



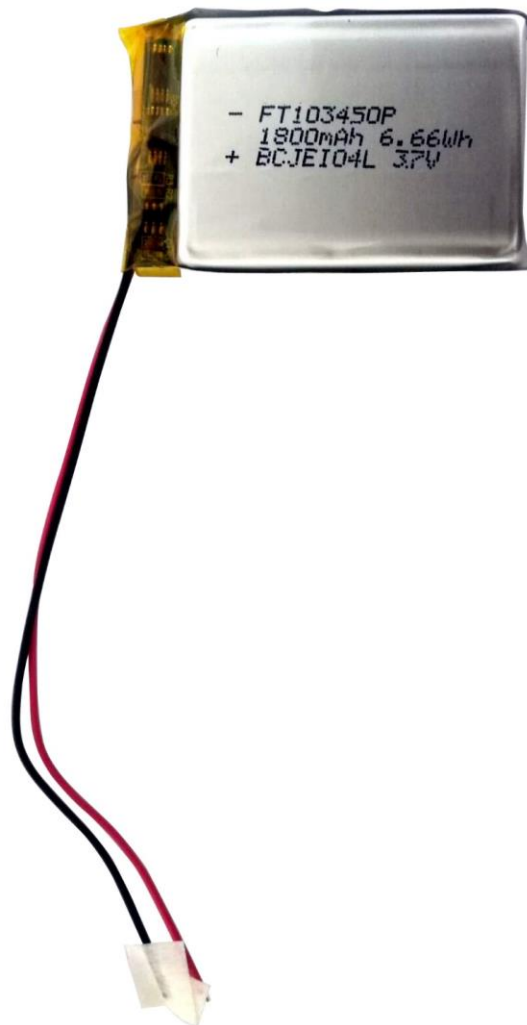
ENGLISH

Datasheet

RS Pro Article: 1449405

## Polymer Li-ion Rechargeable Battery Pack

Tested and approved to UN38.3



## 1. Scope

This specification shall be applied to polymer Li-ion rechargeable battery.

## 2. Model

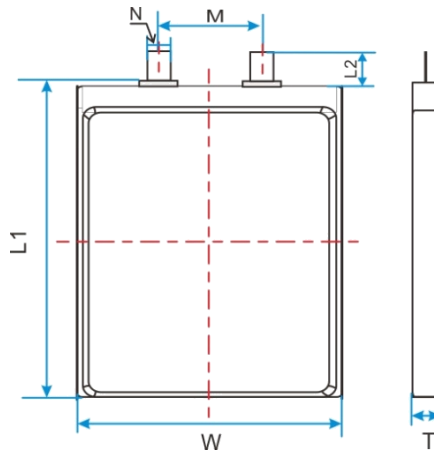
FT103450P

## 3. Basic Product Characteristics

No.	Item	Characteristics
3.1	Nominal Capacity	1800 mAh
	Minimum Capacity	1700 mAh
3.2	Nominal Voltage	3.7 V
3.3	Impedance	$\leq 160$ m $\Omega$ (AC impedance @1 kHz, 50% SoC, (23 $\pm$ 2 °C))
3.4	Limited Charge Voltage	4.20 <sup>+0.03</sup> <sub>-0.02</sub> V
3.5	Discharge Cut-off Voltage	3.0 V
3.6	Standard Charge	0.2C <sub>5</sub> A (340 mA) CC (constant current) charge to charge limited voltage, then CV (constant voltage) charge until charge current decline to end-of-charge current at 23 $\pm$ 2 °C
3.7	Standard Discharge	0.2C <sub>5</sub> A (340 mA) discharge to the discharge cut off voltage at 23 $\pm$ 2 °C
3.8	Maximum Charging Current	0-10°C 0.2C/4.1 V 0.02 C <sub>5</sub> A cut-off
		10-45°C 0.5C/4.2 V 0.02 C <sub>5</sub> A cut-off
3.9	Maximum Discharging Current	-20-0°C 0.2 C <sub>5</sub> A
		0-60°C 0.5 C <sub>5</sub> A
3.10	Operating Temperature Range	Charge 0 - 45 °C
3.11	Storage Temperature Range	Discharge – 20 - 60 °C
		-20 to 60 °C $\leq$ 1 month, -20 to 45 °C $\leq$ 3 months or -20 to 30 °C $\leq$ 12months (50 $\pm$ 10%) SoC
	Operating and Storage Humidity Range	45 - 75% RH
3.12	Weight	36.0 g

#### 4. External Dimension

Item	Dimension (mm)
T	Max 10.2
W	Max 34.50
L1	Max 52.50
L2	8±1
M	14±1.5
N	4.0±0.2



#### 5. Appearance

Free from any defects which could affect commercial value of the cell such as scratches, cracks, deformation or leakage.

