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聚合物锂离子电池产品规格书

LITHIUM POLYMER BATTERY SPECIFICATIONS

客户名 Customer's Name	**HD-VA**
产品类别 Production Type	**Lithium Polymer Battery**
产品型号 Production Model	**IP1102338**
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目　　录

CONTENTS

1.	范围 **Scope**	**p4**
2.	产品体系 **System**	**p4**
3.	产品型号 **Battery Model**	**p4**
4.	标称性能 **Ratings**	**p4**
5.	产品外观和尺寸 **Visual and Dimension**	**p5**
6.	产品性能 **Battery Performance**	**p5-8**
7.	出货状态 **Delivery Condition**	**p8**
8.	保质期 **Date of Minimum Durability**	**p8**
9.	安全使用指南 **Handling Guideline**	**p8-10**
10.	产品规格书的修订和声明 **Revision and Statement**	**p10**
11.	附件 1 保护板规格书 **Appendix 1 PCM Specifications**	**p11-12**
12.	附件 2 电池图纸 **Appendix 2 Battery Drawing**	**p13**

1. 范围 Scope

本规格书适用于本司生产的型号为 IP1102338 的数码聚合物锂离子电池。
This specification shall be applied to lithium polymer rechargeable battery - model number IP1102338 manufactured by Intellect Pioneering Battery Technology.

2. 产品体系 System

聚合物锂离子电池
Lithium Polymer Rechargeable Battery

3. 产品型号 Battery Model

IP1102338

4. 标称性能 Ratings

4.1.	标称容量 Nominal Capacity	1000mAh @0.2C（Typical） 950mAh @0.2C（Min）	
4.2.	标称内阻 Nominal Impedance	130mohm（Typical） 260mohm（Max）	
4.3.	标称电压 Nominal Voltage	3.7V	
4.4.	充电截止电压 Charge Cutoff Voltage	4.20±0.05V	
4.5.	充电电流 Charge Current	电池表面温度 Battery surface temperature	充电电流 Charge current
		0～15℃	95mA（0.1C）Max
		16～25℃	475mA（0.5C）Max
		26～45℃	950mA（1.0C）Max
4.6.	充电时间 Charging Time	标准充电：3.5 小时（参考值） Standard charge：3.5 hours（Ref.） 快速充电：2.0 小时（参考值） Rapid charge：2.0 hours（Ref.）	
4.7.	放电截止电压 Discharge Cutoff Voltage	3.00±0.05V	
4.8.	最大持续放电电流 Max. Continuous Discharge Current	950mA（1.0C）Max	
4.9.	电池重量 Weight	约 16.0±1.0g Approx. 16.0±1.0g	
4.10.	操作温度 Operation Temperature.	放电　Discharge：-20℃ ～60℃	
4.11.	存储 Storage	存储温度　Storage Temperature ：-20℃ ～45℃ 存储湿度　Storage Humidity：65±20% RH	

5. 产品外观和尺寸 Visual and Dimension

5.1.	厚度 Thickness	11.0mm max	尺寸参考附录 2：电池图纸。 Refer to Appendix2: Battery Drawing. 卡尺测试，力度以电池不滑落为准，温度 25±2℃。
5.2.	长度 Length	40.0mm max	
5.3.	宽度 Width	23.5mm max	
5.4.	外观 Visual	电池外观应无明显损伤、变形、漏液或破裂。 There shall be no such defects as remarkable scratches, cracks, leakage or deformations.	

6. 产品性能 Battery Performance

6.1. 标准测试条件 Standard Test Condition

测试电池必须是本公司出厂时间一个月以内，并且未超过 5 次以上的充放电循环的新电池（测试条件另有规定除外）。除非另有规定，本规格书规定的测试条件为：温度 25℃±3℃；相对湿度 45%～75%；气压 86kPa～106kPa。

The batteries tested here shall be new batteries within one month after shipment from our factory and not be cycled over 5 times. The tests shall be conducted in an ambient temperature of 25±3℃ under humidity of 45% to 75% and pressure of 86kPa to 106kPa, unless otherwise specified.

