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Description	Lithium-Ion Battery	REV:	A	

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1 Abstract

A 3.7V Li- Ion battery containing one cell and safety circuit.

The battery pack in its final assembled form is designed to power a flashlight made by XXXXX

2 Specification

2.1 Cell

Type of Cell	Sealed Lithium-ion cylindrical Rechargeable battery
Cell Brand	Panasonic
Cell Model	NCR18650
Cell Size	18650
Cell Typical capacity	2900 mAh
Cell Minimum capacity	2750 mAh
Number of cell used	1PC
Cell UL Number	MH12210

2.2 Pack

Rated voltage	3.7V
Typical capacity	2900 mAh (8.32Wh)
Minimum capacity	2750 mAh (7.95Wh)
Standard charge	580mA x 5.5hrs to 4.2V
Rapid charge	1450mA x 2.5hrs to 4.2V
Maximum charge current	2000mA
Maximum discharge current	5000mA(continuous mode)
Discharge end voltage	3.0V
Battery Pack Color	White / Red
Operating temperature	0 – 45°C (charge) -20 - 60°C (discharge)
Storage temperature	-20 - 50°C (1 week) -20 - 35°C (6 months)

3 Test Conditions

Unless otherwise specified, all tests should be conducted within one month of delivery, under the following conditions:

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Ambient temperature : 20 +/- 5°C.
Relative humidity : 65 +/- 20%.

4 Performance

Item	Criteria	Test conditions
Capacity	Above 2750mAh	Standard charge and standard discharge
Internal impedance	Less than 160mohm	Measure AC impedance at 1kHz
Cycle life **	Above 2200mAh	300 cycles charging/discharging is repeated in the below condition. <ul style="list-style-type: none"> • Charging: 1375mA to 4.2V • Rest time: 20min • Discharging: 1375mA up to 3V • Temperature: 20±2°C
Leakage resistance	No leakage	Visually inspect battery pack after standard charge and storage at 25°C for 14 days.
Drop test	No fire, No explosion, No leakage (max. weight loss 0.1%)	Drop battery pack after standard charged onto a Bakelite floor from a height of 1 m for 6 times.
Vibration test	No fire, No explosion, No leakage (max. weight loss 0.1%)	The battery pack is vibrated in tri-axial direction with 4 mm amplitude of frequency 30 Hz for 1 minute in each direction.
Short circuit test	No fire, No explosion, cell temperature shall not exceed 150 °C	External short circuit
Dimensions	Refer to drawing LIC18650P2.25_DWG	Measured by calipers
Battery weight	Approx. 46g	Measured by balance
Appearance	No crack, no leakage, no deformation	Visual inspection

Notes:

** Data provided under "Cycle Life" in this document is our best estimate based on the technical data supplied by battery cell manufacturer in the Product Specification Form.

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5 Casing

Casing will be provided by a shrink wrap.

6 Warranty

One year limited warranty against workmanship and material defects.

Manufacturer reserves the right to alter, amend the design, model and specification without prior notice.

7 Charge state of cell before shipment

Charge from 10% to 50% according to delivery.

8 Safety precaution

Please follow the safety precaution carefully as improper handling of Polymer lithium-ion batteries may result in injury or damage from electrolyte leakage, heating ignition or explosion.

To ensure safety, consult us, regarding the charge and discharge specifications, Equipment structure, warning labels, using our product in designs and other important details.

- *Never charge the battery above 4.25V.*
- *Never reverse charge the battery.*
- *Never heat or incinerate the battery.*
- *Never pierce, crush or cause mechanical damage to the battery.*
- *Never charge a battery at high temperature condition, such as at or near a fire.*
- *Never "short" the battery.*
- *Never discharge a battery to below 3.0V per cell.*
- *Never allow the battery to get wet or be immersed in water.*
- *For long period of storage, temperature should be below 45 °C.*
- *After long period of storage, the battery may require some cycling to recover capacity.*

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9 Safety Device and Abuse Requirement

Circuitry protection as described below has been presented inside the battery pack, to insure safety in case of misuse.

Overcharge Voltage Protection

At a charge voltage greater than $4.3 \pm 0.1V$, the overcharge protection should engage interrupting the charge current.

Over Discharge Protection

When a voltage less than $2.3V \pm 0.25V$ is reached upon discharging, the over discharge protection device should engage. The resulting discharge current should be below $1\mu A$.

Over Discharge/Short Circuit Protection

When discharge current exceeds $8.0A$, the over discharge current protection should engage interrupting the discharge current.