1. Scope:

This document is made according to customer parameter requirements, it describes the Product Specification of soft-packed Li-MnO_2

2. Description

2.1 Model: CP444644

2.2 Assembly Way

1S1P

single cell the inflexed fold and solder

3. Specification

3.1 Assembled cell parameters

No.	Item	Spec	Note
1	**Model**	CP444644/2100mAh	1S1P
2	**Nominal Voltage**	3.0V	When shipping, the voltage without load is between3.10V and 3.25V.
3	**Nominal Capacity**	Typ:2100mAh@5mA Discharge	Nominal Capacity refer to the capacity of 5 mA discharge to 2.0V cut-off voltage at 23℃.
4	**Max. Continuous Discharge Current**	800mA	At 23±2℃ the battery can discharge at least the max continuous discharge value which rated capacity 50% can permit。

5	**Max. Pulse Discharge Current**	1200mA	At 23±2℃,battery discharge duration for 3 seconds and stand 27 seconds, it can discharge at least the max pulse discharge value which rated capacity 50% can permit
6	**Discharge Cut-off Voltage**	2.0V	
7	**Operating Temperature**	-40℃~ +70℃	Exceed the operating temperature range could lead to battery operating voltage reduction or even a security risk.
8	**storage temperature**	-20 ℃~+40℃	3.10V ~ 3.25V
9	**Storage life**	10 years	Relative humidity 45~35%RH Temperature -20 ℃~+40℃
10	**Cell Weight**	Approx: 15.0 g	
11	**Self Discharge Rate**	2%/year	Out of the recommended condition, the self-discharge rate 2% may increase.
12	**Assemblage Dimension**	Length：44.0mm Max Width：46.0mm Max Thickness：4.4mm Max	Measured weight of 300gf at 23℃± 1 ℃.Not including battery drawing line.

4. Battery Cell Performance Criteria

4.1 Standard testing environment

Unless specifically stated otherwise, tests must be done within one month of delivery and the number of charging-recharging cycles is fewer than 5. The following is test conditions:
Test conditions:
Ambient Temperature： 23ºC ± 1ºC
Ambient Humidity： 45~75%RH

4.2 The requirement of measure instrument

(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 ±0.1%, isobarically accuracy is ±0.5%, and timer accuracy is not less than ±0.1%.
(5) The accuracy of the thermometer is at least ±0.5ºC.

4.3 Visual inspection

Not allowing any visual defects which will affect the electronic characteristics, such as leakage and damage.

4.4 Mechanical Characteristics

No.	Item	Testing Conditions and Method	Standard
1	**Vibration Test**	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.	UL1642 No explosion, no fire
2	**Drop Test**	A battery is dropped from a height of 1 meter two times onto a concrete surface.	UL1642 No explosion, no fire

4.5 Safety Test

No.	Item	Testing Conditions and Method	Standard
1	**Short-circuit**	A battery is short-circuited for 1 hour at 0.04Ω.	UL1642 No explosion, no fire

2	**Heat shock**	The cell is placed in a thermal chamber. Temperature is raised to 130±2ºC at the rate of (5±2ºC)/min and held for 10 minutes, then cooled to room temperature at the rate of 5±2ºC/min.	UL1642 No explosion, no fire
3	**Humidity and heat test**	A battery is placed in a box for 48 hours where the temperature is 40ºC±2ºC and the relative humidity is 90% ~ 95%	UL1642 No explosion, no fire

4.6 High and low temperature test

No.	Item	Testing Conditions and Method	Standard
1	**High Temperature**	A battery is placed in an oven for 2 hours at 55ºC±2ºC, then discharged at a 1mA current to the termination voltage.	Discharge 90 percent of the original capacity.
2	**Low Temperature**	A battery is placed in a thermal chamber for 2 hours at -10ºC±2ºC; then discharged at 1mA to the termination voltage.	Discharge more than 45 percent of the original capacity.

