

PRODUCT SPECIFICATION

DOC NO.: CPS-11091

REV. : A0

SHEET : 1 OF 12

Specification Approval Sheet(cell)

产 品 规 格 书 (电 芯)

Customer Name 客户名称 RX

Cell Model 电芯型号 955255

Cell Capacity 电芯容量 4200 mAh

Customer Model 客户型号

Cell P/N 电芯料号

Prepared By 制作人	Approved By RD 研发审核	Approved By PRJ 项目部审核	Approved By QA 品质部审核	Approved By RD 研发批准
彭赛	陈华	黎莉	张学普	王乾

Customer Approved 客户承认 (Stamp) (盖章)	Approved by 批准	Date 日期

PRODUCT SPECIFICATION

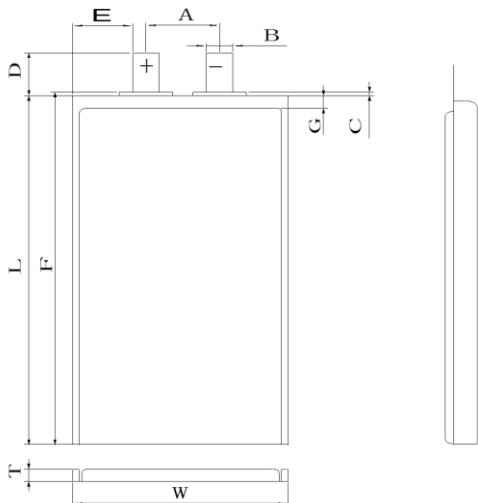
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<div>1. Scope 使用范围</div> <div>This document describes the Product Specification of the Lithium-ion Polymer (LIP) rechargeable battery cell supplied by Dongguan GanfengLithium ELECTRONICS CO., LTD.</div> <div>本规格书适用于东莞赣锋电子有限公司生产的可充电聚合物锂离子电池芯的产品性能指标。</div>					
<div>2. Model 型号</div> <div>955255</div>					
<div>3. Reference standard参考标准</div> <div>GB31241-2014 UL1642</div>					
<div>4. Specification 产品参数</div>					
NO.	Items项目	Specifications规格			
1	Nominal voltage标称电压	3.8V			
2	Charge cut-off voltage充电截止电压	4.35V			
3	Discharge cut-off voltage放电截止电压	3.0V			
4	Minimal capacity最小容量	4200mAh@0.2Cdischarge			
5	Typical capacity典型容量	4330mAh@0.2Cdischarge（参考值）			
6	Standard charge method 标准充电	Charging the cell initially with constant current at 0.2C and then with constant voltage at 4.35V till charge current declines to 0.02C. 先以0.2C恒流充电，当电芯电压达到4.35V后，改为恒压充电直到充电电流小于或等于0.02C。			
7	Max charge rate 最大充电倍率	1.0C			
8	Max discharge rate 最大放电倍率	2.0C			
9	Operating temperature 工作温度	Charge temperature 充电温度	0~20℃MAX: Standard charge method		
		充电截止电压	20~45℃ MAX: Charge current:1.0C		
		Discharge temperature 放电温度	4.35V		
10	Initial Impedance初始内阻	≤60mΩ		-20~0℃ discharge current 0.2C max	
11	Cell Voltage of shipment 出货电压	3.85-3.95V		0~20℃ discharge current 0.5C max	
12	Whether there is coulometer是否带电量计			20~60℃ discharge current2.0C max	
13	Weight 电芯重量	约58.0 g			
14	Match battery team 电芯配组	配组方式: 1S1P			
14	Size尺寸	T	9.50mm Max	Thickness厚度(含胶纸)	
		W	52.0mm Max	Width 宽度（含胶纸，单折边）	
		L	55.5mm Max	Length(Without sealant) 电芯长度(不含极耳胶，不含胶纸)	
		G	3.0±0.5mm	Top sealing length顶边宽度	
		A	24.0±1.0mm	Tab distance极耳中心距	
		B	5.0±0.2mm	Tab width极耳宽度	
		E	11.5±1.5mm	正极边距正极耳边距离	
		D	10±1mm	裁极耳尺寸（含极耳胶）	
15	Storage temperature 储存温度	C	0.2~2.0mm	Sealant Length极耳胶尺寸	
		3 months三个月内	-20℃ ~+45℃	长期存储要求参见7.1	
		6 months六个月内	-20℃ ~+35℃		
	Humidity湿度	60% ±20%			

