



浙江谷神能源科技股份有限公司

Zhejiang Godsend Power Technology Co., Ltd.

## Specification Approval Sheet

For

**LiFePO<sub>4</sub> Cylinder Battery**

**LiFePO<sub>4</sub> 圆柱型 电池**

**产品规格确认书**

型 号 MODEL : GSF46160M-22

客户名称 CUSTOMER: \_\_\_\_\_

客户确认 CONFIRMATION: \_\_\_\_\_

日 期 DATE: \_\_\_\_\_

| 编制<br>Designed | 审核<br>Checked | 批准<br>Approved |
|----------------|---------------|----------------|
|                |               |                |



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## 1. 适用范围/Scope

本产品规格书描述了圆柱型锂离子电芯的外型尺寸、特性、技术要求及注意事项。本标准适用于浙江谷神能源科技股份有限公司生产的可充电  $\text{LiFePO}_4$  圆柱形锂离子电池的产品性能指标。

The document describes the type and size, performance, technical characteristics, warning and caution of the  $\text{LiFePO}_4$  rechargeable cylinder battery cells supplied by Zhejiang Godsend Power Technology Co., LTD.

## 2. 电芯型号/Model

描述/Description: 圆柱型磷酸铁锂二次电池  
型号/Model: GSF46160M-22

## 3. 尺寸/Dimensions



| 项目/Item | 描述/Description       | 尺寸/Dimension              |
|---------|----------------------|---------------------------|
| A       | 高度/Height            | $167 \pm 1 \text{ mm}$    |
| B       | 总高度/Total height     | $177 \pm 1 \text{ mm}$    |
| C       | 直径/Diameter          | $45.8 \pm 0.2 \text{ mm}$ |
| D/ E    | 极柱高度/Terminal height | $5.0 \pm 0.2 \text{ mm}$  |



浙江谷神能源科技股份有限公司

Zhejiang Godsend Power Technology Co., Ltd.

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#### 4.规格/Specifications

| 序号<br>NO. | 项目/Item                                   | 规格/Specification                                                                                   |
|-----------|-------------------------------------------|----------------------------------------------------------------------------------------------------|
| 1         | 标称容量<br>Nominal capacity                  | 22000 mAh @ 0.5C                                                                                   |
| 2         | 标称电压<br>Nominal voltage                   | 3.2 V                                                                                              |
| 3         | 内阻<br>Impedance                           | $\leq 3.0 \text{ m}\Omega$ (50%SOC)                                                                |
| 4         | 充电截止电压<br>Cut-off charge voltage          | 3.65 $\pm$ 0.05 V                                                                                  |
| 5         | 充电电流<br>Charge current                    | 标准充电: 11A/Standard charge: 11A<br>快速充电: 22A/Rapid charge: 22A<br>最大充电: 44A/Max charge current: 44A |
| 6         | 标准充电方法<br>Standard Charging method        | 0.5C (11 A) 恒流 (CC) 充电至 3.65 V, 再恒压 (CV) 充电至充电电流小于 0.02C (0.44A)                                   |
| 7         | 充电时间<br>Charging time                     | 标准充电: 2h (参考值) /Standard charge: 2h (reference)<br>快速充电: 1h (参考值) /Rapid charge: 1h (reference)    |
| 8         | 最大放电电流/<br>Max discharge current          | 110 A                                                                                              |
| 9         | 瞬间最大放电电流<br>Max instant discharge current | 220 A                                                                                              |
| 10        | 放电终止电压<br>Cut-off discharge voltage       | 2.0 V                                                                                              |
| 11        | 工作温度<br>Operating temperature             | 充电/Charge: 0 ~ 45 °C<br>放电/Discharge: -20 ~ 60 °C                                                  |
| 12        | 储存温度<br>Storage temperature               | 长期 (6个月) /Long period (6 month): -10 ~ 35 °C<br>短期 (1个月) /Short period (1 month): -20 ~ 45 °C      |
| 13        | 储存湿度<br>Storage humidity                  | < 85% RH                                                                                           |
| 14        | 电池重量<br>Cell weight                       | 570.0 $\pm$ 10 g (净重)                                                                              |