5. Storage and others

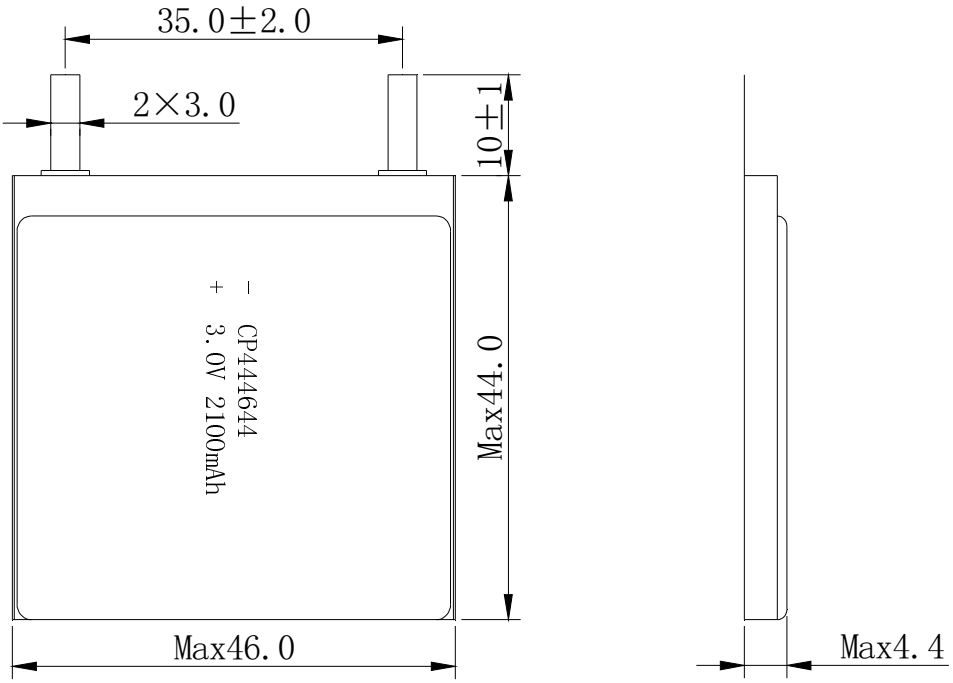
5.1 Longterm Storage

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 and the storage conditions are the same as Item 3.3.1.11

