

锂离子电芯规格书

Specification For Lithium-ion Rechargeable Cell

电芯型号 : INR18650A260

Cell Type : INR18650A260

Document No	P/PB-D-INR18650A260	revised date	2017-08-10
Version	A/03	Pages	9
Approved	Checked	Designed	
李艳斌	邱沫	李文娟	

Contents 目录

- 1 preface 前言**
- 2 Definition 定义**
 - 2.1 Rated capacity 标称容量
 - 2.2 Standard charge method 标准充电方式
 - 2.3 Standard discharge method 标准放电方式
- 3 Cell type and dimension 电芯型号及尺寸**
 - 3.1 Description and model 电芯说明及型号
 - 3.2 Cell dimension 电芯尺寸
- 4 Cell characteristics 电芯特性**
- 5 Technical requirements 技术要求**
 - 5.1 Cell usage conditions 电芯使用环境
 - 5.2 Cell testing conditions 电芯实验环境
 - 5.3 Requirement of the testing equipment 测量仪表要求
 - 5.4 Electrochemical characteristics 电化学特性
 - 5.5 Environmental characteristics and safety characteristics 环境适应性能与安全性能
 - 5.6 PTC Specification PTC规格
- 6 Package picture 包装图片**
- 7 Shipment 出货**
- 8 Warranty 质量保证**
- 9 Storage and Shipment Requirement 存储及运输要求**
- 10 Warning and cautions in handling the lithium-ion cell 电芯使用时警告事项及注意事项**
- 11 The restriction of the use of hazardous substances 有害物质控制要求**
- 12 Contact information 联系方式**

1 preface 前言

This specification describes the type and dimension, performance, technical characteristics, warning and caution of the lithium ion rechargeable cell. The specification only applies to 18650 cell supplied by BISS Product Development, LLC.

本标准描述了圆柱型锂离子电芯的外型尺寸、特性、技术要求及注意事项。本标准适用于BISS生产的圆柱型 18650锂离子电芯。

2 Definition 定义

2.1 Rated capacity:

标称容量:

Rated capacity $Cap=2600mAh$. Under $22.5\pm2.5^{\circ}C$, the capacity obtained when a cell is discharged at 5-hours rate to voltage 2.75 V, which is signed Cap, the unit is mAh.。

标称容量 $Cap=2600mAh$, 指在 $22.5\pm2.5^{\circ}C$ 环境下, 以 5 小时率放电至终止电压 2.75V 时的容量. , 以 Cap 表示, 单位为毫安培时(mAh)。

2.2 Standard charge method

标准充电方式:

Under $22.5\pm2.5^{\circ}C$, it can be charged to 4.2V with constant current of 0.5C (1250mA) , and then, charged continuously with constant voltage of 4.2V until the charged current is 0.01C (25mA) .

指在 $22.5\pm2.5^{\circ}C$ 环境下, 以 0.5C (1250mA) 的电流恒流充电至单体电芯电压 4.2 V 后, 转为恒压 4.2 V 充电, 至充电电流小于 0.01C (25mA) 时, 停止充电。

2.3 Standard discharge method:

标准放电方式:

Under $22.5\pm2.5^{\circ}C$, it can be discharged to 2.75 V with constant current of 0.2C (500mA)。

指在 $22.5\pm2.5^{\circ}C$ 环境下, 以 0.2C (500mA) 的电流恒流放电至单体电芯电压 2.75 V。

3 Cell type and dimension电芯型号及尺寸

3.1 Description and model 电芯说明及型号

Description: Cylindrical Li-ion rechargeable cell

Model: INR18650A260

3.2 Cell dimension 电芯尺寸

Cell physical dimension listed in Figure 3(unit: mm).

电芯尺寸示意图如图 3 所示 (单位: mm)。

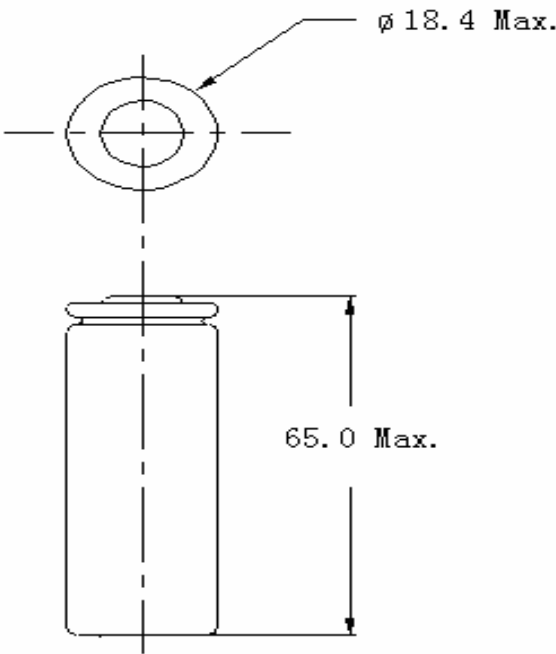


Figure 3/ 图 3

4 Cell characteristics fresh cell tested at $22.5 \pm 2.5^\circ\text{C}$, standard charge and discharge unless otherwise specified

电芯特性（除非有特殊说明，否则所有测试要求为：温度在 $22.5 \pm 2.5^\circ\text{C}$ 条件下，样品为新电池，充放电制度为标准充电和标准放电）

ITEM 项目	SPECIFICATION 规格
Nominal capacity 标称容量	2600 mAh@0.2C (500mA)
Minimum capacity 最小容量	2500 mAh@0.2C (500mA)
Nominal voltage 标称电压	3.6 V
Charge voltage (End current) 充电电压（截止电流）	4.2 V (25 mA)
Energy density 能量密度	200Wh/Kg
Discharge ending voltage 放电终止电压	2.75 V
Max charge current 最大充电电流	1C (2500mA) $10^\circ\text{C} \leq T \leq 45^\circ\text{C}$ 0.2C (500mA) $10^\circ\text{C} > T \geq 0^\circ\text{C}$

Max discharge current 最大放电电流	1C (2500mA) 60℃>T≥45℃ 2C (5000mA) 45℃>T≥5℃ 0.5C (1250mA) 5℃>T≥-20℃
Storage temperature and time 存储温度和时间	1month (1 个月): -20~60℃ 3month (3 个月): -20~45℃ 12month (12 个月): -20~25℃
Internal resistance 内阻	≤70 mΩ(AC Impedance, 1000 Hz)
Cell dimension 电芯尺寸	Height : 65.0 mm Max 最大高度: 65.0 mm Diameter : 18.4mm Max 最大直径: 18.4mm
Weight 重量	≤ 47g

5 Technical requirements技术要求

5.1 Cell usage conditions 电芯使用环境

Temperature of charge 充电温度: 0~45℃

Temperature of discharge 放电温度: -20~60℃

5.2 Cell testing conditions 电芯试验环境

Unless otherwise specified, all tests stated according to following:

除非有特殊说明, 所有测试的环境条件要求如下:

Temperature 温度: 22.5±2.5℃

5.3 Requirement of the testing equipment 测量仪表要求

Voltage meter: The voltage tester internal resistance is ≥ 10 KΩ/V

电压仪表要求: 测量电压的仪表内阻不小于 10KΩ/V

Temperature meter: The precision is ≤0.5℃

温度仪表要求: 测量温度的仪表精度不低于 0.5℃

5.4 Electrochemical Characteristics 电化学特性

(Fresh cells, tested at 22.5±2.5℃, standard charge and discharge unless otherwise specified.

(除非有特殊说明, 否则所有测试要求为: 温度在 22.5±2.5℃条件下, 样品为新电池, 充放电制度为标准充电和标准放电)

NO. 序号	ITEM 测试项目	CRITERION 性能标准
5.4.1	Discharge rate capability 倍率放电 性能	Test condition: Temperature : 22.5±2.5℃ Charge: CC/CV 0.5C (1250mA) 4.2V cut off current: 0.01C (25mA) Discharge: CC variable values; End-of-discharge Voltage: 2.75V <div> <div> $\frac{\text{discharge capacity at 0.5C}}{\text{discharge capacity at 0.2C}} \geq 95\%;$ </div> <div> $\frac{0.5C\text{放电容量}}{0.2C\text{放电容量}} \geq 95\%;$ </div> </div> <div> <div> $\frac{\text{discharge capacity at 1.0C}}{\text{discharge capacity at 0.2C}} \geq 90\%;$ </div> <div> $\frac{1.0C\text{放电容量}}{0.2C\text{放电容量}} \geq 90\%;$ </div> </div>

