

Specification of Lithium-ion Polymer Rechargeable TMT250 Battery

1. Scope

This document describes the product specification and using condition of the Lithium-ion Polymer rechargeable cell.

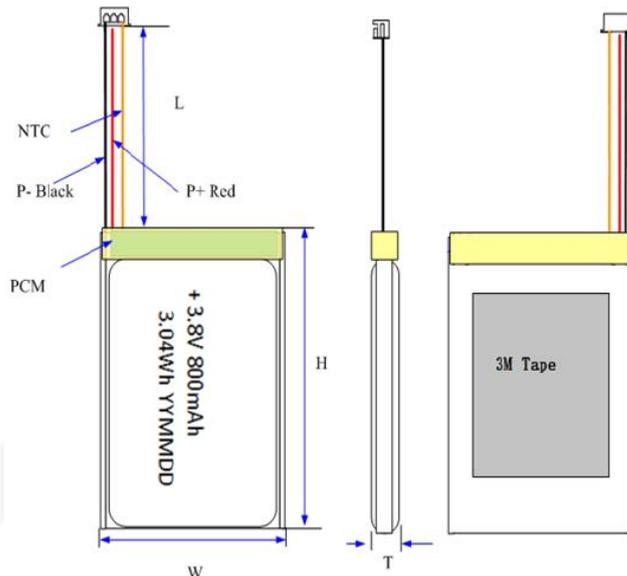
2. Product

- 2.1 Name : Lithium-ion polymer rechargeable cell;
- 2.2 Product Description: Single cell with PCM;

3. Specification

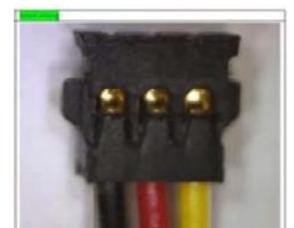
Item	Specification
3.1 Nominal voltage	3.8 V
3.2 Minimal capacity	800 mAh discharge from 4.35V to 3.0V at 0.2C mA
3.3 Initial impedance	≤150 mΩ The Specifications included cell;PCM;wire
3.4 Full charge voltage	4.35±0.05 V
3.5 Pack Voltage	3.8~4.1 V
3.6 Max charge current	800 mA
3.7 Charging method	CC/ CV charge with constant current 0.5C to 4.35V, then charge with constant voltage 4.35V till charge current is less than 0.01C
3.8 Max discharge current	800 mA
3.9 Discharge cut-off voltage	2.80 V PCM cut-off voltage
3.10 Operating environment:	Charging 0°C ~ 45°C ; 65±20%RH
3.11 Storage environment	-20°C~45°C 65±20%RH storage for a long time(≥3months) and the storage condition shall be: ≤45°C; 65±20%RH; 3.7~3.9V
3.12 Pack Weight (Approx)	≈18.0 g

4. Outward appearance and Dimension



单位: mm

Item	Dimension
(T) Thickness	Max: 7.0
(W) Width	Max: 30.5
(H) High	Max: 37.5
(L) The length of the Wire	40±3
bending	Single



