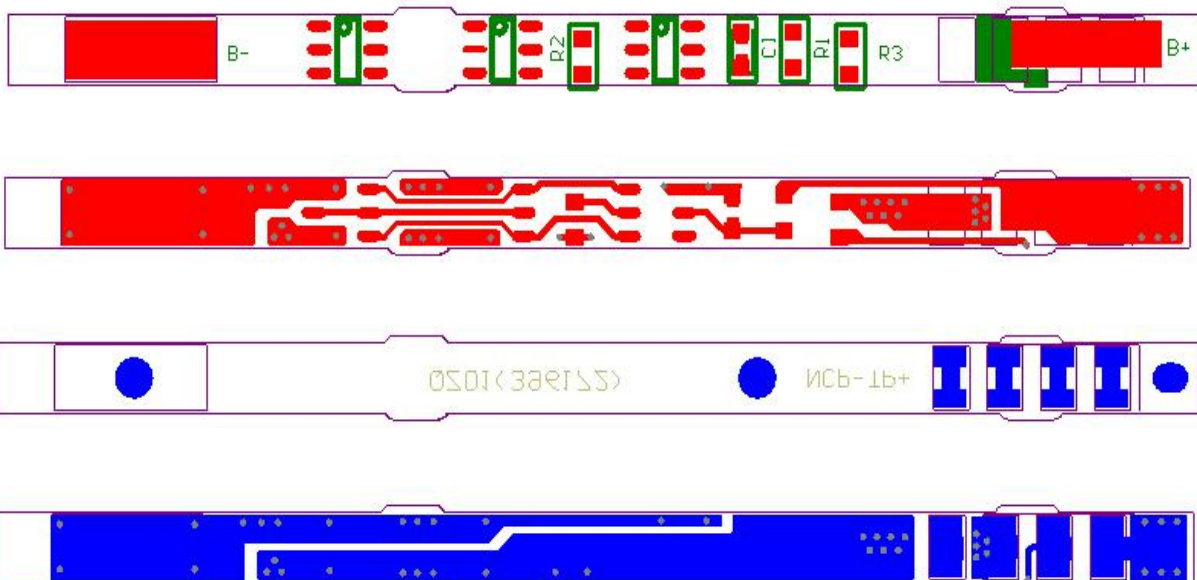
# 锂电池规格书

附标贴图纸:

## 9.1 Schematic of the PCB 保护板原理图



## 9.2 PCB layout 层面图





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## 9.3 Parts list 主要元件清单

序号	物料代码	物料名称	规格型号	数量	备注
1	U1	控制 IC	R5478N227CD SOT-23-6	1	理光
2	U2U3	MOSFET	8205 SOT-23-6	2	德普
3	R1	贴片电阻	330Ω, ±5%, SMD-0603	1	国巨
4	R2	贴片电阻	1KΩ, ±5%, SMD-0603	1	国巨
5	R3	NTC	3KΩ, ±5%, SMD-0603	1	国巨
6	C1	贴片电容	1nF, -20%/+80%, 25V,SMD-0603	1	国巨
7		五金	2.7*1.65*0.7mm	4	金启顺
8	B+B-	镍片	7*2*0.3 7*2.5*0.3	2	金启顺