BISS Product Development, LLC

		$\frac{\text{discharge capacity at } 2.0C}{\text{discharge capacity at } 0.2C} \geq 80\%; \quad \frac{2.0C \text{ 放电容量}}{0.2C \text{ 放电容量}} \geq 80\%$
5.4.2	Cycle life 循环寿命	<p>Test condition: Temperature : 22.5±2.5℃ Charge: CC/CV 0.5C (1250mA) 4.2V cut off current: 0.01C (25mA) Discharge: CC 0.5C (1250mA) ; End-of-discharge Voltage: 2.75V 301th: Charge: CC/CV 0.5C (1250mA) 4.2V cut off current: 0.01C (25mA) Discharge: CC 0.2C (500mA) ; End-of-discharge Voltage: 2.75V</p> $\frac{\text{Discharge capacity of 301th cycle}}{C_{\min \text{ in } 4}} \geq 70\%; \quad \frac{\text{第301次循环的放电容量}}{\text{标称最低容量}} \geq 70\%$
5.4.3	High-Low temperature discharge performance 高低温放电 性能	<p>Test condition: Charge: CC/CV 0.5C (1250mA) 4.2V cut off current: 0.01C (25mA) Discharge: CC 0.5C(1250mA); End-of-discharge Voltage: 2.75V</p> $\frac{\text{discharge capacity at } -10^{\circ}\text{C}}{\text{discharge capacity at } 25^{\circ}\text{C}} \geq 55\%; \quad \frac{-10^{\circ}\text{C 放电容量}}{25^{\circ}\text{C 放电容量}} \geq 55\%$ $\frac{\text{discharge capacity at } 0^{\circ}\text{C}}{\text{discharge capacity at } 25^{\circ}\text{C}} \geq 75\%; \quad \frac{0^{\circ}\text{C 放电容量}}{25^{\circ}\text{C 放电容量}} \geq 75\%$ $\frac{\text{discharge capacity at } 60^{\circ}\text{C}}{\text{discharge capacity at } 25^{\circ}\text{C}} \geq 95\%; \quad \frac{60^{\circ}\text{C 放电容量}}{25^{\circ}\text{C 放电容量}} \geq 95\%$
5.4.4	Storage performance 存储性能	<p>Test condition: Charge: CC/CV 0.5C(1250mA) 4.2V cut off current: 0.01C(25mA); stored at 25℃ for 30 days Discharge: CC 0.5C(1250mA); End-of-discharge Voltage: 2.75V</p> $\frac{\text{Residual capacity after 30days storage}}{C_{\min \text{ in } 4}} \geq 90\%; \quad \frac{\text{存储30天后残余容量}}{\text{标称最低容量}} \geq 90\%$ $\frac{\text{Recover capacity after 30days storage}}{C_{\min \text{ in } 4}} \geq 95\%; \quad \frac{\text{存储30天后恢复容量}}{\text{标称最低容量}} \geq 95\%$

5.5 Environmental characteristics and safety characteristics 环境适应性能和安全性能

5.6 PTC Specification PTC 规格

	PTC Specification (in the Cell)			
Item (项目)	Hold Current (保持电流)	Resistance(阻值)	Power Dissipation (功率损耗)	Resistance After Trip (失效后内阻)
Spec. (内容)	2.6A	10-20m Ω	Max. 2.5W	Max.35m Ω

6 Package picture 包装图片



Small box

big box

pallet

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

7 Shipment 出货

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.

单体电芯按 3.6~3.9V 的充电电压或客户要求出货,电芯出货后充电前的剩余容量取决于储存时间和条件.

8 Warranty 质量保证

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

自出货之日起,电芯的保质期限依合同而定.但是,在此期间内,如果非BISS公司的制程原因。而是客户的误用造成的电芯质量问题,BISS公司不承诺免费更换.

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

BISS公司对违反安全守则操作所产生的问题不承担任何责任.

BISS will not be responsible for trouble occurred by matching electric circuit, cell pack and charger.

BISS公司对与电路,电池组,充电器搭配使用所产生的问题不承担任何责任.

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

出货后客户在电芯组装过程中产生的不良电芯不在BISS公司质量保证的范围之列.

9 Storage and Shipment Requirement 存储及运输要求

Item 项目		Requirement 要求
Storage environment 储存环境	Short period less than 1 month 短期少于 1 个月	-20°C ~ +60°C, 90 % RH Max
	Long period more than 3 month 长期超过 3 个月	-10°C ~ + 45°C, 90 % RH Max
	Recommend storage 推荐存储	-10°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.		

10 Warning and cautions in handling the lithium-ion cell

电芯使用时警告事项及注意事项

Lithium-Ion rechargeable batteries subject to abusive conditions can cause damage to the cell and/or personal injury. Please read and observe the standard cell precautions below before using utilization.

滥用锂离子充电电芯可能会造成电芯的损害或人身的伤害. 在使用锂离子充电电芯以前, 请仔细阅读以下的安全守则:

Note 1. The customer is required to contact BISS in advance, if and when the customer needs other applications or operating conditions than those described in this document.

注释 1. 如果客户需要其它应用程序或本文档中描述之外的操作条件, 客户需要提前联系BISS。

Note 2. BISS will take no responsibility for any accident when the cell is used under other conditions than those described in this Document.

注释 2.在该文件说明的条件之外使用该电芯而产生的事故, BISS公司不承担任何责任.

Warning 警告

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:

危险警告: (应在使用说明手册或说明书中, 特别注明) 为防止电池可能发生泄漏, 发热, 爆炸, 请注意以下预防措施:

- » Don't immerse the battery in water and seawater. Please put it in cool and dry environment if no using.
- » 严禁将电池浸入海水或水中, 保存不用时, 应放置在阴凉干燥的环境中。
- » Don't use and leave the cell near a heat source such as fire or heater.
- » 禁止将电芯在热高温源旁, 如火, 加热器等旁边使用和留置。
- » Do not use or leave the cell under the blazing sun (or in heated car by sunshine).
- » 不要将电芯放置在太阳光直射的地方。
- » Being charged, using the battery charger specifically for that purpose.
- » 充电时请选用锂离子电芯专用充电器。
- » Don't reverse the positive and negative terminals
- » 严禁颠倒正负极后使用电芯。

- » Do not disassemble or modify the cell.
 - » 不要拆卸或修整电芯.
 - » Do not use the cell with conspicuous damage or deformation..
 - » 不要使电芯受到明显的损害或变形.
 - » Don't connect the cell to an electrical outlet directly.
 - » 严禁将电芯直接插入电源插座。
 - » Don't discard the cell in fire or heater.
 - » 禁止将电芯丢入火或加热器中。
 - » Do not short circuit, over-charge or over-discharge the cell.
 - » 不要将电芯短路,过充或过放.
 - » Don't transport and store the cell together with metal objects such as necklaces, hairpins.
 - » 禁止将电芯与金属, 如发卡、项链等一起运输或存储。
 - » Do not use lithium ion battery and others different lithium battery model in mixture.
 - » 禁止与液态锂离子或不同型号的锂电池混合使用。
 - » Keep the battery away from babies.
 - » 电池应远离小孩.
 - » Don't strike, throw or trample the cell.
 - » 禁止敲击, 抛掷或踩踏电芯等。
 - » Prohibition of use of damaged cells.
 - » 禁止使用已损坏的电芯。
 - » Battery pack designing and packing Prohibition injury batteries.
 - » 电池外壳设计和包装禁止损伤电池。
 - » The battery replacement shall be done only by either cells supplier or device supplier and never be done by the user.
 - » 更换电芯应由电芯供应商或设备供应商完成, 用户不得自行更换。
 - » Be aware discharged batteries may cause fire; tape the terminals to insulate them..
 - » 废弃之电池应用绝缘纸包住电极, 以防起火, 爆炸。
 - » 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.
 - » 禁止在强静电和强磁场的地方使用, 否则易破坏电池安全保护装置, 带来不安全的隐患。
 - » Do not directly solder the battery and pierce the battery with a nail or other sharp object.
 - » 禁止直接焊接电池和用钉子或其它利器刺穿电池。
 - » Do not recommend series and parallel connection (not cylinder battery), Otherwise, do that after grouping.
 - » 不建议串并联使用 (非圆柱产品), 串并联需经过配组后.
 - » When disposing of secondary cells, keep cells of different electrochemical systems separate from each other.
 - » 二次电池处理时, 请将电池和其他电化学体系的产品分开。
 - » Disassemble or reconstruct the cell
- 拆解或重新组装电芯

Caution 小心

- » 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.

- » 禁止在高温下（直热的阳光下或很热的汽车中）使用或放置电池，否则可能会引起电池过热，起火或功能失效，寿命减短。
- » 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.
- » 如果电芯发生泄露，电解液进入眼睛，请不要搓揉，应用清水冲洗眼睛不少于 15min，必要时请立即前往医院接受治疗，否则会伤害眼睛。
- » If the cell gives off an odor, generates heat, becomes discolored or deformed, or in any way appear abnormal during usage, recharging or storage, immediately remove it from the device or cell charger and stop using it.
- » 如果电芯发出异味，发热，变色，变形或使用、存储、充电过程中出现任何异常现象，立即将电芯从装置或充电器中移开并停用。
- » 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.
- » 如果电池弄脏，使用前应用干布抹净，否则可能会导致接触不良功能失效。

11 The restriction of the use of hazardous substances 有害物质控制要求

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

本型号锂离子电芯符合本公司“有害物质和材料管理规范”要求！

12 Contact information 联系方式

If you have any questions regarding the cell, please contact the following address:

如有疑问，请按以下地址联系：wang_tim@126.com