

## Li-ion Cylindrical Battery

Customer No: KH00000943

Model.: YT14500 3.7V 800mAh

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Customer Acknowledge:	
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## Document Revision History

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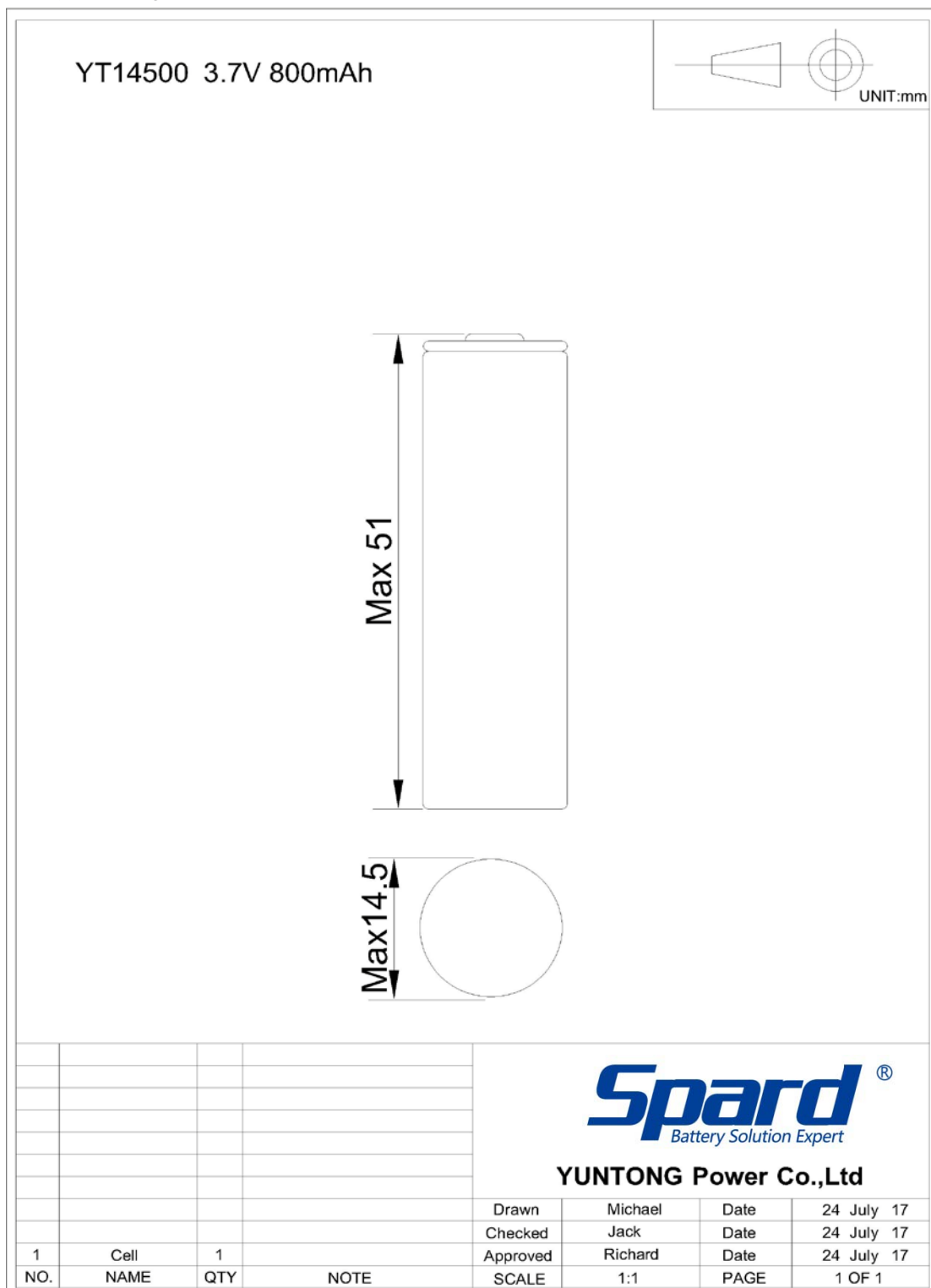
## 1. Preface

This document describes the Product Specification of the Li-ion Cylindrical rechargeable battery cell supplied by YUNTONG.

## 2.Battery configuration.

2.1 Model.: YT14500 3.7V 800mAh

## 2.2 Assembly Drawing. (unit: :mm)



## 3. Specification

NO.	Items	standard	Remarks
1.	Typical capacity	800mAh	Discharge current:0.2C Cut-off voltage:2.75V/cell
2.	Minimum capacity	760mAh	
3.	Charge voltage	4.2V	
4.	Nominal voltage	3.7V	
5.	Discharge cut-off voltage	2.75V	
6	Charge current	Standard: 0.2C	
		Rapid: 0.5C	
7	Discharge current	Standard: 0.2C	Continue discharge
		Max: 1C	Continue discharge
8	Standard charge	0.2C CC(constant current) charge to 4.2V/cell, then CV(constant voltage) 4.2V/cell charge 3.5hours or 8mA (0.01C) cut off.	
9	Rapid charge	0.5C CC (constant current) charge to 4.2V/cell, then CV (constant voltage) 4.2V/cell charge 3.0 hour or 8mA (0.01C) cut off.	
10	Max. charge current	400mAh	
11	Internal Impedance	Max: 80mΩ	AC 1KHz after standard charge
12	Energy	2.96Wh	
13	Weight	Approx: 20g	
14	Operating Temperature.	Charge: 0 ~ 45°C	Forbid to outrun provision scope a work.
		Discharge: -10 ~ 60°C	
15	Storage Temperature	-20 ~ 45°C	See the section 5 <sup>th</sup> .

