产 品 承 认 书

物料名称: 锂聚合物电池组

项 目 号: L751-M5

产品规格: 845157ADB

适用机型:

Prepared 编制	Checked 审核	CQA Checked CQA 审核	Approved 批准
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目录/ Catalog

产品修订履历表
Product Revision History

REV. 版本	S.No. 序号	Date 日期	Mark 标记	Revision Description 修订描述	Originator 修订人
A0	1	2020-12-21	/	First Issue 首次发行	DY Lin
	2	2020-12-28	/	1.典型容量由4000mAh修改为4020mAh 2.增加电芯结构图	DY Lin
	3	2020-12-30	/	1.典型容量由4020mAh修改为4000mAh 2.最小容量由3890mAh修改为3900mAh 3.增加PCM布线图	DY Lin
	4	2021-01-07	P4 P18	1.出货电压由3.80V~4.00V改为3.87V~4.00V； 2.更新PCM BOM表(PCB+PFC)； 3.更新原理图； 4.成品长度由59.2mm更新为59.4mm； 5.端子输出尺寸由9.3mm更新为9.1mm；	DY Lin
	5	2021-03-22	P15 P19	1. 增加商标图； 2. 增加PCM、FPC Layout图；	DY Lin
	6	2021-04-09	P16 P6 P15	1. 更新商标图logo； 2. 增加重量标准约 54.5 g； 3. 增加产品BOM资料；	DY Lin
A1	1	2021-06-26	P4 P15	厚度公差由+0/-0.3mm 改为+0/-0.45mm	DY Lin

1、适用范围 Scope：

本规格书规定了二次聚合物锂离子电池组 L751-M5 的技术要求、测量方法、检验规则、运输及储存等。Technical requirement, measurement method, test standard, shipment condition and storage condition are defined in this specification for rechargeable Li-Polymer battery pack L751-M5。

2、参考标准 Standard：

GB/T18287-2013 蜂窝电话用锂离子电池总规范。

GB/T18287-2013 Li-ion battery specification for cell phone.

GB 31241-2014 便携式电子产品用锂离子电池和电池组安全要求。

GB 31241-2014 safety requirement for Li-ion battery using in portable electronic product.

3、名称及主要物料 Model and Main Materials：

3.1 电池组型号 Model：L751-M5

4、基本性能 Specification：

项目 Item	性能 Value	备注 Note
4.1 额定容量 Rated capacity	3900mAh	0.2ItA
典型容量 Typical Capacity	4000mAh	0.2ItA
4.2 标称电压 Nominal voltage	3.86V	
4.3 内阻 Impedance	≤120mΩ	AC1KHz 交流阻抗 AC1KHz impedance
4.4 NTC	10KΩ±1% B=3380K	
4.5 R ID	39KΩ±1%	
4.6 尺寸 Dimension	8.41(+0/-0.45)*51(+0/-0.9)*59.4(+0/-0.9)mm	详细见成品电池组结构图 Refer to 2D drawing of finished battery pack
4.7 重量 Weight	约 54.5 g About 54.5 g	
4.8 充电方式 Charge method	CC/CV	
4.9 推荐充电电流(Icr) Recommended charge current (Icr)	0.2ItA	
4.10 最大充电电流(Icm) Max. charge current (Icm)	0.7ItA	15℃～45℃
4.11 充电限制电压 (Ucl) Charging limited voltage(Ucl）	4.45V	
4.12 充电上限电压(Uup) Max. charging voltage (Uup)	4.45V	
4.13 放电截止电压(Udo) Cut-off voltage(Udo）	3.00V	
4.14 推荐放电电流(Idr) Recommended discharge current (Idr)	0.2ItA	
4.15 最大放电电流(Idm) Max. discharge current (Idm)	3.0A	15℃～60℃
4.16 充电环境温度 Charge temperature	0℃～15℃	0.2ItA
	15℃～45℃	0.7ItA
	45℃～55℃	0.3ItA 4.10V
4.17 放电环境温度 Discharge temperature	-20℃～15℃	0.2ItA
	15℃～60℃	3.0A
4.18 存储温度: Storage temperature: 一个月以内 Within 1 month	-20℃～60℃	相对湿度:85% Relative humidity:85%
三个月以内 Within 3 months	-20℃～45℃	
一年以内 Within 1 year	-20℃～30℃	
4.19 出货状态:电压 Shipment voltage	3.87V～4.00V	出货一周内 Within one week after shipment

5、标准测试条件 Test Standard

5.1 环境条件 Environment standard

除非另有规定,本规格书各项实验均在以下温、湿度及大气压条件下进行。

Unless otherwise specified, all the tests in this specification are conducted under temperature, humidity and atmospheric pressure given below.

5.1.1 温度 Temperature：23℃±2℃。

5.1.2 相对湿度 Relative humidity：60±15%。

5.1.3 大气压力 Atmospheric pressure：96Kpa。

5.2 测量仪表与设备要求 Test apparatus

5.2.1 测量电压的仪表准确度应不低于 0.5 级，内阻应不低于 10KΩ/V。The accuracy of voltage meter should be no less than 0.5 degree with impedance not less than 10KΩ/V.

5.2.2 测量电流的仪表准确度应不低于 0.5 级。The accuracy of current meter should be no less than 0.5 degree.

5.2.3 测量时间的仪表其相对误差为±0.1%。The relative error for time measurement should be ±0.1%.

5.2.4 恒流负载在被测电源电压范围内恒定电流可调,其电流相对误差为±0.1% 。The current value for constant current power supply should be adjustable within the voltage test range and its relative error for current measurement should be ±0.1%.

5.2.5 充电电源（或充电器）在电池组电压达到充电电压恒压值后应能改为恒压充电。The charger should be able to switch from constant current (CC) charge mode to constant voltage (CV) charge mode after battery pack voltage reaches up to the charge limit.

5.3 样品要求 Sample requirement

被测试电池组须为本公司出厂时间不超过一个月的新电池组,且电池组未进行过5次以上充放电循环。All the batteries tested should be produced within one month, as well as have not been charged/discharged for more than 5 cycles.

