



## 锂离子聚合物电池规格书

Specification of Li-ion Polymer Battery

Model:QS4025130-1500mAh

编 号: QS-RDD-2412C

版 本: A/2

页 码: 1/12

东莞谦盛电子科技有限公司

## Specification of Li-ion Polymer Battery

### 锂离子聚合物电池规格书

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Model: QS4025130-1500mAh ( 801441 )

|                                      |                                                          |
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### Model:QS4025130-1500mAh

编 号: QS-RDD-2412C  
版 本: A/2  
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#### 1. Scope 范围

The specification shall be applied to Li-ion polymer rechargeable battery of QS4025130 which is manufactured by. Dong guan Qian-sun Electronic Technology Co., Ltd The products satisfy ROHS requirements.

本规格书适用于东莞谦盛电子科技有限公司生产的 QS4025130 产品满足 ROHS 要求。

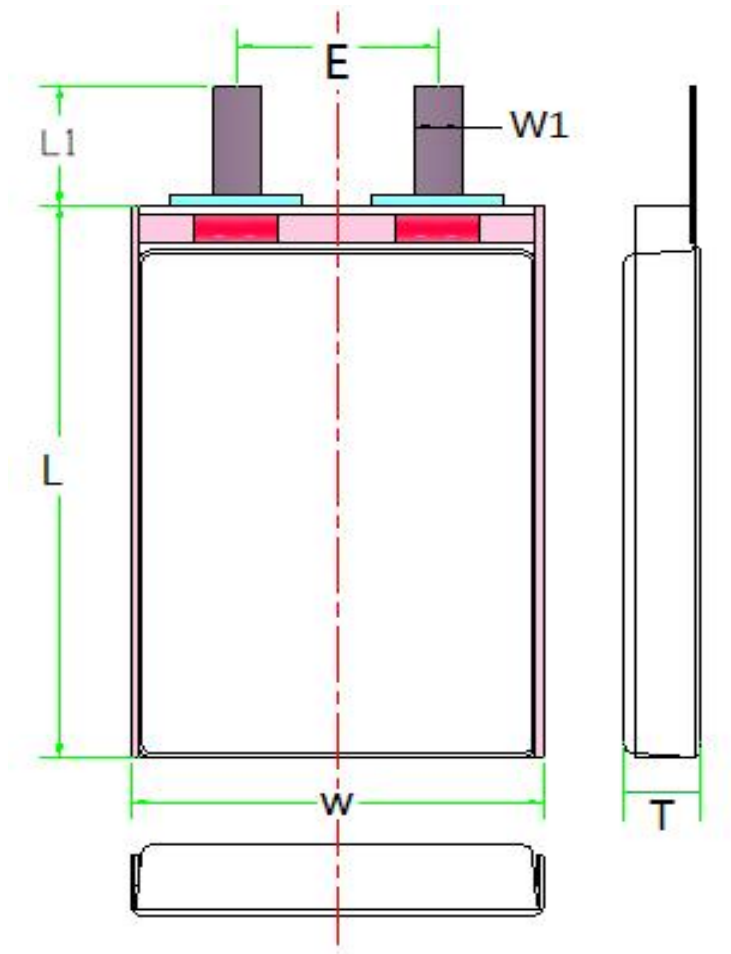
#### 2. Reference Standard 参考标准

The standard refer to GB31241and the other technology standard.

本标准参考国标 GB31241 等技术标准规范编制而成。

#### 3. Picture of battery 电池图

##### 3.1 Picture of single cell (Not according to the proportion) :单体电芯图 (未按比例)



| 电芯厚度 (T)    | 电芯宽度 (W) | 电芯长度 (L)  | 极耳长度 (L1) | 极耳宽度 (W1) | 极耳中心距 (E) |
|-------------|----------|-----------|-----------|-----------|-----------|
| Max:4.0     | Max:25   | Max:132.5 | 8.0±2.0   | 4.0±0.1   | 11.0±2.0  |
| UNIT 单位: mm |          |           |           |           |           |

