# 深圳市鸿昊升电子有限公司

SHENZHEN HONGHAOSHENG ELECTRONICS CO.,LTD.

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## Specification For Approval

## 客 户 承 认 书

Customer 客户名称：

Battery model 电池型号： 357095 3.7V 2800mAh

Revision NO.版本： A0

Sample Delivery Date 送样日期： 2019-1-3

| Prepared by 拟定 | Checked by 审核 | Approved by 核准 |
|---|---|---|
| 李儒广 | 顾燕虹 | 潘宜东 |

| | |
|---|---|
| Customer’s signature 客户回签 | |
| Effective Date 生效日期 | |

## 1、Scope 适用范围

This document describes the Product Specification of the Lithium(HHS) rechargeable battery cell supplied by Honghaosheng Electronics Co.,Ltd.

本规格说明书描述了深圳市鸿昊升电子有限公司（以下简称鸿昊升电子）生产的可充电锂离子电池的产品性能。

## 2、Specifications of battery pack 产品规定

2.1: Battery model ----------
电池型号----------: -----357095

2.2: Semi-manufactured cell -------
电芯规格----------: -----357095P

2.3: Nominal voltage----------
标称电压----------: -----3.7V

2.4: Nominal capacity----------
标称容量----------: -----≥2800mAh

2.5: Interior resistance----------
产品内阻----------: -----≤150mΩ

## 3、Technology parameters 技术参数

3.1 The main technical parameters of the battery 电池主要技术参数

| NO.<br>序号 | Items<br>项目 | | units<br>单位 | Specifications<br>参数 | Remark<br>备注 |
|---|---|---|---|---|---|
| 1 | Max. charge voltage<br>充电上限电压 | | V | 4.2V | |
| 2 | Min. discharge voltage<br>放电终止电压 | | V | 3.0V | |
| 3 | Max. continuation charge current<br>最大连续充电电流 | | mA | 1400mA | |
| 4 | Max continuous discharge current<br>最大连续放电电流 | | mA | 1400mA | |
| 5 | Standardenvironment 标准环境 | temperature 温度 | ℃ | 25±5℃ | |
| | | Humidity 湿度 | RH | 45-75%RH | |
| 6 | Operating temperature工作温度 | Charging 充电 | ℃ | 0~45℃ | |
| | | Discharging 放电 | ℃ | -10~+60℃ | |
| 7 | Charging time<br>充电时间 | standard charge<br>标准充电 | H | 6.0H | 0.2C<br>560mA |
| | | quick charge<br>快速充电 | H | 3.0H | 0.5C<br>1400mA |
| 8 | About Weight<br>大约重量 | | g | 50g | |
| 9 | Outgoing voltage<br>出货电压 | | V | ≦3.7 | |

## 3.2 Performance inspection and testing 性能检查及测试

| NO.<br>序号 | Items<br>项目 | Content<br>内容 | Requirement<br>要求 |
|---|---|---|---|
| 1 | Standard charge<br>标准充电 | Charging the cell initially with constant current at 0.2C and then with constant voltage at 4.2V till charge current declines to0.01C<br>以 0.2C 恒流充电至 4.2V，再改为恒压充电，直至充电电流≤0.01C 时停止。 | Constant current constant voltage source<br>恒流恒压源 |

| | | | |
|---|---|---|---|
| 2 | Normal capacity<br>标称容量 | The capacity means the discharge capacity of the cell, which is measured with discharge current of 0.2C with 3.0 V cut-off voltage after standard charge.<br>标称容量是指电池标准充电后,以标准放电（0.2C）至终止电压 3.0V 的容量。 | C≥2800mAh |
| 3 | Cycle life<br>循环寿命 | Test condition:<br>Charge: 0.2C to 4.2V<br>Discharge: 0.2C to 3.0V<br>60% or more of 1st cycle capacity at 0.2C discharge of Operation.<br>测试条件:<br>充电：0.2C 充电到 4.2V<br>放电：0.2C 放电到 3.0V<br>当放电容量降至初始容量的 60%时，所完成的循环次数定义为该电池的循环寿命。 | ≥300 次<br>≥300 times |
| 4 | Temperature Characteristics<br>温度特性 | 1. According to item Standard Charge.<br>2. Capacity comparison at each temperature, measured with constant discharge current 0.2C with 3.0V cut-off. Percentage as an index of the capacity compared with 100% at 25℃.<br>1.将电池标准充电。<br>2.在不同温度条件下，用 0.2C 的电流恒流放电至截止电压 3.0V。以 25℃时放电容量为基准计算百分比。 | -10℃: ≥60%<br>25℃: 100%<br>60℃: ≥85% |

## 4、PCM parameter PCM 参数

### 4.1、PCM 参数

| Items<br>项目 | Symbol<br>符号 | Content<br>详细内容 | Criterion<br>标准 |
|---|---|---|---|
| Over charge Protection<br>过充保护 | $V_{DET1}$ | Over charge detection voltage<br>过充电检测电压 | 4.28±0.025V |
| | $tV_{DET1}$ | Over charge detection delay time<br>过充电检测延迟时间 | 1300ms max |
| | $V_{REL1}$ | Over charge release voltage<br>过充电解除电压 | 4.08±0.05V |

| | | | |
|---|---|---|---|
| Over discharge protection 过放保护 | $V_{DET2}$ | Over discharge detection voltage 过放电检测电压 | 3.0±0.063V |
| | $tV_{DET2}$ | Over discharge detection delay time 过放电检测延迟时间 | 1300ms max |
| | $V_{REL2}$ | Over discharge release voltage 过放电解除电压 | 3.00±0.1V |
| Over current protection 过流保护 | $V_{DET3}$ | Over current detection voltage 过电流检测电压 | 180±15mV |
| | $I_{DP}$ | Over current detection current 过电流保护电流 | 2-6A |
| | $tV_{DET3}$ | Detection delay time 检测延迟时间 | 20ms max |
| | | Release condition 保护解除条件 | Cut load 断开负载 |
| Short protection 短路保护 | | Detection condition 保护条件 | Exterior short circuit 外部电路短路 |
| | $T_{SHORT}$ | Detection delay time 检测延迟时间 | 500us max |
| | | Release condition 保护解除条件 | Cut short circuit 断开短路电路 |
| Interior resistance 内阻 | $R_{DS}$ | Main loop electrify resistance 主回路通态电阻 | VC=4.2V, $R_{DS}$≤60mΩ |
| Current consumption 消耗电流 | $I_{DD}$ | Current consume in normal operation 工作时电路内部消耗 | 3.0μA Type 6.0μA Max |

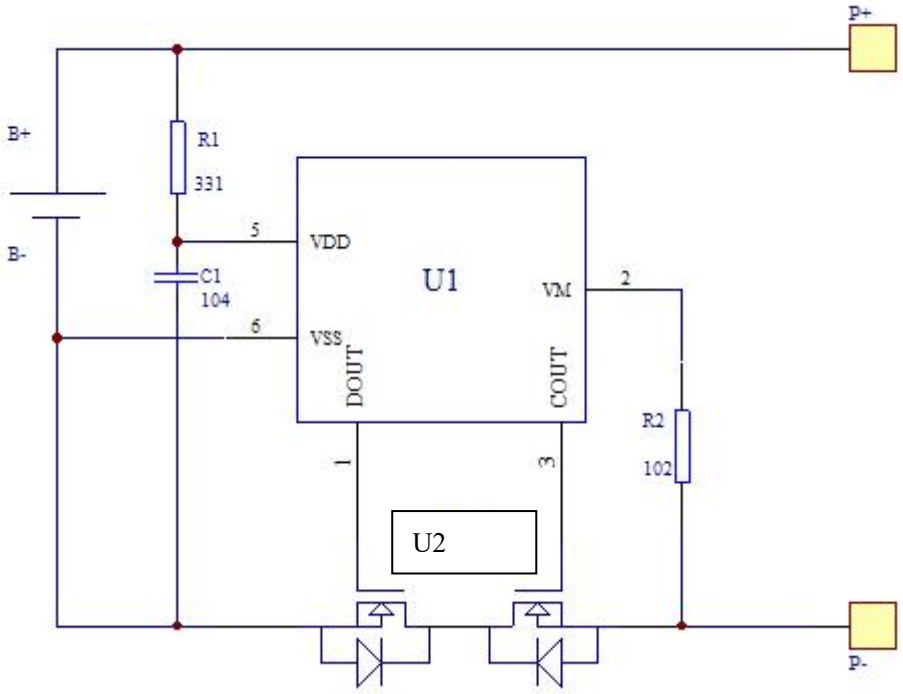
## 4.2、 PCB component list 主要元件清单

| 序号 No. | 元件编号 Part name | 元件名称 Specification | 元件规格 Specification | 封装形式 Pack type | 用量 Q'ty |
|---|---|---|---|---|---|
| 1 | U1 | 单节锂电保护 IC Battery protection IC | S-8261DAI | SOT-23-6 | 1 |
| 2 | U2 | MOS 管 Silicon MOSFET | 8205A | TSSOP-8 | 1 |
| 3 | R1 | 贴片电阻 Resistance | SMD 330Ω ±5% | 0603 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| 4 | R2 | 贴片电阻 Resistance | SMD 1KΩ ±5% | 0603 | 1 |
| 5 | C1 | 贴片电容 Capacitance | SMD 0.1μF | 0603 | 1 |
| 6 | PCB | 印制电路板 Print circuit board | FR4，双面板 | ±0.15mm | 1 |

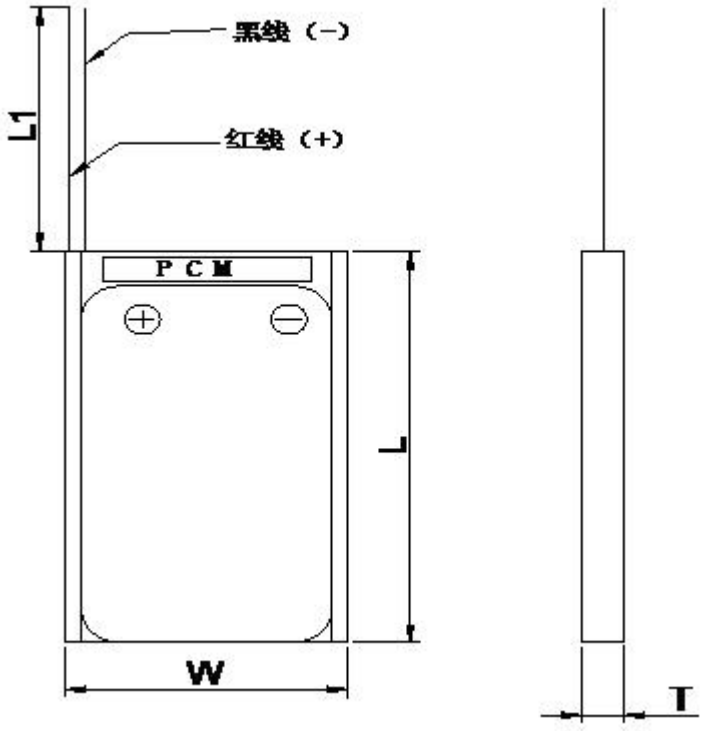
## 4.3、Application Schematic

### 原理图



## 5、Dimensions of battery pack

### 成品结构尺寸




| 项 目<br>Item | 说 明<br>Description | 尺寸规格<br>Specification |
|---|---|---|
| T | 厚度<br>Thickness | 3.7mm max |
| W | 宽度<br>Width | 70.5mm max |
| L | 长度<br>Length | 98.0mm max |
| L1 | 出线长度<br>Wire length | UL1007 26# 50±5mm |

## 6、Visual inspection/产品外观要求

There shall be no such defect as scratch, flaw, crack and leakage, which may adversely affect commercial value of the cell.
成品电池不可出现划伤、污迹、变形、褪色、漏液等不良现象。

## 7、The warranty period/保修期

12 Month from the factory shipment.
从出厂代码日起 12 个月保修。

## 8、 Storage 储存

8.1 The Li-ion battery pack should be stored in a cool, dry and well-ventilated area, and should be far from the fire and the high temperature.
锂电池需保存在阴凉，干燥，通风的环境中，避免接触火源与热源。

8.2 The battery should store in the product specification book stipulation temperature range, the best storage temp. is 0 to 25℃. The best humidity is 60±25%.
电池需按规格书规定温度范围进行储存，最佳储存温度 0-25℃，最佳湿度为 60±25%。

8.3The battery should be stored within room temperature, and charged to 40%~60% electric quantity. In order to avoid over-discharge, we suggest charge the batteries every three months. If stored over one year, we suggest activate the battery as per standard charge-discharge method.
电池应当在室温下存放，应充到 40%至 60%的电量。为防止电池过放，建议每 3 个月按标准充电方式进行一次充电， 如储存时间超过一年，建议每年按标准充放电方式进行一次充、放电循环以激活电池。

## 9、Use Attentions 使用注意事项

To ensure proper use of the battery please read the manual carefully before using it.
为确保电池正确使用，请在使用之前阅读使用说明书。

9.1 Warnings 警告:

Do not expose to, dispose of the battery in fire.
不可将电池置于火中。

Do not put the battery in a charger or equipment with wrong terminals connected.
不可将电池充电器正负极反接。

Avoid shorting the battery.
不可将电池短路。

Avoid excessive physical shock or vibration.
避免电池过度冲击和震荡。

Do not disassemble or deform the battery.
不可拆解或扭曲电池。

Do not immerse in water.
不可浸入水中。

Do not use the battery mixed with other different type or model batteries.
不可将该电池与其它种类和型号的电池混用。
Keep out of the reach of children.
请置于儿童接触不到的地方。

9.2 Charge 充电:

Battery must be charged in appropriate charger only.
请使用合适的充电器对电池充电。
Charging current: Can not surpass the biggest charging current which in this specification book stipulated.
不可使用超出本规格书最大充电电流对电池进行充电。
Charging voltage: Does not have to surpass the highest amount which in this specification book stipulated to decide the voltage.
充电电压：请不要超出本规格书所规定最高充电电压。
Charge temperature: The battery must carry on the charge in the ambient temperature scope which this specification book stipulated.
充电温度：电池需在指定温度范围内进行充放电。
Uses constant current and constant voltage way charge. PLS connect the positive and negative terminals in right way, or the battery may be damaged.
请使用恒流恒压方式进行充电，请勿反接正负极，以免损坏电池。

9.3 Discharge 放电:

The discharging current should not surpass the biggest discharging current this specification book stipulation, The large discharge current can cause heat and lower capacity.
放电电流不可超过规格书最大额定放电电流。大电流会导致电池发热和容量降低。
Discharge temperature: The battery discharge must carry on in the ambient temperature scope which this specification book stipulated.
放电温度：电池必须在规格书规定温度范围内放电。
Over-discharge: After short time over discharge, then charge immediately won't damage the battery. But the battery will be damaged for being long time over discharged. During long-term storage, the battery may be within over-discharging condition for self discharge. To prevent the occurrence of over discharging, the battery should maintain the certain capacity when storage.
过放电：电池瞬间过放然后立即充电不会损坏电池。但是如果长时间过放，电池将会被损坏。 在长期储存中，可能由于电池自放电而导致电池处于过放状态。因此为避免电池过放，必须带电储存。