## 5.技术要求/Technical characteristic

### 5.1 电性能/Electrical characteristics

| 序号<br>NO. | 项目/Item                                 | 标准/Requirements                                                                    | 测试方法/Test Method                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------|-----------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | 倍率放电性能<br>Discharge rate<br>Performance | $0.5C \geq 100\%$<br>$1C \geq 100\%$<br>$3C \geq 95\%$<br>$5C \geq 90\%$           | 在 1 标准大气压,环境温度 $20 \pm 5^\circ\text{C}$ ,相对湿度为 $45 \sim 80\%$ 的条件下, 电池以 $0.5C_2$ A 标准充电后, 在 $20 \pm 5^\circ\text{C}$ 下, 分别以 $0.5C/1C/3C/5C$ 电流放电,直到放电终止电压 $2.0\text{ V}$ 或企业技术条件中规定的放电终止电压。(循环三次, 当有一次达到标准, 即达到要求)<br>Standard charging at $0.5C_2$ A under the condition of normal atmospheric pressure, $20 \pm 5^\circ\text{C}$ and $45 \sim 80\%$ RH, discharging at $0.5C/1C/3C/5C$ to $2.0\text{ V}$ or the specified cut-off voltage according to the technical document of enterprise. Charge/discharge cycle can be conducted for 3 times before meeting the standards. (the same below) |
| 2         | 低温放电性能<br>Low-Temperature<br>Discharge  | $C/C_2 \geq 60\%$                                                                  | 电池标准充电后, 在 $-20 \pm 2^\circ\text{C}$ 恒温环境下搁置 $20\text{ h}$ , 以 $0.5C_2$ A 放电至 $2.0\text{ V}$ , 要求放电时间 $\geq 1.2\text{ h}$ 。<br>Standard charge. Keep the battery under $-20 \pm 2^\circ\text{C}$ for $20\text{ h}$ . Then discharge to $2.0\text{ V}$ at $0.5C_2$ A. The discharge time should be no less than $1.2$ hours.                                                                                                                                                                                                                                                                       |
| 3         | 高温放电性能<br>High-Temperature<br>Discharge | $C/C_2 \geq 95\%$                                                                  | 电池标准充电后, 在 $55 \pm 2^\circ\text{C}$ 恒温环境下搁置 $5\text{ h}$ , 以 $0.5C_2$ A 放电至 $2.0\text{ V}$ , 要求放电时间 $\geq 1.9\text{ h}$ 。<br>Standard charge. Keep the battery under $55 \pm 2^\circ\text{C}$ for $5\text{ h}$ . Then discharge to $2.0\text{ V}$ at $0.5C_2$ A. The discharge time should be no less than $1.9$ hours.                                                                                                                                                                                                                                                                           |
| 4         | 荷电保持能力<br>Charge<br>retention           | $C_{\text{剩余}}/C_{\text{标称}} \geq 90\%$<br>$C_{\text{恢复}}/C_{\text{标称}} \geq 95\%$ | 电池标准充电后, 开路放置 $28$ 天, 以 $0.5C_2$ A 放电至 $2.0\text{ V}$ , 测量电池的剩余容量; $0.5C_2$ A 充 / $0.5C_2$ A 放, 测量蓄电池的恢复容量。<br>Measure initial status and initial capacity. Storing for $28$ days after standard charge, then measuring residual capacity by discharging to $2.0\text{ V}$ at $0.5C_2$ A; obtaining recoverable                                                                                                                                                                                                                                                                                   |



