Document No. :	Rev : A1	Data : 2018.05.28	Page : 1 / 7
Description : 3.6V/67.0Ah		Model NO. : SPC-P1291	

锂离子电芯规格书

Lithium-ion Cell

PRODUCT SPECIFICATION

电芯型号 3.6/67.0Ah

客户名称：Customer Name : 客户确认：Customer Confirmation : 日期 Date :

版本修正记录：Revision History：

版本 Revision	日期 Date	修正人 Originator	修正内容 Reason For Change
A1	**2018.05.27**	**李荣生**	**首次发行**

核准 Approved	审核 Reviewed	制订 Prepared
姚松 Date:2018.05.27	常海波 Date: 2018.05.27	**李荣生** Date: 2018.05.27

Document No. :	Rev : A1	Data : 2018.05.28	Page : 2 / 7
Description : 3.6V/67.0Ah		Model NO. : SPC-P1291	

1、范围 Scope

本规格书描述**深圳市伟创源科技有限公司**锂离子电池有关参考技术指标及要求。

This specification describes the requirements of the Lithium-ion Rechargeable Battery supplied by SHENZHEN VICTPOWER TECHNOLOGY CO., LTD.

2、产品描述 Description and Model

2.1 电池类型 Battery Classification：锂离子电池

2.2 电池型号 Battery Type: 3.6V/67.0Ah

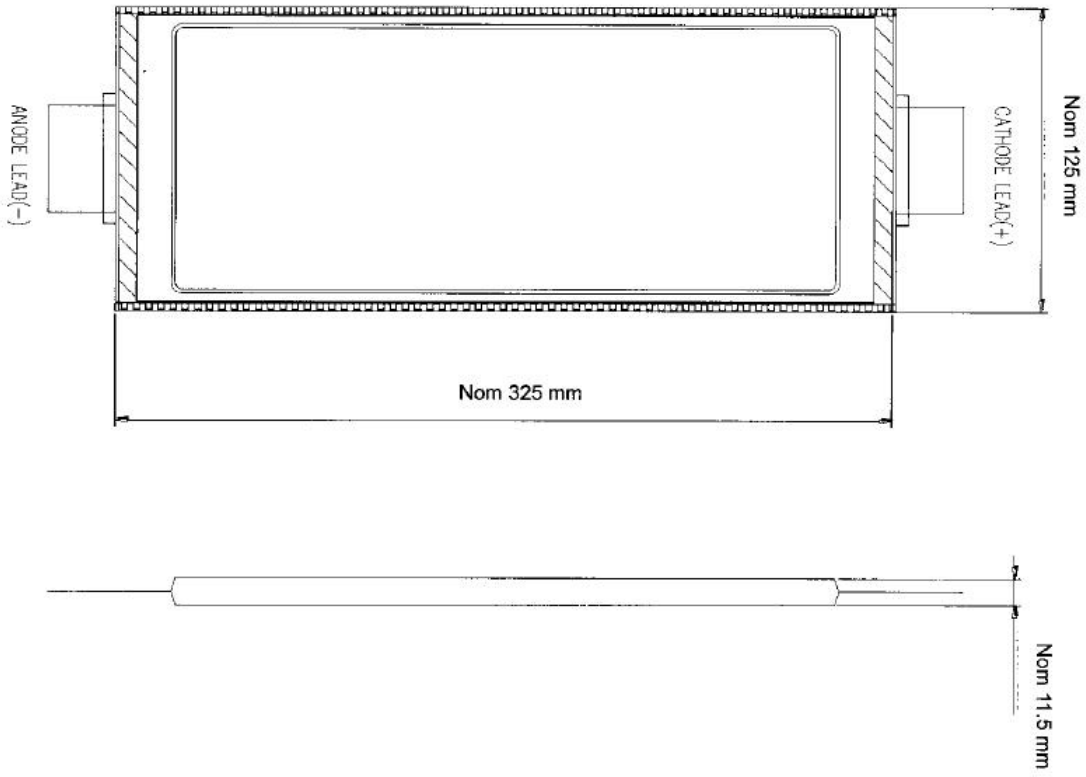
3、基本参数 Basic Characteristics

No.	项目 Item	规格 Specification
1.	电芯型号 Cell Model	**3.6V/67.0Ah**
2.	标称电压 Average working Voltage	**3.6V**
3.	额定容量 Nominal Capacity	**≥67.0Ah(0.3C 充电，0.5C 放电)** **(0.3C charge and 0.5C discharge)**
4.	充电电压 Charging Voltage	**4.20V**
5.	标准充电电流 Standard Charge Current	**20.1A (0.3C)**
6.	最大持续充电电流 MAX Continuous Charge Current	**60.0A(25~45℃)**
7.	标注充电方式 Standard Charge Method	**CC--CV** **(0.3C 恒流持续充电至单体电池最大 4.20V,然后 4.20V 恒压持续充电至电流小于 3.2A)** **(Charging at constant current of 0.3C to 4.20V , then Charging at constant voltage of 4.20V until the current is less than 3.2A)**
8.	电池内阻 Initial AC Impedance	**0.5±0.2mΩ** (at 1kHz after standard charge)
9.	标准放电电流 Standard Discharge Current	**33.5A (0.5C)**
10.	最大持续放电电流 MAX Continuous Discharge Current	**67.0A (1.0C)**
11.	最大脉冲放电电流 Max pulse discharge current	**180A (Max10.0S)**
12.	放电终止电压 Discharge End Voltage	**2.50V**

