产品规格书
Specification

Product Name： Li-MnO_2 Thin cells

产品型号 Model： GN-CP502440

制　　订 Draft: _____

审　　核 Check: _____

批　　准 Approve: _____

客户回签 Customer Approve: _____

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Content
目 录

1.Scope
适用范围……3
2. Description
说明…… 3
3. Specification
产品规格…… 3
4. Battery Cell Performance
电芯性能标准…… 4
5. Storage and Others
贮存及其它事项…… 6
6. Warranty Period
包修期限…… 6
7. Assembly Diagram（not to scale）
装配示意图…… 7
8. Discharge curve
放电曲线图…… 7

Handling Precautions and Guideline
操作指示及注意事项…… 9
1.Discharging Current
放电电流……9
2.Discharging Temperature
放电温度……9
3.Over-Discharge
过放电……9
4.Charge Protection
防充电……9
5.Storage
贮存…… 10
6.Attentions
注意事项…… 10
7.Other Notice
其它注意事项……12
8.Recommended Notice
推荐使用事项……13

1. Scope:

适用范围：

The document applies to Li-MnO_2 Battery GN-CP502440supplied by GN Energy Technology Co., Ltd.,

此规格书是锂锰软包电池电芯GN-CP5022440，只适用于惠州巨能科技有限公司（GN Energy）.

2. Description

说明

2.1 Model: CP502440

型号：CP502440

2.2 Assembly Way

装配方式

Single cell

单体电芯1S1P

3. Specifications

产品规格：

3.1 Assembled cell parameters

装配后电芯组件参数：

No.	Item	Spec	Note
1	**Model** 型号	CP502440/1200mAh	1S1P
2	**Nominal Voltage** 标称电压	3.0V	OCV: 3.05V~3.25V. 出货时，电芯开路电压在 3.05V~3.25V之间。
3	**Tab** 极耳	Tin coated Ni 镀锡镍极耳	
4	**Nominal Capacity** 标称容量	1200mAh	At 10mA load, until 2.0 V voltage at 23°C (The actual measured capacity value will be changed by discharge current, temperature and cut-off voltage) 在23℃,10 mA 平台 2.0 V 的放电容量。
5	**Max. Continuous Discharge Current** 最大持续放电电流	200mA	To get 50% of the nominal capacity at +23±2°C with 2.0V cut off. Higher currents possible, consult GN. 在 23±2℃条件下，终止电压为 2.0V可放出 50%标称容量的电流值。

6	**Max. Pulse Discharge Current** 最大脉冲放电电流	400mA	To get 50% of the nominal capacity is up to 150 mA, at +23±2℃, discharge 3s and stand 27s. Varies according to pulse characteristics, temperature, cell history and the application. Consult GN. 在 23±2℃的环境下，电池以工作 3S,静置 27S 的脉冲放电方式能够至少放出标称容量的 50%所能允许的最大脉冲放电 电流值
7	**Discharge Cut-off Voltage** 放电截止电压	2.0V	
8	**Operating Temperature** 工作温度	-40℃~ +60℃	Operation under higher or lower ambient temperature may lead to reduced capacity and function lost. 超过使用温度范围可能导致电池容量减少、电池失效。
9	**storage temperature** 储存温度	-5 ℃~+35℃	
10	**Storage life** 储存寿命	5 years（年）	Relative humidity: 45~75%RH Temperature: -5 ℃~+35℃
11	**Cell Weight** 电芯重量	Approx.: 10.0g 约： 10.0g	
12	**Self-Discharge Rate** 年自放电率	≤2%	Less than 2% after 1 year of storage at 25℃ 当电池的储存条件不在推荐范围时,电池的自放电率可能加大。
13	**Assemblage Dimension** 装配尺寸	Length：41.0 mm Max Width：25.0 mm Max Thickness：5.2mm Max	

4. Battery Cell Performance
电芯性能

4.1 Standard Testing Environment
标准测试环境

Test conditions:

测试条件：

The test must be done within one month after received unless there is otherwise noted.

除非另有说明，测试应在电池出货的 1 个月内进行。本产品规格书中的所有测试均在以下环境条件下进行：

Ambient Temperature： 25ºC ± 1ºC;

Ambient Humidity： 45~75%RH.

