Cylindrical Li/ SOCl2 Battery

Specification

Model: ER14250

Edited : Xiang Wenbin **Date : 2023.09.29**
Audited : Zhong miaoxin **Date : 2023.09.30**
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Customer: _____ **Date:** _____

Supplier： Liyuan Battery Technology(Yichun) Co., Ltd.
Add： Liyuan Battery Technology Industrial Park,No.166 Food Avenue,Shanggao County, Yichun City, Jiangxi Province
Tel： 0795-2524666

1. Purpose

1.1 In order to avoid errors and deviations by different testing method or condition, we established this specification to define the battery model and test method of lithium battery manufactured by Liyuan.

1.2 Give some guidance for using our products.

2. Description and Model

Table 1

Description	Model
$Li/SOCl_2$ Cylindrical Battery	**ER14250**

3. Technical parameters

Table 2

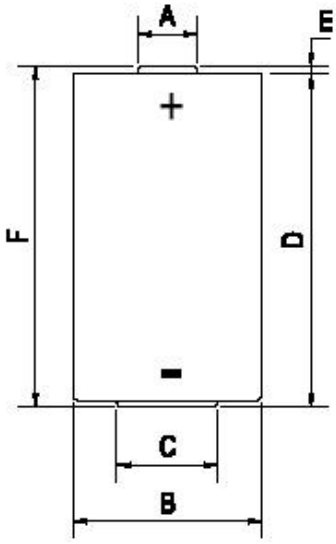
No.	Items	Characteristics
1	Nominal Capacity*	1200mAh
2	Discharge Capacity (continuously discharge under 1mA till 2.0V end voltage)	1100±100mAh
3	Nominal Voltage	3.6V
4	Operating Temperature range	-55 ~ +85℃
5	Max. Pulse Current	50mA
6	Max. Continuous Discharge Current	35mA
7	Structures	Thionyl chloride, lithium anode, acetylene black, separator, and stainless steel cell shell etc.
8	Weight for Reference	About 10.0g

* Nominal Capacity: The nominal capacity means that when discharge at 3.6KΩ/1mA、20± 2℃、end voltage 2.0V. (the nominal capacity may differ due to change of the discharge current, temperature and end voltage)

** Nominal Voltage: The nominal Voltage means that when discharge at 36KΩ/0.1mA、20± 2℃.

4. Outline figure and dimension

4.1 Outline figure is shown as follow



4.2 Outline dimension (unit: mm)

Table 3

ER14250	A	B	C	D	E	F
	4.3±0.15	14.1±0.2	10±0.2	.4±0.2	5±0.2	±0.3

5. Appearance

The surfaces of the batteries are clean. The ma rk is clear. There should not be deformation 、 rust、 stain or leakage.

6. Performance

6.1 Electronic characteristic

Table 4

No.	item	Test condition	Performance within one year under normal temperature	Performance after one year's storage under normal temperature
1	Open circuit voltage			
	Room temperature	20±2 ℃	3.63~3.70V	3.63~3.72V
	Low temperature	-40±2 ℃	3.63~3.70V	3.63~3.72V
	High temperature	60±2 ℃	3.63~3.74V	3.63~3.74V
2	Working temperature	Discharge load: 3.6KΩ		
	Room temperature	20±2 ℃	≥3.2V	≥3.1V
	Low temperature	-20±2 ℃	≥2.9V	≥2.8V
	High temperature	60±2 ℃	≥3.3V	≥3.2V

No.	item	Test condition	Performance within one year under normal temperature	Performance after one year's storage under normal temperature
3	Working life Room temperature Low temperature High temperature	Discharge load: 6.98KΩ End voltage: 2.0V 20±2 ℃ -20±2 ℃ 60±2 ℃	≥2000hrs ≥1000hrs ≥1900hrs	≥1900hrs ≥900hrs ≥1800hrs
4	Working life Room temperature	Discharge load: 0.82KΩ End voltage: 2.0V 20±2 ℃	≥215hrs	≥205hrs