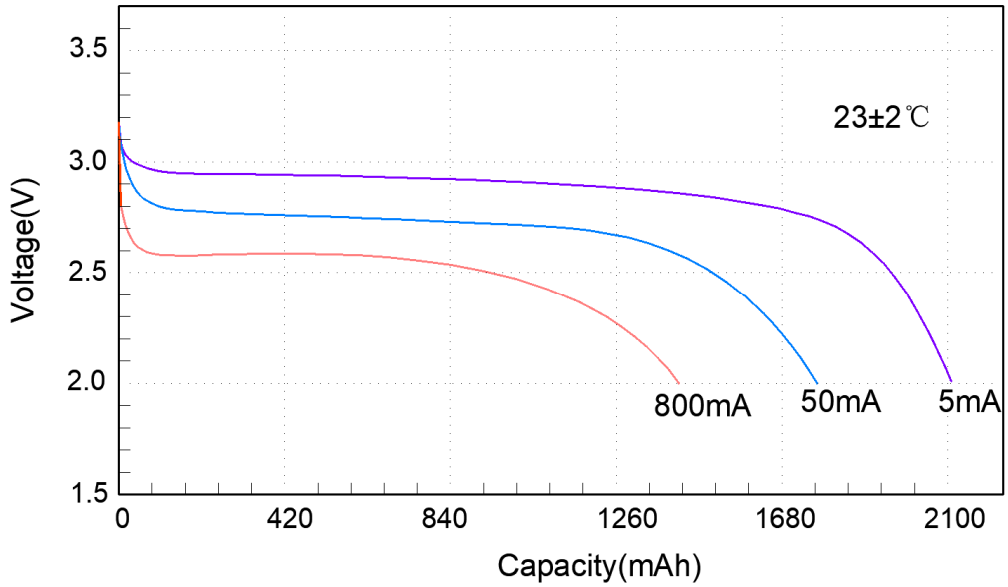
7.Drawing

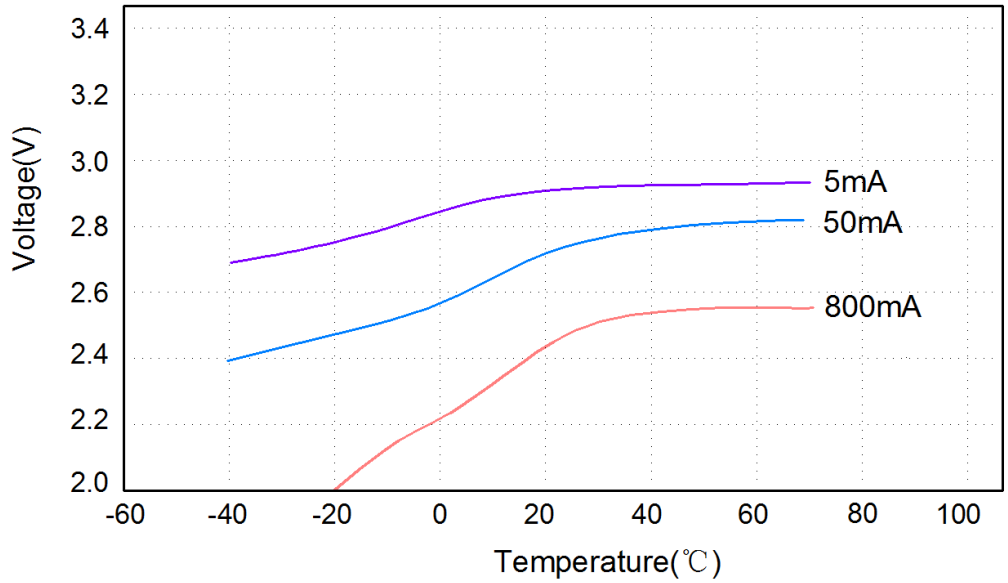
7.1 Assembly diagram（not to scale）

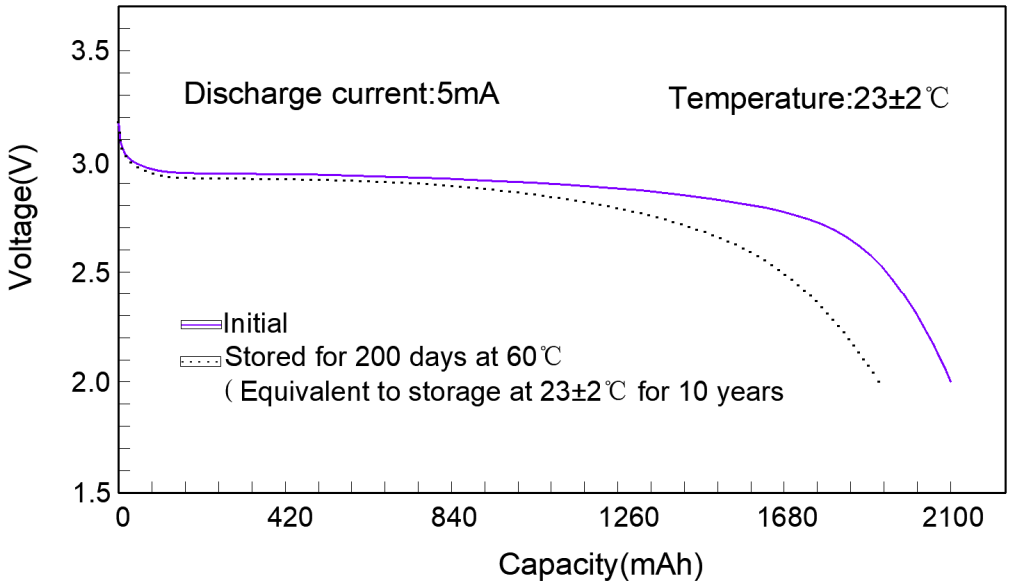
Model：CP444644
Unit：mm



8、Discharge curve







Handling Precaution and Guideline

1. Discharging Current:

The cell shall be discharged at less than the maximum discharge current specified in the Specification Approval Sheet. A high discharging current may reduce the discharge capacity significantly or cause overheating.

2. Discharging Temperature

The Discharging Temperature must be within the range specified in this Specification Approval Sheet.