Fig. (1) The Dimension of Single Cell

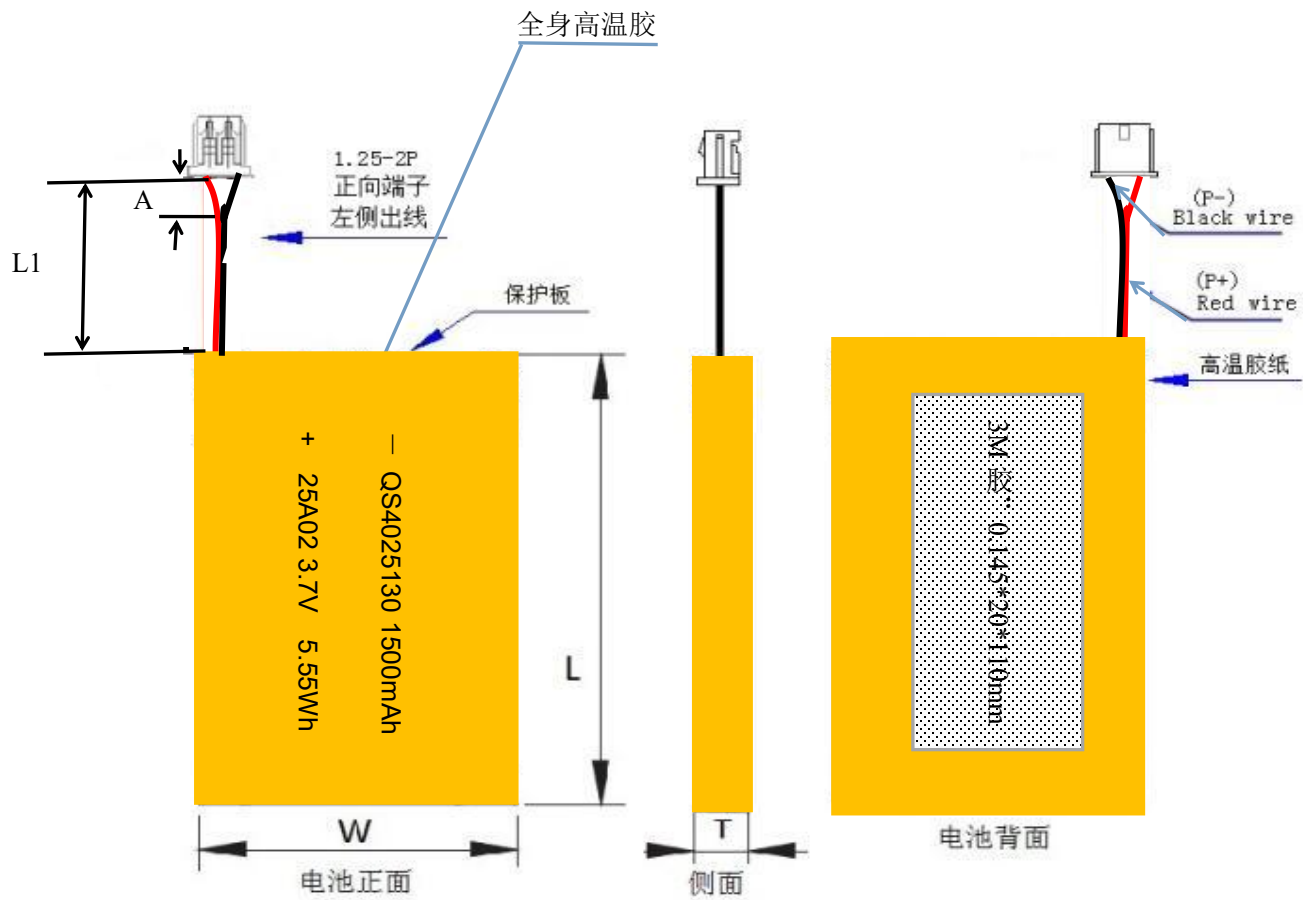
图 (1) 单体电池尺寸图



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3.2 Picture of assembled battery (Not according to the proportion) :组合电池图（未按比例）



Remark: Date 根据客户订单对日期描述,确认喷码内容.  
喷码内容: - QS4025130 1500mAh  
+ 生产日期 3.7V 5.55Wh  
(生产日期如: 2025.1.02 喷码为 25A02,月份用 A.B.C~J.K.L 代用)

| PACK thickness<br>( T ) | PACK width<br>( W ) | PACK length<br>( L ) | Wire length<br>( L1 ) | Wire length<br>( A ) | 引线型号<br>Wire size | 端子规格<br>Terminal specs |
|-------------------------|---------------------|----------------------|-----------------------|----------------------|-------------------|------------------------|
| Max:4.5                 | Max:26              | Max:135              | 60±3                  | ≤25                  | 1571#26AWG        | 1.25-2P 正向             |
| UNIT 单位: mm             |                     |                      |                       |                      |                   |                        |

