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For any details and enquiry, please contact VDL; Tel:0755-29961201,Fax:0755-29961203

VDL SPECIFICATIONAPPROVAL SHEET

VDL 产品承认书

Customer Name 客户代码: 0473

Customer Product Model 客户产品型号:

Product Model 产品型号: 653033PN3

Product Capacity 产品容量: 850mAh/3.8V

Product Code产品编码: 100100653033

Assembly Plant Code 组装厂编码:

Terminal Code 终端编码:

ME by 结构工程师	EE by 电子工程师	Cell by 电芯工程师	ME Checked by 审核	EE Checked by 审核	Approved by 批准
刁鹏	刘江伟	陈慧	罗亚森	华优见	罗亚森

Approved by customer 客户承认 (Stamp) (盖章)	Tested by 测试	Checked by 审核	Approved by 批准

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VDL® 业界领先的聚合物锂电池制造商

Revision History
版本履历表

Revision 版本	Description 内容描述	Modify 修改人	Approval 审批人	Date 日期
A0	First Issue 新版发行	刁鹏	陈远松	2024-12-10
	P14、P15 更新标签，删除固定信息码	刁鹏	陈远松	2024-12-18
	P4 出货电压由 3.80~3.95V 变更为 3.75~3.85V	刁鹏	陈远松	2024-12-26
	1. P4、P6、P13、P17、P18 增加备选电子方案 2. P16 PTC，端子线，高温胶增加 UL Card	刁鹏	陈远松	2025-01-07
	1. P4 出货电压由 3.75~3.85V 变更为 3.85~3.95V 2. P15 更新标签，增减部分 LOGO，生产厂由“重庆市新能源维都利有限公司”变更为“重庆市紫建电子股份有限公司”。	刁鹏	陈远松	2025-02-05
	1. P15 更新标签，增加电池信息和警告语等内容	刁鹏	陈远松	2025-02-12
	P16 补充高温胶规格型号，补充 PTC 和 NTC 的 UL 号	刁鹏	陈远松	2025-03-03
	P14 P15 CCC 标志由“蓝色待打印”变更为“黑色印刷”	刁鹏	陈远松	2025-03-11
	1. P4 P9 充电上限温度由 45℃变更为 46℃ 2. P16 高温胶增加基材型号 CH250-1750	刁鹏	罗亚森	2025-03-18
	1. P4 出货电压由 3.85-3.95V 变更为 3.9-4.0V 2. P12 增加保护板 Layout 布线图 3. P12 电路原理图更新	刁鹏	罗亚森	2025-03-19
A1	1. P4 P6 P13 P17 P18 增加备选的电子方案 2. P16 标签中 PSE 标志下方文字由“GN Audio Japan Ltd.”变更为“GN Hearing Japan K.K.”	刁鹏	罗亚森	2025-04-01
	P16 标签中增加 KC 证号“XU102202-25134”	刁鹏	罗亚森	2025-04-10

Contents 目录

1 . Scope 概述

The specification shall be applied to Rechargeable Lithium-ion battery pack manufactured by **VDL Electronics Co., LTD**. It is the basis for product design, production and inspection. Its purpose is to let the customer know the quality standard and the instruction.

本产品承认书描述重庆市紫建电子股份有限公司设计制造的可充式锂离子电池组，它是产品设计、生产和检验的依据。其作用是让客户了解产品的质量标准及正确使用方法。

Reference standard 参考标准:

GB 31241-2022 中华人民共和国国家标准《便携式电子产品用锂离子电池和电池组安全技术规范》

IEC/EN61960 欧盟便携式二次电芯和电池的性能标准

UL1642 美国锂电池安全标准

2 . Product basic information 产品基本信息:

No.	Items 项 目	Parameter 参 数
1	Battery model电池型号	653033PN3
2	Design scheme保护电路设计方案	主选：S-8261DAU+DP8205+10K NTC+PTC
		备选：FH3016DCH+DP8205+10K NTC+PTC
3	Minimal capacity最小容量/Rated Capacity额定容量	850mAh (0.2C Standard discharge 0.2C标准放电)
4	Typical capacity典型容量	875mAh (0.2C Standard discharge 0.2C标准放电)
5	Nominal voltage标称电压	3.8V
6	Shipment voltage出货电压	3.9-4.0V
7	Charge ending voltage充电限制电压(U_{cl})	4.35V
8	Discharge ending voltage放电终止电压(U_{de})	3.0V
9	Upper limited charging voltage充电上限电压(U_{up})	4.35V
10	Discharge cut-off voltage放电截止电压(U_{do})	主选：2.45V
		备选：2.75V
11	Over current protection过电流保护	主选：1.25-3A
		备选：1.59-3.33A
12	Short circuit protection短路保护功能	Yes/有
13	AC Impedance内阻	≤280mΩ (Detail in 9.4/详见9.4项)
14	Battery Weight电池组重量	About约：13.5g
15	Max charge current最大充电电流(I_{cm})	1.0C (For continuous charge mode连续充电模式)
16	Max discharge current最大放电电流(I_{dm})	1.0C (For continuous discharge mode连续放电模式)
17	Recommended charge current推荐充电电流(I_{cr})	0.5C (Detail in 9.1.1/详见9.1.1项)
18	Recommended discharge current推荐放电电流(I_{dr})	0.2C (Detail in 9.1.2/详见9.1.2项)
19	Upper limited charging temperature上限充电温度(T_{cm})	46℃ (Detail in 7.1/详见7.1项)
20	lower limited charging temperature下限充电温度(T_{cl})	0℃ (Detail in 7.1/详见7.1项)
21	Upper limited discharging temperature上限放电温度(T_{dm})	60℃ (Detail in 7.2/详见7.2项)
22	lower limited discharging temperature下限放电温度(T_{dl})	-20℃ (Detail in 7.2/详见7.2项)

3 . Battery protection characteristics 电池保护特性(Ta=25±3℃)

