



产品规格书

PRODUCT SPECIFICATION

产品名称 Product Name: 扣式锂锰电池 Button lithium manganese battery

产品型号 Product Model: CR2032HR

产品容量 Product Capacity : 210mAh

产品编码 Part Code: CR2032HR-RD-2406001

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1. Scope 适用范围

1.1 本规格书适用于力源电池科技（宜春）有限公司生产的 3V CR2032HR扣式锂锰电池。

This specification applies to the following 3.0v lithium button cell CR2032HR made by LIYUAN BATTERY TECHNOLOGY(YI CHUN)., LTD.

1.2 本规格书经客户确认后作为供需双方的技术和质量协议附件。

This specification shall be attached to the technical and quality agreement of both parties after customer confirmation.

1.3类别型号 Category Model:

1.3.1类别 Category: 锂-二氧化锰电池 Lithium-manganese dioxide battery

1.3.2 型号 Model: CR2032HR(HR 指Heat Resistant Coin Type Lithium Manganese Dioxide Battery)

1.4商标 (Brand): 使用“力源”品牌名称 (The brand name of "LIYUAN" is used.)

2. 特性 Features

(1)、优异的耐高温性能，可在 125℃温度下持续工作。尤其高温环境中能表现出极其优异的性能 满足TPM的储存工作要求。

Excellent high temperature resistance, continuous operation at 125℃. Especially in high temperature environment, it can show extremely excellent performance to meet the storage requirements of TPM.。

(2) .长时间的暴露在高温环境中（80℃）仍然保持良好的电气特性。

Long-term exposure to high temperatures (80 ° C) still maintains good electrical characteristics

(3) .电池在-40℃和125℃之间高低温循环冷热冲击100次，电池仍然保持良好的电气特性和密封性能。

The battery has 100 cycles of hot and cold shock between -40 ° C and 125 ° C, and the battery still maintains good electrical characteristics and sealing performance.

3. 产品基本特性 Product basic information

表1Table1: 产品基本特性Product basic information

电化学体系 Electrochemical Systems	锂-二氧化锰/有机电解质 Lithium - manganese dioxide/organic electrolyte
标称电压 Nominal Voltage	3V
最大连续工作电流 Maximum continuous operating current	5mA
最大脉冲工作电流 Maximum pulse operating current	10mA
年自放电率 Annual self-discharge rate	≤2%
标称容量 Nominal Capacity (25℃±2℃时标准电阻 15kΩ放电至 2V) At 25℃±2℃, the standard resistance 15kΩ is discharged to 2V	210mAh
担保 (Guarantee)	从生产日期起1年 (1year from manufacture date code)
使用温度范围 Operating Temperature Range	-40℃~125℃
电池重量 Standard Weight	About 3.0g
外观 Appearance	外观应光洁、标志清晰、无变形、锈蚀、漏液 clear and clean without deformation, corrosion and leakage

4.1外形尺寸图 Outline Dimensional Drawing:

表2 Table2 (外形尺寸图 Outline Dimensional Drawing)

	直径D (A)	20.0 _(-0.2) mm
	高度H (B)	3.2 _(-0.2) mm

4. 电化学特性指标及检测方法 Electrochemical characteristic index and detection method :

4.1 电池在交货后一个月进行测试

A test will be conducted commencing within one month after delivery

表3 Table3 (指标及检测方法 characteristic index and detection method)