Fig. (2) The Dimension of Assembled Battery  
图 (2) 组合电池外形尺寸图



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#### 4. Battery technology parameters and composition of the material 电池技术参数及组成物料

##### 4.1 Battery technology parameters 电池技术参数

| No. | Item 项目                                         | Specification 性能                                                                                                      |
|-----|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| 1   | Rated Capacity<br>额定容量                          | 1500mAh (0.2C discharging)                                                                                            |
| 2   | Normal Voltage<br>标称电压                          | 3.70V                                                                                                                 |
| 3   | O.C.V<br>出厂电压                                   | 3.70~4.10V                                                                                                            |
| 4   | Batteries charging off voltage<br>电芯充电截止电压      | 4.2V                                                                                                                  |
| 5   | Batteries discharge cut-off voltage<br>电芯放电截止电压 | 2.75V                                                                                                                 |
| 6   | Standard charging method<br>标准充电方式              | 0.2C constant current charge to 4.2V, then constant voltage 4.2V charge till charged current declines to $\leq 0.01C$ |
| 7   | charging Time<br>充电时间                           | Standard charge:5.5~6.5 h (With 0.2 C continuous charging current, 4.2 V voltage, cut-off current 0.01 C)             |
| 8   | Max Continuous Charging Current<br>最大充电电流       | Rapid charge:1.5~2.5 h (With 0.8C continuous charging current, 4.2 V voltage, cut-off current 0.01 C)<br>1000mA       |
| 9   | Standard discharging Current<br>标准放电电流          | 0.2C (300mA)                                                                                                          |
| 10  | Max. Standard Discharging Current<br>最大放电电流     | 1000mA                                                                                                                |
| 11  | Operating environment<br>工作环境                   | Charging: 0℃~45℃<br>Discharging: -10℃~60℃,<br>65±20%R.H.Bare Cell (单体电池储存湿度范围)                                        |
| 12  | Impedance<br>成品内阻                               | $\leq 300m\Omega$ 含测试导线 (4.2V AC 1KHz measured)                                                                       |
| 13  | Assembled Mode<br>组合方式                          | 单体                                                                                                                    |

##### 4.2 Battery material list 电池物料清单

| NO.<br>序 号 | Name of raw materials<br>原材料名称 | Type/specification<br>型号/规格 | quantity<br>数量 | Note<br>备注 |
|------------|--------------------------------|-----------------------------|----------------|------------|
| 1          | CELL/电芯                        | 4025132-1500mAh             | 1              |            |
| 2          | PCM                            | BTR-2035: DW01+8205-6       | 1              |            |
| 3          | Terminal Wire 端子规格             | 1.25-2PIN 正向 1571#26AWG     | 1              |            |
| 4          | The high temperature tape 高温胶纸 | 0.06*25*290mm               | 1              |            |
| 5          | The high temperature tape 高温胶纸 | 0.06*6*290mm                | 1              |            |
| 6          | Tin line 锡线                    | 无铅焊锡 $\phi 1.0$             | 1              |            |
| 7          | 3M 胶                           | 0.145*20*110mm              | 1              |            |



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#### 5. Electrical Characteristics of Cell 电芯电性能

##### 5.1 Normal Test Conditions 标准测试条件

Temperature: 15~35℃ Relative Humidity: 45-85%RH Atmospheric pressure: 86 -106 KPa