## 4. Battery Cell Performance Check and Test

### Require

(1) Visual in spection.: There shall be no such defect as scratch, flaw, crack, and leakage, which may adversely affect commercial value of the cell.

(2) Standard environmental test condition

Humidity:  $65 \pm 20 \%$

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

### 4.1 Common Performance

NO	Items	Test Method and Condition	standard
1	Charge Performance.	The battery can be charged when using the original charger. The standard charge mode :under the temperature of $23 \pm 5^{\circ}\text{C}$ , charge the battery with the current of 0.2C until the voltage reaches up to 4.2V, then charge with constant voltage until the charge current $\leq 0.01\text{C}$ , then stop charging.	N.A.
2	Discharge performance.	When connecting with load, the battery can supply power. Charge the battery with standard charge mode, then rest for 0.5h, then discharge with 0.2C until the voltage is 2.75V	$\geq 760\text{mAh}$ .
3	Cycle Life	Under the temperature of $23 \pm 5^{\circ}\text{C}$ , charge the battery with 0.2C, when the voltage reaches up to 4.2V charge with constant voltage until the charge current $\leq 0.01\text{C}$ , then stop charging, then rest for 10min, then discharge with 0.2C to 2.75V. Cycle with the above mode, the test shall be terminated when Discharging Capacity $\geq 80\%$ of Initial Capacity in three consecutive cycles. The cycle life is required $\geq 500$ times.	$\geq 500$
4	Temperature Dependence of Capacity	Charge: 0.2C, CC/CV, 4.2V, current $\leq 0.01\text{C}$ cut-off ,at $23 \pm 5^{\circ}\text{C}$ Discharge: at setting temperature 0.2C, CC, 2.75V cut-off (Interval for temperature change is 2 hours)	Discharge Temp. As capacity $-10^{\circ}\text{C} \geq 50\%$ $0^{\circ}\text{C} \geq 75\%$ $25^{\circ}\text{C} \geq 90\%$ $60^{\circ}\text{C} \geq 95\%$
5	Capability of keeping electricity	$20 \pm 5^{\circ}\text{C}$ , After standard charging, rest the battery 28days, discharging at 0.2C to voltage 2.75V, recording the discharging time.	Capacity Retention $\geq 85\%$ .
6	Battery Voltage	As of shipment.	$\sim 3.7\text{V}$

## 4.2 Safety Performance

NO.	Items.	Test Methods and Condition.	standard
1	Hot oven Characteristics	The fully charged battery is placed the battery in the hot box , then rose to $130^{\circ}\text{C}\pm 2^{\circ}\text{C}$ in the temperature to $5^{\circ}\text{C}\pm 2^{\circ}\text{C}/\text{min}$ rate , insulation 30min.	No fire , No explosion
2	Over charge testing	The battery is charged at a 3 C constant current with a voltage limit of 4.8V for 8 hours after fully charged	No fire, No explosion; Max.Temp.of battery surface should not exceed $150^{\circ}\text{C}$ .
3	Over discharge testing	The battery is discharged to termination voltage, then the external $30\Omega$ for 24h after fully charged at $20\pm 5^{\circ}\text{C}$	No fire, No explosion
4	Short-circuit testing	A fully charged battery, is to be connected with the thermocouple in a fume hood, short circuit of positive and negative ( total line resistance is less than $100\text{ m}\Omega$ ), test process, monitoring the cell temperature, when the temperature dropped to about $10^{\circ}\text{C}$ lower than the peak value, ended test.	No fire, No explosion; Max.Temp,of battery surface should not exceed $150^{\circ}\text{C}$

## 5. Storage and Shipment Requirement

Item.		Requirement.
Storage temperature	Short period less than 1 month	$-20^{\circ}\text{C}\sim +45^{\circ}\text{C}$
	Long period less than 3 month	$0^{\circ}\text{C}\sim +30^{\circ}\text{C}$
Humidity	$60\pm 15\% \text{RH}$	
Voltage	$3.70\text{V}\sim 3.90\text{V}$	

## 6. Warranty Time.

Warranty time is six (6) months from the date when the Li-ion Cylindrical rechargeable battery ship out from YUNTONG factory. But If the Li-ion battery is found to have a problem due to use outside of YUNTONG recommended specification, YUNTONG will have no responsibility for the battery.

## 7. Cautions in use

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

- ☐ Do not expose to, dispose of the battery in fire.
- ☐ Do not put the battery in a charger or equipment with wrong terminals connected.
- ☐ Avoid shorting the battery
- ☐ Avoid excessive physical shock or vibration.
- ☐ Do not disassemble or deform the battery.
  - Do not immerse in water.
  - Do not use the battery mixed with other different make, type, or model batteries
- ☐ Keep out of the reach of children.

### . Charge and Discharge

- ☐ 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.

## 8. Battery operation instruction

### 8.1 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.

### 8.2 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.

### 8.3 discharge temperature

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

8.4 Over-discharges After the short time excessively discharges charges immediately cannot affect the use, but the long time excessively discharges can cause the battery the performance, battery function

losing. The battery long-term has not used, has the possibility to be able to be at because of its automatic flashover characteristic certain excessively discharges the condition, for prevented excessively discharges the occurrence, the battery should maintain the certain electric quantity.

## 8.5 Storing the Batteries

The battery should store in the product specification book stipulation temperature range. If has surpasses above for three months the long time storage, suggested you should carry on additional charge to the battery.

## 9. 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.

## 10.Note:

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

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