Li-MnO2 Thin Cells Specification

Model ： CP702537

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1. Scope

The document applies to Li-MnO2 Battery CP702537 supplied by VTC Power Co., Ltd.

2. Description

2.1 Model: CP702537

2.2 Assembly Way

Single cell 1pc

3. Specifications

3.1 Assembled cell parameters

No.	Item	Spec	Note
1	Model	CP702537-1600mAh	1pc
2	Nominal Voltage	3.0v	OCV:3.10v-3.3v
3	Tab	Stainless steels Tab	
4	Nominal Capacity	1600mAh	At 5mA load, until 2.0V voltage at 23℃ (The actual measured capacity value will be changed by discharge current, temperature and cut-off voltage)
5	Max. Continuous Discharge Current	500mA	To get 50% of the nominal capacity at +23±2℃ with 2.0V cut off. Higher currents possible, consult VTC.
6	Max. Pulse Discharge Current	1000mA	To get 50% of the nominal capacity is up to 1000mA, at +23±2℃, discharge 3s and stand 27s. Varies according to pulse characteristics, temperature, cell history and the application. Consult VTC.
7	Discharge Cut-off Voltage	2.0v	
8	Operating Temperature	-20℃~ +65℃	Operation under higher or lower ambient temperature may lead to reduced capacity and function lost.

9	storage temperature	-5 ℃~+35℃	
10	Storage life	10 years	Relative humidity: 45~75%RH Temperature: -5 ℃~+35℃
11	Pack Weight	Approx.: 11.8g	
12	Self-Discharge Rate	≤2%	Less than 2% after 1 year of storage at 25℃
13	Assemblage Dimension	L40mm*W25.5mm*H7.2mm	

4. Battery Cell Performance

4.1 Standard Testing Environment

Test conditions:

The test must be done within one month after received unless there is otherwise noted.

Ambient Temperature： 25ºC ± 1ºC;

Ambient Humidity： 45~75%RH.

4.2 The Requirement of Measure Instrument

(1) The measurement instrument has been qualified by the inspection institution.

(2) The accuracy of the measuring instrument is less than 0.01mm.

(3) The accuracy of multi meter is not less than 0.5%.

(4) The current accuracy of the battery test system is above ±0.1%, constant voltage is ±0.5%, and timer accuracy is not less than ±0.1%.

(5) The accuracy of the thermometer is not lower than ±0.5ºC.

4.3 Appearance

Not allowing any visual defects which will affect the electronic characteristics, such as leakage and damage.

4.4 Mechanical Characteristics

No	Item	Testing Conditions and Method	Standard
1	Vibration Test	According to the UL1642 test requirement, a battery vibration frequency is to be varied at the rate of 1 hertz per minute between 10 and 55 hertz, amplitude is 0.38 mm. The battery is to be tested in three mutually perpendicular directions; each is not less than 30mins.	UL1642: No explosion, no fire
2	Drop Test	According to the UL1642 test requirement, each cell should be dropped 2 times from 1.2m height onto cement ground.	UL1642 No explosion, no fire

4.5 Safety Test

No.	Item	Testing Conditions and Method	Standard
1	UN38.3/MSDS	Follows UN38.3/MSDS.	UN38.3
2	UL-1642 （Cell Level）	Follows UL1642.	UL-1642

4.6 High and Low Temperature Test

No.	Item	Testing Conditions and Method	Standard
1	High Temperature	A battery is placed in a high-temperature cabinet for 2 hours at 60ºC±2ºC, then discharged at 5 mA current until the voltage cut off.	Discharge 90% of the nominal capacity.
2	Low Temperature	A battery is placed in a high-temperature cabinet for 2 hours at -20ºC±2ºC, then discharged at 5 mA current until the voltage cut off.	Discharge more than 45% of the nominal capacity.

5. Storage and Others

5.1 Long-term Storage

Lithium batteries should be stored in a cool, clean, dry environment. The recommended temperature and relative humidity should be the same as 3.3.1.9, avoid contact with corrosive materials, away from fire and heat.