除非另有规定，本规格书中的各项测试应在标准大气条件下进行：

温度： 15~35 ℃ 相对湿度： 45-85%RH 大气压力： 86 ~106 KPa

##### 5.2 Electrochemical Characteristics 电化学性能

| NO.<br>序号 | Item<br>项目                                   | Criterion<br>性能标准                                                               | Test Method<br>测试方法                                                                                                                                                                                                          |
|-----------|----------------------------------------------|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | 0.2C<br>discharging<br>capacity<br>0.2C 放电性能 | Discharging capacity is not less than normal capacity.<br>放电容量应不小于标称容量          | After Standard Charging, rest 5 minutes ,then 0.2C discharge to ending voltage<br>标准充电后，电芯放置 5 分钟，再 0.2C 放电至终止电压。                                                                                                            |
| 2         | 0.8C discharging<br>capacity<br>0.8C 放电性能    | Discharging capacity is not less than 90% normal capacity.<br>放电容量应不小于标称容量的 90% | After Standard Charging, rest 5 minutes ,then 0.8C discharge to ending voltage<br>标准充电后，电芯放置 5 分钟，再 0.8C 放电至终止电压。                                                                                                            |
| 3         | Cycle life<br>循环寿命                           | The cycle times is not less than 300<br>循环次数不小于 300 次                           | Test condition:<br>Charge: 0.2C to 4.2V<br>Discharge: 0.2C to 3.0V<br>When the discharge capacity reduced to 70% of rated capacity, Stop testing<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>当放电容量降至额定容量的 70%时，停止测试。 |
| 4         | Self-Discharge<br>自放电                        | Discharging capacity is not less than 90% initial capacity<br>放电容量应不低于初始容量的 90% | After Standard Charging, test condition:<br>Temperature: 20±5℃<br>Storage Time: 28days<br>Then 0.2C discharge to ending voltage<br>标准充电后，测试条件如下：<br>温度：20±5℃<br>搁置时间：28 天<br>再以 0.2C 放电至终止电压。                                |

##### 5.3 Environment Characteristics 环境适应性能

| NO<br>序号 | Item<br>项目                                                       | Criterion<br>性能标准                                                                                            | Test Method<br>测试方法                                                                                                                                                                                                            |
|----------|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Constant<br>temperature and<br>constant humidity<br>test<br>恒定湿热 | No explosion, no fire, no leakage.<br>Discharging capacity is not less than 85% initial capacity<br>不起火、不爆炸、 | After Standard Charging, test condition:<br>Temperature: 40±5℃<br>Relative Humidity: 90~95%RH<br>Storage Time: 96 hours<br>Then return to room temperature for 2 hours , Then 1C discharged to ending voltage<br>标准充电后，测试条件如下： |



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|   |                      |                                                          |                                                                                                                                                                                                                                                                                                                                                    |
|---|----------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |                      | 不泄漏。<br>放电容量不低于<br>初始容量的 85%                             | 温度: $40\pm 5^{\circ}\text{C}$<br>相对湿度: 90~95%<br>放置时间: 96 小时<br>电芯取出在室温下放置 2 小时, 然后以 1C 电流放电至终止电压。                                                                                                                                                                                                                                                 |
| 2 | Vibration test<br>振动 | No explosion, no<br>fire, no leakage<br>不起火、不爆炸、<br>不泄漏。 | After Standard Charging, fixed the cell to vibration table, then<br>subjected to vibration test for 30 minutes per axis of XYZ axes<br>Frequency rate: 1oct/min<br>Vibration frequency: 10Hz-55Hz<br>Excursion (single amplitude): 0.8mm<br>电芯按标准充电后, 固定在振动台上, 然后沿 XYZ 每个坐标方向<br>振动 30 分钟<br>扫频速率: 1oct/min<br>振动频率: 10Hz~55Hz<br>位移幅值(单振幅): 0.8mm |
| 3 | Shock test<br>碰撞     | No explosion, no<br>fire, no leakage<br>不起火、不爆炸,<br>不泄漏。 | After Standard Charging, test condition:<br>Acceleration: $100\text{m/s}^2$<br>Pulse lasting time: <16ms<br>Shock times: $1000\pm 10$ times<br>标准充电后, 测试条件如下:<br>加速度: $100\text{m/s}^2$<br>脉冲持续时间: <16ms<br>碰撞次数: $1000\pm 10$ 次                                                                                                                   |

