

Product Specification: NCR18500A

2040mAh 3.7V 18500 Lithium-Ion Cell

1. Scope

This product specification has been prepared to specify the rechargeable Lithium-ion Polymer cell ('cell').

2. Description and Model

- 2.1 Description Cell (lithium-ion rechargeable cell)
2.2 Model NCR18500A

3. Specifications

1	Charge Voltage	DC: 4.2V	
2	Nominal Voltage	3.7V	
3	Minimal Capacity	1940mAh @0.388A Discharge	
4	Charge Current	Standard charge: 1.35A	
5	Standard Charging Method	1.35A CC (constant current) charge to 4.2V, then CV (constant voltage 4.2V) charge, the total charging time is 3 hours at 25°C	
6	Charging Time	Standard charge: 3 hours	
7	Max. Charge Current	1.35A	
8	Max. Discharge Current	3.88A	
9	Discharge Cut-off Voltage	2.5V	
10	Operating Temperature	Charging: 10 to 45°C	Discharging: -20 to 60°C
11	Storage Temperature	-20 to 50°C	
12	Battery Weight	34.5g (maximum)	
13	Battery Dimensions	Length: 49.5mm	Diameter: 18.5mm

4. Battery Performance Criteria

4.1 Electrical Characteristics

	Item	Test Method & Condition	Criteria
1	Standard Charge	1.35A CC (constant current) charge to 4.2V, then CV (constant voltage 4.2V) charge, the total charging time is 3 hours at 25°C.	N/A
2	Initial Capacity	The capacity means the discharge capacity of the battery, which is measured in terms of discharge current of 0.388A and 2.5V cut-off voltage after the standard charge.	≥1940mAh
3	Cell Cycle Life	1 The battery is charged at a 1.35A constant current until the voltage reaches 4.2V. The current is then reduced to keep a constant voltage of 4.20V. The total charging time is 3 hours at 25°C.	
		2 Within 1 hour after fully charging at 25°C, the battery is discharged at 1.94A continuously to 2.5V at 25°C.	≥54min

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		3	After the battery has been subjected to 300 repeated charge and discharge cycles (charged by CC-CV of 1.35A-4.2V for 3.0 hours, discharged by CC of 1.94A to 2.5V at 25°C).	≥38min
4	Self-Discharge		After the standard charging, store the battery under the condition as No.4.4 for 30days, then measured the capacity with 1.94A till 2.5V.	Remaining Capacity >80%
5	Initial Impedance		Internal resistance measured at AC 1KHz after 50% charge.	≥100mΩ
6	Battery Voltage		As of shipment.	3.5V - 3.6V

4.2 Mechanical Characteristics

	Item	Test Method & Condition	Criteria
1	Vibration Test	After standard charging, fixed the battery to vibration table and subjected to vibration cycling that the frequency is to be varied at the rate of 1Hz per minute between 10Hz an 55Hz, the amplitude of the vibration is 1.6mm. The battery shall be vibrated for 30 minutes towards per axis of XYZ axes.	No fire or leakage.
2	Drop Test	The battery is to be dropped from a height of 1 meter twice onto concrete ground.	No fire, explosion or leakage.

4.3 Visual Inspection

There shall be no such defects as scratch, flaw, crack, and leakage which may adversely affect commercial value of the cell.

4.4 Standard Environmental Test Conditions

Unless otherwise specified, all tests stated in this Product Specification are conducted at the condition below:

Temperature : $23 \pm 5^{\circ}\text{C}$

Humidity : $65 \pm 20\% \text{ RH}$

5. Storage and Others

5.1 Long Time Storage

If the Battery is stored for a long time(over 3 months), the Battery's storage voltage should be 3.5-3.6V and the Battery is to be stored in according to the condition specified about No. 4.4.

5.2 Others

Any matters that this specification does not cover should be discussed between the customer and the manufacturer.

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6. Dimensions