6.2. 测试设备要求 Measuring Instrument or Apparatus

尺寸测量 Dimension Measurement	精度不低于 0.01㎜ Precision should not be worse than 0,01mm
电压和电流测量 Voltage and Current	万用表准确度不低于 0.5%级，测电压时内阻不应小于 10kΩ/V。 Precision over class 0.5%, having inner impedance more than 10kΩ/V.
内阻测量 Impedance Measurement	交流阻抗法，测试条件为 1kHz LCR。 Sinusoidal alternating current method（1kHz LCR meter）.
电池测试系统 Battery test system	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%。 Current measurement shall be implemented by instrument with equal to more precision scale of ±0.1% and the constant voltage precision should be implemented with ±0.5%, and the timing precision should be not below ±0.1%.
温度测量 Temperature Measurement	准确度不低于± 0.5℃。 With equal or more precision scale of ±0.5℃.

6.3. 标准充电 Standard Charging

在 25±5℃的条件下，电池以 475mA（0.5C）的恒定电流充到 4.2V，然后以 4.2V 的恒定电压充电，共充 3.5 小时或达到截止电流为 47mA（0.05C）。

At 25±5℃，the battery shall be charged at a constant current of 475mA（0.5C）to 4.2V and then at constant voltage of 4.2V with a charging time of 3.5 hours or 47mA（0.05C）cut off.

6.4. 电性能测试 Electrical Performance

测试项目 Test Items		测试方法 Test Method	指标 Criteria
6.4.1.	额定容量 Rated Capacity	电池按 6.3 规定充电结束后，在 25±5 度的条件下，搁置 1 小时后以 190mA（0.2C）电流放电到终止电压 3.0V 时的测量值。 The capacity shall be measured at a discharge current of 190mA（0.2C）and a cut-off voltage of 3.0V after the standard charge（Section 6.3）	≥950mAh。
6.4.2.	循环寿命 （0.5C） Cycle Life （0.5C）	电池按 6.3 规定充电后，搁置 5 分钟，再以 475mA（0.5C）电流放电到 3.0V，搁置 5 分钟，即为一周循环。持续重复以上测试达到设定周次。 The battery shall be repeated the following test circle to required times: charge the battery with the standard charge（as of section 6.3）, stand by for 5min, then discharge the battery at 475mA（0.5C）to 3.0V, stand by for 5min.	300 次循环容量保持率大于或等于额定容量的 80%。 The capacity retention after 300 cycles shall be no less than 80% of rated capacity.
6.4.3.	贮存性能 （25℃） Storage Characteristics （25℃）	容量保持量为电芯按 6.3 规定充电结束后，在环境温度为 25±5℃的条件下开路搁置 28 天，再以 190mA（0.2C）电流进行放电到终止电压 3.0V 时放电容量测量值；而容量恢复量指在测量容量保持量后按 6.3 规定充电，然后以 190mA（0.2C）电流进行放电到终止电压 3.0V 时的容量测量值。 The capacity retention shall be measured at a discharge current of 190mA（0.2C）and a cut-off voltage of 3.0V after standard charge（Section 6.31）and being stored for 28 days at 25±5℃ .Then, the capacity recovery shall be measured at a discharge current of 190mA（0.2C）and a cut-off voltage of 3.0V after standard charge（Section 6.3）.	容量保持量≥额定容量的 85%； 容量恢复量≥额定容量的 90%。 The capacity retention shall be no less than 85% of rated capacity, and 90% of the capacity recovery.

6.5. 环境适应性能 Environmental Performance

测试项目 Test Items		测试方法 Test Method	指标 Criteria
6.5.1.	高低温放电性能 High-low Temperature Discharge performance	电池按 6.3.规定充电结束后，在指定温度环境中，以 190mA（0.2C）电流放电到终止电压 3.0V 时测量容量。 The capacity shall be measured at a discharge current of 190mA（0.2C）in different ambient temperature and a cut-off voltage of 3.0V after the standard charge（Section6.3.）.	不变形、不爆炸、不漏液 No distortion, no explosion，no leakage 放电容量： Discharging capacity: 60℃：≥95% -10℃：≥60%
6.5.2.	浸水测试 Water steep	电池按 6.3.规定充电结束后，浸入纯净水中 24 小时。 After standard charge（Section 6.3.）, the battery is put in pure water for 24 hours.	不漏液、不起火、不冒烟、不爆炸 No leakage，no fire，no smoking，no explosion