## 9.4 PCM Parameter PCM 参数

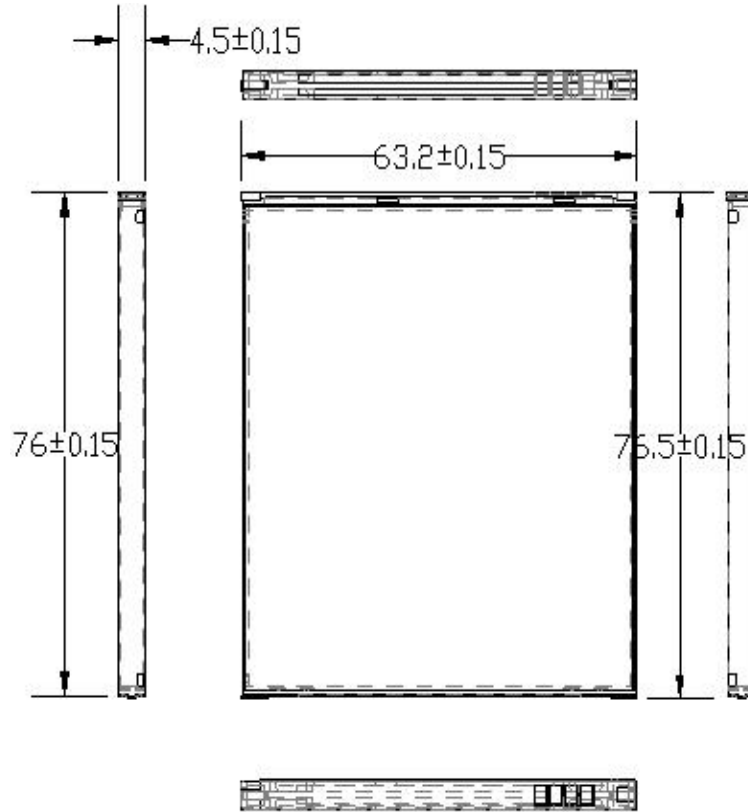
测试项目 Test Item	最小值 Min	典型值 TYP	最大值 Max	单位 Unit	备注 Remark
输入电压 (B+与B-间) Input voltage(B+ to B-)	0.3		12	V	
过充保护电压 Over charge detection voltage	4.325	4.375	4.425	V	
过充保护恢复电压 Over charge release voltage	4.15	4.175	4.2	V	
过充保护延迟时间 Over charge detection delay	0.8	1	1.2	S	
过放保护电压 Over discharge detection voltage	2.4	2.5	2.6	V	
过放保护恢复电压 Over discharge release voltage	2.925	3.00	3.075	V	V <sub>cc</sub> = 3.6~2.0V
放电过流保护延迟时间 Over current detection delay	14	20	26	ms	
放电过流保护电流 Over current detection current	/	6	8	A	
放电过流保护延迟时间 Over current detection delay	8	12	16	ms	
正常状态下静态电流 Current consumption (Operation)	/	4	7	uA	V <sub>cc</sub> = 3.9V
导通内阻 Impedance	20	40	60	mΩ	
短路保护延迟时间 Short delay			500	us	





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## 10. Outline Drawing 外形图纸



成品尺寸  $4.5 \pm 0.15 * 63.2 \pm 0.15 * 76.0 \pm 0.15$



# 锂电池规格书

## 11 Appendix 附录

### 11.1 Instructions and Safety Requirement 使用说明和安全规程

#### 11.1.1 Recommending Usage 推荐使用事项

- 1 Please read the battery instructions and the label on its surface before use.  
使用电池前, 请仔细阅读使用说明书和电池表面标识。
- 2 Use the battery indoors under normal condition, temperature:  $(20 \pm 5) ^\circ\text{C}$ , absolute humidity:  $65 \pm 20\%$ .  
请在正常的室内环境中使用电池, 温度:  $(20 \pm 5) ^\circ\text{C}$ , 相对湿度:  $65 \pm 20\%$ 。
- 3 When in use, the battery shall be kept out of heat, high voltage and avoided children' s touching.  
Do not drop the battery.  
在使用过程中, 应远离热源、高压, 避免儿童玩弄电池, 切勿摔打电池。
- 4 Use the compatible charger. Do not put the battery into the charger over 24hours.  
本电池只能使用配套充电器充电, 不要将电池放在充电器超过 24 小时。
- 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.  
切勿将电池正负极短路, 切勿自己拆装电池, 也勿让电池放在受潮处, 以免发生危险。
- 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.  
长期不用时, 请将电池储存完好, 让电池处于半荷电状态。请用不导电材料包裹电池, 以避免金属直接接触电池, 造成电池损坏, 将电池保存阴凉干燥处。
- 7 Well disposed the disused battery. Do not put it into fire or water.  
废弃电池请安全妥当处理, 不要投入火中或水中。

#### 11.1.2 Hazard Warning 危险警告

##### 1 Forbid Disassemble Batteries 禁止拆装电池

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.

