ROHS

Product Specification

Engineering Dept.

Client	BTS（AEC）	Model	UONE Battery
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1. Applicability

This Specification specifies the requirements for UONE rechargeable lithium-ion batteries produced by Weiliwang Electronic Co., Ltd.

2. Executive Standards:

2.1. GB/T18287-2000 standard for lithium-ion batteries

2.2. YD/T·999·1-1999 industrial standard for lithium-ion batteries of cellular phones and their chargers

3. Basic Data

3.1	Nominal Voltage	3.7V
3.2	…….	850mAh
3.3	Rated Capacity ……...	CC/CV(Constant Current/Constant Voltage
3.4	Charging Mode ……..	1.0C
3.5	Max. Charging Current ……..	4.20± 0.05V
3.6	Charging Cut-off Voltage	1.5C (Continuous Discharge)
3.7	……...	3.0V
3.8	Max. Discharge Current ……	
3.9	Discharge Cut-off Voltage …….	2.75V
3.10	Standard Discharge Cut-off	Charging Temperature: 0℃ -- +45℃
3.11	Voltage…	Discharge Temperature: -20℃ -- +60℃
3.12	Operating Temperature	1 Month: -20℃ -- +60℃
	……....	3 Months: -20℃ -- +40℃
	Storage Temperature ……..	1 Year: -20℃ -- +25℃
	Relative Humidity …….....	65±20%Max 18g ?
	Weight ……	

4. Shape and Dimensions

For details, see the attached drawings.

5. Appearance and Assembling Requirements:

5.1 Such defects influencing the commercial value as scratches, stains, rusts, deformations, decolorization and leakages are not allowed.

5.2 It goes smooth to dismantle the battery when it is inserted into the phone. It is smooth to touch, without seizure of battery.

5.3 No clearance is allowed around the battery in the back cover of the phone.

6. Test Conditions

Temperature: 25 ± 10℃

Relative Humidity: 45% ~ 75%

Atmospheric Pressure: 86kPa ~ 106kPa

7. Requirements for Technical Characteristics:

7.1 Electrical Properties:

Items	Conditions and Others	Performance
7.1.1 Charging of battery	It means the battery is charged 2.5 hours at constant current of 1C and constant voltage of 4.2V.	
7.1.2. Initial Capacity	It means the charge of battery, that is, the discharge capacity when the battery is discharged from0.2CA to 2.75V after it is charged fully as per 7.1.1.	Initial Capacity≥850mAh
7.1.3 Cycle Life	**At 20℃±5℃, within 1hour after fast charge. Discharge the battery with 1C to 2.75V cut-off An hour later, redo it Until two discharge time in succession less than 48minute.**	**After 301 cycles Capacity ≥ 83% of initial Capacity**
7.1.4 Internal Resistance	To be determined in the state of full capacity	Internal Resistance <130 mΩ
7.1.5 Cryogenic Property	Under the condition of 20℃±5℃, after the charging of battery at 1CA/0.2CA ends, please place it into the cryogenic box of -20℃±2℃ in temperature for constant temperature of 16h-24h, and then discharge it at 0.2CA to 2.75V. The required discharge duration should not be less than 3.5 hours, and there are no deformations and cracks on the appearance of battery.	
7.1.6 Elevated Temperature Property	Under the condition of 20℃±5℃, after the charging of battery in accordance with 5.3.2.2 in GB/T18287-2000 ends, please place it into the high-temperature box of 55℃±2℃ in temperature for constant temperature of 2h, and then discharge it at 1CA to 2.75V. The required discharge duration should not be less than 51min, and there are no deformations and cracks on the appearance of battery.	
7.1.7 Storage	The battery for storage test should be from those with storage time below 3 months from the date of production to the date of test. The battery should be charged to 40%-50% of the capacity according to the system specified in 5.3.2.2 of GB/T18287-2000 first, and then stored in the environment with ambient temperature of 20℃±5℃ and relative humidity of 45℃-85℃. After its storage ends, it will be charged and discharged according to 5.3.2.2. Its discharge time should comply with 4.10 of international standard.	
7.1.8 Voltage	As of Shipment	3.8~4.20.V