6.5.3.	恒定湿热 Humidity	电池按 6.3.规定充电结束后，在温度 40±2℃，相对湿度为 90%-95%的环境中搁置 48 小时，取出在 20℃±5℃的环境中搁置 2 小时后，观察外观并以 190mA（0.2C）电流放电到终止电压 3.0V 测量容量。 The battery shall be conducted at a temperature of 40±2℃, under a humidity of 90%-95% for 48 hours after the standard charge（Section 6.3.）; then stand by at a temperature of 20±5℃ for 2 hours, check the visual and measure the retention capacity at a discharge current of 190mA（0.2C）and a cut-off voltage of 3.0V.	不变形、不漏液、不冒烟、不起火、不爆炸。 容量保持量≥额定容量的 70%。 No distortion, no leakage, no smoking, no fire, no explosion. Capacity retention shall be no less than 70% of rated capacity.
6.5.4.	跌落测试 Dropping	电池按 6.3.规定充电结束后，电池从 100cm 高度（最低点高度）位置自由跌落到置于水泥地面上的 18～20 ㎜厚的硬木板上，从 X、Y、Z 正负方向（六个方向）每个方向自由跌落 1 次；结束后将电芯以 190mA（0.2C）电流放电至终止电压 3.0V After standard charge（Section 6.3.）, the battery is dropping to the wood board with a thickness of 18mm to 20mm on the cement ground, the height shall be 100cm measured from the lowest point of the battery to the wood board surface. Drop the battery from X, Y, Z direction（including face side and reverse side direction each）each time, then measured the capacity at a discharge current of 190mA（0.2C）and a cut-off voltage of 3.0V.	不漏液、不冒烟、不起火、不爆炸。 放电容量≥额定容量的 85%。 No leakage, no smoking, no fire, no explosion. Maximal discharge capacity shall be no less than 85% of rated capacity.

6.6. 安全性能 Safety Performance

测试项目 Test Items		测试方法 Test Method	指标 Criteria
6.6.1.	过充电测试 Overcharge test	电池按 6.3.规定充电结束后，以 950mA（1C）/4.5V 充电 2.5 小时。 After standard charge（Section 6.3.）, the battery shall be charged at 950mA（1C）/ 4.5V for 2.5 hrs.	不起火、不冒烟、不爆炸。 No fire, no smoking，no explosion
6.6.2.	短路测试 Short test	电池按 6.3.规定充电结束后，短路其正负极（线路总电阻不大于 100mΩ）1 小时。 After standard charge（Section 6.3.）, the battery shall be subjected to a short-circuit condition with a wire of resistance less than 100mΩ for 1 hour.	不起火、不冒烟、不爆炸。 No fire, no smoking，no explosion
6.6.3.	振动测试 Vibration Test	电池按 6.3.规定充电结束后，搁置 0.5～1 小时，然后固定在振动台上，沿 X、Y、Z 三个方向各振动 30 分钟，振幅 1.6mm，振动频率为 10Hz~55Hz，每分钟变化 1Hz After standard charging（Section 6.3.）, and stand by for 0.5～1.0 hour, fixed the cell to vibration table and subjected to vibration cycling that the frequency is to be varied at the rate of 1Hz per minute between 10Hz an 55Hz, the excursion of the vibration is 1.6mm. The cell shall be vibrated for 30 minutes per axis of XYZ axes.	不漏液、不起火， No leakage, no fire

7. 出货状态 Delivery Condition

大约 30%容量，电池电压为 3.7～3.85 V.
The battery capacity is about 30%（30% SOC）and the voltage is 3.7～3.85 V.

8. 保质期 Date of Minimum Durability

电池出厂后在标准存储条件下保质期为一年。标准存储条件为：温度 20℃±5℃；相对湿度 45%～85%；气压 86kPa～106kPa。
Date of Minimum Durability: one year after shipment in the standard storage condition. The ambient temperature is 20±5℃, the humidity is 45% to 85%, and the pressure is 86kPa to 106kPa.
电池收货后 2 个月内进行一次补电，如要长期存储，须保持约 50%的荷电状态（50%SOC），每六个月补电一次。
Charge the battery within two months after received, and charge the battery to about 50% SOC each six months during a long-term storage.

