

# Product Specification

Number: L-KLS5-04-CP402523-400mAh

Name: Primary Lithium Battery

Date: 2025-11-29



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# Primary Lithium Battery

## CP402523

3.0V [Li-MnO<sub>2</sub>]



### BENEFITS

- High Voltage Response, Stable During Most of the Lifetime of the Application
- Energy Density up to 830Wh/L
- Wide Operating Temperature Range (-20 °C ~+70 °C)
- Low Self-discharge Rate (less than 1% per year after 1 year of storage at +25 °C)

### KEY FEATURES

- Optimized Battery Structure, Full Discharge Capacity
- Long Endurance
- No Passivation
- GB 8897.4-2008、IEC 60086.4:2014 and RoHS

### MAIN APPLICATIONS

- Security System
- Smart Metering
- RFID and Tracking System
- Wireless Transmitting
- Smart Home Devices
- Military Devices

### References Data

#### Electrical characteristics

Open circuit voltage (at +25°C) ≥3.10V

Nominal capacity 400mAh

(At +25°C, battery discharged at continuous current 1mA until voltage reaches cut-off voltage 2.0V. The capacity can vary at different temperature, discharge current or cut-off voltage.)

Maximum continuous current 200mA

(At +25°C, 2.0V cut-off, battery discharged for minimum 50% of rated capacity.)

Maximum pulse discharge current 300mA

(At +25°C, 2.0V cut-off, battery discharged for minimum 50% of rated capacity with max pulse for 3 seconds after 27 seconds break. For more battery capacity, please consult KLS.)

Storage (recommended) ≤+30°C

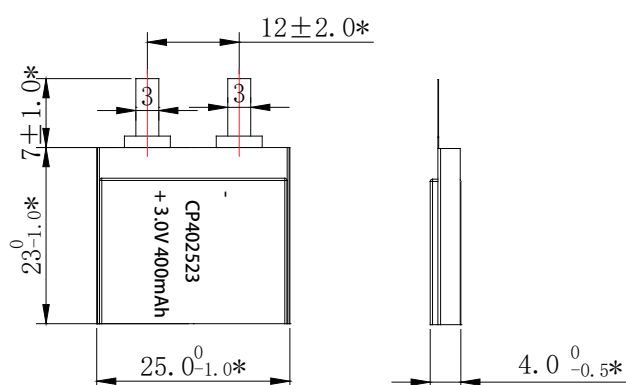
(For more severe conditions, consult KLS.) ≤75%RH

Operating temperature range -20°C~+70°C

(Operation above ambient Temperature may lead to reduced capacity and lower voltage readings at the beginning of pulses, consult KLS.)

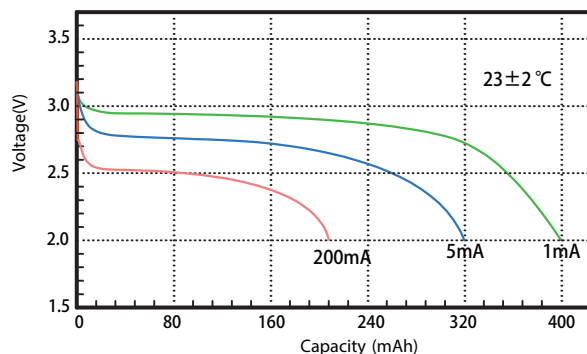
## Physical characteristics

Width	25.0 <sup>0</sup> <sub>-1.0</sub> mm
Height	23.0 <sup>0</sup> <sub>-1.0</sub> mm
Thickness	4.0 <sup>0</sup> <sub>-0.5</sub> mm
Typical weight	3.5g
Li metal content	0.16g

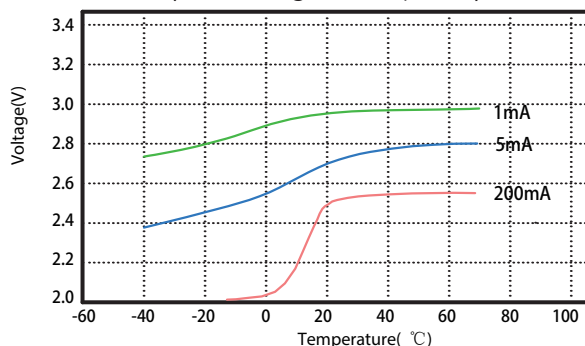


Dimensions in mm (GB1804-m)

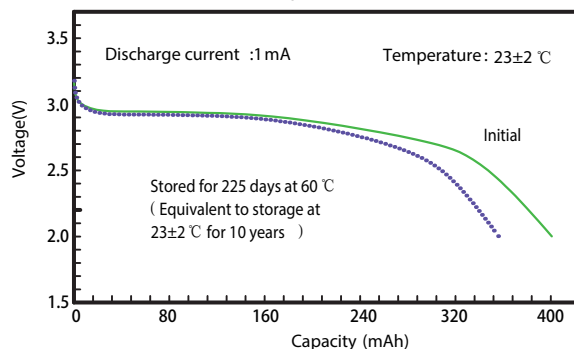
## 1. Typical discharge profiles at 23±2°C (at mid-discharge)



## 2. Typical discharge profiles with different current (at discharge stable phase)



## 3. Storage characteristics



## WARNING:

- Do Not Short Circuit
- Do Not Recharge
- Do Not Puncture
- Do Not Crush
- Do Not Dismantle
- Do Not Incinerate
- Do Not Mix New and Used Batteries
- Do Not Heat Above 100°C

This information is generally descriptive only and is not intended to make or imply any representation, guarantee or warranty with respect to any cells and batteries. Cell and battery designs/specifications are subject to modification without notice. Contact KLS for the latest information

## 1. Battery Cell Performance Criteria

### 电芯性能标准

#### 1.1 Standard testing environment

##### 标准测试环境

Unless specifically stated otherwise, tests must be done within one month of delivery.