温度：25℃ ± 1℃;

湿度：45~75%RH

4.2 The Requirement of Measure Instrument

测量设备要求

(1) The measurement instrument has been qualified by the inspection institution.
测量设备、仪器需经检定机构检验合格。

(2) The accuracy of the measuring instrument is less than 0.01mm.
测量尺寸的仪器精确度小于 0.01mm。

(3) The accuracy of multimeter is not less than 0.5%.
万用表测量电压及电流的准确度应不低于 0.5%。

(4) The current accuracy of the battery test system is above ±0.1%, constant voltage is ±0.5%, and timer accuracy is not less than ±0.1%.
电池测试系统的电流精度应在±0.1%以上，恒压精度±0.5%，计时精度不低于±0.1%。

(5) The accuracy of the thermometer is not lower than ±0.5ºC.
测量温度的仪表准确度应不低于±0.5℃。

4.3 Appearance

外观检查

Not allowing any visual defects which will affect the electronic characteristics, such as leakage and damage.
不允许有影响电芯性能的外观缺陷，诸如泄漏、损坏等。

4.4 Mechanical Characteristics

机械特性

No. 序号	Item 项目	Testing Conditions and Method 测试方法及条件	Standard 标准
1	**Vibration Test** 振动测试	According to the UL1642 test requirement, a battery vibration frequency is to be varied at the rate of 1 hertz per minute between 10 and 55 hertz, amplitude is 0.38 mm. The battery is to be tested in three mutually perpendicular directions; each is not less than 30mins. 将电芯固定在振动台上并沿X、Y 、 Z三个方向各振动30分 钟，振 幅 为0.38mm，振动频率为10Hz－55Hz，每分钟变化 1Hz。	UL1642: No explosion, no fire 无爆炸、无起火

2	**Drop Test** 跌落测试	According to the UL1642 test requirement, each cell should be dropped 2 times from 1.2m height onto cement ground. 将电芯 2 次从 1 .2米 的高度跌落至混凝土地面。	UL1642 No explosion, no fire 无爆炸、无起火

4.5 Safety Test 安全测试

No. 序号	**Item** 项目	**Testing Conditions and Method** 测试方法及条件	**Standard** 标准
1	**UN38.3/MSDS** UN 测试	Follows UN38.3/MSDS. 根据 UN38.3 标准。	**UN38.3**
2	**UL-1642** （Cell Level） UL 测试 （单体电池）	Follows UL1642. 根据 UL1642 标准。	**UL-1642**

4.6 High and Low Temperature Test 高低温性能测试

No. 序号	**Item** 项目	**Testing Conditions and Method** 测试方法及条件	**Standard** 标准
1	**High Temperature** 高温性能	A battery is placed in a high-temperature cabinet for 2 hours at 55ºC±2ºC, then discharged at 10 mA current until the voltage cut off. 在 55℃±2℃条件下，将电芯放入高温箱中 2h 后，再以10 mA电流放电至终止电压。	Discharge 90% of the nominal capacity. 可放出初始容量的 90%.
2	**Low Temperature** 低温性能	A battery is placed in a high-temperature cabinet for 2 hours at -10ºC±2ºC, then discharged at 10 mA current until the voltage cut off. 在-20℃±2℃条件下，将电芯放 入低温箱中 2h 后，再以 10 mA 电流放电至终止 电压。	Discharge more than 45% of the nominal capacity. 可放出初始容量的 45%（-20℃）以上.

5. Storage and Others

贮存及其它事项

5.1 Long-term Storage

长期贮存

Lithium batteries should be stored in a cool, clean, dry environment. The recommended temperature and relative humidity should be the same as 3.3.1.9, avoid contact with corrosive materials, away from fire and heat.

长期贮存的电池(超过 3 个月)须置于干燥凉爽处，且储存要求与 3.3.1.9 条相同。

5.2 Any issues not mentioned in the specification should be discussed with GN.

本说明书中未提及的任何事项，须经双方协商确定。

6. Warranty Period

保修期限

The warranty period is 6 months from the date on the cells.

