

产品规格书

Product Specification

名称/Name: 锂聚合物电池/ Lithium Polymer Batteries

型号/Model: PL805050-3.7V-2200mAh 1S1P

用途/Application:

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核准/Approval: 沈启红/ **Shen qihong**

日期/Date: 2015-03-04

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Customer Signature 客户确认		

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变更记录/Modification Record Table

NO:	Version 版本	Date/日期	Modification description/修改描述	Modification Manager/修改者
1	Ver: 1.0	2013.12.30	新版发行/New Version	张华南
2	Ver: 1.0	2015.03.04	修改插头参数	施化奎/Shi huakui

Content

目录

1 Scope 使用范围.....	4
2 Model 型号.....	4
3 Specification 规格(CELL).....	5
4 Specification 规格(PACK).....	6
4.1 Visual inspection 外观.....	6
4.2 Standard environmental test condition 测试环境标准.....	6
4.3 Electrical characteristics 电性能.....	7
4.4 Special Electronic Characteristics 特殊电器性能.....	8
4.5 Mechanical characteristics 机械性能.....	8
4.6 Safety Test 安全测试.....	8
5 Long Time Storage 长时间储存性能.....	9
6 Product Cautionary Statement and Disclosure 产品警示声明.....	9
7 Others 其它.....	10
8. PCB Electric Features 保护板技术参数.....	11
8.1. Circuit Diagram 电气原理图.....	12
8.2. PARTS LIST 物料清单.....	12
9. The finished product drawings 成品图纸.....	13

1. Scope/使用范围

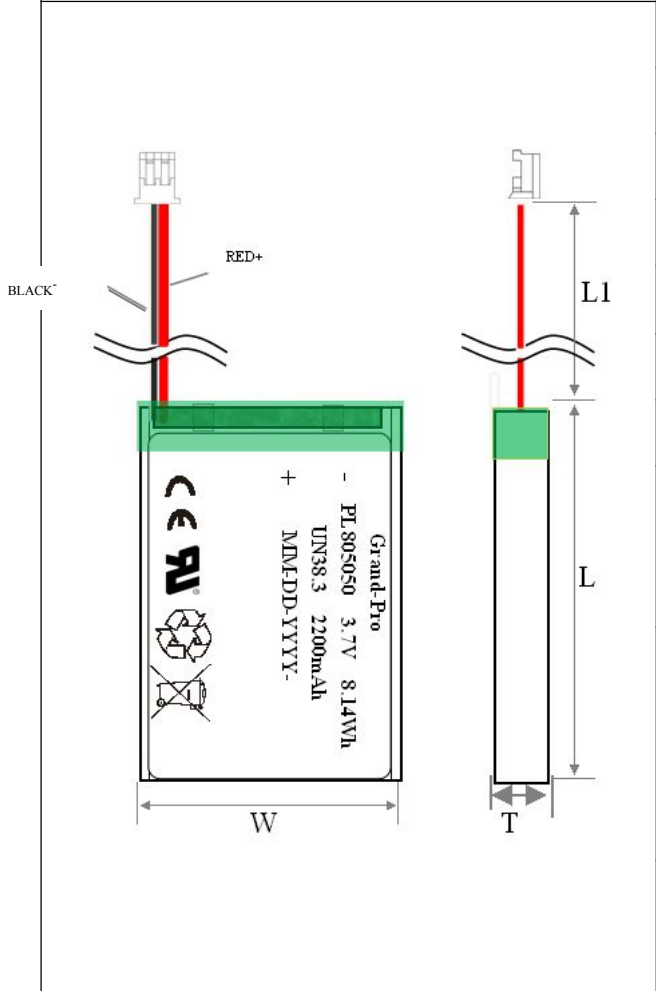

This document describes the Product Specification of the Lithium Polymer Batteries supplied by Grand-Pro.

本档描述的产品是由深圳格兰博科技有限公司提供的聚合物锂离子电池。

1. Model/型号 PL805050

2.1 Spec. (规格) : 3.7V/2200mAh

2.2 Cell drawing(成品图纸)如下:

Shipping drawing(成品图纸)	Dimension (尺寸)		
	Item	Description	Dimension
	T	Thickness	MAX:8.5mm
	W	Width	MAX:51.0mm
	L	Length	MAX:53.0mm
	L1	/	60±5mm
	L3	/	/
	L4	/	/
Connect Model (连接器型号): MOLEX5264-2P (Pitch=2.0mm) 反向插头 Wire Type: UL1007 24AWG Red(+) Black(-)			Label(标签): Grand-Pro - PL805050 3.7V 8.14Wh UN38.3 2200mAh + MM-DD-YYYY 
Other declare (其他):			
Remark(备注): When measuring the cell's thickness, width and length, the stress of the measuring instrument on the cell should be larger than 300gf. 在测量电池厚度长度和宽度时, 需要在测量仪器上施加 300gf 的力压紧。			

