APPROVAL SHEET

FOR

FB-NP-F550-B

Date日期:

To:

Model No.型号 : FB-NP-F550-B

Specification: 7.2V /2200mah

Total No. of Pages总页数: Total 14 pages including this cover sheet共14页（含封面）

Approved by

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|  | Section | Confirm | checked | Approval |
| Name |  |  |  |
| Approve |  |  |  |

Presented by

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| **FB** | Written**拟定** |  |
| Project checked**工程审核** |  |
| Quality checked**品质审核** |  |
| R&D checked **研发审核** |  |
| Approval **批准** |  |

**1. 范围(Scope):**

本规格书描述了沣标运营（深圳）有限公司出品的锂电池的产品规格、测试方法、产品类别和产品型号 This Data Sheet described the specification, testing method, type and model NO. of Lithium-ion Battery which produced by FBtech Communications(Shenzhen)Co.,Ltd.

**1.1 类别 (Type):**

数码电池(Digital camera battery)

**1.2 产品型号(Model NO.):**

FB-NP-F550-B

**2:电池检测标准/** battery

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 项目(Item) | | 性能(Performance) | | 备注(Remarks) | |
| 1 | 额定电压  Rated Voltage | | 7.2V | |  | |
| 2 | 标准充电限压  Charge limited voltage | | 8.4V | |  | |
| 3 | 标准放电终止电压  Discharge-off voltage | | 5.5V | |  | |
| 4 | 额定容量  Rated Capacity | | 2050mAh | | 0.2C 放电  Discharge at 0.2C | |
| 5 | 最小容量  Minimum Capacity | | 2200mAh | | 0.2C 放电  Discharge at 0.2C | |
| 6 | 充电方式  Charging Method | | 先恒流后恒压(CC-CV) | |  | |
| 7 | 标准充电电流  Standard Charging Current | | 0.40Ah | | 0.2C 0℃-+45℃ | |
| 8 | 标准放电电流  Standard Discharge Current | | 0.40Ah | | 0.2C -20℃-+60℃ | |
| 9 | 快速充电电流  Rapid Charging Current | | 2.0Ah | | 1C 0℃-+40℃ | |
| 10 | 快速放电电流  Rapid Discharge Current | | 2.0Ah | | 1C -10℃-+60℃ | |
| 11 | 总内阻  Total Resistor | | ≤230mΩ | | AC 1kHz 交流阻抗值  AC 1kHz AC Resistor | |
| 12 | 最小漏电流  Mini imum current comsumption | | 6.0μA | |  | |
| 13 | 单体电池重量  Individual Battery weight | | 100g±3 g | | 电子称(不含包装材料)  Electronic Scale | |
| 14 | 外型尺寸(±0.2mm)  Imal External dimension | | L= 70.4mm  W=38.4mm  H= 20.5mm | | 卡尺  Caliper Scale | |
| 15 | 工作温度范围  Operating Temperature  Range | 充电  Charge | | 0˚C ~+45˚C | | 湿度65±20%  Humidity |
| 放电  Discharg | | -20˚C~+60˚C | | 湿度65±20%  Humidity |
| 16 | 贮存温度范围  Storage Temperature Range | 长期贮存(1 年内)  Long Term Storage  (Less than 1 year) | | 0˚C~+25˚C | | 湿度65±20%  Humidity |
| 说明(Instruction)：  1．贮存时间以出货日期为起始点计算；  Storage time should be counted from the time of Delivery；  2．测试方法及标准：环境温度(21~25)℃,CC/CV 方式,0.2C 恒流充电到 8.4V, 再  恒压充电方式,截止电流 0.02C 电流，0.2C 恒流放电,截止电压5.5V，放 电时间大于5 小时。  Test Method & Standard: The battery is charged at ambient temperature(21~25) ℃ ,  with a constant current CC/CV at 0.2℃ to charge to 8.4V,and constant voltage  charging to final current to 0.02C,then the battery is discharged with CC 0.2C  to final voltage 5.5V, The discharge time is more than 5 hours. | | | | |

**3. 测试(Test)：**

**3.1 测试条件(Conditions):**

3.1.1 测试电池为用户收到后不超过1 个月的产品.

The testing battery should not be exceed one month from users received.

