Li-ion Battery Specification

承　认　书

Product Name 产品名称：3.6V Li-ion Battery

Product Model 产品型号：LIR954

Product Capacity 产品容量：35mAh

Part Code 产品编码：

Patent Number 专 利 号：201820841358.0
201821640320.3
201821640298.2
201821640297.8

Total Page 文件页数：11

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	2022-01-01	2022-01-01	2022-01-01

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Revision record 版本修订记录

REV 版本号	Date 发行日期	Revision Description 描述	ORIGINATOR 责任人
A\0	2019-12-17	For the first time to revise 首次修订	邹陆军
A\01	2020-04-09	Revised data and content 修订数据及内容 增加快充数据	张祖喜
A\02	2022-01-01	Modify the data after the upgrade 修订升级后的数据	张祖喜

目　　录

1 Scope 适用范围

Product admitted that book describe force source battery technology (shenzhen) co., LTD., the design and manufacture of secondary lithium ion battery, it is the basis of product design and production and inspection, provides for 3.6 V lithium ion button cell (model: LIR954) the size of the structure performance, safety reliability of environmental, adaptation performance, This specification applies only force source battery technology co., LTD. Production of LIR1954-35mAh battery

本产品承认书描述力源电池科技（深圳）有限公司，设计制造的二次锂离子电池，它是产品设计、生产和检验的依据，规定了 3.6V 锂离子扣式电池（型号：LIR954）的尺寸、结构、电性能、安全可靠性、环境适应性能及注意事项。本规格书仅适用力源电池科技有限公司生产的 LIR954-35mAh 电池。

2 Product basic information 产品基本信息

No. 序号	Items 项 目		Parameter 参 数
1	Nominal capacity 标称容量		35mAh
2	Nominal voltage 额定电压		3.6V
3	Inner Impedance 内阻		≤600mΩ
4	Discharge cut-off Voltage 放电截止电压		2.75V
5	Charge current 充电电流		0.2C mA
6	Max continuous charge current 最大充电电流		2C mA
7	Charge Voltage 充电电压		4.2V
8	Maximum charge voltage 最大充电电压		4.25V
9	Charging time 充电时间		约 5 h
10	Fast recharging time 快速充电时间		约 0.5h
11	Standard Discharge Circuit 标准放电电流		0.5C mA
12	Maximum Discharge Current 最大放电电流		1C mA
13	Weight 重量		1.1±0.2 g
14	Operating Temperature Range 工作温度	Charge 充电	0～+45℃
15		Discharge 放电	-20～+60℃
16	Storage temperature 储存温度		-20～+60℃

3 Product performance 产品性能

3.1 Standard Test Conditions 标准测试条件

The test battery must be a new battery that has been out of the factory for no more than one month, and the battery has not been charged and discharged for more than five times, except for other special requirements. The test conditions

Specified in this product specification are: temperature 25±2℃, relative humidity 45%~85% standard test conditions.

测试电池必须是本公司出厂时间不超过一个月的新电池，且电池未进行过五次以上充放电循环。除非其它特殊要求，本产品规格书规定的测试条件为：温度 25±2℃，相对湿度 45%～85%。

3.2 Requirements for measuring equipment 测量设备要求

The accuracy of the measuring instrument shall be greater than or equal to 0.01mm.

测量尺寸的仪器精度应大于等于 0.01mm。

The accuracy of measuring voltage and current should be no less than 0.5, Internal resistance should be no less 10kΩ/V when measuring voltage.

万用表测量电压及电流的准确度应不低于 0.5 级，测量电压时内阻不应小于 10kΩ/V。

Using internal resistance test device.

内阻测试仪测量。

The current accuracy of the battery test system should be above ±0.1%, the constant voltage accuracy ±0.5%, and the timing accuracy not less than ±0.1%.

电池测试系统的电流精度应在±0.1%以上，恒压精度±0.5%，计时精度不低于±0.1%。

The meter accuracy of measuring temperature should be no less than ±0.5℃

测量温度的仪表准确度应不低于±0.5℃。

3.3 Electric performance test 电性能测试

3.3.1 Rate discharge performance 倍率放电性能

After charging at standard 25±2℃, the battery was set aside for 10min and discharged to 2.75v at 0.2c, 0.5c and 1.0c, respectively, for 10min to test the multiplier discharge performance of the battery

电池在 25±2℃标准充电后，搁置 10min，分别以 0.2C、0.5C、1.0C 放电至 2.75V，搁置 10min，测试电池的倍率放电性能。

Rate discharge 放电倍率	0.2C	0.5C	1.0C
Capacity retention 容量比例	100%	95%	＞90%

3.3.2 High-and-low temperature performance 高低温放电性能

The battery is charged under the ambient temperature 25±2℃, and then cool down or heating up to the test temperature within 30 minutes. Before discharging, the battery remains at this temperature for 1 hour. The constant discharge reaches the cut-off voltage of 2.75v and the discharge current is 0.2cmA.

电池在 25±2℃标准充电，然后在 30 分钟内冷却或加热到测试温度。放电前电池在此温度下保持 1 小时，恒流放电到截止电压 2.75V，放电电流为 0.2CmA，做完一个温度实验后，电池在室温下放置 2h 然后进行充电（25±2℃），要求如下：

Discharge Temperature 放电温度	-20℃(0.2C)	25℃(0.2C)	60℃(0.2C)
Discharge capacity 放电容量	＞60%	100%	＞100%

3.3.3 Cycle life 循环寿命

After charging the electrical standard, set it aside for 10min, discharge 0.2C mA to 2.75v, set it aside for 10min, repeat the above steps for circulation, 25±2℃,500 times capacity retention rate greater than 80%.

标准充电后，搁置 10min，0.2CmA 放电至 2.75V，搁置 10min，重复上述步骤进行循环，测试温度 25±2℃（影响电池循环性能的重要参数），500 次容量保持率大于 80%。

3.3.4 Storage performance 储存性能

Items 项目		Test Method 测试方法	Requirement 要求
Room temperature storage 常温储存	1	After standard charging, the battery was stored in 25±2℃ environment for 30 days to test discharge capacity with 0.2CmA (retention capacity). 标准充电后，电池在 25±2℃的环境中贮存 30 天，测试 0.2CmA 放电容量（保持容量）	Surplus capacity 剩余容量≥97%
	2	After the above discharge, standard charging, 0.2C mA constant discharge cycle for 3 times, test to restore the residual capacity. 在上述放电之后，标准充电，0.2CmA 恒流放电循环 3 次，测试恢复容量（3 周循环的最大放电容量）	Capacity recovering 恢复容量≥97%
High-temperature storage 高温储存	1	The standard rechargeable battery was stored in an environment of 60±2℃ for 7 days to test the discharge capacity with 0.2C mA. 标准充电后电池在 60±2℃的环境中贮存 7 天，测试 0.2CmA 放电容量（保持容量）	Surplus capacity 剩余容量≥60%
	2	After the above discharge, standard charging, 0.2C mA constant discharge cycle for 3 times, test to restore the residual capacity. 在上述放电之后，标准充电，0.2CmA 恒流放电循环 3 次，测试恢复容量（3 周循环的最大放电容量）	Capacity recovering 恢复容量≥90%

Charge retention 荷电保持能力		Under the ambient temperature of 23±2℃,after charging the battery at the current of 0.2C mA conforming to standard, stand at 23±2℃ for 30 days. Then discharge at 0.2C to 2.75V cut-off. 在 23±2℃的环境温度下，以标准要求的 3C mA 电流充满电后，在此温度下放置 30 天，然后以 0.5 C mA 电流放电至 2.75V。	Surplus capacity（30 days or 1 year） 剩余容量)≥97% (30 天) 剩余容量≥95%(1 年)