产品保修期限为 6 个月，自出厂日期（喷码）开始算起。

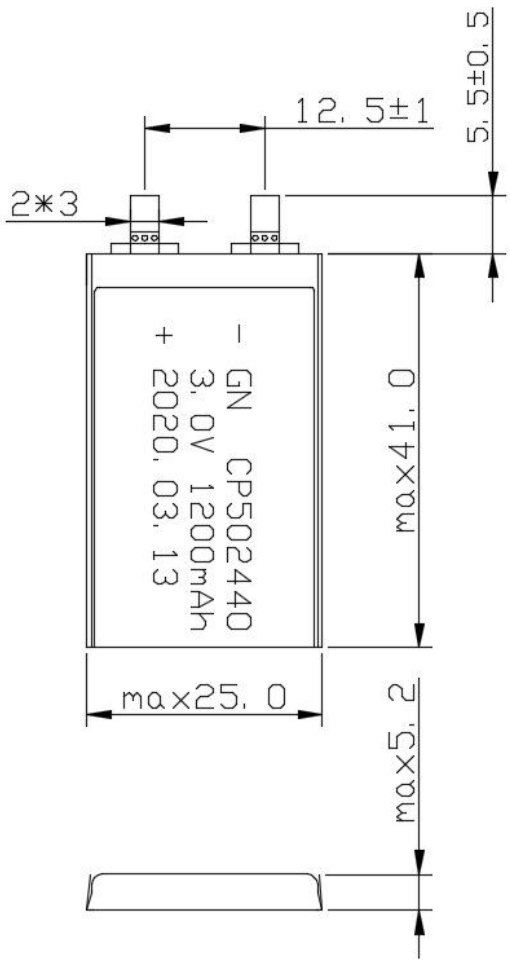
7.Drawing

7.1 Assembly Diagram（not drawn to scale）

装配尺寸图(未按比例)