5. Cell Drawing电芯外形尺寸示意图



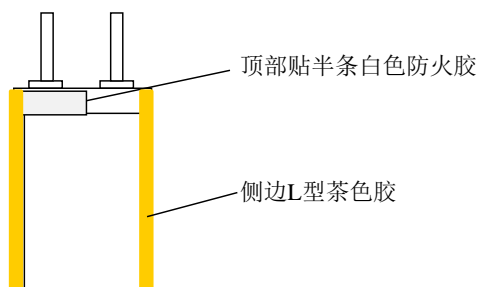
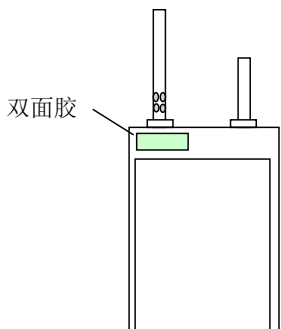
喷码：正面喷码

- 15.96Wh
955255 3.8V
+ XXXYWWABBBB

喷码规则：

XXX Y WW A BBBBB


流水码
周几，周一1，周二2，周日0
周次
年，2016年6，2017年7
生产文件号




电芯出货裁极耳，折极耳；

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6. Cell Performance Criteria电芯性能检查及测试				
6.1 Visual inspection外观检查				
There shall be no such defect as scratch, flaw, crack, and leakage, which may adversely affect Commercial value of the cell.				
不允许有影响电芯价值的外观缺陷,例如:裂纹、裂缝、泄漏等。				
6.2 Standard environmental test condition 标准测试环境				
Test should be conducted with new batteries within one month after shipment from our factory and the cells shall not be cycled more than five times before the test.				
Unless otherwise defined, test and measurement shall be done under temperature of 23±2℃ and relative humidity of 60±20%.				
测试电池必须是本公司出厂时间不超过一个月的新电, 且电池未进行过五次以上充放电循环。				
除非其它特殊要求, 本产品规格书规定的测试条件为: 温度 23±2℃, 相对湿度 60±20%				
6.3 Electrical characteristics 充放电性能				
NO.	Items 项目	Test Method and Condition测试方法		Criteria标准
1	Charge/Discharge Cycle 充放电循环	The capacity on 0.5C charge shall be measured after 500 cycles Of 0.5C discharge at 23±2℃. 23±2℃条件下0.5C充放电循环500次。		Capacity≥80% 容量≥80%
2	Retention Capability 荷电保持能力	After full charging, storing the battery 28 days with 23 ± 2 ℃ condition, and then staying 1 hours with discharge current of 0.2C till 3.0V cut-off voltage. 电芯满充电后, 在23±2℃的环境条件下存放28天, 然后以0.2C电流连续放电至3.0V终止电压。		Capacity≥85% 容量≥85%
3	H/L temperature 高低温性能	After standard charging (23±2℃), then perform 0.2C discharge to 3.0V at different Temp, Ratio(%) in different temperature is the discharge capacity at relative temperature over capacity at 23℃ 在23±2℃条件下满充电后, 测量电芯在不同温度下用0.2 C电流放电至3.0V所放出的容量 (与23℃容量作为比较)。		-10℃ ≥60% 23℃ ≥100% 60℃ ≥90%
※ Typical capacity典型容量				
The capacity means the average discharge capacity of the cell, which is measured with discharge current of 0.2C with 3.0V cut-off voltage after the standard charge at 23±2℃ environment temperature, unit: mAh				
典型容量指23±2℃温度下, 以0.2C电流放电至终止电压时所放出容量对应的容量分布中心值, 单位为mAh。				
※ Charge/Discharge current rate充放电电流倍率				
Charge/Discharge current rate: AC(Ah)=A*Minimal capacity (mAh) , for example, 0.02C=0.02*Minimal capacity				
充放电电流倍率: AC(Ah)=A*最小容量 (mAh) , 例如, 0.02C=0.02*最小容量				