电池内部具有保护机构和保护电路可以避免发生危险。不合适的拆装会损坏保护功能, 将会造成让电池发热、冒烟、变形或燃烧。

##### 2 Forbid Short-circuit Batteries 禁止让电池短路

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.

不要将电池的正负极用金属连接, 也不要将电池与金属片放在一起存储和移动。如果电池被短路, 将会有超大电流流过, 将会损坏电池, 造成电池发热、冒烟、变形或燃烧。

##### 3 Forbid heat and burn the battery 严禁加热和焚烧电池

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.

加热和焚烧电池将会造成电池隔离物的溶化、安全功能丧失或电解质燃烧, 过热就会使电池发热、冒烟、变形或燃烧。



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## 4 To avoid use the battery near the heat 避免在热源附近使用电池

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

不要在火源、烤炉附近或超过 80°C 的环境中使用电池, 过热将会导致电池内部短路, 使电池发热、冒烟、变形或燃烧。

## 5 Forbid bathing the battery 禁止弄湿电池

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.

不要弄湿电池, 更不能将电池投入水中, 否则会造成电池内部保护电路和功能丧失及发生不正常的化学反应, 电池有可能发热、冒烟、变形或燃烧。

## 6 Avoid charging near fire or in the sunlight 避免在火源附近或阳光直射下充电

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

否则会造成电池内部保护电路和功能丧失和发生不正常的化学反应, 电池有可能发热、冒烟、变形或燃烧。

## 7 Danger in using non-indicated chargers in 使用非专用充电器给电池充电, 会发生危险

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.

在非正常的条件下充电会造成电池内部保护电路功能丧失和发生不正常的化学反应, 电池有可能发热、冒烟、变形或燃烧。

## 8 Forbid Damage Battery 禁止破坏电池

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.

禁止用金属凿入电池、锤打或摔打电池或其他方法破坏电池, 否则会造成电池发热、冒烟、变形或燃烧, 甚至会发生危险。

## 9 Forbid directly welding on the battery 禁止在电池主体上直接焊

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

过热将会造成电池隔离物的溶化、安全保护功能丧失, 使电池发热、冒烟、变形或燃烧。

## 10 Forbid directly charging on the power socket or car kit cigarette 严禁将电池直接在电源插座上或车载点烟器上充电

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

高压、大电流将会过电池而使其损坏, 或使电池发热、冒烟、变形或燃烧。

## 11 Do not use this battery for other equipment 不可将电池用于其他设备

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

不恰当使用会损坏电池的性能、降低寿命, 甚至会使电池发热、冒烟、变形或燃烧。

## 12 Do not touch the leak-out battery 不要直接接触及漏液电池

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.

渗漏的电解液会造成皮肤不适, 万一电解液进入眼睛, 尽快用清水冲洗, 不可揉眼, 并迅速送医院处理。





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## 11.1.3 Warning 警告

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.

电池不可与其它类型的一次或二次电池混用, 否则因为不正常的充、放电造成电池发热、冒烟、变形或燃烧。

2 Keep the battery out of children's reached and prevents them biting or swallowing the battery.

将电池远离孩童不能得到的地方, 以避免孩童噬咬或吞咽电池, 如果吞咽了电池, 应迅速送医院处理。

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.

如果超过正常充电时间很长时间充电器仍在充电, 应停止充电, 不正常的充电有可能会使电池发热、冒烟变形或燃烧。

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 dispose it. The bad battery will causes over-heated, smoke or burning.

不可置于微波炉或其他压力容器中, 瞬间加热或结构漏液(或有异味), 应让电池离开手机或充电器并弃用。使用不正常的电池会发热、冒烟、变形或燃烧。

## 11.1.4 Cautions 注意事项

### 1 Notice 注意

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.