9. 安全使用指南 Handling Guideline

9.1. 电池充电 Battery Charging

应使用制造商认可的充电器和充电程序。不恰当的充电方式会导致电池发热或损坏。
Use only approved chargers and procedures. Improperly charging may cause the battery to flame or damage.
使用恒流恒压的方式充电。
Charge the battery using constant current /constant voltage method.
不要使用高于本规格书规定的最大电流或电压充电。电池的最大充电电压为 4.25V 。
Do not charge the battery with a current or voltage higher than the specified maximum value in this specification. The absolute maximum charging voltage is 4.25V.
电池必须在 0℃～45℃ 的环境温度范围内才能进行正常充电。环境温度低于 15℃时，只能以小电流（建议 0.1C）充电；当环境温度低于 0℃时，应禁止充电。
Battery shall be charged at 0℃～45℃ environment temperature specified in the Product Specification. In case of environment temperature is lower than 15℃, charge shall be with a little current（recommend 0.1C）. If the environment temperature is lower than 0℃, charge shall be prohibited.
严禁反充电池（正负极接反）。电池应按恰当的方法连结。
Prohibit reverse charging of the battery. The battery must be connected correctly.

9.2. 电池放电 Battery Discharging

不要使用超过本规格说明的最大电流放电，如欲以高于最大电流的电流放电,请先咨询本司。
Do not discharge battery over the max current specified in this specification. If you plan to discharge battery at a higher current than the max current, please consult us.
电池都应避免在低于 3.0V 的情况下放电。
Avoid discharge the battery below 3.0V.
电池长时间不使用其过放状态会通过其自放电特性显示出来，为了防止过放，电池应周期性地充电，使电池电压保持在 3.7V～4.1V 范围内。
Do not over-discharge the battery. Over-discharging can damage the performance of the battery. It should be noted that the battery would be at an over-discharged state by its self-discharge characteristics in case the battery is not

used for a long time. In order to prevent over-discharging, battery shall be charged periodically to maintain between 3.7V and 4.1V.

9.3. 操作温度 Operation Temperature

电池的贮存、充电、放电温度应遵照本规格书的规定。
The battery shall be operated（stored, charged and discharged）in the temperature specified in this specifications.

9.4. 电池短路 Battery Short Circuit

不要让电池短路，电池短路会使电池发热，严重的会导致起火。如果电池的结构被破坏，多次瞬时的短路会减少电池的服务寿命，严重的会导致电池起火。电池短路会引起电池和线接头处温度升高，避免与之直接接触，以免烧伤皮肤。
Do not short-circuit a battery. A short circuit can result in over-heating of the terminals and provide an ignition source. More than a momentary short circuit will generally reduce the battery service life and can lead to ignition of surrounding materials or materials within the battery if the seal integrity is damaged. Extended short-circuiting creates high temperature in the battery and at the terminals. Physical contact to high temperatures can cause skin burns. In addition, extended short-circuit may cause the battery to flame.

9.5. 人体接触 Body Contact

避免与损坏或破裂的电池原料接触。
Avoid contact with the materials from a damaged or ruptured battery.
接触眼睛：应立即用清水冲洗眼睛不少于 15 分钟，并及时接受医生治疗。
Eye contact: Washing immediately with plenty of water for at least 15 minutes. Get medical contact.
接触皮肤：应立即用清水和肥皂冲洗。
Skin Contact: Washing immediately with water and soap.
吸入气体： 应立即呼吸新鲜空气，并及时接受医生治疗。
Inhalation of Vented Gas: Remove to fresh air. Get medical contact in time.
误食：立即接受医生治疗。
Ingestion: Get medical contact immediately.

9.6. 电池存放 Battery Storage

请将电池放在儿童无法拿到的地方。
Keep away battery from children.
电池存放应注意避免其短路。
Do not store battery in a manner that allows terminals to short circuit.
不要将电池放置在热源附近或长时间暴露在阳光下，温度的上升会缩短电池的使用寿命。
Do not place battery near heating sources, nor exposed to direct sunlight for long periods. Elevated temperatures can result in reduced battery service life.
不要将电池存放在其他损害电池或有安全隐患的地方。
Do not store battery in any place where will damage battery or cause safety matter.

