

## Lithium Ion Polymer Battery Specification

Model: PCLP582245PCMNTC

### Customer Approval

Date	Customer Name	Signature

**Amendment Record**

<b>Version No.</b>	<b>Date</b>	<b>Content</b>	<b>Remark</b>
A	2/12/2015	First Issue	Rough Draft
B	3/13/2015		Draft
C	3/19/2015		Draft

### 1. Scope

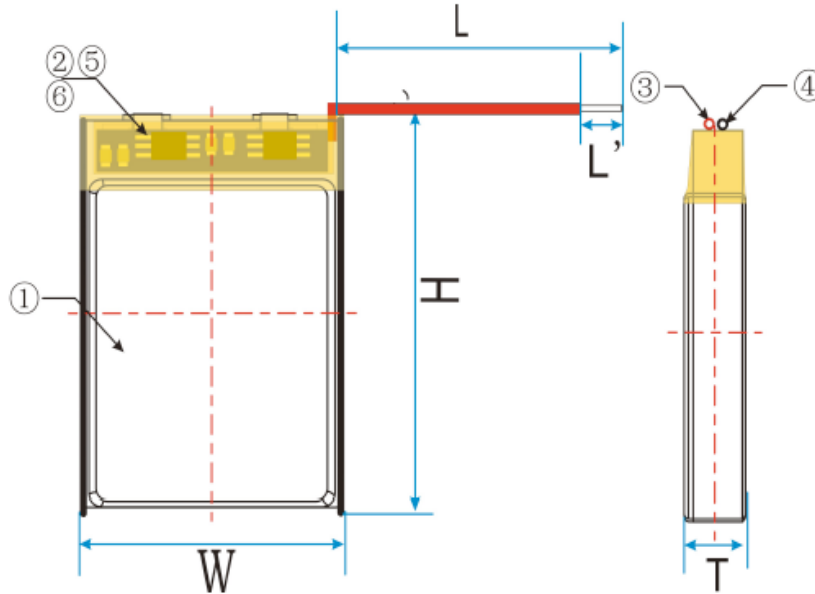
This specification applies to Lithium Polymer battery supplied by Zeus Battery Products.

**2. Model:** Zeus PCLP582245PCMNTC, **Shenzhen BAK Cell Model:** 582245P

### 3. Specification

No.	Item	Specification	Remark
1	Nominal Capacity	550mAh	0.2C discharge
2	Minimum Capacity	500mAh	0.2C discharge
3	Nominal Voltage	3.7V	
4	Charge Voltage	4.20±0.03V	
5	Charge Current	Standard charge: 0.2C (110mA)	Charge constant current 0.2C to 4.2V, then 4.2V constant voltage until current is ≤ 0.02C
		Rapid charge: 0.5C (275mA)	Charge constant current 0.5C to 4.2V, then 4.2V constant voltage until current is ≤0.02C
6	Charging time	Standard charge: Approx. 5 hrs Rapid charge: Approx. 2.5hrs	Charge mode: CC/CV
7	Max. charge current	0.5C (275mA)	
8	Max. continuous discharge current	1C (550mA)	Discharge cut-off voltage: 3.0V
9	Pulse discharge current	2.0C (1100mA)	
10	Discharge cut-off voltage	3.0V	
11	Operating temperature	Charge: 0 ~ 40°C Discharge: -20 ~ 60°C	
12	Storage temperature	1 year: 10 ~ 20°C 3 months: 0 ~ 25°C 1 month: -20 ~ 45°C	For prolonged storage, the battery must be partially charged (40 ~ 60%), and cycle the battery once every 3 ~ 6 months to retain performance
13	Internal Resistance	≤250mΩ	1KHz AC
14	Weight	Approx. 13g	
15	Battery Pack Dimension	Thickness: 6.20mm Max. Width: 22.80mm Max Length: 48.00mm Max	
16	Cycle Life	≥300	0.2C discharge