13.	循环寿命 Cycle Life	**3000 cycles (0.5C charge , 0.5C discharge, capacity retention ≧80%)**
14.	工作温度 Operating Temperature	**Charging : 10℃～45℃** **Discharging : -20℃～45℃**
15.	贮存温度 Storage Temperature 贮存超六个月需要充电一次	**1 month : -20℃～60℃**
		6 month : -20℃～45℃
		1 year : -20℃～20℃
16.	贮存相对湿度 Relative Humidity	**65±20%**
17.	出货电压 Delivery Voltage	**≥3.6V**

4、外形尺寸 OUTLINE DIMENSION (UNIT: mm)（单位：mm）

4.1. 电芯尺寸：长度 325.0±2.5mm，宽度 125.0±2.5 厚度 11.5±0.50mm，参考附图 1。
Dimension: L： 长度 325.0±2.5mm，W：125.0±2.5 T： 11.5±0.50mm
Refer to the attached drawing 1



5、外观 APPEARANCE

电芯外观不存在明显的刮痕、凹坑、裂痕、锈蚀、漏液等影响电池性能的外观不良。

Th ere shall be no such defect as deep scratch, flaw, crack, rust, leakage, which may adversely affect commercial value of the cell.

6 、测试条件和定义 TEST CONDITION AND DEFINITIONS

6.1 Measuring Equipment 测试设备

1.Voltmeter 伏特计

Inner impedance>1000Ω/V. 内阻>1000Ω/V

2.Ampere-meter 安培表

Total external resistance(ammeter and wire)<0.01Ω. 总外阻抗（安培表和线路）<0.01Ω

3.Slide caliper 游标卡尺

The slide caliper should have a scale of 0.02mm. 游标卡尺精度为 0.02mm

4.Impedance meter 内阻测试仪

The impedance meter should be operated at AC 1kHz. 在 1kHz 交流条件下进行内阻测试

6.2 除特殊要求外，所有测试均在标准温度 25±2°C 和标准湿度 65±20% RH 的条件下进行。测试使用电芯为交货一周内的新电芯。

Unless otherwise specified, all tests shall be performed at 25±2°C and humidity of 65±20% RH.The cells used for the test mentioned should be new one delivered a week before at most.

6.3 所有测试的充电电压均同于 7.1

All tests shall be performed at the same charge voltage, per 7.1.

6.4 定义 Definitions

倍率（“C”）：满电电池 1 小时放电至终止电压所用的电流大小（mA）。

C Rate（“C”): The rate (milliamperes) at which a fully charged cell is discharged to its end voltage in one (1) hour.

7、性能 CHARACTERISTICS

7.1 Charge method 充电方式:

7.1.1 0.3C 恒流充电至 4.2V，再以 4.2V 恒压充电至电流衰减为 3.2A。

Charging shall consist of charging at a 0.3C constant current rate until the cell voltage reaches 4.20V.The cell shall then be charged at constant voltage of 4.20 volts while tapering the charge current.Charging shall be terminated when the charging current has tapered to3.2A

7.2 Discharge method 放电方式:

7.2.1 0.5C 恒流放电至 2.50V

Cells shall be discharged at a constant current of 0.5C to 2.50 volts

7.3 Internal Impedance内阻

The impedance shall be measured at AC 1k Hz initially.

在 1kHz 交流条件下使用内阻测试仪测试电池内阻

Initial Internal Impedance ≤ 0.5±0.20mΩ.

电池内阻≤ 0.5±0.020mΩ

7.4 Cycle Life 循环寿命

7.4.1 25± 2℃测试环境下，按 7.1.2 方式对电池进行充电，休眠 15 分钟，按 7.2.3 方式对电池进行放电，休眠 15 分钟，充放电一次为一个循环，测试 1000 次循环后放电容量。

Charge cells per 7.1.2. Rest 15 minutes. Discharge per 7.2.3. Rest 15 minutes before recharge. The test enviromental temperature is 25± 2℃. A cycle is defined as one charge and one discharge. Discharge capacity shall be measured after 1000 cycles.