6、充电、放电条件 Charge and Discharge Standard

项目 Item	测试方法 Test Method
快速充电 Fast charge	0.7ItA 电流恒流充电到 4.45V，然后以 4.45V 恒压充电，直到充电电流低于 0.02ItA 时停止充电。 CC charge at 0.7ItA until battery pack voltage reaches up to 4.45V, then CV charge at 4.45V until the charge current is less than 0.02ItA.
标准充电 Standard charge	0.2ItA 电流恒流充电到 4.45V，然后以 4.45V 恒压充电，直到充电电流低于 0.02ItA 时停止充电。 CC charge at 0.2ItA until battery pack voltage reaches up to 4.45V, then CV charge at 4.45V until the charge current is less than 0.02ItA.
快速放电 Fast discharge	电池组满充电后，搁置 0.5-1 小时，以 3.0A 电流恒流放电到 3.00V。 After the battery pack is fully charged for 0.5 to 1 hour, CC discharge at 3.0A to 3.00V.
标准放电 Standard discharge	电池组满充电后，搁置 0.5-1 小时，以 0.2ItA 电流恒流放电到 3.00V。 After the battery pack is fully charged for 0.5 to 1 hour, CC discharge at 0.2ItA to 3.00V.

7、电气性能、实验方法和判定规则 Electric Property, Test Method and Test Standard

项目 Item	测试方法 Test Method	判定规则 Standard
额定容量 Rated capacity	电池组标准充电后，再标准放电。记录放电容量。 Record the discharged capacity for standard discharge after the battery pack is standardly charged.	≥100%*额定容量 ≥100%*rated capacity
荷电保持能力 Charge retention	电池组标准充电后，存放 28 天后标准放电，记录放电容量。 After standardly charged, store the battery pack for 28 days and then record the discharged capacity for standard discharge.	≥85%*额定容量 ≥85%*rated capacity
循环寿命 Cycle life	电池组按 0.5ItA 充电放电 49 次，充停电流为 0.1ItA，然后以 0.2ItA 标准充放电 1 次检测容量，计为循环 50 次，如此循环。 Charge/discharge at 0.5ItA for 49 cycles with the cut-off current for charge process set at 0.1ItA. After that, charge/discharge at 0.2ItA to check the capacity. Move in above cycles.	≥600 次，容量保持率≥80％，厚度膨胀不大于8% Cycle life ≥600 cycles / rated capacity ≥ 80%，thickness swelling less than 8%

8、温湿度适应性 Temperature and Humidity Test

项目 Item	测试条件（方法）Test Method	判定规则 Standard
高温性能 High temp. test	电池组标准充电后，在 55℃±2℃高温箱中恒温 2 小时，然后以 0.2ItA 电流放电至截止电压.记录放电容量，检测电池组外观。 After standardly charged, put the battery pack inside high-temperature chamber (55 ℃ ±2 ℃) for 2 hours, then discharge at 0.2ItA to cut-off voltage. Record the discharged capacity and check the appearance of battery pack.	≥100%*额定容量，电池组厚度增加≤10%，无破裂、无漏液。 ≥100%*rated capacity, battery pack thickness increased ≤10% and no crack or leakage
低温性能 Low temp. test	电池组标准充电后，在-10℃±2℃低温箱中恒温 4 小时，然后以 0.2ItA 电流放电至截止电压。记录放电容量，检测电池组外观。 After standardly charged, put the battery pack inside low-temperature chamber (-10℃±2℃) for 4 hours, then discharge at 0.2ItA to cut-off voltage. Record the discharged capacity and check the appearance of battery pack.	≥60%*额定容量，电池组厚度增加≤10%，无破裂、无漏液。 ≥60%*rated capacity，battery pack thickness increased ≤10% and no crack or leakage

恒定湿热试验 Constant temp. and humidity test	电池组标准充电后，在高温 40℃和相对湿度 95%的环境条件下搁置 48 小时，在 23℃±2℃静置 2 小时后以 0.2ItA 电流进行放电至终止电压。记录放电容量，检测电池组外观。 After standardly charged, put the battery pack aside at 40℃ and 95% RH for 48 hours, then put aside again at 23℃ ±2℃ for 2 hours followed by discharge at 0.2ItA to cut-off voltage. Record the discharged capacity and check the appearance of battery pack.	≥60%*额定容量，电池组厚度增加≤10%，无破裂、无漏液，无锈蚀、不冒烟、不起火、不爆炸。 ≥60%*rated capacity, battery pack thickness increased ≤10%, no crack, leakage, rust, smoke, fire or explosion

9、电气结构特性 Electric and Mechanical Test

项 Item	试验条件（方法）Test Method	判定规则 Standard
静电测试 Static test	测试标准依照 IEC Pub 61000-4-2 进行，在电池组的五金端子加载±8kV 的电压接触放电，频率为 1 次/秒，共测 10 次；然后再加载±15kV 的电压非接触放电，频率为 1 次/秒，共测 10 次。 Static test is carried out based on IEC Pub 61000-4-2. Apply ±8kV voltage on the metal contacts of battery pack for contact discharge once per second for 10 times. After that, apply ±15kV voltage for non-contact discharge once per second for 10 times.	电池组可正常充放电，所有保护回路功能正常。 Battery pack could be charged and discharged normally with normal protection function
振动 Vibration test	将电池组固定在振动台上，不可使电池组或电池组变形。采用正弦波进行振动，并以对数扫频方式在 15min 内从 7Hz 扫频到 200Hz 并返回到 7Hz。振动沿样品互相垂直的三个方向（其中一个方向必须与样品正负极所在平面垂直）进行，每个方向按上述对数扫频方式重复 12 次，振动 3h。对数扫频方式如下：7Hz～18Hz 保持 9.8m/s2 的峰值加速度。将振幅保持在 0.8mm（位移为 1.6mm）直至峰值加速度达到 78.4m/s2（频率约为 50Hz）。保持 78.4m/s2 的峰值加速度直到频率增长到 200Hz。 Fix the battery pack on vibration table and make sure the cell or battery pack is not deformed. Start vibration at sine wave form and its logarithmic sweep should start from 7Hz to 200Hz and back to 7Hz again in 15 minutes. Vibration should be done in 3 perpendicular directions of sample and one direction must be perpendicular to the cell plane where positive and negative terminals exist. Vibrate by using above logarithmic sweep for 12 times at each direction for 3 hours. The details of logarithmic sweep are as follows: keep peak acceleration at 9.8m/s2 and amplitude at 0.8mm from 7Hz to 18Hz until the peak acceleration increases to 78.4m/s2 (frequency at about 50Hz). Keep that peak acceleration until the frequency increases to 200Hz.	开路电压应不低于 90%的初始电压，应不泄漏、不泄气、不破裂、不起火和不爆炸。 Open circuit voltage ≥ 90% of initial voltage. No leakage, air escape, crack, fire or explosion

自由跌落 Drop test	电池组标准充电后进行跌落试验：将电池组由高度 1.5m 的位置自由跌落到光滑水泥地面上，以六个面依次跌落 1 次共 6 次。跌落结束后，目测电池组外观。 After standardly charged, drop the battery pack from 1.5m to the smooth concrete floor for 6 directions: once for each direction. After that, check the appearance of battery pack.	开路电压应不低于90%的初始电压，应不泄漏、不起火和不爆炸。（注：软包电池组不做此项测试） Open circuit voltage ≥ 90% of initial voltage. No leakage, fire or explosion.(Note: this test item is not applicable to soft battery pack.)