**4. Battery Pack Dimension**



Item	Description
Wire: UL1571 26AWG	Red: + Black: - Yellow: 10K NTC
L (Wire length)	50±3mm Max.
T (Thickness)	6.20mm Max.
W (Width)	22.8mm Max
H (Height)	48.0mm Max.
1	Cell PCLP582245
2	PCM
3	Red wire
4	Black wire
5 & 6	Insulating tape



### 5.1 PCM Parameters

Parameter	Min.	Typ.	Max.	Unit
Overcharge Detection Voltage	4.25	4.30	4.350	V
Overcharge Detection Delay Time	900	1440	11100	ms
Over-discharge Detection Voltage	2.5	2.8±0.10		V
Over Current Detection	2.5	3.8	5.5	A
Over Current Detection Delay Time	9	12	15	ms
Short Circuit Detection Delay Time	300	400	440	mS
Current Consumption in Normal Operation		3.0	7.0	μA
Impedance		75	100	mΩ

### 6. Appearance

There shall be no defects such as scratch, discoloration, or leakage which may adversely affect commercial value of the battery.

### 7. Standard Test Conditions

#### 7.1 Environmental Conditions

Unless otherwise specified, all test are to be conducted at temperature 25±5°C and 60±20% relative humidity.

#### 7.2 Measuring Equipment

##### 1: Ammeter and Voltmeter

Standard class specified in the national standard or more sensitive class

##### 2: Sliding Caliper

The sliding caliper should have 0.01mm precision.

### **3: Impedance Meter**

The impedance meter with AC 1kHz should be used.

## **8. Characteristics**

### **8.1 Standard Discharge Capacity**

The standard discharge capacity is the initial discharge capacity of the cell, which is measured with discharge current of 0.2C (110mA) with 3.0V cut-off voltage at 25±5°C, within 1 hour after a standard charge.

Standard Discharge Capacity ≥500mAh

### **8.2 Cycle Life**

The cycle life shall be conducted using the following procedures

Step 1: charge the cell with standard charge

Step 2: rest for 10min

Step 3: discharge at 0.2C down to 3.0V cut-off voltage

Step 4: rest for 10 min

The capacity after 300 cycles is expected to be equal to or more than 80% of the initial capacity. After 500 cycles, the capacity should be no less than 60% of the initial minimum capacity.

### **8.3 Initial Internal Impedance**

The initial internal impedance shall be measured at AC 1kHz after a standard charge.

Initial internal impedance ≤250mΩ

## **9. Mechanical Characteristics**

### **9.1 Drop Test**

Drop the cell onto thick wooden platform from 1.0m height at random direction 6 times.

No fire or explosion shall occur.

### **9.2 Vibration Test**

After a standard charge, fix the cell to vibration table and perform vibration cycling such that the frequency is varied at 1Hz per minute between 10Hz and 55Hz, with 1.8mm excursion. The cell shall be vibrated for 20 minutes per axis.

No fire or explosion shall occur.

## **10. Safety**

### **10.1 Overcharge Test**

Charge the cell at 1C (550mA) until the cell voltage reaches 4.6V. Continue to charge at 4.6V while tapering the charge current at 25°C for 2.5hrs.

No fire or explosion shall occur.

### **10.2 External Short-circuit Test**

Short-circuit the cell by connecting positive and negative terminal with wire containing  $\leq 110\text{m}\Omega$  resistance.

No fire or explosion shall occur.

### **10.3 Over-discharge Test**

At  $20\pm 5^\circ\text{C}$  discharge with constant current 0.2C until the cut-off voltage has been reached, then place  $30\text{m}\Omega$  external load for 24 hrs.

No fire or explosion shall occur.

### **10.4 Thermal Abuse**

Place the cell in a thermal chamber. Raise the temperature to  $130^\circ\text{C}$  at the rate of  $5^\circ\text{C}$  per minute and hold it for 10min, and then lower the temperature at  $5^\circ\text{C}$  per minute until room temperature has been reached.

No fire or explosion shall occur.

## **11. Warranty**

Zeus Battery Products provides 12 months of warranty against defects or poor workmanship. Any problems stemming from improper care or improper use are not covered under this warranty.