#### 5.4 Safety Characteristics 安全性能

| NO<br>序号 | Item<br>项目                  | Criterion<br>性能指标                                                                                                                                                 | Test Method<br>测试方法                                                                                                                                                                               |
|----------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Over charge test<br>过充电性能   | No explosion, no fire<br>不起火、不爆炸                                                                                                                                  | Discharge : 0.8C to3.0V<br>Charge : 0.8C charge to 4.8V, and maintain 8 h<br>放电: 0.8C 放电至 3.0V<br>充电: 0.8C 充电 4.8V, 保持 8 小时                                                                       |
| 2        | Short circuit<br>test<br>短路 | No explosion, no fire, The<br>temperature of the<br>surface of the Cells are<br>lower than $150^{\circ}\text{C}$<br>不起火、不爆炸,电芯表面<br>温度不超过 $150^{\circ}\text{C}$ 。 | After Standard Charging, Short circuit the positive and<br>negative, and the resistance of copper wire is not more<br>than $100\text{m}\Omega$ 。<br>标准充电后, 使用总内阻不大于 $100\text{m}\Omega$ 的导线短路正负极。 |
| 3        | Forced discharge<br>过放试验    | No explosion, no fire<br>不起火、不爆炸                                                                                                                                  | Discharge at a current of 0.8 C5A for 2.5h.<br>以 0.8CmA 的电流放电 2.5 小时                                                                                                                              |
| 4        | Free<br>fall test<br>自由跌落   | No Leakage ,no<br>explosion, no fire 。<br>不漏液, 不爆炸, 不起火。                                                                                                          | The battery to be fully charged with standard charging<br>condition ,then fall from height of 1.0m and hit onto<br>concrete ground 2 times<br>电池标准充电后, 让其从 1.0m 高处自由落下, 跌落在混凝<br>土地面上 2 次。        |

Note: Above testing of safe characteristics must be with protective equipment.

备注: 以上安全性能实验应在有保护措施的条件下进行。





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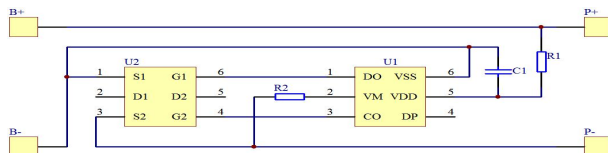
编号: QS-RDD-2412C  
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## 6. PCM Specification PCM 规格

### 6.1 Electrical Characteristics 电性能(Normal temperature, Relative humidity≤80%) (室温, 湿度≤80%)

| 测试项目<br>Test Item                                    | 最小值<br>Min     | 典型值<br>TYP | 最大值<br>Max | 单位<br>Unit | 备注<br>Remark |
|------------------------------------------------------|----------------|------------|------------|------------|--------------|
| 输入电压 (B+与 B-间) Input voltage(B+ to B-)               | 1.5            | /          | 10         | V          |              |
| 过充保护电压 Over charge detection voltage                 | 4.25           | 4.30       | 4.35       | V          |              |
| 过充保护恢复电压 Over charge release voltage                 | 4.05           | 4.10       | 4.15       | V          |              |
| 过放保护电压 Over discharge detection voltage              | 2.425          | 2.5        | 2.575      | V          |              |
| 过放保护恢复电压 Over discharge release voltage              | 2.825          | 2.9        | 2.975      | V          |              |
| 放电过流保护电流 Over current detection current              | 2              | 3.0        | 6          | A          |              |
| 过充保护延迟时间 Over charge detection delay                 | 77             | 110        | 143        | ms         |              |
| 过放保护延迟时间 Over discharge release delay                | 38.5           | 55         | 71.5       | ms         |              |
| 放电过流保护延迟时间 Over current detection delay              | 4.9            | 7          | 9.1        | ms         |              |
| 短路保护延迟时间 Short delay                                 | 200            | 400        | 600        | us         |              |
| 正常状态下静态电流 Current consumption (Operation)            | /              | 2          | 6          | uA         | VDD=3.9V     |
| 空载内阻 Load resistance                                 | 35             | 55         | 65         | mΩ         |              |
| 最大工作温度范围 Max operating temperature range             | -40            | /          | 85         | ℃          |              |
| 建议最大持续充/放电电流 Max continuous charge/discharge current | /              | /          | 1          | A          |              |
| 是否允许 0V 充电 Allowed 0V change                         | 允许 / Available |            |            |            |              |