主选方案：S-8261DAU+DP8205

No.	Items 项 目	Parameter 参 数	condition 条件
1	Overcharge protection detection voltage 过充保护检测电压	(4.425±0.020)V	Battery voltage is greater than the protection voltage, and the delay time to reach, then the state of the battery into overcharge protection. 电池电压大于过充保护电压，且延时时间达到，则电池进入过充电保护状态。
2	Overcharge release voltage 过充保护恢复电压	(4.225±0.05)V	
3	Overcharge protection delay time 过充保护延迟时间	700-1300 ms	
4	Overdischarge protection detection voltage 过放保护检测电压	(2.5±0.05)V	Battery voltage is less than the protection voltage, and the delaytime to reach, then the state of the battery into overdischarge protection. 电池电压小于过放保护电压，且延时时间达到，则电池进入过放电保护状态。
5	Overdischarge release voltage 过放保护恢复电压	(2.9±0.1)V	
6	Over discharge protection delaytime 过放保护延迟时间	22.4-41.6ms	
7	Overcurrent discharge protection current 放电过流保护电流	1.25-3A	Battery discharge current is greater than the protection current, and the delay time to reach, then the state of the battery into overcurrent protection 电池放电电流大于过流保护，且延时时间达到，则电池进入放电过流保护状态。
8	Overcurrent protection delay time 放电过流保护延时时间	5.6-10.4 ms	
9	Current consumption (Operation) of PCM 保护板的正常状态下静态电流	≤4μA	VDD= 3.9V
10	Load resistance of PCM 保护板的空载内阻	≤120mΩ	VDD= 3.9V
11	0V charge function 0V充电功能	Available允许	
12	Charge overcurrent protection current 充电过流保护电流	1.25-3A	If shall stop charging for an excessive charge current at Over Current Protection current lasts for delay time 电池充电电流大于充电过流保护电流，且延时时间达到，则电池进入充电过流保护状态。
13	Charge overcurrent delay time 充电过流延迟时间	5.6-10.4 ms	
14	Short Detection Delay Time 短路延时	196-364 us	

备选方案：FH3016DCH+DP8205

No.	Items 项 目	Parameter 参 数	condition 条件
1	Overcharge protection detection voltage 过充保护检测电压	(4.40±0.025)V	Battery voltage is greater than the protection voltage, and the delay time to reach, then the state of the battery into overcharge protection. 电池电压大于过充保护电压，且延时时间达到，则电池进入过充电保护状态。
2	Overcharge release voltage 过充保护恢复电压	(4.2±0.05)V	
3	Overcharge protection delay time 过充保护延迟时间	700-1300 ms	
4	Overdischarge protection detection voltage 过放保护检测电压	(2.80±0.05)V	Battery voltage is less than the protection voltage, and the delaytime to reach, then the state of the battery into overdischarge protection. 电池电压小于过放保护电压，且延时时间达到，则电池进入过放电保护状态。
5	Overdischarge release voltage 过放保护恢复电压	3.0±0.1 V	
6	Over discharge protection delaytime 过放保护延迟时间	89.6-166.4 ms	
7	Overcurrent discharge protection current 放电过流保护电流	1.59-3.33A	Battery discharge current is greater than the protection current, and the delay time to reach, then the state of the battery into overcurrent protection 电池放电电流大于过流保护，且延时时间达到，则电池进入放电过流保护状态。
8	Overcurrent protection delay time 放电过流保护延时时间	5.6-10.4ms	
9	Current consumption (Operation) of PCM 保护板的正常状态下静态电流	≤3μA	VDD= 3.9V
10	Load resistance of PCM 保护板的空载内阻	≤70mΩ	VDD= 3.9V
11	0V charge function 0V 充电功能	Available 允许	
12	Charge overcurrent protection current 充电过流保护电流	1.53-3.43A	If shall stop charging for an excessive charge current at Over Current Protection current lasts for delay time 电池充电电流大于充电过流保护电流，且延时时间达到，则电池进入充电过流保护状态。
13	Charge overcurrent delay time 充电过流延迟时间	5.6-10.4 ms	

4. Condition adapting characteristics 环境适应性

No.	Items 项目	Test Method 测试方法	Criteria 标准
1	High/low Temperature 高/低温性能	After the cell fully charged at 25℃±3℃, measure the discharging capacity with discharging current 0.2C till 3.0 (V) cut off voltage at different temperature. (as compared with initial capacity) 在 25℃±3℃条件下满充电后，测量电池在不同温度下用 0.2 C_5A 电流放电至 3.0 (V)所放出的容量（与初始容量作为比较）。	在-10℃时 ≥70% At -10℃: ≥70% 在 55℃时 ≥95% At 55℃:≥95%
2	Invariableness humid and hot 恒定湿热	After putting the cell in the invariableness humid and hot box of 40℃±2℃ and relative humidity of 90～95% for 48 hours. Discharge the cell to 3.0(V) cut-off voltage at 0.2C current. 将电池放入 40℃±2℃及相对湿度为 90～95%的恒温恒湿箱中 48 小时后，再以 0.2C 电流放电至 3.0(V)。	No leakage, no fire, no explosion. The discharging time ≥3h. 无泄漏，无起火，无爆炸。放电时间≥3h。
3	Vibration 振动	The fully charged cell is vibrated from 90 to 100 minutes at three mutually perpendicular planes with excursion of 0.8mm, and change the frequency from 10 to 55 HZ with 1Hz/min speed. 满充电后的电池在三个相互垂直的方向按振幅 0.8mm 的谐振形式进行振动，频率在 10-55HZ 以 1Hz/min 的速率变化，往复振动 90 至 100min.	No leakage, no fire, no explosion. 电池无漏液,无冒烟，无起火，无爆炸
4	Free fall 自由跌落	The cell free falls from a height of 1m into the cement floor from X,Y,Z front and opposite direction of each direction. Then discharge the cell to 3.0(V) cut-off voltage with 1.0C current. 电池将从 1 米高处自由跌落到水泥地板上， 从 X、Y、Z 正反方向每个方向自由跌落一次,再以 1.0C 放电至 3.0 (V)	No leakage, no fire, no explosion. 电池无漏液,无冒烟，无起火，无爆炸

5．Safety performance 安全性能

No.	Items 项目	Test Method 测试方法	Criteria 标准
1	Forced discharge 强制放电	Discharge the cell to the cut-off voltage with 0.2C current and then reverse charge the cell for more than 90 mins with 1C current.电池先以 0.2C 放电至终止电压，再以 1C 电流，对电池进行反向充电，90min 以上	No fire, no explosion 无起火，无爆炸
2	Overcharge 过充电	After discharged with 0.2C to the cut-off voltage, charge the cell with 3.0C/4.65V for 7.0hrs. 0.2C 放电至截止电压后，电池用 3C /4.65V 恒流恒压充电 7.0h	No explosion, no fire 无起火、无爆炸
3	Low pressure 低气压	Put the fully charged cell in a vacuum chamber at ambient temperature 20~25℃ for 6 hrs. The vacuum environment pressure is set to be less than 11.6kPa, simulating an altitude of 15240m. 电池放在一个模拟真空的空间放置 6 小时，环境温度为 20~25℃，真空环境压力≤11.6kpa，模拟 15240m 高空低压环境	No leakage, no fire, no explosion 无泄漏，不起火，不爆炸
4	Short test 短路测试	Short circuit the fully charged cell by connecting the positive and negative terminals with resistance load 80±20 mΩ at room temperature 20~25℃. The cell remains on test for 24 hrs or until the surface temperature declines by 20 % of the maximum temperature rise, whichever is the sooner. 在室温 20~25℃下，把充满电电池的正负极用 80±20 mΩ 的负载连接起来，使电池外部短路。结束条件：测试时间 24 小时或者表面温度下降到最高温度的 20%。	No fire, no explosion. The temperature of the cell surface not exceeds 150℃. 无起火，无爆炸 电池表面温度不超过 150℃。

