

LITHIUM-ION RECHARGEABLE BUTTON CELL SPECIFICATION

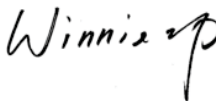
ICR1654(100mAh)

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Lithium-ion rechargeable Button Cell ICR1654

1、Scope:

This specification is applies to describe the related Battery product in this Specification and the Battery/cell supplied by CHUNG PAK (GUANGDONG) BATTERY INDUSTRIAL CO.,LTD.

2、Cell Model: ICR1654

3、Cell Specification

No.	Items	Specification	Remark
1	Nominal Capacity	100mAh	0.2C Standard discharge
2	Nominal Voltage	3.7V	Mean Operation Voltage
3	Delivery voltage	3.75~3.95V	Within 10 days from Factory
4	Charge cut-off Voltage	4.20V	By standard charge method
5	Discharge cut-off voltage	3.0V	By standard discharge method
6	Standard charging method	0.2C constant current charge to 4.20V,4.20V constant voltage continue charging till current decline to $\leq 0.02C$, charge time:6.5h(Ref)	/
7	Standard discharging method	0.2C constant current discharge to 3.0V	/
8	Cell Internal Impedance	$\leq 500m\Omega$	Internal resistance measured at AC 1KHZ after 50% charge
9	Max continuous charge current	1C	Standard charge, charge time: 1.2h (Ref)
10	Max continuous discharge current	1C	For continuous discharge mode
11	Weight(Approx.)	3.2g	/

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4、Cell Specification (continuous)

No.	Items	Specifications		Remark
12	Operation temperature and relative humidity range	Charge	0~45℃ 60±25%R.H.	Charge at a very low temperature such as below 10℃, will be get a lower capacity and reduce cycle life of the battery.
		Discharge	-10~55℃ 50±25%R.H.	
13	Storage temperature for a long time	25±5℃ 60±25%R.H.		Do not storage exceed half year. Must charge once when storage for half year. Must charge the battery which with protect circuit when storage for three months.

5、Battery/Cell performance test Criteria

a) Appearance inspection by visual

There shall be no such defect as flaw, crack, rust, leakage, which may adversely affect commercial value of battery.

b) Environmental test condition

Unless otherwise specified, all test stated in this product specification are conduct at below test condition.

Temperature: 20℃~25℃

Relative Humidity: 60%±25% R.H.

c) Cell Electrical characteristics

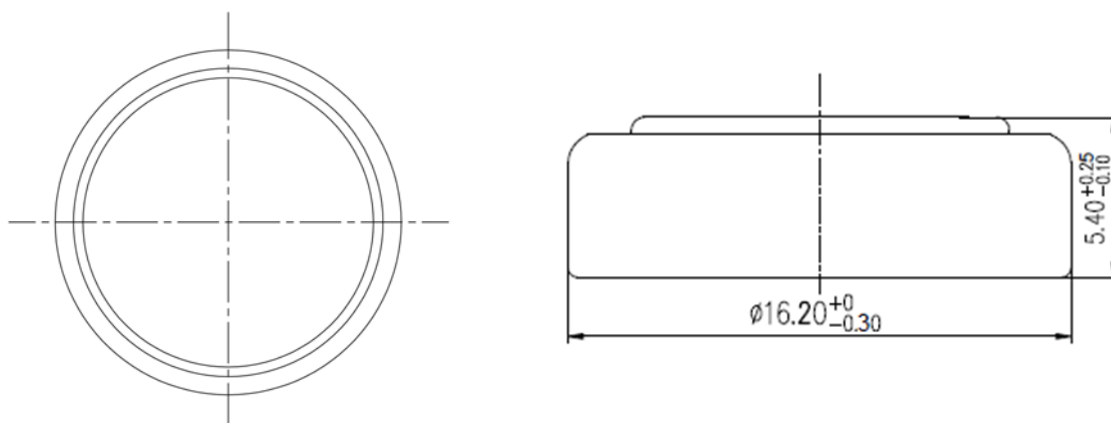
No	Items	Test Method and Condition/	Criteria
1	Cycle Life	Test condition(25±2℃): Step1: 0.2C constant current, 4.20V constant voltage charge to 4.20V, continue charging till current decline to ≤0.02C Step 2: standby 5min; Step3: discharge the cell at 0.2C to 3.0V; Step 4: standby 5min; Step5: repeat step1 to step4 for 500 times. measure the capacity of 1st cycle capacity at 0.2C discharge of operation.	≥80% of initial capacity ≤10.0% the thickness of the rate of change

Lithium-ion rechargeable Button Cell ICR1654

d) Mechanical characteristics

No	Items	Test Method and Condition	Criteria
1	Free fall test	The battery to be fully charged in accordance with standard charge condition, then drop the battery three times from a height of 1m onto a Board. The batteries are dropped so as to obtain impacts in random orientations.	No Fire, No leakage, No Explosion
2	Vibration test	After standard charging, fixed the cell to vibration table and subjected to vibration cycling that the frequency is to be varied at the rate of 1Hz per minute between 10Hz and 55Hz, the excursion of the vibration is 1.6mm. The cell shall be vibrated for 30 minutes per axis of XYZ axes.	No Fire, No leakage, No Explosion
3	Crush test	Fully charged the battery in accordance with standard charge condition, the battery is to be crushed between two flat plates. Continuous to applied force on battery of 13kN(17.2Mpa),stopped until a pressure reading of 17.2Mpa is reached on the hydraulic ram.	No Fire, No Explosion
4	Overcharge test	Test method: To charge the standard charged cell with 100mA constant current until cell voltage reaches 4.6V, then be charged at constant voltage of 4.6V while tapering the charge current at 25℃ for 2.5hrs.	No Fire, No Explosion

6、Cell initial Dimensions



Lithium-ion rechargeable Button Cell ICR1654

7、Handling of Cells

In order to handling Lithium-ion rechargeable button cell correctly, please read following notice seriously. CHUNG PAK (GUANG DONG)BATTERY INDUSTRIAL CO.,LTD shall not be responsibility for any problem that violate the notice.

Danger !

To prevent the possibility of cell from leakage, explosion or fire, please observe the following notice:

- (1) Don't immerse the cell in water or make it wet.
- (2) Don't use and store the cell near a heat source as fire or heater.
- (3) Don't reverse the positive and negative terminals.
- (4) Don't connect the cell directly to wall outlet or car cigarette-lighter sockets.
- (5) Don't discard the cell in fire or heater.
- (6) Don't connect the positive and negative terminal directly with metal objects. Don't transport and store the cell together with metal objects such as necklace hairpins.
- (7) Don't hit, throw or mechanical shock the cell.
- (8) Don't pierce the cell with a nail or other sharp object. Don't strike or trample the cell.
- (9) Don't directly solder the cell.
- (10) Don't charge the cell under heat source or extreme heat condition.

Warning !

To prevent the possibility of cell from leakage, explosion or fire, please observe the following notice:

- (1) Don't put the cell in the microwave or pressure vessel.
- (2) Don't use with primary cell or other type. If the cell with a smell, generate heat, deformed, becomes discolored or in any way appear abnormal, the cell shall never be used any more. If the cell appeared abnormal during usage or recharging, immediately remove it from the device or charger and stop using it.
- (3) Keep the batteries out of the reach of children. If children swallowed the cell accidentally, seek medical immediately.
- (4) The cell with a smell of the electrolyte leakage or a leakage shall be placed away from fire to avoid firing or explosion. The electrolyte leaks may cause fire or explosion.
- (5) If the cell leaks and the electrolyte get into your eyes, don't wipe eyes, thoroughly rinse the eyes with clean running water and seek medical immediately. Otherwise, eyes injury can result.

Caution !

Don't use or leave the cell at very high temperature conditions (for example, strong direct sunshine or a vehicle in extremely hot conditions). Otherwise, the cell overheating may cause fire and affect performance and shorten the life.

Only use the cell under following conditions. Otherwise may affect performance and shorten the life. Using the cell outside the following temperature range, the cell may cause overheating, explosion or fire.

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Operate Environment:

Charge: 0°C ~ 45°C

Discharge: -10°C ~ 55°C

Store for 30 days: -10°C ~ 45°C

Store for 90 days: 0°C ~ 45°C

- (1) If long-term storage is necessary, the cell should be charge and discharge activation every 3 months. (Method: 0.2mA cycle for 1weeks)
- (2) If the cell leakage and the electrolyte come into contact with the skin or clothes, thoroughly rinse the eyes with clean running water. Otherwise may cause dermatitis.
- (3) If the device not to be used for a long time, remove the cell from the device and store at cool and dry environment. Otherwise, the cell may rust or poor performance.
- (4) If the cell terminals get dirty, and clean the terminals with dry clothes before use. Otherwise, the cell poor contact may cause energy loss or unable to change.

8、Period of Warranty

The period of warranty is a year from the date of shipment. CHUNG PAK guarantees to give a replacement in case of cells with defects proven due to manufacturing process instead of the customer abuse and misuse.

9、Deliver state of cell

The cells are delivered with about 50% capacity, and voltage are 3.75-3.95V.