Items	Conditions and Others
7.2.1 Vibration Test	Having been charged according to 5.3.2.2 in GB/T18287-2000 ends, the battery will be mounted on the top of the vibration table and vibrated circularly for 30min from 10Hz~55Hz in such directions as X, Y and Z according to vibration frequency of 10Hz~30Hz and displacement amplitude of 0.38mm or vibration frequency of 30Hz~55Hz and displacement amplitude of 0.19mm. The sweep rate is 1oct/min.
7.2.2 Drop Test	Under the condition of 20℃, having been charged fully, please drop the battery sample from the height of **1000mm** (the lowest-point height) to the hardwood of 10~20mm in thickness, which is placed on the cement flooring. The battery sample will separately drop once from six directions such as X, Y, Z, minus and plus. After the free drop, the battery should receive 1CA discharge until the voltage stoppage. The required discharge time is greater than or equal to 51min (At most it can receive 3 times of charge-discharge cycles. If one of them is qualified, it can be stopped).

7.2_Material Characteristics:

Performance: IN addition to not leaking, smoking and exploding, the battery can be fixed in the mobile with good contact and firm locking.

7.3. Safety Indices:

Items	Conditions and Others
7.3.1 Overcharge Protection	The battery is charged completely for 8 hours at 2C and 7.2V.
7.3.2 Overdischarge Protection	After the battery is discharged to 3V, please connect its positive and negative with a 30ohm resistor for 24 hours.
7.3.3 Short-circuit Protection	A copper wire of 0.1ohm is used to connect the positive and negative of the battery as the short circuit.
7.3.4 ESD Test	Contact Discharge: ±±8V Air Discharge: ±15KV

Performance: The battery has no obvious damages in appearance, in addition to not smoking, leaking and exploding.

7.4. Other Characteristics:

Items	Conditions and Others
7.4.1 Steady-state Damp Heat	Place the fully-charged battery into the constant temperature-humidity chamber with relative temperature of 40℃±2℃ and relative humidity of 90%-95% for 48 hours first, and then at the temperature of 20℃±5℃ for 2 hours. Visually check whether the appearance of the battery is subject to 4.7.1 in GB/T18287-2000. After that, discharge it with IC current to 2.75V.
7.4.2. Charge Retention	After the battery is charged fully, place the battery at the ambient temperature of 20℃±5℃ and with open circuit for 28 days first, and then discharge it at current of 0.2CA to the final voltage. The discharge time should not be less than 4.25 hours.

Performance: The battery has no obvious damages in appearance, in addition to not smoking, leaking and exploding.

8. Transport:

The battery should be cartooned in the semi-charging state (20-50% charging state) for transport. In the transport, no severe vibration, shock, or extrusion and exposure to the sun and rain happen to the battery, so it is fit for the transport by such common conveyances for transport as lorry, train, ship and plane.

9. Storage:

The battery should be stored in the clean, dry and ventilated room of -5℃~45℃ in ambient temperature and kept off from the corrosive substance, fire and heat source. In addition, it should be charged once every six months in the storage period.

10. Packing and Labeling:

10.1. The battery should be packed as required by the clients. The outside of the box should be marked with product name, model, quantity, gross weight, name and address of manufacturer, date of production, as well as some necessary markings as "Handle with care", “Keep dry” and “Up”. The graphical representation of its packing, storage and transport should be subject to the regulations in GB191-2000.

10.2 The outside of the battery should note such necessary information as product identification, product name, model, nominal voltage, rated capacity, voltage limit for charging, executive standard code, positive and negative polarities, name and trademark of manufacturer, and warning.

11. Safety Specification and Direction for Use:

You are kindly asked to peruse the following instructions prior to the use. Inappropriate use will give rise to heating, fire, cracking, damage and energy reduction of the battery.

Warning

1. The battery can’t be placed in a fire or heated, neither can it be stored in the high-temperature environment.
2. The battery can’t be placed in the charger with opposite polarities.
3. The positive and negative polarity of the battery can’t be made of short circuit by use of wire or metal objects.
4. The battery can’t be nailed or hammered.
5. The external structure of the battery can’t be disassembled or changed.
6. The battery can’t be placed in the water or wet when it is stored.

Care

1. Please charge or discharge the battery correctly with the charger specified by the manufacturers.
2. Please don’t use this battery with those from other manufacturers, such as dry batteries, nickel-metal high-energy batteries, nickel-cadmium batteries or new lithium-ion batteries of different models and types.
3. The burnt, color-changed, deformed, crept or otherwise deformed batteries can’t be recharged in the charger.
4. When the battery is not recharged, it can’t be continuously discharged.
5. When children use the batteries, please tell them the correct methods to ensure they can correctly use it.
6. In case of the abnormalities or abnormal changes including burning to the purchased batteries, please contact the manufacturer for return.
7. If the battery is stored for a long time, please charge it at 0.5C for 1 hour.
8. Please use or store this battery in the following environment, otherwise it is easily heated, damaged or physically deteriorated.

12. Warranty Period:

The battery shall be warranted for 12 months as from the date of production.

13. Products:

13.1. The users shall make strict use of the batteries made by Weiliwang Electronic Co., Ltd. in accordance with the Instructions.

13.2. For the fire accidents arising out of heating, firing, cracking, smoking due to the abnormal use of the battery, we shall not be responsible for such accidents from the use not as required.

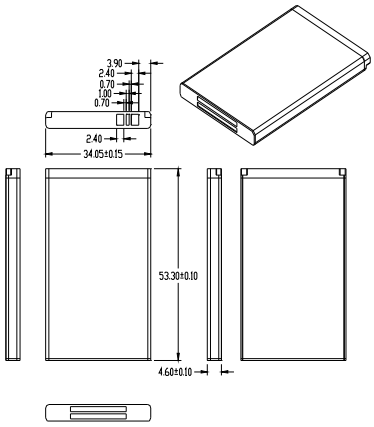
14. Change Note:

If the specifications, materials, production and control of the product change, we shall notify clients of such changes in the written form.

Appendices:

1. Outline Dimensional Drawing of Battery;
2. Technical Requirements for the Finished Product;
3. Schematic Diagram of Circuits
4. List of PCB Components
5.; Fender characteristic table
6.; Bill of Materials (BOM);
7. Figure of Battery Labels;

Appendix 1: Outline Dimensional Drawing of Battery



battery and exterior coupling's specification

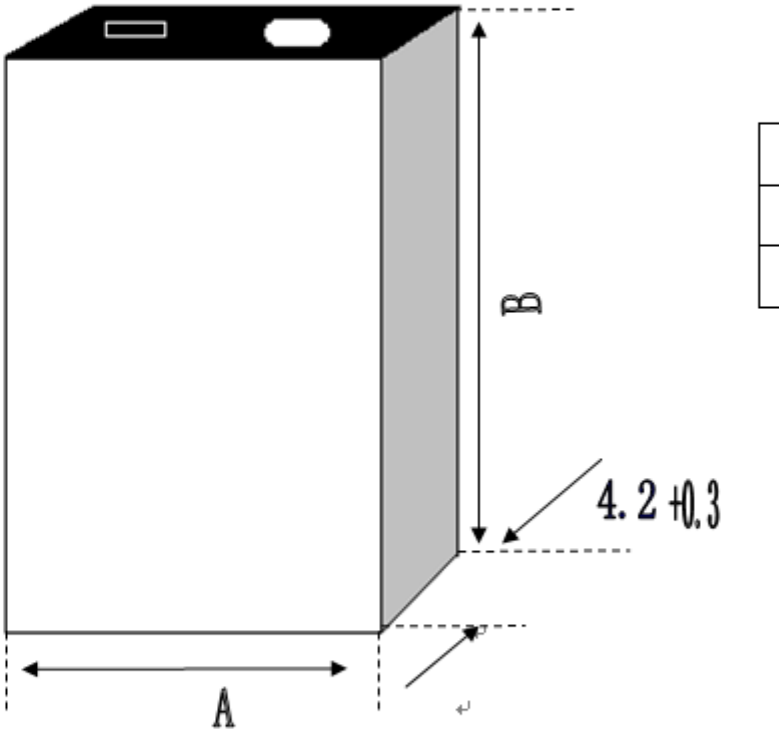
1. The Jin Shouzhi part must bear the oxidation, does not have the corrosion, Jin Ceng can delimit by the battery coupling puts on or appears becomes dark obviously phenomenon

2. The finished product does not allow to see on PCB the shading trace.

Main Parameters

No.	Items	Specifications	Remarks
1	Rated Capacity	⩾850mAh	
2	Open-circuit Voltage	3.8~4.2V	As of Shipment
3	Internal Resistance	⩽130 mΩ	
4	Protective Voltage for Overdischarge	2.25~2.35V	
5	Protective Voltage for Overcharge	4.255~4.305V	
6	Short-circuit Protection	Have the short-circuit protection	
7	Storage Temperature	-5~+35℃	
8	Polarity	Have the markings of positive and negative polarities.	

Appendix 2: Dimensional Chart of Battery Cells (423450Ar/850mAh supplied by clients)

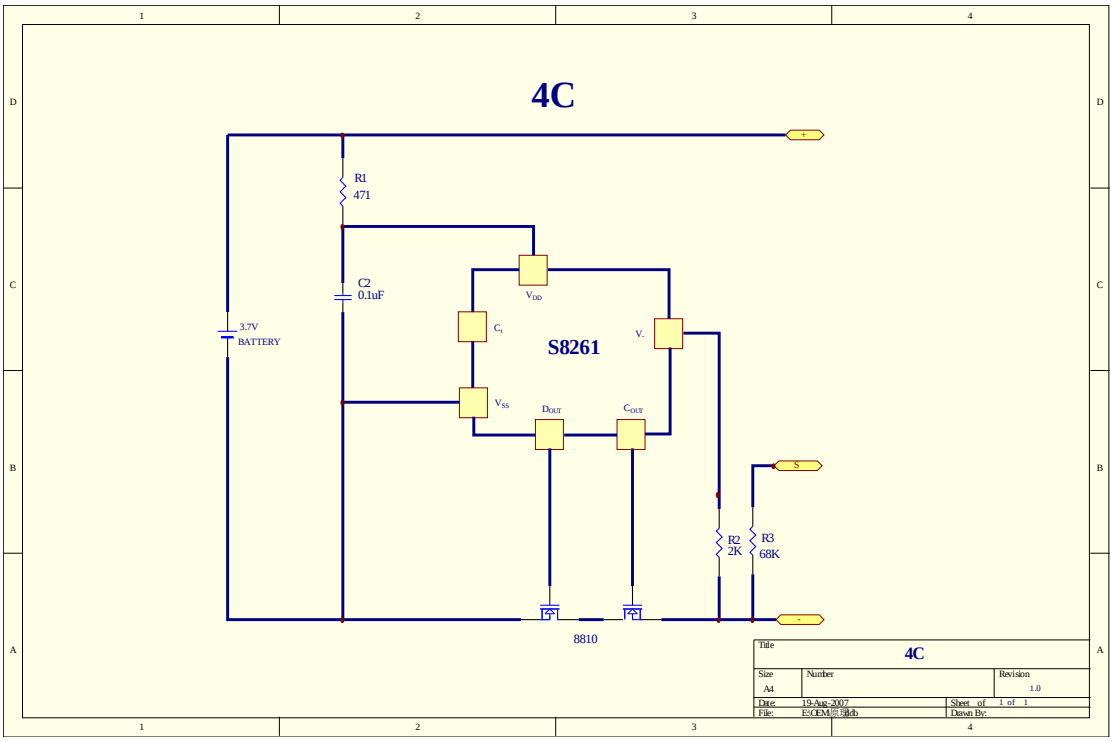


Technical Indicators:

Specification	-423450Ar
Capacity	≥850mAh
Internal Resistance	≤60mΩ

No.	Items		Specifications	Remarks
1	Open-circuit Voltage		3.80—4.20V	
2	Capacity	Discharge Current	170mA	
		Rated Capacity	850mA	
3	Size	Thickness	4.5mm	Maximum
		Width	34mm	
		Length	50mm	
4	Internal Resistance		≤60mΩ	
5	Weight		约 18.1g	
6	Charge	Charge Method	CC CV	Constantflow constant pressure
		Charge Voltage	4.2V±0.05VCharge Voltage	
		Standard Charge Current Rated Capacity	170mA	
		Fast Charge Current	850mA	