3.Cell Specification/规格 (CELL)

No.	Items 项目	Specifications 规格
1	Nominal capacity 标称容量	2200mAh @ 0.2C discharge 0.2C 放电容量 2200mAh
2	Nominal voltage 标称电压	3.7V
3	Charge voltage 充电电压	4.2V
4	Charge current 充电电流	Standard charge/标准充电电流: 0.2C Rapid charge 快速充电电流: 0.5C
5	Standard Charging method 标准充电方法	0.2C(constant current) charge to 4.2V, then CV(constant voltage 4.2V) charge till charge current decline to $\leq 0.01C$. 0.2C 恒流充电至 4.2V, 然后 4.2V 恒压充电至电流 0.01C 截止
6	Charging time 充电时间	Standard charge/ 标准充电时间: 6.0 hours (Ref.) Rapid charge/快速充电时间: 4.0 hours (Ref.)
7	Max. charge current 最大充电电流	2.2A
8	Max. discharge current 最大放电电流	3.3A
9	Discharge cut-off voltage 放电截止电压	3.0V
10	Operating temperature 工作环境温度	Charging / 充电温度: 0°C ~80°C Discharging/放电温度: -10°C ~80°C
11	Storage temperature 储存温度	Less than 1 month/一个月: -20°C ~ 45°C Less than 6 month/ 六个月: -20°C ~ 35°C
12	Cell weight 电芯重量	Approx.42g 大约 42g
13	Cell resistance 电芯内阻	$\leq 60m\Omega$ (at AC 1KHz after 50% charge)

4.0Pack Specification/规格(PACK):

No.	Items 项目	Specifications 规格
1	Nominal capacity 标称容量	2200mAh @ 0.2C discharge 0.2C 放电容量 2200mAh
2	Nominal voltage 标称电压	3.7V
3	Charge voltage 充电电压	4.2V
4	Charge current 充电电流	Standard charge/标准充电电流: 0.2C Rapid charge 快速充电电流: 0.5C
5	Standard Charging method 标准充电方法	0.2C (constant current) charge to 4.2V, then CV(constant voltage4.2V) charge till charge current decline to $\leq 0.01C$. 0.2C 恒流充电至 4.2V, 然后 4.2V 恒压充电至电流 0.01C 截止
6	Charging time 充电時間	Standard charge/ 标准充电時間:6.0 hours (Ref.) Rapid charge/快速充电時間:4.0 hours (Ref.)
7	Max. charge current 最大充电电流	2.2A
8	Max. discharge current 最大放电电流	3.3A
9	Discharge cut-off voltage 放电截止电压	3.0V
10	Operating temperature 工作环境温度	Charging / 充电温度:0°C ~80°C Discharging/放电温度: -10°C ~80°C
11	Storage temperature 储存温度	Less than 1 month/一个月: -20°C ~ 45°C Less than 6 month/ 六个月: -20°C ~ 35°C
12	The finished product resistance 成品内阻	$\leq 150m\Omega$ (at AC 1KHz after 50% charge)

4.1 Visual inspection/外观

There shall be no such defect as scratch, flaw, crack, and leakage, which may adversely affect commercial value of the cell.

电芯表面沒有刮痕, 瑕疵, 裂紋, 泄露等能影响电芯常规性能的缺陷.

4.2 Standard environmental test condition 标准环境测试条件

Unless otherwise specified, all tests stated in this Product Specification are conducted at below condition:

Temperature/温度: : $23 \pm 5^{\circ}\text{C}$

 Humidity/湿度: $65 \pm 20\% \text{ RH}$

除非有其他规格说明, 所有测试条件都遵循以下规格:

4.3 Electrical characteristics 电性能

No.	Items 项目	Test Method and Condition 测试方法和条件	Criteria 标准
1	Standard Charge 标准充电	Charging the cell initially with constant current at 0.2C, after cell voltage reach to 4.2V then Charge with constant voltage at 4.2V (accuracy $4.20 \pm 0.05\text{V}$) till charge current declines to 0.05C. 初始以 0.2C 恒流充电, 在电压达到 4.2V 后, 以 4.2V($4.20 \pm 0.05\text{V}$) 恒压充电直到充电点流小於 0.05C.	$\leq 2200\text{mAh}$
2	Minimum Capacity 最小容量	The capacity means the discharge capacity of the cell, which is measured with discharge current of 0.2C with 2.75V cut-off voltage after the standard charge. 电芯放电容量, 即标准充电后以 0.2C 恒流放电, 截止电压 2.75V 时放出的容量.	$\geq 2200\text{mAh}$
3	Cycle Life 循环寿命	Test condition:测试条件 Step1: 0.2C charged to 4.2V, 0.01C cut-off current 第 1 步:0.2C 充电至 4.2V, 截止电流 0.01C Step 2: Standby 10min; 第 2 步: 静置 10 分钟 Step3: Discharge the cell at 0.5C to 2.75V; 第 3 步:0.5C 放电至 2.75V, Step 4: Standby 10min; 第 4 步: 静置 10 分钟 Step5: Repeat step1 to step4 for300 times. Measure the capacity of 1st cycle capacity at 0.5C discharge of Operation 第 5 步:重复第 1 步至第 4 步 300 次, 记录 300 周循环後容量与第 1 次循环容量的比值.	300cycles: $\geq 80\%$
4	Self-discharge 自放电	Capacity after 30 days storage, measured under the same condition as Item.4.2 在 4.2 同样条件下测试存放 30 天后的容量.	Residual capacity $>90\%$ 残留容量 $>90\%$
5	Initial Impedance 初始阻抗	Internal resistance measured at AC 1KHz after 50% charge 半充后在 AC 1KHZ 条件下测试电芯交流内阻	$\leq 180\text{m}\Omega$
6	The finished product resistance 成品阻抗	Internal resistance measured at AC 1KHz after 50% charge 半充后在 AC 1KHZ 条件下测试电芯交流内阻	$\leq 150\text{m}\Omega$
7	Cell Voltage 电压	As of shipment. 出货电压	《不带负载测试电压: 3.81V ~ 3.95V; 加负载 250mΩ 测试电压: 3.75V ~ 3.90V》

4.4 Special Electronic Characteristics 特殊电器性能

No.	Items 项目	Test Method and Condition 测试方法和条件	Criteria 标准
1	Discharge at low Temperature 低温放电	After standard charging, laying the Cells 16h at $-10\pm 2^{\circ}\text{C}$, then discharging at 0.2C to ending voltage, recording the discharging time. 电池标准充电后, 在 $-10\pm 2^{\circ}\text{C}$ 恒温环境放置 16 小时, 采用 0.2C 的电流放完电, 记录放电时间。	$\geq 210\text{min}$
2	Discharge at High Temperature 高温放电	After standard charging, laying the Cells 2h at $55\pm 2^{\circ}\text{C}$, then discharging at 0.5C to ending voltage, recording the discharging time. 电池标准充电后, 在 $55\pm 2^{\circ}\text{C}$ 恒温环境放置 2 小时, 采用 0.5C 的电流放完电, 记录放电时间。	$\geq 108\text{min}$

4.5 Mechanical characteristics 机械性能

No.	Items 项目	Test Method and Condition 测试方法和条件	Criteria 标准
1	Vibration Test 振动测试	After standard charging, 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 and 55Hz, the excursion of the vibration is 1.8mm. The cell shall be vibrated for 30 minutes per axis of XYZ axes. 测试方法: 将标准充电后的电池固定在振动台上, 沿 X、Y、Z 三个方向各振动 30 分钟, 振幅 1.8mm, 振动频率 10Hz~55Hz, 每分钟变化 1Hz.	No explosion, no fire, no leakage. 不爆炸, 不起火, 无泄漏
2	Drop Test 跌落测试	The cell is to be dropped from a height of 1 meter 2 times onto concrete ground. 电芯由 1 米高跌落至混凝土地面 2 次.	No explosion, no fire, no leakage. 不爆炸, 不起火, 无泄漏

4.6 Safety Test 安全测试

No.	Items 项目	Test Method and Condition 测试方法和条件	Criteria 标准
1	Over-charge 过充	To charge the standard charged cell with 3C constant current until cell voltage reaches 5V, then be charged at constant voltage of 5V while tapering the charge current at 25°C for 0.5hrs. 标准充电后, 3C 恒流恒压将电池充电至 5V, 时间限制 0.5 小时。	No fire, no explosion, and no smoke. 无起火、爆炸、冒烟

2	Over-discharge 过放	At 20±5℃ conditions, the battery will be discharge with constant current 0.2C to cut-off voltage, then connect with external load of 30mΩfor 24 hours. 在室温 20±5℃条件下, 电池以 0.2C 持续放电至截止电压, 然后电池外接 30 毫欧电阻短路 24 小时	No explosion, no fire, no smoke, no leakage. 无爆炸、起火、冒烟、漏液
3	Short-circuit 短路	To short-circuit the standard charged cell by connecting positive and negative terminal by less than 50mΩwire. 电池标准充电后,使用内阻小于 50mΩ的导线将电池正负极连接	No explosion, no fire, no smoke, 无起火、爆炸、冒烟
4	Heat shock 热冲击	After fully charged, heat up the standard charged cell at heating rate 5℃ per minute up to 130℃ and keep the cell in oven for 30 minutes. 电池标准充电后,将电池放入烘箱中,以 5℃每分钟的速率升温至 130℃,并保持 30 分钟.	No explosion or fire 无爆炸、起火

5.Long time Storage 长期储存

If the Cell is stored for a long time, the cell's storage voltage should be 3.6~3.9V and the cell is to be stored in a condition as Item. 4.2.

电芯在 4.2 的存放条件下长期存放, 电芯的存储电压应在 3.6~3.9V.

请每隔 3 个月按下面方法激活电池一次: please activate the battery once every 3 months according to the following method:

0.2C 充电至 4.2V, 截止电流 0.01C, 休息 5 分钟, 然后用 0.2C 放电至每颗电池 3.0V, 休息 5 分钟, 0.2C 充电 3.9V.

Charge at 0.2C to 4.2V, rest 5 min, then discharge with 0.2C to 3.0V/cell, rest 5 min, then charge at 0.2C to 3.9V.

6.Product Cautionary Statement and Disclosure 产品警示声明

Thank you for purchasing from Grand-pro. Please review the following terms for the correct handing procedures before using the product. Keep this paper for future reference.

感谢您选择格兰博, 在产品使用之前, 请认真阅读下列正确操作步骤, 并保存这份文件以日后备参考.

Important! Use the battery for the specified purpose only. If ignored or incorrectly followed, could lead to explosion or toxic gas leakage, and cause burn injury even death.

非常重要! 电池只能用于指定用途。不正确使用操作, 可能会导致爆炸或有毒气体泄漏, 并引起烧伤甚至死亡。

- Place the battery out of the reach of children and infants.
请将电池放置在儿童接触不到的地方。
- Do not place the battery in grand-pro ovens or other similar appliances.
不要将电池放在烤箱或其他类似设备
- Do not remove the product label.
不要移除电池标贴
- Do not attempt to open or service the battery pack.

不要尝试拆解电池包。

- Do not expose to temperatures above 60°C (140F).

不要将电池暴露在 60°C 以上温度环境中。

- Do not short-circuit the positive and negative terminals of the battery with wire or other metallic objects. Do not transport or store the battery with metallic items.

不要使用电线或其他金属物品直接将电池正负极短路，不要将电池和其他金属物品一起运输或储藏。

- Do not expose the battery to direct heat or flame, and do not use or store it near a fire or a location, subject to high temperatures. In addition, do not immerse or dampen the battery in water, saltwater, or any other liquid.

请勿让电池直接暴露在高温或火焰中,不要使用或储存在火旁边。此外不要让电池浸入水、盐水或其他液体中。

- Do not puncture the battery with any sharp objects, hit it with a hammering device or similar device, step on it, drop it or subject it to strong shock.

不要用任何尖锐物品穿刺电池, 或用锤子或相似设备敲打电池,或踩踏电池,或将之强烈振动。

- Do not use battery if it is damaged or deformed.

当电池被破坏时,请不要再使用。

- Immediately cease use of the battery if it produces strange smells or smokes or becomes abnormally hot.

当电池产生异味、冒烟或异常发热时,请立即终止使用

- If the battery fluids leak and come into contact with an eye, do not rub the eye and immediately flush it with plenty of water before seeking medical assistance.

当电池出现漏液情况并与眼睛有接触,请不要擦拭眼睛,在寻求医疗协助前,应立即用大量的水冲洗眼睛。

7.Others 其他

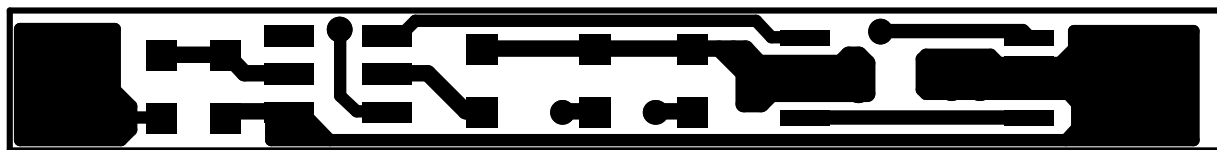
Any matters that this specification does not cover should be conferred between the customer and Grand-Pro.