5	Soak test 浸泡测试	Put the fully charged cell into pure water, soaked for 24 hours. 把满充电的电池放进清水中浸泡 24 小时	No broken, no fire 无破裂，无起火
6	Crush test 挤压测试	A fully charged cell is to be crushed between two flat surfaces. The force for the crushing is to be applied by a hydraulic ram or similar force mechanism. The flat surfaces are to be brought in contact with the cell and the crushing is to be continued until an applied force of 13 ±1kN is reached. Once the maximum force has been obtained it is to be released. 满充电池，放置在两块平面金属板间，持续施压 13±1kN 的压力，直到液压油缸施加的压力达到 13KN (17.2Mpa) 时停止。	No fire, no explosion 无起火，无爆炸
7	Shock test 撞击测试	The cell is to be secured to the testing machine by means of a rigid mount which supports all mounting surfaces of the cell. Each cell shall be subjected to a total of three shocks of equal magnitude. The shocks are to be applied in each of three mutually perpendicular directions unless it has only two axes of symmetry in which case only two directions shall be tested. Each shock is to be applied in a direction normal to the face of the cell. For each shock the cell is to be accelerated in such a manner that during the initial 3ms the minimum average acceleration is 75 g (where g is the local acceleration due to gravity). The peak acceleration shall be between 125 and 175 g. 在环境温度下，将电池分别按三个轴向固定在测试台面上，每个面经受等量的冲击，每一次冲击前 3ms 内平均加速度最少达到 75g（g 为重力加速度），峰值加速度达 125g 至 175g。	No leakage, no fire, no explosion 无泄漏，不起火，不爆炸

6. Testing requirements 测试要求

6.1 Battery test environment 电池试验环境（无特别注明时，试验环境应符合此项要求）

Temperature 温度：25℃±3℃

Relative humidity 相对湿度： 45～85% RH

Atmospheric pressure 大气压力： 86～106 kPa

6.2 Measuring instrumentation requirements 测量仪表要求

Voltage instrumentation requirements: Measuring the voltage meter accuracy no less than 0.5 magnitude

电压仪表要求：测量电压的仪表的精确度不低于 0.5 级

Current instrumentation requirements: Measuring the current meter accuracy no less than 0.5 magnitude

电流仪表要求：测量电流的仪表精确度不低于 0.5 级

Time instrumentation requirements: Measuring the time meter accuracy no less than 0.1%

时间仪表要求：测量时间的仪表精确度不低于 0.1%

Temperature instrumentation requirements: Measuring the temperature meter accuracy no less than 0.5 ℃

温度仪表要求：测量温度的仪表准确度不低于 0.5℃

Impedance instrumentation requirements: Measuring impedance should by sinusoidal alternating (1 KHZ) test

内阻仪表要求：测量内阻应由正弦交变(1KHZ)进行测试

7. Operation temperature and humidity range 运行温湿度范围

7.1 Charging temperature and the Current requirements 充电环境温度及电流要求:

Temperature 温度	Max charge current 允许最大充电电流	Relative humidity 相对湿度
0℃≤T≤15℃	485mA(截止电压4.35V)	45~85%
15℃＜T≤46℃	1.0C(截止电压4.35V)	45~85%

7.2 Discharge temperature 放电环境温度:

-20℃ ～ +60℃，Relative humidity：45~85%

-20℃ ～ +60℃，相对湿度：45~85%

8. Storage temperature and humidity range(At 50% SOC)存储温湿度范围(在 50% SOC 条件下)

8.1 Environmental conditions 存放条件:

Unless otherwise specified，Cells shall to be tested within one month after shipment and not be cycled (charge/discharge) over one time before the test. All tests shall be performed at 25℃±3℃ and humidity of 65±20% RH.

The cell impedance would increase in whole storage process, while the capacity would decrease, cell would be charged in 9.1.1 and discharged in 9.1.2

除非另有规定,电池应在装运后一个月内进行测试,且在测试前一段时间内不得循环(充放电)。所有试验均在 25℃±3℃、65±20% RH 湿度下进行。电池在整个存储过程中阻抗会增大，容量会减小，电池在 9.1.1 条件下进行充电，在 9.1.2 条件下进行放电。

Storage Temperature	25℃	25℃	25℃	25℃	60℃	60℃
Storage Duration	1 Year	1 Year	90 Days	90 Days	1 Week	1 Week
Storage Charge State	As received	100%	As received	100%	As received	100%
Recovered Capacity	90%	80%	95%	90%	85%	80%
Recovered Impedance @100% Charge State	150%	150%	120%	150%	150%	160%

9．Electrical Characteristics 电气特性

9.1 Battery standard charge/discharge电池组标准充/放电

9.1.1 standard charge 标准充电

At 25℃±3℃ conditions, CC 0.5C/CV 4.35V, when charging current drops to 0.02Ccharging is terminated, The charging time limited 4hrs.

在25℃±3℃条件下，以0.5C恒电流，4.35V恒电压充电至电流降到0.02C截止，限时4小时。

9.1.2 Standard Discharge标准放电

Standard discharge current 0.2Cfor continuous discharge, when the voltage drops to discharge ending voltage 3.0V discharge is terminated, shall be full discharged.

以标准放电电流0.2C进行持续放电，当电压降至放电终止电压3.0V时放电被终止，即为放空。

9.2 Maximum charge current 最大充电电流

At 25℃±3℃ conditions, CC 1.0C/CV 4.35V, when charging current drops to 0.02Ccharging is terminated, The charging time limited 3h.

在25℃±3℃条件下，以1.0C恒电流，4.35V恒压，充电至电流降到0.02C截止，限时3小时。

9.3Maximum discharge current 最大放电电流

At 25℃±3℃ condition, discharge the cell with 1.0C.