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6.4 Mechanical and Environmental Test 环境适应性					
No.	Items 项目	Test Method and Condition测试方法		Criteria标准	
1	Vibration 振动	After standard charging, fixed the cell to vibration table and subjected to vibration cycling that the frequency is to be varied from 7HZ to 200HZ ,then return to 7HZ , the excursion of the vibration is 0.8mm. The cell shall be vibrated for 3 hrs. 满充电后的电芯在三个相互垂直的方向按振幅0.8mm的正弦波进行振动, 频率从7HZ增加到200HZ 再降回7HZ, 往复振动3小时。		Voltage is not less than 90% of the primary, no leakage, no venting, no rupture, no fire, no explosion. 开路电压不低于90%的初始电压、不泄漏、不泄气、不破裂、不起火、不爆炸	
2	Constant temperature and Humidity 恒定湿热	After standard charging, put cell into the chamber that the temperature is 40±2℃ and the humidity ranges between 90and 95% for 48hours,then put it at 23±2℃ for 2hrs,measure0.2C CAP. 满充电后将电芯放入40℃ ±2℃及相对湿度为90~95%的恒温恒湿箱中48小时后, 取出在23±2℃环境下搁置2h, 再以0.2C电流放电至3.0V。		No distortion, no rust, no leakage , no venting ,no rupture , no fire ,no explosion, the discharge time is not less than 3hrs 不变形、不锈蚀、不泄漏、不泄气、不破裂、不起火、不爆炸、放电时间不低于3h	
3	Drop 自由跌落	After standard charging, the cell is to be dropped from a height of 1 meter onto concrete board, dropped once in the positive and negative directions of three mutually perpendicular X, Y, Z axes. 满充电电芯从1米高处自由跌落到水泥地板上, 从X, Y, Z正负方向每个方向自由跌落一次。		No leak, no smoke, no fire no explosion 无漏液、冒烟或爆炸	

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6.5 Safety 安全性能			
No.	Items 项目	Test Method and Condition测试方法	Criteria标准
1	Overcharge 过充	After discharge to limit voltage, charged at constant current of 3C and constant voltage of 4.6V, While voltage reaches to the max ,if charging continued over 7 hours or temperature is 20% less than the top , close the test. 电芯放电至终止电压后, 用3C电流和4.6V的极限电压充电, 电压达到最大值后, 当充电时间大于7h或者温度降至比峰值低20%时终止测试。	No fire, no explosion 不起火、不爆炸
2	Over discharge 过放	After standard charging, cells are discharged at constant current of 1.0C keep 150min 电池满充电后, 以1.0C放电150分钟	No fire, no explosion 不起火、不爆炸
3	Short-Circuit Test 短路测试	After standard charge, the battery is to be short-circuited by connecting the positive and negative terminals of the battery with copper wire having a maximum resistance load of 0.1Ω. 标准充电后, 电池应在外电路总电阻不大于 0.1Ω的铜线连接下进行短路	No fire, no explosion 无起火、无爆炸
4	Crush 挤压	After standard charging, a cell is to be crushed between two flat surface, once the maximum pressure has been to 13KN it is to be released 将电芯满充电后,用两平板挤压电芯扁平, 调节挤压力, 压力达到最大值13±1KN时停止试验。	No fire, no explosion 无起火、爆炸
7. Storage And warranty period 贮存及保质期			
7.1 Long Time Storage 长期贮存			
Sstored for a long time, the cell should be stored in drying and cooling place. And the cell should be charged once every 6 months to keep cell's storage voltage between 3.7~3.9V. The environmental condition should be: Temperature: 23±2℃,Humidity: 60±20%RH It should be noted that the cell would be at an over-discharged state (the voltage below 2.75V/cell) by its self-discharge characteristics in case the cell is not used for long time. In order to prevent over-discharging, the cell shall be charged periodically to maintain between 3.7V and 3.9V. 长期贮存的电池须置于干燥、凉爽处,且每6个月充一次电, 使电池电压保持在3.7~3.9V 。 且贮存要求如下: 须置于温度为23±2℃、湿度为60±20%RH的环境中。 需要注意的是, 在电池长期未使用期间, 它可能会用其自放电特性而处于某种过放电状态（电芯电压低于2.75V）。为防止过放电的发生, 电池应定期充电, 将其电压维持在3.7V至3.9V之间。			
7.2 Warranty period 保质期			
The warranty period of battery is 12 months after the manufacture day. 产品保质期为制造之日开始算起后的12个月。			
8. Others 其他事项			
Any matters that this specification doesn't cover should be conferred between the customer and GanfengLithium 任何本规格书中未提及的事项, 需要经双方协商确定。			

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9 Appendix 附录

Handling Precautions and Guideline For LIP Rechargeable Batteries

对可再充电锂聚合物电芯操作指引和注意事项

Foreword

This document of 'Handling Precautions and Guideline LIP Rechargeable Batteries' shall be applied to the battery cells manufactured by GanfengLithium .