6.2 Performance inspection

6.2.1 Six samples for each testing item

6.2.2 Samples should be placed over 24 hours under the requested temperature, which the test will be done

6.3 Environment and safety performance

Table 5

No	item		requirement	method
A	Environment acclimatization	Altitude Simulation Test	NM、NL、NV、NC、NR、NE、NF	At 20 ℃± 2 °C, the batteries should be stored at the pressure of 11.6 KPa or less for at least six hours.
B		Temperature Cycling	NM、NL、NV、NC、NR、NE、NF	The batteries should be stored at least 6 hours at 75±2 ℃, then be stored at least six hours at -40 ± 2 ℃ . The interval between the two temperatures should be maximum 30 minutes. Repeat this process for 10 times. Then store batteries 24hours at 20±5℃ ,
C		Vibration	NM、NL、NV、NC、NR、NE、NF	The batteries should be subjected to a simple harmonic motion with an amplitude of 0.8mm(1.6mm total maximum excursion). The frequency is to be varied at the rate of 1Hz per minute between 10 and 55Hz.The test should be last 90min ~ 100min and the cell should be tested in two mutually perpendicular direction.
D		Shock	NM、NL、NV、NC、NR、NE、NF	The batteries should be secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test battery. Each battery should be subjected to a total of three shocks of equal magnitude. The shocks are to be applied in each of the three mutually perpendicular directions. Each shock is to be applied in a direction perpendicular to the face of the battery. For each shock the battery is to be accelerated in such a manner that, during the initial 3ms, the minimum average acceleration is 75×9.8m/s^2. The peak acceleration should be between 125×9.8 m/s^2 ~ 175×9.8 m/s^2 .

Table 6

No.	ite m		requirement	method
E	Safety Performance	External Short Circuit	NT、NR、NE、NF	The batteries to be tested should betemperature stabilized so that its external case temperature reaches 20 ± 5 °C and thenthe batteries should be subjected to a short circuit condition with a total externalresistance of less than 0.1 ohm at 20 ± 5 °C. This short circuit condition is continued for at least one hour after the battery external case temperature has returned to 20 ± 5°C. The battery must be ob served for a further six hours for the test to be concluded. The battery to be tested should have endured vibration and shock test. Otherwise thebattery endured altitude simulation test should be test..
F		Forced-discharge	NE 、NF	Each battery should be forced discharged at ambient temperature of 23℃±3℃ byconnecting it in series with a 12 V D.C. power supply at an initial current equal to the maximum discharge current specified bythe manufacturer. Each battery should be forced discharged for a time equal to the time in which a new cell is discharged to2.0V .
G		Abnormal Charge	NE、NF	Sample batteries are to be connectedreversely with a D.C. power supply , and subjected to a constant charging current at 3 times the I_c Charge time t_c=2.5*C_n/(3*I_c) **
H		Free Drop	NV、NE、NF	The not-discharged battery is to be dropped from a height of 1m onto a concrete surface.Each sample is to be dropped six times, two times in each direction. The sample shouldbe examined 1 hours after testing
I		Heating Test	NE、NF	The battery should be placed in an oven. The oven temperature should be increased at a rate of 5 ℃±2℃ per minute until the oven reached 130℃±2℃ .The oven should be maintained at 130℃±2℃ for 10min.

NM: **noweightloss** **NL** : **nol eakage** **NV** : **no venting** **NF** : **no fire**
NC : **nos hortcircuit** **NR** : **nonpture** **NE** : **noxplosion**
NT: **no overheating (the temperature at th e surface of battery not exceed 150℃)**

* Max discharge current: in table 2 means maximum continuousdischarge current 35mA.

** T_c=2.5*C_n/(3*I_c)

T_c—test time calculated by computer is 67h.

C_n—nominal capacity, our ER14250's nominal capacity is 1200mAh.

I_c—the abnormal charge current for the tests provided by battery supplier. Ours is I_c 15mA

7. Test condition

7.1 State of batteries:

The batteries should be marked with manufacture date(year, month, date)

7.2 Normal testing environment:

If no special requirement, test should be made under the temper ature of 18 ℃ ~ 22℃ and relative humidity of 45%-75%.