10、安全性能 Safety Test

项目 Item	试验条件（方法）Test Method	判定规则 Standard
过充保护 Over charge protection	电池组快速充电然后在恒流 2ItA 及恒压 10V 的条件下充电 10 小时。充电后目视电池组外观。 Fast charge first, then charge at constant current of 2ItA and constant voltage of 10V for 10 hours. After that, check the appearance of battery pack.	电池组不爆炸、不起火、不冒烟或漏液。 No leakage, smoke, fire or explosion
过放电保护 Over discharge protection	电池组标准放电后用 30Ω 的负载电阻连接电池组两极，放电 7 小时，目视电池组外观。 Standard discharge first, then connect a 30Ω resistor between positive and negative terminals of battery pack and discharge for 7 hours. After that, check the appearance of battery pack.	电池组应不爆炸、不起火、不冒烟或漏液。 No leakage, smoke, fire or explosion
短路保护 Short circuit test	电池组标准充电后在电池组正负极之间连接一只 80 mΩ±20mΩ 固定负载电阻，1 小时后目视电池组外观。 Standard charge first, then connect a 80mΩ±20mΩ resistor between positive and negative terminals of battery pack and discharge for 1 hour. After that, check the appearance of battery pack.	电池组应不泄漏、不泄气、不破裂、不起火和不爆炸。0.2ItA 充电 2 秒钟后电池组电压应大于 3.86V。 No leakage, air escape, crack, fire or explosion. Battery pack voltage ≥3.86V after charged at 0.2ItA for 2 seconds
热冲击 Thermal shock	电池标准充电后放置于热箱中，温度从常温以 5℃/min 的速率升至 130℃并保温 10 分钟。 Standard charge first, then put the battery inside high-temperature chamber. Rise the temperature to 130℃ at the rate of 5℃/min and keep it for 10 minutes.	电池应不起火、不爆炸。 No fire or explosion

11、外观 Appearance

新电池组产品的外表面以及标识标牌表面应色泽均匀、清洁、无划痕及机械损伤；用目测检验。各种试验中电池组外观应保持完好，无变形、无爆炸、无漏液。

Battery pack surface and label should be evenly colored, clean and without scratch or mechanical damage. The appearance of battery pack should be good in all the tests and without deformation, leakage or explosion.

12、运输 Shipment

电池组应在 3.80V~4.00V 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，应适用汽车、火车、轮船、飞机等普通交通工具运输。

Battery pack should be packed into cartons with voltage value at 3.80V to 4.00V before shipment, which should be shipped without violent vibration, impact, extrusion, exposed in the sun or rain, etc. It should be shipped by those normal vehicles, such as truck, train, ship and airplane.

13、储存 Storage

电池组应储存在环境温度为－20℃~25℃的清洁、干燥通风的室内，应避免与腐蚀性物质接触，应远离火源及热源。

电池组在储存过程中每四个月(最迟五个月)充电一次。

Battery pack should be stored indoors at -20℃ to 25℃ under clean, dry and well-ventilated conditions. It should be kept away from corrosive substance, fire source and heat source. Moreover, battery pack should be charged every 4 months, or 5 months at latest during storage.

14、标志和包装 Label and Packaging

14.1 包装 Packaging

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“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。

Battery pack name, model, quantity, gross weight, manufacturer name, address and Mfg. date should be marked on the surface of carton. Moreover, ‘handle with care’, ‘keep dry’ and ‘upwards’ signs must also be marked based on GB-191-2000 standard.

14.2 标志 Label

每个电池组上应有下列中文标志：产品名称、型号、标称电压、额定容量、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）。

Label should be stuck on each battery pack with following information: name, model, rated voltage, rated capacity, +/- terminals mark, cautions, Mfg. date, batch No. and manufacturer name, or a serial No. that includes above information.

15、使用说明和安全规程 Instructions and Cautions

15.1 推荐使用事项 Instructions

15.1.1 使用电池组前，请仔细阅读使用说明书和电池组表面标识。Read the instructions and label carefully before usage.

15.1.2 请在正常的室内环境中使用电池组，温度：（20±5）℃，相对湿度：65±20%。Please use the battery pack under normal environment conditions: 20±5℃ and 65±20% RH.

15.1.3 在使用过程中，应远离热源、高压，切勿摔打电池组。Keep away from heat source, high voltage and children, as well as avoid drop or extrusion.

15.1.4 本电池组只能使用配套充电器充电，不要将电池组放在充电器超过 24 小时。Only charge the battery pack with assorted charger and do not charge for more than 24 hours.

15.1.5 切勿将电池组正负极短路，切勿自己拆装电池组，也勿让电池组放在潮湿处，以免发生危险。Do not short circuit or disassemble the battery pack and do not put it in the humid place.

15.1.6 长期不用时，请将电池组储存完好，让电池组处于半荷电状态。请用不导电材料包裹电池组，以避免

金属直接接触电池组，造成电池组损坏，将电池组保存阴凉干燥处。For long term storage, battery pack should be stored in shady and dry place at half-charged state. It should be wrapped by insulated materials to avoid any damage caused by direct contact of metal to the battery pack.

15.1.7 不要随意抛弃废弃电池组，请交废旧电池组回收中心或其它方式安全妥当处理，不要投入火中或水中。Do not discard waste battery pack or throw it into fire or water. Please handle it properly or send it to the waste battery pack collection center.

15.2 危险警告 Warnings

15.2.1 禁止拆装电池组 No disassembly

电池组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，将会造成让电池组发热、冒烟、变形或燃烧。

There is protection circuit with protection features inside battery pack to avoid danger. Improper disassembly will cause damage, such as temperature rise, smoke, distortion or fire.

15.2.2 禁止让电池组短路 No short circuit

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

Do not connect the positive and negative terminals of battery pack by using metal. Moreover, store or ship the battery pack with metal is prohibited. Otherwise, short circuit will cause damage, such as temperature rise, smoke, distortion or fire.

15.2.3 严禁加热和焚烧电池组 No heating or flame

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

Heating or flame will cause melting of plastic housing, burning of electrolyte and other unsafe circumstances, such as temperature rise, smoke, distortion or fire.

15.2.4 避免在热源附近使用电池组 No usage near heat source

不要在火源、烤炉附近或超过 80℃的环境中使用电池组，过热将会导致电池组内部短路，使电池组发热、冒烟、变形、燃烧或爆炸。

Do not use the battery pack near fire source, oven or environment with temperature greater than 80℃. Otherwise, it will cause internal short circuit of battery pack and lead to temperature rise, smoke, distortion, fire or explosion.