前言

“对可再充电锂聚合物电芯操作指引和注意事项”的文件仅适用于由赣锋电子制作的电芯。

Statement (1):

Customers are requested to contact GanfengLithium in advance, if and when the customer needs other applications or operating conditions than those described in this document. Additional experimentation may be required to verify performance and safety under such conditions

声明(1):

如果客户需要其他方面的说明或工作条件与规格书内容不一致，请客户提前和赣锋电子公司联系。客户可以要求验证在规格书提供的条件下的特性和安全性能的测试。

Statement (2):

GanfengLithium will take no responsibility for any accident when the cell is used under other conditions than those described in this Document.

声明(2):

对于没有按规格书提供的条件而其他条件下使用导致电芯出现事故，赣锋电子公司将不承担任何责任。

Statement (3):

GanfengLithium will inform, in a written form, customers of improvement(s) regarding proper usage and handling of cells, if it is deemed necessary.

声明(3):

如果客户需要，赣锋电子公司将以书面形式，提供关于电芯的正确使用和操作方法的改进。

Appendix –A Charge

附录-----A 充电

1.Charging current充电电流

Charging current should be less than the maximum value specified in the Product Specification. Charging with higher current than recommended value may cause damage to cells’ electrical, mechanical, and safety performance and could lead to heat generation or leakage.

充电电流应小于产品规格书里提到的最大充电电流，没有按照推荐值而用大电流充电可能会产生电芯的电气、机械和安全性能事故，会导致发热或漏液。

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2.Charging Voltage充电电压

Charging shall be done by voltage less than that specified in the Product Specification (4.35V/cell). Charging beyond (4.35V/cell) , which is the absolute maximum voltage, must be strictly prohibited. The charger and protection circuit of battery pack shall be designed to comply with this condition. It is very dangerous that "&" charging with higher voltage than the maximum value and may cause damage to the cell electrical, mechanical safety performance and could lead to heat generation or leakage

充电电压应小于产品规格书里提到的电压 (4.35V/cell)。充电电压禁止超过最大值 (4.35V/cell)，充电器要和电芯使用条件相符合。没有按照规格书提供的电压而用高电压充电将会产生电芯的电气、机械和安全性能事故，会导致发热或电芯燃烧，这是非常危险的

3.Charging temperature充电温度

The cell shall be charged within the specified temperature range in the Product Specification.

电芯应当在产品规格书中指定的温度范围内充电。

4.Prohibition of Reverse Charge禁止反向充电

Reverse charge is prohibited. Cells shall be connected correctly. The polarity has to be confirmed before wiring. In case of the cell is connected improperly, the cell cannot be charged. Simultaneously, the reverse charging may cause damage to the cell which may lead to degradation of cell performance and damage the cell safety, and could cause heat generation or leakage.

禁止反向充电。电芯按照正确方法连接，焊接导线之前，确定电芯极性。在不正确连接情况下，电芯不能充电。同时，反向充电可能对电芯有破坏性,将会导致电芯性能的退化和危害电芯安全性能，产生发热和漏液现象。

Appendix –B Discharge

附录-----B 放电

1. Discharge Current放电电流

The cell shall be discharged at less than the maximum discharge current specified in the Product Specification. High discharging current may reduce the discharge capacity significantly or cause over-heat.

放电电流应小于产品规格书里提到的最大放电电流。高放电电流将极大降低放电容量或者使电芯发烫。

2. Discharge Temperature放电温度

The cell shall be discharged within the temperature range specified in the Product Specification.

电芯应当在产品规格书中指定的温度范围放电。

3. Over-Discharge过放电

It should be noted that cells would be at an over-discharged status due to self-discharge characteristics in case they were not used for a long time. In order to prevent over-discharging, cells shall be charged periodically to maintain the voltage between 3.7V and 3.9V. Over-discharging may cause the loss of cell performance, characteristics, or battery functions.

