LONG SING HPC(Hybrid Pulse Capacitor)
Model: HPC1530

PRODUCT SPECIFICATION

Hybrid Pulse Capacitor Rechargeable Lithium Cell

Model: HPC1530, 4.0V

	Name	Position	Signature
Prepared			
Authorized			
Approved			

LONG SING TECHNOLOGY GROUP (HONG KONG) LIMITED

ADD.: ROOM 1002 10/F SEAVIEW PLAZA, 283 SHAUKEIWAN ROAD HONG KONG

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Record of Revisions

No.	Date	Revision Page	Modifications	By
A	2020-2-25		Initial Release	M. WU

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1. Scope

This document describes the Product Specification of the "HPC1530,4.0V" Capacitor Cell supplied by LONG SING TECHNOLOGY GROUP (HONG KONG) LIMITED.

2. **Model:** HPC1530, 4.0V

3. Specification

System	Hybrid Pulse Capacitor cell
Version	HPC1530
Nominal voltage	4V
Nominal capacity	＞180mAh
Nominal discharge current	125mA (100% capacity)
Max.continuous discharge current	800mA(50% capacity)
Discharge end voltage	2.5V
Max.charge voltage	4.1V
Nominal charge current	50mA
Temperature range	-40℃~+85℃
Cell impedance @ 1kHz,RT	max. 120mΩ
Nominal energy	max. 0.72Wh
Weight	10.0g

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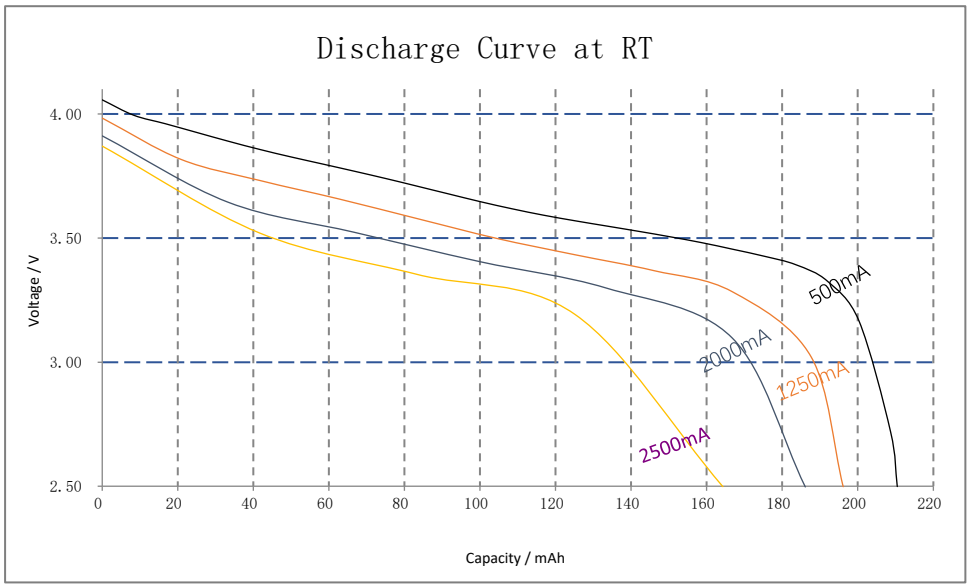
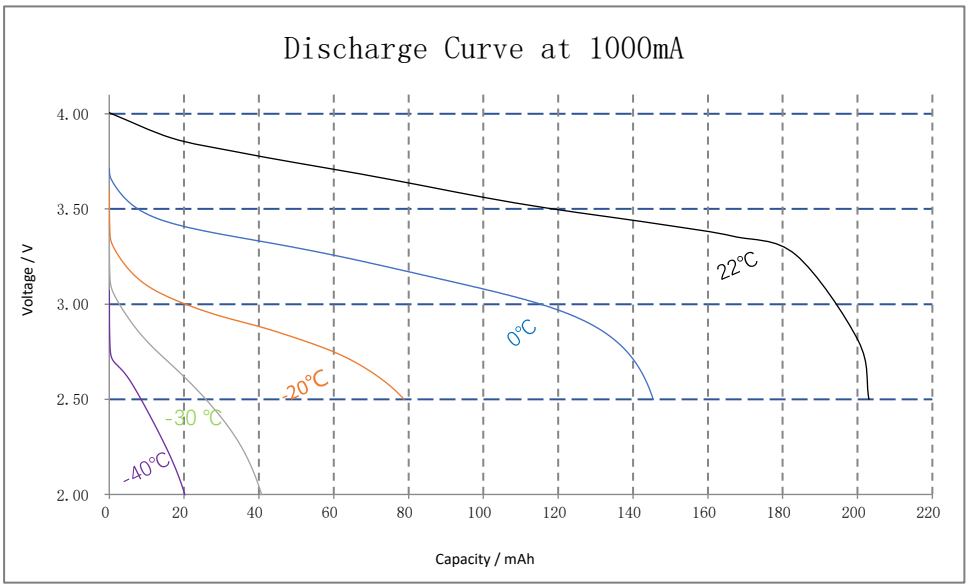
4. Performance Date

4.1 Independent utility (@4.1V) Performance Date





Remark: Charge: 50mA to 4.1V @RT

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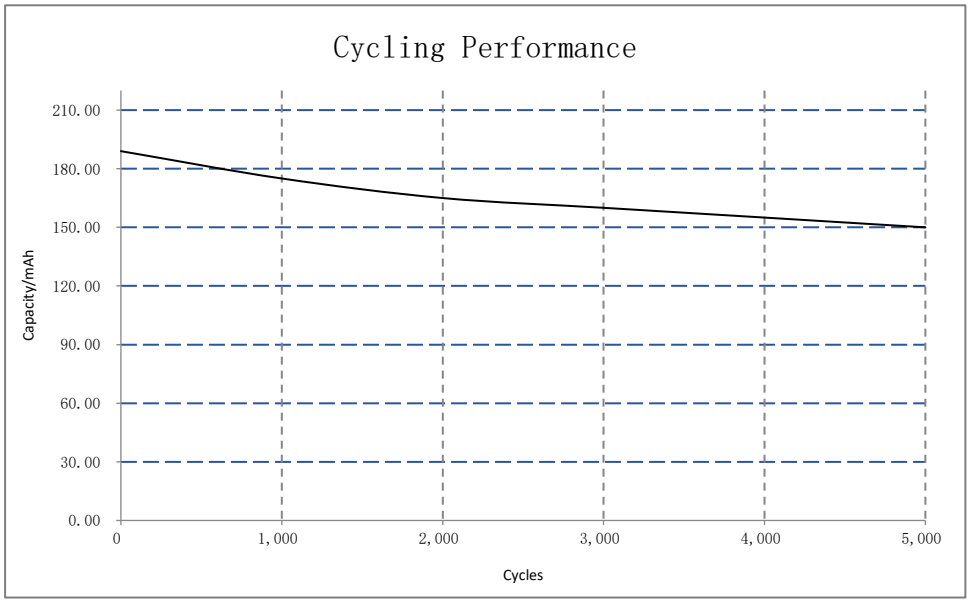
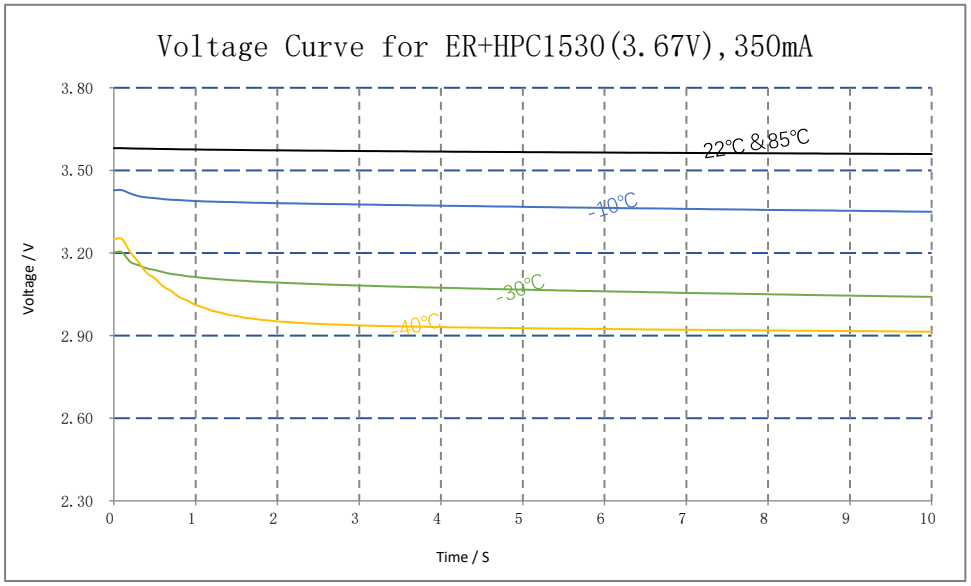


Remark: Charge:50mA to 4.1V Discharge 125mA to 2.5V @RT

4.2 HPC1530 at Li/$socl_2$ potential (@3.67V) Performance Date



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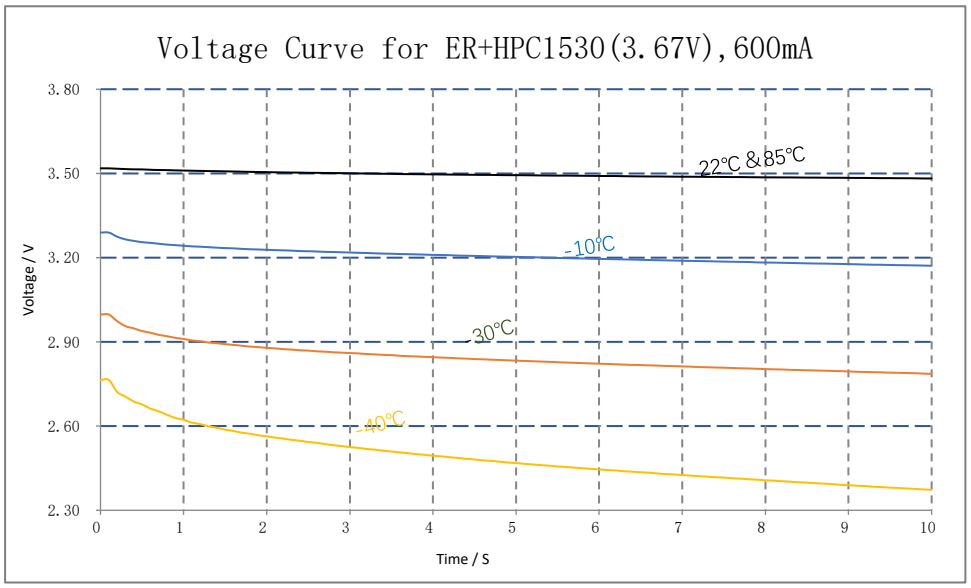

5. Performance Criteria

5.1. Visual Inspection

There shall be no such defect as distortion, flaw, and leakage, which may Adversely affect commercial value of the battery.

5.2. Standard Environmental Test Condition

Unless otherwise specified, all tests in this Product Specification are conducted at below condition:Temperature:20±5℃ /Humidity:45~75%/ Atmospheric pressure:86-106kpa

5.3. Resistance Leakage

Test batteries shall be stored for 24th at a temperature of (70℃) and Humidity(60±15%), followed by storage for at least 8h at ambient temperature. Criteria: No electrolyte leakage explosion or fire.

5.4. Electrical Safety

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No.	Items	Test Method and Condition	Criteria
1	External short circuit	The test batteries subjected to a short-circuit condition with a total external resistance of less than 0.1Ω. This short-circuit condition is continued for at least 1 hour.	No Explosion No Fire
2	Drop	Undischarged test batteries shall be dropped from a height of 1m onto a concrete surface. Each test battery shall be dropped six times. The test batteries shall be stored for 1 hour afterwards.	No Venting No Explosion No Fire
3	High temperature	Test batteries shall be stored for 5 hours at a temperature of 100℃, followed by storage for 8 hours at ambient temperature.	No Venting No Explosion No Fire
4	3:1 Reversal	A test battery is connected in series with three additional undischarged batteries of the same type in such a way that the terminals of the test battery are connected in reverse.	No Explosion No Fire
5	Thermal shock	Test batteries shall be stored for 48 hours at a temperature of 75℃, followed by storage for 6 hours at a temperature of -20℃, followed by storage for at least 24 hours at ambient temperature. The maximum time for each temperature shall be 5 minutes.	No Leakage No Venting No Explosion No Fire

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5.5. Mechanical Safety

No.	Items	Test Method and Condition	Criteria
1	Vibration	Fixed the undischarged battery 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 1.6mm. The battery shall be vibrated for 30 minutes per axis of XYZ axes.	No Leakage No Venting No Explosion No Fire
2	Crush	A battery is to be crushed between two flat parallel surface. The force for the crushing is to be applied by a hydraulic ram with a 32 mmdiameter piston. The crushing is to be continued until a pressure reading of 17.2Mpais reached on the hydraulic ram, applied force of 13KN. Once the maximum pressure has been obtained it is to be released.	No Venting No Explosion No Fire
3	Shock	Force each shock the cell is to be accelerated in such a manner that during the initial 3 milliseconds the minimum average is 75g, the peak acceleration shall be between 125 and 175g. The shocks are to be applied in each of three mutually perpendicular directions. Each shock is to be applied in a direction normal to the face of the cell. Cell shall be tested at a temperature of 20±5℃.	No Explosion No Fire

