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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 different types of 18650 Flashlights.

## 2 Specification

### 2.1 Cell

Type of Cell	Sealed Lithium-ion cylindrical Rechargeable battery
Cell Brand	Panasonic
Cell Model	NCR18650B
Cell Size	18650
Cell Typical capacity	3400 mAh (12.58Wh)
Cell Minimum capacity	3250 mAh (12.02Wh)
Number of cell used	1PC
Cell UL Number	

### 2.2 Pack

Rated voltage	3.7V
Typical capacity	3400 mAh (12.58Wh)
Minimum capacity	3250 mAh (12.02Wh)
Standard charge	680mA x 5.5hrs to 4.2V
Rapid charge	1700mA x 2.5hrs to 4.2V
Maximum charge current	3400mA (1C)
Maximum discharge current	7000mA(continuous mode)
Discharge end voltage	3.0V
Battery Pack Color	White / Red / Blue / Black
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:

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

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## 4 Performance

Item	Criteria	Test conditions
<b>Capacity</b>	Above 2500mAh	Standard charge and standard discharge
<b>Internal impedance</b>	Less than 151mohm	Measure AC impedance at 1kHz
<b>Cycle life **</b>	Above 2000mAh	300 cycles charging/discharging is repeated in the below condition. <ul style="list-style-type: none"> <li>• Charging: 1250mA to 4.2V</li> <li>• Rest time: 20min</li> <li>• Discharging: 1250mA up to 3V</li> <li>• Temperature: 20±2°C</li> </ul>
<b>Leakage resistance</b>	No leakage	Visually inspect battery pack after standard charge and storage at 25°C for 14 days.
<b>Drop test</b>	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.
<b>Vibration test</b>	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.
<b>Short circuit test</b>	No fire, No explosion, cell temperature shall not exceed 150 °C	External short circuit
<b>Dimensions</b>	Refer to drawing LIC18650P2.25_DWG	Measured by calipers
<b>Battery weight</b>	Approx. 46g	Measured by balance
<b>Appearance</b>	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.

## 5 Casing

Casing will be provided by a shrink wrap.

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## 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.*

## 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.

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#### 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 7.3A, the over discharge current protection should engage interrupting the discharge current.

## 10 EG-Konformitätserklärung

Hiermit erklären wir, dass das beschriebene Produkt aufgrund seiner Konzipierung und Bauart sowie in der von der ENERdan GmbH in Verkehr gebrachten Ausführung den einschlägigen grundlegenden Sicherheits- und Gesundheitsanforderungen der EG-Richtlinien entspricht.

#### Bezeichnung des Produktes / Produkttyp:

ENERPOWER 3,7V Lithium-Ionen Akkumulator 18650, 3400 mAh

(Panasonic Li-Ion LIC18650P3.4 – 3400 mAh – mit PCB)

Artikelnummer: 114028013

EAN: 4250615503502

Dieses Produkt entspricht folgenden EG-Richtlinien:

**2006/66/EG BATTERIERICHTLINIE**

**2001/95/EG RICHTLINIE FÜR DIE ALLGEMEINE PRODUKTSICHERHEIT**

**2004/108/EG RICHTLINIE FÜR DIE ELEKTROMAGNETISCHE VERTRÄGLICHKEIT**

Angewandte Normen:

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**DIN EN 61960:2004: Akkumulatoren und Batterien mit alkalischen oder anderen nichtsäurehaltigen Elektrolyten – Lithium-Akkumulatoren und -batterien für tragbare Geräte (IEC 61960:2003)**

**DIN EN 62133:2003: Akkumulatoren und Batterien mit alkalischen oder anderen nicht säurehaltigen Elektrolyten – Sicherheitsanforderungen für tragbare gasdichte Akkumulatoren und daraus hergestellte Batterien für die Verwendung in tragbaren Geräten**