任何此规格书没有涉及的条件都应在客户和格兰博间协商确定。

8.0PCB Electric Features .保护板参数

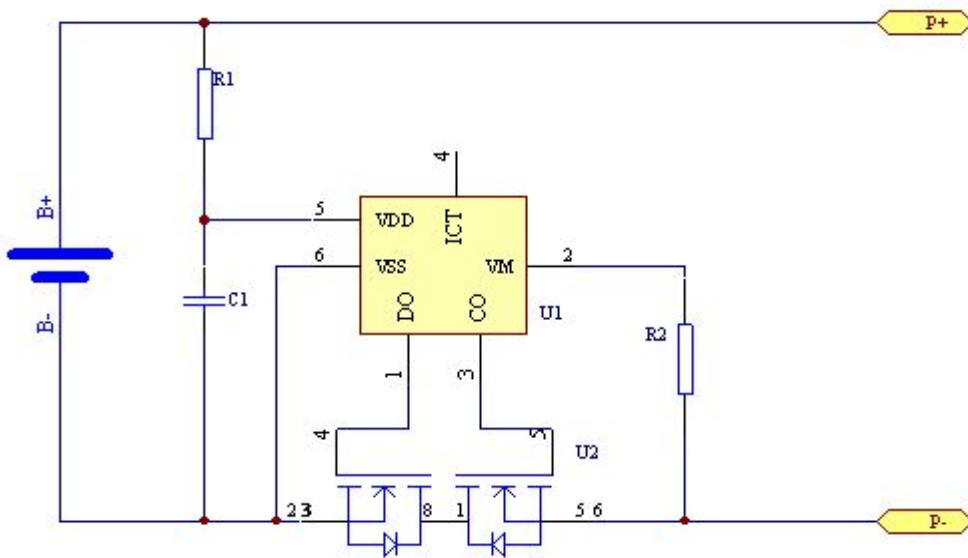
Item 项目	Symbol 符号	Content 内容	Criteria 标准
Over-charge protection 过充电保护	V _{DET1}	Over charge detection voltage 过充侦测电压	4.250±0.025V
	T _{CU}	Over charge detection delay time 过充侦测延迟时间	1000±200ms
	V _{REL1}	Over charge release voltage 过充保护解除电压	4.05±0.025V
Over-discharge protection 过放电保护	V _{DET2}	Over discharge detection voltage 过放侦测电压	2.8±0.08V
	T _{DL}	Over discharge detection delay time 过放侦测延迟时间	128±30ms
	V _{REL2}	Over discharge release voltage 过放保护解除电压	3.0±0.08V
Over-current protection 过流保护	I _{DP}	Over current detection current 过流侦测电流	3~5A
	T _{IOV1}	Over current detection delay time 过流侦测延迟时间	10±5ms
		Release condition 保护解除件	Cut load 断开负载
Short protection 短路保护		Detection condition 侦测条件	Exterior short circuit 外部短路
	T _{IOV2}	Short current detection delay time 短路侦测延迟时间	200~500us
		Release condition 保护解除件	Cut short circuit 切断短路源
Interior resistance 内阻	R _{DS}	Main loop electrify resistance 主回路内阻	R _{DS} =70mΩ
Current consumption 电流消耗	I _{DD}	Current consume in normal operation 正常工作电流消耗	7μ A Type

8.0PCM 板图及工作原理图:





8.1 Circuit Diagram 电气原理图



8.2 PARTS LIST 物料清单

序号 NO.	物料名称/供应商 Description/vendor	代号 Symbol	规格/型号Spec./Model	封装 Pack Type	品牌 Brand	单位 unit	数量 Q'ty
1	贴片电阻	R1	470Ω/±5%	0402	YAGEO	PCS	1
2	贴片电阻	R4	2KΩ/±5%	0402	YAGEO	PCS	1
3	贴片电容	C1	0.1μF/±10%	0402	YAGEO	PCS	1
4	PCB		/双层/无铅喷锡 GLB16500 ∅ 16*0.6mm			PCS	1
5	贴片IC	U1	S8261AAJMD-G3m-T2G	SOT-23-6	精工	PCS	1
6	贴片MOS	Q1Q2	8205A	TSSOP-8		PCS	2
7	NTC	R2	10	0402	YAGEO	PCS	1