7.3 Test precision:

The measuring tolerances relative to the speci fied or actual values should be within these range:

Voltage	Current	Capacity	Temperature	Time	Weight	Dimension
±1%	±1%	±1%	±2℃	±0.1%	±0.1%	±0.1%

These tolerances include all errors caused by precision of testi ng instrument, testing method and testing process.

8. Packaging

Dimension of box	Net weight	Gross weight
406mm×287mm×165mm	13.5KG	16KG

Normal package : 1200 pcs per box.

9. Environment requirement

The product meets ROHS standard.

10. Producing standard and certification

Our batteries are produced according to the IEC-60086 standard, UL safety authentication (MH26236) and UN shipment authentication. 。

11. Transportation

- The Batteries should be stored away from solarization, fire, rain, water, and never put together with corrosive during transportation.
- Vibration and shock during transportation and load-and-unload should be restrict to a minimum level.
- The height should not exceed 1.5m for cardboard packages.
- The batteries if transported by sea should be stored away from ship engines during prolonged transit, and not le ft for long periods in unventilated environment during summer.

12. Information for safety

! Dangerous

- Do not overheat batteries or dispose of batteries in fire.
- Do not put batteries togeth er with metalwork such as necklace, coins, etc in one bag，or store them together
- Do not short-circuit batteries.
- Do not inset batteries in reverse. Obse rve the + and – markings on battery and equipment.
- Do not disassemble batteries.
- Do not weld or solder directly to batteries.
- Do not use deformed batteries or batteries with serious scar.
- Read the guide carefully before using batteries. Unsuitable operation will make batteries overheat，fire，explode，destroy or reduce battery's capacity.

! **Warning**

- Do not place the battery in heater, washer or high-pressure container.
- Do not use the battery together with different kind of or different type of battery.
- Stop using when the battery become heat, emit smell or appear other abnormality during use, or storing.
- Do not recharge the battery.
- Do not force-discharge the battery.
- Keep away from the battery when the battery is leakage or emit abnormal smell.
- Wash yourself quickly when the electrolyte infiltrate to your skin or clothes.
- Wash your eyes with clean water quickly and go to hospital for further check if the electrolyte infiltrate to your eyes.
- Please contact with us in advance If two or more batteries are to be connected in a series and / or placed in a parallel arrangement.

! **Caution**

- Keep the battery away from the children, avoid being swallowed.
- Read the guide carefully and pay attention to the guide when using the battery.
- Read the instrument guide carefully before installing the battery or uninstalling the battery from the instrument.
- Take out of the battery when the life of the battery is over.
- Take out of the battery and keep it under the condition of low temperature and low humidity when the battery is not used for a long time.
- Clean the battery with dry cloth before use if the connection of the battery is dirty.
- Battery should be used and stored far from the electrostatic place.

13. Storage

- The batteries should be stored at 10℃ ~ 25℃（never exceed 30℃）, 45%~75%RH.
- The batteries should not be stored next to heat sources nor in direct sunlight. The storage area should be clean，cool，dry，ventilated and weatherproof.
- The height to which batteries may be stacked is clearly dependent on the strength of the packaging. As a general rule， this height should not exceed 1.5m for cardboard packages nor 3m for wooden cases.

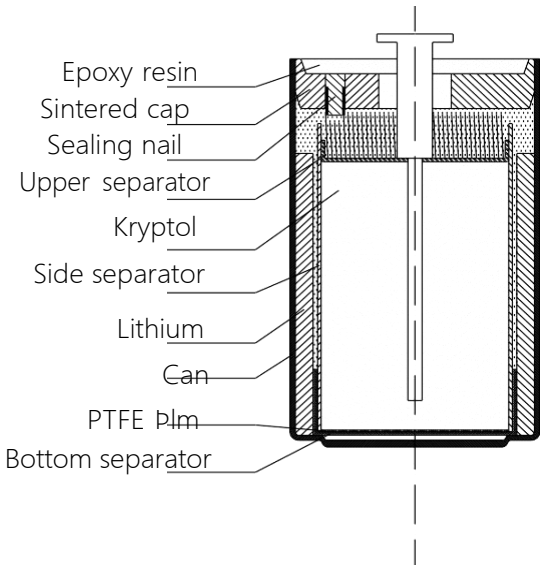
— Store and display batteries in their original package. The batteries may be short-circuited or damaged if been unpacked and stacked mussily.