3.1.2 温度(Temperature ): 21℃~25℃

相对湿度(Relative Humidity): 45%~85%

大气压力(Atmospheric Pressure): 86kPa~106 kPa

**3.2测试工具 Testing Instruments:**

2.2.1 电压计: IEC 51/IEC 485 所规定的0.5 级或以上, 内阻大于10KΩ/V

Volt Meter: In Standard IEC 51/IEC 485 stated 0.5 degree or more .Inner Resistor more than 10KΩ/V

2.2.2 电流计: IEC 51/IEC 485 所规定的0.5 级或以上, 包括引线总电阻小于0.01Ω.

Current Meter: In Standard IEC 51/IEC 485 stated 0.5 degree or more. The total inner Resistor

includes lead wire less than 0.01Ω.

2.2.3 卡尺精确度0.02mm

Caliper Scale: Scale defined 0.02mm

2.2.4 负载电阻包括外部线路,电阻值允许误差为±5%.

Load: Including external circuits, Resistor tolerance is±5%.

2.2.5 成品电池测试仪

Complete Battery Tester

**3.3 性能检测方法与要求：**

**Inspection method & requirement for battery performance**

|  |  |  |  |
| --- | --- | --- | --- |
|  | 项目（Item） | 检测方法(Inspection Method) | 要求（Requirement） |
| 1 | 重量  Weight | 用电子称测量  Test by electronic scale | (不含包装材料)  (Excludingpacking) |
| 2 | 充电方式  Charge Method | 环境温度(21~25)℃,CC/CV 方式,0.2C 恒流充电到 8.4V,再恒压充电方式 ,截止电 流 0.02C. Test at ambient temperature(21~25)℃,CC/CV Constant current charge at 0.2C to 8.4V, and constant voltage charge to final current 0.02C | 放电时间:≥60min. Discharge  time:≥60min.  电池外观应无变形无爆裂、漏液.  Battery appearance should not be cracked nor leaked. |
| 3 | 放电方式  Discharge Method | 环境温度(21~25)℃, 0.5C 恒流放电,截止电压 5.5V  Test at ambient temperature(21~25) ℃ , at constant current 0.5C to final voltage 5.5V |
| 4 | 低温放电  Low temperature discharge | 1)按标称容量充电方法将电池充饱电.  According to standard capacity  charging the battery fully  2) 将电池或者电池组放入-10℃±2℃的低温箱中放置4H后,以0.2ItA的电流放电至终止电压,放电时间不低于3H.  Put battery or battery pack into -10℃±2℃ low temperature freezer placed 4 hours then use 0.2ItA current discharge to cut-off voltage, discharge time no less than 3 hours. | 电池外观应无变形无爆裂、漏液.  Battery appearance should not be cracked nor leaked. |
| 5 | 高温放电  High temperature discharge | 1)按标称容量充电方法将电池充饱电.  According to standard capacity  charging the battery fully  2) 将电池或者电池组放入55℃±2℃的高温箱中放置2H后,以0.2ItA的电流放电至终止电压,放电时间不低于5H.Put battery or battery pack into 55℃±2℃ high temperature freezer placed 2 hours then use 0.2ItA current discharge to cut-off voltage, discharge time no less than 5 hours | 电池外观应无变形无爆裂、漏液.  Battery appearance should not be cracked nor leaked. |
| 6 | 循环寿命  Life cycle | 在23℃±2℃的环境下测试,每50次循环做一次容量检查,电池或电池组充放电之间搁置0.5h～1h,直至任一个第50次循环放电时间低于3h,按照50次循环的规定再进行一个循环,如果放电时间任然低于3h,则认为寿命终止.  Testing battery or battery pack under 23℃±2℃, check battery or battery pack capacity after 50th cycles,set aside battery or battery pack between charging and discharging with 0.5h～1h until any one of the 50th cycle discharge time less than 3H, according to 50th cycle rule to make a 50th cycle again, if discharge time still less than 3H then considered battery or battery pack end of life. | 电池不能有爆炸 ,冒烟, 燃烧,变形之现象.1充放电循环寿命应:≥300 次。  The battery should not explore, smoke, burn, distort. The life cycle should be equal or more than ≥300 |
| 7 | 抗振动性能  Anti-Vibration capability | 1)按标称容量充电方法将电池充饱电.  According to standard capacity  charging the battery fully  2)电池或电池组充满电后固定在振动台上,采用正弦波进行震动,并以对数扫频方式在15min内从7Hz扫频到200Hz并返回到7Hz震动沿样品互相垂直的3个方向进行,每个方向按上述对数扫频方式重复12次,震动3H.  Fully charged Battery or Battery Pack then fixed on the vibration table,use a sine wave vibration and use logarithmic sweep mode within 15min from 7Hz sweep to 200Hz then return to 7Hz, vibration based on samples three vertical direction and every direction need repeated 12 times, total shake 3H | 电池外观应无明显损伤、漏液、冒烟或爆炸  There should be no obvious crack, leakage, smoking or exploring on the appearance of the |
| 8 | 抗跌落性能  Drop test | 1)按标称容量充电方法将电池充饱电.  According to standard capacity  charging the battery fully  2)将电池悬空在 1.1-1.3 米高处，将电芯自由掉落 6 面（正负极面，横向面）各 2次，共 6 次。  Put the battery at a height of 1.1-1.3 meter, drop the cells on six sides freely | 电池应不漏液 、 不冒烟、不爆炸  There should not be leakage, smoking and exploring |
| 9 | 恒定湿热测试  Constant damp heat test y | 1)按标称容量充电方法将电池充饱电.  According to standard capacity  charging the battery fully  2) 将电池或电池组放入温度为40℃±2℃,相对湿度为90%～95%的恒温恒湿箱中搁置48h,将电池取出在23℃±2℃的环境温度下搁置2h,目测电池外观,并以0.2ItA电流放电至终止电压.  Put battery and battery pack into 40℃±2℃ and relative humidity 90%～95% constant temperature and humidity chamber set for 48h then remove battery into 23℃±2℃ enviroment set for 2H, check battery or battery pack appearance and use 0.2ltA current discharging to cut-off voltage | 电池外观应无明显损伤、漏液、冒烟或爆炸  There should be no obvious crack, leakage, smoking or exploring on the appearance of the |

