Specification
For
Lithium-ion Rechargeable Cell

Cell Type: PX 18650 / 2500mAh

Document No	P/PR03/PB-D-PX18650	**Revised date**	2016.6.12
Version	A/03	**Pages**	9
Approved	**Checked**	**Designed**	

1 Preface

This specification describes the type and dimension, performance, technical characteristics, warning and caution of the lithium ion rechargeable cell. The specification only applies to PX18650 cell supplied by POWER-XTRA GROUPE INTERNATIONAL LIMITED

2 Definition

2.1 Rated capacity:

Rated capacity Cap=2400mAh. Under 25±2℃, the capacity obtained when a cell is discharged at 1-hours rateto voltage 2.75 V, which is signed Cap, the unit is mAh.。

2.2 Standard charge method

Under 25±2℃, it can be charged to 4.2V with constant current of 0.5C（1200mA）, and then, charged continuously with constant voltage of 4.2V until the charged current is0.01C（24mA）.

2.3 Standard discharge method:

Under 25±2 , it can be discharged to 2.75 V with constant current of 1C（2400mA）。.

3 Cell type and dimension

3.1 Description and model

Description: Cylindrical Li-ion rechargeable cell

Model: PX18650 -2500mAh

3.2 Cell dimension

Cell physical dimension listed in Figure 1(unit: mm).

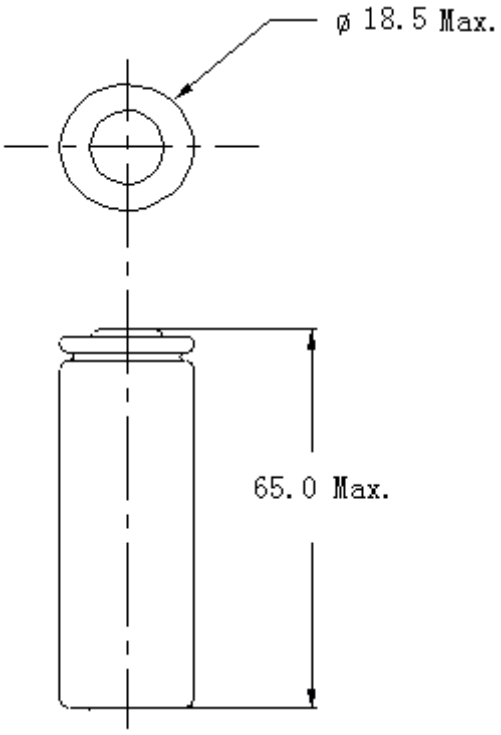

Figure 1/

4 **Cell characteristicsfresh cell tested at** 25±2°C,standard charge and discharge unless otherwise specified

ITEM		SPECIFICATION
Capacity	Nominal capacity	2400 mAh@1C
	Typical capacity	2500 mAh@0.2C
Nominal voltage		3.6 V
Charge voltage		4.2± 0.05V
Discharge ending voltage		2.75± 0.05 V
Energy density		184Wh/Kg（1C）
Max charge current		1C（2400mA） 25°C(not for cycle life)
Max discharge current		3C （7200mA）25°C(not for cycle life)

Storage temperature and time	1month ：-20～60℃ 3months ： -20～45℃ 12months ： -20～25℃
Humidity range	0～90%RH (non-condensing)
Internal resistance	≤35 mΩ(AC Impedance, 1000 Hz)
Cell dimension	Height ：65.0 mm Max Diameter ：18.5mm Max
Weight	≤ 49g

5 Technical requirements

5.1 Cell usage conditions

Temperature of charge ： 0～45℃

Temperature of discharge： -20～60℃

5.2 Cell testing conditions

Unless otherwise specified, all tests stated according to following:

Temperature： 25±2℃

5.3 Requirement of the testing equipment

The voltage measurement device: Not less than 0.5 grade

The current measurement device: Not less than 0.5 grade

AC Impedance,:1000 Hz

Temperature meter: The precision is ≤0.5℃

Time measurement unit: ± 0.1%

The size measurement device: ± 0.1%

The quality measurement device: ± 0.1%

5.4 Electrochemical Characteristics

(Fresh cells, tested at 25±2℃,standard charge and discharge unless otherwise specified.

NO.	ITEM	CRITERION
5.4.1	Discharge rate capability	Test condition: Temperature : 25±2℃ Charge: CC/CV 0.5C（1200mA） 4.2V cut off current: 0.01C（24mA） Discharge: CC variable values; End-of-discharge Voltage: 2.75V $\frac{\text{discharge capacity at 3C}}{\text{discharge capacity at 1C}}$ 90%
5.4.2	Cycle life	Test condition: Temperature : 25±2℃ Charge: CC/CV 0.5C（1200mA） 4.2V cut off current: 0.01C Discharge: CC 1C（2400mA）; End-of-discharge Voltage: 2.75V $\frac{\text{Discharge capacity of 501th cycle}}{\text{Original discharge capacity}}$ 90% $\frac{\text{Discharge capacity of 1001th cycle}}{\text{Original discharge capacity}}$ 80%
5.4.3	High-Low temperature discharge performance	Test condition: Charge: CC/CV 0.5C（1200mA）4.2V cut off current: 0.01C（24mA）， at room temperature. Discharge: CC 1C(2400mA) at various temperature; End-of-discharge Voltage: 2.75V，2. 5V (-20℃) $\frac{\text{discharge capacity at -20}^{O}\text{C}}{\text{discharge capacity at 25}^{O}\text{C}}$ 70% $\frac{\text{discharge capacity at 60}^{O}\text{C}}{\text{discharge capacity at 25}^{O}\text{C}}$ 90%
5.4.4	Storage performance	5.4.4.1 RT Storage Performance (100%SOC) Test condition: Charge: CC/CV 0.5C(1200mA) 4.2V cut off current: 0.01C(24mA); stored at 25°Cfor 28 days Discharge: CC 1C(2400mA); End-of-discharge Voltage: 2.75V $\frac{\text{Residual capacity after 28days storage}}{\text{Original discharge Capacity}}$ 85% $\frac{\text{Recover capacity after 28days storage}}{\text{Original discharge Capacity}}$ 90%

		5.4.4.2 High Temperature Storage Performance (100%SOC) Test condition: Charge: CC/CV 0.5C(1200mA) 4.2V cut off current: 0.01C(24mA); stored at 60℃for 7 days Discharge: CC 1C(2400mA); End-of-discharge Voltage: 2.75V $\frac{\text{Residual capacity after 7days storage}}{\text{Original discharge Capacity}}$ 85% $\frac{\text{Recover capacity after 7days storage}}{\text{Original discharge Capacity}}$ 90% 5.4.4.3 High Temperature Storage Performance(50%SOC) Test condition: Charge: CC/CV 0.5C(1200mA) 4.2V, cut off current: 0.01C(24mA); Discharge: CC 1C (2400 mA) for 30min stored at 45℃ for 28 days Charge: CC/CV 0.5C(1200mA) 4.2V, cut off current: 0.01C(24mA) after RT kept for 5H. Discharge: CC 1C(2400 mA); End-of-discharge Voltage: 2.75V $\frac{\text{Recovery capacity after 28days strorgge}}{\text{Original discharge capacity}} \geq 90\%$

5.5 Environmentalcharacteristics and safety characteristics

Meets GB/T31485-2015（QD16E12PB2221）, QCT/743-2006 （QA15E11EB3861）, UL1642（MH29353）and ROHS

Package picture

Small box **big box** **pallet**

(100pcs cells in a small box, 2 small boxes in a big box)

6 Shipment

The Cell shall be shipped in voltage range of 3.6 ~ 3.9 V or in accordance with customers' requirement.The remaining capacity before charging shall be changed depending on the storage time and conditions.

7 Warranty

The Warranty period of cell is made according to business contract. However, even though the problemoccurs within this period, PX won't replace a new cell for free as long as the problem is not due tothe failure of PX manufacturing process or is due to customer's abuse or misuse.

PX will not be responsible for trouble occurred by handling outside of the precautions in instructions.

PX will not be res ponsible for trouble occurred by matching electric circuit, cell pack and charger.

PX will be exempt from warrantee any defect cells during assembling after acceptance.

8 Storage and Shipment Requirement

Item		Requirement
Storage environment	Short period less than 1 month	-20°C ~ +60°C, 90%RH Max
	Long period more than 3 month	-20°C ~ + 45°C, 90%RH Max
	Recommend storage	-20°C ~ + 25°C , 85%RH Max
Long time storage : If the cell is stored for a long time, the cell's storage voltage should be 3.6-3.9V .Also, it is recommended to charge the cell every six months.		

Warning

Danger warning (it should be described in manual or instruction for users, indicated especially) to prevent the possibility of the battery from leaking, heating, explosion. Please observe the following precautions:

1	Don’t use and leave the cell near a heat source such as fire or heater.
2	Do not use or leave the cell under the blazing sun (or in heated car by sunshine).
3	Do not use or leave the battery at very high temperature conditions (for example, strong direct sunlight or a vehicle in extremely hot conditions). Otherwise, it can overheat or fire or its performance will be degenerate and its service life will be decreased.
4	Do not short circuit, over-charge or over-discharge the cell.
5	Don’t immerse the battery in water and seawater. Please put it in cool and dry environment if no using.
6	Don’t reverse the positive and negative terminals
7	Do not disassemble or modify the cell.
8	Do not transport and store the battery together with metal objects such as necklaces, hairpins, coins, etc.
9	Do not use the cell with conspicuous damage or deformation.
10	Don’t connect the cell to an electrical outlet directly.
11	If the cell leaks and the electrolyte get into the eyes, don’t wipe eyes, instead, thoroughly rinse the eyes with clean running water for at least 15 minutes, and immediately seek medical attention. Otherwise, eyes injury can result.
12	Do not use lithium ion battery and others different lithium battery model in mixture
13	Keep the battery away from babies.
14	Do not directly solder the battery and pierce the battery with a nail or other sharp object

15	Do not strike , throw or trample the battery.
16	Being charged, using the battery charger specifically for that purpose
17	When disposing of secondary cells, keep cells of different electrochemical systems separate from each other.
18	In case the battery terminals are dirt, clean the terminals with a dry cloth before use. Otherwise power failure or charge failure may occur due to the poor connection with the instrument.
19	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 charge and stop using it.
20	The battery replacement shall be done only by either cells supplier or device supplier and never be done by the user.
21	Be aware discharged batteries may cause fire; tape the terminals to insulate them.
22	Do not use it in a location where is electrostatic and magnetic greatly, otherwise, the safety devices may be damaged, causing hidden trouble of safety.
23	Prohibition of use of damaged cells
24	Battery pack designing and packing Prohibition injury batteries.
25	Battery pack should be according to rated range ,any misuse among different rates should not be permitted.
26	Cell disassemble from pack or module was not permitted, ,unless under the guidance of professional technicians

10 The restriction of the use of hazardous substances

11 This model of lithium-ion cell is in accordance with our company's request of "The hazardous substances and material management standard" or customer's requirements.

12 Contact information

www.power-xtra.com