次循环后放电容量≥80%首次容量

Discharge capacity (1000th Cycle) ≥80% of 1st Cycle Capacity

7.5 Storage Characteristics 存储性能

After charge as per 7.1.1, store the testing cells at 25 ± 2 °C for 28 days. Then discharge as per 7.2.1.The residual discharge capacity>90% of Initial capacity

电芯按 7.1.1 方式充电后，在 25±2°C 环境下存储 28 天后，按 7.2.1 方式放电并记录电芯容量。电芯残余容量>90%初始容量

7.6 Temperature Characteristics 不同温度放电性能

温度 Temperature	容量	条件
45°C	102.1% of C_5	25.0°C 充电，45°C 放电 25.0°C charge，450°C discharge
25°C	100.0% of C_5	25.0°C 充电，25°C 放电 25.0°C charge，25°C discharge
0°C	940.4% of C_5	25.0°C 充电，0°C 放电 25.0°C charge，0°C discharge
-10°C	84.2% of C_5	25.0°C 充电，-10°C 放电 25.0°C charge，-10°C discharge
-20°C	60.2% of C_5	25.0°C 充电，-20.0°C 放电 25.0°C charge，-20.0°C discharge

8 安全性能 SAFETY

8.1. External Short-circuiting Test at 25℃ 25℃外部短路测试

按照 7.1.1 方式将电池充满电，使用外电路短路电池正（+）负（-）极，要求外电路内阻小于

50mohm。当电池电压降到 0.1V，或电池温度降至测试温度 10℃范围内，结束测试。
Cell charged per 7.1.1, is to be short circuited by connecting the positive (+) and negative (-) terminals with a total external resistance of less than 50mohm. Stop the test when the cell voltage falls below 0.1V and the cell case temperature has returned to a value within 10 ºC of the original testing temperature.
标准：电芯不起火，不爆炸
Criteria: No Explosion, No Fire

8.2. Overcharge Test 过充电测试

Cell fully discharged per 7.2.2, is to be overcharged with 1.5C to 12V. Monitoring change of cell temperature during testing. Stop the test when cell temperature decays to room temperature.
按照 7.2.2 方式将电池放电至终止电压后，以 1.5C 电流进行充电至电压达到 12V。测试过程中监测电池温度变化，当电池温度下降至室温时，结束测试。
Criteria: No Explosion, No Fire
标准：电芯不起火，不爆炸

8.3. Heating Test 热箱测试

Cell charged per 7.1.1, is to be placed in the hot oven.Store the testing cells connecting with thermocouple in constant temperature box, heating the cells and box(speed of ascending temperature is 5ºC±2ºC per min) together at room temperature simultaneity, monitor the temperature change of the box, keep for 60 minutes after the box temperature reaches 130ºC±2ºC,then stop the test.
按照 7.1.1 方式充满电的电池放置到恒温加热箱中，用热电偶连接电池监测电池温度。恒温箱升温加热电池，要求恒温箱升温速度为每分钟 5±2℃。监测恒温箱温度变化，当恒温箱温度达到 130±2℃后恒温保持分钟，结束测试。
Criteria: No Explosion, No Fire
标准：电芯池不起火，不爆炸

8.4. Impact Test 冲击测试

Cell charged per 7.1.1, is to be placed on a flat surface. A 5/8 inch (15.8 mm) diameter bar is to be placed across the center of the cell. A 20 pound (9.1 kg) weight is to be dropped from a height of 24± 1 inch (610
300 25 mm) onto the sample.
按照 7.1.1 方式充满电的电池放置于水平表面上，将一直径为 5/8 inch（15.8mm）的铁棒横跨放置在电池中心，用 20pound（9.1kg）的重物从 24±1 inch（610±25mm）的高度自由落体砸落在样品上，结束测试。
Criteria: No Explosion, No Fire
标准：电芯不起火，不爆炸

8.5. Crush Test 挤压测试

Cell, charged per 7.1.1, is to be crushed between two flat surfaces and with cell longitudinal axis parallel to the flat surfaces of the crushing apparatus.The force for the crushing is to be applied by a hydraulic ram with a 1.25 inch (32 mm) diameter piston.

The crushing is to be continued until a pressurereading of 2500 psig (17.2 MPa) is reached on the hydraulic ram, applied force of 3000 pounds (13 kN). Once the maximum pressure has been obtained it is to be released.

按照 7.1.1 方式充满电的电池放置于两个水平平板之间，要求电池长度方向与平板平行。采用直径为 1.25 inch（32mm）的活塞泵作为动力供给的液压设备对两平板持续加压，直到液压达到 2500psig （17.2MPa），两平板间压力到达 3000pounds（13kN）的挤压力，结束测试。

Criteria: No Explosion, No Fire

标准：电芯不起火，不爆炸

9 、PACKAGING 包装

Loading 100 cells per box, 2 boxes per case for a total of 200 cells. Sketch map refer to attached drawing 2 电芯包装每盒装 100 只电芯，每箱装 2 盒，共 200 只电芯。包装示意

10、 OTHERS 其它

Any matter not included in this specification shall be confered between the both parties.

不包含在此产品规格书之内的任何问题，由双方协商解决。

11 、SHIPPING 运输

The capacity of delivery cell is approximately at 60% of charging. It is not specified more than 60% capacity remain at customer, because of self-discharge. During transportation, keep the cell from acutely vibration, impacting, solarization, drenching.

出货电芯处于 60%充电状态，由于电芯存在自耗，运送到客户端的电芯无法完全保证 60%荷电量。运输过程应防止剧烈振动、冲击、日晒雨淋。