

**Lithium-ion Battery Pack
Specification**

Model: PCL18650-1S PAN

ZEUS CONFIDENTIAL

191 Covington Drive, Bloomingdale, IL 60108
Phone: 630-295-6800 Fax: 630-295-6801
Toll Free: 877-469-4255



PCL18650-1S PAN
3.6V 3300mAh Lithium-ion

AMENDMENT HISTORY

| Rev | Description | Date | Name |
|-----|-----------------|-----------|----------|
| Pre | Initial Release | 7-25-2017 | Kevin Oh |
| | | | |
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CUSTOMER APPROVAL

| Company/Customer Name | Department | Date | Signature |
|-----------------------|------------|------|-----------|
| | | | |
| | | | |

- **For Air Shipments:** A 30% state of charge (SOC) limit on secondary lithium-ion cells and batteries, including Section II cells and batteries, will now apply. This does not apply to batteries packed with or contained in equipment (Effective April 1, 2016).
- Lithium cells/battery packs must be charged within 45 days of receipt to avoid over discharge.
- Shipping lithium materials must be done through a licensed shipper with appropriate packaging & labeling to meet current regulations.

These amendments are detailed in a lithium battery update document found on the International Air Transport Association (IATA) website: <http://www.iata.org/whatwedo/cargo/dgr/Documents/lithium-battery-update.pdf>

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1. Scope

This product specification applies to rechargeable Lithium-ion battery supplied by Zeus Battery Products.

2. Description and Model

Model: PCLI18650-1S PAN

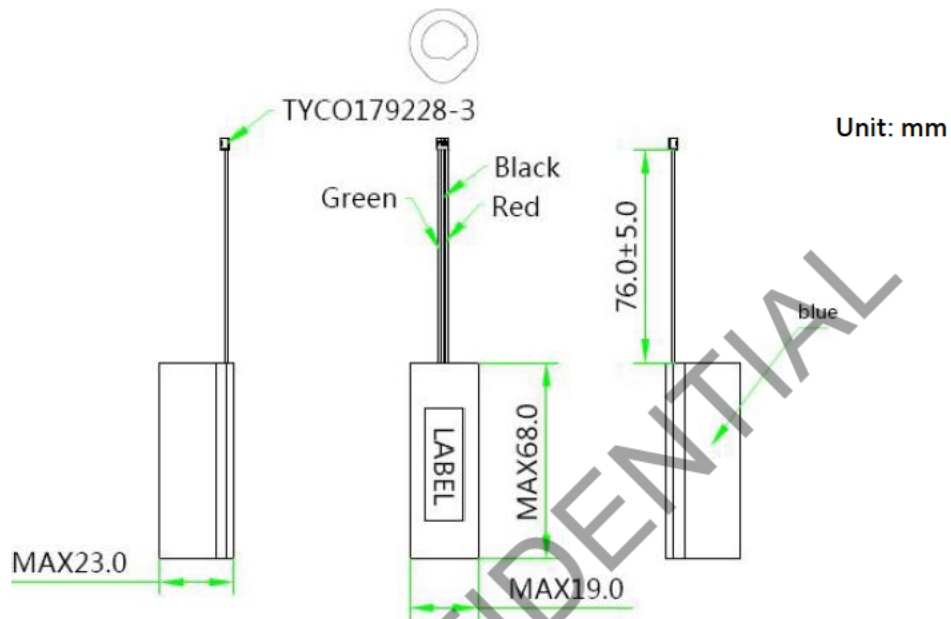
Description: 3.6V 3300mAh

3. Nominal Specifications

| No. | Item | Specification | Remark |
|-----|-----------------------------------|---------------------------------------------------------------|------------------------------------|
| 1 | Nominal Capacity | 3300mAh | @ 0.2C discharge, room temperature |
| 2 | Nominal Voltage | 3.60V | |
| 3 | Charge Voltage | 4.20+/-0.03V | |
| 4 | Standard Charge current | 660mA | |
| 5 | Max. continuous charge current | 1.2A | |
| 6 | Max. continuous discharge current | 1.2A | |
| 7 | Discharge cut-off Voltage | 2.50V | |
| 8 | Internal resistance | ≤250mΩ | |
| 9 | Weight | Approx. 60g | |
| 10 | Operating temperature | Charge: 0 ~ 45°C Discharge: -10 ~ 60°C | |
| 11 | Storage temperature | 1 yr: -10 ~ 25°C 6 months: 25 ~ 45°C 1 month: 45 ~ 55°C | |
| 12 | Cycle Life | ≥300 cycles | @ 0.2C discharge, room temperature |
| 13 | Battery cell | Panasonic NCR18650GA | |

***Note on Air transport: Lithium ion cells and batteries must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated design capacity**

3. Battery Dimension



Pin Definition

| Pin No. | Definition | Color | Description |
|---------|------------|-------|-------------------|
| 1 | P+ | Red | Positive terminal |
| 2 | P- | Black | Negative terminal |
| 3 | NTC | Green | 10K NTC |

3.2 Protection Parameters

| Item | Parameter Value (General Temperature 25°C) | | | |
|--------------------------------------------|--------------------------------------------|---------|------|------|
| | Min | Typical | Max | Unit |
| Over charge detection voltage | 4.20 | 4.25 | 4.30 | V |
| Over charge release voltage | 3.95 | 4.05 | 4.15 | V |
| Over discharge detection voltage | 2.4 | 2.5 | 2.6 | V |
| Over discharge release voltage | 2.9 | 3.0 | 3.1 | V |
| Over current detection current | 4.5 | 6.0 | 7.5 | A |
| Short circuit protection | External short | | | |
| Short circuit recovery condition | Cut short circuit | | | |
| Current consumption under normal operation | | 3.5 | 10.0 | uA |

4. Battery Handling Precautions

- ◆ The battery should be stored at half charged state in a dry, clean area with good ventilation. If the battery has to be stored for extended period of time (over 3 months), the environmental condition should be 20+/-5°C with 65+/-20% Relative Humidity.
- ◆ Charging current and voltage should be less than maximum charge current specified in the Product Specification. Charging with higher current or voltage than recommended value may damage the battery and lead to poor performance increased safety risk.
- ◆ Do not reverse the polarity of battery pack leads. Reverse charging may cause damage to the battery and lead to degradation of performance and increased safety risk.
- ◆ Please use a charger appropriate for charging lithium batteries.
- ◆ The battery shall be discharged at less than the maximum discharge current specified in the Product Specification. Higher current than allowed may reduce performance and lead the battery to over-heat.
- ◆ Always adhere to operating temperature as listed in the Product Specification. Using batteries outside of its operating temperature will lead to reduced performance and increased safety risk.
- ◆ Never short-circuit the battery pack.
- ◆ Do not disassemble the battery pack as it may generate internal short circuit in the battery and lead to gassing, fire, or other safety problems.
- ◆ If electrolytes leak and come into contact with the skin or eyes, flush with fresh water and seek medical attention immediately.
- ◆ Never incinerate or dispose the battery in fire.
- ◆ Never allow the battery to come into contact with liquids such as water, soft drinks, juices and etc.

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- ◆ Batteries might be damaged during shipping. If abnormal features are present such as damage in a plastic envelop, visible deformation of packaging, or electrolyte odor, the battery shall not be used and placed in a safe well ventilated area away from heat source.

5. Warranty

Products supplied by Zeus Battery Products contain 12 months warranty against manufacturing defects. Zeus Battery Products shall not be responsible for any accident or damage resulting from user abuse or misuse.

Note: This product specification is subject to change without prior notice

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