No 序号	ITEM 测试项目	参数指标	TEST METHODS 测试方法
1	外形尺寸 Dimensions	直径D : 20.0 _(-0.2) mm 高度H : 3.2 _(-0.2) mm	用精度不低于 0.02mm 游标卡尺测量，测量时防止电池短路，卡尺的一端卡头上应贴上一层绝缘材料。 Using vernier caliper (accuracy ≥ 0.02) while avoiding short-circuit. One end of the caliper should be coated with an insulating material.
2	开路电压 Off-load voltage	初始期 (生产后 60 天内) 3.0~3.4V Initial period (within 60 days after production)	开路电压测量采用直流进行电压表，可以测量从0V到4V。电压表的精度会降低 $\pm 1\text{mV}$ 或更精确，输入阻抗大于10M。 Open circuit voltage measurement using DC voltmeter, It can measure from 0V to 4V. The accuracy of the voltmeter is reduced to $\pm 1\text{mV}$ or more, and the input impedance is greater than 10M Ω
		80 $^{\circ}\text{C}$ *25天 3.0~3.4V Stored test (25 days storage at 80 $^{\circ}\text{C}$)	样品的储存条件 电池温度为80 $\pm 3^{\circ}\text{C}$ ，相对湿度小于75%。 储存后测试将于储存后1个月内进行。储存25天后将进行测试 The storage conditions for sample batteries The batteries temperature will be at 80 $\pm 3^{\circ}\text{C}$ and at relative humidity of less than 75%. The test after storage will be commenced within 1 month after storage.
3	闭路电压 Instantaneous short-circuit current	负载电压 (初始期) V500 Ω 2S $\geq 2.60\text{V}$ Load voltage (initial period)	测试前电池需在 25 $\pm 2^{\circ}\text{C}$ 、RH60 $\pm 15\%$ 条件下放置 8 小时以上，再在同样温度下测量。用万用表测量时，每次测量时间不超过 5 秒，避免重复测量，若需再次测量时，时间间隔应在半小时以上。负载电阻包括外部电路及其所有电阻误差将在0.5%以内。 Before the test, the battery should be placed under the condition of 25 $\pm 2^{\circ}\text{C}$ 、RH60 $\pm 15\%$ for more than 8 hours, and then measured at the same temperature Time of short-circuit should be less than 0.5 second and avoid repeated test within half an hour.



		80°C25days V500Ω2S≥2.3V	测试前电池需在 25±2°C、RH60±15%条件下放置 8 小时以上，再在同样温度下测量。用万用表测量时，每次测量时间不超过 5 秒，避免重复测量，若需再次测量时，时间间隔应在半小时以上。负载电阻包括外部电路及其所有电阻误差将在0.5%以内。 The storage conditions for sample batteries The batteries temperature will be at 80±3°C and at relative humidity of less than 75%. The test after storage will be commenced within 1 month after storage.
4	外观与极端 Appearance	电池表面光洁、标志正确、字体清晰、电池无漏液 The battery surface is smooth, the logo is correct, the font is clear, and the battery has no leakage	用肉眼在距离电池30厘米的地方检查渗漏的状态40瓦荧光灯的光在一米以上。 Check the state of the leakage by the naked eye 30 cm away from them under the light of the 40 watt fluorescent lamp one meter above.
5	使用寿命Service life	初始期（生产后 60 天内） ≥1000h Initial period (within 60 days after production) 贮存期（生产后 365 天内）≥960h Storage period (within 365 days after production) ≥960h	取 9 pcs电池在 20°C±2°C、RH60%±15%条件下放置 8 小时以上，在相同温湿度条件下用 15kΩ电阻连续放电至 2.0V 时的平均放电时间,电池应在生产后 60 天内进行。贮存电池应在贮存期满后 14 天内进行。 Take 9pcs batteries and place them at 20 ° C ± 2 ° C and RH60%±15% for more than 8 hours, and discharge them continuously with 15kΩ resistance to 2.0V under the same temperature and humidity conditions. The battery should be carried out within 60 days after production. Storage of batteries should be carried out within 14 days after the expiration of storage.
6	常温脉冲工作能力 Pulse working capacity at normal temperature	≥160mAH	测试电池在25°C±2°C，45%~75%的环境中10mA5S/min 24h/day连续脉冲至1.8V Test battery at 25°C±2°C, 45%~75% environment 10mA5S/min 24h/day continuous pulse to 1.8V
7	高温放电特性 High temperature discharge characteristic	≥170mAh	测试电池在125°C±2°C的环境中用2mA电流持续放电至2.0V终止。 The test battery was discharged continuously at 125 ° C ± 2 ° C with 2mA current to 2.0V termination
		≥175mAh	测试电池在105°C±2°C的环境中用2mA电流持续放电至2.0V终止。 The test battery was discharged continuously at 105 ° C ± 2 ° C with 2mA current to 2.0V termination



