



Hong Kong TAC Industrial Co., Ltd
香港艺洲实业有限公司

VER:A

FLAT C, 9/F WINNING HOUSE NO.72 AND74 WING LOK STREET H.K
TEL: 00852-51230576 HTTP://WWW.TACBATTERY.COM

DATE:2019.08.24

Customer: _____

Li-ion Cylindrical Battery Specification

Model: ICR22430 3.7V 2000mAh WITH TAG

Prepared By/Date 编制/日期	Checked By/Date 审核/日期	Approved By/Date 批准/日期
黄光松 2019-8-24		

Customer Approval	Signature/Date(签名/日期)
	Company Name(公司名称)
	Company Stamp(公司印章)



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1. Scope

This specification is applied to ICR22430 Manufactured by Hong Kong TAC Industrial Co.,Ltd

2. Product Specification

Table 1

No.	Item	Rated Performance		Remark
		Typical	2000mAh	
1	Rated Capacity	Minimum	1800mAh	Standard discharge (0.2C C ₅ A) after Standard charge
2	Nominal Voltage	3.7V		Mean Operation Voltage During Standard Discharge After Standard Charge
3	Voltage at end of Discharge	3.0V		Discharge Cut-off Voltage
4	Charging Voltage	4.2±0.03V		
5	AC (1KHz) Impedance New Cell Max.(mΩ)	≤ 35 mΩ		The measure must be uses the new batteries that within one week after shipment and cycles less than 5 times
6	Standard charge	Constant Current 0.2C ₅ A Constant Voltage 4.2V 0.01 C ₅ A cut-off		Charge time : Approx 7.0h
7	Standard discharge	Constant current 0.2 C ₅ A end voltage 3.0V		
8	Fast charge	Constant Current 1C ₅ A Constant Voltage 4.2V 0.01 C ₅ A cut-off		Charge time : Approx 3.5h
9	Fast discharge	Constant current 1C ₅ A end voltage 3.0V		
10	Maximum Continuous Charge Current	1 C ₅ A		
11	Maximum Continuous Discharge Current	2 C ₅ A		
12	Operation Temperature Range	Charge: 0~45°C		60±25%R.H. Bare Cell
		Discharge: -20~60°C		
13	Storage Temperature Range	Less than 1 year: -20~25°C		60±25%R.H. at the shipment state
		less than 3 months: -20~40°C		
14	Weight	Approx 40±3 g		Bare Cell
15	Cell Dimension	Diameter:22.5MM		MAX
		Height:43.3MM		



3. Performance And Test Conditions

3.1 Standard Test Conditions

Test should be conducted with new batteries within one week after shipment from our factory and the cells shall not be cycled more than five times before the test. Unless otherwise defined, test and measurement shall be done under temperature of $20\pm 5^{\circ}\text{C}$ and relative humidity of 45~85%. If it is judged that the test results are not affected by such conditions, the tests may be conducted at temperature 15~30 $^{\circ}\text{C}$ and humidity 25~85%RH.

3.2 Measuring Instrument or Apparatus

3.2.1 Dimension Measuring Instrument

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

3.2.2 Voltmeter

Standard class specified in the national standard or more sensitive class having inner impedance more than 10k Ω /V

3.2.3 Ammeter

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

3.2.4 Impedance Meter

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

3.3 Standard Charge\Discharge

3.3.1 Standard Charge : Test procedure and its criteria are referred as follows:

$$0.5C_5A = 1000\text{mA}$$

Charging shall consist of charging at a 0.5C₅A constant current rate until the cell reaches 4.2V. The cell shall then be charged at constant voltage of 4.2 volts while tapering the charge current. Charging shall be terminated when the charging current has tapered to 0.01C₅A . Charge time : Approx 4.0h, The cell shall demonstrate no permanent degradation when charged between 0 $^{\circ}\text{C}$ and 45 $^{\circ}\text{C}$.

3.3.2 Standard Discharge

$$0.2C_5A = 400\text{mA}$$

Cells shall be discharged at a constant current of 0.2 C₅A to 3.0 volts @ 20 $^{\circ} \pm 5\text{C}$

3.4 Appearance

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

3.5 Initial Performance Test

Table 2

Item	Measuring Procedure	Requirements
(1) Open-Circuit Voltage	The open-circuit voltage shall be measured within 24 hours after standard charge.	$\geq 4.08\text{V}$
(2) AC Impedance Resistance	The Impedance shall be measured in an alternating current method (1kHz LCR meter) after standard charge at $20\pm 5^{\circ}\text{C}$.	$\leq 100\text{m}\Omega$
(3) Nominal Capacity	The capacity on 0.2C ₅ A discharge shall be measured after standard charge at $20\pm 5^{\circ}\text{C}$.	Discharge Capacity $\geq 1800\text{mAh}$



3.6 Temperature Dependence of Capacity (Discharge)

Cells shall be charged per 3.3.1. and discharged @0.2C₅A to 3.0 volts. except to be discharged at temperatures per Table 3. Cells shall be stored for 3 hours at the test temperature prior to discharging and then shall be discharged at the test temperature. The capacity of a cell at each temperature shall be compared to the capacity achieved at 23 °C and the percentage shall be calculated. Each cell shall meet or exceed the requirements of Table 3.

Table 3

Discharge Temperature	-10°C	0°C	23°C	60°C
Discharge Capacity (0.2 C ₅ A)	50%	80%	100%	95%

3.7 Cycle Life and Leakage-Proof

Table 4

No.	Item	Criteria	Test Conditions
1	Cycle Life (0.2 C ₅ A)	Higher than 80% of the Initial Capacities of the Cells	Carry out 300cycle charging/ Discharging in the below condition. ◆Charge: Standard Charge, per 3.3.1 ◆Discharge:0.2 C ₅ A to 3.0V ◆Rest Time between charge/discharge:30min. ◆Temperature:20±5°C
2	Leakage-Proof	No leakage (visual inspection)	After full charge, store at 60±3°C 60±10%RH for 1month.

4. Safety Test

Table 5

Item	Battery Condition	Test Method	Requirements
Crush	Fresh, Fully charged	Crush between two flat plates. Applied force is about 13kN(1.72Mpa) for 30min.	No explosion, No fire
Short Circuit	Fresh, Fully charged	Each test sample battery, in turn, is to be short-circuited by connecting the (+) and (-) terminals of the battery with a Cu wire having a maximum resistance load of 0.1Ω. Tests are to be conducted at room temperature(20±2°C).	No explosion, No fire The Temperature of the surface of the Cells are lower than 150°C

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Short Circuit	Fresh, Fully charged	Each test sample battery, in turn, is to be short-circuited by connecting the (+) and (-) terminals of the battery with a Cu wire having a maximum resistance load of 0.1Ω. Tests are to be conducted at temperature(60±2℃).	No explosion, No fire The Temperature of the surface of the Cells are lower than 150℃
Impact	Fresh, Fully charged	A 56mm diameter bar is inlaid into the bottom of a 10kg weight. And the weight is to be dropped from a height of 1m onto a sample battery and then the bar will be across the center of the sample.	No explosion, No fire
Forced Discharge	Fresh, Fully charged	Discharge at a current of 1CmA for 2.5h.	No explosion, No fire
Nail Pricking (3mm)	Fresh, Fully charged	Prick through the sample battery with a nail having a diameter of 3mm and remain 2h.	No explosion, No fire

5. CAUTIONS IN USE

To ensure proper use of the battery please read the manual carefully before using it.

. Handling

- Battery must be charged in appropriate charger only.
- Never use a modified or damaged charger.
- Do not leave battery in charger over 24 hours.

. storage

- Store the battery in a cool, dry and well-ventilated area.

. disposal

- Regulations vary for different countries. Dispose of in accordance with local regulations.

6. Battery operation instruction

6.1 Charging

Charging current : Cannot surpass the biggest charging current which in this specification book stipulated.

Charging voltage : Does not have to surpass the highest amount which in this specification book stipulated to decide the voltage.

Charge temperature: The battery must carry on the charge in the ambient temperature scope which this specification book stipulated.

Uses the constant electric current and the constant voltage way charge, the prohibition reverse charges. If the battery positive electrode and the cathode meet instead, can damage the battery.



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6.2 Discharging current

The discharging current does not have to surpass this specification book stipulation the biggest discharging current, the oversized electric current electric discharge can cause the battery capacity play to reduce and to cause the battery heat.

6.3 Electric discharge temperature

The battery discharge must carry on in the ambient temperature scope which this specification book stipulated

7. Period of Warranty

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

8. Other The Chemical Reaction

Because batteries utilize a chemical reaction, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, if the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage. If the batteries cannot maintain a charge for long periods of time, even when they are charged correctly, this may indicate it is time to change the battery.

9.Note:

Any other items which are not covered in this specification shall be agreed by both parties.



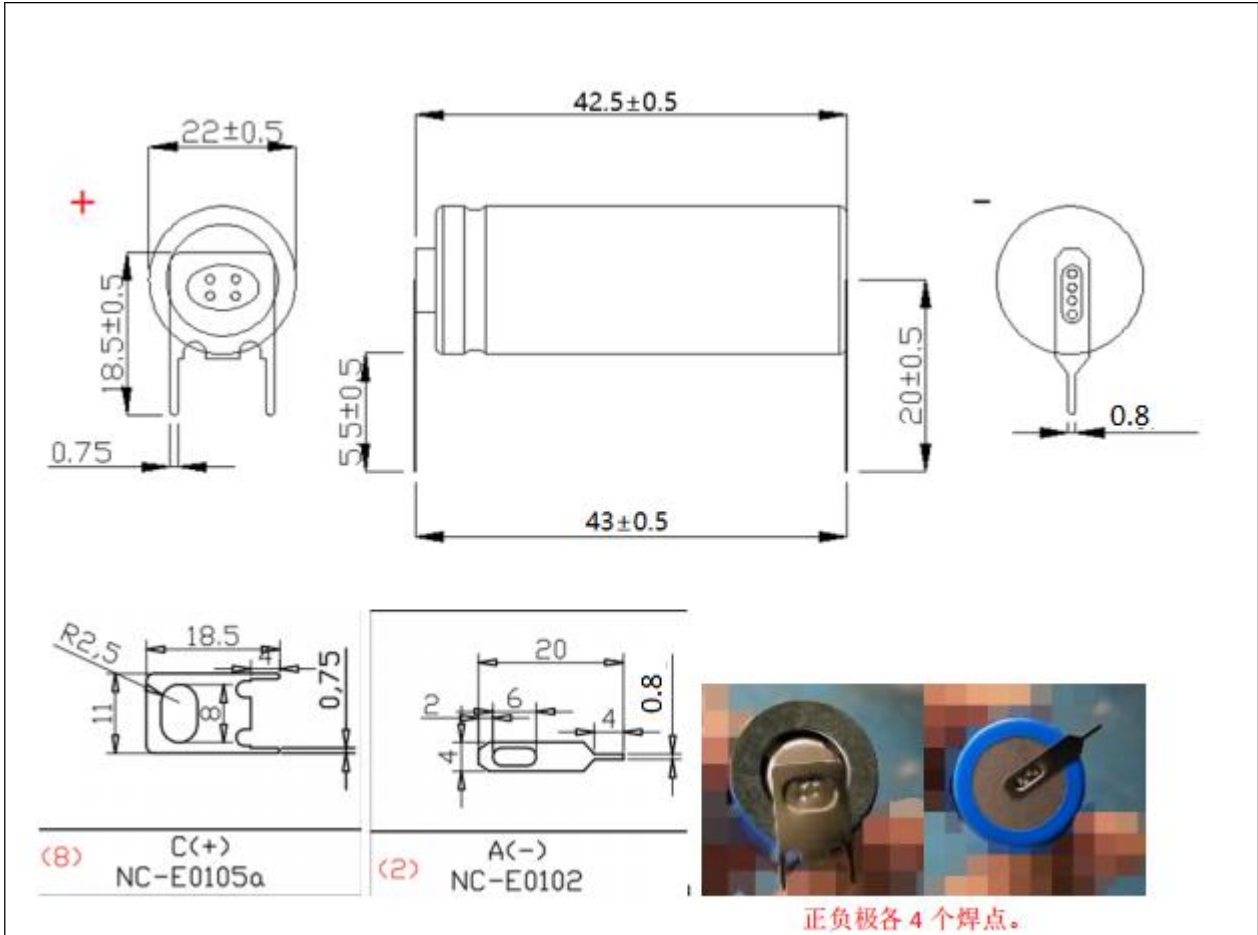
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10. Initial Dimension for pack



D	22.4	H	43.3	UNIT	mm
Drawer	Checked	Approved	Date		
			ICR22430 DRAWING		
			Drawing ID		