Specifications

Lithium-ion Rechargeable Cell 3.7V 4Ah

Model No.:RP-L-S21700FJ-4Ah

Version	Date	Revision Content	Note
A0	May.20,2023	New	
A1	Dec.03,2023	Revise	

Edit	Proofread	Audit	Customer Approval

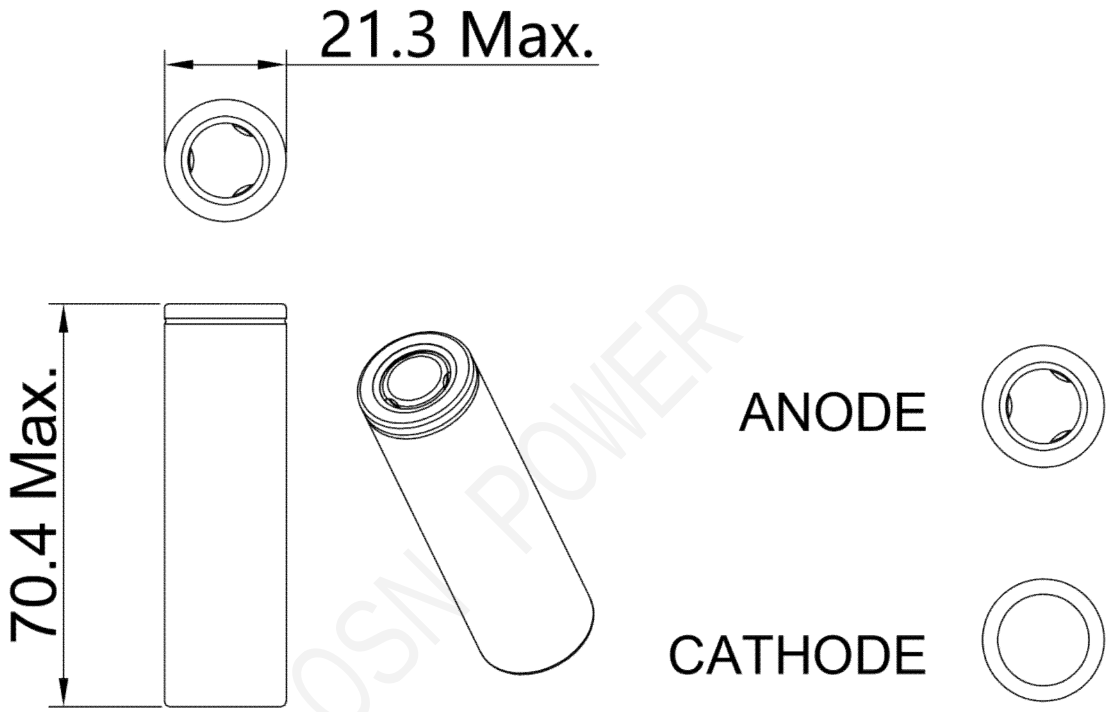
Contents

1. Scope

The purpose of this document is to specify the specifications of 3.7V 4Ah Lithium-ion cells supplied by Racepow.

2. Mechanical Drawing (Units:mm)

2.1 Cell Size: Diameter 21.3 Max. ; Height 70.4 Max.



2.2 Cell impression drawing(or photo):

3. Cell Weight: ≤68 g

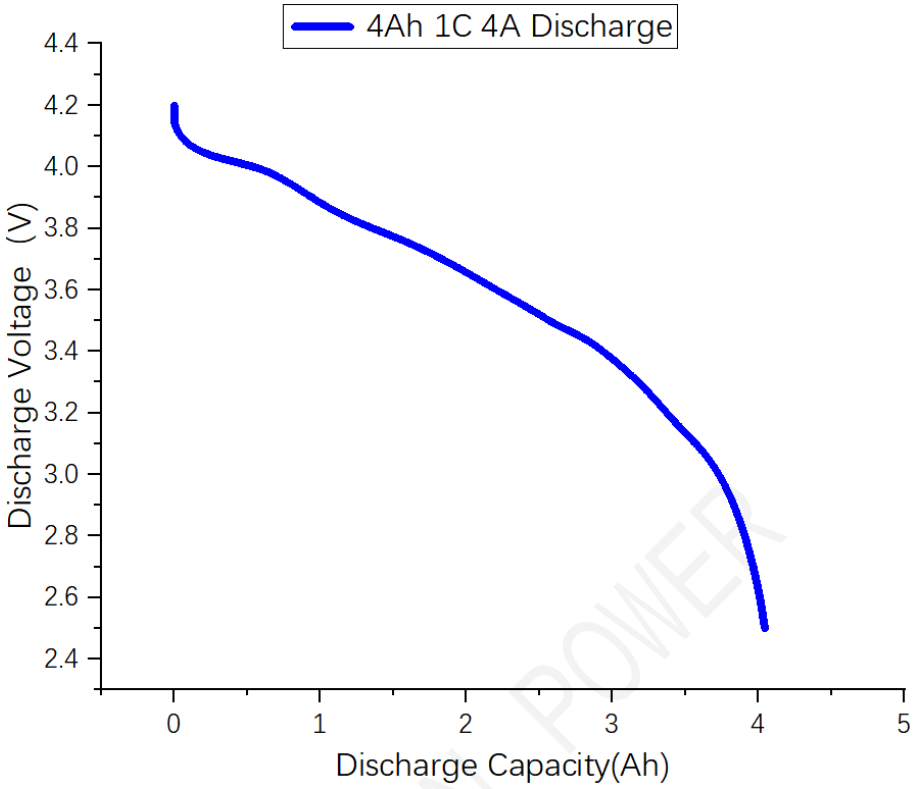
4. Energy Density: ≥217Wh/kg

5. Product Specification

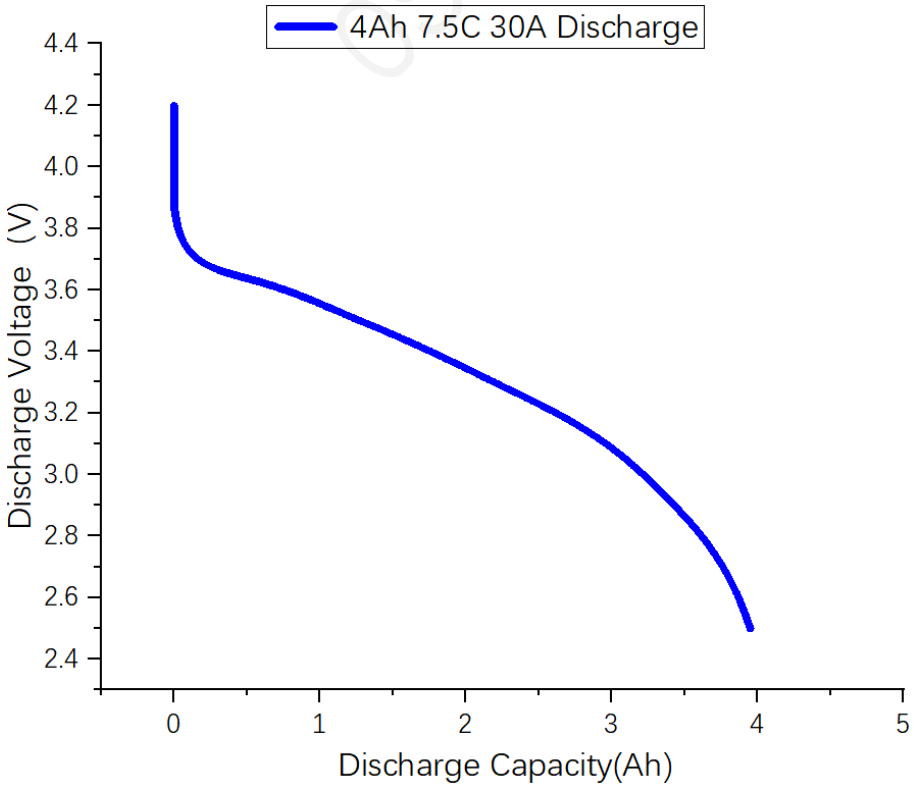
No.	Parameter		Specification	Remarks
5.1	Nominal Capacity		4Ah	25℃±2℃，0.2C/0.2C
5.2	Nominal Voltage		3.7V	
5.3	Discharge Energy		14.8Wh	
5.4	Charge Cut-off Voltage		4.2V	
5.5	Discharge Cut-off Voltage		2.5V	
5.6	Internal Resistance		<15mΩ	AC 1kHz，25℃±2℃
5.7	Charging Temperature		0℃~50℃	
5.8	Discharging Temperature		-20℃~75℃	
5.9	Standard Charge Current		0.2C	25℃±2℃
	Maximum Discharge Current		2C	
5.10	Standard Discharge Current		0.2C	25℃±2℃
	Maximum Continuous Discharge Current		7.5C	
	Maximum Pulse Discharge Current		10C	<2s @ 25℃±2℃
5.11	Cycle Life		≥300cycles	25℃±2℃
5.12	Storage Temperature		-20℃~45℃	<3 months
			-20℃~25℃	<1 year
5.13	Storage Humidity		<85% RH	25℃±2℃ Fresh cell
5.14	High/Low Temperature Capacity	55℃/25℃	≥95%	55℃±2℃ 0.2C Discharge Capacity
		-20℃/25℃	≥70%	-20℃±2℃ 0.2C Discharge Capacity
	Nominal Temperature Storage	Charge Retention Rate	≥94%	Stored for 28 days at 25℃±2℃ 0.2C/0.2C.
		Capacity Recovery Rate	≥98%	

6. Performance Curves

6.1 Under 25℃±2℃ ambient conditions, discharge to 2.5V with 1C constant current.



6.2 Under 25℃±2℃ ambient conditions, discharge to 2.5V with 7.5C constant current.



7. Safety Characteristics

No.	Items	Test Methods & Steps	Standard
7.1	Over-discharge	After the cell is fully charged according to the standard charging mode, it is discharged with 1C current for 90min.	No fire. No explosion.
7.2	Over-charge	After the cell is fully charged in the standard charging mode, it is then charged with 1C current to 4.6V to stop charging.	No fire. No explosion.
7.3	Short-circuit Test	After the cell is fully charged according to the standard charging mode, it will directly short circuit the positive and negative poles (the total resistance of the line is 80± 20mΩ) for 10 min, and observe the temperature and appearance changes of the cell.	No fire. No explosion.
7.4	Heating Additive Test	After the cell is fully charged in the standard charging mode, place the cell in a heating test chamber, rise from room temperature to 130℃±2℃ at 5℃/min and hold for 30 min.	No fire. No explosion.
7.5	High and Low Temperature shock	After the cell is fully charged according to the standard charging mode, it is put in a low temperature environment of -40℃ for 1h, and then for 1h at 75℃. End the test for 10 cycles, and the sample is taken out after the test.	No fire. No explosion.
7.6	Crushing Test	After the cell is fully charged according to the standard charging mode, the half cylinder plate with a radius of 75mm is used to press the cell in the direction vertical to the cell plate at the speed of (2±1) mm/s. When the voltage reaches 0V or the deformation reaches 15% or the extrusion pressure reaches 13 KN.	No fire. No explosion.
7.7	Drop Test	After the cell is fully charged according to the standard charging mode, the free falling body falls on the concrete plate at a drop height of 1m. The two end surfaces of the single cell fall twice each, with a total of four drop tests.	No leakage. No fire. No explosion.
7.8	Heavy Impact	After the cell is fully charged in the standard charging mode, place a steel rod of 15.8mm diameter in the middle of the cell; then drop the hammer of 9.1±0.1kg freely onto the cell from the height of 610 ± 25mm.	No fire. No explosion
7.9	Vibration Test	After standard fully charge, cell shall be attached to a vibration table directly and subjected to vibration that consists of 10 Hz to 55 Hz to 10 Hz at the speed of 1Hz/min in 180-200mins. The total excursion of the vibration is 0.8mm (0.060 inches). The cell shall be vibrated in each direction along axis of the cylinder and the vertical directions of axis of the cylinder.	No leakage. No fire. No explosion.
7.10	Low Air Pressure	After the cell is fully charged according to the standard charging mode, the cell is 11.6kPa for 6 hours at room temperature.	No leakage. No fire. No explosion.
Notes: Refer to lithium-ion battery standards for electric vehicles for battery safety test.			