在25℃±3℃条件下，以1.0C对电池进行放电。

9.4 Initial impedance 初始内阻

At25℃±3℃ ambient temperature, after standard charged battery pack, AC impedance tester(1KHz) measuring the initial impedance should be≤280mΩ.

在 25℃±3℃环境温度下，经过标准充电的电池，使用交流阻抗测试仪（1KHz）测量初始内阻应≤280mΩ.

9.5 Initial capacity 初始容量

The initial capacity is for standard charge to full, in 1 hour, the capacity measured at 25℃±3℃ conditions with discharge current of 0.2C till 3.0V cut-off voltage.

The initial capacity≥850mAh.

电池初始容量为电池以标准充电方式满充，1 小时内，在 25℃±3℃条件下以 0.2C 电流放电至 3.0V 截止所放出的容量，初始容量≥850mAh.

9.6 Retention Capability荷电保持能力

After full charging, storing the battery 28 days with20±5°C condition, and then discharge with discharge current of 0.2C till 3.0V cut-off voltage, discharge time should be≥255min

电池满充电后，在 20±5℃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，放电时间≥255min

9.7 Cycle life 循环寿命

Battery cycle life is tested at 25℃±3℃. For each cycle test, battery is charged using 1.0C constant current until battery voltage meet 4.35V. Then, battery is charged by constant voltage until battery charging current drop to 0.05C. After that, battery is discharged by 0.5C constant current until battery voltage drop to 3.0V. Repeat until each 50^{th} cycle.

At each 50 cycle, battery capacity will be tested. The test condition is that the battery is charged using 0.5C constant current until the battery voltage meet 4.35V. Then, battery is charged by constant voltage until the charging current drop to 0.02C. After that, battery is discharged by 0.2C constant current until battery voltage drop to 3.0V.

If the discharge time is more than or equal to 4hours (80% of initial battery capacity), battery need to repeat above 50cycles charge/discharge test. If not, cycle life test is completed.

Cycle life should be 500cycles or above. the thickness after swelling will be less than 110%.

电池在温度 25℃±3℃条件下循环测试，以 1.0C 恒流充电到电压 4.35V，然后恒压充电到截止电流 0.05C。再以 0.5C 恒流放电到 3.0V，为 1 个循环周期。这样重复 50 次。

每 50 次做一次容量检测。以 0.5C 恒流充电到 4.35V，然后恒压充电到截止电流 0.02C。再以 0.2C 恒流放电到 3.0V。

如果放电时间大于等于 4 小时（80%初始容量），电池必须再重复 50 次充放电测试。否则，循环寿命测试结束。

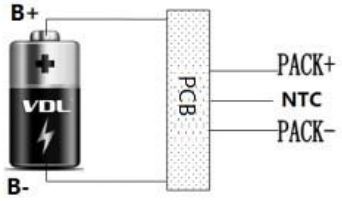
循环寿命应该大于等于 500 次。膨胀后厚度≤110%。

9.8 Agency approvals 承认机构

VDL battery safety performance is designed according to UL1642 standard and CE Directive requirement, the product’ s safety performance is conforming to UL1642 standard and CE Directive requirement.

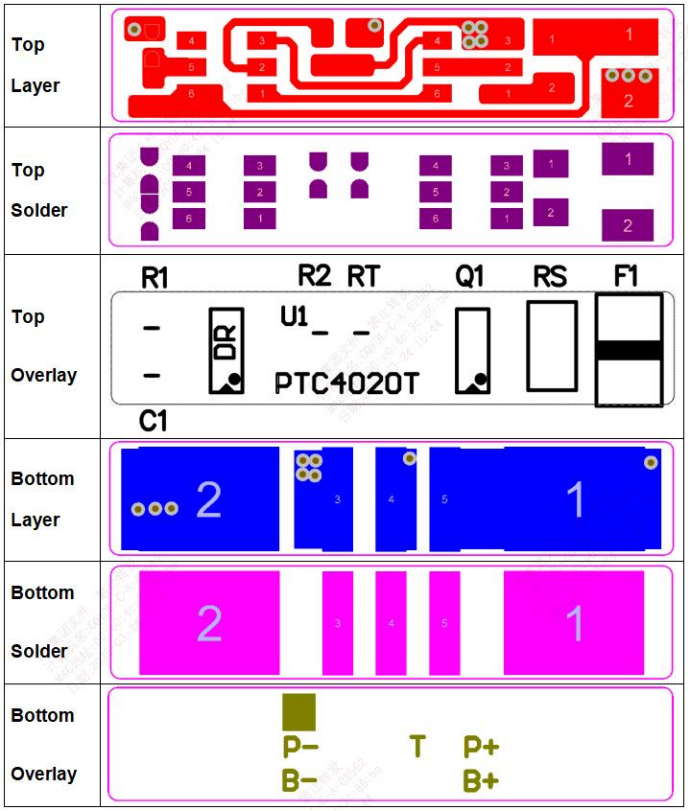
VDL 电池的安全性能是根据 UL1642 标准和 CE 指令要求制定.产品的安全特性与 UL1642 标准和 CE 指令的要求是一致的.

10. Battery structure diagram 电池架构图(Sketch map 示意图)



11. PCB Layout PCB 布线图

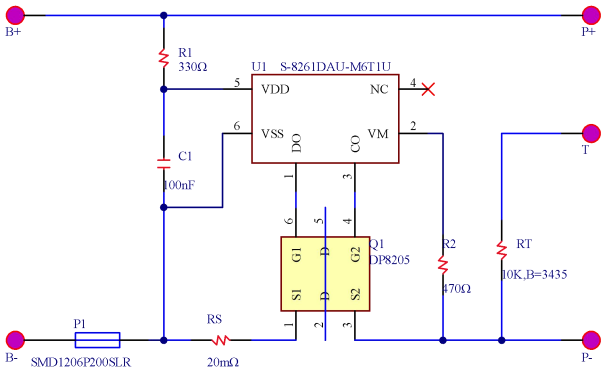
主选:



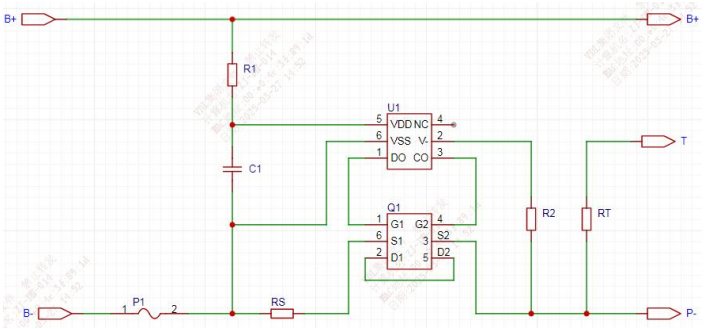
备选: TBD

12. Schematic circuit diagram 电路原理图

主选:



备选:

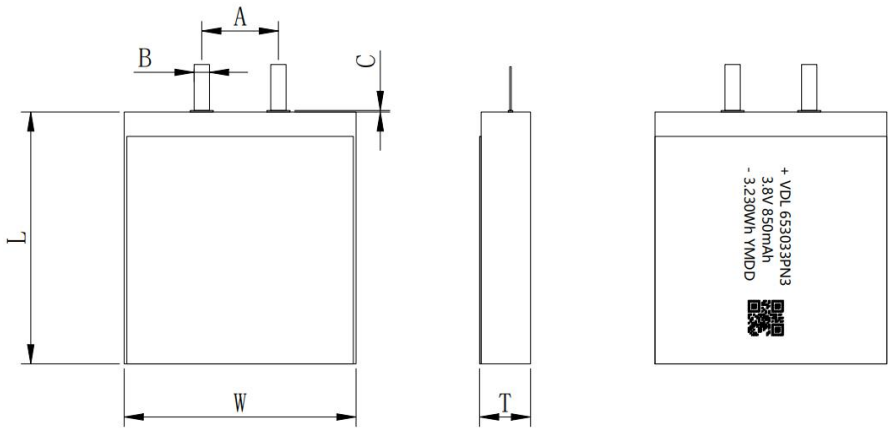


13. Cell 电芯

13.1 Cell Performance parameters 电芯性能参数

编号	项目		规格	备注
1	Initial impedance 初始内阻		≤110mΩ	1kHz AC Impedance 交流阻抗 AC 1kHz
2	Nominal voltage 标称电压		3.8V	/
3	Dimensions 外形尺寸	T	6.49 mm Max	Thickness 厚度(受 300gf 力测量)
		W	30.26 mm Max	Width 宽度(受 300gf 力测量)
		L	32.88 mm Max	Cell length(not include Tab sealant) 电芯长度(不含极耳胶) (受 300gf 力测量)
		A	12.0±2.0 mm	Tab center distance极耳中心距
		B	3.0±0.1 mm	Tab width 极耳宽度
		C	0.2~2.0 mm	Tab exposed size 极耳胶外露尺寸

13.2 Cell outline drawing 电芯外形尺寸(Not In Scale 未按比例，带*为重点尺寸，其它为参考尺寸)



13.3 Spray Content 电池喷码：

背面喷码：

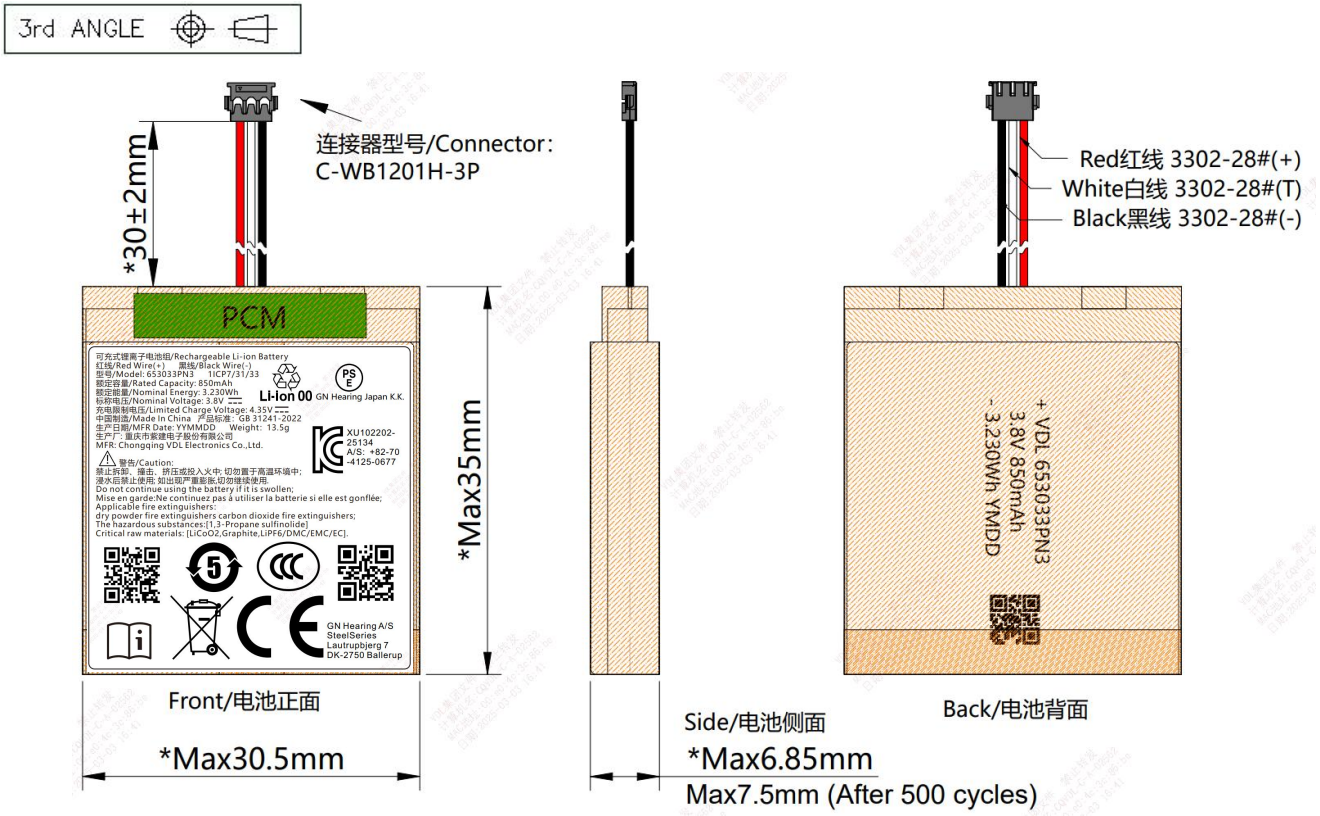
+ VDL 653033PN3
3.8V 850mAh
- 3.230Wh YMDD