|   |                                |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---|--------------------------------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |                                |                                              | capacity by charge/discharge at $0.5C_2$ A / $0.5C_2$ A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 5 | 循环寿命<br>Cycle Life             | $C/C_{\text{标称}} \geq 80\%$<br>$N \geq 1800$ | 进行 $0.5C_2$ A / $0.5C_2$ A 充放循环, 当循环放电容量小于额定容量的 80% 时, 停止试验, 记录循环次数<br>Charge/discharge at $0.5C_2$ A / $0.5C_2$ A ceaselessly until the discharge capacity is less than 80% of nominal capacity.<br>Recording cycle times. The cycle times $\geq 1800$ .                                                                                                                                                                                                                                                                                                                                                                 |
| 6 | 贮存性能<br>Storage<br>Performance | $C_{\text{恢复}}/C_{\text{标称}} \geq 95\%$      | 电池标准充电后搁置 1h, 以 $0.5C_2$ A 放电至 40~60%, 在 $20^\circ\text{C} \pm 5^\circ\text{C}$ 储存 3 个月; 放电至终止电压, 标准充电后搁置 1 h, 以 $0.5C_2$ A 放电, 此充放电最多可循环 5 次, 有一次达到要求即可。<br>Laying the cells aside for 1 h after standard charge.<br>Discharging at $0.5C_2$ A until the capacity of the cell is about 40~60% of nominal capacity. Then storing the cell at $20 \pm 5^\circ\text{C}$ for 3 months. Discharge to cut-off voltage. Charge through standard method, then rest for 1 h and discharge at $0.5C_2$ A. Recording the discharge capacity.<br>(Charge/discharge cycle can be conducted for 5 times before meeting the standards.) |

## 5.2 安全性能/Safety Performance

| 序号<br>NO. | 项目/Item               | 标准/Requirements                   | 测试方法/Test Method                                                                                                                                                                             |
|-----------|-----------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | 过充性能<br>Overcharge    | 不着火、不爆炸/<br>No fire, no explosion | 标准充电后, 以 $1C_2$ A 电流充电至电池电压为 5V 或充电时间达到 90min 结束试验。<br>After standard charging, continue charge at $C_2$ A to voltage to 5V or continue charge at $C_2$ A for 90 min.                        |
| 2         | 过放性能<br>Overdischarge | 不着火、不爆炸/<br>No fire, no explosion | 标准充电后, 电池在 $20 \pm 5^\circ\text{C}$ 下; 以 $1C_2$ A 电流持续放电至电压为 0V。<br>After standard charging, continue discharge at $1C_2$ A to voltage to 0V hours at $20^\circ\text{C} \pm 5^\circ\text{C}$ |



|   |                       |                                   |                                                                                                                                                                                                                                                                                                                                                                                   |
|---|-----------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | 短路性能<br>Short Circuit | 不着火、不爆炸/<br>No fire, no explosion | 电池标准充电后, 置于防爆玻璃罩中直接短路其正负极(线路总电阻不大于 5mΩ) 10 min, 试验结束。<br>After standard charging, put the battery into a blast-proof cabinet and short-circuit the battery (general resistance of the circuit shall be no more than 5 mΩ) for 10 minutes.                                                                                                                                         |
| 4 | 挤压性能<br>Extrude       | 不着火、不爆炸/<br>No fire, no explosion | 电池标准充电后, 将电池置于两块铁板之间, 使电极面与铁板平行, 施加 13 KN 的压力。<br>After standard charging, keep the battery between two pieces of iron plate and let the electrode surface be paralleled to the iron plate. Put a 13 KN pressure on the iron plate.                                                                                                                                               |
| 5 | 高温搁置性能<br>Hot Oven    | 不着火、不爆炸<br>No fire, no explosion  | 电池标准充电后, 以 5℃ 升温速率升温至 130℃ 在此环境下放置 30 min。<br>After standard charging, heating the box from room temperature to 130 °C a rate of 5 °C/min. Keep the battery in the box under 130°C for 30 minutes.                                                                                                                                                                                |
| 6 | 跌落性能<br>Drop          | 不着火、不爆炸<br>No fire, no explosion. | 电池标准充电后, 将电池样品极柱端子朝下由高度 1.5 m 的位置自由跌落到混凝土上。<br>After standard charge. Let the battery fall from a height of 1.5 m.                                                                                                                                                                                                                                                                |
| 7 | 针刺<br>Acupuncture     | 不着火、不爆炸<br>No fire, no explosion  | 电池标准充电后, 用 φ3mm~φ8mm 的钢钉以 20~30mm/s 速度刺入, 在电池中央部位沿与电极面垂直的方向穿透电池(钢针停留在蓄电池中), 观察 1h 以上。<br>After standard charging, put the call into the jig, pierce it with a steel pin (φ3mm~φ8mm) at the speed of 20~30 mm/s. Observe it more than 1 h.                                                                                                                                         |
| 8 | 撞击性能<br>Hit           | 不着火、不爆炸<br>No fire, no explosion. | 电池标准充电后, 将一根圆钢棒(直径 7.9 mm, 长度 70mm) 以与电池电极面平行并与电池上部端子成直角的方向置于电池中部, 将一重量为 9.1kg 的钢球从 61cm 的高度自由跌落至圆钢棒上。<br>After standard charging, put a steel bar(with 7.9 mm diameter and 70 mm length) in the middle of battery surface, s parallel to cell electrode surface and perpendicular to battery electrode. Make a steel ball with a weight of 9.1 kg fall from a height of 61 cm to |