The following is test conditions:

Test conditions:

Ambient Temperature:  $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$

Ambient Humidity: 45~75%RH

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：

温度：  $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$

湿度： 45~75%RH

#### 1.2 The requirement of measure instrument

##### 测量设备要求

- (1) The measurement instrument has been certified by a qualified source.
  - (2) The accuracy of the measuring instrument is less than 0.01mm.
  - (3) The accuracy of multimeter is at least 0.5%.
  - (4) The current accuracy of the battery test system is at least  $\pm 0.1\%$ , isobarically accuracy is  $\pm 0.5\%$ , and timer accuracy is not less than  $\pm 0.1\%$ .
  - (5) The accuracy of the thermometer is at least  $\pm 0.5^{\circ}\text{C}$ .
- (1) 测量设备、仪器需经检定机构检验合格。
  - (2) 测量尺寸的仪器精确度小于 0.01mm。
  - (3) 万用表测量电压及电流的准确度应不低于 0.5%。
  - (4) 电池测试系统的电流精度应在 $\pm 0.1\%$ 以上，恒压精度 $\pm 0.5\%$ ，计时精度不低于 $\pm 0.1\%$ 。(5) 测量温度的仪表准确度应不低于 $\pm 0.5^{\circ}\text{C}$ 。

#### 1.3 Visual inspection

##### 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。


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#### 1.4 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	<b>Vibration Test</b> 振动测试	After standard charging, the cell is secured to a vibration table and subjected to vibration cycling in which the frequency is varied at the rate of 1Hz per minute between 10Hz and 55Hz; the excursion of the vibration is 0.38mm. The cell shall be vibrated for 30 minutes on each of X, Y, and Z axis. 将标准充电后的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	<b>Drop Test</b> 跌落测试	A battery is dropped from a height of 1 meter two times onto a concrete surface. 标准充电后, 将电芯 2 次从 1 米的高度跌落至混凝土地面。	UL1642 No explosion, no fire 无爆炸、无起火

#### 1.5 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	<b>Short-circuit</b> 短 路	A battery is short-circuited for 1 hour at 0.04Ω. 将标准充电后的电芯, 用 0.04Ω 电阻器短接 1h。	UL1642 No explosion, no fire 无爆炸、无起火
2	<b>Heat shock</b> 热冲击	The cell is placed in a thermal chamber. Temperature is raised to 130±2°C at the rate of (5±2°C)/min and held for 10 minutes, then cooled to room temperature at the rate of 5±2°C/min. 电池置于热箱中, 温度以 (5±2°C) /min 的速率升至 130±2°C 并保温 10min, 再以 5 ± 2 °C /min 的速度降至室温。	UL1642 No explosion, no fire 无爆炸、无起火
3	<b>Humidity and heat test</b> 湿度和热度测试	A battery is placed in a box for 48 hours where the temperature is 40°C±2°C and the relative humidity is 90% ~ 95% 将电芯放入温度为 40°C±2°C, 相对湿度为 90% ~ 95% 的箱子中, 保持 48h。	UL1642 No explosion, no fire 无爆炸、无起火

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**1.6 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	<b>High Temperature</b> 高温性能	A battery is placed in an oven for 2 hours at 55°C±2°C, then discharged at a 1mA current to the termination voltage. 在 55°C±2°C 条件下, 将电芯放入高温箱中 2h 后, 再以 5mA 电流放电至终止电压。	Discharge 90 percent of the original capacity. 可放出初始容量的 90%.
2	<b>Low Temperature</b> 低温性能	A battery is placed in a thermal chamber for 2 hours at -10°C±2°C; then discharged at 1mA to the termination voltage. 在 -10°C±2°C 条件下, 将标准充电后的电芯放入低温箱中 2h 后, 再以 10mA 电流放电至终止电压。	Discharge more than 45 percent of the original capacity. 可放出初始容量的 45% (-10°C) 以上.

**2. Storage and others**

**贮存及其它事项**

**2.1 Longterm Storage**

**长期贮存**

If the cell is to be stored for 3 months or longer it should be held in a dry and cool environment.

Voltage during storage needs to me maintained between 3.10V~3.25V.

长期贮存的电池(超过 3 个月)须置于干燥凉爽处, 储存电压应保持在 3.10V~3.25V.

**2.2 Any issues not covered in this specification should be discussed.**

本说明书中未提及的任何事项, 须经协商确定。