9.7. 危险操作 Dangerous Operation

严禁把电池的正负极接反。

Prohibit reversing battery polarity within a battery assembly.
不要将电池或电池的局部弯曲、折叠、这样会破坏电池，严重的会导致电池鼓涨、漏液、起火或爆炸。
Do not bend, fold or fall the battery or part of the battery. It may cause the battery be damaged and result in the battery swelling, leaking, explosion or ignition
不要将电池加热或将电池扔进火里、水里或是其它液体中。
Do not heat or dispose the battery into fire, water or other liquids.
不要将电池放到微波炉、洗衣机或是烘干机里。
Do not put the battery into microwave, washing machine or drying machine.
不要将电池放在烘箱上。
Do not put the battery onto oven.
不要在其他高温环境下放置或使用电池。
Do not put or operate battery under other high temperature conditions.
不要使用已损坏的电池。
Do not use a damaged battery.
不要将不同型号的电池混合一起。避免将新的和旧的或不同型号、不同规格、不同化学成份的电池配对。
Do not mix batteries and types. Avoid using old and new batteries or batteries of different sizes, different chemistry or types in the same battery assembly.

9.8. 电池分解 Battery Disassembly

不要分解电池。
Never disassemble a battery.
如果电池无意中被挤压，导致包容物泄露，必须戴橡胶手套处理，避免吸入泄露的气体。
Should a battery unintentionally be crushed, thus releasing its contents, rubber gloves must be used to handle all battery components. Avoid inhalation of any vapors that may be emitted.

9.9. 其他 Others

如不按以上规定操作导致发生意外，与本司无关。
We shall make no liability for problems that occur when the above specifications are not followed.

10. 产品规格书的修订和声明 Revision and Statement

经客户同意，本司可以对本产品规格书进行修订。
With the agreement of our customers we can revise this specification.
如对本规格有异议，双方可协商解决。
If any matters with this specification arise, it shall be revised by mutual agreements.

附件 1 保护板规格书 Appendix 1 PCM Specifications

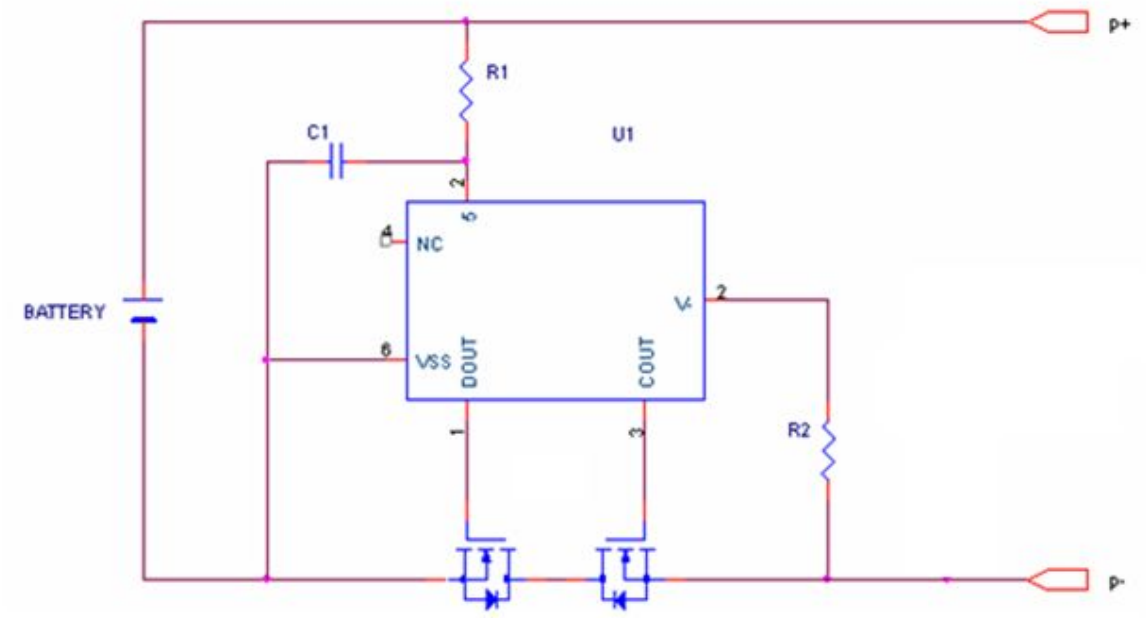
1 Electrical characteristics 电气特性 Topt=25℃