3. Over-Discharge

Over-discharging will cause cell degradation and functional losses. The cell can degrade into an over-discharge state through self discharging. In order to prevent over-discharging, the cell should be charged periodically to retain between 3.10V and 3.22V.

4. Storage

Cells should be stored at the proper temperature that is identified in the Specification Approval Sheet.

5. Notice

5.1 Handling of cells:

- ★ Avoid any short-circuit. It will cause the leads to get hot and lose electronic functions.
- ★ Soft package is easily damaged by sharp objects such as needles and knives. Avoid touching the cells with sharp objects when handling and storing.
- ★ Next to the leads is the sealed edge. Don't bend or fold the sealing edge as it is sensitive to movement.
- ★ Don't open the folded edge on the sides of the cell.
- ★ Don't bend the tabs as the tabs are sensitive.
- ★ Avoid mechanical shock to the cells.
- ★ Don't put the cells into an oven, washing machine or any high-voltage container.
- ★ Don't use a charger without a safety certification. Use only a recommended charger.
- ★ You should immediately stop charging if the cell overheats, emits an odor, changes color, changes shape, etc.
- ★ Adults should supervise the use of batteries by children.
- ★ Before using batteries, please carefully read and understand the handling guidelines.
- ★ Avoid electro-static discharge when using, charging, and storing cells.
- ★ Avoid putting the battery in contact with metal conductors such as neck chains, barrettes, or bolts, etc.
- ★ Don't use metal conductors to connect the positive and negative leads together.
- ★ Avoid errors during assembly by contacting the positive lead with the negative lead.

5.2 Notice for Designing Battery Pack

5.2.1 Package Design

① The battery pack should have sufficient strength and the battery should be protected from mechanical shock.

② No sharp objects should be inside the pack containing the battery.

5.3 Notice for Assembling Battery Pack

5.3.1 Tab connection

① Ultrasonic welding or spot welding is recommended to connect the battery with the PCM or other parts.

② If the tab is to be soldered to the PCM, the instructions below are very important to ensure battery performance.

a) The solder iron should be temperature controlled and ESD safe.

b) Soldering temperature should not exceed 350±10℃ .

c) Soldering time should not be longer than 3 seconds.

d) Soldering times should not be fewer than 5.

e) Let the battery tab cool down before soldering again.

f) Direct heat to the cell body is strictly prohibited. The battery will be damaged by heat above approx. 60ºC.

5.3.2 Cell fixing

① The cell should be fixed to the battery pack by its large surface area.
② There should be no sharp edges at the assembly contact area.
③ Cells must be held firmly in the battery pack; movement is not allowed.
④ The total thickness (the cell thickness plus the thickness of auxiliary materials,e.g. sponge pad, insulate pad, tape and so on) can't exceed the interior room of the plastic case, in order to prevent the cell from the damage and safe issue.

6. Others

6.1 Disassembly may cause an internal short circuit to the cell, which may cause out-gassing, fire, or other problems.

6.2 LIP battery should not have liquid flowing, but in case the electrolyte come into contact with the skin, or eyes, physicians, we recommend as below:

a. The electrolyte touch eyes: Flush the electrolyte immediately with fresh water for 15min. and medical advice is to be sought.
b. The electrolyte touch skin: Flush the electrolyte immediately with a great deal of fresh water.
c. Breath the released gas: Go outside to breath flash air.
d. Mis-eaten: Go to take some medical advice.

6.3 Prohibition of dumping of cells into fire

Never incinerate or dispose the cells in fire, for these may cause firing of the cells.

6.4 The cells should never be soaked with liquids such as water, drinks or oil.

6.5 Prohibit using the cells mixed with different manufactories. Prohibit using new cells mixed with old ones.

6.6 Prohibit using damaged cells.

7. Recommended Notice:

7.1 Using cells on specified facilities only.

7.2 Using cells in normal ambition temperature. Temperature: -10 ~ 35℃ , Relative Humidity : 45~75%.

7.3 Using the cells, away from heat source. Don't let children play with cells.

7.4 Avoid the positive pole shortcutting with the negative one. Avoid the cells affected with damp.

7.5 Useless cells should be deal with in a safety way. Don't drop them into the water or fire.