		$\geq 195\text{mAh}$	测试电池在 $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 的环境中用2mA电流持续放电至2.0V终止。 The test battery was discharged continuously at $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ with 2mA current to 2.0V termination
8	高温贮存性能 Leakage at high temperature	无漏液 No leakage	测试前电池需在 $25 \pm 2^{\circ}\text{C}$ 、 $\text{RH}60 \pm 15\%$ 条件下放置 8 小时以上，再在同样温度下测量。用万用表测量时，每次测量时间不超过 5 秒，避免重复测量，若需再次测量时，时间间隔应在半小时以上。负载电阻包括外部电路及其所有电阻误差将在0.5%以内。 The storage conditions for sample batteries The batteries temperature will be at $80 \pm 3^{\circ}\text{C}$ and at relative humidity of less than 75%. The test after storage will be commenced within 1 month after storage.
		80°C 25天后 $\geq 170\text{mAh}$ After 25 days at 80°C $\geq 170\text{mAh}$	测试电池在 $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 的环境中用2mA持续放电至2.0V终止 The test battery was discharged continuously at $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ with 2mA 2.0V termination

5. 安全性能测试（电性）Safety performance test (electrical)

表4Table4：（标准引用UN38.3）Table 3: (Standard citation UN38.3)

序号 Serial number	项目 ITEM	测试方法 Test method	要求 Require
1	外部短路 External short circuit	电池在 $55 \pm 2^{\circ}\text{C}$ 的环境下达到温度平衡后，在相同温度下经受外部电路总阻值小于 0.1Ω 的短路，短路持续至外壳温度回落至 $55 \pm 2^{\circ}\text{C}$ 后，再继续1h以上。电池还需要继续被观察受6h后，测试结束。 After the battery reaches temperature equilibrium at $55 \pm 2^{\circ}\text{C}$, it is subjected to a short circuit with the total resistance of the external circuit less than 0.1Ω at the same temperature, and the short circuit continues until the shell temperature drops to $55 \pm 2^{\circ}\text{C}$, and then continues for more than 1 hour. The battery needs to continue to be observed for 6h after the test is over.	不过热、不破裂、不爆炸、不着火 No overheating, no cracking, no explosion, no fire
2	强制放电 Forced discharge	在环境温度下，将已放电电池连接在12v直流电源上。调节电阻，以规定的最大持续放电电流做为初始电流。强制放电结束后，观察受检电池7d。 At ambient temperature, connect the discharged battery to a 12V DC power source. The resistance is mediated, with the specified maximum continuous discharge current as the initial current. After the end of the forced discharge, observe the tested battery for 7d.	不爆炸、不着火、 No explosion, no fire



3*	非正常充电 Abnormal charge	每个电池反向接于-直流电源上，以规定的放电电流Ic的三倍做为非正常充电电流。 Each battery is reversely connected to the -DC power supply, with three times the specified discharge current Ic as the abnormal charging current.	不爆炸、不着火、 No explosion, no fire
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*注：对于CR2032HR电池最大充电电流为15mA.建议非正常充电依此为准。

Note: the maximum charging current for CR2032HR battery is 15MA. It is recommended that abnormal charging shall prevail.

6. 环境安全性能测试

Environment security performance testing

环境试验引用UL1642标准/UN38.3/市场需求

Environmental tests refer to UL1642 standard /UN38.3/ Market demand

表5 Table5

序号 No	项目ITEM	测试方法 Test method	要求 Request
1	高空模拟 High altitude simulation	测试电池在压力为 11.6KPa 或更低，温度为 20°C±2°C的环境下至少放置6h。 The test cells were placed at a pressure of 11.6 kpa or lower and at a temperature of 20 ° C ± 2 ° C for at least 6 H.	无质量损失、不泄 漏、不泄放、不短路、不破裂、不爆炸、不着火 No quality loss, no leakage, no leakage, no short circuit, no rupture, no explosion, no fire
2	热冲击 Thermal shock	被检测电池在温度为 125°C的环境下至少放置 0.5h,然后在-40°C的环境下至少放置0.5h，不同温度的转换时间应不超过 30min,每个电池进行 100 个循环后，在环境温度下至少放置 24h，电池无质量损失无漏液。 The tested battery should be placed at least 0.5h at a temperature of 125 ° C, and then at a temperature of -40 ° C for at least 0.5h. The conversion time of different temperatures should not exceed 30min. After 100 cycles of each battery, the battery should be placed at the ambient temperature for at least 24h, and the battery has no quality loss and no leakage	无质量损失，不着火、不爆炸、不漏液、不泄放、不短路、不破裂 No quality loss, no fire, no explosion, no leakage, no leakage, no short circuit, no rupture

