

SPECIFICATION OF PRODUCT

FOR PRISMATIC LITHIUM-ION RECHARGEABLE BATTERY

MODEL : 043040SP

PREPARED BY :

CHECKED BY :

APPROVED BY :

Guangzhou Markyn Battery Co., Ltd.

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	Guangzhou Markyn Battery Co., Ltd.	File No. : M10 0650 190
	SPECIFICATION FOR 043040SP	Rev. : A0 Date: 2006-5-10

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1.0 SCOPE

This Specification describes the requirements of the lithium-ion rechargeable battery 043040SP supplied by Guangzhou Markyn Battery Co., Ltd.

2.0 OVERVIEW

NO.

Item

Characteristics

2. 1

Battery Model

043040SP

2. 2

Shell Material

Stainless Steel

2. 3

Nominal Voltage

3.7 V

2. 4

Rated Capacity

400mAh

2. 5

Impedance

$\leq 210\text{m}\Omega$

2. 6

Max Charge Current

1.5C

2. 7

Max Discharge Current

1.5C

2. 8

Standard Charge Voltage

4.20V

2.9

Charge Method

CC/CV (constant current/constant voltage)

2.10

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Protection Circuitry

- 1 IC: CS213
- 2 MOSFET: STC5NF20V

2.11

Main Characteristics of Protection Circuitry

Over Charge Measuring & Protecting Voltage

 $4.30 \pm 0.05V$

Over Discharge Measuring & Protecting Voltage

 $2.50 \pm 0.10V$

Max Over Current Protecting Value

2.0~4.0A

Self-Consumption Current

 $\leq 6.0\mu A$

Short Circuit Protection

OK

2.12

Max Dimension:

Width: 30.5mm

Thickness: 4.4mm

Height: 43.0mm

2.13

Operation Temperature:

Charge: 0~45°C

Discharge: -20~60°C

2.14

Storage Temperature:

-20~45°C

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2.15	Relative Humidity	
	65±20%	
2.16	Visual Requirements	
	Defects, such as scratches, flaws, dirty spots, rust, deformation, discoloration, leakage, etc., which damage commercial values shall not be presented.	
2.17	Weight	
	About 15.5g	
3.0	CHARACTERISTICS	
3.1	Testing Conditions(unless otherwise specified):	
	• Temperature:	20±5℃
	• Relative Humidity:	45%~75%
	• Atmospheric pressure:	86~106Kpa
3.2	Testing Facilities:	
	• Caliper:	Precision≤0.02mm;
	• Voltmeter & Ammeter:	Precision class≤0.5;
	• Impedance:	Tested under the condition of sine AC 1KHZ
3.3	Testing Instruction and Requirements	
		NO
ITEM		TESTING INSTRUCTION REQUIREMENTS
		3.1
Complete Charge		
	Charge the battery with a 0.5C charge current. About 5h	
		3.2
Quick Charge		
	Charge the battery with a 1C charge current. About 2.5h	
		3.3
Nominal Capacity		
	Measure discharge capacity with discharge current 0.5C to 3.0V after complete charge. ≥400mAh	
		3.4
Cycle Life		
	Measure the capacity after 300 cycles of complete charge and discharge at 400mA current. ≥ 80% of initial Capacity	

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3.5

Storage

Capacity after 30days storage at 25°C from complete charge.

Retention capacity

≥ 90%

3.6

Temperature testing

Measure capacity with constant discharge current 0.2C to cut-off voltage 3.0V at different temperatures after complete charge at 25°C. As an index for comparing, capacity at 25°C is 100%.

80% at -20°C

85% at 0°C

85% at 60°C

3.7

Constant temperature /humidity

Keep the battery at 40°C and 90%RH for 96hrs

Recovery capacity

≥ 85%

3.8

Short Circuit

Short-circuit the battery by connecting the positive and negative terminals with an external load of 0.1 Ω for 1 hr after charge.

The battery shall not rupture, smoke, catch fire, vent or leak.

3.9

Over Charge Testing

The battery charged completely will be charged continuously for 8hr with the external power supply of the limit voltage of 4.8V and the current of 1.2C

3.10

Over Discharge Testing

After complete charge, the battery will be discharged to end voltage. Then connect with external load of 30 Ω for 24hrs.

4.0 WARRANTY PERIOD & PRODUCT LIABILITY

Warranty period of this product is 6 months from delivery date.

PTI is not responsible for the troubles caused by mishandling of the battery that is clearly against the instructions in this specification.