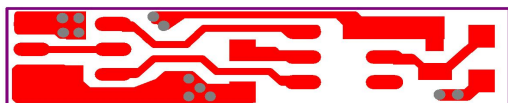
### 6.2 Circuit Diagram 电路图



3

### 6.3 Circuit topology Drawing 电路布线图

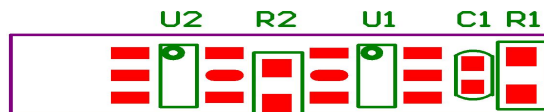
顶层线路图:



底层线路图:



顶层丝印图:



底层丝印图:



### 6.4 PCM BOM 保护板物料清单

| 序号<br>No. | 物料代码<br>Material code | 物料名称<br>Material name | 规格<br>Specifications      | 封装形式<br>Encapsulation form | 数量<br>Number | 单位<br>Unit | 备注<br>Remarks |
|-----------|-----------------------|-----------------------|---------------------------|----------------------------|--------------|------------|---------------|
| 1         | R1                    | 电阻                    | 1000 Ω                    | 0402                       | 1            | PCS        |               |
| 2         | R2                    | 电阻                    | 1K Ω                      | 0402                       | 1            | PCS        |               |
| 3         | C1                    | 电容                    | 0.1uF (104) 50V           | 0402                       | 1            | PCS        |               |
| 4         | U1                    | IC                    | DW01                      | SOT-23-6                   | 1            | PCS        |               |
| 5         | U2                    | MOSFET                | 8205A                     | SOT-23-6                   | 1            | PCS        |               |
| 6         | B+ B-                 | 镍片                    | 4*3*0.3 MM                |                            | 2            | PCS        |               |
| 7         |                       | PCB                   | BTR-2035-B (20*3.5*0.6MM) |                            | 1            | PCS        |               |