Model：CP502440

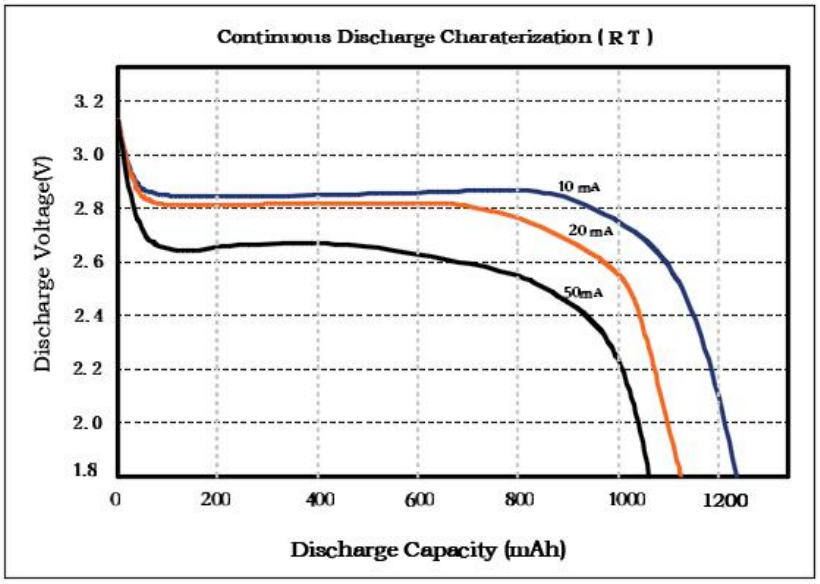
Unit：mm



8.Discharge Curve

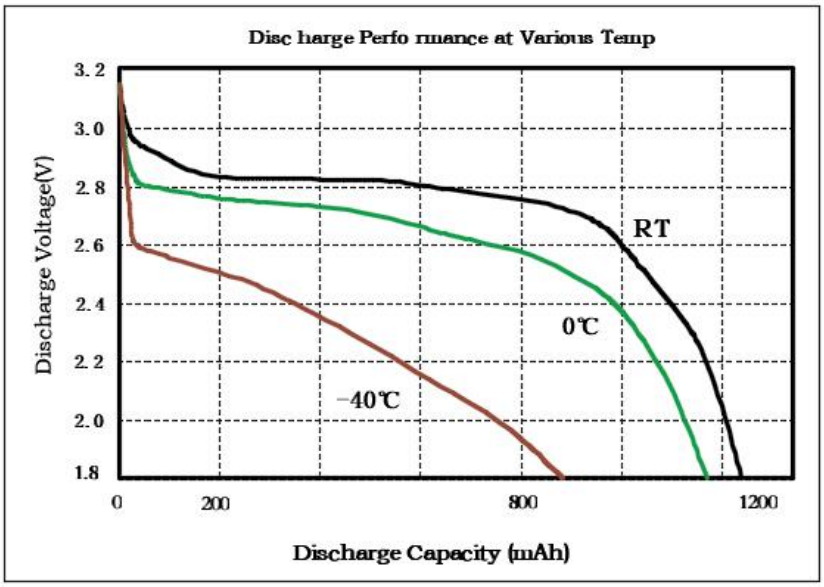
8.1 Different Current Discharge Curve at 23℃

CP502440电池在 **23**℃不同电流条件下放电曲线图



8.2 Different Temp. Discharge Curve at10 mA

CP502440电池在不同温度下 **10 mA** 放电曲线图



Handling Precaution and Guideline

For CP batteries

The document of 'Handling Precautions and Guidelines for CP Batteries' is only applied to the battery cells manufactured by GN Energy.

本文件锂锰软包装电池操作指示及注意事项"仅适用于惠州巨能科技有限公司生产的电芯。

Note (1): Customer should contact GN Energy in advance if needs to change the working conditions stipulated in the document. Additional tests are required to verify the performance and safety of the cell with these conditions.
注（1）：客户若需要变动文件中规定的工作条件，应事先联系惠州巨能科技有限公司。需要额外进行试验以核实电芯在该使用条件下的性能及安全性。

Note (2): GN Energy will take no responsibility for any accident when the cell is used on conditions which is not mentioned in specification.
注（2）：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，惠州巨能科技有限公司概不负责。

Note (3): GN Energy will inform the customer in writing of the improvement measures to use and operation of the cell correctly if necessary. GN Energy can revise the specification before signature and will confirm with customer.
注（3）：如有必要惠州巨能科技有限公司会以书面形式告知客户有关正确使用及操作电芯的改进措施。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，惠州巨能科技有限公司将会通知客户。

1. Discharging Current:
放电电流

Discharge current shall not exceed the maximum discharge current specified in the specification. Excessive discharge current will cause reduced capacity and cells will be overheating.

放电电流不得超过本规格书规定的最大放电电流，过大的放电电流会导致电芯容量剧减并导致电芯过热。

2. Discharging Temperature
放电温度

The discharge temperature of the cell must be within the ambient temperature range specified in the specification.
电芯放电温度必须在本规格书规定的环境温度范围内进行。

3. Over-Discharge
过放电

Over-discharging will cause cell degradation and functional losses and should be avoided.
过放电会导致电芯性能及功能的丧失，要避免过放电。

4. Charge Protection
防止充电

When incorporating a lithium primary battery into a circuit powered by an independent main power source, protective devices shall be used in order to prevent charging the primary battery from the main power source, for example:

当将锂原电池并入由独立主电源供电的电路时，为了防止电池从主电源充电，应使用保护装置，例如:

a) a blocking diode and a current limiting resistor (see Figure a);

阻塞二极管和限流电阻(见图a);

b) two series blocking diodes (see Figure b);

两个串联阻塞二极管(见图b);

c) circuits with a similar blocking function based on two or more independent protective;

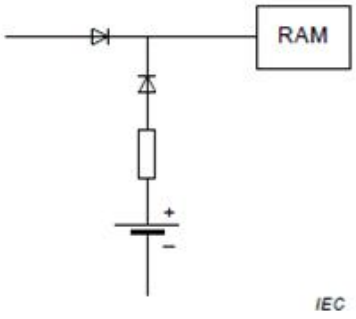
两个或两个以上的具有类似的阻塞功能的独立保护电路;

devices:

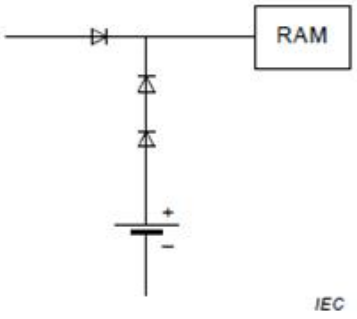
设备:

provided the first protective device is capable to limiting the charging current through the lithium battery to the normal reverse current specified by the manufacturer which can be applied to the battery during its operating life, while the second protective device is capable to limit the charging current to the abnormal charging current specified by the battery manufacturer. The circuit shall be so designed that at least one of these protective devices remains operational when any one component of the circuit fails.