SPECIFICATION FOR 043040SP**5.0 Highlight in Handling**

To prevent a possibility of the battery from leaking, heating or explosion please observe the following precautions:

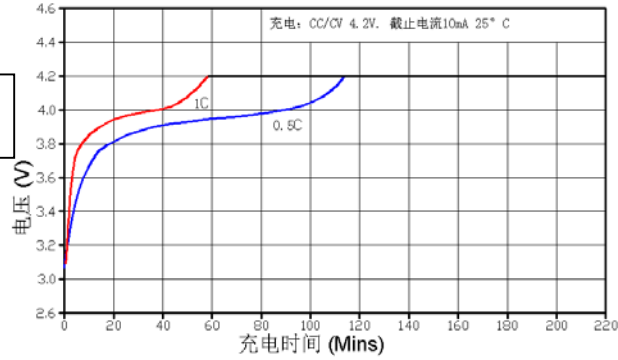
Warning in use :

- When recharging, use the battery charger specifically for that purpose.
- Do not reverse the position (+) and negative (-) terminals.
- Do not connect the battery to an electrical outlet.
- Do not use or leave the battery near a heat source as fire or heater.
- Do not immerse the battery in water or seawater, and keep the battery in a cool dry surrounding if it stands by.
- Do not use it in a location where static electricity is great, otherwise, the safety devices may be damaged, causing hidden trouble of safety.
- 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 decreased.
- Do not short-circuit the battery by directly connecting the positive (+) and negative (-) terminal with metal objects such as wire.
- Do not strike or throw the battery.
- Do not directly solder the battery and pierce the battery with a nail or other sharp object.
- 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 stop using.
- If the battery leaks, and the electrolyte get into the eyes. Do not rub eyes, instead, rinse the eyes with clean running water, and immediately seek medical attention. Otherwise, it may injure eyes or cause a loss of sight.
- Be aware discarded batteries may cause fire, tape the battery terminals to insulate them.
- Disposal regulation may vary depending on local government.
- Don't disassembly the battery.

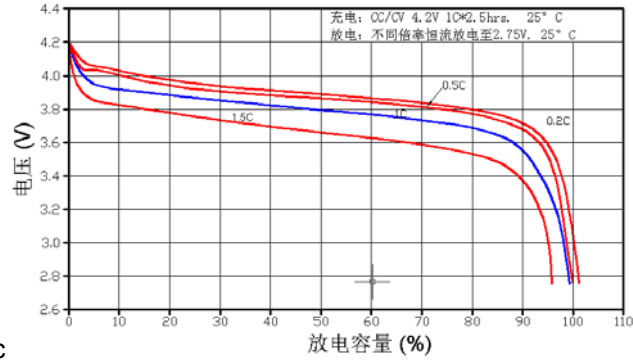
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6.0 CHARACTERISTIC CURVE

充电: cc/cv 0.5C * 5hrs, 25 °C
 放电: constant current 0.5C to 2.75V, 25 °C



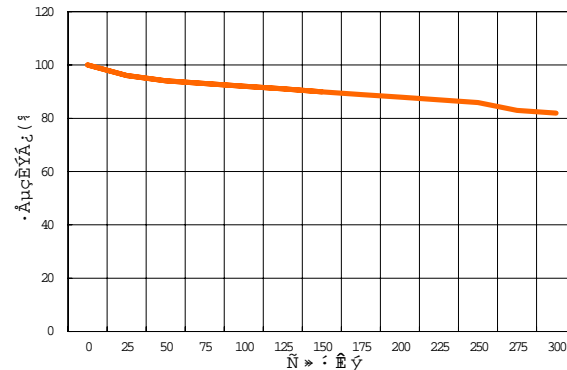
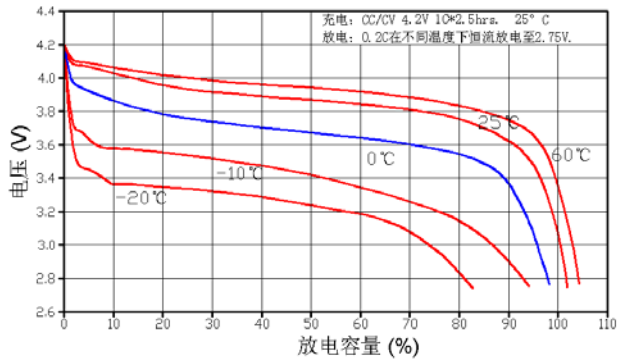
6.1 Charge Characteristic



6.2 Discharge Characteristic

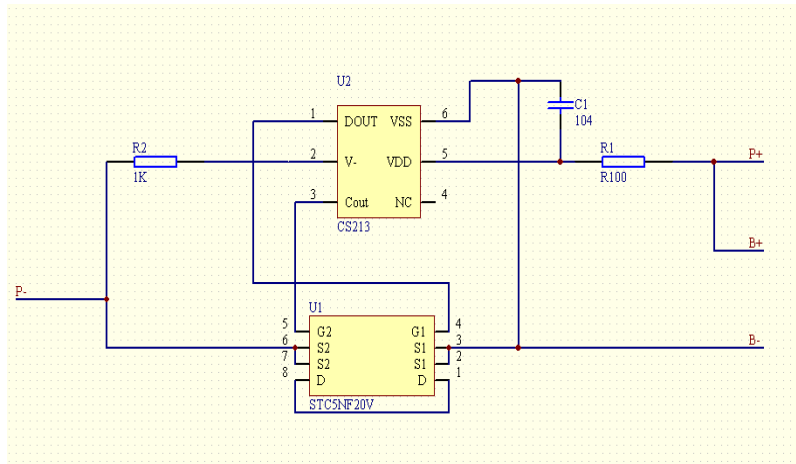
6.3 Temperature Characteristic

6.4 Cycle Life



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7.0 PCM Circuitry



8.0 Specification revising and changing.

This Specification is subject to change without prior notice. If there are any questions or inconsonance to the specification, please contact Guangzhou Markyn Battery Co., Ltd.