#### 6. Basic Electrical Characteristics

No.	Items	Criteria	Test Method
6.1	Open Circuit Voltage	3.75 V - 3.95 V	Measure with voltmeter.
6.2	Rated Capacity	≥1700 mAh	Standard discharge after standard charge and rest for 10 min.
6.3	1C <sub>5</sub> A Discharge Capacity	≥90% × Rated Capacity	1C <sub>5</sub> A discharge to the discharge cut off voltage after standard charge and rest for 10 min.
6.4	Temperature Characteristics	Discharge Capacity : 55°C: ≥85% × Rated capacity 0°C: ≥80% × Rated capacity ; -10°C: ≥60% × Rated capacity	After standard charge, the cell is stored at -10 ± 2°C for 4 hours, and then at the same temperature 0.2C <sub>5</sub> A discharges to the discharge cut off voltage. According to this procedure, test 0 ± 2°C - 55 ± 2°C discharge capacity, respectively.
6.5	Storage Characteristics	Retention Capacity: ≥85% × Rated Capacity	After standard charge, the cell is stored for 28 days and then 0.2 C <sub>5</sub> A discharges to the discharge cut-off voltage to test retention capacity.

6.6	Cycle Life	Discharge Capacity (301 <sup>th</sup> cycle) $\geq$ Rated Capacity $\times$ 80%	A cycle is defined as a standard charge, 10 minute-rest and standard discharge. The cell is to be cycled for 301 times.
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**Remark 1: All tests mentioned in this specification will be tested at 23  $\pm$  2°C and the standard air pressure.**

## 7. Safety Characteristics

No.	Items	Criteria	Test Method
7.1	Overcharge	No fire. No explosion.	Charging to 6 V with maximum charging current after standard discharge, then CV charge until current decline to End-of-Charge Current or CV time is more than 7 hours.
7.2	Short circuit	No fire. No explosion. The temperature of the cell will not exceed 150°C.	Rest for 30 min at 55 $\pm$ 2°C after standard charge, then short circuit cells by connecting the positive and negative terminals with a circuit load having a resistance load (copper wire) of 80 $\pm$ 10 m $\Omega$ . Test can be terminated when cell surface temperature has returned to $\pm$ 10°C of environment temperature.
7.3	Heating	No fire. No explosion.	The cell is to be heated in a gravity convection or circulating air oven after standard charge. The temperature of the oven is to be raised at a rate of 5 $\pm$ 2°C per minute to a temperature of 130 $\pm$ 2°C and remain for 10 min.

**Remark 2: All safety characteristics are carried out by specialised personnel familiar with Li-ion knowledge or under instruction of our technical personnel after detailed consultation.**

## 8. Reliability Characteristics

No.	Items	Criteria	Test Method
8.1	Static Humidity and Temperature	Retention Capacity: $\geq$ 80% $\times$ Rated Capacity Recoverable Capacity	After Standard Charge, the cell is stored at 40 $\pm$ 2°C and 90%-95% RH for 48 hours, then rest for 2 hours at 23 $\pm$ 2°C. Standard discharge to test its

		$\geq 85\% \times \text{Rated Capacity}$  No deformation. No rupture. No smoke. No leakage.	retention capacity, and then perform a cycle with standard charge and standard discharge procedure to test recoverable capacity.
8.2	Vibration	OCV $\geq 3.6 \text{ V}$  No rupture. No leakage. No fire. No explosion.	After standard charge, the cell is fixed to vibration table and subjected to vibration cycling that the frequency is to be varied at the rate of 1 Hz per minute between 10 Hz and 55 Hz, the excursion of the vibration is 1.6 mm. The cell will be vibrated for 30 min per axis of XYZ axes.
8.3	Drop	Retention Capacity: $\geq 90\% \times \text{Rated Capacity}$  No rupture. No leakage. No fire. No explosion.	After standard charge, the cell is to be dropped from a height of 1 m onto board ground for 6 times, then test the retention capacity with standard discharge.

## 9. Period of Warranty

Period of warranty is 12 months.

## 10. Matters needing attention

Strictly observes the following needing attention. RS Pro are not responsible for any accident occurred by handling outside of the precautions in this specification.

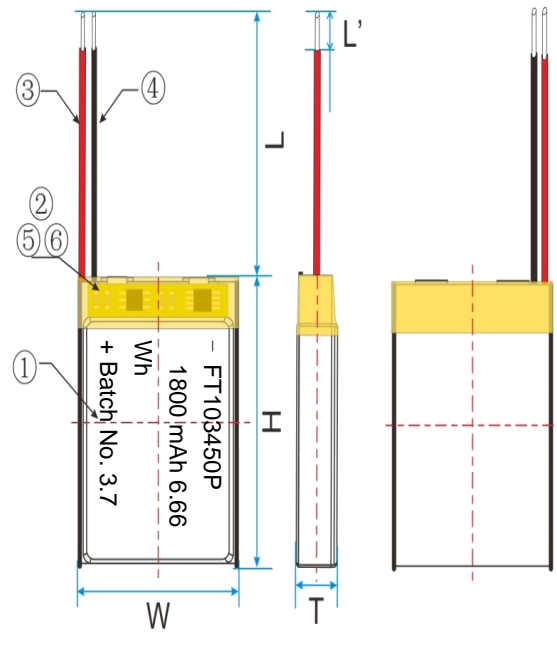
## 11. Parameter of PCM

### 11.1 List of Parameter

Parameter	Min.	Typical.	Max.	Unit
Overcharge Detection Voltage	4.300	4.325	4.350	V
Overcharge Detection Delay Time	960	1200	1400	ms
Over discharge Detection Voltage	2.45	2.50	2.55	V
Over discharge Detection Delay Time	115	144	173	ms
Over Discharge Current Detection	5.0	7.0	9.0	A



## External Dimension Drawing Pack

	<p>1 · External Dimension</p> <p>Thickness : <math>T(\max)=10.4</math> mm</p> <p>Width : <math>W(\max)=35.0</math> mm</p> <p>Height : <math>H(\max)=53.5</math> mm</p> <p>Wire length : <math>L=100 \pm 3</math> mm <math>L=1.5 \pm 0.5</math> mm</p> <p>2 · Material :</p> <p>① Cell: FT103450P</p> <p>② PCM</p> <p>③ Red Wire(+) UL3302 24 AWG</p> <p>④ Black Wire (-) UL3302 24 AWG</p> <p>⑤ Electrical Tape</p> <p>⑥ Electrical Tape</p>
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## Danger!

- Never heat cell or throw it into fire
- Never throw cell in liquid such as water - gasoline or drink.
- Prohibition of use cell close to fire or in a car where temperature will be above  $60^{\circ}\text{C}$   
Also do not charge / discharge in such conditions
- Never put batteries in your pockets or a bag together with metal objects such as necklaces, hairpins, coins or screws. Do not store or transport batteries with such objects
- Never short circuit the (+) and (-) terminals with other metals
- Do not place cell in a device with the (+) and (-) in the wrong way around
- Do not pierce cell with a sharp object such as a needle
- Do not disassemble the cell
- Never weld a cell directly
- Do not use a damaged cell
- Carefully read the manual before use to avoid deteriorated performance, cell leakage, heat, smoke, fire or explosion due to wrong operations

## **Warning!**

- Do not put cell into a microwave oven, dryer or high-pressure container
- Never use cell with dry cells and other primary batteries. Also do not use mixed cells/batteries with different package, models or brands
- Stop charging the cell if charging is not completed within the specified time
- Stop using the cell if abnormal heat, odour, discolouration, deformation or abnormal condition is detected during use, charge or storage
- Keep away from fire immediately when leakage or unpleasant smell is detected
- If liquid leaks onto your skin or clothes, wash well with fresh water immediately
- If liquid leaking from the cell gets into your eyes, do not rub your eyes. Wash them well with fresh water and go to see a doctor immediately

## **Caution!**

- Before using the cell, be sure to read the manual and cautions on handling thoroughly
- Charge with specific charger according to product specification. Charge with CC/CV model. Reverse charging is prohibited or it may deteriorate the cell performance and lead to safety issues such as heat and leakage
- Keep batteries out of reach of children to avoid the risk of being swallowed
- Batteries have life cycles. If cell powers equipment much shorter time than usual, replace the cell with a new one
- When not using cell for long terms, remove it from the equipment and store in a place with low humidity and low temperature
- While the cell pack is charged, used and stored, keep it away from places/objects with static electric
- If the terminals of cell become dirty, clean it with dry cloth before using
- To prevent over-discharging, the battery needs be charged periodically to maintain between 3.7 V and 3.9 V. Cell is to be stored in a condition as Item. 3.11 and 3.12