



Specification Approval Sheet

Model: CP355050

型号 : CP355050

Assembly Way

single cell the inflexed fold and solder

Specification

3.1 Assembled cell parameters

No.	Item	Spec	Note
1	Model 型号	CP355050/2000mAh	1S1P
2	Nominal Voltage	3.0V	When shipping, the voltage without load is between 3.05V and 3.25V.
3	Nominal Capacity	Typ:2000mAh@10mA Discharge(放电)	Nominal Capacity refer to the capacity of 10mA discharge to 2.0V cut-off voltage at 23°C.
4	Max.Discharge Current	200 mA	At 25± 2°C the battery can discharge at least the max continuous discharge value which rated capacity 50% can permit.



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5	Max. Discharge Current	500 mA	At 23± 2°C, 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	-20°C~ +60°C	Exceed the operating temperature range could lead to battery operating voltage reduction or even a security risk. 減
8	Recommend storage temperature	-5 °C~+35°C	电芯应在 3.05V ~ 3.25V 状态下储存。
9	Storage life	8 years (年)	Relative humidity 相对湿度: 45~75%RH Temperature -5 °C~+35°C
10	Cell Weight 电芯重量	Approx:1 5.0 g 约: 15.0 g	
11	Self Discharge Rate	2%	Out of the recommended condition, the self-discharge rate 2% may increase.
12	Assemblage Dimension	Length : 51.0 mm Max Width : 50.5mm Max Thickness : 3.7 mm Max	Measured weight of 300gf at 25 °C ± 1 °C. 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 : 25°C ± 1°C

Ambient Humidity : 45~75%RH



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4.2 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 $\pm 0.5^{\circ}\text{C}$.

4.3 Visual inspection

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

4.4 Mechanical Characteristics 机械特性

No. 号	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 安全测试

No. 号	Item	Testing Conditions and Method	Standard
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1	Short-circuit 短路	A battery is short-circuited for 1 hour at 0.04Ω.	UL1642 No explosion, no fire
2	Heat shock 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. 速 2	UL1642 No explosion, no fire
3	Humidity and heat test 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% 9	UL1642 No explosion, no fire

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	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.	Discharge 90 percent of the original capacity. 可放出初始容量的90%.
2	Low Temperature	A battery is placed in a thermal chamber for 2 hours at -10°C±2°C; then discharged at 1mA to the termination voltage.	Discharge more than 45 percent of the original capacity. 可放出初始容

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 be maintained between 3.05V~3.25V and the storage

conditions are the same as Item 3.3.1.11

5.2 Any issues not covered in this specification should be discussed between the customer and GMB.



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6. Repair period 包修期限

The repair period is 6 months from the date that the batteries are shipped out from GMB factory (the printing date on the cell).