电芯喷码 Remark:
653033PN3 表示电芯型号;
VDL 代表生产厂：重庆市紫建电子股份有限公司
Y 代表年份，例如 2021 缩写为 1;
M 代表月份，例如 1~9 代表为 1~9 月，A-C 代表为 10-12 月;
DD 代表日期，例如 01~31 代表为 1~31 日;
电芯二维码规则 Remark:
1.二维码内容为：YMDDLLL00001
2.Y 代表年份，例如 2021 缩写为 1;M 代表月份，例如 1~9 代表为 1~9 月,A-C 代表为 10-12 月;DD 代表日期,例如 01~31 代表为 1~31 日
3.LLL 为批次号:同生产批次号（3 位）
4.00001 位流水号：共 5 位,00001~99999
例：210900100001 代表 22 年 01 月 09 日 001 批次第 1 个电池.
5.二维码 12 位，尺寸参考值：4.5*4.5±0.5mm

14. Battery Outline Drawing 电池组外形尺寸（Units 单位: mm）

14.1Battery Outline Drawing电池组外形尺寸

(Not In Scale 未按比例，带*为重点尺寸，其它为参考尺寸)



14.2 Battery size parameters 电池组尺寸参数

Wiring method 出线方式	Middle leads 中间出线
Remark 备注	1.Resistance welding，储能焊； 2.Protect circuit components facing outside，保护电路元器件朝外； 3.The thickness of the finished product is measured by the force of 600gf, and the width and length of the finished product are measured by the force of 300gf. 成品厚度受 600gf 的力测量，宽度、长度尺寸，需受 300gf 的力测量。

14.3 Reminder关于电池折边面注意事项的温馨提示

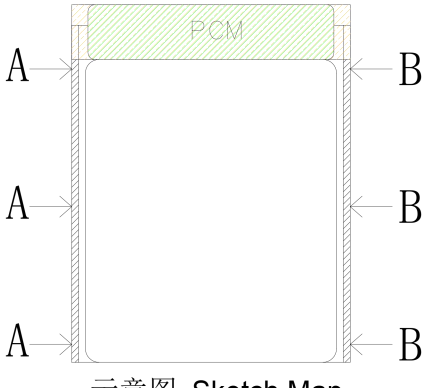


示意图 Sketch Map

温馨提示客户：

电池折边面(图示A&B指示填充区域)严禁与导体接触；电池包边若已绝缘，此点可忽略。

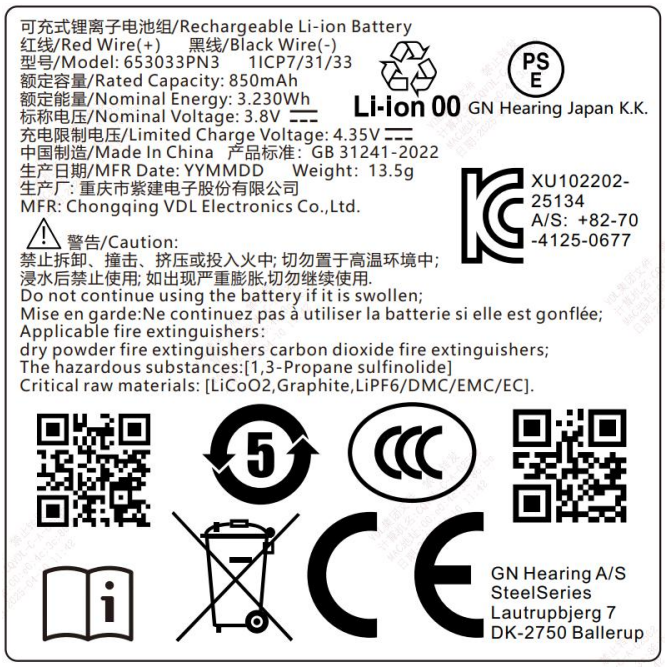
Caution:

The folded edge surface of the battery (the filling area indicated by A & B in the figure) is strictly prohibited from contacting with the conductor; If the battery edge is insulated, this point can be ignored.

14.4 Label/Marking 标签/标识 (请注意：各个国家的认证完成前，产品不得在相应的国家和地区销售)

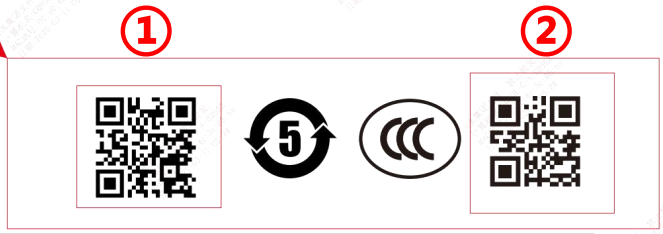
The following labels are pasted on the battery body.以下标签贴于电池本体上：

(标签中YYMMDD为生产日期，YY为生产年份后两位，MM为生产月，DD为生产日.生产日期随订单实时更新)



②二维码内容（追溯码）：

二维码由标签供应商打码,为 QR 二维码 尺寸为 4.5*4.5±0.5mm
二维码扫描等级:≥C 级
二维码内容扫描显示:0473653033PN3YYMMDD00001
0473:固定码,客户代码,
653033PN3:固定码，电池型号,
YY 代表：日期码，代表生产年份后两份,
MM 代表：日期码，代表生产月份,
DD 代表：日期码，代表生产日,
00001：五位位流水码（流水码从 00001——99999）



①二维码内容（固定信息码）：

可充式锂离子电池组/Rechargeable Li-ion Battery
中国制造/Made in China
红线/Red Wire(+) 黑线/Black Wire(-)
型号/Model: 653033PN3 1ICP7/31/33
额定容量/Rated Capacity: 850mAh
额定能量/Nominal Energy: 3.230Wh
标称电压/Nominal Voltage:3.8Vdc ⎓
充电限制电压/Limited Charge Voltage: 4.35Vdc ⎓
生产厂：重庆市紫建电子股份有限公司
MFR: Chongqing VDL Electronics Co.,Ltd.
重量/Weight:[13.5]g The chemistry:[Lithium-ion]
The hazardous substances: [1,3-Propane sulfinolide]
Critical raw materials: [LiCoO2,Graphite,LiPF6/DMC/EMC/EC]
Address:Building 1-4,
Puli Industrial New Area, Zhaojia Street, Kaizhou District,Chongqing, China
Website:www.gdvdl.com
Applicable fire extinguishers: dry powder fire extinguishers,carbon dioxide fire extinguishers;
Caution:
Do not continue using the battery if it is swollen; Mise en garde: Ne continuez pas à utiliser la batterie si elle est gonflée;
注意事项：禁止拆卸、撞击、挤压或投入火中；切勿置于高温环境中,浸水后禁止使用；如出现严重膨胀,切勿继续使用.