避免在强光曝晒环境下使用电池, 以免发热、变形、冒烟. 至少避免电池性能下降、降低寿命。

### 2 Electro Static-free 防静电

There is a protective circuit inside the battery to prevent contingency. Do not use the battery in the Electro static circumstances, (above 1000V), for it is easily destroyed the circuit board so that the battery doses not work and causes over-heated, distort, smoke or burning.

电池中装有保护电路以避免各种意外情况发生。不要在产生静电的场所使用电池, 因为静电(1000V 以上)容易损坏保护板, 而导致电池工作不正常, 发热、变形、冒烟或起火燃烧。

### 3 Discharging Temperature Range 充电温度范围

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

推荐的充电温度范围是 0-40°C。在超出此范围的环境中充电会造成电池性能下降、减少寿命。

4 Read carefully the manual before use or whenever in need. 在使用电池之前, 请仔细阅读使用手册并经常在需要时阅读。

### 5 Charging Method 充电方式

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

请使用专用充电器和推荐的充电方式, 在推荐的环境条件下给电池充电。

### 6 First Usage 第一次使用

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 uncleaness or odors. The battery should be returned to the vendor.

在第一次使用电池时, 若发现电池不整洁或有异味等不正常现象, 不可继续将电池用于手机或其他它设备, 应将电池返回销售商。



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## 7 Children Use 儿童使用

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

儿童使用电池前, 应受父母指导, 并在使用中受监督是否正确。

## 8 Avoid Children's Touch 避免孩童接触电池

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.

电池应放在孩童不易拿到的位置, 应避免孩童将电池从充电器或手机中取出、玩弄。

## 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

注意避免电池漏液接触皮肤或衣物, 若已接触请用清水冲洗, 以免造成皮肤不适。

## 10 Consultation 咨询

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.

购买电池时, 请注意销售商联络方法, 以便需要时及进与销售商取得联系, 得到咨询。

## 11 Guarantee period 保用期

Guarantee is one year since it is out of the factory. Life time:1000 cycles. Any damage by incorrect use and not quality problem, even in its guarantee period, free service won't be provided by the manufacture.

保用期是自出厂之日起三年, 寿命为: 充放电循环 1000 次。但是属于使用不当而非质量问题, 即使在保用期内, 生产厂家也不会无偿更换新电池。

### 11.1 Safety Usage Guarantee 安全使用保障

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.

如果将电池用于其他设备, 请与供应商讨保护功能的完善性。至少应该咨询电池的大电流、快速充电、特殊应用的问题。

### 11.2 Quality Evaluation Programmed 质量评定

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.

质量检验分为鉴定检验和质量一致性检验。鉴定检验一般在设计定型、更改设计和生产定型时进行, 抽样方案、检验项目、顺序以及判定规则等事宜由供需双方协商确定。原则上应包括以上各项性能试验。质量一致性检验分为逐批检查和周期检查, 用以判定产品生产过程中能否合格保证产品质量的持续稳定。可以参照 GB2828—1987, 标准执行。具体检查的检验项目应包括外观、内阻、额定容量或 0.2C5A 放电容量等。

### 11.3 Environment Protection 环保要求

This product accord with ROHS requirement.

此产品符合 ROHS 环保要求。

### 11.4 Others 其他事项



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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.

以上述, 可以作为供需双方对于电池产品性能和检验规则的约定框架。如果没有新的书面约定或更改通知, 即可按此执行。

## 11.5 Packaging and labeling 包装和标识

11.5.1 电池表面应有必要的产品标识: 产品名称、型号、制造厂名、商标和警告说明, 电池的包装需按客户的要求进行, 包装箱外应标明产品名称、型号、数量、毛重、制造商及其联地址、出厂日期、还应有“小心轻放”、“怕湿”、“向上”等必要标示

Cell surface should have the necessary product ID: product name, model number, manufacturer name, trademark and warning instructions battery packaging according to customer's requirements, outside the box shall be marked with the product name, model, quantity, gross weight, manufacturers and their address, date of production, should also be "handle with care", "wet", "up" the necessary marking

## 11.5.2 Packaging 包装