14. Declaration

- Please contact with Shenzhen Richlight Technology Co., Ltd. If you have any question with this specification.
- Shenzhen Richlight Technology Co., Ltd. keep the right to change the specification.

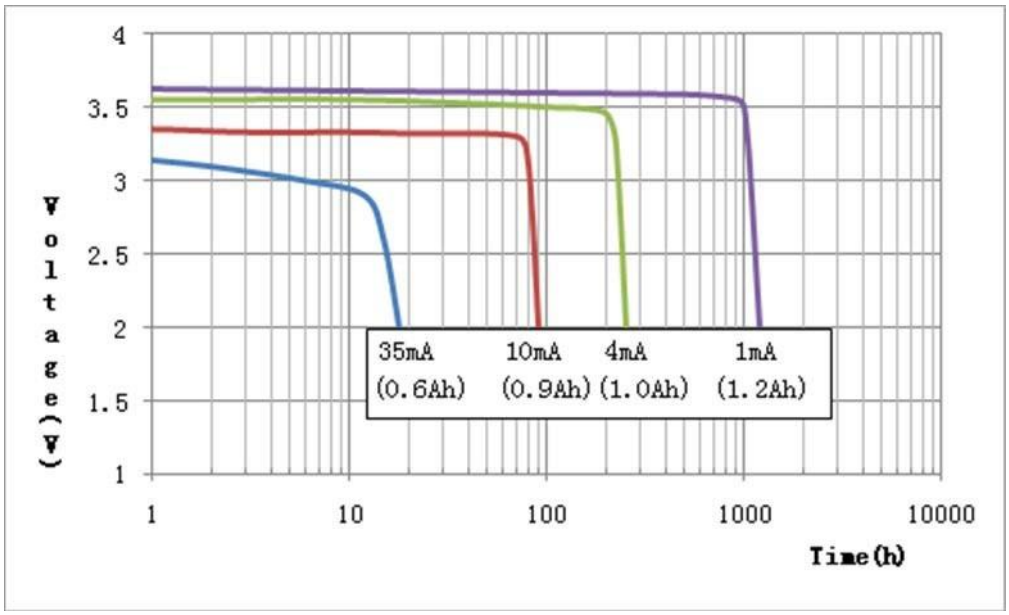
Appendix 1:

Battery S trutural Drawing
ER14250 Battery with High capacity



Appendix 2:

discharge Curve on Different Current at 20℃



Appendix 3:

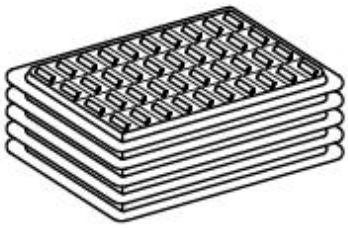
Structure Figure of Package
ER14250 1200 Pcs Per Box

1. Battery

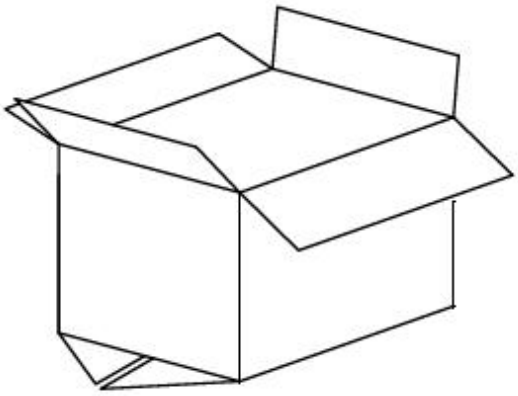
2. 40 Pcs Pre Plate

Outline Dimensions Of
Plate: 243 × 128 × 17

3. 5 Plates Per Min Package



4. 6 Min Package Per Box



Outline Dimensions Of
Box: 406 × 287 × 165
Net: 13.5 kg Gross: 16.0 kg