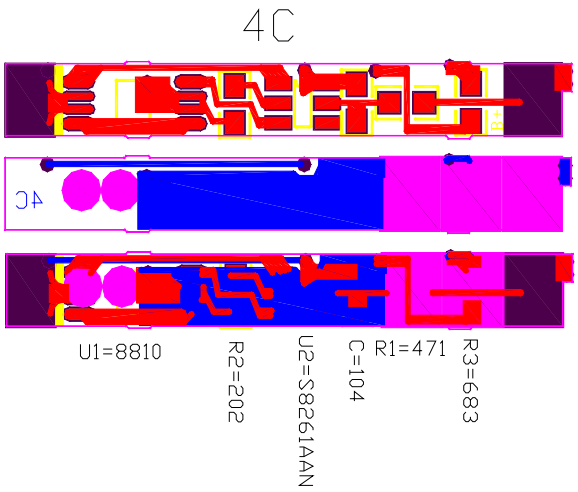
Appendix 3: Schematic Diagram of Circuits



Appendix 4: List of PCB Components

NO	Names	Specifications	Units	Quantity	Symbols
1	Capacitance	0. 1uF 20% 50V 0603	pcs	1	C1
2	Resistance	470Ω 5% 1/16W 0603	pcs	1	R1
3	Resistance	2KΩ 5% 1/16W 0603	pcs	1	R2
4	Resistance	68K 5% 1/16W 0603	PCS	1	R3
5	IC1	S-8261AAJMD-G2J-T2	pcs	1	U1
6	IC2	AO8810	pcs	1	U2
7	PCB	4C-1	pcs	1	RF-4

Appendix 5: Table for Characteristics of Battery Pack (Temperature=25℃)



No.	Items	Minimum	Typical	Maximum	Units
3.1	Protective Voltage for Overcharge	4. 255	4.28	4.305	V
3.2	Resetting Voltage for Overcharge	4.00	4.05	4.15	V
3.3	Protective Voltage for Overdischarge	2.25	2.30	2.35	V
3.4	Detecting Voltage for Overcurrent		0.1		ms
3.5	Protective Current for Overcurrent	2.8	3.2	3.6	A
3.6	Protective Voltage for Short Circuit	V_{DD}-1.2	V_{DD}-0.9	V_{DD}-0.6	V
3.7	Current Consumption		3.5	7.0	uA
3.8	Current Consumption at Standby ~~Current~~		0.3	0.6	mA
3.9	PCB Line Resistance		30	45	mΩ
3.10	Short-Circuit Protection				

When the battery positive and negative short-circuit to automatically cut off the circuit;

When the short-circuit eliminated, the circuit can automatically recover or recharge Instant Recovery (3 seconds)

Appendix 6: Bill of Materials (BOM)

No.	Names	Model & Spec.	Locations	Consumption	Suppliers	Remarks
	Lithium batteries	423450Ar/850mAh/55mΩ				
1	Protective Chips	S-8261AAJMD-G2N/ Halogen-free	N1	1PCS	SEIKO	Designated
2	FET	AO8810R/Halogen-free	N2	1PCS	SANYO	Designated
3	covering	4C bottom shell (the shell injection)		1PCS		
4	Insulating piece	4*34mm		1PCS		
5	Trademark	Special-purpose		1PCS		
6	“-” nickel piece	（12.2*2.5+2*7） mm		1PCS		
7	“+” nickel piece	（12.2*2.5+2*7） mm		1PCS		
8	Basic Plate	UONE/Gilt>0.30mm/ Halogen-free	RF-4	1PCS	Assunny / Fuxiang	Designated
9	Polybag	PE Material /Specially for battery / Halogen-free		1PCS	Compatible	Designated
10	Clear plastic	15×10mm		1PCS		

Appendix 7: Figure of Battery Labels (Barcode's Mark is TENTATIVE)

附录 7 电池标签图:

Battery label's specification:

1、 On the battery label should have following Chinese or the graphical representation symbolized: The product range, the model, the nominal voltage, the rated capacity, the charge limit voltage, carries out the standard serial number, the production date, the serial number, the manufacture manufacturer, the trademark, the caution explanation

2、 The battery label should the handwriting be clear, glue smooth reliable。

3、Production date coding rule

According to: "0080100000", expressed the significance is "008" expressed that 08 years "01" expressed "01" the quarter, the year and the quarter change along with the concrete delivery year and the quarter changes, "00000" five position codes expressed that machine's Taiwan number from 00001 to 99999, is not continuously redundant, latter time delivers the digit must meet the preceding time.

4、 Under the battery label sees for details sees the chart: