EEMB CO., LTD

Polymer Li-ion Battery

Specification

Model: **LP451218HB**

Capacity: **40mAh**

Prepared	Checked	Approved

Customer:

Customer Approval（Customer confirmation）:		
Signature	**Checked**	**Approved**

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Catalog

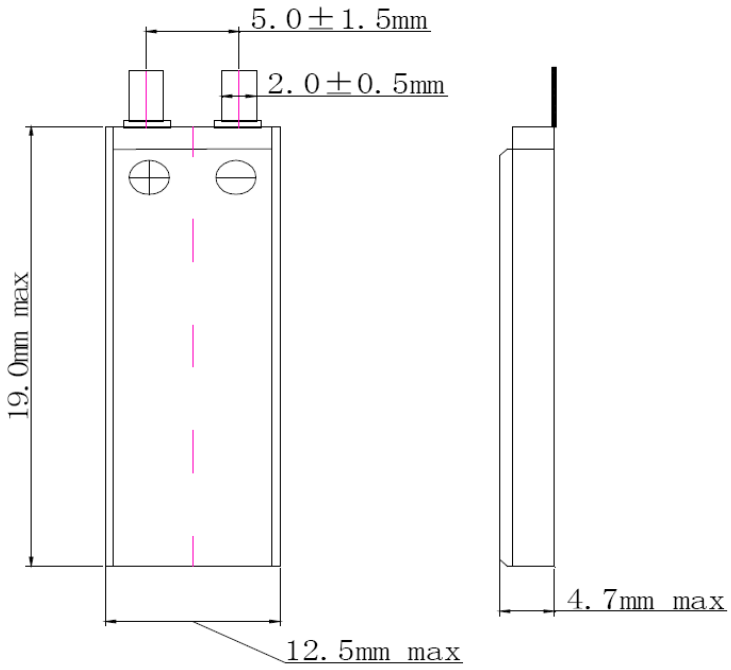
1. Scope

This product specification defines the requirements of the rechargeable polymer lithium-ion battery supplied to the customer by EEMB Co., Ltd.

2. Product Basic Characteristics

Item	Specification	Remark
Nominal Capacity	40mAh	0.2 C discharge
Minimum. Capacity	39mAh	0.2 C discharge
Nominal Voltage	3.7 V	
Charge Voltage	4.2 ± 0.02 V	
Charge Current	Standard charge : 0.5 C (20 mA) Rapid charge : 1.0C (40mA)	0~40 ℃
Charging Time	Standard charge: 3.0 hours (Ref.) Rapid charge: 2.0 hours (Ref.)	
Max. charge current	1.0 C (40 mA)	
Cont. Discharge Current	15.0 C (600mA)	0~40 ℃
Cutoff Voltage	2.75 V	
Resistance	≤ 250 mΩ	1kHz AC Method
Weight (Approx.)	1.1g	
Dimensions(T.W.H.)	**T**hickness: 4.7mm max. **W**idth: 12.5mm max. **L**ength: 19.0mm max.	
Operating Temperature	Charge : 0 ~ 40℃ Discharge : -20~40℃	
Storage Temperature	1 year : -20~20℃ 3 months : -20~25℃ 1 month : -20~30℃	

3. Shape and Dimensions（Unit：mm）



4. Battery Performance Criteria

Unless otherwise specified, all tests stated in this specification are conducted at temperature 25±5℃ and humidity 60±20%.

Test item	Test method	Specification
Standard Discharge Capacity	The standard discharge capacity is the initial discharge capacity of the cell, which is measured with discharge current of 600mA with 2.75 V cut-off at 25±5℃, within 1 hour after the standard charge.	Standard Discharge Capacity ≥ 32mAh
Cycle Life	Each cycle is an interval between the charge at CC-CV (20 mA - 4.2 V) for 3h and the discharge (discharge current 600mA) with 2.75 V cut-off. After 100 cycles, measure capacity under the standard condition	Capacity ≥ 28mAh (70% of the capacity at 25℃)
Initial internal impedance	Initial internal impedance measured at AC 1kHz after 50% charge.	Initial internal impedance ≤ 250 mΩ
Storage Characteristics	Capacity after storage for 28 days at 25℃ from the standard charge, measured with discharge current 8mA with 2.75 V cut-off at 25℃.	Capacity retention (after the storage) ≥34mAh (85% of the capacity at 25℃)

Status of the cell as of ex-factory	The cell should be shipped in 50% charged state	OCV is not less than3.8V.
Drop Test	as of shipment or full charged) drop onto concrete ground from 1.0m height at a random direction 6 times	No fire, and no explosion
Vibration Test	After standard charging, fixed the cell to vibration table and subjected to vibration cycling that the frequency is to be varied at the rate of 1Hz per minute between 10Hz an 55Hz, the excursion of the vibration is1.8mm. The cell shall be vibrated for 30 minutes per axis of XYZ axes.	No fire, and no explosion
Overcharge Test	To charge the standard charged cell with 40 mA constant current until cell voltage reaches 4.6 V, then be charged at constant voltage of 4.6 V while tapering the charge current at 25℃ for 2.5hrs.	No fire, and no explosion
External Short-circuit Test	To short-circuit the standard charged cell by connecting positive and negative terminal by less than 50mΩ wire.	No fire and no explosion.

5. Storage and Others

If the cell is kept for a long time (3months or more), It is strongly recommended that the cell is preserved at temperature range (0-25℃), low humidity, no corrosive gas atmosphere.

6. Handling Precaution and Guidance

Strictly observes the following needing attention. EEMB will not be responsible for any accident occurred by handling outside of the precautions in this specification.

! Danger

- Strictly prohibits heat or throw cell into fire.
- Strictly prohibits throw and wet cell in liquid such as water、gasoline or drink etc.
- Strictly prohibits use leave cell close to fire or inside of a car where temperature may be above 60℃. Also do not charge / discharge in such conditions.
- Strictly prohibits put batteries in your pockets or a bag together with metal objects such as necklaces. Hairpins, coins, or screws. Do not store or transportation batteries with such objects.
- Strictly prohibits short circuit the (+) and (-) terminals with other metals.
- Do not place Cell in a device with the (+) and (-) in the wrong way around.
- Strictly prohibits pierce Cell with a sharp object such as a needle.

- Strictly prohibits disassemble or modify the cell.
- Strictly prohibits welding a cell directly.
- Do not use a Cell with serious scar or deformation.
- Thoroughly read the user's manual before use, inaccurate handling of lithium ion rechargeable cell may cause leakage, heat, smoke, an explosion, or fire, capacity decreasing.

! Warning

- Strictly prohibits put cell into a microware oven, dryer, or high-pressure container.
- Strictly prohibits use cell with dry cells and other primary batteries, or new and old battery or batteries of a different package, type, or brand.
- Stop charging the Cell if charging is not completed within the specified time.
- Stop using the Cell if abnormal heat, odor, discoloration, deformation or abnormal condition is detected during use, charge, or storage.
- Keep away from fire immediately when leakage or foul odor is detected.
- If liquid leaks onto your skin or clothes, wash well with fresh water immediately.
- If liquid leaking from the Cell gets into your eyes, do not rub your eyes. Wash them well with clean edible oil and go to see a doctor immediately.

! Caution

- Before using the Cell, be sure to read the user's manual and cautions on handling thoroughly.
- Charging with specific charger according to product specification. Charge with CC/CV method. Strictly prohibits revered charging. Connect cell reverse will not charge the cell. At the same time, it will reduce the charge-discharge characteristics and safety characteristics, this will lead to product heat and leakage.
- Store batteries out of reach of children so that they are not accidentally swallowed.
- If younger children use the Cell, their guardians should explain the proper handling.
- Before using the Cell, be sure to read the user's manual and cautions on handling thoroughly.
- Batteries have life cycles. If the time that the Cell powers equipment becomes much shorter than usual, the Cell life is at an end. Replace the Cell with a new same one.
- When not using Cell for an extended period, remove it from the equipment and store in a place with low humidity and low temperature.
- While the Cell pack is charged, used and stored, keep it away from objects or materials with static electric charges.
- If the terminals of the Cell become dirty, wipe with a dry clothe before using the Cell.
- Storage the cells in storage temperature range as the specifications. After full discharged, we suggest that charging to 3.7~4.0V with no using for a long time.
- Do not exceed these ranges of the following temperature ranges：

  Charge temperature range: 0℃ to 45℃;
  Discharge temperature range: -20℃ to 60℃.
  Store less than 1 month : -20℃ - +60℃
  Store less than 3 months : -20℃ - +45℃
  Store less than 1 year : -20℃ - +25℃

! Special Notice

Keep the cells in 50% charged state during long period storage. We recommend to charge the battery up to 50% of the total capacity every 3 months after receipt of the battery and maintain the voltage 3.7~4.0V. And store the battery in cool and dry place.