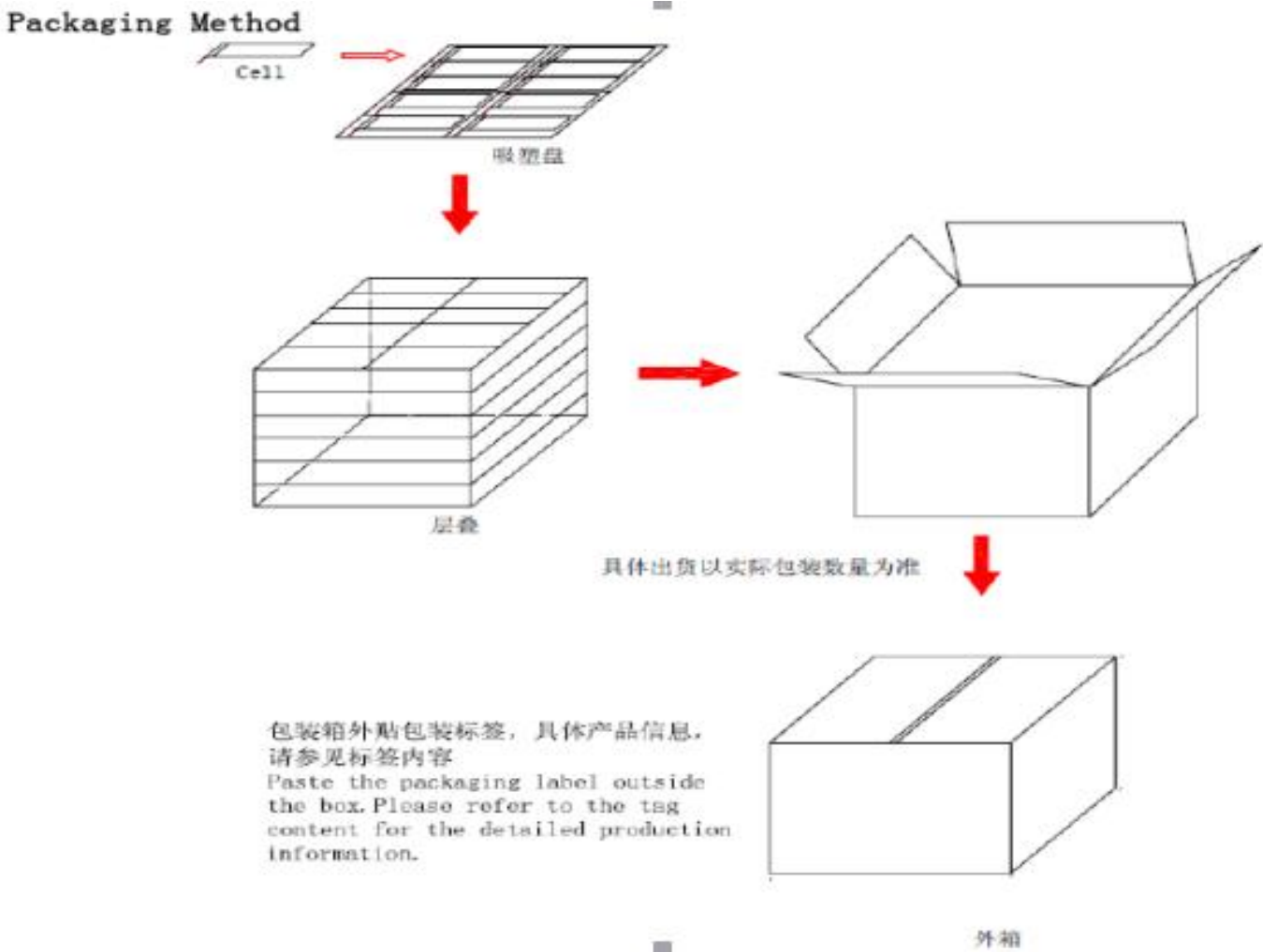


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7. Product packaging and storage and transportation requirements 产品包装及存储和运输要求

7.1 Package diagram 包装示意图



7.2 Storage and Shipment Requirement 存储及运输要求

| Item 项目                                                                                                                                                                                                                                                                                                                                                                                                                  | Requirement 要求          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Short period less than 1 month<br>短期少于一个月                                                                                                                                                                                                                                                                                                                                                                                | -20℃ ~ +45℃, 65%±25%RH  |
| Long period less than half year<br>长期小于半年                                                                                                                                                                                                                                                                                                                                                                                | -20℃ ~ + 35℃, 65%±25%RH |
| Long period less than 1 year<br>长期小于一年                                                                                                                                                                                                                                                                                                                                                                                   | 0℃~+30℃, 65%±25%RH      |
| Long time storage 长期贮存:<br>If the battery has to be storied for a long time, the environmental condition should be: Temperature:23±2℃,Humidity: 65±20%RH<br>长期存储电池须置于温度为 23±2℃、湿度为 65±20%RH 的环境中。<br>The voltage for a long time storage shall be 3.70V~3.90V range.<br>贮存电压为 3.70V~3.90V 。<br>We recommend that batteries be charged about once per half a year to prevent over discharge.<br>如长时间储存，建议每半年充一次电以防止电池过放电。 |                         |



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### Model:QS4025130-1500mAh

编 号: QS-RDD-2412C  
版 本: A/2  
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#### 8.Period of Warranty 保质期

The period of warranty is one a year from the date of shipment. Within the battery idle for at least six months to charge the battery activation time, because if the idle time is too long and that the battery performance of the company is not responsible for any damage, QS guarantees to give a replacement in case of battery with defects proven due to manufacturing process instead of the customers abuse and misuse.

电池的保质期从出货之日算起为一年。电池闲置六个月之内至少给电池充电激活一次，如果因为闲置时间过长而导致电池性能受损本公司概不负责，如果证明电池的缺陷是在我们公司制造过程中造成的而不是客户滥用或错误使用造成，本公司负责退换电池。

#### 9. Warning and Cautions 警告及注意事项

Danger warning (it should be described in manual or instruction for users, indicated especially) to prevent the possibility of the battery from leaking, heating, explosion. Please observe the following precautions:

危险警告：（应在使用说明手册或说明书中，特别注明）为防止电池可能发生泄漏，发热，爆炸，请注意以下预防措施：

Don't immerse the battery in water and seawater. Please put it in cool and dry environment if no using.

严禁将电池浸入海水或水中，保存不用时，应放置在阴凉干燥的环境中。

Do not discard or leave the battery near a heat source as fire or heater

禁止将电池在热高温源（如火、加热器）旁等使用、留置或丢入。

Being charged, using the battery charger specifically for that purpose

充电时请选用锂离子电池专用充电器。

Don't reverse the positive and negative terminals

严禁颠倒正负极使用电池。

Don't connect the battery to an electrical outlet directly.

严禁将电池直接接入电源插座。

Don't connect the positive and negative terminal directly with metal objects such as wire. Short terminals of battery is strictly prohibited, it may damage battery.