3.4 Safety performance 安全性能

Performance 性能	Test Method 测试方法	Requirement 要求
Short circuit 短路	The battery is to be short-circuited by connecting the positive and negative terminals of the battery with copper wire having a maximum resistance load of 100mΩ,Monitor its temperature while testing, the cell is to be discharged until the cell case temperature has returned to be 10℃ less than peak temperature. 标准充电后，将接有热电偶的电池置于通风橱中，短路其正负极（线路总电阻不大于 100mΩ），试验过程中监视电池温度变化，当电池温度下降到比峰值低约 10℃时，结束试验。	The outer temperature of the battery should be less than 120℃ and it should not be blasting and with fire. 电池不起火、不爆炸，外部温度不得高于 120℃（极耳熔断属正常现象）
Heat abuse 热冲击	Standard charge, set aside for 24 hours. The battery is put into the oven and the temperature rises to 100±2℃ with rate of （5±2℃）/min. Keep the battery for 30 min. 标准充电，搁置 24h，然后将电池放于热箱中，热箱温度以（5±2℃）/min 的速率升至 100±2℃并保温 30min	The battery should not to be blasting and with fire. 电池不起火、不爆炸
Over charge 过充电	The battery connected with thermocouple was put in the ventilating cabinet and positive and negative charge are connected with constant-current constant-voltage power, Charge the battery with the current of 1C and voltage of 4.8V until the voltage of the battery come to 4.8V. During the process of test, follow the change of battery's temperature. When the temperature drops 10℃ lowers than the highest point, the test is finished. 标准充电后，将接有热电偶的电池置于通风橱中，连接恒流恒压源，电压调节为 4.8V，电流为 1CmA，然后对电池以 1CmA 充电，试验过程中监视电池温度变化，当电池温度下降到比峰值低约 10℃时，结束实验。测试过程中并不要求电流一直保持 1CmA。	The battery should not to be blasting and with fire. 电池不起火、不爆炸

The free-drop examination 自由跌落	Drop height :1.0m; Joints :18~20mm hardwood; Drop direction: 3 free drop tests in X, Y and Z directions 电池标准充电后，按下列条件进行自由跌落试验： 跌落高度：1.0m； 承 接 物：18~20mm 厚硬木板； 跌落方向：沿 X、Y、Z 三个方向各跌落 3 次。	The battery should not to be blasting and with fire or smoke. 电池不起火、不冒烟、不爆炸
Damp heat test 高温高湿	Keep the battery in a constant temperature and humidity box with a temperature of 60℃ and a humidity of 90. 标准充电后，将电池置于温度为 60℃和湿度为 90%的恒温恒湿箱中，搁置 7 天。	Leak-free 电池无泄漏

4 Transport and storage 运输与贮存

The cell is packed into boxes for transportation under the state of 70% charge. In the transportation process, it shall prevent severe vibration and impact or extrusion to prevent sun and rain, and shall not be inverted.

电芯在 70%荷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，不得倒置。

The cell is stored (within 1 month) in a clean, dry and ventilated room with ambient temperature of -20℃ ~ 45℃, avoiding contact with corrosive substances and away from fire and heat sources.

电芯贮存（1 个月内）在环境温度为-20℃ ~ 45℃的清洁、干燥通风的室内，避免与腐蚀性物质接触，远离火源及热源。

5 Notes 注意事项

5.1 Warnings 警示

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

为防止电池组合可能发生的泄漏,发热,起火,请注意以下预防措施:

- Do not put batteries in microwave ovens or pressure vessels
  禁止将电池置入微波炉或压力容器中；
- Do not use the battery with other different types or models of batteries together.
  禁止与一次电池（如干电池）或不同容量、型号、品种电池组合使用；

- Do not leave the battery in a charger or equipment if it generates an older or heat, changes color or shape, leaks electrolyte, or cause any the abnormality.
  如果电池发出异味、发热、变形、变色或出现其它任何异常现象时不得使用；如果电池正在使用或充电，应立即从用电器中或充电器上取出并停止使用；
- The battery should be kept out of reach of the child, and if the child accidentally swallows the battery, seek immediate medical attention.
  电池应放在小孩接触不到的地方，如果小孩不小心吞咽电池，应立即寻求医疗救助；
- If the battery leaks or gives off an odor, immediately remove it from the vicinity of the open fire; The leaking electrolyte may cause a fire or explosion.
  如果电池泄漏或发出异味，应立即将其从接近明火处移开；泄漏的电解液可能引起火灾或爆炸；
- If the battery leaks and the electrolyte enters the eye, do not wipe it, rinse it with water and seek immediate medical attention.
  如果电池漏液后电解液进入眼睛，不要擦，应用水冲洗，立即寻求医疗救助。如不及时处理，眼睛将会受到伤害。