提供第一个保护装置能够通过锂电池的充电电流限制在制造商说明适用于电池使用寿命的正常的反向电流，而第二个保护装置能够限制由制造商说明的非正常充电电流。电路的设计应使其中至少一个保护装置，在电路的任何一个部件发生故障时仍能工作。



a) Diode and resistor



b) Two diodes

5. Storage

贮存

The cells should be stored at the temperature range specified in the specification.

电芯应在产品规格书规定的温度范围内储存。

6. Attentions

注意事项

6.1 Attention When Using Cells:

使用电芯时应注意

★ Avoid short-circuit. Short circuit may cause the tap got heated which will make battery function invalid.

★ 慎防短路，任何情况引起的短路可能会导致极耳金属发热，使电池功能失效。

★ Keep cells away from the sharp object.

★ 电芯属于软包装，包装材料易被尖锐物品刺伤，诸如尖针，刀片等，电芯在使用和存放时，应

避免与尖锐物品碰撞。

★ Don’t bend or fold the top sealing edge.

★ 电芯极耳引出端为顶封边，顶封边为电芯密封敏感区，使用时，禁止弯折顶封边。

★ Don’t open the folded the sealing edge on sides.

★ 禁止打开电芯两侧的折边。

★ Don’t bend the tabs.

★ 电芯极耳的机械强度并非异常坚固，禁止弯折极耳。

★ Avoid mechanical shock on the cells.

★ 禁止机械撞击电芯、坠落、弯折电芯。

★ Don’t put the cells into heater, washing machine or any high pressure vessel.

★ 不要把电池放在加热器皿、洗衣机或高压容器中。

★ Any heat, smelly, discolored, deformation or otherwise abnormal during storage, stop immediately.

★ 在储存期间如发现电池有变热、散发气味、变色、变形或其它反常之处应停止使用。

★ Keep cells away from children.

★ 把电池放到小孩够不到的地方以免吞服。

★ Please read carefully and understand the handling guidelines before using batteries.

★ 在使用电池之前，应详细阅读操作指南并对使用中的注意事项有足够深刻的理解。

★ Away from static electricity when using, and storing cells.

★ 电池应在远离静电的场所进行使用和储存。

★ Don’t use or leave, discharge batteries near to fire or in cars with temperatures over 60℃.

★ 不要在火源附近或温度超过 60℃的轿车中使用或遗留电池,也不要在这些环境中进行放电。

★ Keep the cells away from the metal items.

★ 不要把电池同项链发夹硬币或螺钉等金属品一起放在手提包中，也不要把电池同上述物品一起储存。

★ Don’t connect the positive and negative together with metal conductors.

★ 不要使用金属导体短路电池的正、负极。

★ Avoid Don’t assemble the positive and negative in the opposition direction when using.

★ 在使用时应注意电池的正、负极不要反装。

★ The deformed battery can’t be used.

★ 不要使用带有严重变形的电池。

6.2 Attention for Designing Battery Pack

电池外壳设计注意事项

6.2.1 Package Design

外壳设计

① The battery pack should be with mechanical strength to avoid the mechanical damage.
电池外壳应有足够的机械强度以确保其内部电芯免受机械伤害。

② No sharp edges in the housing where Install the battery.