**3.4 空载电压(出货时电压)**

Voltage on shipment: 7.7 V~7.9V

**4.保护板性能检测与要求：Protectionperformancetestingandrequirements**

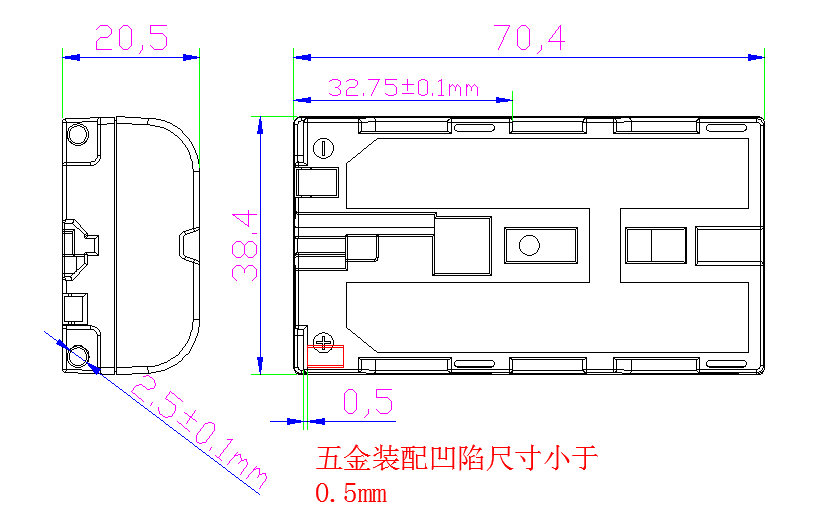
|  |  |  |  |
| --- | --- | --- | --- |
| 项目 | 符号 | 详细内容 | 标准 |
| 过充保护  Over charge protection | VDET1 | 过充电检测电压  Over Charge Prohibition | ( 4. 325V~4.375V)\*2 |
| tVDET1 | 过充电检测延迟时间  Over Charge Delay Time | 0.7s~1.3s |
| VREL1 | 过充电解除电压  Over Charge Release | ( 4. 1V~4.2V)\*2 |
| 过放保护  Over discharge protection | VDET2 | 过放电检测电压  Over Discharge Prohibition | (2.242V~2.358V )\*2 |
| tVDET2 | 过放电检测延迟时间  Over Discharge Delay Time | 89ms~167ms |
| VREL2 | 过放电解除电压  Over Discharge Release | 充电解除 |
| 过流保护  Over current protectio |  | 过放电电流保护  Over discharge current protection | 3A~6A |
| 过充电电流保护  Over charge current protection | / |
| tVDET3 | 检测延迟时间  Excess Current Delay Time | 8ms~16ms |
|  | 保护解除条件  Protection release condition | 断开负载  Loaded breaking current |
| 短路保护  Short circuit protection |  | 保护条件  Protection Condition | 外部电路短路  Exterior short circuit |
| TSHORT | 检测延迟时间  Testing Delay Time | 150us~500us |
|  | 保护解除条件  Protection release condition | 断开短路电路  Disconnect short circuit |
| 内阻  Internal Resistor | RDS | 主回路通态电阻  Main circuit state Resistor | RDS≤65mΩ |
| 消耗电流  Static Electric Current | IDD | 工作时电路内部消耗  Static Electric Current | MAX：75μA |