BOM List

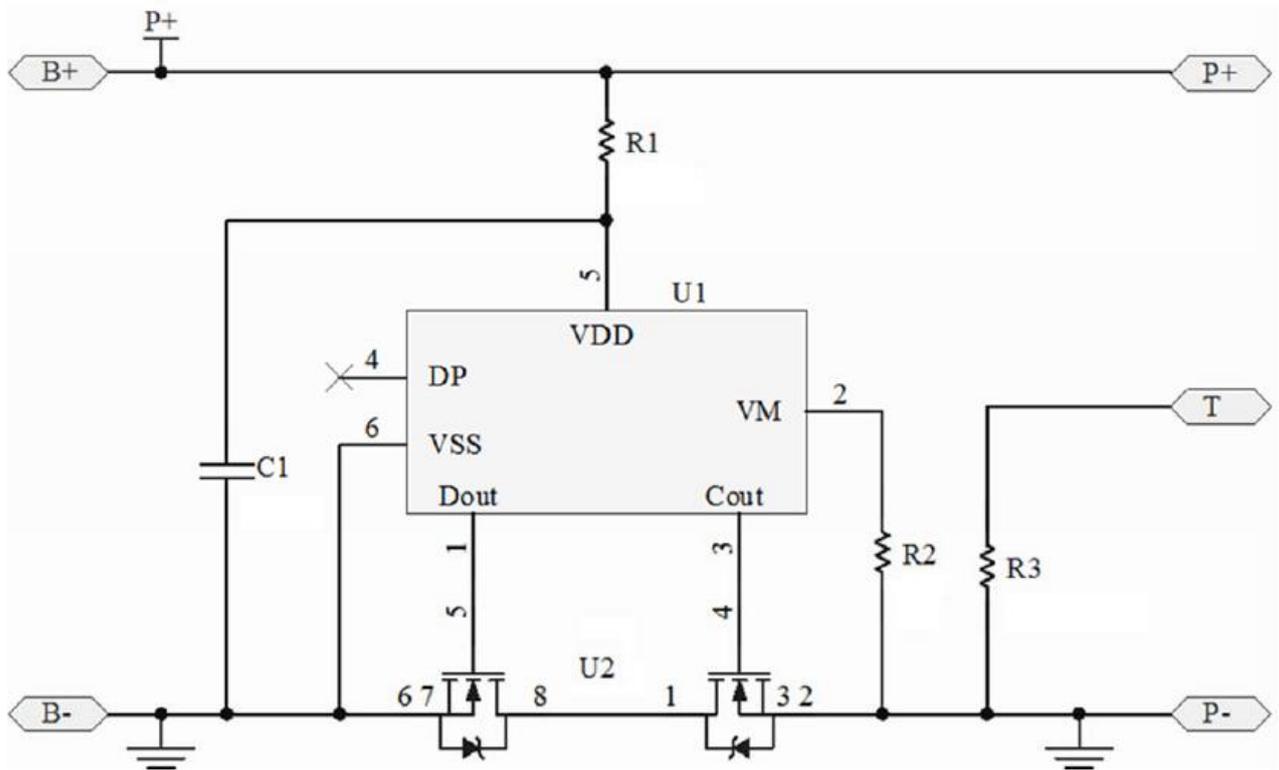
Item	Reference	Material name	Model/Specification	Quantity
1	Cell	ZN703035	3.8V 800 mAh	1
2	PCM	ZN-Pcm	ZN-Pcm (HY2113-OB1B+8205*1+10K NTC)	1
3	Red wire	UL1571 30#	Red	1
4	Black wire	UL1571 30#	Black	1
5	Yellow wire	UL1571 30#	Yellow	1
6	Connector	A1201H-03-10BK0	Black-Red-Yellow (MOLEX78172)	1
7	3M TAPE	3M9448A	0.15*20*20mm	1

5. PCM

5.1 Parameter

Symbol	Name	MIN	Typical.	Max	Unit
VDET1	Over-Charge detect voltage	4.375	4.400	4.425	V
VDET2	Over-discharge detect voltage	2.75	2.80	2.85	V
IEC	Excess Current threshold	2.5	3.5	5.0	A
SD	Self-discharge	1	4	7	μA
RD	Internal resistance in normal operation	---	---	70	mΩ

5.2 Schematic diagram



6. Visual Inspection

There shall be no such defect as scratch, flaw, crack, and leakage, which may adversely affect commercial value of the cell.

7. Cell Specification

7.1 Electrical characteristics

Items	Test Method and Condition	Criteria															
7.1.1 Full charge	charge to 4.35V with 0.5C ,then go on charging with constant voltage 4.35V till charge current declines to 0.01C .																
7.1.2 Initial capacity	The capacity means the discharge capacity of the cell that was discharged to 3.0V with discharge current of 0.2C within one hour after the full charge.	≥ 800 mAh															
7.1.3 Cycle life	Cycle life is the capacity of the cell that was repeated 500 cycles with full charge and then discharging to 3.0V with discharge current of 0.2C .	≥80% Initial capacity															
7.1.4 Initial impedance	Cell resistance was measured at AC 1KHz after 50% charge and the test temperature was 25°C.	≤ 150 mΩ															
7.1.5 Temperature	<p>The discharge capacity of contrast, under the conditions of different temperature in 25 °C under the condition of normal temperature after full charge of the battery, as shown in the table below normal temperature and high temperature to the capacity of 0.2 C to 3.0 V, low temperature is 0.2C to 2.5 V discharge capacity. the time between charging and discharging must beyond 3 hours.</p> <table border="1"> <thead> <tr> <th>Charge temperature</th> <th colspan="4">Discharge temperature</th> </tr> <tr> <td>25°C</td> <td>-20°C</td> <td>0°C</td> <td>25°C</td> <td>60°C</td> </tr> <tr> <td></td> <td>≥50%</td> <td>≥80%</td> <td>100%</td> <td>≥95%</td> </tr> </thead></table> <p>Note: under the environment of low temperature (≤15 °C) or less, the no load voltage of battery state during 3.2 3.4 V, external load work led to the decrease of the voltage will be faster.</p>	Charge temperature	Discharge temperature				25°C	-20°C	0°C	25°C	60°C		≥50%	≥80%	100%	≥95%	
Charge temperature	Discharge temperature																
25°C	-20°C	0°C	25°C	60°C													
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7.1.6 Self-discharge	After the full charging, storage the cells in a temperature of 25°C for 28 days, then measure the capacity with discharge current of 0.2C till 3.0V.	Capacity ≥95% Initial capacity															
7.1.7 store	At 50% SOC and specified temperature, recoverable capacity in % vs. time																
	<table border="1"> <thead> <tr> <th>-20°C to 30°C</th> <th>30°C to 45°C</th> <th>45°C to 60°C</th> <th>60°C to 70°C</th> </tr> </thead> <tbody> <tr> <td>12months</td> <td>3months</td> <td>1month</td> <td>4hr</td> </tr> <tr> <td>≥85%</td> <td>≥85%</td> <td>≥60%</td> <td>≥80%</td> </tr> </tbody> </table>	-20°C to 30°C	30°C to 45°C	45°C to 60°C	60°C to 70°C	12months	3months	1month	4hr	≥85%	≥85%	≥60%	≥80%				
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12months	3months	1month	4hr														
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7.2 Mechanical specification

