SAIVINIC®
深圳市赛威科技发展有限公司
SHEN ZHEN SAIVINIC TECHNOLOGY DEVELOPMENT CO.,Ltd.
Add: Floor 2, No.25 liansheng Road, Liulian Community, Pingdi Street, Longgang District, ShenZhen City, China. Tel: +0086 +755-89889189 E-mail:saivinic@126.com

产 品 规 格 确 认 书

SPECIFICATION FOR PRODUCTION

产品名称	锂离子电池
英文名称	Li-ion Battery
产品型号	18650 1200mAh
注册商标	SAIVINIC®
产品等级	A 级
产品代码	SV-18650-3712A+PL
拟　　订：	FANGXI
批　　准：	HE YI FENG

Revision:SV20251223

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Add: Floor 2, No.25 liansheng Road, Liulian Community, Pingdi Street, Longgang District, ShenZhen City, GuangDong Province,China. 深圳市龙岗区坪地街道六联社区联盛路 25 号 2 楼
Tel: +86 -755-89889189 E-mail:saivinic@126.com

1.0 Scope 适用范围

This specification describes the basic performance,technical requirement ,testing method ,warning and caution of the Li- ion Cylindrical rechargeable battery .The specification only applies to ShenZhen Saivinic Technology Development Co., Ltd with 18650 li-ion battery and refer to GB31241-2014and GB/T18287－2000.

本标准规定了圆柱锂离子可充电池的基本性能、技术要求、测试方法及注意事项，本规格书适用于深圳市赛威科技发展有限公司生产供应的 18650 锂离子电池。同时本规格书相关参数制定参考国标 GB31241-2014 和 GB/T18287－2000 的各项要求。

2.0 产品类型

类型名称 Name : Li-ion Battery 锂离子电池 规格型号 Model：18650 1200mAh

3.0 Specification 产品规格

NO. 序号	Item 项目	Specifications 规格要求
3.1	Nominal capacity 标称容量	1200mAh 0.2C Discharge (0.2C 放电)
	Minimum capacity 最小容量	1100 mAh 0.2C Discharge (0.2C 放电)
3.2	Nominal voltage 标称电压	3.7V
3.3	Charge current 充电电流	Standard Charge (标准充电) ： 0.5C Rapid charge (快速充电) ： 1.0C
3.4	Standard Charging method 标准充电方法	0.5C CC（constant current）charge to 4.2V,then CV(constant voltage 4.2V)charge till charge current decline to ≤0.01C. 0.5C CC（恒流）充电至 4.2V，再 CV（恒压 4.2V）充电直至充电电流≤0.01C
3.5	Charging time 充电时间	Standard Charging (标准充电) Approx 5 hours 大约 5 小时 Rapid charge (快速充电) Approx 2 .5hours 大约 2.5 小时
3.6	Max.charge current 最大充电电流	Constant Current 1C Constant Voltage 4.2V 0.01 C cut-off（持续电流：1C 持续电压：4.2V 截止电流：0.01 C）
3.7	Max.discharge current 最大放电电流	Constant current 1.0C end voltage2.75V（持续电流：1.0 C 截止电压：2.75V）
3.8	Standard Discharge Current 标准放电电流	Constant current 0.2 C end voltage2.75V（持续电流：0.2C 截止电压：2.75V）
3.9	Discharge cut-off voltage 放电截止电压	2.75V
3.10	Charge cut-off Voltage 充电截止电压	4.20V
4.11	Initial Impedance 初始内阻	≤150mΩ
3.12	Weight 电池重量	Approx(约)：37±2g
3.13	Operating temperature 工作温度	Charging(充电)： 0℃~45℃ Discharging(放电)：-20℃~60℃
3.14	Storage temperature 储存温度	-5℃~35℃
3.15	Storage Humidity 储存湿度	≤75% RH
3.16	Appearance 外观	Without scratch,distortion,contamination and leakage（无划痕、变形、污迹、电解液泄露）
3.17	Standard environmental condition 标准环境	Temperature(温度) ： 23±2℃ Humidity（湿度） ： 45-75%RH Atmospheric Pressure（大气压） ： 86-106 Kpa

4.0 General Performance (Only Cell) 常规性能 (仅限于电芯）

No.	Item 项目	Test Methods and Condition 测试方法和条件	Criteria 标准
4.1	0.2C Capacity 0.2C 容量	After standard charging, laying the battery 5min, then discharging at 0.2C to voltage 2.75V, recording the discharging time. 标准充饱电后,搁置 5 分钟,然后用 0.2C 电流放电至 2.75V, 所记录放电时间	≥300min
4.2	1C Capacity 1C 容量	After standard charging, laying the battery 5min, then discharging at 1C to voltage 2.75V, recording the discharging time. 标准充饱电后,搁置 5 分钟,然后用 1C 电流放电至 2.75V,记录放电时间	≥50min
4.3	Cycle Life 循环寿命	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 70% of the Initial Capacities of the Cells 先用 0.5 C 恒流充电至 4.2V，再恒压 4.2V 充电直至充电电流≤0.01C,搁置 5 分钟,再用 0.5C 电流放电至 2.75V;又搁置 10 分钟,重复以上步骤,直到放电容量是初始容量的 70%	≥200 times(次)
4.4	Capability of keeping electricity 荷电保持能力	23±2℃, After standard charging, laying the battery 28days, discharging at 0.2C to voltage 2.75V, recording the discharging time. 在 23±2℃状态下,标准充饱电后,电芯搁置 28 天,然后用 0.2C 放电至 2.75V,所记录放电时间.	≥200min

