LI-POLYMER BATTERY SPECIFICATIONS

MODEL NO.: PL-7250115-2C

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Manufacturer reserve the right to alter or amend the design, model and specification without prior notice.
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1. **Preface**

The specification is suitable for the performance of Lithium Polymer (LiPo) rechargeable battery produced by the AA Portable Power Corp.

2. **Model**

PL-7250115-2C

3. **Specification**

**LxWxT with tolerance +/- 0.5 mm**

Specifications of single cell

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance between 2 tabs</td>
<td>20.0 ± 2mm</td>
</tr>
<tr>
<td>Tab width</td>
<td>7.0 mm</td>
</tr>
</tbody>
</table>

| Typical Capacity[] | 5.0Ah         |
| Nominal Voltage   | 3.7V          |
| Charge Condition  |               |
| Mix Current       | 7.5A          |
| Voltage           | 4.2V ± 0.03V  |
| Discharge Condition |             |
| Continuous Current | 5.0A        |
| Peak Current      | 10A           |
| Cut-off Voltage   | 3.0V          |
| AC Impedance(mΩH) | <10           |
| Cycle Life[] (CHA 1.0C, DOH 0.5C []) | >800 cycles |
| Operating Temp.   |               |
| Charge           | 0°C~60°C       |
| Discharge        | -20°C~40°C     |
| Thickness(T)     | 7.2±0.5mm     |
| Width(W)         | 50.0±0.5mm    |
| Length(L)        | 117±0.5mm     |
| Distance between 2 tabs | 20.0 ± 2mm |
| Tab width        | 7.0mm         |
| Weight(g)        | 90.0g         |

4. **Cell Performance Criteria**

Before proceeding the following tests, the cells should be discharged at 0.2C to 3.0V cutoff. Unless otherwise stated, tests should be done within one month of delivery under the following conditions:

- Ambient temperature: 20°C±5°C
- Relative Humidity: 65±20%RH

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Note Standard Charge/Discharge Conditions:

Charge: The cell shall be charged to 4.2V at 0.5C from constant current to constant voltage, when the current is 0.05C, stop to charge;

Discharge: 0.5C to 3.0V cell

<table>
<thead>
<tr>
<th>NO</th>
<th>Items</th>
<th>Unit</th>
<th>Specifications</th>
<th>Test Conditions</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Capacity</td>
<td>mAh</td>
<td>≥ 5000</td>
<td>Standard Charge / Discharge</td>
<td>Up to 3 cycles are allowed</td>
</tr>
<tr>
<td>2</td>
<td>Open circuit Voltage (OV)</td>
<td>V</td>
<td>≥ 3.7</td>
<td>Within 1 hr after standard charge</td>
<td>Unit cell</td>
</tr>
<tr>
<td>3</td>
<td>Internal Impedance (R)</td>
<td>mΩ</td>
<td>≤ 10.0</td>
<td>Upon fully charge at 1kHz</td>
<td>*</td>
</tr>
<tr>
<td>4</td>
<td>High Rate Discharge (1Q)</td>
<td>min</td>
<td>≥ 54</td>
<td>Standard Charge/rest 5min discharge at 0.5C to 3.0V</td>
<td>Up to 3 cycles are allowed</td>
</tr>
<tr>
<td>5</td>
<td>Low Temperature Discharge</td>
<td>min</td>
<td>≥ 210</td>
<td>Standard charge, Storage: 2hrs at -2 0± 2°C 0.2C discharge at 0± 2°C</td>
<td>3.0V cell Cut-off</td>
</tr>
<tr>
<td>6</td>
<td>Charge Reserve</td>
<td>min</td>
<td>≥ 90% capacity</td>
<td>Standard charge Storage at 20 degree: 30days Standard discharge (0.5C)</td>
<td>3.0V cell Cut-off</td>
</tr>
<tr>
<td>7</td>
<td>Cycle Life</td>
<td>Cycle</td>
<td>≥ 300</td>
<td>Standard Charge, short-circuit the cell at 20°C± 5 °C until the cell temperature returns to ambient temperature, (cross section of the wire or connector should be more than 0.75mm)</td>
<td>*</td>
</tr>
<tr>
<td>8</td>
<td>External Short Circuit</td>
<td>NA</td>
<td>No fire and no explosion</td>
<td>Standard Charge, and then leave for 2hrs, check battery before / after drop Height: 50 cm Thickness of wooden board: 30mm Direction is not specified Test for 3 times</td>
<td>*</td>
</tr>
<tr>
<td>9</td>
<td>Drop</td>
<td>NA</td>
<td>No fire and no explosion</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. STORAGE AND OTHERS

5.1 Ambient temperature: 20°C± 5°C
Relative Humidity: 65±20%RH

5.2 Please activate the battery once every 3 months according to the following method:
Charge at 0.2C to 4.2V, rest 5 min, then discharge with 0.2C to 3.0V/cell, rest 5 min, then charge at 0.2C to 3.9V.

6. HANDLING PRECAUTIONS AND GUIDELINE

Note(1):
The customer is requested to contact OEM in advance, if and when the customer needs other applications.
or operating conditions than those described in this document. Additional experimentation may be required to verify performance and safety under such conditions.

Note(2):
GEPOW will take no responsibility for any accident when the cell is used under other conditions than those described in this document.

GEPOW will inform in a written form the customer of improvement(s) regarding proper use and handling of the cell, if it is deemed necessary.

6.1 Charging

6.1.1 Charging current:
Charging current should be less than maximum charge current specified in the Product Specification. Charging with higher current than recommended value may cause damage to cell electrical, mechanical and safety performance and could lead to heat generation or leakage.

6.1.2 Charging voltage:
Charging shall be done by voltage less than that specified in the Product Specification (4.2V cell). Charging beyond 4.25V, which is the absolute maximum voltage, must be strictly prohibited. The charger shall be designed to comply with this condition. It is very dangerous that charging with higher voltage than maximum voltage may cause damage to the cell electrical, mechanical safety performance and could lead to heat generation or leakage.

6.1.3 Charging temperature:
The cell shall be charged within 0℃-60℃ range in the Product Specification.

6.1.4 Prohibition of reverse charging:
Reverse charging is prohibited. The cell shall be connected correctly. The polarity has to be confirmed before wiring. In case of the cell is connected improperly, the cell cannot be charged. Simultaneously, the reverse charging may cause damaging to the cell which may lead to degradation of cell performance and damage the cell safety, and could cause heat generation or leakage.

6.2 Discharging

6.2.1 Discharging current
The cell shall be discharged at less than the minimum discharging current specified in the Product Specification. High discharging current may reduce the discharging capacity significantly or cause over-heat.

6.2.2 Discharging temperature
The cell shall be discharged within -20℃-40℃ range specified in the Product Specification.

6.2.3 Over-discharging:
It should be noted that the cell would be at over-discharged state by its self-discharge characteristics in case the cell is not used for long time. In order to prevent over-discharging, the cell shall be charged periodically to maintain between 3.6V and 3.9V. Over-discharging may causes loss of cell performance, characteristics, or battery functions. The charger shall be equipped with a device to prevent further discharging exceeding a cut-off voyage specified in the Product Specification. Also the charger shall be equipped with a device to control the recharging procedures as follows:
The cell battery pack shall start with a low current (0.01A) for 15-30 minutes, i.e. charging, before rapid charging starts. The rapid charging shall be started after the (individual) cell voltage has been reached above 3V within 15-30 minutes that can be determined with the use of an appropriate timer for pre-charging. In case the (individual) cell voltage does not rise to 3V within the pre-charging time, then the charger shall have functions to stop further charging and display the cell/pack is at abnormal state.

6.3. Storage:
The cell shall be stored within -10°C-45°C range environmental condition, If the cell has to be stored for a long time (Over 3 months), the environmental condition should be; Temperature: 23±5°C
Humidity: 65±20%RH. The voltage for a long time storage shall be 3.6V-3.9V range.

6.4. Since the battery is packed in soft package, to ensure its better performance, it’s very important to carefully handle the battery;

6.4.1. The soft aluminum packing foil is very easily damaged by sharp edge parts such as N-tabs, pins and needles.
Don’t strike battery with any sharp edge parts;
Trim your nail or wear glove before taking battery[]
Clean worktable to make sure no any sharp particle;

6.4.2. Don’t bend or fold sealing edge;
6.4.3. Don’t open or deform folding edge;
6.4.4. Don’t bend tab;
6.4.5. Don’t Fall, hit, bend battery body;
6.4.6. Short terminals of battery is strictly prohibited, it may damage battery;

6.5. Notice Designing Battery Pack;
Battery pack should have sufficient strength and battery should be protected from mechanical shock;
No Sharp edge components should be inside the pack containing the battery;

6.6. Notice for Assembling Battery Pack
6.6.1. Tab connection
Ultrasonic welding or spot welding is recommended to connect battery with PCM or other parts. If apply manual solder method to connect tab with PCM below notice is very important to ensure battery performance.
a) The solder iron should be temperature controlled and ESD safe
b) Soldering temperature should not exceed 350°C
c) Soldering time should not be longer than 3s
d) Soldering time should not exceed 5 times. Keep battery tab cooled down before next time soldering
e) Directly heat cell body is strictly prohibited. Battery may be damaged by heat above approx. 100°C

6.6.2. Cell fixing
The battery should be fixed to the battery pack by its large surface area
No cell movement in the battery pack should be allowed

7. OTHERS
7.1. Prevention of short circuit within a battery pack

Manufacturer reserve the right to alter or amend the design, model and specification without prior notice.
Enough insulation layers between wiring and the cells shall be used to maintain extra safety protection.

7.2. Prohibition of disassembly

7.2.1. The disassembling may generate internal short circuit in the cell, which may cause gassing, firing, or other problems.

7.2.2. LFP battery should not have liquid from electrolyte flowing, but in case the electrolyte come into contact with the skin, or eyes, physicians shall flush the electrolyte immediately with fresh water and medical advice is to be sought.

7.3. Never incinerate nor dispose the cells in fire. These may cause firing of the cells, which is very dangerous and is prohibited.

7.4. The cells shall never be soaked with liquids such as water, seawater, drinks such as soft drinks, juices, coffee or others.

7.5. The battery replacement shall be done only by either cells supplier or device supplier and never be done by the user.

7.6. Prohibition of use of damaged cells

The cells might be damaged during shipping by shock. If any abnormal features of the cells are found such as damages in a plastic envelope of the cell, deformation of the cell package, smell of electrolyte, electrolyte leakage and others, the cells shall never be used any more.

The cells with a smell of the electrolyte or a leakage shall be placed away from fire to avoid firing.