15.2.5 禁止弄湿电池组 No damp

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

Do not damp the battery pack or put it into water, or else the protection feature inside will be disabled together with abnormal chemical action, which might cause temperature rise, smoke, distortion or fire.

15.2.6 避免在火源附近或阳光直射下充电，否则会造成电池组内部保护电路和功能丧失和发生不正常的化学反应，电池组有可能发热、冒烟、变形或燃烧。

No charging near fire source or in sunlight, or else it will disable the protection feature inside together with abnormal chemical action, which might cause temperature rise, smoke, distortion or fire.

15.2.7 使用非专用充电器给电池组充电，会发生危险。No charging with unspecified charger

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

Charging with unspecified charger might disable the protection feature inside together with abnormal chemical action, which might cause temperature rise, smoke, distortion or fire.

15.2.8 禁止破坏电池组 No destruction

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

Do not chisel, hammer or drop the battery pack for destruction. Otherwise, it will cause temperature rise, smoke, distortion, fire or explosion.

挤压、跌落、碰撞等机械外力作用产生变形或破损的电池组严禁继续使用，否则很可能会造成电池组发热、冒烟、燃烧，甚至引起火灾等危险。

Distorted or damaged battery pack which is caused by extrusion, drop, collision or other mechanical force could not be used any more, or else temperature rise, smoke, flame or fire hazard might happen.

15.2.9 禁止在电池组上直接焊 No welding

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

Do not weld directly on the battery pack, or else overheat will cause melting of plastic housing, burning of electrolyte and other unsafe circumstances, such as temperature rise, smoke, distortion or fire.

15.2.10 严禁将电池组直接在电源插座上或车载点烟器上充电 No improper charging

高压、大电流将会过电池组而使其损坏，或使电池组发热、冒烟、变形或燃烧。

Do not directly charge the battery pack with electric socket or vehicle cigar lighter, or else high voltage and big current will cause damage, such as temperature rise, smoke, distortion or fire.

15.2.11 不可将电池组用于其它设备 No improper use

不恰当使用电池组会损坏电池组的性能、降低寿命，甚至会使电池组发热、冒烟、变形或燃烧。

Do not use the battery pack in other equipment: improper use will negatively affect the performance and life of battery pack, or even lead to temperature rise, smoke, distortion or fire.

15.2.12 不要直接触及漏液电池组 No contact with weeping battery pack

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。

Do not touch weeping battery pack, or else electrolyte will cause skin suffer. If electrolyte enters the eyes by mistake, please wash your eyes with clean water immediately. In this case, never rub your eyes and go to hospital for further treatment as soon as possible.

15.3 警告 Cautions

15.3.1 不可与其它电池组混用 No mixed use with other batteries

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

Do not mixed use this battery pack with other primary or secondary batteries. Otherwise, improper charge/discharge will cause temperature rise, smoke, distortion or fire.

15.3.2 将电池组远离孩童，置于孩童取拿不到的地方，以避免孩童噬咬或吞咽电池组。如果吞咽了电池组，应迅速送医院处理。

Keep away from children to avoid possible bite or swallow by them. If the battery pack is swallowed, immediately send the child to hospital.

15.3.3 不可长期置放充电器上 No long-term charging with charger

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组发热、冒烟变形或燃烧。

If the charger keeps charging for a long time that is much longer than usual, charging should be stopped to avoid

possible temperature rise, smoke, distortion or fire.

15.3.4 不可置于微波炉或其它压力容器中 Away from microwave oven or other pressure vessels

可能使电池组瞬间受热或漏液(或有异味)而损坏，应让坏损的电池组离开手机或充电器并弃用。不正常的使用电池组会发热、冒烟、变形、燃烧或爆炸。

Keep away from microwave oven or other pressure vessels, or else the battery pack might be damaged due to instant heat or leakage. One should remove and abandon the battery pack from mobile phone or charger immediately once it is damaged. Otherwise, it will cause temperature rise, smoke, distortion or fire.

15.4 注意事项 Notes

15.4.1 注意事项 Notes

避免在强光爆晒环境下使用电池组，以免电池组发热、变形、冒烟、性能下降、降低寿命。

Do no use the battery pack in strong light to avoid temperature rise, smoke, distortion, performance reduction or life reduction.

15.4.2 防静电 Electrostatic prevention

电池组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组，因为静电（1000V以上）容易损坏保护板，而导致电池组工作不正常，发热、变形、冒烟或起火燃烧。

Although there is protection circuit inside the battery pack, strong static (higher than 1000V) should be avoided in usage. Otherwise, the protection circuit is likely to be damaged and thus cause temperature rise, smoke, distortion or fire.

15.4.3 充电温度范围 Charging temperature

推荐的充电温度范围是 0-55℃。在超出此范围的环境中充电会造成电池组性能下降、减少寿命。The recommended charging temperature range is 0-55℃ to avoid performance reduction or life reduction.

15.4.4 在使用电池组之前，请仔细阅读使用手册并经常在需要时阅读。

Read the instruction manual carefully before usage.

15.4.5 充电方式 Charging method

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组充电。

Please use the specified charger under recommended environment conditions.

15.4.6 第一次使用 First use

在第一次使用电池组时，若发现电池组不整洁或有异味等不正常现象，不可继续将电池组用于手机或其它设备，应将电池组返回销售商。

If the battery pack is found to be unkempt or with bad smell when first applied, one should not use it anymore and just return it to the seller.

15.4.7 儿童使用 Parental guidance

儿童使用电池组前，应受父母指导，并在使用中受监督是否正确。

Parental guidance is necessary for children if they want to use the battery pack.

15.4.8 避免孩童接触电池组 Away from children

电池组应放在孩童拿不到的位置，应避免孩童将电池组从充电器或手机中取出、玩弄或其它操作而损坏电池组，可能使电池组发热、变形、冒烟、起火或爆炸。

Keep away from children to prevent improper treatment which might cause temperature rise, smoke, distortion, fire or explosion.

15.4.9 注意避免电池组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。

Do not touch weeping battery pack, or else electrolyte will cause skin suffer. If electrolyte enters the eyes by mistake, please wash your eyes with clean water immediately. In this case, never rub your eyes and go to hospital for further treatment as soon as possible.

15.4.10 咨询 Consultation

购买电池组时，请注意销售商联络方法，以便需要时及时与销售商取得联系，得到咨询。

Please note the contact method of your agent so that consultation could be made if necessary.

15.4.11 保用期 Warranty

保用期是自出厂之日起一年，寿命为：充放电循环 600 次。但是属于使用不当或其它人为损坏电池组而非质量问题，即使在保用期内，生产厂家也不予无偿换新电池组或保修。

Battery pack has a twelve-month warranty and its life is 600 charge/discharge cycles. However, manufacturer will not be responsible for free repair or replacement with new battery pack for any problem caused by improper use or artificial damage by the user even it is still under warranty.

15.4.12 安全使用保障 Safe use

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

If the battery pack is to be used in other equipment, please discuss with the supplier about protection function, maximum current, fast charge and other related problems.

16、质量评定程序 Quality Check

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 GB/T2829-2002，标准执行。具体检查的检验项目应包括外观、内阻、额定容量等。

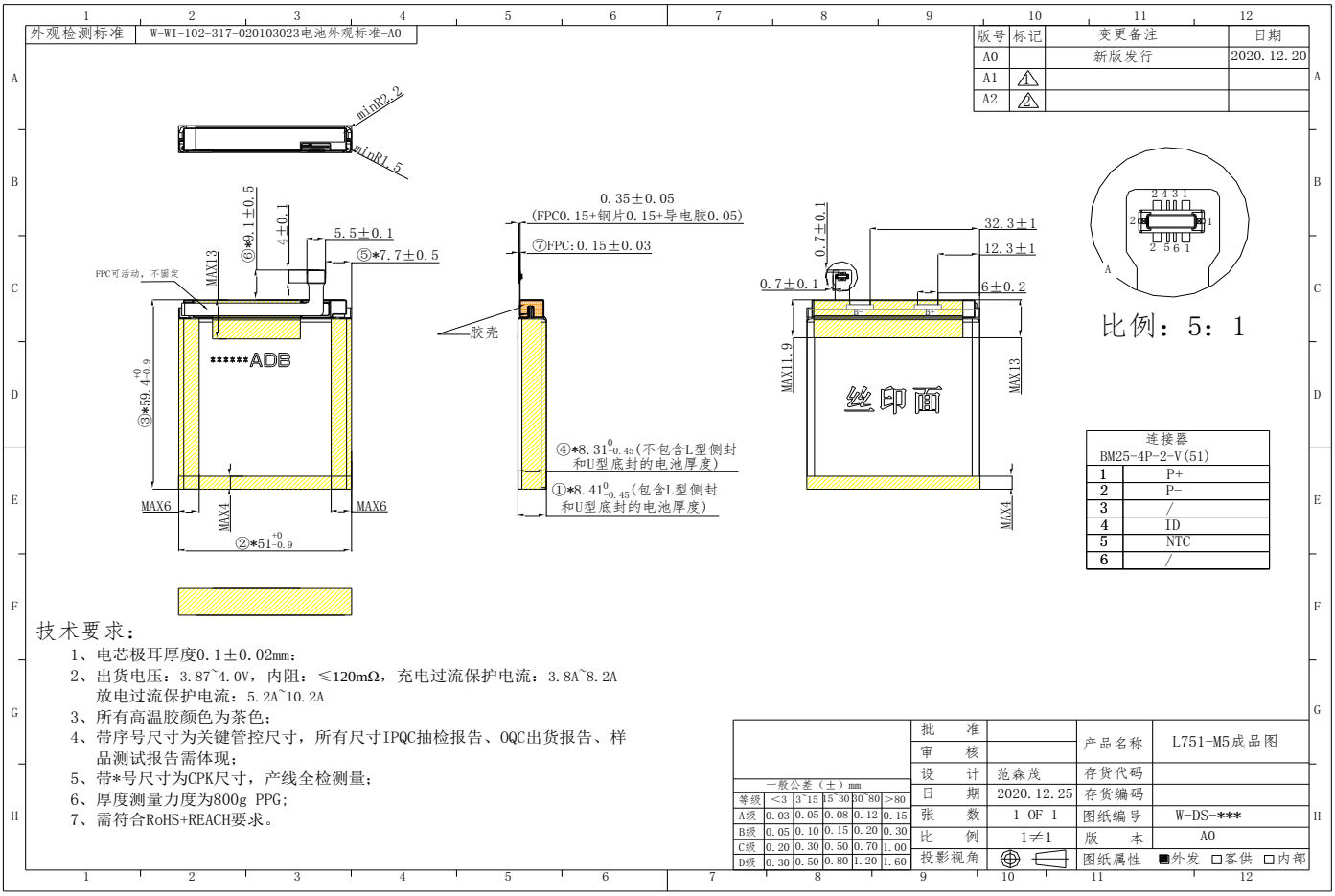
It is classified into evaluation check and consistency check. Evaluation check is normally done during design finalization, design alteration and production definition stages, in which sampling plans, inspection items, inspection sequences and test standards should be consulted and defined clearly by the customer and supplier. Consistency check is subdivided into batch check and periodic check to ensure the quality stability of product. It is generally conducted based on GB/T2829-2002 that generally includes appearance, impedance, rated capacity, etc.

17、附主要元件资料 Appendix

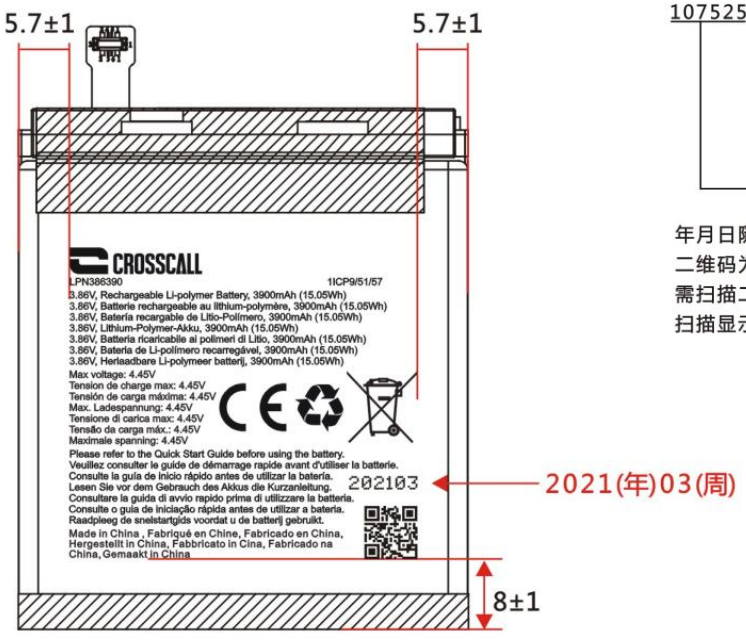
17.1 产品 BOM 表 **BOM**

No.	元件名称 Part name	规格值 Description	数量 Quantity	备注 Note
1	FR4 PCM	专用 Specially designed	1PCS	
2	FPC PCM	专用 Specially designed	1PCS	
3	电芯 Cell	HPP845157ADB/3920mAh	1PCS	
4	小配件	黑色 PC+ABS	1PCS	
5	电气胶 1Electric tape 1	T0.06mm	1PCS	
6	电气胶 2Electric tape 2	T0.06mm	1PCS	
7	电气胶 3Electric tape 3	0.05*31.2*44mm	1PCS	
8	胶垫 Silicone pad	/	2PCS	
9	红壳纸 red dielectric paper	T0.25mm	1PCS	
10	UV 胶 UV glue	8815L	0.02g	
包装材料 Packaging				
13	商标 Label	专用 Specially designed	1PCS	移印 pad printing
14	吸塑托盘 Plastic tray	275*220mm	0.125PCS	1 盘装 8PCS 1PCS per tray
15	吸塑托盘 Plastic tray	275*220mm	0.0069PCS	1 箱用 1PCS 1PCS per carton
16	托盘底部珍珠棉 Pearl cotton	专用 Specially designed	0.25PCS	1 箱用 36PCS 36PCS per carton
17	隔板 Clapboard	224*281mm	0.0069PCS	1 箱用 1PCS 1PCS per carton
18	纸箱 Carton	295*238*203mm	0.0069PCS	1 箱装 144PCS 144pcs per carton
19	箱唛 Carton label	100*65mm	0.0069PCS	1 箱用 1PCS 1PCS per carton
20	二维码追溯标签 2D barcode tracing label		0.0069PCS	1 箱用 1PCS 1PCS per carton
21	月份标签 Month label		0.0069PCS	1 箱用 1PCS 1PCS per carton
22	干燥剂 Desiccant		0.02778PCS	1 箱用 4 包 4PCS per carton
23	胶袋 Bag	600*700mm	0.0069PCS	1 箱用 1PCS 1PCS per carton
24	QA PASS 标示贴 PASS label		0.0069PCS	1 箱用 1PCS 1PCS per carton
26	RoHS 标示贴 RoHS label	绿色椭圆形	0.0069PCS	1 箱用 1PCS 1PCS per carton

17.2 产品尺寸图(单位 mm) Dimensional Drawing (mm)



17.3 商标图 Label drawing



扫描显示示例：107525-11313881-211E-900001

107525 11313881 211E 9 00001

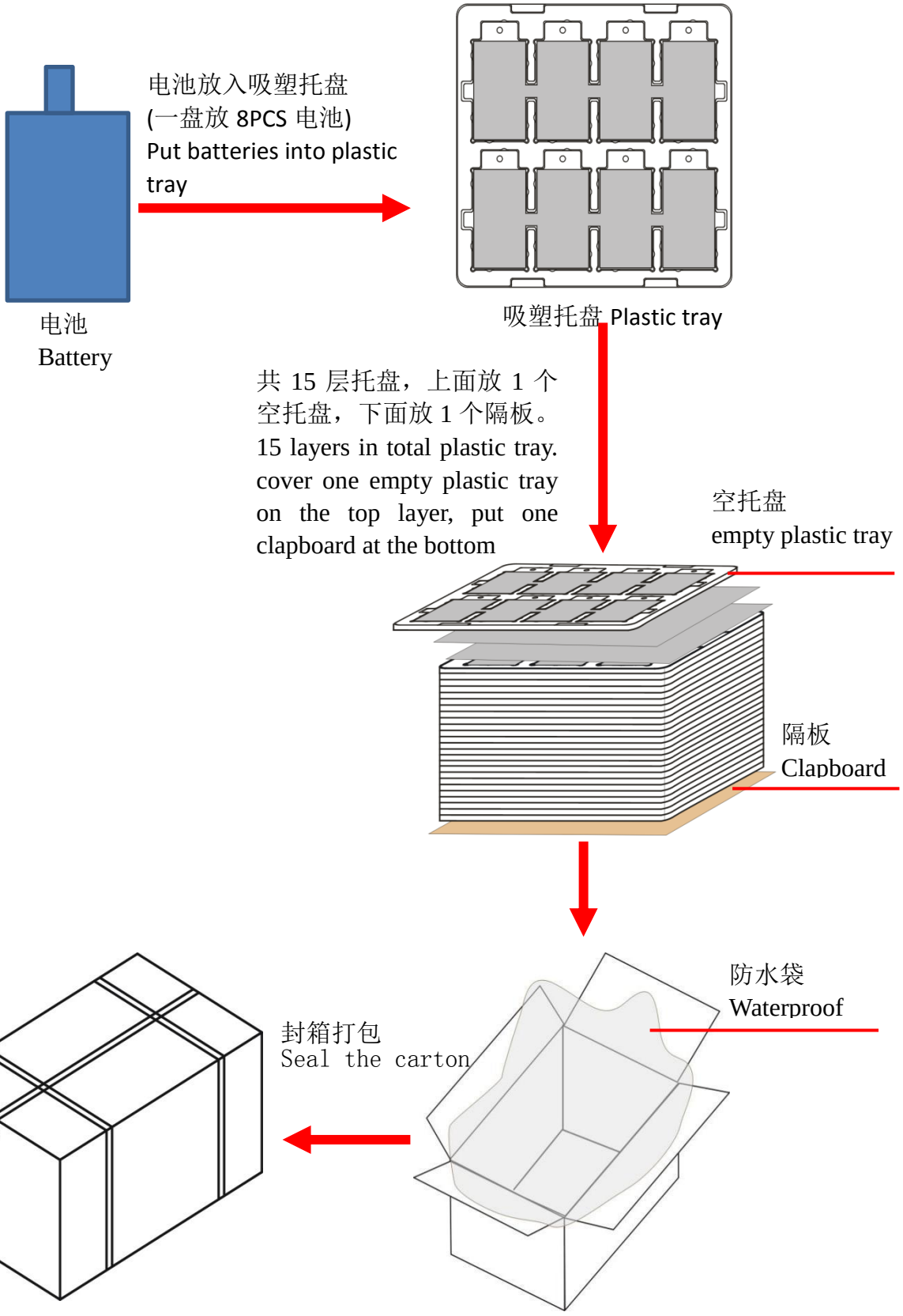
99001-99999为样品电池喷码
起始码:00001，终止码99000

- 序列号(5位，十进制)
- 生产拉线代码(9，固定不变)
- 21年，1(月，对照见表)
  E(日，对照见表)
- 物料号（固定码，8位）
- 海信代应商代码（固定码，6位）