5.0 Environment Performance (Only Cell) 环境性能 (仅限于电芯）

No.	Item 项目	Test Methods and Condition 测试方法和条件	Criteria 标准
5.1	Discharge at high temperature 高温放电	After standard charging, laying the Cells 4h at 55±2℃, then discharging at 1C to voltage 2.75V, recording the discharging time. 标准充电后，在 55±2℃条件下贮存 4h，然后用 1C 放电至 2.75V,所记录放电时间.	≥45min
5.2	Discharge at low temperature 低温放电	After standard charging, laying the Cells 16h at -10±2℃, then discharging at 0.2C to voltage 2.75V, recording the discharging time. 标准充电后， 在-10±2℃条件下贮存 16h， 然后用 0.2C 放电至 2.75V,所记录放电时间.	≥120min
5.3	Thermal shock 热冲击	Put the battery in the oven and connected to a thermocouple, The temperature of the oven is to be raised at 5±2℃ per minute to a temperature of 100±2℃ and remains 10 minutes. 将电池放进烘箱内，并与热电偶相连，以 5±2℃/min 速度升高烘箱内温度至 100±2℃后,恒温 10min.	No fire, No explosion 不起火,不爆炸

6.0 Safe Characteristic (Only Cell) 安全性能 (仅限于电芯）

No.	Item 项目	Test Methods and Condition 测试方法和条件	Criteria 标准
6.1	Over charge testing 过充测试	At 23±2℃, charging batteries with constant current 1C to voltage 4.6V, then with constant voltage 4.5V till current decline to 0. Stop test till batteries' temperature 10℃ lower than max temperature. 在 23±2℃状态下,电池用 1C 电流充电至 4.6V,然后恒压 4.6V 让电流下降接近为 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.	No fire, No explosion 不起火,不爆炸
6.2	Over discharge testing 过放测试	At 23±2℃, 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 2hours. 在 23±5℃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 2 小时.	No fire, No explosion 不起火,不爆炸
6.3	Short-circuit testing 短路测试	电池标准充电后，测量电池的初始状态，置于防爆玻璃 罩中直接短路其正负极（线路总电阻不大于 100mΩ），当电池温度下降到比峰值约低 10 ℃时试验结束观察电池的温度及外观变化。 After standard charging of the battery, measure the initial state of the battery and place it in explosion-proof glass Short circuit its positive and negative poles directly in the cover (the total resistance of the circuit is not greater than 100mΩ), when The test ends when the battery temperature drops to about 10℃below the peak value. Observing electricity the temperature and appearance changes of the pool.	No fire, No explosion 不起火,不爆炸
6.4	Vibration testing 振动测试	After standard fully charge ,cell shall be attached to a vibration table directly and subjected to vibration that consists of 10Hz to 55Hz to 10Hz at the speed of 1Hz/min in 90-100min.The total excursion of the vibration is 0.8mm(0.06 inches). The cell shall be vibrated in each direction along axis of the cylinder and the vertical directions of axis of the cylinder. 将满电电芯放在振动实验台上,在 90~100mins 由 10Hz 到 55Hz 再到 10Hz 以 1Hz/min 的速率变化,振幅为 0.8mm(0.060 英寸)进行振动实验.电芯在电芯的轴向和与电芯轴向垂直的两个方向上振动.	No fire, No explosion, No leakage 不起火,不爆炸,不泄漏
6.5	Drop 跌落性能	Standard charge. Then let it self fall off from a height of 1.2m (the lowest height) to a smooth wooden surface. The self fall off should be conducted from every positive and negative direction. Then discharge at 0.2C5A to discharge cut-off voltage. Conduct 0.2 C5A cycle for 3 times. 标准充电后,将电池样品由高度(最低点高度)为 1m 的位置自由跌落到 18~20mm 的硬木板上,要求各面各跌落一次.然后将电池以 0.2 C5A 放电至终止电压,做 0.2 C5A 循环达到要求停止,充放电循环次数不高于 3 次.	No fire, No explosion 不起火,不爆炸

6.6	lmpact Test 重物冲击	电池标准充电后，测量电池的初始状态，放在平面上， 并与热电偶相连，将一直径为 15.8mm 的棒放在电池高 度方向中间位置，让重量 9.1kg 的重物从 610mm 高度自由垂落至冲击台面，观察电池外观及温度变化。 After standard charging of the battery, measure the initial state of the battery, place it on a flat surface,and connect it to a thermocouple. Place a rod with a diameter of 15.8mm in the middle of the height direction of the battery, allowing a weight of 9.1kg to freely fall from a height of 610mm to the impact table, and observe the appearance and temperature changes of the battery.	No fire, No explosion 不起火,不爆炸
6.7	Crush Test 挤压测试	测量电池的初始状态，电池标准充电后，与热电偶相连，放置于两铁制平面模具中，用 13KN 的最大力压力进行瞬间压缩，观察电池的温度及外观变化。 Measure the initial state of the battery, connect it to a thermocouple after standard charging, and place it in two iron flat molds. Apply a maximum force of 13KN for instant compression, and observe the temperature and appearance changes of the battery.	No fire, No explosion 不起火,不爆炸