the stick.

### 5.3 环境适应性能/Environmental Adaptability

| 序号<br>NO. | 项目/Item                                         | 标准/Requirements                                                                                                                  | 测试方法/Test Mothed                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | 温度冲击<br>Thermal Shock                           | 不漏液, 不冒烟, 不着火,<br>不爆炸。<br>No fire, no explosion, no fume,<br>no leakage                                                          | 电池标准充电后, 在环境温度为-20℃的条件下开路放置1.5h, 然后在85℃条件下开路放置2h, 如此循环5次。观察电池外观变化。<br>After standard charging, keep the battery in the environment of -20℃ for 1.5 h and 85℃ for another 2 h .Repeat the procedure for 5 times. Observe the appearance of the battery                                                                                                                                                                                                    |
| 2         | 恒定湿热<br>Constant<br>Temperature<br>and Humidity | 电池外观无明显变形、无腐蚀、不冒烟、不爆炸, 放电时间≥1.6h。<br>No remarkable deformation,<br>no erosion, no fume, no<br>explosion, discharge time<br>≥1.6h | 电池标准充电后, 置于温度为40℃±2℃, 相对湿度为93%的恒温恒湿箱中。搁置48h后取出, 在常温常压下搁置4h, 观察电池外观变化。然后以0.5C <sub>2</sub> A放电至2.0V 测量蓄电池最终容量。<br>Standard charge. Keep the battery in a temperature humidity chamber with a temperature of 40±2℃ and a humidity of 93% for 48 h. Then get it out and keep it under normal pressure and temperature for 4 h. Observe the variation of the battery's appearance and get the final capacity via discharging to 2.0V at 0.5C <sub>2</sub> A. |
| 3         | 机械振动<br>Mechanical<br>Vibration                 | 电池外观无明显损伤、不漏液、不冒烟、不爆炸。<br>No remarkable deformation,<br>no explosion, no fume, no<br>leakage.                                    | 蓄电池标准充电, 测量蓄电池初始状态, 然后将电池安装在振动台面上, 按以下振动频率和对应的振幅调整好试验设备, 在X、Y、Z三个方向每个方向上从10~55 Hz 循环扫频振动10次, 扫频速率为1oct/min。<br>条件:<br>A) 振动频率: 10Hz~30Hz<br>位移幅值 (单振幅): 0.38mm<br>B) 振动频率: 30Hz~55Hz<br>位移幅值 (单振幅): 0.19mm<br>扫频结束后测蓄电池最终状态, 观察电池外观变化<br><br>Measure initial status of the battery after standard charge. Then make the battery fixed on the vibration                                                                                                   |