5.2 Any issues not mentioned in the specification should be discussed with VTC.

6. Warranty Period

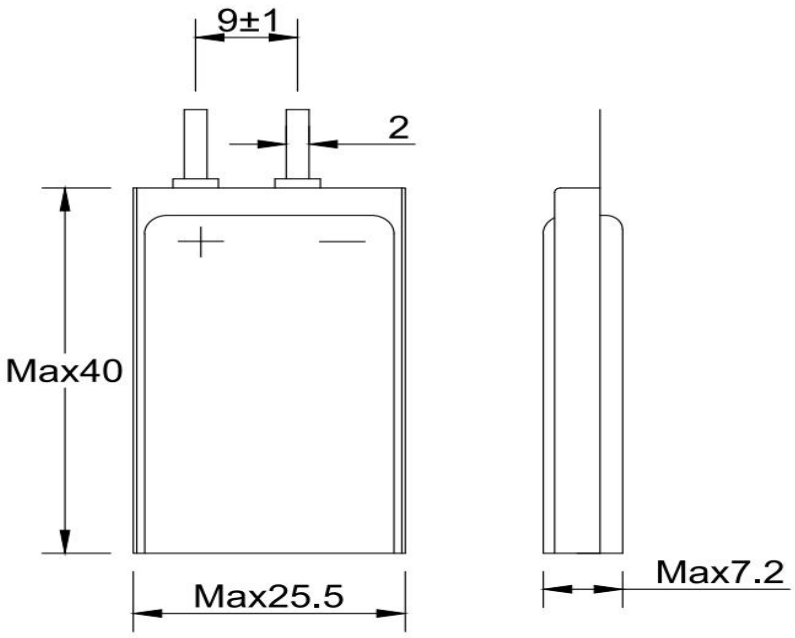
The warranty period is 6 months from the date on the cells.

7.Drawing

7.1 Assembly Diagram（not drawn to scale）

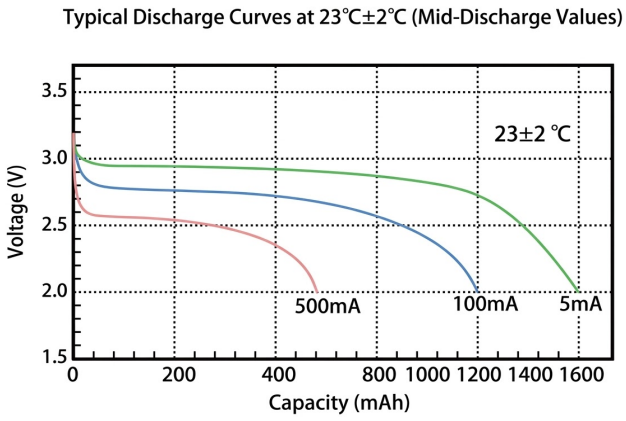
Model：CP702537

Unit：mm



8、Discharge Curve

8.1 Different Current Discharge Curve at 23℃



Handling Precaution and Guideline

For CP batteries

The document of ‘Handling Precautions and Guidelines for CP Batteries’ is only applied to the battery cells manufactured by VTC

Note (1): Customer should contact VTC in advance if needs to change the working conditions stipulated in the document. Additional tests are required to verify the performance and safety of the cell with these conditions.

Note (2):VTC will take no responsibility for any accident when the cell is used on conditions which is not mentioned in specification.

Note (3): VTC will inform the customer in writing of the improvement measures to use and operation of the cell correctly if necessary. VTC can revise the specification before signature and will confirm with customer.

1.Discharging Current:

Discharge current shall not exceed the maximum discharge current specified in the specification. Excessive discharge current will cause reduced capacity and cells will be overheating.

2.Discharging Temperature

The discharge temperature of the cell must be within the ambient temperature range specified in the specification.

3.Over-Discharge

Over-discharging will cause cell degradation and functional losses and should be avoided.