7.机械性能试验 (Mechanical test)

表6Table6 (标准引用UL1642 /GB8897.4) Table 5 The standard is UL1642 /GB8897.4

3	振动 Vibration	以能如实传递振动但不致电池变形的方式将被检电池牢牢的固定在振动设备的振动平台上，对被检电池进行正弦波振动。在三个相互垂直固定的方位上每个方位各进行 12 次循环，每个方位循环时间共计 3h。其中的一个方位应垂直于电池的极端面。用做过热冲击检验的电池做该项检验。 The tested battery is fixed firmly on the vibration platform of the vibration equipment in a way that can transmit the vibration truthfully but does not cause the battery deformation, and carries on the sine wave vibration to the tested battery. In three mutually, vertically fixed azimuth, each azimuth carried out 12 cycles, each azimuth cycle time total of 3 hours. For one of them, the azimuth should be perpendicular to the extreme face of the battery. Used for overheating shock test, battery for this test.	无质量损失、不泄漏、不泄放、不短路、不破裂、不爆炸、不着火 No quality loss, no leakage, no leakage, no short circuit, no rupture, no explosion, no fire
4	冲击 Impact	用能支撑被检电池所有固定面的刚性支座将被测电池固定在检测设备上。每只被检电池在三个相互垂直固定的方位上每个方位各经受 3 次冲击，共计 18 次。 A rigid support supporting all fixed surfaces of the tested battery with energy shall fix the tested battery on the testing equipment. Each battery was subjected to 3 shocks in each of the three mutually perpendicular fixed azimuths, for a total of 18 shocks.	无质量损失、不泄漏、不泄放、不短路、不破裂、不爆炸、不着火 No quality loss, no leakage, no leakage, no short circuit, no rupture, no explosion, no fire
5	挤压 Squeeze	通过台钳或具有圆形活塞的液压油缸施加压力，使受检的单体电池或电池单元在两个平面之间被挤压，从最初的接触点开始，以约 1.5cm/s 的速度持续进行挤压，直至挤压力达到大约 13kN 立即释压。 By applying pressure through bench tongs or hydraulic cylinders with round pistons, the inspected cell or cell is squeezed between two planes, starting at the initial contact point, continuous extrusion at a speed of about 1.5 cm/s until the extrusion pressure reaches about 13 kn and the pressure is released immediately.	不过热、不爆炸、不着火 Not hot, not explosive, not on fire
6	重物冲击 Heavy impact	在电池中心处横放一根直径为 15.8mm 的棍棒 9.1kg 的重物从 610±25mm 的高度落在样品上，电池的纵向轴线与其表面平行，并与棍棒的纵向轴线垂直，每个被试电池只冲击一次。 A 9.1kg weight with a diameter of 15.8mm was placed across the center of the battery and dropped on the sample from a height of 610±25mm. The longitudinal axis of the battery was parallel to its surface and	不过热、不爆炸、不着火 Not hot, not explosive, not on fire



		perpendicular to the longitudinal axis of the stick. Each battery was only impacted once	
说明： 变形：应报告出现的变形并附原因 泄放：如果电解质在泄放扣未打开的情况下在泄放口漏出，应判为漏液。 Description: Deformation: the occurrence of deformation should be reported with the reason for it Drainage: If electrolyte leaks out at the drain port without the drain catch being opened, it shall be judged as a leak.			
NM: 无失重 No weightlessness、NL：无漏液 No leakage、NV：无泄放 No venting、NC：无短路 No short circuit、（测试后的电压不低于测试前的 90% post-test voltage not less than 90 per cent of pre-test voltage），NR：无破裂 Non-ruptured、NE: 无爆炸 Non-explosive、NF：无起火 No fire、NT: 无过热（电池表面温度不超过 170℃）No overheating (battery surface temperature not exceeding 170℃)			

8. 容量检验（按照 GB8897.1 标准性能检测执行）

Capacity test (in accordance with GB8897.1 standard performance test implementation):

8.1 每次做容量检验为 8 个电池。

Each volumetric testing is 8 pcs batteries

8.2 电池平均放电时间不低于表 2 中的规定值，而且低于标准值的 95% 的电池数不大于 1，判定电池的容量合格。

The average discharge time of the battery is not less than the specified value in Table 2, and the number of batteries that are less than 95% of the standard value is not greater than 1, the capacity of the battery is judged to be qualified.

8.3 当平均放电容量低于表 2 的标准值或低于标准值的 95% 的电池数大于 1 时，重新取 8 只样品进行试验，若平均放电容量不低于表 2 中的标准值且低于标准值 95% 的电池只数不大于 1 时，判定电池容量合格。

When the average discharge capacity is lower than the standard value in Table 2 or the number of batteries lower than 95% of the standard value is greater than 1, re-take 8 samples for test, if the average discharge capacity is not lower than the standard value in Table 2 and the number of batteries lower than 95% of the standard value is not greater than 1, it is judged that the capacity of the battery is qualified.

8.4 若第二次试验中的平均放电容量低于表 2 中的标准值或低于标准值的 95% 的电池数大于 1 时，判定电池容量不合格，不再进行第二次试验。

If the average discharge capacity in the second test is lower than the standard value in Table 2 or the number of cells lower than 95% of the standard value is greater than 1, it is judged that the capacity of the battery is unqualified and the second test will not be conducted.



9验收规则 Acceptance regulations

9.1交收检验以每次出货数量为一个检查批

Each shipment quantity shall be one inspection batch. .

9.2 交收检验采用 GB2828.1 正常检验一次抽样方案，检验项目、检查水平（IL）、接收质量限（AQL）按下表规定执行。

The delivery inspection adopts GB2828.1 Normal Inspection One Sampling Programme, and the inspection items, inspection level (IL) and acceptance quality limit (AQL) are implemented according to the following table.

表7Table7抽样方案 sampling scheme

序号 NO.	检验项目 Test Item	IL	AQL
1	外形尺寸 Overall Dimensions	II	1.0
2	开路电压 OCV	I	0.25
3	外观与极端 Appearance and extremes		1.0

10.警告事项 Warnings

10.1 严禁吞咽 It is forbidden to swallow

10.2 将电池置于远离婴儿和儿童的地方，防止他们吞咽电池。如已吞咽电池，请立即咨询医生。

Keep the battery away from infants and children to prevent them from swallowing. If they have swallowed the battery, consult a doctor immediately

10.3严禁充电 It is forbidden to recharge

不能用任何其他电源对该电池进行充电。充电可导致产生气体以及内部短路，从而造成电池变形、泄露、过热、爆炸或起火

Not being able to charge the battery from any other source can lead to the generation of gases and internal short circuits that can cause the battery to distort, leak, overheat, explode or catch fire.

10.4严禁置于明火之中 Do not place in a fire environment

将电池置于明火中会导致锂金属熔化。

Leaving the battery in an fire environment causes the lithium metal to melt.

10.5 严禁拆解电池 Disassembly of batteries is strictly prohibited

不要拆解电池，否则会造成电池密封圈或隔膜纸的损坏，而使电池变形、泄露、过热、爆炸或起火。

Do not disassemble the battery, otherwise it will cause damage to the battery seal ring or diaphragm paper, and make the battery deformation leakage overheating explosion or fire.

10.6严禁反向安装电池的正负极



Do not install the positive and negative electrodes of the battery in reverse

不恰当地安装电池会导致电池短路、充电或者强制放电。这会造成电池变形、泄露、过热、爆炸或起火。

Improperly installed batteries can cause them to short-circuit to charge or force them to discharge which can cause them to distort, leak, overheat, explode or catch fire.

10.7 严禁将电池短路 Do not short circuit the battery

不要将正负极短路。不要将电池和金属物品放在一起携带或保存。否则会导致电池变形、泄露、过热、爆炸或起火。

Do not short-circuit the positive and negative electrodes. Do not carry or store the battery with metal objects or it will cause the battery to distort, leak, overheat, explode or catch fire.