|  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--|--|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |  | platform and prepare the equipment according to following vibration frequency and relevant amplitude. Do vibration along X, Y and Z directions with frequency sweeping from 10Hz to 55Hz at a rate of 1oct/min, each for 10 times.<br>Conditions:<br>A)vibration frequency:10Hz~30Hz<br>Displacement breadth (single swing): 0.38mm<br>B) vibration frequency: 30Hz~55Hz<br>Displacement breadth(single swing): 0.19mm<br>Measure final status after sweeping and Observe the variation of the battery's appearance. |
|--|--|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**备注：**以上标准中一些术语的定义：

**Remarks:** Definitions about some terms in this specification.

- (1) 标准充电：在环境温度  $20\pm5^{\circ}\text{C}$  的条件下，以  $0.5C_2$  A 充电，当电池端电压达到充电限制电压 3.65V 时，改为恒压充电，直到充电电流小于或等于  $0.02C_5$  A 停止充电。

Standard charge: Charge with current  $0.5C_2$  A to limit charge voltage 3.65V under the condition of  $20\pm5^{\circ}\text{C}$  surrounding temperature, then change to charge with constant voltage till the current less than or equal to  $0.02 C_5$  A.

- (2) 剩余容量：电池经过特定的检测程序后的首次放电容量。

Residual Capacity: The first discharge capacity after being tested by the specific procedure.

- (3) 标准循环：电池  $0.5C_2$  A 标准充电后，搁置 30min，以  $0.5C_2$  A 放电至 2.0V

Standard Cycle: After standard charge at  $0.5C_2$  A, rest for 30min, then discharge at  $0.5C_2$  A to 2.0 V.

- (4) 恢复容量：电池经过特定的检测程序后，通过反复充放电使状态恢复后的放电容量。

Recovery Capacity: The discharge capacity by implementing charge-discharge cycle repeatedly after being tested by the specific procedure.

- (5) 用于上述测试的电池必须是交货一个月内的电池，除非另有规定。

Test shall be conducted within one month after new batteries be delivered. Unless otherwise defined.

## 6.外观检查/Visual Inspection

不允许有任何影响电池性能的外观缺陷，如裂纹、裂缝、泄漏等。

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

## 7.标准测试环境/Standard test environment

除非特别说明，本规格书中所有测试均在以下环境条件下进行：



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

温 度:  $20\pm 5^{\circ}\text{C}$

Temperature:  $20\pm 5^{\circ}\text{C}$

湿 度: 25-85%RH

Humidity: 25-85%RH

大气压: 86~106 kPa

Atmosphere Pressure: 86~106 kPa

## 8. 储存及其它事项/Storage and Others

### 8.1 长期储存/Long-Period Storage

长期储存的电池（超过3个月）须置于干燥、凉爽处。每6个月对电池进行一次充放电，储存电压为3.2~3.35V且储存环境要求如7。

If the cell is stored for a long time (more than three months), it should be stored in dry and cool place. The cell shall be charged and discharged every six month. The cell's storage voltage should be 3.2~3.35V. And the cell shall be stored in an environment as NO.7.

### 8.2 其它事项/Others

任何本规格书中未提及的事项，须经双方协商确定。

Any matter that does not mentioned in this specification should be consulted between the customer and GODSEND.

## 9. 保质期及产品责任/Warranty Period& Product Liabilities

保质期是从出厂日期（喷码）开始起 6 个月

Warranty period of this product is 6 months from manufacturing code.

谷神能源公司对因没有按本规格书规定操作而导致的意外不负责任，当本规格书有一些变动时，谷神能源公司会通知购买方。

GODSEND is not responsible for the troubles caused by mishandling of the battery which is clearly against the instructions in this specification. When GODSEND finds any new fact which requires modification of this document, we will inform the buyer.