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如果电芯长时间不用，由于自身放电特性，电芯将处于过放电状态,这是应注意的。为了避免过放电，电芯应周期性充电，使电压保持在3.7V到3.9V之间，过放电会导致电芯性能，特性或功能的降低。

Appendix –C Storage

附录-----C存储

If the Cell is stored for a long time, the cell's storage voltage should be 3.7~3.9V and the cell is to be stored in a condition as Item. 4.11.

电芯在4.11 的存放条件下长期存放后,电芯的存储电压应在3.7~3.9V。

Appendix –D Handling of Cells

附录----- D 电芯操作

1.Consideration of strength of film package包装膜注意事项

Easily damaged by sharp edge parts such as nail and needle, so don't strike by those sharp parts.

铝箔软包装比较容易被锐利部件刺破，如钉子、针，不要用这些锐利的部件刻划电池。

Sealed edge may be damaged by heat above 100 °C, bend or fold sealed edge.

封边被加热到100 °C 以上以及弯折封边都容易使封边受损。

2.Short短路

Don't bend the tabs.Short terminals of cells is strictly prohibited, it may damage cells, even result in safety accident.

禁止弯折极耳。禁止短路电芯，它会导致电芯严重损坏，甚至引发安全事故。

3.Mechanical Shock机械冲击

Don't Fall, shock, Crush, bend cell body.

禁止跌落，冲击，挤压，弯折电芯。

Appendix –E Others

附录-----E 其他

1. Prevention of short circuit within a battery pack

Enough insulation layers between wiring and the cells shall be used to maintain extra safety protection. The battery pack shall be structured with no short circuit within the battery pack, which may cause generation of smoke or firing.

在导线和电芯之间有足够多的绝缘材料将用于保持电芯较好的安全特性。包装盒内不要设计短路电路，短路会产生冒烟或起火。

2. Prohibition of disassembly禁止拆卸电芯

Never disassemble the cells The disassembling may generate internal short circuit in the cell, which may cause gassing, fining, explosion, or other problems.

不要拆卸电芯。拆卸电芯会导致电芯内部短路，产生有毒气体，澄清剂，爆炸和其他问题。

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Electrolyte is harmful LIP battery should not have liquid from electrolyte flowing, but in case the electrolyte come into contact with the skin, or eyes, physicians shall flush the electrolyte immediately with fresh water and medical advice is to be sought

电解液是有毒的。锂聚合物电芯LIP不能有流动的液体，但是如果电解液接触到皮肤，或者进入眼睛内，医生将立即用清水清洗电解液，遵医嘱检查。

3. Prohibition of dumping of cells into fire禁止把电芯放进火里

Never incinerate nor dispose the cells in fire. These may cause explosion of the cells, which is very dangerous and is prohibited.

不要烧毁电芯也不要投掷火中，这样将导致电芯爆炸，这些是非常危险和禁止的。

4. Prohibition of cells immersion into liquid禁止把电芯放在液体里

The cells shall never be soaked with liquids such as water, seawater, and drinks such as soft drinks, juices, coffee or others.

电芯不能被液体浸湿比如水、海水，和饮料如不含酒精的饮料、果汁、咖啡、或其他。

5. Cells replacement置换电芯

The battery replacement shall be done only by either cells supplier or device supplier and never be done by the user.

电芯置换仅仅由其他电芯厂商或设备厂商操作，不能由使用者置换。

6. Prohibition of using the damaged cells禁止使用损坏电芯

The cells might be damaged during shipping by shock. If any abnormal features of the cells are found such as damages in a plastic envelop of the cell, deformation of the cell package, smelling of an electrolyte, an electrolyte leakage and others, the cells shall never be used any more. The Cells with smell of the electrolyte or leakage shall be placed away from fire to avoid firing or exploding

电芯在运输其间由于振动而损坏，如果发现电芯有任何不正常现象，例如：电芯的塑料包装的损害，包装的变形，有电解液的气味，漏液和其他现象，电芯将不再使用。有电解液或漏液气味的电芯应远离火源避免发生火灾或爆炸。

7. Power consumption at standby status整机静态功耗

Products using LIB battery can charge from 0V but not preferred: Power consumption of products with LIB battery at standby status maybe cause battery discharged deeply.

本产品不支持0V充电，在设计配套产品时请考虑整机静态功耗，以免电芯造成过放。