8. Safety Precautions

In order to avoid the dangers of leakage, heated, combustion and explosion of cells, please pay attention to:

8.1 It is strictly forbidden to immerse cells in liquids. When not in use, cells should be stored in a cool and dry environment.

8.2 It is forbidden to place cells near high-temperature heat sources, such as fires, heaters, etc.

8.3 When charging, please choose a special charger for Lithium-ion cells.

8.4 It is strictly forbidden to use cells by reversing the positive and negative electrodes.

8.5 It is forbidden to connect the positive and negative electrodes of cells directly with metals to make them short-circuit.

8.6 Striking or throwing, trampling and bending cells are prohibited.

8.7 It is forbidden to pierce the cell with nails or other sharp tools.

8.8 Cells are prohibited at high temperatures.

8.9 It is forbidden to use cells in places with strong static and magnetic fields.

8.10 If the cell leaks and the electrolyte enter the eyes, please don't rub it. Rinse your eyes with clean water and send to the hospital immediately.

8.11 If there is any abnormality in the process of odor, heat, discoloration, deformation or use, storage and charging, remove the cell from the device or charger immediately and stop using it.

8.12 To prevent short circuit in cell packaging, there should be enough insulation between lead and cell to ensure absolute safety. No short circuit shall occur in the enclosure to prevent smoke or fire.

8.13 Disassembly of cells is strictly prohibited. Replacement of cells should be completed by cell suppliers or equipment suppliers. Users are not allowed to replace cells by themselves.

8.14 Using damaged cells is prohibited.

8.15 It is forbidden to mix cells of different models and brands.

8.16 It is forbidden to mix old and new cells with cells of different materials.

9. Disclaimer

9.1 If the product demand company is not used according to the regulations in the specification, the social influence is caused, and the reputation of the Racepow Power is influenced, the Racepow Power will be investigated for the responsibility of the requirement unit. According to the degree of influence on the Racepow Power, the product demand company needs to provide compensation for the Racepow Power.

9.2 Racepow Power reserves the right to modify the specifications and performance parameters of the product. The buyer needs to confirm the latest status of the Racepow Power in advance before ordering the Racepow Power product.

10. Hazard Warning

10.1 Waring Statement

WARNING

CELLS ARE POTENTIALLY DANGEROUS AND PROPER PRECAUTIONS MUST BE OBSERVED IN HANDLING AND MAINTENANCE.
RUNNING TESTS ON THE CELLS IMPROPERLY MAY RESULT IN SEVERE PERSONAL BODY INJURY OR PROPERTY DAMAGES.
WORK ON CELLS MUST BE PERFORMED ONLY WITH PROPER TOOLS AND PROTECTIVE EQUIPMENT MUST BE USED.
CELL MAINTENANCE MUST BE CARRIED OUT BY PERSONNEL KNOWLEDGEABLE OF CELLS AND TRAINED IN THE SAFETY PRECAUTIONS INVOLVED.
FAILURE TO OBSERVE THE ABOVE MAY CAUSE VARIOUS HAZARDS.

10.2 Types of Hazards

Customer acknowledges the following potential hazards in connection with the usage and handling of the Products:

10.2.1 Working with battery can expose the handler to chemical, shock and/or arcing hazards. Although a person's body might react to contact with direct current voltage differently than from contact with alternate current voltage, Customer shall take a conservative position and consider the risk of shock or electrocution to be the same for both alternate current and direct current exposures greater than 50V.

10.2.2 Batteries expose its handler to chemical hazards associated with the electrolyte used in the cell.

10.2.3 When selecting work practices and personal protective equipment, customer and its employees should consider potential exposure to these hazards and therefore prevent accidental short-circuit that can result in electrical arcing, explosion, and/or "thermal runaway" of the batteries.