**5 结构清单 BOM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| NO | 模具号  Mould Number | 物料名称  Material Name | 规格描述  Specification Description | 用量  Quantity | 备注  Remarks |
| 1 |  | 电芯  Cell | YT 18650 2200mAh | 2 |  |
| 2 |  | 保护板  PCB | DB F550-2 V1.0 | 1 |  |
| 3 |  | 面壳 | F550面壳 | 1 |  |
| 4 |  | 底壳 | F550底壳 | 1 |  |
| 5 |  | 支架 | F550支架 | 1 |  |
| 6 |  | 五金1 | F550方五金 | 1 |  |
| 7 |  | 五金2 | F550圆五金 | 2 |  |

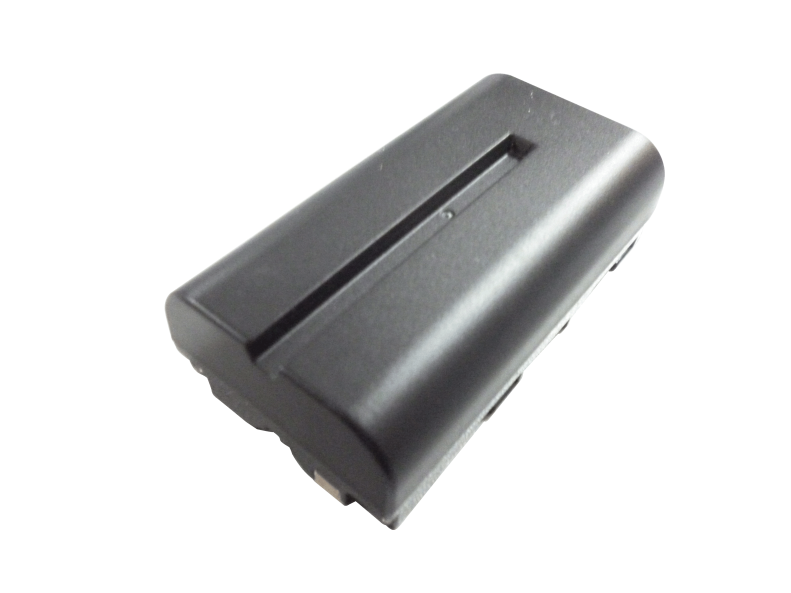
**6 .Mechanical机械性**

**6.1**.Mechanical Drawing机械图（±0.2mm）



6.2:.Photo of the product 电池图片



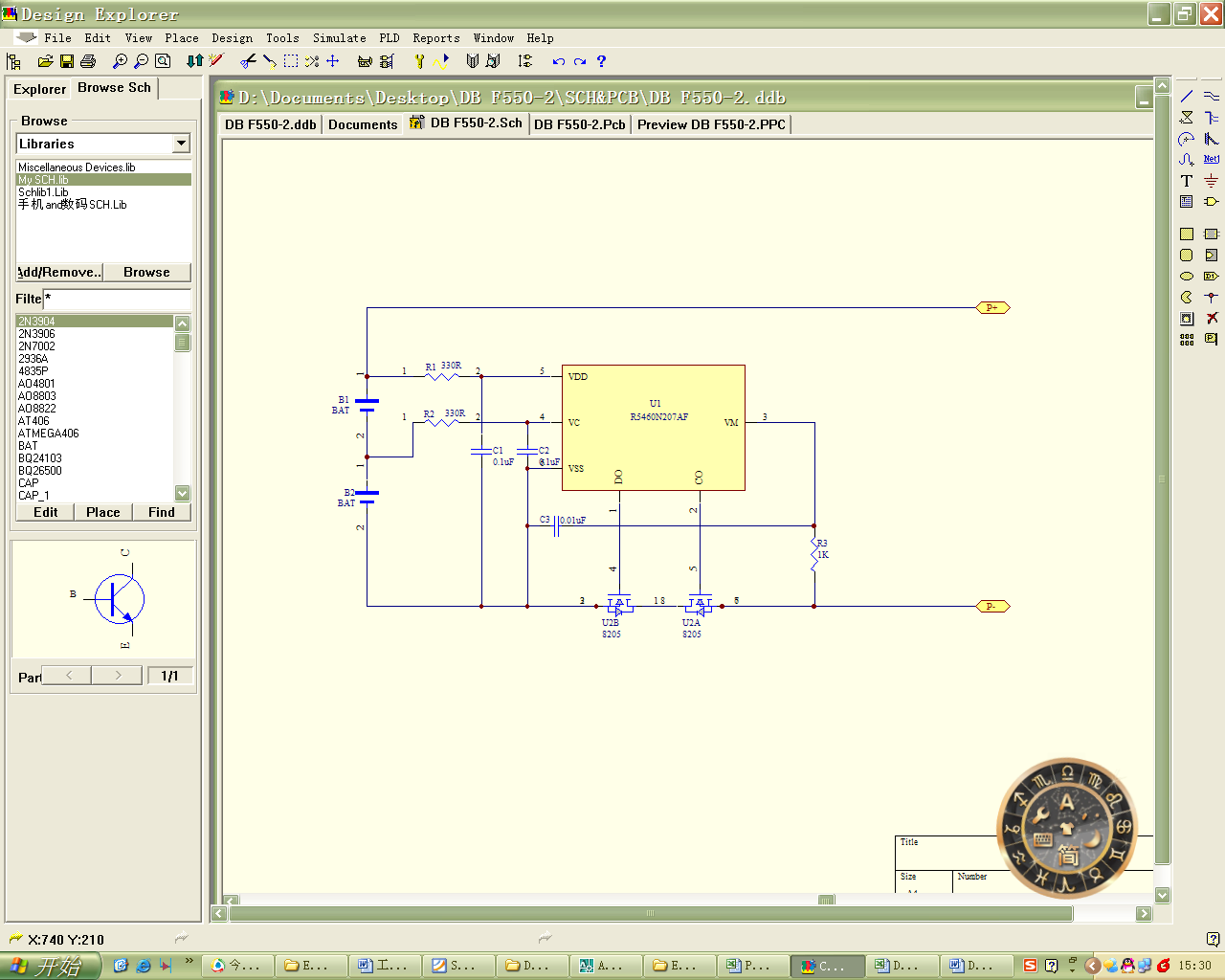


<Top side view> 正面 <Bottom side view> 背面