## 10. 电池使用时警告事项及注意事项/Warnings and Cautions in using the battery

为防止电池可能发生泄漏，发热，爆炸，请注意以下预防措施：

To prevent the battery from leaking, heating or explosion, please pay attention to the following precautions:

**警 告 ! WARNINGS!**



- ◆ 使用规定的充电器

Use specific battery charger.

- ◆ 不要将电池投入火中或加热

Do not discard the battery in fire or a heater.

- ◆ 不要将电池分解拆散

Do not dismantle the battery

- ◆ 严禁将电池浸入海水或水中，保存不用时，应放置于阴凉干燥的环境中。

Do not immerse the battery in water or seawater, and keep the battery in a cool & dry surrounding if it is idle.

- ◆ 禁止将电池放置在高温源附近，如火、加热器等使用和留置。

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

- ◆ 严禁颠倒正负极使用电池。

Do not reverse the positive and negative terminals.

- ◆ 严禁将电池直接插入电源插座。

Do not connect the battery to an electrical outlet directly.

- ◆ 禁止用金属直接连接电池正负极短路。

Do not short-circuit the battery by directly connecting the positive and negative terminals with metal objects.

- ◆ 禁止将电池与金属，如发夹、项链等一起运输或贮存。

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

- ◆ 禁止敲击、抛掷、踩踏电池。

Do not strike, trample or throw the battery.

- ◆ 禁止直接焊接电池和用钉子或其它利器刺穿电池。

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

- ◆ 禁止在高温下（炙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、功能失效或寿命减短。

Do not use or keep the battery under high temperature (for example, under strong sunlight or in an extremely hot vehicle). Otherwise, the battery would be overheated, firing, out of operation or service life decreased.

- ◆ 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，带来安全隐患。

Do not use the battery in a location with high static or intense magnetic field. Otherwise, the safety devices may be damaged, causing hidden threat against safety.



- ◆ 如果电池发生泄露，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。

If the battery leaked and the electrolyte get into eyes, do not rub eyes, instead, rinse the eyes with clean water, and immediately seek medical attention.

- ◆ 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，立即将电池从装置或充电器中移离并停用。

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

- ◆ 如果电极弄脏,使用前应用干布或细砂皮抹净,否则可能会导致接触不良影响电池使用性能。

In case the battery terminals are dirty, clean the terminals with a dry cloth before use. Otherwise poor performance may occur due to the loose contact.

- ◆ 废弃之电池应用绝缘纸包住电极,以防起火、爆炸。

Be aware discarded batteries may cause fire or explode, tape the battery terminals to insulate them.