10.8 严禁将不同的电池一起使用 Do not use different batteries together

由于电池特性不同，将不同的电池一起使用，如不同类型的、新的和旧的或者不同制造商的，可能会导致电池变形、泄露、过热、爆炸或起火。

Due to different battery characteristics, using different batteries together, such as different types of new and old or different manufacturers, can cause the battery to distort, leak, overheat, explode or catch fire.

10.9 严禁直接在电池上焊接端子引脚或导线

Do not weld terminal pins or wires directly on the battery

焊接时的加热会导致锂的熔化，或导致电池中的绝缘材料的损坏。这会造成电池变形、泄露、过热、爆炸或起火。如需焊接，请与力源或专业焊接商联系。

Heating during welding can lead to the melting of lithium or damage to the insulation material in the battery which can cause the battery to be deformed, leaked, overheating, explosion or fire. For welding, please contact Power Source or a professional welder.

11. 注意事项 Notes

11.1 不可严重震动电池，掉落、抛撒或踩踏电池可能会使电池变形、泄露、过热、爆炸或起火。

Do not seriously shake the battery, drop or step on the battery, It may cause the battery to distort, leak, overheat, explode or catch fire

11.2 安装电池时请小心操作，不要让电池接触到可能会使电池短路的金属物品。

When installing the battery, please be careful not to let the battery come into contact with metal objects that may short-circuit the battery

11.3 按照设备的操作说明来选择和使用合适的电池

Follow the instructions for selecting and using the appropriate battery

11.4 不要在高温的地方使用或放置电池，如阳光直射处，或炎热天气的汽车中，否则可能会导致电池变形、泄露、过热、爆炸或起火。

Do not use or place batteries in hot places, such as in direct sunlight, or in cars in hot weather, as this can cause batteries to distort, leak, overheat, explode or catch fire

11.5 不要让电池和水接触或放置在潮湿的环境中，否则会使电池生锈，或使电池变形、泄露、过热、爆炸或起火。

Do not let the battery and water contact or placed in a humid environment, or the battery will rust, or deformation of the battery leakage overheating explosion or fire.

11.6 由于接触不良，电池电压可能低于目标值，因此请保持 2N 以上的接触压力以确保适当的接触电阻。



Battery voltage may be below target due to poor contact, so maintain contact pressure above 2N to ensure proper contact resistance

11.7 如有其他疑问请向力源电池联系咨询。

If you have any other questions, please contact LIYUAN battery for consultation

12. 贮存环境 Storage environment

建议贮存环境应清洁、凉爽、干燥、通风、不能靠近高温高湿处，环境温度在 0℃-30℃，RH 不超过 75%为宜。

The storage environment should be clean, cool, dry and ventilated, not close to the high temperature and high humidity, the ambient temperature is 0-30,RH no more than 75%.

13.标志与包装 Marking and packaging

13.1 电池正极标志 Positive sign of battery 图1Figure 1



13.2 喷码 Spraying the code

如客户有需求可按国际 IEC 标准在电池负极面上喷 2 位码：**，前位以 0~9 数字表示相应年份，后位以 1~9 表示 1~9 月份，X、Y、Z 表示 10~12 月份

If the customer needs, please spray 2 bits of code on the negative surface of the battery according to the international IEC standard **: **. The front digit is 0~9 for the corresponding year, the back digit is 1~9 for January ~ September, and X Y Z for October ~ December. Different jet code can also be customized.

表8 Table 8

例 e g : 31	表示 2013 年 1 月生产; Indicates January 2013 production;	3X	表示 2013 年 10 月生产; Indicates October 2013 production;
3Y	表示 2013 年 11 月生产; Indicates November 2013 production;	3Z	表示 2013 年 12 月生产。 Indicates December 2013 production.

不同喷码方式也可定制。Different coding methods can also be customised.