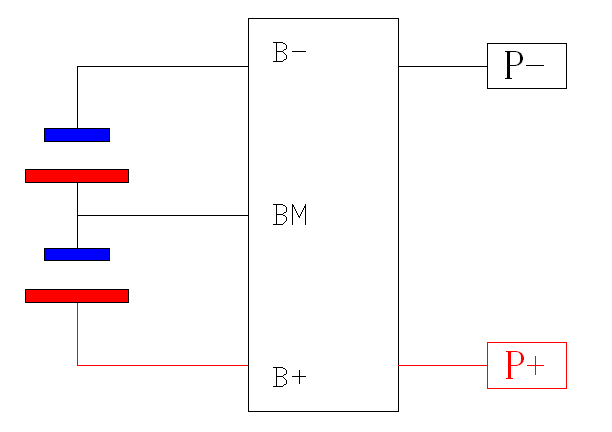


**7 保护板（Protection）；**

7.1保护板原理图（Protection Principle Picture）：



7.2 Circuit Diagram 电路图



**7.3 端口原理图（Port Diagram）**

Pin Assignment Pin位分布



(-) = Negative supply

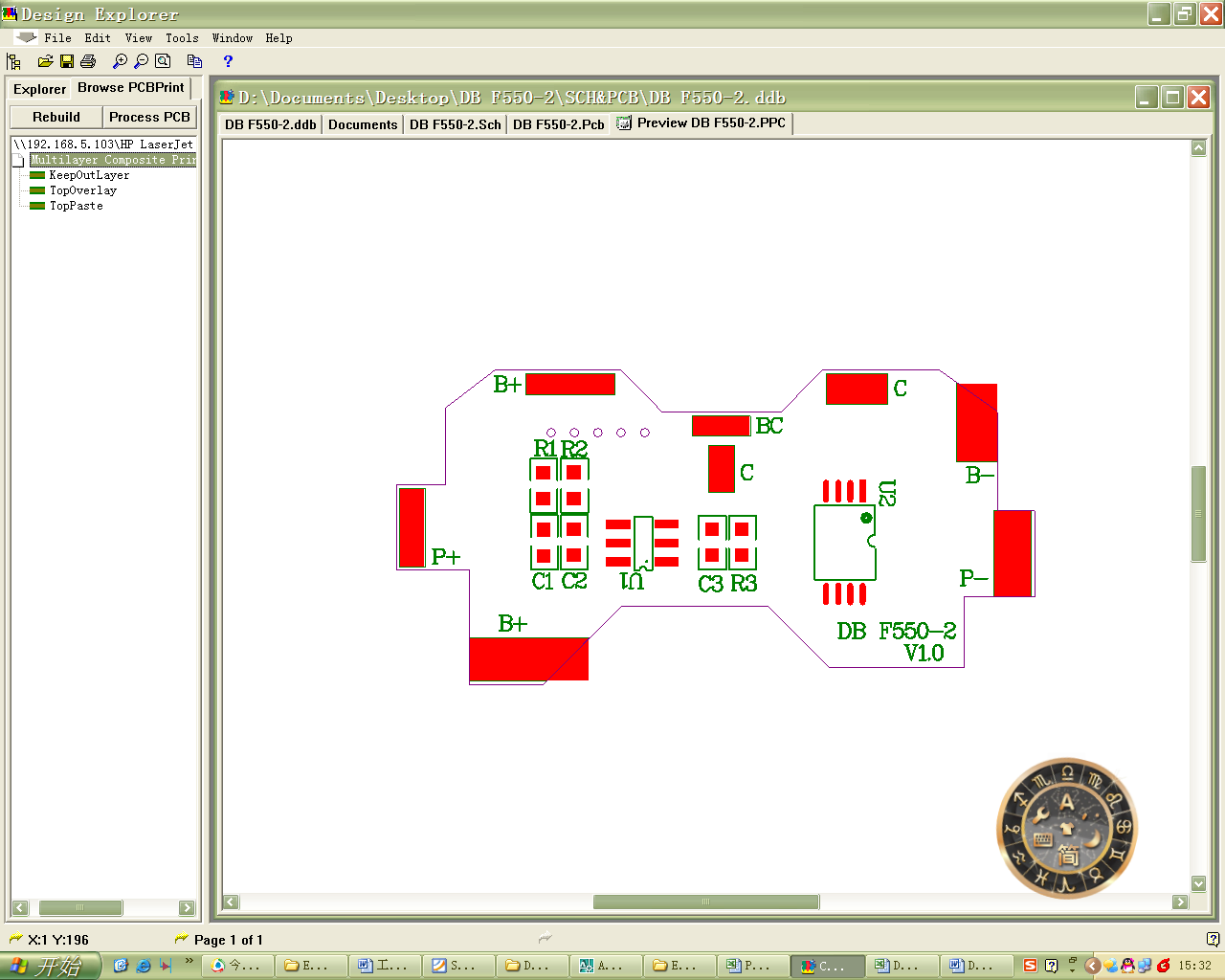
(+) = Positive supply

(NC) =空点

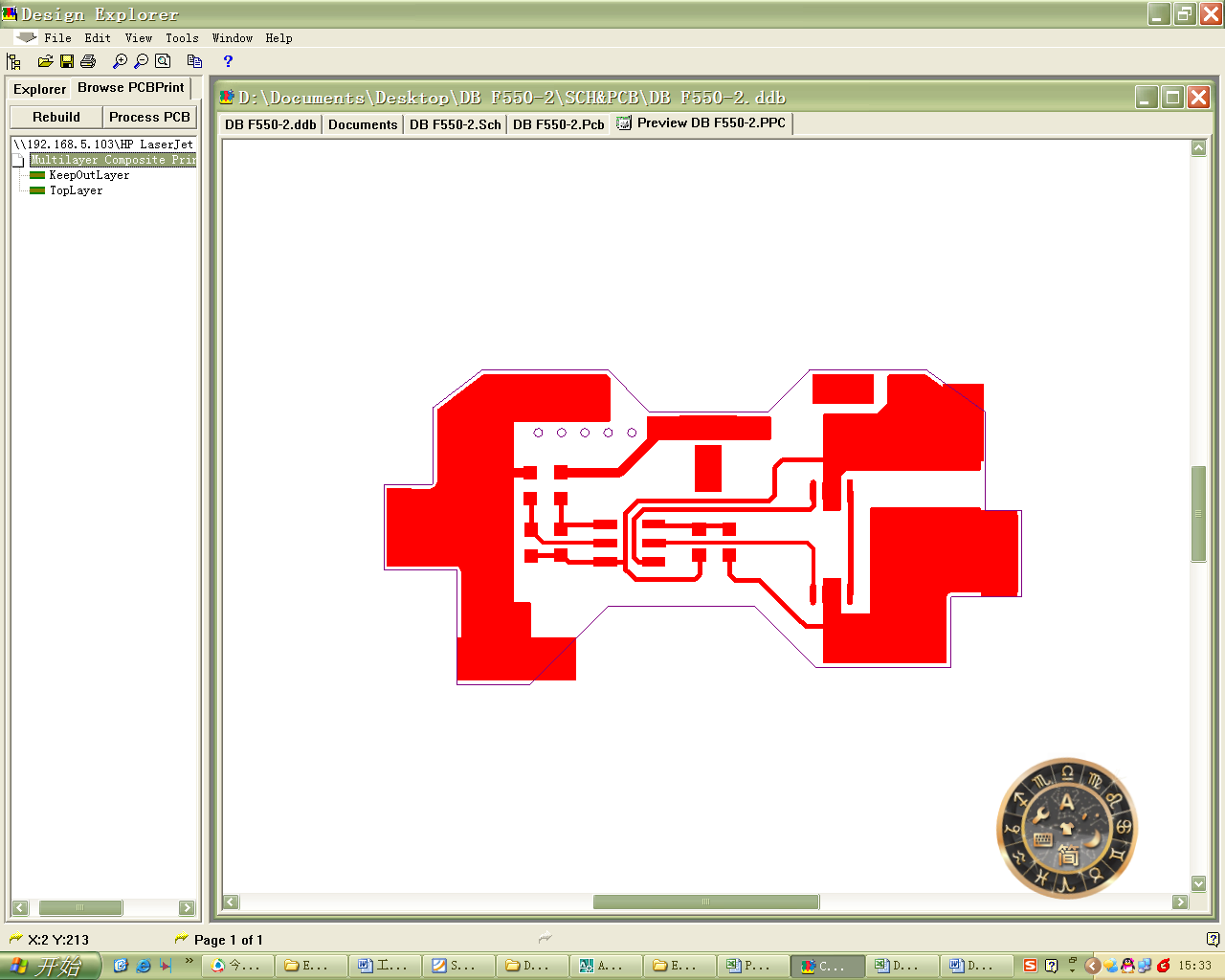
|  |  |
| --- | --- |
| **Pin** | **Description** |
| B+ | Connect to Positive terminal of cell1连接在锂电芯组正极的焊盘。 |
| B- | Connect to negative terminal of cell1接在锂电芯组负极的焊盘。 |
| P+ | Connect to Camcorder +/Charger +。接在电池的正极的焊盘。（输出点） |
| P- | Connect to Camcorder -/ Charger -。连接在电池的负极的焊盘。（输出点） |
|  |  |
|  |  |
|  |  |