4.Charge Protection

When incorporating a lithium primary battery into a circuit powered by an independent main power source, protective devices shall be used in order to prevent charging the primary battery from the main power source, for example:

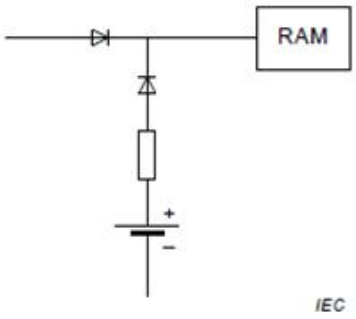
A）a blocking diode and a current limiting resistor (see Figure a);

B）two series blocking diodes (see Figure b);

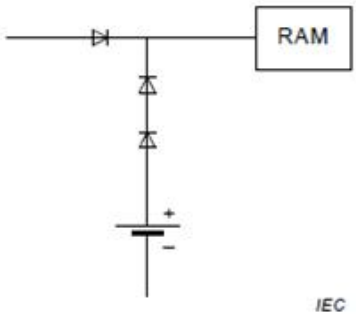
C）circuits with a similar blocking function based on two or more independent protective;

devices:

provided the first protective device is capable to limiting the charging current through the lithium battery to the normal reverse current specified by the manufacturer which can be applied to the battery during its operating life, while the second protective device is capable to limit the charging current to the abnormal charging current specified by the battery manufacturer. The circuit shall be so designed that at least one of these protective devices remains operational when any one component of the circuit fails.



a) Diode and resistor



b) Two diodes

5.Storage

The cells should be stored at the temperature range specified in the specification.

6.Attentions

6.1Attention When Using Cells:

★ Avoid short-circuit. Short circuit may cause the tap got heated which will make battery function invalid.

★ Keep cells away from the sharp object.

★ Don’t bend or fold the top sealing edge.

★ Don’t open the folded the sealing edge on sides.

★ Don’t bend the tabs.

★ Avoid mechanical shock on the cells.

★ Don’t put the cells into heater, washing machine or any high pressure vessel.

★ Any heat, smelly, discolored, deformation or otherwise abnormal during storage, stop immediately.

★ Keep cells away from children.

★ Please read carefully and understand the handling guidelines before using batteries.

★ Away from static electricity when using, and storing cells.

★ Don’t use or leave, discharge batteries near to fire or in cars with temperatures over 60℃.

★ Keep the cells away from the metal items.

★ Don’t connect the positive and negative together with metal conductors.

★ Avoid Don’t assemble the positive and negative in the opposition direction when using.

★ The deformed battery can’t be used.

6.2 Tab Connection

Ultrasonic welding or spot welding is recommended to connect the battery with the PCM or other parts.

If using manual soldering, please pay attention to the below to ensure battery performance:

A）The solder iron should be temperature controlled and anti-static.

B）Soldering temperature should not exceed 350±10℃.

C）Soldering time should not be longer than 3 seconds.

D）Soldering times should not more than 5 times.

E）The battery tab should be cooled down before soldering again.

F）Direct heat to the cell body is strictly prohibited. The battery will be damaged by heat above approx. 60ºC. Direct heating of the cell is forbidden. The battery will be damaged if temperature higher than 60℃.

7. Others

7.1 Disassembly may cause an internal short circuit to the cell, which may cause out-gassing, fire, or other problems.

7.2 No flowing liquid inside the battery, but if leakage is happened and touched on the skin, eyes or other parts on the body, please take the below preventive measures:

a.Touch eyes: immediately rinse with water for at least 15 minutes. If still discomfort, medical treatment will be sought.

b.Touch skin: immediately rinse with plenty of water.

c.Breath the released gas: Go outside to breath flash air.

d.Accidental ingestion: medical treatment is required immediately.

7.3 Prohibit dumping cells into fire

Never incinerate or dispose the cells into fire, for these may cause firing of the cells.

7.4 The cells should never be soaked with liquids such as water, drinks or oil.

7.5 It is prohibited to use a mixture of batteries from different manufacturers and old batteries.

7.6 Prohibit using damaged cells.

8. Recommended Notice:

8.1 Using cells on specified facilities only.

8.2 Using cells in normal ambition temperature.

Temperature: -10～35℃，

Relative Humidity： 45~75%.

8.3 Using the cells, away from heat source, not allow children playing with cells.

8.4 Avoid short circuit on battery and avoid affected with damp.

8.5 Useless cells should be deal with in a safety way. Don’t drop them into the water or fire.