年月日随生产时间变更，序列号为跳码，**过日清零**，跳码不可以重码
二维码为喷码工艺，二维码类型为QR Code
需扫描二维码，扫描出内容显示27位，
扫描显示示例：**107525-11313881-211E-900001**

月份对照表	日期对照表		
1月--1			
2月--2	1日--1	11日--B	21日--M
3月--3	2日--2	12日--C	22日--N
4月--4	3日--3	13日--D	23日--O
5月--5	4日--4	14日--E	24日--P
6月--6	5日--5	15日--F	25日--Q
7月--7	6日--6	16日--G	26日--R
8月--8	7日--7	17日--H	27日--S
9月--9	8日--8	18日--J	28日--T
10月--A	9日--9	19日--K	29日--U
11月--B	10日--A	20日--L	30日--V
12月--C			31日--W

7.4 包装示意图 Packaging Drawing



17.5 PCM 规格 PCM description

17.5.1 PCM 规格 PCM description

材质 Material	FPC+FR4
FR4 尺寸 Dimension/结构 Structure	40.3*4.0*0.6mm，2 layer
FPC 尺寸 Dimension/结构 Structure	52.65*14.3*0.15mm，2 layer

17.5.2 PCM 参数规格 PCM parameters

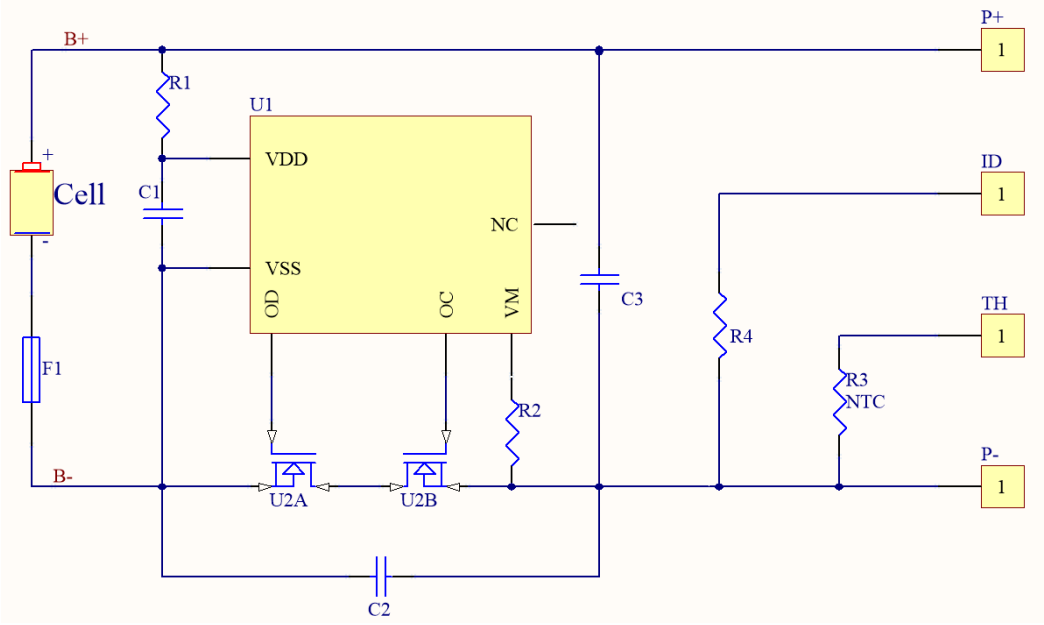
测试内容 Item	最小值 Minimum Value	平均值 Average Val ue	最大值 Maximum Value
过压充电保护电压(Ucp) Over charge protection voltage (Ucp)	4.530V	4.550V	4.570V
过压充电保护延迟时间 Over charge protection delay (voltage)	0.7s	1.0s	1.3s
过压充电恢复电压 Over charge protection release voltage	4.300V	4.350V	4.400V
欠压放电保护电压(Udp) Over discharge protection voltage (Udp)	2.450V	2.500V	2.550V
欠压放电保护延迟时间 Over discharge protection delay (voltage)	14 ms	20 ms	42 ms
欠压放电恢复电压 Over discharge protection release voltage	2.800V	2.900V	3.000V
过流充电保护电流(Icp) Over charge protection current (Icp)	3.8A	6A	8.2A
过流充电保护延迟时间 Over charge protection delay (current)	5 ms	8ms	21 ms
过流放电保护电流(Idp) Over discharge protection current (Idp)	5.2A	7.5A	10.2A
过流放电保护延迟时间 Over discharge protection delay (current)	8 ms	12ms	21 ms
短路保护延迟时间 Short circuit protection delay	180 us	250 us	425 us
工作自耗电量 Function mode consumption	/	3uA	6uA
静态自耗电量 Stand-by mode consumption	/	/	1uA
PCM 内阻 PCM impedance	/	/	R<50mΩ