※ 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)

7.0 CAUTIONS IN USE 使用警告

To ensure proper use of the battery please read the manual carefully before using it. Handling
为了使电池安全的使用及处理请在使用前认真的阅读操作说明

◆Do not expose to, dispose of the battery in fire.不能把电池曝晒或丢在火中

◆Do not put the battery in a charger or equipment with wrong terminals connected.电池充电时不能把正负极性装反

◆Avoid shorting the battery 避免短路电池◆Avoid excessive physical shock or vibration. 避免过分的物理震动和冲击电池◆Do not disassemble or deform the battery.不能拆解或使电池变形◆Do not immerse in water. 不能将电池浸入水中

◆Do not use the battery mixed with other different make, type, or model batteries.不能将其它不同厂家，类型，型号的电池混合使用◆Keep out of the reach of children.禁止小孩接触电池

Charge and discharge 充放电

◆Battery must be charged in appropriate charger only.电池必须在合适的条件下充电◆Never use a modified or damaged charger.决不能用故障的充电器给电池充电◆Do not leave battery in charger over 24 hours.电池持续充电不能超过 24H

Storage 贮存◆Store the battery in a cool, dry and well-ventilated area.电池贮藏在通风干燥的环境中

Disposal 处理◆Regulations vary for different countries. Dispose of in accordance with local regulations.不同国家法规的不同，处理时根据当地的法规。

8.0 Battery operation instruction 电池操作说明

8.1 Charging 充电

◆Charging current：Cannot surpass the biggest charging current which in this specification book stipulated。充电电流：不能超过规格书规定的最大的充电电流

◆Charging voltage：Does not have to surpass the highest amount which in this specification book stipulated to decide the voltage。充电电压：不能超过规格书规定的最高的限制电压

◆Charge temperature：The battery must carry on the charge in the ambient temperature scope which this specification book stipulated。充电温度：电池充电温度必须按照规格书的温度范围执行

◆Uses the constant electric current and the constant voltage way charge, the prohibition reverse charges. If the battery positive electrode and the cathode meet instead, can damage the battery。先恒流后恒压方式充电，禁止颠倒的方式

充电。如果电池正负极颠倒充电会带来危险。

8.2 Discharging current 放电电流

The discharging current does not have to surpass this specification book stipulation the biggest discharging current, the oversized electric current electric discharge can cause the battery capacity play to reduce and to cause the battery heat。
电池放电电流不能超过规格书规定的最大放电电流，过大的电流放电会造成电池发热和容量衰减。

8.3 discharge temperature 放电温度

The battery discharge must carry on in the ambient temperature scope which this specification book stipulated
电池放电温度必须按照规格书的温度范围执行

8.4 Over-discharges 过放电

After the short time excessively discharges charges immediately cannot affect the use, but the long time excessively discharges can cause the battery the performance, battery function losing. The battery long-term has not used, has the possibility to be able to be at because of its automatic flashover characteristic certain excessively discharges the condition, for prevented excessively discharges the occurrence, the battery should maintain the certain electric quantity。
短时间的的过充过放不影响电池的使用，但是长时间的过放电会影响到电池的功能失效，电池永久性不能适用，电池过放可能还有一个原因是自动能量的消失。预防电池过放出现方法是电池应保持一定的电量。

8.5 Storing the Batteries 贮存电池。

The battery should store in the product specification book stipulation temperature range. If has surpasses above for two months the long time storage, suggested you should carry on additional charge to the battery。
电池贮存在规格书规定的温度范围内，**如果电池贮存超过二个月，建议你开始给电池充电。**

9.0 Period of Warranty 保质期

The period of warranty is half a year from the date of shipment. ShenZhen Saivinic Technology Development Co., Ltd. guarantees to give a replacement in case of cells 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半年。如果证明电池的缺陷是在制造过程中形成的而不是由于用户滥用及错误使用造成，本公司负责退换电池。

10. Other The Chemical Reaction 其它化学反应

Because batteries utilize a chemical reaction, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, if the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage. If the batteries cannot maintain a charge for long periods of time, even when they are charged correctly, this may indicate it is time to change the battery.
由于电池是利用化学反应的原理，所以随时间的增加电池的性能会降低，即使是存放很长一段时间而不使用。如果使用条件如充电、放电及周围环境温度等情形不在指定的使用范围内，也会缩短电池的使用寿命，或者产生漏液导致设备损坏。如果电池长周期不能充电，即使充电方法正确，这样需要更换电池了。

11.Note: 备注

Any other items which are not covered in this specification shall be agreed by both parties.
本说明书未包括事项应由双方协议确定。

12.0 外形尺寸 Size （单位：㎜ ，未按比例）