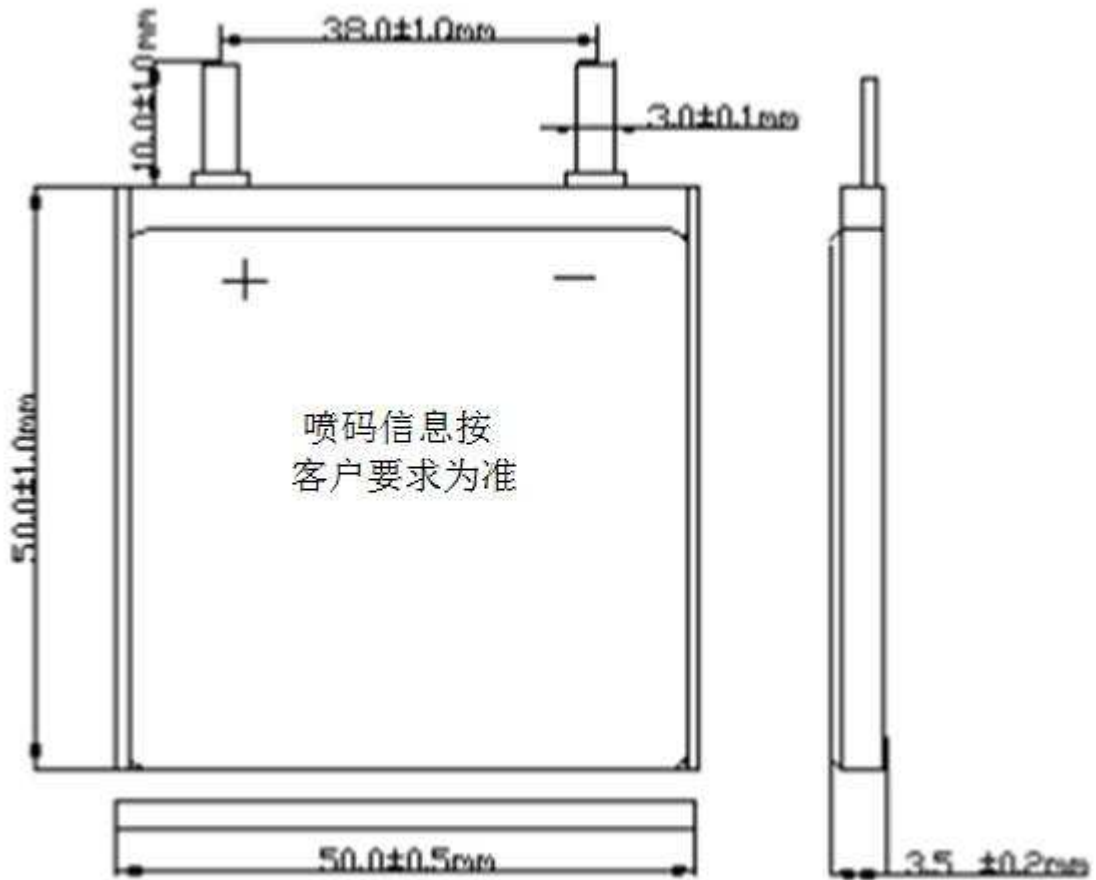
7.Drawing

7.1 Assembly diagram (not to scale)

装配尺寸图(未按比例)

Model : CP355050

Unit : mm



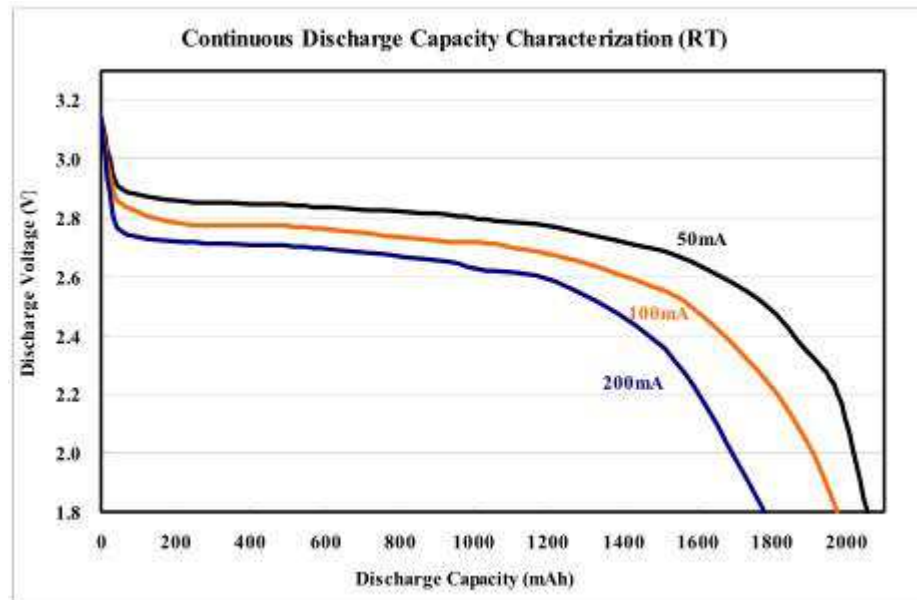


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8、 Discharge curve

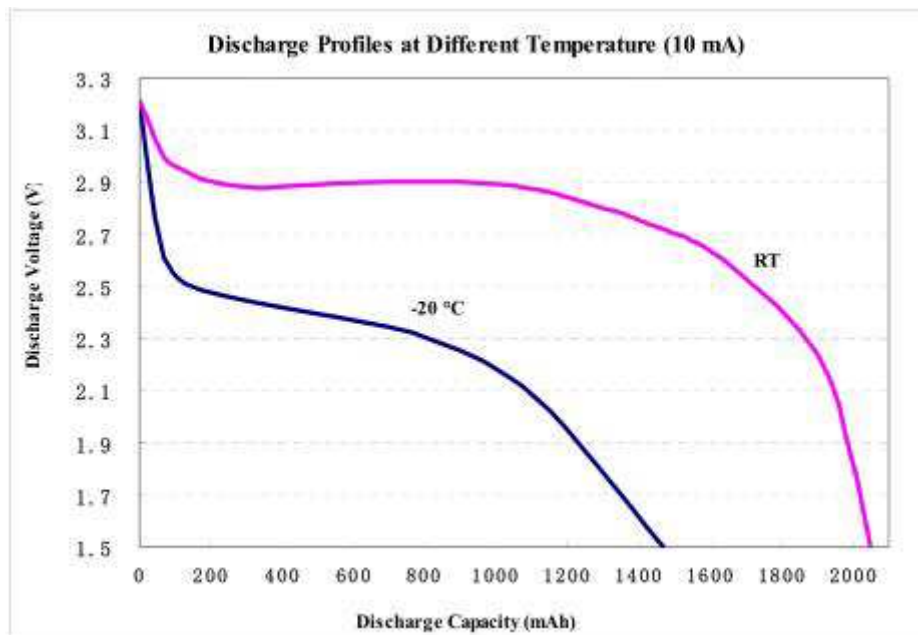
8.1 Different current discharge curve at 23°C

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8.2 Different temp discharge curve at 10 mA

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1. Discharging Current:

放电电流

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

放电温度

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



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3. Over-Discharge

过放电

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 3.05V and 3.22V.

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4. Storage

贮存

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.



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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

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 $350 \pm 10^{\circ}\text{C}$.
 - 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. 60°C .



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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 fresh 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.



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6.6 Prohibit using damaged cells.

7. Recommended Notice:

7.1 Using cells on specified facilities only.

7.2 Using cells in normal ambient temperature. Temperature: $-10 \sim 35^{\circ}\text{C}$, 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 shortcircuiting 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.