**7.4 PCB 布线图(PCB wiring diagram)**

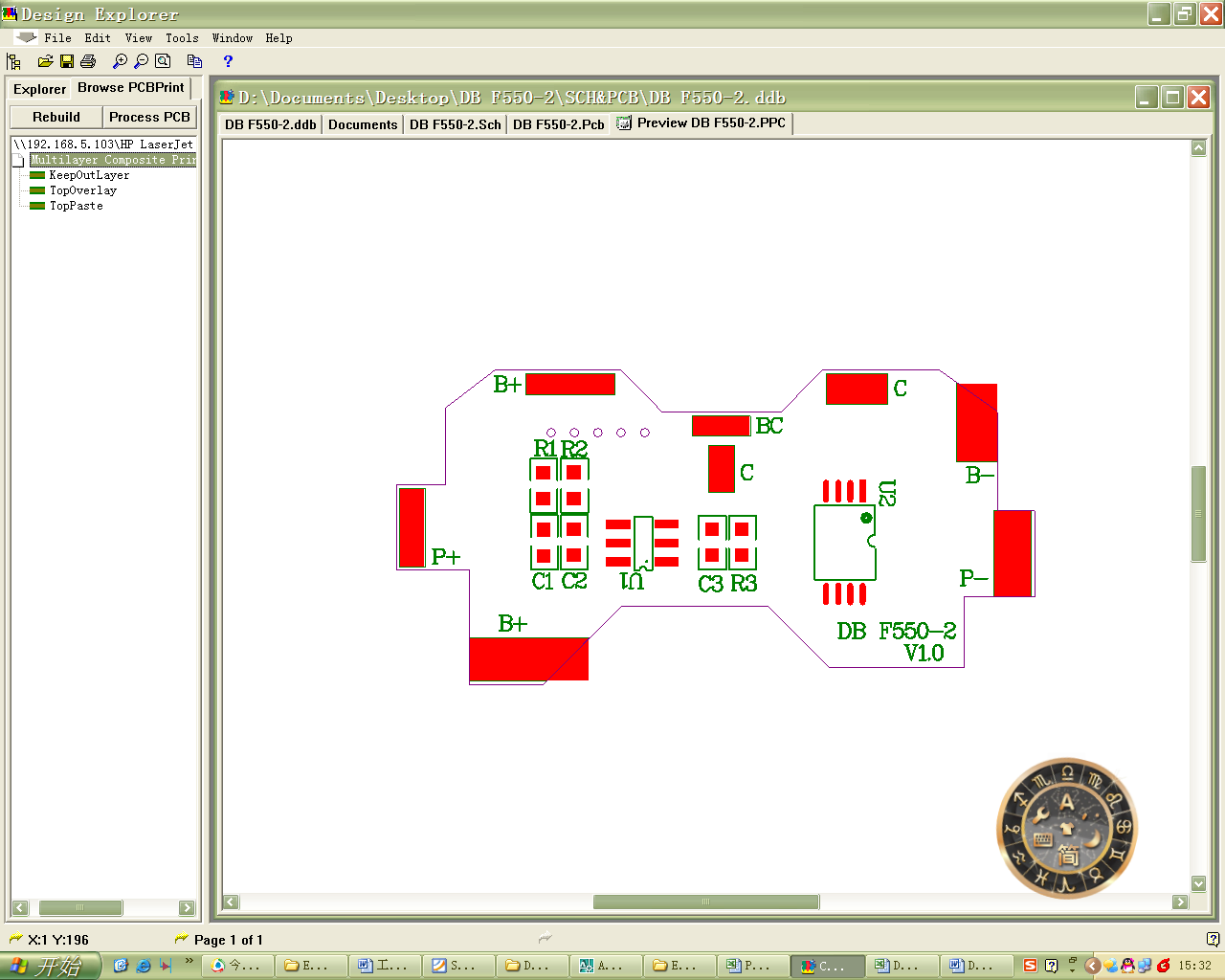
PCB 板正面（PCB Frontispiece Side）



PCB 板反面（PCB Reverse Side）



**7.5 PCB 板尺寸图: PCB Board Dimension Drawing/mm**



16.8mm

34.1mm