Specification Approval Sheet

Name : Battery Lithium-Ion Button Cell

Model : AKYGA LIR2430-0.06M

SPEC : 3.6V / 60mAh

Specification Modification Records

Modification Time	Descriptions	Issued Date	Approved By
	Release 1	2022-09-01	

Content

Any copies are invalid without our company's approval

1 Scope

This specification is applied to Akyga Lithium Ion Battery manufactured by Akyga Battery

2 Product and Model Name

Product： Lithium-ion button cell

Model Name：LIR2430-0.06M

3 Ratings

Item		Rating	Note
Capacity	Typical	60mAh	Discharge:0.2CmA cut off Voltage:2.75V
	Nominal(Minimum)	55mAh	
Nominal Voltage		3.6V	Discharge:0.2CmA cut off Voltage:2.75V
AC Impedance Resistance		≤700mΩ	
Discharge Cut-off Voltage		2.75V	
Charge Current		0.5C mA	Standard Charge
Max. Charge Current		1.0C mA	
Charge Voltage		4.2V	
Max. Charge Voltage		4.23V	
Charge Time		Approx 3.0h	Standard Charge
Fast Charge Time		Approx 2.0h	1.0CmA
Standard Discharge Current		0.5C mA	Standard Discharge
Peak. Discharge Current		2.0C mA	
Weight		Approx 3.2g	
Operating Temperature	Charge	0~+45℃	
	Discharge	-20~+60℃	
Storage Temperature	less than 1 month	-20~+45℃	Recommended storage temperature: 25℃,at the shipment state
	less than 6 months	-20~+35℃	

4 Performance

4.1 Standard Test Conditions

Test should be conducted with new batteries within one month after shipment from our factory and the batteries shall not be cycled more than five times before the test. Unless otherwise defined, test and measurement shall be done under temperature of 25±2℃ and relative humidity of 45~85%. The test results are not affected evidently by such conditions of temperature 25±2℃ or humidity 40~85%RH.

4.2 Measuring Instrument or Apparatus

4.2.1 Dimension Measuring Instrument

The dimension measurement shall be implemented by instruments with equal or more precision scale of 0.01mm.

4.2.2 Voltmeter

Standard class specified in national standard or more sensitive class having inner impedance more than 10 MΩ

4.2.3 Ammeter

Standard class specified in national standard or more sensitive class. Total external resistance including ammeter and wire is less than 0.01Ω.

4.2.4 Impedance Meter

Impedance shall be measured by a sinusoidal alternating current method (1kHz LCR meter).

4.3 Standard Charge and Discharge

Test procedure and its criteria are referred as follows:

0.5CmA=30mA

Full charge condition: Constant current 0.5CmA, Constant voltage 4.2V, till the current fall to 0.05CmA, for 3.0 hours in all at 25±2℃. After 10 minutes interval, discharge to 2.75V with 0.5CmA.

4.4 Rest Period

Unless otherwise defined, 10min, rest period after charge and discharge.

4.5 Initial Performance Test

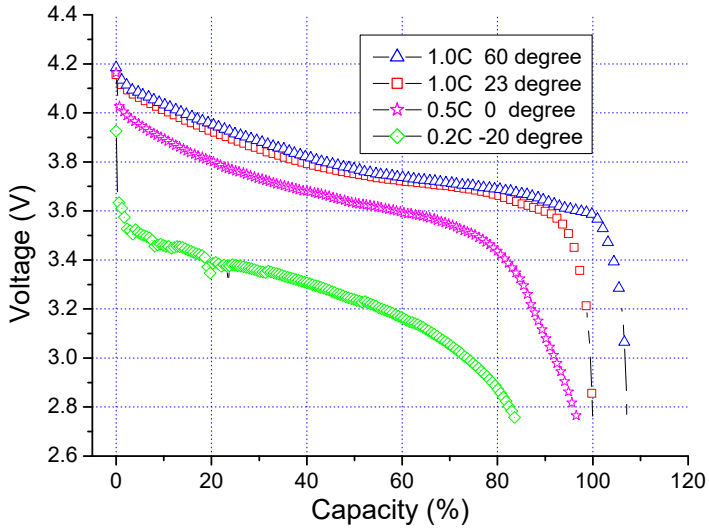
Item	Measuring Procedure	Requirements
Open-Circuit Voltage	The open-circuit voltage shall be measured within 24 hours after standard charge.	≥4.10V
AC Impedance Resistance	The Impedance shall be measured in an alternating current method (1kHz LCR meter) after standard charge at 25±2℃.	≤700mΩ
Capacity	The capacity on 0.2CmA discharge shall be measured after standard charge at 25±2℃.	C5≥60mAh

4.6 Electrical Performance

4.6.1 Temperature Dependence of Capacity (Discharge)

Cells shall meet the discharge capacity requirements listed in the below table under respective discharge temperatures. The capacities are to be measured with constant discharge current 0.2CmA (2.75V cut-off) after standard charge at 25±2℃.

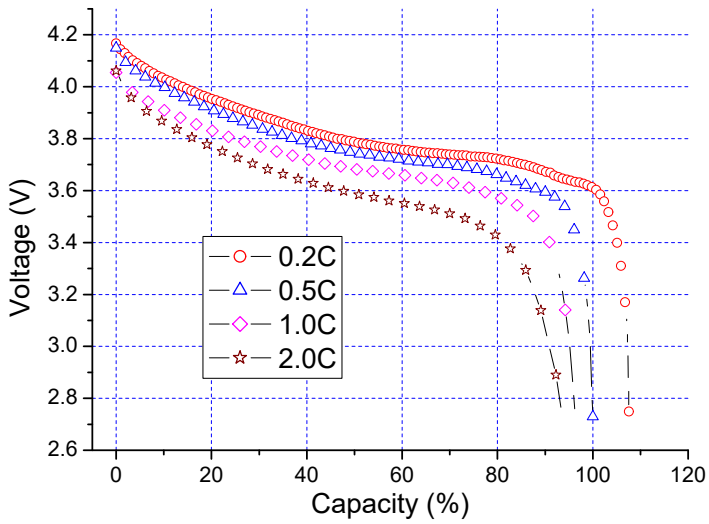
Discharge Temperature	-20℃(0.2C)	25℃(0.5C)	60℃(0.5C)
Discharge Capacity	60%	100%	90%



4.6.2 Rating Discharge

Cells shall meet the discharge capacity requirements listed in the below table under respective discharge current. The capacities are to be measured with constant discharge current 0.2CmA (2.75V cut-off) after standard charge at 25±2℃.

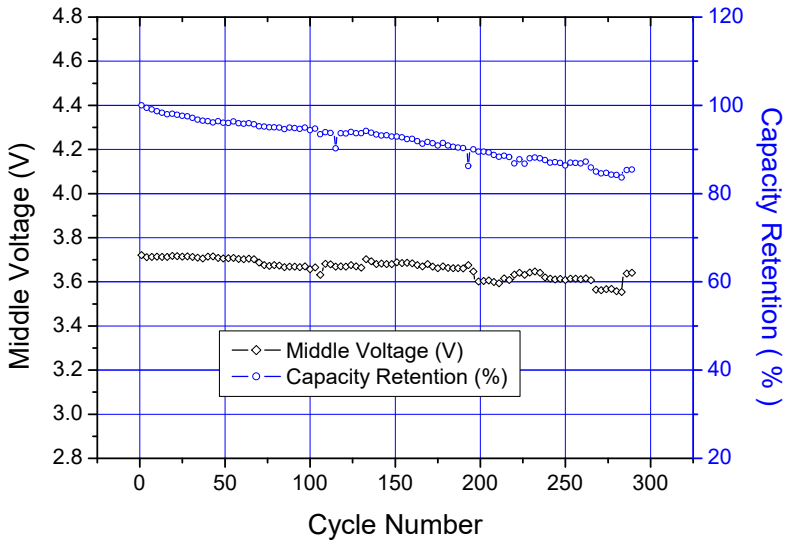
Discharge current	0.2C	0.5C	1.0C	2.0C
Capacity ratio	>100%	100%	>97%	>90%



4.6.3 Cycle Life

10min rest period after standard charge, 0.5CmA discharge to 2.75V, 10min rest period, the capacity shall be measured after 300 cycles of standard charge and discharge at 25±2℃.

Capacity ≥80% minimal capacity



4.6.4 Shelf Life

Item		Measuring Procedure	Requirements
Storage Characteristics 1	1	The capacity on 0.2CmA discharge shall be measured after standard charge and then storage at 25±2℃ for 30 days.	Remaining Capacity ≥85% C5
	2	After above measured Remaining capacity, the capacity on 0.2CmA discharge shall be measured after standard charge.	Recovery capacity ≥90% C5
Storage Characteristics 2	1	The capacity on 0.2CmA discharge shall be measured after standard charge and then storage at 60±2℃ for 7 days.	Remaining Capacity ≥60% C5
	2	After above measured Remaining capacity, the capacity on 0.2CmA discharge shall be measured after standard charge.	Recovery capacity ≥80% C5

4.7 Safety Performance

Item	Measuring Procedure	Requirements
Short-Circuit Test	After standard charge, the battery is to be short-circuited by connecting the positive and negative terminals with a copper wire having a maximum resistance load of 0.1Ω.	No explosion, no fire. The temperature of the exterior cell casing shall not exceed 150℃ (It's normal if the tab is melted.).
Heating Test	A battery is to be heated in a gravity convection or circulating air oven. The temperature of the oven is to be raised at a rate of 5±2℃/min to 130±2℃ and to be remained for 10 minutes before the test is ended.	No explosion, no fire.
Over Charging Test	After standard charge, the battery is subjected to a 3.0CmA charging current by connecting it to a DC-power supply. The voltage of the DC-power supply is 4.8V. The test time is 2.5 hours.	No explosion, no fire.
Drop Test	After standard charge, drop the battery from 1m height onto 5cm or thicker concrete 3 times each of X , Y, and Z directions at 25±2℃	No fire, no explosion, no smoking.
High Temperature and High Humidity	After standard charge, batteries are shelved in a constant temperature and constant humidity box. The temperature and humidity are set at 60℃ and 90%. After 7 days, the test is ended.	No leakage.

5 Handling Instructions

Read and observe the following warnings and precautions to ensure correct and safe use of Li-ion batteries.

Danger!

Failure to observe the following precautions may result in battery leakage, overheating, explosion and/ or fire.

— Do not immerse the battery in water or allow it to get wet.

— Do not use or store the battery near sources of heat such as a fire or heater.

—Do not use any chargers other than those recommended by Akyga .

— Do not reverse the positive(+) and negative(-) terminals.

— Do not connect the battery directly to wall outlets or car cigarette-lighter sockets.

— Do not put the battery into a fire or apply direct heat to it.

—Do not shot-circuit the battery by connecting wires or other metal objects to the positive(+) and negative(-) terminals.

—Do not carry or put the battery together with necklaces, hairpins or other metal objects.

— Do not strike, throw or subject the battery to severe physical shock.
— Do not pierce the battery casing with a nail or other sharp object, break it open with a hammer, or step on it.
— Do not directly solder the battery terminals.
— Do not attempt to disassemble or modify the battery in any way.
—Do not recharge the battery near a fire or in extremely hot conditions.

Warning!

Failure to observe the following precautions may result in battery leakage, overheating, explosion and/ or fire.
—Do not place the battery in a microwave oven or pressurized container.
—Do not use the battery in combination with primary batteries (such as dry-cell batteries) or batteries of different capacity, type or brand.
— Do not use the battery if it gives off an odor, generates heat, becomes discolored or deformed, or appears abnormal in any way. If the battery is in use or being recharged, remove it from the device or charger immediately and discontinue use.
— Keep the batteries out of the reach of children. If a child somehow swallows a battery, seek medical attention immediately.
— If the battery leaks or emits an odor, immediately remove it from the proximity of any exposed flame. The leaking electrolyte can ignite and cause a fire or explosion.
—If the battery leaks and electrolyte gets in your eyes, do not rub them. Instead, rinse them with clean running water and immediately seek medical attention. If left as is, electrolyte can cause eye injury.

Caution!

Do not use or store the battery where is exposed to extremely hot, such as under window of a car in direct sunlight in a hot day. Otherwise, the battery may be overheated. This can also reduce performance and/or shorten service life.

Use the battery only under the following environmental conditions. Failure to do so can result in reduced performance or a shorten service life. Recharging the battery outside of these temperatures can cause the battery to overheat, explode or catch fire.

Operating environment:
When charging the battery: 0℃～45℃
When discharging the battery: -20℃～60℃
When stored up to 30 days: -20℃～45℃
When stored up to 90 days: -20℃～35℃

In cases where children use the battery, instruct them on the contents of the user’s guide and keep an eye on them to ensure that the battery is being used correctly.

If the battery leaks and electrolyte gets your skin or clothing, immediately rinse the affected area with clean running water. If left as is, skin inflammation can occur.

For directions on battery installation and removal, read the instruction manual that accompanies the equipment in which the battery will be used.

If a device is not used for an extended period, the battery should be removed and stored in a cool, dry place. Otherwise, resting or reduced performance may occur.

If the terminals of the battery are dirty, wipe them clean with dry cloth before use. Otherwise, solid electrical contact may not be charged with the equipment, and this can cause power outages or charging to fail.

6 Period of Warranty

The period of warranty is one year from the date of shipment. AKYGA Battery guarantees to give a replacement in case of cells with defects proven due to manufacturing process instead of the customer's abuse and/or misuse.

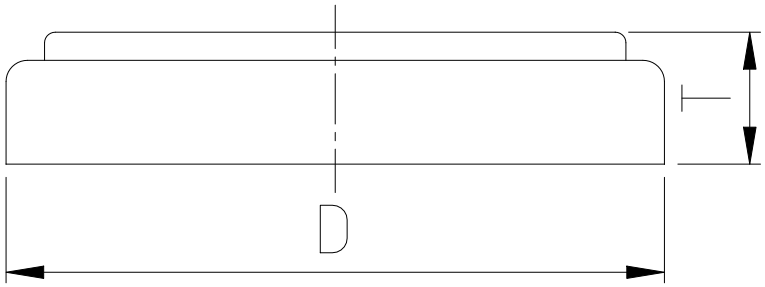
7 Shipment

Partially charged condition, about 80% of capacity.Voltage in:3.9-3.95V.

8 Amendment of This Specification

Akyga shall have the right to revise our product specification,
In the revised product specification will notify the customer really Akyga Battery

9 Dimensional Drawing



Item	Dimension
T	3.1±0.2 mm
D	24.5±0.1 mm