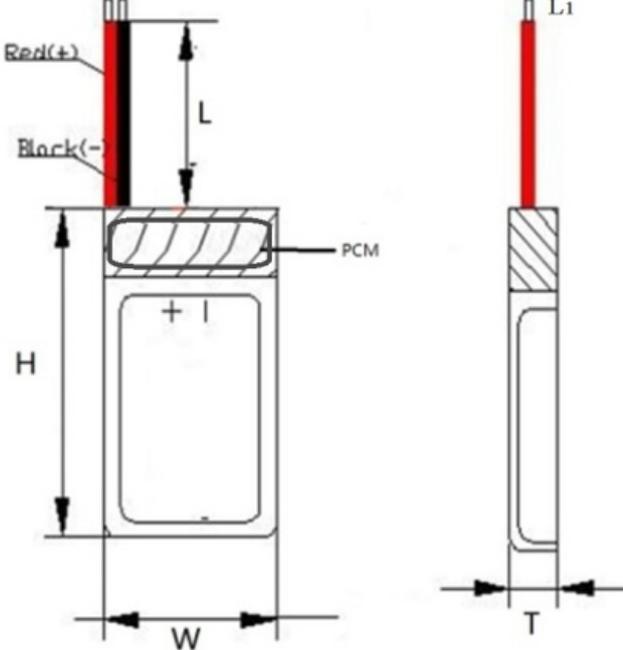


# POWER-XTRA

Model : Power-Xtra PX105568 3.7V 5000 mAh Li-Polymer Battery with PCM(3.0A)  
 Stock Code : 900.869.503.273

| Technical Drawing and Dimension  |                             |                   | Product Image  |  |
|--|-----------------------------|-------------------|--|--|
|  |                             |                   |  |  |
| Length (L)   | 70.0±1mm                    | Length Cable      | 100±5mm  |  |
| Width (W)  | 55.5±1mm                    | Cable             | UL1007#22AWG   |  |
| Thickness (T)  | 10.2±0.5mm                  | Plug/Connector    | No   |  |
| No.  | Item                        | General Parameter |  | Remark   |
| 1  | Rated Capacity              | Typical           | 5000mAh  | Standard discharge (0.2C) after Standard charge  |
|  |                             | Minimum           | 4900mAh  |  |
| 2  | Nominal Voltage             | 3.7V              |  | Mean Operation Voltage   |
| 3  | Voltage at end of Discharge | 2.75V             |  | Discharge Cut-off Voltage  |
| 4  | Charging Voltage            | 4.2±0.03V         |  |  |
| 5  | Internal Impedance          | ≤130mΩ            |  | Internal resistance measured at AC 1KHZ after 50% charge<br>The measure must uses the new batteries that within one week after shipment and cycles less than 5 times |
| 6  | Weight                      | About 85 g        |  |  |

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|    |                                      |  |                                     |
|----|--------------------------------------|--|-------------------------------------|
| 7  | Standard charge                      | Constant Current 0.2C<br>Constant Voltage 4.2V<br>0.01 C cut-off |                                     |
| 8  | Standard discharge                   | Constant current 0.2C<br>end voltage 2.75V                       |                                     |
| 9  | Maximum Continuous Charge Current    | 2500mA (0.5C)  |                                     |
| 10 | Maximum Continuous Discharge Current | 2500mA (0.5C)  |                                     |
| 11 | Operation Temperature Range          | Charge: 0~45°C   | 60±25%R.H.<br>Bare Cell             |
|    |                                      | Discharge: -20~60°C  |                                     |
| 12 | Storage Temperature Range            | Less than 1 year: -20~25°C                                       | 60±25%R.H.<br>at the shipment state |
|    |                                      | less than 3 months: -20~40°C                                     |                                     |

## 1. Performance and Test Conditions

### 2.1 Standard Test Conditions

Test should be conducted with new batteries within one week after shipment from our factory and the cells shall not be cycled more than five times before the test. Unless otherwise specified, test and measurement shall be done under temperature of 20±5°C and relative humidity of 45-85%. If it is judged that the test results are not affected by such conditions, the tests may be conducted at temperature 15-30°C and humidity 25-85%RH.

### 2.2 Measuring Instrument or Apparatus

#### 2.2.1 Dimension Measuring Instrument

The dimension measurement shall be implemented by instruments with equal or more precision scale of 0.01mm.

#### 2.2.2 Voltmeter

Standard class specified in the national standard or more sensitive class having inner impedance more than 10kΩ/V

#### 2.2.3 Ammeter

Standard class specified in the national standard or more sensitive class. Total external resistance including ammeter and wire is less than 0.01Ω.

#### 2.2.4 Impedance Meter

Impedance shall be measured by a sinusoidal alternating current method (1kHz LCR meter).

### 2.3 Appearance

There shall be no such defect as flaw, crack, rust, leakage, which may adversely affect commercial value of battery.

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## 2.4 Temperature Dependence of discharge capacity

Table 3

| Discharge Temperature     | -10°C | 0°C | 23°C | 60°C |
|---------------------------|-------|-----|------|------|
| Discharge Capacity (0.2C) | 50%   | 80% | 100% | 95%  |

## 2.5 Cycle Life and Leakage-Proof

Table 4

| No. | Item              | Criteria   | Test Conditions   |
|-----|-------------------|--|---|
| 1   | Cycle Life (0.5C) | Higher than 70% of the Initial Capacities of the Cells | Carry out 500cycle Charging/Discharging in the below condition.<br>◆Charge: Standard Charge<br>◆Discharge:0.5C to 2.75 V<br>◆Rest Time between charge/discharge:30min.<br>◆Temperature:20±5°C |
| 2   | Leakage-Proof     | No leakage (visual inspection)                         | After full charge with standard charge, store at 55±3°C, 60±10%RH for 1 week.   |

## 2. Mechanical characteristics and Safety Test for Cell

Table 5

(Mechanical characteristics)

| No. | Items          | Test Method and Condition   | Criteria                              |
|-----|----------------|---|---------------------------------------|
| 1   | 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 is 1.6mm. The cell shall be vibrated for 30 minutes per axis of XYZ axes. | No leakage<br>No fire                 |
| 2   | Drop Test      | The cell is to be dropped from a height of 1 meter twice onto concrete ground.  | No explosion,<br>No fire, no leakage. |

Table 6

(Safety Test)

| Item                 | Battery Condition     | Test Method  | Requirements  |
|----------------------|-----------------------|--|---|
| Crush                | Fresh, Fully charged  | Crush between two flat plates. Applied force is about 13kN(1.72Mpa) for 30min.   | No explosion,<br>No fire  |
| Short Circuit (20°C) | Fresh, Fully charged) | Each test sample battery, in turn, is to be short-circuited by connecting the (+) and (-) terminals of the battery with a Cu wire having a maximum resistance load of 0.1Ω.Tests are to be conducted at room temperature(20±2°C ). | No explosion,<br>No fire The Temperature of the surface of the Cells are lower than 150°C |

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|                      |                       |  |  |
|----------------------|-----------------------|--|--|
| Short Circuit (60°C) | Fresh, Fully charged  | Each test sample battery, in turn, is to be short-circuited by connecting the (+) and (-) terminals of the battery with a Cu wire having a maximum resistance load of 0.1Ω. Tests are to be conducted at temperature(60±2°C ). | No explosion, No fire The Temperature of the surface of the Cells are lower than 150°C |
| Impact               | Fresh, Fully charged  | A 56mm diameter bar is inlaid into the bottom of a 10kg weight. And the weight is to be dropped from a height of 1m onto a sample battery and then the bar will be across the center of the sample.                            | No explosion, No fire  |
| Forced Discharge     | Fresh, Fully charged) | Discharge at a current of 1.0C for 2.5h.   | No explosion, No fire  |
| Nail Pricking (3mm)  | Fresh, Fully charged  | Prick through the sample battery with a nail having a diameter of 3mm and remain 2h.   | No explosion, No fire  |

## 3. Protection circuit

(PCM Standard)

| Item                      | Symbol | Content                             | Criterion              |
|---------------------------|--------|-------------------------------------|------------------------|
| Current                   | IDP    | Max. Charging Current               | 3A                     |
|                           |        | Max. Discharging Current            | 3A                     |
| Over charge Protection    | VDET1  | Over charge detection voltage       | 4.30±0.05V             |
|                           | tVDET1 | Over charge detection delay time    | 80–200ms               |
|                           | VREL1  | Over charge release voltage         | 4.10±0.05V             |
| Over discharge protection | VDET1  | Over discharge detection voltage    | 2.40±0.10V             |
|                           | tVDET1 | Over discharge detection delay time | 40-120ms               |
|                           | VREL1  | Over discharge release voltage      | 3.00±0.1V              |
| Over current protection   | VDET3  | Over current detection voltage      | 1.30±0.5V              |
|                           | IDP    | Over current detection current      | 5-9A                   |
|                           | tVDET3 | Detection delay time                | 5-20ms                 |
|                           |        | Release condition                   | Cut load               |
| Short protection          |        | Detection condition                 | Exterior short circuit |
|                           | TSHOR  | Detection delay time                | 5-120ms                |
|                           |        | Release condition                   | Cut short circuit      |
| Interior resistance       | RDS    | Main loop electrify resistance      | VC=4.2V,RDS≤70mΩ       |
| Current consumption       | IDD    | Current consume in normal operation | 3.0μA Type 6.0μA Max   |

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## 4. Handling of Cells

### 4.1 Consideration of strength of film package

#### 1) Soft Aluminium foil

Easily damaged by sharp edge parts such as pins and needles, Ni-tabs, comparing with metal-can-cased LIB.

2) Sealed edge may be damaged by heat above 100°C, bend or fold sealed edge.

### 4.2 Prohibition short circuit

Never make short circuit cell. It generates very high current which causes heating of the cells and may cause electrolyte leakage, gassing or explosion that are very dangerous.

The Power-Xtra tabs may be easily short-circuited by putting them on conductive surface. Such outer short circuit may lead to heat generation and damage of the cell.

An appropriate circuitry with PCM shall be employed to protect accidental short circuit of the battery pack.

### 4.3. Mechanical shock

Power-Xtra cells have less mechanical endurance than metal-can-cased LIB.

Falling, hitting, bending, etc. may cause degradation of Power-Xtra characteristics.

### 4.4 Handling of tabs

The battery tabs are not so stubborn especially for aluminum tab.

Don't bend tab.

Do not bend tabs unnecessarily.

## 5. Storing the Batteries

The batteries should be stored at room temperature, charged to about 30% to 50% of capacity.

We recommend that batteries be charged about once per half a year to prevent over discharge.