No	Item	Condition	Specification
1	过充电 Overcharge	保护电压 Detection Voltage	4.280±0.025V
2		恢复电压 Release Voltage	4.080±0.025V
3		保护延迟时间 Detection Delay Time	0.96～1.40S
4	过放电 Over Discharge	保护电压 Detection Voltage	3.000±0.050V
6		恢复电压 Release Voltage	3.000±0.100V
7		保护延迟时间 Detection Delay Time	144±29mS
8	放电过流 Over Discharge Current	放电过流保护电流 Over Current	1.0～3.00A
9		放电过流保护延时 Delay Time	7.2～11.0ms
10	短路保护 Short Detection	短路保护延时 Short Detection Delay Time	220～380us
11		恢复条件 Release Conditions	断开负载/Cut Off Load
12	自耗电 Normal Current Consumption	静态电流消耗 Normal Current Consumption Of PCM	Max7.00uA
13	建议工作条件 Suggest Working Conditions	建议最大持续充//放电电流 Max Continuous Charge/Discharge Current	0.8A
14		建议工作温度 Suggest Working Temperature	-20℃～60℃
15	内阻 IR Resistance	PCM 内阻 IR Of PCM	≤65mΩ

2 Parts list 主要元件清单

NO.	Location 元件编号	Part name 元件名称	Specification 元件规格	Pack type 封装式	Q'ty 数量
1	U1	Battery protection IC	S8261-G3J	SOT-23-6	1
2	Q1	Silicon MOSFET	8205	SOT-23-6	1
3	R1	Resistance	SMD 470Ω±5%	0402	1
4	R2	Resistance	SMD 2KΩ±5%	0402	1
5	C1	Capacitance	SMD 0.1μF	0402	1

3 Application Circuit 线路板原理图



附件 2 电池图纸 Appendix 2 Battery Drawing

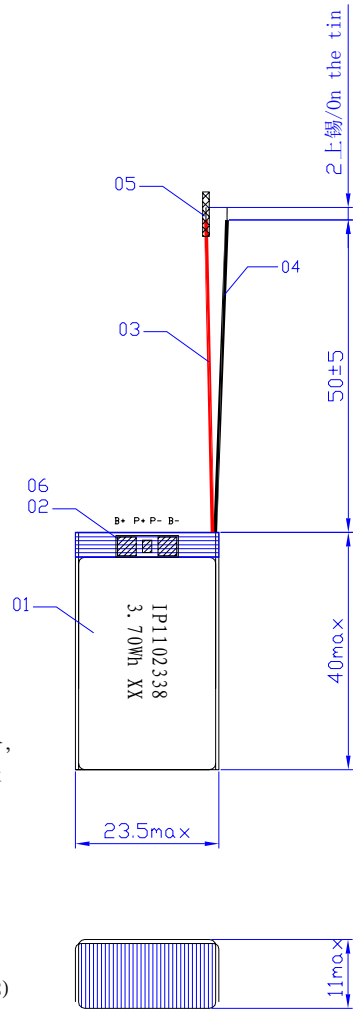
技术要求:
/Technical requirement:

电池正面要求喷码:
/Print the code on the surface of the cell:

IP1102338
3.70Wh XX

(注: 前面的X表示装配的年, 后面的X表示装配的月份, 年及月均用字母代替, 自2007年起用A表示, 2008年用B表示, 以此类推;1月份用A表示, 2月份用B表示, 以此类推; 如BA则表示装配年月为2008年1月)
/(Remark: The first X stands for the year of assembly, the second one stands for the month, use letter to replace the year and month, A stands for 2007, B stands for 2008, and so on; A stands for January, B stands for February, and so on; For example, BA means it's assembled in January of 2008)

此款电池容量为:
/Capacity: 950mAh(Min), 1000mAh(Typ)



序号/No.	部件名称/Part apellation	型 号/Model	数量/Q'ty	图号/Dwg No.
06	绝缘胶布/Insulating tape	蓝色胶布/Blue	1	
05	热缩管/Heat Shrink Tubing	黑色/Black	1	
04	黑线/Black Wire(P-)	1571#28	1	
03	红线/Red Wire(P+)	1571#28	1	
02	保护板/PCM	PM266 3.0V(S8261-G3J+8205)	1	
01	电芯/Cell	IP1102338	1	

※※以上物料均需符合ROHS要求※※

标记	处数	变更内容
		更改喷码/Changes to spurt the code

设计		样品确认	
绘图		复核	
审核		版本	A1
批准		日期	2015-06-17

Battery Drawing
电池成品图

锂离子聚合物电池
/IP1102338

精锐电池科技有限公司
Intellect Pioneering Battery Technology Co.,Ltd.

客户/customer	数量	重量	比例
HD-VA			1:1
共 1 张	第 1 张		

RD-WI-T-WI205-HD-VA001-A