14.5 电子标签（外包装标签，以下电子标签不会贴在电池上）

The following lithium-ion battery labels should be included in the package of the product or in the instructions for use: (Certified LOGOs must be shown in the manner required by the certification)

以下锂电池标识内容须在产品的外包装上或使用说明书中体现:(各种认证的 LOGO 须按认证要求的方式体现)

/

15. BOM 1(Bill of materials)电池物料清单

NO. (项次)	Material Name (零件名称)	Specification(规格型号)	Qty (用量)	备注	UL Card
1	Cell 电芯	653033PN3/850mAh	1	/	/
2	Protection board 保护板	主选：S-8261DAU+DP8205+10K	1	/	/
		备选：FH3016DCH+DP8205+10K	1	/	/
3	Plug Wire 端子线	Connector 连接器 C-WB1201H-3P	1	/	E357946
		Red Wire 红线 3302-28	1	/	E492150
		White Wire 白线 3302-28	1	/	
		Black Wire 黑线 3302-28	1	/	
4	Brown Tape 茶色高温胶	2525 绝缘 PI，T=0.05mm 基材型号 CH250-1750	Some 若干	PCM 绝缘+耳胶+全身胶+底部胶	E251243
5	Lable 标签	普通 PET+过油	1	贴电池正面	/

主选：PCM BOM 2

Material Name (零件名称)	Specification (规格型号)	Position (零件位置)	Qty (用量)	Remark (备注)
PCBA	**HFPTC4020TV1-Ni**	**/**	**1**	**/**
PCB	**0.6*4.0*20mm**	**/**	**1**	**E340032**
IC	**S-8261DAU/SOT-23-6**	**U1**	**1**	**/**
MOS	**DP8205/SOT-23-6**	**Q1**	**1**	**/**
贴片电阻 Chip resistor	**330Ω±5%**	**R1**	**1**	**/**
贴片电阻 Chip resistor	**470Ω±5%**	**R2**	**1**	**/**
贴片电阻 Chip resistor	**20mΩ±1%**	**RS**	**1**	**/**
贴片电容 Chip capacitors	**0.1μF/-20%~+80%/16V**	**C1**	**1**	**/**
PTC	**SMD1206P200SLR**	**P1**	**1**	**E201431**
NTC	**10K±1% B=3435K ECTH100505103F3435FST**	**RT**	**1**	**E258805**
Nickel 镍片	**0.3*5*3mm**	**B+, B-**	**2**	**/**