6. Storage and Others

6.1 Storage

Storage temperature:10℃-25℃

6.2 Others: Any matters that this specification does not cover should be conferred between the customer and LONG SING TECHNOLOGY GROUP (HONG KONG) LIMITED.

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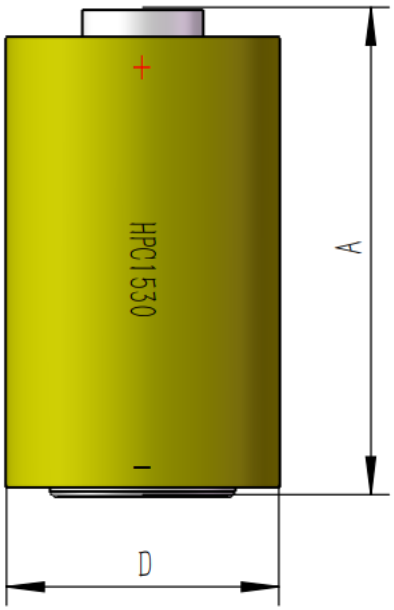
7. Drawing(all units in mm)



Items	Dimension and Spec.
A	MAX. 28.0mm
D	MAX. 15.0mm

8. Appendix

Handling Precautions and Guideline for HPC1530 Preface
This document of “Handling Precautions and Guideline HPC1530” shall be applied to the battery manufactured by LONG SING TECHNOLOGY GROUP (HONG KONG) LIMITED

Note (1):
The customer is requested to contact LONG SING TECHNOLOGY GROUP (HONG KONG) LIMITED in advance, if and when the customer needs other applications or operating conditions than those described in this document.
Additional experimentation may be required to verify performance and safety under such

conditions.

Note (2):
LONG SING TECHNOLOGY GROUP (HONG KONG) LIMITED will not take no responsibility for any accident when the battery is used under other conditions than those described in this Document.
Note (3):
LONG SING TECHNOLOGY GROUP (HONG KONG) LIMITED will inform, in a written form, the customer of improvement(s) regarding proper use and handling of the battery, if it is deemed necessary.
When used correctly, lithium batteries provide a safe and dependable source of power. However, if they are misused or abused, leakage, venting or in extreme cases, explosion and /or fire may cause.

8.1. Prohibition of battery immersion into liquid such as water; The battery shall never be soaked with liquids such as water, seawater, drinks such as soft drinks, juices, coffee or others.

8.2. Prohibition of dumping of batteries into fire; Never incinerate nor dispose the batteries in fire.
These may cause firing of the batteries, which is very dangerous and is prohibited.

8.3. Do not insert batteries in reverse. Observe the + and - markings on battery and equipment.

8.4. Do not short-circuit batteries. When the positive (+) and negative (-) terminals of a battery are connected directly with each other, the battery becomes short-circuited. This can result in venting, leakage, and possibly fire.

8.5. Prohibition of disassembly
Never disassemble the batteries, The disassembling may generate internal short circuit in the battery, which may cause firing, or other problems.

8.6. Electrolyte is harmful.
In case the electrolyte come into contact with the skin, or eyes, physicians shall flush the electrolyte immediately with fresh water and medical advice is to be sought.

8.7. Do not charge batteries. Attempting to charge a primary battery may cause internal gas and/or heat generation resulting in venting, explosion and possibly fire.

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8.8. Do not force discharge batteries.

8.9. Do not allow children to replace batteries without adult supervision. Keep batteries out of the reach of children. In case of ingestion of a battery, seek medical assistance promptly.

8.10. Do not mix batteries.

8.11. Prohibition of use of damaged batteries.
The batteries might be damaged during shipping by shock. If any abnormal features of the batteries are found such as damages in a plastic envelop of the battery, deformation of the battery package, smelling of an electrolyte, an electrolyte leakage and others, the batteries shall never be used any more. The batteries with a smell of the electrolyte or a leakage shall be placed away from fire to avoid firing.

8.12. Exhausted batteries should be immediately removed from equipment and dispose of.