外壳内安装电芯的部位不应有锋利的边角。

6.3 Attention for Assembling Battery Pack

电池外壳组装注意事项

6.3.1 Tab Connection

电芯的连接

① Ultrasonic welding or spot welding is recommended to connect the battery with the PCM or other parts.
建议使用超声波焊接或点焊技术来连接电芯与保护电路模块或其它部分。

② If using manual soldering, please pay attention to the below to ensure battery performance:
如使用手工锡焊，须注意以下事项，以保证电芯的功能：

a) The solder iron should be temperature controlled and anti-static.
烙铁的温度可控且防静电。

b) Soldering temperature should not exceed 350±10℃.
烙铁的温度不能超过 350±10℃。

c) Soldering time should not be longer than 3 seconds.
锡焊时间不能超过 3 秒；

d) Soldering times should not more than 5 times.
锡焊次数不能超过 5 次；

e) The battery tab should be cooled down before soldering again.
必须在极耳金属片冷却后再进行二次焊接；

f) Direct heat to the cell body is strictly prohibited. The battery will be damaged by heat above approx. 60ºC. Direct heating of the cell is forbidden. The battery will be damaged if temperature higher than 60℃.

禁止直接加热电芯，高于 60℃会导致电芯损坏。

6.3.2 Cell Fixing

电芯的安装

① The cell should be fixed to the battery pack by its large surface area.
应将电芯的宽面安装在外壳内；

② No burrs or sharp edges are allowed in the position of the cell.
装电芯的位置不能有毛刺和尖锐边角；

③ The cell should be fixed to the shell, no movement.
电芯不能在壳内活动。

④ The thickness of the pack, including the cell and auxiliary materials (such as: sponge pat, insulation sheet, tape, etc.) should not exceed the shell inner space, to prevent the cell from the damage and safe issue.
电芯的厚度与辅助材料(如：海面垫、绝缘片、胶带等)的总厚度不能大于壳体内部空间尺寸，以免造成对电芯的损坏和安全隐患。

7. Others

其它注意事项

7.1 Disassembly may cause an internal short circuit to the cell, which may cause out-gassing, fire, or other problems.
在任何情况下不得拆卸或解剖电芯，拆卸和解剖可能会引致电芯内部短路，进而引起鼓气、冒烟、起火及其它安全问题。

7.2 No flowing liquid inside the battery, but if leakage is happened and touched on the skin, eyes or other parts on the body, please take the below preventive measures:
电芯内容物不存在流动的电解液，但万一电池密封不严或刺伤造成吸潮而泄漏接触到皮肤、眼睛、或身体其它部位，以下是建议预防措施：

a. Touch eyes: immediately rinse with water for at least 15 minutes. If still discomfort, medical treatment will be sought.
眼睛触到电芯内容物：立即用清水冲洗至少 15 分钟，如仍有不适，建议到相关医院就诊。

b. Touch skin: immediately rinse with plenty of water.
皮肤接触：立即用大量的清水冲洗。

c. Breath the released gas: Go outside to breath flash air.
吸入排放气体：换场所吸入新鲜空气。

d. Accidental ingestion: medical treatment is required immediately.
误食：需马上医疗就诊。

7.3 Prohibit dumping cells into fire
Never incinerate or dispose the cells into fire, for these may cause firing of the cells.
严禁将电芯投入火中

7.4 The cells should never be soaked with liquids such as water, drinks or oil.
严禁将电芯浸入液体中，如水，饮料，汽油等。

7.5 Prohibit using the cells mixed with different manufactories and mixed with old ones.
禁止和不同厂家的电芯混用，禁止新旧电芯混用。

7.6 Prohibit using damaged cells.
禁止使用已损坏的电芯。

8. Recommended Notice:
推荐使用事项

8.1 Using cells on specified facilities only.
仅在指定的设备上使用电池。

8.2 Using cells in normal ambition temperature.
请在正常的室内环境中使用电池。
Temperature: -10～35℃，
Relative Humidity： 45~75%.
温度：-10～35℃，
相对湿度：45~75%。

8.3 Using the cells, away from heat source, not allow children playing with cells.
在使用过程中，应远离热源，避免儿童玩弄电池。切勿摔打电池。

8.4 Avoid short circuit on battery and avoid affected with damp.
切勿将电池正、负极短路，切勿让电池受潮，以免发生危险。

8.5 Useless cells should be deal with in a safety way. Don’t drop them into the water or fire.
废弃电池请安全妥当处理，不要投入火中或水中。