禁止用金属直接连接电池正负极短路，任何时候禁止短路电芯，它会导致电芯严重损坏。

Do not transport and store the battery together with metal objects such as necklaces, hairpins.

禁止将电池与金属，如发夹，项链等一起运输或贮存。

Do not strike , throw or trample the battery.

禁止敲击或抛掷，踩踏电池等。

Do not directly solder the battery and pierce the battery with a nail or other sharp object

禁止直接焊接电池和用钉子或其它利器刺穿电池。

Do not use lithium ion battery and others different lithium polymer battery model in mixture

禁止与液态锂离子或不同型号的聚合物锂电池混合使用

Prohibition of use of damaged cells

禁止使用已损坏的电芯

Don't bend or fold sealing edge. Don't open or deform folding edge Don't fillet the end of the folding edge

禁止弯折顶封边，禁止打开或破坏折边，禁止导折电芯折边底部

Don't fall, hit, bend battery body.

禁止坠落、冲击、弯折电芯。

Battery pack designing and packing Prohibition injury batteries.

电池外壳设计和包装禁止损伤电池。

Never disassemble the cells

在任何情况下不得拆卸电芯

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

更换电芯应由电芯供应商或设备供应商完成，用户不得自行更换。



**锂离子聚合物电池规格书**  
Specification of Li-ion Polymer Battery  
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Keep the battery away from babies. 电池应远离小孩。

Caution 小心

◆ Do not use or leave the battery at very high temperature conditions (for example, strong direct sunlight or a vehicle in extremely hot conditions). Otherwise, it can overheat or fire or its performance will be degenerate and its service life will be decreased.

禁止在高温下（直热的阳光下或很热的汽车中）使用或放置电池，否则可能会引起电池过热，起火或功能失效，寿命减短。

◆ Do not use it in a location where is electrostatic and magnetic greatly, otherwise, the safety devices may be damaged, causing hidden trouble of safety.

禁止在强静电和强磁场的地方使用，否则易破坏电池安全保护装置，带来不安全的隐患。

◆ If the battery leaks, and the electrolyte get into the eyes. Do not wipe eyes, instead, rinse the eyes with clean running water, and immediately seek medical attention. Otherwise, eyes injury can result.

如果电池发生泄漏，电解液进入眼睛，请不要揉擦，应用清水冲洗眼睛，并立即送医治疗，否则会伤害眼睛。

◆ If the battery gives off an odor, generates heat, becomes discolored or deformed, or in any way appear abnormal during use, recharging or storage, immediately remove it from the device or battery charge and stop using it.

如果电池发出异味，发热，变色，变形或使用，贮存，充电过程中出现任何异常现象，立即将电池从装置或充电器中移除并停用。

◆ In case the battery terminals are dirt, clean the terminals with a dry cloth before use. Otherwise power failure or charge failure may occur due to the poor connection with the instrument.

如果电池弄脏，使用前应用干布抹净，否则可能会导致接触不良功能失效。

Prohibition of use of damaged cells

禁止使用已损坏的电芯

◆ Be aware discharged batteries may cause fire, tape the terminals to insulate them.

废弃之电池应用绝缘纸包住电极，以防起火，爆炸。

## 10. Note 声明

Note (1): The customer is requested to contact in advance if and when the variations of the operating conditions described in this document. Additional experimentation may be required to verify performance and safety under such conditions.

声明一：

客户若需要将电芯用于超出文件以外的设备，或在文件规定以外的使用条件下使用电芯，应事先联系。因为需要进行特定的实验测试以核实电芯在该使用条件下的性能及安全性。

Note (2): take no responsibility for any accident when the cell is used under conditions outside of this specification.

声明二：

对于在超出文件规定以外的条件下使用电芯而造成的任何意外事故，概不负责。

Note (3): inform the customer in writing of improvement(s) regarding proper use and handling of the cell if it is deemed necessary. Energy reserves the right to revise this specification before the customer signs the Data sheet. If a revision is required, notify the customer.

声明三：

如有必要会以书面形式告知客户有关正确操作使用电芯的改进措施。

在规格书未签确前，本公司有权对本产品规格书进行修订，如有必要修订后将会通知客户。

Appendix.附录

N/A