## 11. 电池的特征曲线/Feature curve

- ◆ 常温倍率充电曲线 Charging curve at room temperature

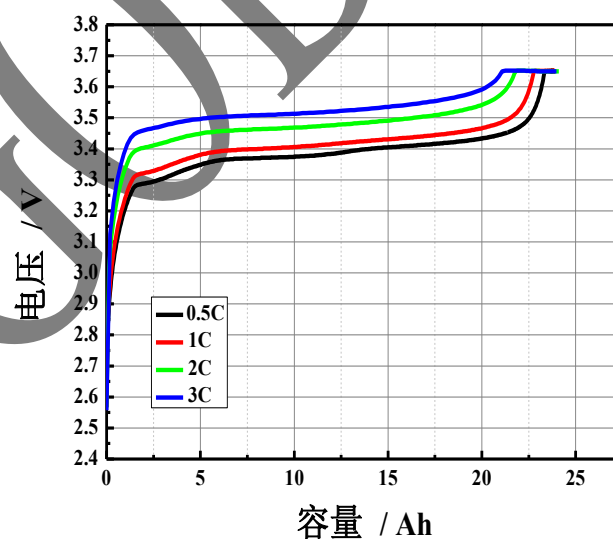


图 11.1 GSF46160M-22 常温倍率充电曲线

Figure 11.1 GSF46160M-22 charge curve of at room temperature



◆ 常温倍率放电曲线 Discharging curve at room temperature

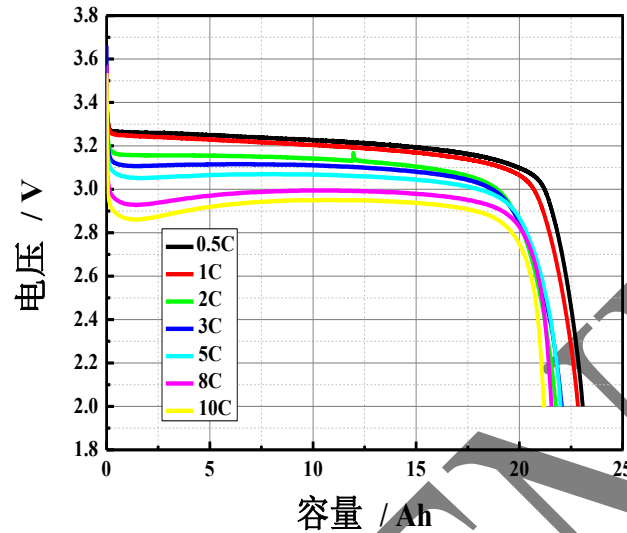


图 11.2 GSF46160M-22 常温倍率放电曲线

Figure 11.2 GSF46160M-22 discharge curve of at room temperature

◆ 高低温放电曲线 Discharging curve at different temperature

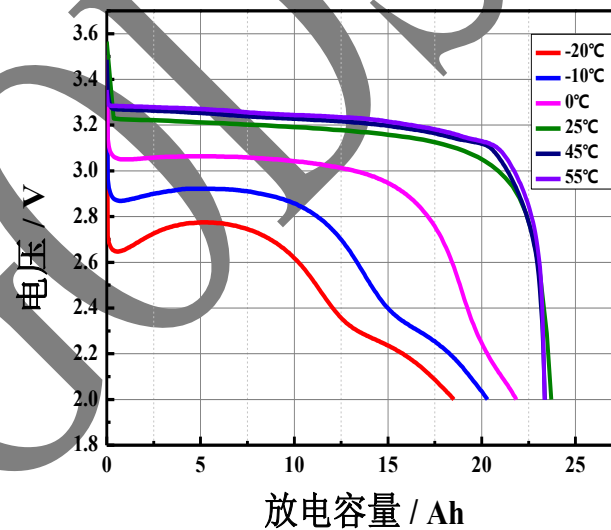


图 11.3 GSF46160M-22 高低温放电曲线

Figure 11.3 GSF46160M-22 discharge curve of at different temperature



◆ 循环寿命曲线 Cycle life curve

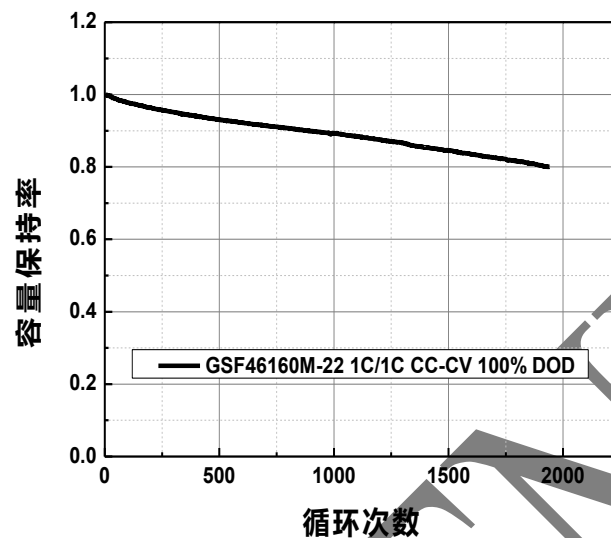


图 11.4 GSF46160M-22 循环寿命曲线 (常温 1C/1C CC-CV100%SOC)

Figure 11.4 GSF46160M-22 cycle life curve (20±5℃ 1C/1C CC-CV100%SOC)

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