Items	Test Method and Condition	Criteria
7.2.1 Vibration Test	Fixed the fully charged 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 and 55Hz, the excursion of the vibration is 0.8mm. The cell shall be vibrated for 90 ~100 minutes per axis of XYZ Axes.	No explosion No fire, No leakage.
7.2.2 Drop Test	The cell is to be dropped onto concrete ground from a height of 1.2 meter three times .	No explosion No fire.

7.3 Safety

Items	Test Method and Condition	Criteria
7.3.1 Crush Test	The pressure on the surface of the fully charged cell do not stop being raised until 17.2 Mpa when the cell is crushed by two flat surfaces. (Max13kN)	No explosion, No fire.
7.3.2 Heat Test	The temperature of the baking box which contains cell is raised to 100 ±2°C at a rate of 5°C/min and then holded for ten minutes.	No explosion, No fire.
7.3.3 Short-Circuit Test	After full charge, the positive and negative polarities are connected together by a copper wire whose resistance is less than or equal to 0.1Ω.	

7.3.4 Over-charge Test	The cell is overcharged to 4.5V with a current of 1C and holded for 8 hours.	
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8. Standard environmental test condition

Unless otherwise specified, all tests stated in this Product Specification are conducted at below condition.
Temperature: 25±2°C Relative humidity : 65±20%.

9. Charging

Charging current and charging voltage should be less than specified in the Product Specification.
The charger shall be designed to comply with Product Specification.
It is dangerous that charging with higher current or voltage than Product Specification may cause damage to the cell electrical, mechanical safety performance.

10. Warnings

Don't throw the cell in fire or heat it or store it in high temperature place;
Don't operate or use the cell under high temperature or next to the heating material. Don't throw the cell in fire or heat it;
Don't fix the positive and negative of the cell reversely to the electrical equipment;
Don't connect the positive and negative polarities by metallic conductor such as a metallic wire;
Don't impact or scrape the surface of the cell by spiculate parts;
Don't stab it with a needle, beating, treading, fold or other way;
Don't drop or fling the cell randomly;
Keep the cell sealed! (Don't open or deform folding edge Don't bend or fold sealing edge etc);
Don't unpack the battery or change its structure!
Don't throw the cell in water, please keep it from humidity.

11. Attention

Please use the qualified equipment for charging and recharging the cell;
Don't use different type of cells supplied by different manufacturer together;
Don't charge the heating or modification cell;
Don't let the cell over-discharge.

12. Attention

Don't use the damaged cells (the sealing edge was damaged, the pack was damaged, the electrolyte leakage, etc.). If the cell heating when using, go far away from the cell, it may avoid unnecessary damage;
Theoretically, there is not flowing electrolyte in the cell, but if the leakage of electrolyte happens, or the electrolyte splash down to the skin, eyes or other parts of the body, wash with water and go to hospital immediately;
If there is any abnormal problem such as unidentified heating, expansion and peculiar smell, please contact with Teltonika Telemedic support.
The Pack stored beyond half year should be charged to 3.7~3.9V/cell with constant current at 0.5C.