5.2 Prohibition 禁止

To prevent the possibility of the pack from leaking, heating, fire ,please observe the following precautions:
为防止电池组合可能发生的泄漏,发热,起火,请注意以下预防措施:

- Do not submerge the battery in water, do not wet the battery when store the battery.
  勿将电池投入水中或将其弄湿；
- Do not use the battery or touch the heat source;
  勿在热源（如火或加热器）附近使用或贮存电池；
- Do nor connect the battery reversed in positive (+) and negative;
  勿将正负极接反；
- Do not connect the battery directly to a wall outlet or vehicle-mounted cigarette socket.
  勿将电池直接连接到墙上插座或车载点烟式插座上；
- Do not put the battery into a fire, or heat the battery;
  勿将电池投入火中或给电池加热；
- Do not let the battery terminals (+ and -) contact a wire or any metal(like a metal necklace or a hairpin) with it carried or stored together, may cause short-circuit.
  禁止用导线或其它金属物体将电池正负极短路，禁止将电池与项链、发夹或其它金属物体一起运输或贮存；
- Do not hit or throw the battery or cause mechanical shock.
  禁止撞击、投掷或者使电池受到机械震动；

- Do not puncture the battery housing with nails or other sharp objects. Do not hammer or pedal batteries.
  禁止用钉子或其它尖锐物体刺穿电池壳体，禁止锤击或脚踏电池；
- Direct welding of battery terminals is prohibited.
  禁止直接焊接电池端子；
- Do not decompose the battery in any way.
  禁止以任何方式分解电池；
- Do not charge the battery in fire or in extreme heat conditions.
  禁止在火源或极热条件下给电池充电。

5.3 Others 其他事项说明

Do not use batteries in extremely hot environments, such as cars in direct sunlight or hot weather, otherwise the batteries will overheat and may catch fire, which will affect battery performance and shorten battery life.

不要使用处于极热环境中的电池，如阳光直射或热天的车内。否则，电池会过热，可能着火（点燃），这样就会影响电池的性能、缩短电池的使用寿命。

Do not use the battery in other than the following conditions, otherwise, the battery might cause heat generation, damage, or deterioration of its performance.

Operating environment:

Charge: 0℃～45℃

Discharge: -20℃～60℃

Store: -20℃～45℃

只能在下述条件下使用电池，否则将会降低电池的性能或缩短电池的使用寿命。在此温度范围外使用电池可能引起过热、爆炸或起火。

工作环境：

充电：0℃～45℃

放电：-20℃～60℃

储存：-20℃～45℃

In case young children use the battery, instruct them on the contents of the instructions and ensure the battery is correctly used by them at all times.

当小孩使用电池时，需要按用户说明书的内容教他们，并密切注意他们确保正确使用电池。

Read the battery device instructions and install and remove the battery correctly.

阅读用电池的装置说明书，正确进行电池的安装与拆卸。

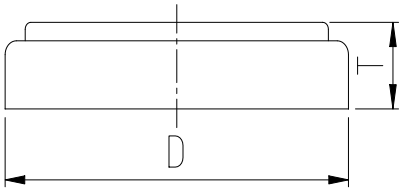
如果设备长期不用，将电池取出并放置在凉爽、干燥的地方，否则，电池可能生锈或性能变差。如果电池的端子变脏，使用前用干布擦干净。否则电池会接触不良，从而引起能量损耗或无法充电。

6 Period of Warranty 保质期

Warranty period of this product is 1 year from manufacture code, Which the battery should be used accordance with this specification.

电池的保质期为出厂后一年。本公司承诺如果在一年中由于电池本身的质量问题，将负责进行调换，如果是由于用户误用而产生的问题，不予调换。

7 The appended drawings 附图



检测项目	技术规格
T	5.4±0.2mm
D	9.0±0.2 mm