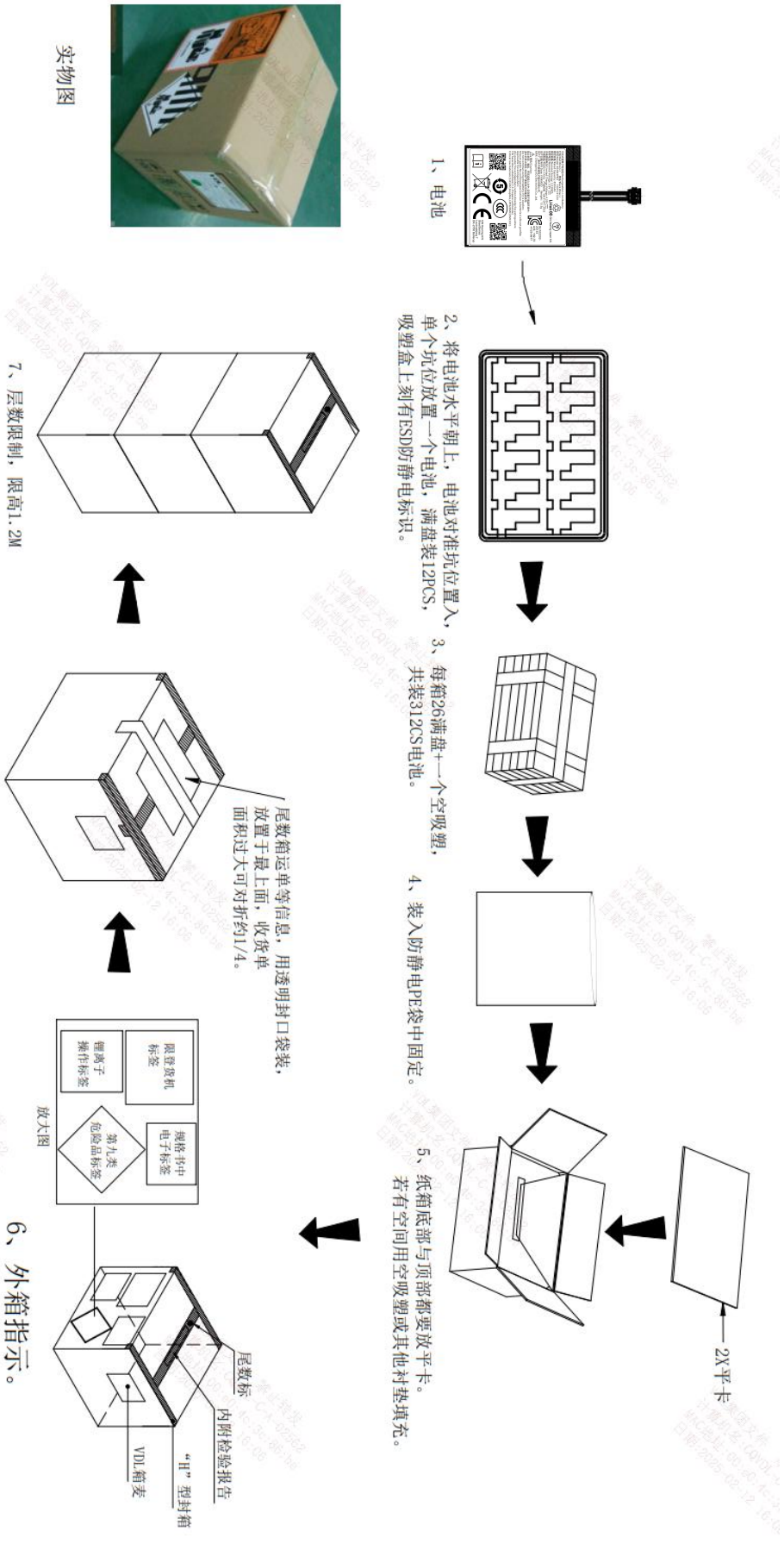
备选：PCM BOM 3

Material Name (零件名称)	Specification (规格型号)	Position (零件位置)	Qty (用量)	Remark (备注)
PCBA	**TBD**	**/**	**1**	**/**
PCB	**0.6*4.0*20mm**	**/**	**1**	**E340032**
IC	**FH3016DCH+ SOT-23-6**	**U1**	**1**	**/**
MOSFET	**DP8205 SOT-23-6**	**Q1**	**1**	**/**
贴片电阻 Chip resistor	**470Ω±5%,**	**R1**	**1**	**/**
贴片电阻 Chip resistor	**2.2KΩ±5%,**	**R2**	**1**	**/**
RS	**20mΩ±1%**	**RS**	**1**	**/**
贴片 NTC Chip resistor	**10K±1% B=3435K ECTH100505103F3435FST**	**RT**	**1**	**E258805**
贴片电容 Chip capacitors	**0.1μF/-20%~+80%/16V**	**C1C2C3**	**3**	**/**
PTC	**SMD1206P200SLR**	**P1**	**1**	**E201431**
Nickel 镍片	**0.3*5*3mm**	**B+, B-**	**2**	**/**

Note：The battery of materials should be consistent with the requirements of the RoHS&REACH&HF.

注：电池组所使用的材料应符合RoHS&REACH&无卤的要求.

包装规范示意图


实物图
1、电池
2、将电池水平朝上，电池对准坑位置入，单个坑位放置一个电池，满盘装12PCS，吸塑盒上刻有ESD防静电标识。
3、每箱26满盘+一个空吸塑，共装312CS电池。
4、装入防静电PE袋中固定。
5、纸箱底部与顶部都要放平卡。若有空间用空吸塑或其他衬垫填充。
2X平卡
7、层数限制，限高1.2M
尾数箱运单等信息，用透明封口袋装，放置于最上面，收货单面积过大可对折约1/4。
放大图
限登极机标签
锂离子操作标签
锂电池中电子标签
第九类危险品标签
6、外箱指示。
尾数标
内附检验报告
"H"型封箱
VDL箱麦

16．Battery Precautions and Safety Instructions 电池组使用注意事项及安全说明

Please be sure to comply with the specifications and the following precautions to use with batteries. For any accident caused by operation not following the specifications, VDL Electronics Co., Ltd will not take any responsibility

请您务必需遵守本规格书和以下使用注意事项使用电池，对于没有按照规格书进行操作所造成的任何意外事故，重庆市紫建电子股份有限公司将不承担任何责任.

- Warranty period is 12 months after shipment date.
- 从出厂代码日起 12 个月内保修.
- When the battery is stored for 3 months, it should be charged with 0.5C current to 50% SOC.
- 电池每放置三个月,请预先以 0.5C 充电 1 次,即让电池具备 50%以上的电量.
- Before using the battery, carefully read the instruction manual and battery labels on the surface.
- 使用电池前，请仔细阅读使用说明书和电池表面标识.
- Please use the original battery charger. The battery should be placed in a dry and ventilated place.
- 电池需使用原装充电器充电，并应放置在干燥通风场所.
- If the battery is not used for a long time, please charge the battery to 50% SOC status. Remove the battery from the device and place it separately, to avoid the short-circuit and damage caused by contacting metal.
- 如长期不使用时，请将电池充电至半满电荷状态，把电池从设备中拆除并分开放置，避免金属接触电池，造成短路或损坏现象.
- When using or during storage, if the battery is hot, with leakage, odor, distortion or other anomalies, please stop using it immediately and stay away from the battery.
- 在使用或储存期间，如发现电池有出现高温发热、漏液、散发异味、变形及其它异常现象时，请立即停止使用并远离电池.
- Do not short-circuit the battery positive and negative terminals. Do not damp the battery to avoid any danger.
- 切勿将电池正负极短路，并注意不可让电池受潮，以免发生危险.
- Please keep the battery away from heat, high voltage place. Please do not beat or hit the battery.
- 使用过程中，应远离热源、高压场所，并勿摔打、撞击电池.
- Remove the battery immediately from the device when the battery life ends. Please dispose the waste battery properly. Do not put it into fire or water.
- 电池寿命终止应立刻从设备中取出,废弃电池请安全妥善处理，切勿投入火中或水中.
- Do not allow children to replace batteries without adult supervision,
  Keep small cells and batteries which are considered swallow able out of the reach of children.
- 不允许儿童在没有成人监督的情况下更换电池，将可被吞咽的小电芯和电池放在儿童取不到的地方。
- Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion.In case of ingestion of a cell or battery, seek medical assistance promptly.
- 如果吞咽电池，应迅速送医院处理，吞咽有可能导致烧伤、软组织穿孔和死亡，摄入后 2 小时内可能发生严重烧伤.
- In case of ingestion of a cell or battery, seek medical assistance promptly.
  如果摄入电芯或电池，应立即寻求医疗援助。

17. Certification checklist 认证清单

编号	认证汇总	认证清单（√）
1	中国 GB31241 测试报告	
2	中国强制性产品认证(CCC)	√
3	UL1642（电芯）	√
4	UL2054（电池）	
5	UL62133（电池）	
6	CB（IEC 62133）	√
7	欧盟电池指令	√
8	欧盟 CE	√
9	美国 CTIA	
10	日本 PSE	√
11	韩国 KC	√
12	俄罗斯 GOST R	
13	印度 BIS	
14	澳洲 RCM	
15	泰国 TISI	
16	台湾 BSMI	
17	英国 UKCA	
18	MSDS	√
19	UN38.3 常规	√
20	UN38.3 上海化工院	
21	UN38.3 SGS	
22	1.2 米跌落	√
23	运输条件鉴定书（海运+陆运）	√

18. Customer Inquiry

客户要求

Model 型号：**653033PN3/850mAh**

1.If the customer approves the specification and samples, please sign the specification back to VDL within 1 week. It is invalid when expires.

如果客户认可本承认书和样品，请于 7 天内回签本承认书给重庆市紫建电子股份有限公司，过期视为无效。

2. If the customer requires more explanation or the operating conditions are different from the specification content, please write down your information and contact VDL Electronics Co., Ltd in advance. VDL Electronics Co., Ltd could design and build products according to your special request.

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,请客户提前和重庆市紫建电子股份有限公司联系. 重庆市紫建电子股份有限公司将按照贵公司特殊要求设计和开发产品.特殊要求标准:

项 目 / 序号	Special Request 特殊要求	Criteria 标准
1		
2		
3		
4		
5		
6		

Company Name : Signature : Date:

公司名称: 签名: 日期: