

	UNIONFORTUNE	NO. : 435583 REV. : 00/00 DATE: 2013-5-8
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Product Specification

for Polymer Lithium-ion Battery

Model : 435583

Prepared by	Checked by	Approved by

Customer Approval	Signature	Date
	Company Name:	
	Company Stamp:	

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AMENDMENT RECORDS

Revision	Description	Date	Approval

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1. SCOPE

This document describes the Product Specification of Lithium-ion Polymer rechargeable battery cell supplied by Unionfortune.

2. Description and Model

2.1 Description: Lithium-ion Polymer rechargeable battery cell

2.2 Model: 435583

3. Specification

NO.	Items	Specification
1	Nominal Capacity	2200mAh@0.2C Discharge to3.0V
2	Typical Capacity	2250mAh@0.2C Discharge to3.0V
3	Nominal Voltage	3.7V
4	Charging Cut-off Voltage	4.2V
5	Discharge Cut-off Voltage	3.0V
6	Maximum Constant Charging Current	1100mA (0.5C)
7	Maximum Continuous Discharging Current	1100mA (0.5C)
8	Standard Charge Method	Constant Current and Constant Voltage (CC/CV) Current: 440mA (0.2C) Voltage: 4.2V End Current: 22mA (0.01C)
9	Operating Temperature	Charge Temperature :5~45°C Discharge Temperature: -10~60°C
10	Storage Temperature	1 month -20~45°C 6 month -10~35°C 20°C is recommend storage temperature
11	Weight	Approx:42.0±0.5g
12	Storage Voltage	3.80-3.90V
13	Environmental request	ROHS If the materials of the product and packaging accord with RoHS standard,there will be a RoHS Id on the box.

4. Dimensions

Please refer the drawing in appendix.

5. Appearance

No scratches, dirt, defect, leakage of electrolyte or gassing should be observed as a new product.

6. Characteristics

6.1 Standard Test Conditions

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

Temperature: 25±2°C

Humidity: 45±20%

Atmospheric Pressure: 100±5kPa

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6.2 Electrical characteristics

NO.	Items	Test Method	Criterion
1	Nominal Capacity	After the Standard Charging, discharge at a constant current of 0.2C to 3.0V, testing will be terminated by either 5 cycles or any one discharge time exceeds 5 hrs.	$\geq 2200\text{mAh}$
2	Cycle Life (25°C)	① discharge (CC): 0.5C to 3.0V; ② rest for 5min; ③ charge (CC/CV): 0.5C to 4.2V end current: 0.01C ₅ A; ④ rest for 5min; ⑤ discharge (CC): 0.5C to 3.0V; ⑥ continue the charge/discharge cycles (from②to⑤) until discharge capacity lower than 80% of rated capacity.	$\geq 300^{\text{th}}$
3	Internal Impedance	Initial resistance measured at AC 1kHz after 50% charge	$\leq 60\text{m}\Omega$
4	Capacity Retention	After the Standard Charging, store them at (25±2)°C for 28 days, then discharge the cells to 3.0V at 0.2C.	Remaining capacity $\geq 85\%$ initial capacity
5	High Temperature Characteristics	After the Standard Charging, store them at (55±2)°C for 2 hours, then discharge the cells to 3.0V at 1.0C.	Discharge capacity $\geq 85\%$ initial capacity
6	Low Temperature Characteristics	After the Standard Charging, store them at (-10±2)°C for 16~24 hours, then discharge the cells to 3.0V at 0.2C.	Discharge capacity $\geq 60\%$ initial capacity
7	Cell Voltage	As of shipment	$\geq 3.75\text{V}$

6.3 Safety characteristic

NO.	Items	Test Method	Criterion
1	Overcharge	Discharge cells to 3.0V at 1C, then charge to 4.8V@3C until the charge current decrease to 0. After still keeping in charging for 30min, the testing finish.	No fire, No explosion.
2	Over Discharge	After the Standard Charging, then discharge to 3.0V@0.2C, connect with external load of 30Ω for 24hrs.	No fire, No explosion.
3	Hot Oven Test	Put a fully charged battery in a forced air oven and raise the temperature at 5±2°C/min. to 130±2°C Rest for 10 minutes.	No fire, No explosion.

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6.4 Reliability

NO.	Items	Test Method	Criterion
1	High Temperature	Fully charged, then stored the cells at 60±2°C for 2 hours. Then the cells are placed at room temperature to “dry out” for 3 hours .	Electrochemical performance 、 visual test not changed
2	Low Temperature	Fully charged, then stored the cells at -20°C for 2 hours. Then the cells are placed at room temperature to “dry out” for 3 hours.	Electrochemical performance 、 visual test not changed
3	Constant temperature and constant humidity	Fully charge cells, stored them at 40±2°C with 90%~95RH% for 48 hours. Then the cells are placed at room temperature to “dry out” for 2 hours and discharged to 3.0V at 1.0C.	The battery should not be distortion, rust, smoking and explosion, the time of discharge ≥36min.

7. Required Protective Functions

To ensure safety, the cells need to be assembled with PTC and protective circuitry to prevent abusive situations occur such as over charge and over discharge or over current. The charger and protective circuitry should be consistent with the requirements listed below:

No	Device	Items	Requirements
1	Charger	Charge termination voltage	4.200±0.049V
2	Protective Circuitry (For reference only)	Overcharge detection voltage	4.275±0.025V
3		Overcharge release voltage	4.175±0.050V
4		Discharge termination voltage	3.00±0.10V
5		Over discharge detection voltage	3.0±0.08V
6		Over discharge release voltage	3.0±0.10V
7		Over discharge detection value	2.7±0.2A

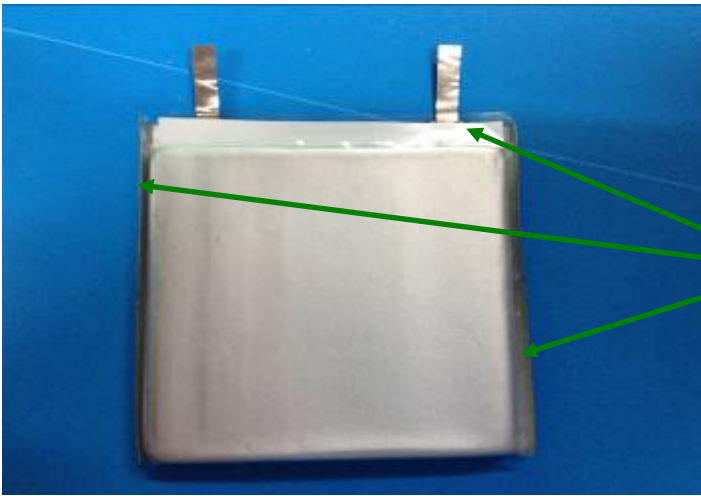
8. Notice for Designing Battery Pack

8.1 Pack Design

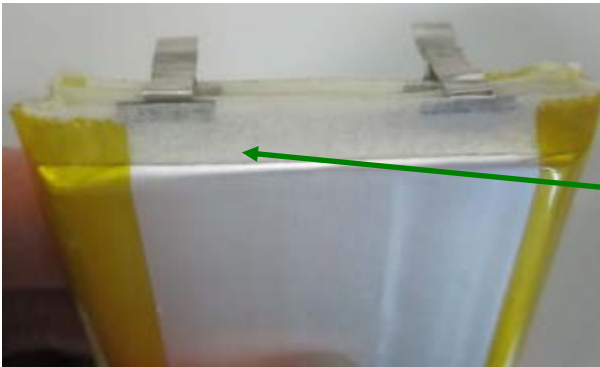
Avoid any components or conductive plate from devices to contact the edge of packing foil of cells



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Any components contacting these three edges, they must be insulated.



When insulation paste is stuck, the upper edge must be more than 1.5mm higher than the top sealing edge, to ensure the tap can be effectively insulated when it is bended.

8.2 Soldering

Directly heat cell body is strictly prohibited. the place of soldering must be more than 2.0mm higher than the sealant edge ,soldering temperature should not exceed 350°C,soldering time should not be longer than 3s.



Soldering is not allowed to touch the sealant .

8.3 Side Sealing Edge

The side sealing edge has been folded and fixed in cell forming processes and passed hermetic test. The Aluminum foil may brake by re-folding time after time. Don't open and refold this edge.

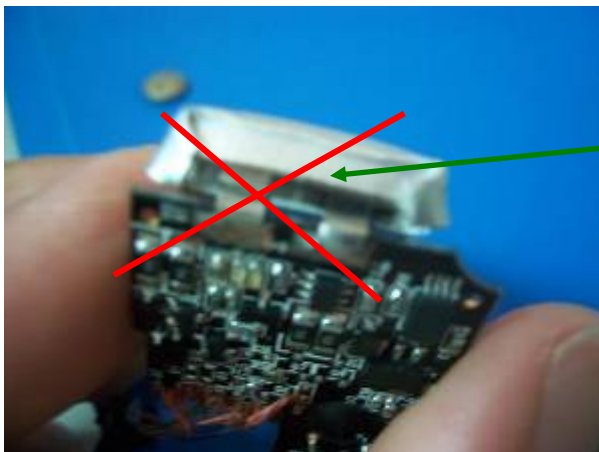
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Don't Fall, shock, bend cell body(including the bottom),to avoid damaging the structure of inside.



The bottom is damaged by outside force



The bottom is damaged by outside force

9. Soft Aluminium Foil

The soft aluminum packing foil may be damaged by sharp matter such as Ni-tabs, pins and needles or other tooling and fixtures.

- ① Don't strike cells with any sharp matter
- ② Wear gloves before taking cells
- ③ Clean worktable to make sure no any sharp particle

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10. Warranty

Warranty period for this product is 12 months starting from the date when the products left the door of manufacturer.

11. Liability

The user has to operate the products according to the instructions printed on the battery label or follow the advices described in this “Product Specification for Polymer Lithium Ion Batteries published by Unionfortune. In case the battery were overheated or even catch fire or explosion caused by mishandling of the user side, Unionfortune will not be liable for the lose caused by any of such mishandling.

Unionfortune will notify the users in written form if any modifications in specification, raw material, production process control.

12. Battery Packing Label

The following warnings should be indicated on the battery pack labels.

Use a specified charger.

Do not throw the battery into fire, or heat.

Do not short-circuit the battery terminals.

Do not disassemble the battery.

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13. Warnings and Cautions in Handling the Lithium-ion Battery

To prevent potential leaking, overheating or explosion of batteries please be advised to take following precautions:

WARNINGS !

Do not immerse the battery in water or seawater, and keep the battery in a cool dry environment during stands by period.

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

Do not connect the battery to an electrical outlet.

Do not take down, crush, bend, nail or crumb the cell.

Do not use or leave the battery near a heat source such as fire or heater.

When recharging, use the battery charger specifically for that purpose.

Don't keep a battery at rest for a long time (over 6 months). Safety accident may happen when re-charging a battery which has a rest for a long time.

Do not dispose the battery in fire or heat.

Do not short-circuit the battery by directly connecting the positive (+) and negative (-) terminal with metal objects such as wire.

Do not transport or store the battery together with metal objects such as necklaces, hairpins etc.

Do not strike or throw the battery against hard surface.

Do not use sharp things to hit the battery.

Do not directly solder the battery and pierce the battery with a nail or other sharp object.

Do not use or leave the battery at very high temperature (for example, at strong direct sunlight or in a vehicle in extremely hot weather). Otherwise, it can overheat or fire or its performance will be degenerate and its service life will be shortened.

Do not use it in a location where static electricity is rich, otherwise, the safety devices may be damaged, causing a harmful situation.

In case the electrolyte get into the eyes due to the leakage of battery, do not rub the eyes! Rinse the eyes with clean running water, and seek medical attention immediately. Otherwise, it may injure eyes or cause a loss of sight.

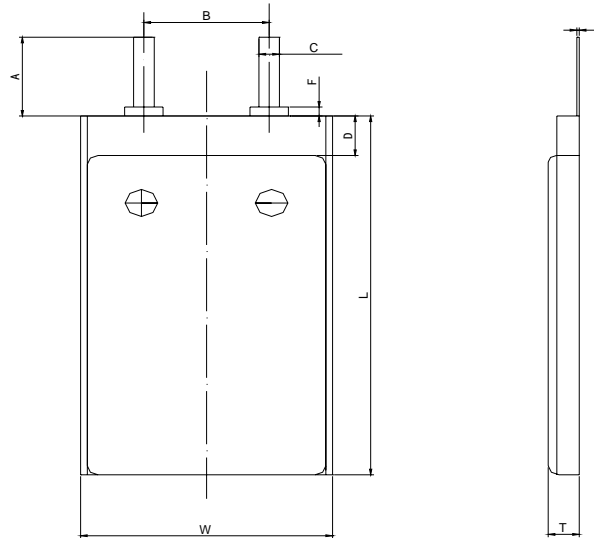
If the battery gives off an odor, generates heat, becomes discolored or deformed, or in any way appear abnormal during use, recharging or storage, immediately remove it from the device or battery charger and place it in a contained vessel such as a metal box.

In case the battery terminals are contaminated, clean the terminals with a dry cloth before use. Otherwise power failure or charge failure may occur due to the poor connection between the battery and the electronic circuitry of the instrument.

Be aware discarded batteries may cause fire, tape the battery terminals to insulate them before disposal.

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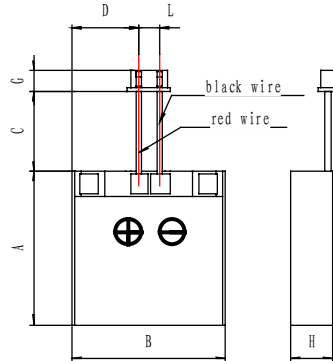
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Item	Description	Dimension and specification
T	Thickness	≤4.50mm
W	Width	≤55.80mm
L	Length	≤83.00mm
A	Tab length	9~12mm
B	Tab center distance	26.50-29.50mm
C	Tab width	3.80-4.20mm
D	Top sealing width	3.2-4.2mm
E	Tab thickness	0.1mm
F	Sealant size	≤2.5mm
Cap	Capacity	2200mAh
Imp	Impedance	60m Ω (MAX)
V	Voltage	3.82~3.89V

NOTICE: Any question you must apprise us in a week, or the standards will be accepted.

Pack drawing (unit: mm)



Item	Description	Dimension and specification
H	Thickness	4.8mm max
B	Width	56.0mm max
A	Length	84.0mm max
C	24AWG, Red/black wire length	80mm
	Connector	JST PHR-2