17.5.3 PCM BOM 表 PCM BOM

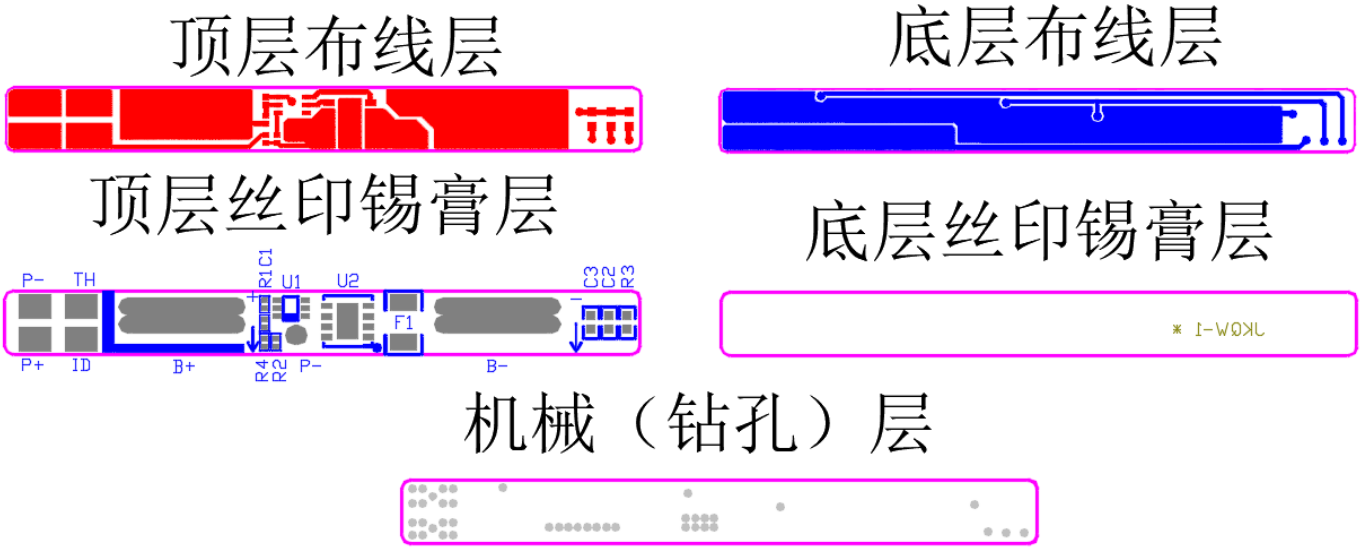
No.	位置 Position	名称 Name	规格 Description	封装 Package	数量 Quantity	备注 Note
1	U1	保护 IC Control IC	R5442L317KU	DFN1814	1PCS	RICOH
			S-8240ADW-I6T1U	SNT-6A		ABLIC
2	U2	MOSFET	CJAE2002	DFNWB3×3- 8 L-	1PCS	JSCJ
			QM2538N3	DFN3*3		UBIQ
3	R1	电阻 Resistor	330Ω	SMD-0201	1PCS	
4	R2	电阻 Resistor	1KΩ	SMD-0201	1PCS	
5	R3	NTC	10KΩ±1% B=3380K	SMD-0402	1PCS	MURATA/ JOINSET
6	R4	电阻 Resistor	39KΩ±1%	SMD-0201	1PCS	
7	C1,C2,C3,	电容 Capacitor	0.1μF	SMD-0201	3PCS	
8	X1	连接器 Connector	BM25-4P/2-V(51)	/	1PCS	Hirose
9	F1	PTC	LP-NSML500(OP)	SMD-1206	1PCS	WAYON
			SMD1206P500SLR			PTTC
10	B+/B-	连接片 Connection piece		/	2PCS	
11		PCB 空板 Blank PCB	T=0.6mm, 2 layer,1.5oz	/	1PCS	JHY/ASJ M
12		FPC 空板 Blank FPC	T=0.15mm, 2 layer	/	1PCS	WH/ASJM

注： 1、Control IC 和 MOSFET 各有备选品牌及型号，见“备注”；
2、上述各品牌型号部件都经我司多次测试，各项指标均合格，我方会根据市场供应紧张程度，随时更换。
Note: 1. Control IC and MOSFET all have alternative brands and models as indicated in the above table;
2. All the parts with brand and model listed above have been tested carefully by Jiade and proved to be qualified for this battery pack. We might change any of them based on the market availability at any time.

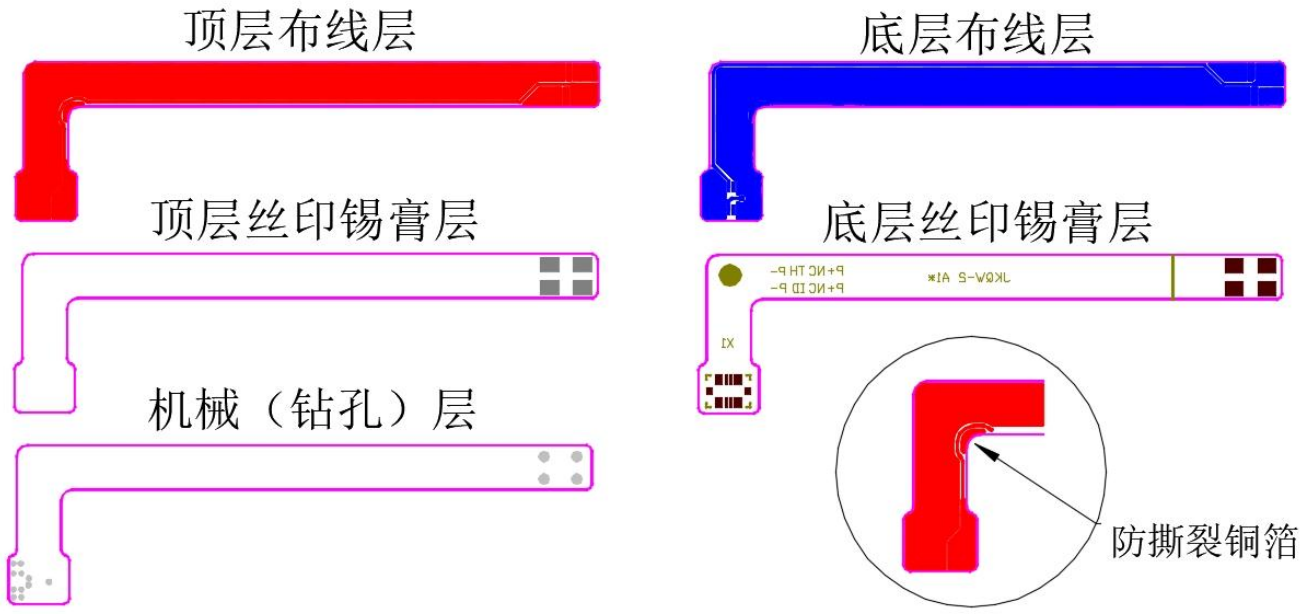
17.5.4 PCM 原理图 PCM schematic diagram



17.5.5 PCM 布线图 PCM layout



17.5.6 FPC 布线图 FPC layout



17.6 电芯规格 Cell Specification

型号 Model：845157ADB-3920mAh

17.6.1 电芯主要技术参数 Main parameters

备注：电芯主要技术参数如下表，详细参数可参照电芯规格书。

Note: please refer to the cell specification for detailed cell parameters.

No.	项目 Item	性能 Value
1	额定容量 Rated capacity	≥100%*额定容量(0.2ItA 放电) ≥100%*rated capacity (0.2ItA discharge)
2	1ItA 容量 1.0ItA capacity	≥90%*额定容量(1.0ItA 放电) ≥90%*rated capacity (1.0ItAdischarge)
3	标称电压 Nominal voltage	3.86V
4	充电限制电压 Charge limit voltage	4.45V
5	充电电流 Charge current	标准充电 Standard charge: 0.2ItA
		快速充电 Fast charge: 0.7ItA
6	标准充电方法 Standard charge	0.5ItA CC(恒流)充电至 4.45V,再 CV(恒压 4.45V)充电直至充电电流≤0.02ItA CC (constant current) charge at 0.5ItA to 4.45V first, then CV (constant voltage) charge at 4.45V until the charge current ≤0.02ItA
7	放电截止电压 Cut-off voltage	3.00V
8	出货电压 Shipping Voltage	3.90～3.98V
9	电芯内阻 Cell impedance	≤60mΩ

17.6.2 电芯热溶胶、底胶图纸 Hot sol and bottom glue of electric core