13.3 包装 Packaging (附录2Appendix 2)

每20粒电池置入一个PVC托盘内，然后10盘（共200粒电池）用透明膜封装，20个小包（共4000粒电池）装入一个外箱。

Every 20 batteries are put into a PVC tray, then 10 plates (a total of 200 batteries) are packaged with transparent film, 20 small packages are packed into the box, and 20 small packages (a total of 4,000 batteries) are placed in an outer box



图2Figure 2（实际包装图 Actual packaging diagram）

*如需加工成焊脚电池，包装将根据产品具体形状调整。

* if the battery needs to be processed into welded foot, the packaging will be adjusted according to the specific shape of the product

随着产品技术更新、技术参数调整，规格书会随时更新，请及时与力源电池联系获取最新版规格书。

As the technical parameters of the product are updated and adjusted, the specification will be updated at any time. Please contact LIYUAN battery for the latest version of the specification.

14. 放电曲线 Discharge curve

图1 不同温度下的放电曲线

Figure 1 Discharge curves at different temperatures

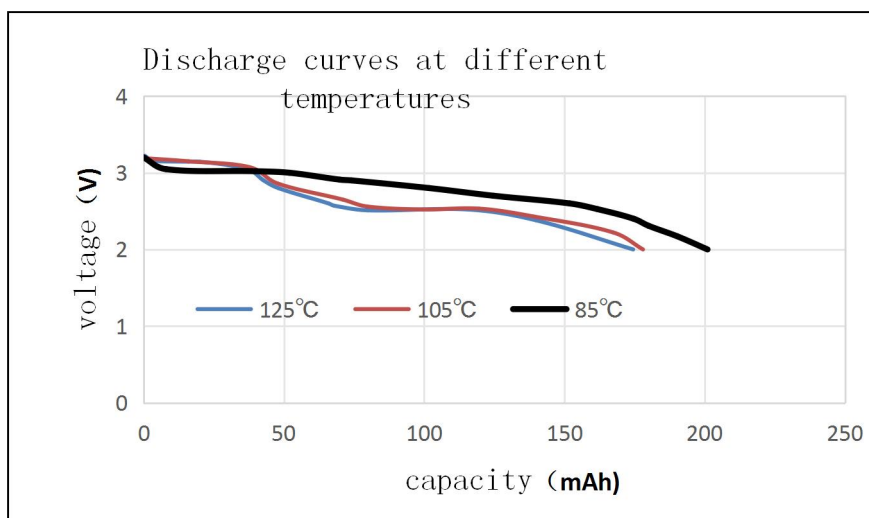


图2 脉冲放电曲线

Figure 2 22°C Pulse Discharge Curve:

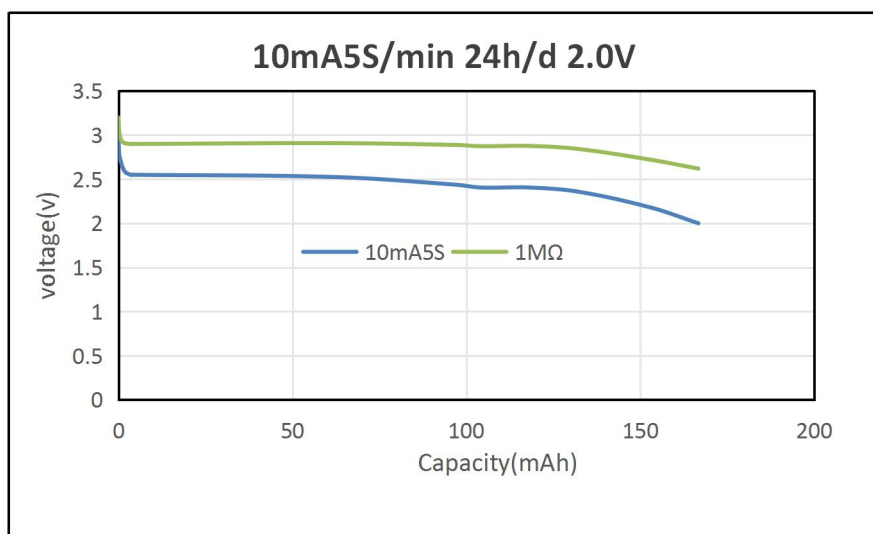


图3 模拟寿命测试:

Figure 3 Simulated life testing:

