

Specification Approval Sheet(Battery)

Model: DTP1265135

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1.Scope

The document describes the Product Specification of the Lithium-ion rechargeable battery manufactured by DATAPOWER TECHNOLOGY CO., LTD

2.Model: DTP1265135

3.Specification

No.	Items	Specifications
1	Charge voltage	DC 4.2V
2	Nominal voltage	3.7V
3	Minimal capacity	10000mAh 0.2C Discharge
4	Charge current	Standard charge: 0.2C Rapid charge: 2.0C
5	Standard Charging method	0.2C CC(constant current) charge to 4.2V, then CV(constant voltage 4.2V) charge till charge current decline to 0.05C
6	Charging time	Standard charge: 7.0 hours (Ref.) Rapid charge: 1.0 hours (Ref.)
7	Max. charge current	2.0 C
8	Max. discharge current	3.0 C
9	Discharge cut-off voltage	3.0V
10	Operating temperature	Charging: 0°C ~ 40°C Discharging: -25°C ~60°C
11	Storage temperature	-10°C ~ + 40°C
12	Battery Weight	Approx. 230g Below
13	Battery Dimension	Length : 132 ±1.0mm Width : 65.0±0.5 mm Thickness : ≤13.5mm

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4. Battery Performance Criteria

4.1 Electrical characteristics

No.	Items	Test Method and Condition	Criteria
1	Standard Charge	Charging the Battery initially with constant current at 0.2C and then with constant voltage at 4.2 V till charge current declines to 0.05C.	N.A.
2	Initial Capacity	The capacity means the discharge capacity of the Battery, which is measured in terms of discharge current of 0.2C and 3.0V cut-off voltage after the standard charge.	$\geq 10000\text{mAh}$
3	Cycle Life	Test condition: Charge: 2C to 4.2 Discharge: 2C to 3.0V ,80% or more of 1 st cycle capacity at 0.2C discharge of Operation	≥ 2000
4	High temperature cycle	Test condition: temperature $55\pm 2^{\circ}\text{C}$ Charge: 1C to 4.2 Discharge: 1C to 3.0V 75% or more of 1 st cycle capacity at 0.2C discharge of Operation	≥ 1500
5	Self-discharge	After the standard charging, store the Batteries under the condition as No.4.5 for 30days, then measured the capacity with 0.2C till 3.0V	Remaining capacity > 93%
6	Initial Impedance	Internal resistance measured at AC 1KHz after 50% charge	$3\text{m}\Omega$
7	Battery Voltage	As of shipment.	3.8V ~ 4.0V

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4.2 Mechanical characteristics

No.	Items	Test Method and Condition	Criteria
1	Vibration Test	After standard charging, fixed the 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 amplitude of the vibration is 1.6mm. The Battery shall be vibrated for 30 minutes towards per axis of XYZ axes.	No leakage No fire
2	Shock test	No explosion After Standard Charging, test condition: Acceleration :100m/s ² Pulse lasting time :<16ms Shock times : 1000±10times	No fire, no explosion, no leakage.
3	Drop Test	Drop the battery in the shipment condition from 1m height onto 5cm thicker concrete with p-tile on it 3 times each of X, Y, and Z directions at 25±2°C.	No explosion, no fire, no leakage.

4.3 Safety Performance

1	Overcharge Test	3C,CC,10V at 23±3°C; When the capacity reach 10V , end test.	No fire , No explosion
2	Over-discharge Test	After discharged to the cut-off voltage, the battery shall be subjected to a short-circuit condition with a load of resistance less than 30Ω for 24 hour.	No fire No explosion

3	Heating Test	A battery is to be heated in a gravity convection or circulating air oven. The temperature of the oven is to be raised at a rate of $5\pm 2^{\circ}\text{C}/\text{min}$ to a temperature of $120\pm 2^{\circ}\text{C}$ at which temperature the oven is to remain for 30 minutes before the test is discontinued.	No fire , No explosion
4	Short circuiting Test	After standard charge, the battery shall be subjected to a short-circuit condition with a wire of resistance less than $100\text{m}\Omega$ for 1 hour.	No fire , No explosion

4.4 Visual inspection

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

4.5 Standard environmental test condition

Unless otherwise specified, all tests stated in this Product Specification are conducted at the condition below:

Temperature : $23 \pm 5^{\circ}\text{C}$

Humidity : $65 \pm 20\% \text{ RH}$

5. Storage and Others

a) Long Time Storage

If the Battery is stored for a long time(over 3 months), the Battery's storage voltage should be 3.8~4.0V and the Battery is to be stored in according to the condition specified about No. 4.5.

b) Others

Any matters that this specification does not cover should be discussed between the customer and ZQPT.

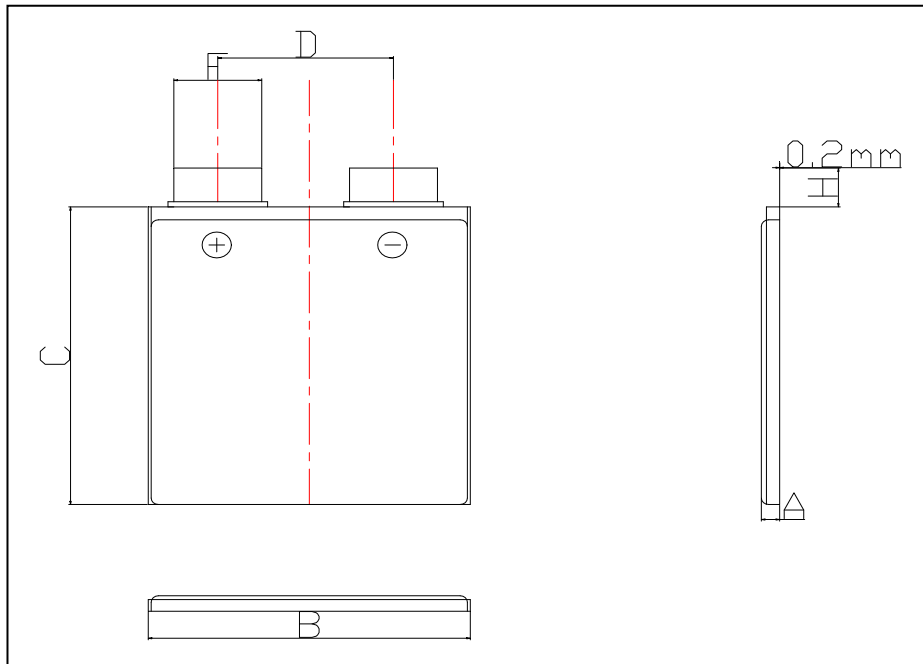
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Dimension (all unit in mm, not in scale)



Item	Description	Dimension
A	Thickness	$\leq 13.5\text{mm}$
B	Width	$65.0 \pm 0.5\text{mm}$
C	Length	$132.0 \pm 1.0\text{mm}$
D	Distance of center	$30 \pm 1.0\text{ mm}$
F	Width of tab	$10 \pm 0.2\text{ mm}$
H	Length of tab	$19 \pm 1.0\text{ mm}$

PRODUCT SPECIFICATIONDOC NO.: DTP1265135REV. : ASHEET : 7 of 12**7. Assembling Request**

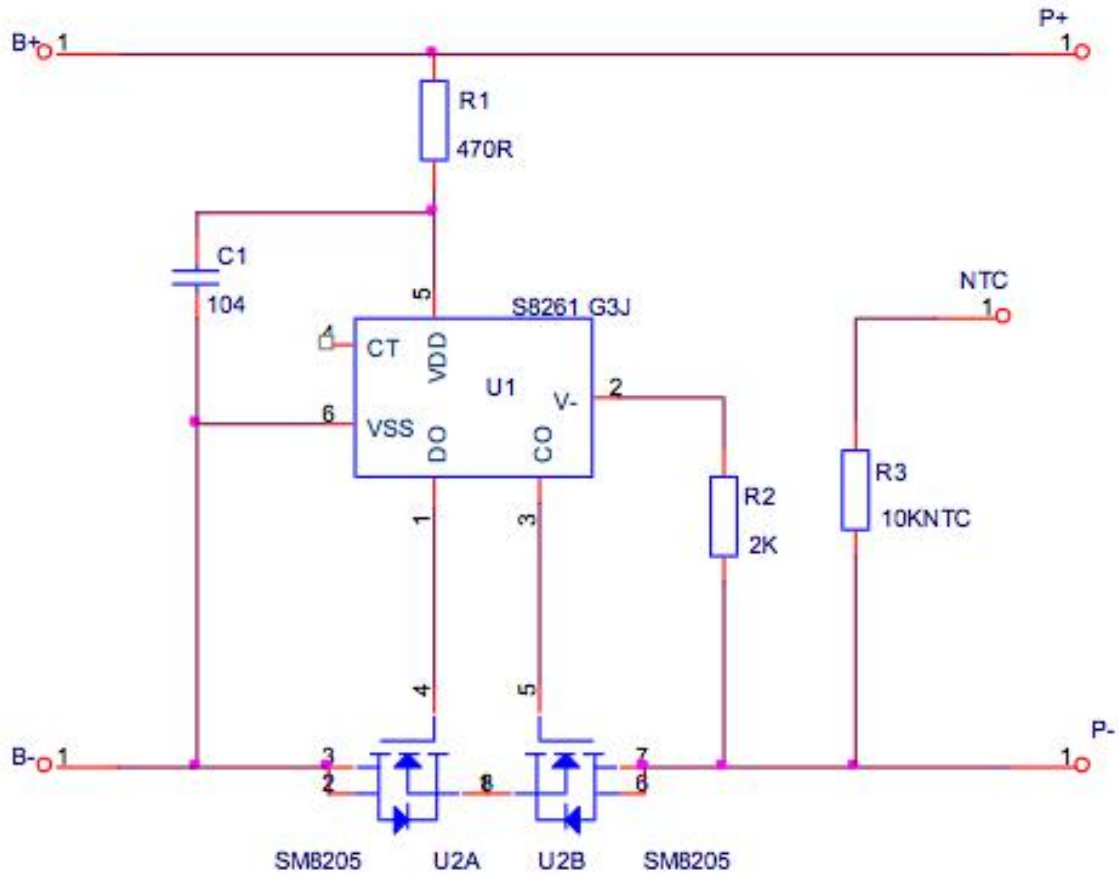
7.1 List of Parameter

Item	Symbol	Content	Criterion
Over charge Protection	V_{DET1}	Over charge detection voltage	4.30V±0.05V
	tV_{DET1}	Over charge detection delay time	960ms-1400 ms
	V_{REL1}	Over charge release voltage	4.10±0.01V
Over discharge protection	V_{DET2}	Over discharge detection voltage	3.0V±0.05V
	tV_{DET2}	Over discharge detection delay time	115ms-173ms
	V_{REL2}	Over discharge release voltage	3.0V±0.1V
Over current protection	V_{DET3}	Over current detection voltage	0.08±0.030V
	I_{DP}	Over current detection current	4~4.5A
	tV_{DET3}	Detection delay time	10ms
		Release condition	Cut load
Short protection		Detection condition	Exterior short circuit
	T_{SHORT}	Detection delay time	≤380us
		Release condition	Cut short circuit
Interior resistance	R_{DS}	Main loop electrify resistance	VC=3.6V; $R_{DS} \leq 65m\Omega$

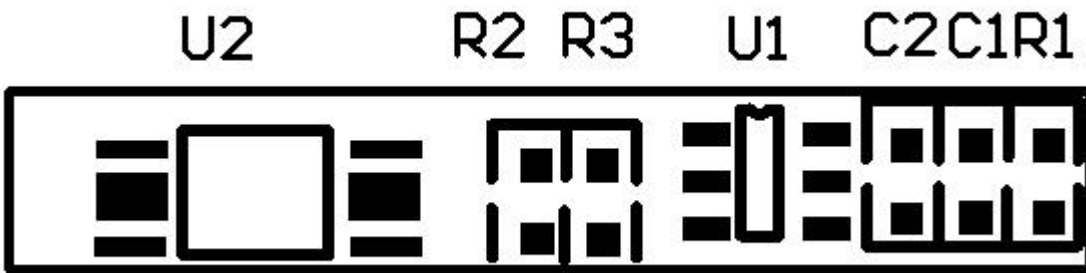
7.2 Parts list

NO.	Location	Part name	Specification	Pack type	Q' ty	Maker/Remark
1	U1	Battery protection IC	S-8261ABJMD-G3J	SOT23-6	1	Seiko
2	U2	Silicon MOSFET	8205A	TSSOP-8	1	MT
3	R1	Resistance	470 $\Omega \pm 5\%$	0603	1	YAGEO
4	R2	Resistance	2K $\Omega \pm 5\%$	0603	1	YAGEO
5	R3	NTC	10K	0603		Taxian
6	C1	Capacitance	0.1 μF	0603	1	TDK
7	PCB	Print circuit board	9*3.8*0.6mm	TS-3810-A0	1	

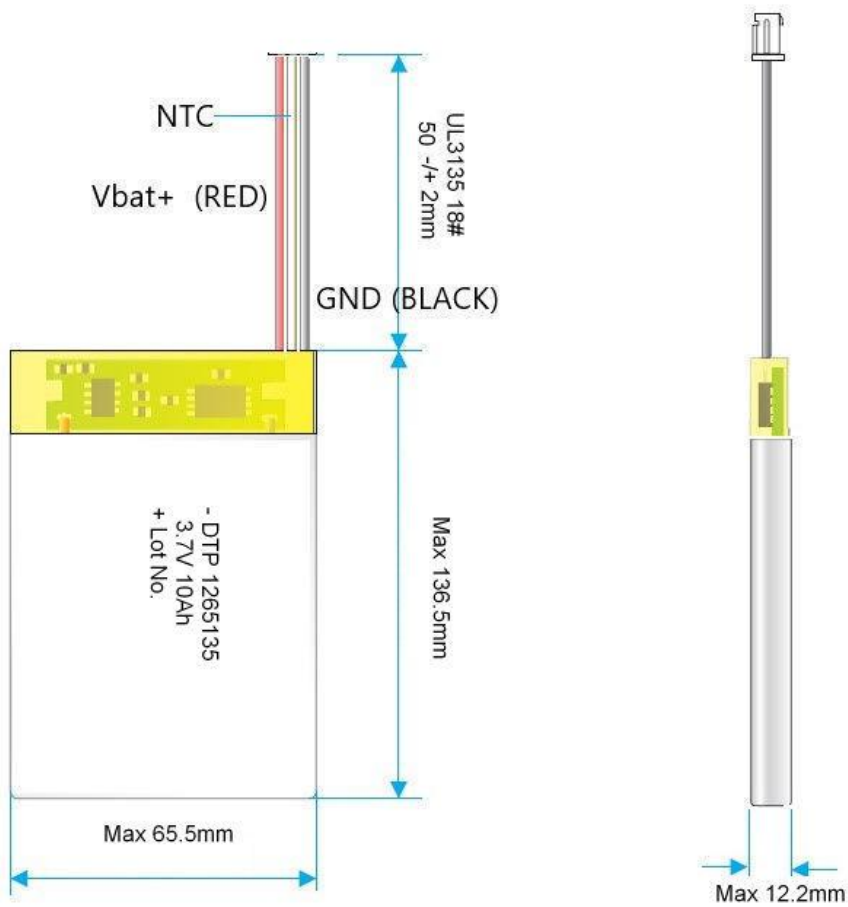
7.3 Application Circuit



7.4 Maps(For reference only)



7.5 External Dimension Drawing



Guarantee Period of Quality

Guarantee period of quality is 12 months after sold.

Matters needing attention

Strictly observes the following needing attention. Data Power will not be responsible for any accident occurred by handling outside of the precautions in this specification.

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1.1 Charging voltage:

Charging shall be done by voltage less than the value specified in the Product Specification (4.2V/Battery). Charging over 4.2, which is the absolute maximum voltage, is strictly prohibited. The charger shall be designed to comply with this condition.

It is very dangerous that charging with higher voltage than maximum voltage, which may cause damage to the battery electrical, mechanical safety performance and could lead to heat generation or leakage.

1.2 Charging temperature:

The battery shall be charged within 0°C~40 °C range in the Product Specification.

1.3 Prohibition of reverse charging:

Reverse charging is prohibited. The Battery shall be connected correctly. The polarity has to be confirmed before charging. In case of the Battery is connected improperly, the Battery cannot be charged. Simultaneously, the reverse charging may cause damage to the Battery which may lead to degradation of battery performance and damage the Battery safety, and could cause heat generation or leakage.

2. Discharging**2.1 Discharging current**

The Battery shall be discharged at less than the maximum discharge current specified in the Product Specification. High discharging current may reduce the discharging capacity significantly or cause over-heat.

2.2 Discharging temperature

The Battery shall be discharged within -20°C~60°C range specified in the Product Specification.

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2.3 Over-discharging:

It should be noted that the Battery might be at an over-discharged state because of its self-discharge property when the Battery is not long use. In order to prevent over-discharging, the Battery shall be charged periodically to maintain its voltage between 3.8V and 4.0V.

Over-discharging may cause loss of Battery performance, characteristics, or battery functions.

The charger shall be equipped with a device to prevent the battery from further discharging below the cut-off voltage specified in the Product Specification. Also the charger shall be equipped with a device to control the recharging procedures as follows:

The Battery pack shall start with a small current (0.01C) for 15 - 30 minutes, i.e. pre-charging, before rapid charging starts. The rapid charging shall be started after the (individual) Battery voltage has been reached above 3.0V within 15 - 30 minutes that can be determined with the use of an appropriate timer for pre-charging. In case the (individual) Battery voltage does not rise to 3.0V within the pre-charging time, then the charger shall have functions to stop further charging and display the Battery/pack is at an abnormal state.

3. Protection Circuit Module (PCM)

The Battery/battery pack shall be equipped with a PCM that can protect Battery pack properly.

PCM shall have functions of (1) overcharging prevention, (2) over-discharging prevention, and (3) over current prevention to maintain safety and prevent great damages to battery performance. The over current can occur by external short circuit

Overcharging prohibition:

Overcharging prevention function shall stop charging if any one of the Battery of the battery pack reaches 4.28V.

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Over-discharge prohibition:

Over-discharging prevention function shall work to avoid further drop of battery voltage below 2.5V. It is recommended that the dissipation current of PCM shall be 0.5uA or less with the over-discharge prevention function.

The protection function shall monitor each bank of the battery pack and control the current all the time.

4. Storage

The Battery shall be storied within -10°C~ 40°C range environmental condition.

If the Battery has to be storied for a long time (Over 3 months), the environmental condition should be:

Temperature: 23±5°C

Humidity: 65±20%RH

The voltage for a long time storage shall be 3.8V~4.0V range.

5. Handling of Battery

Because the battery is packed in Gum hull package, in order to ensure its better performance, it's very important to carefully handle the battery

6. Notice for Designing Battery Casing

6.1 Casing design

- Battery pack should have sufficient strength and battery should be protected from mechanical shock
- No Sharp edge components should be inside the casing containing the battery.

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7. Others

7.1 Prevention of short circuit within a battery pack

Enough insulation layers between wiring and the Battery shall be used to maintain absolute safety protection.

The battery pack shall be structured with no short circuit within the battery pack, which may cause generation of smoke or firing.

7.2 Prohibition of dis-assembly

1) Never disassemble the Battery

The disassembling may generate internal short circuit in the Battery, which may cause burst, fire, or other problems.

2) Electrolyte is harmful

DTP battery should not have liquid from electrolyte flowing, but 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.

7.3 Prohibition of dispose of Battery into fire

Never burn nor dispose of the Battery in fire. These may cause battery fire, which is very dangerous and is strongly prohibited.

7.4 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.

7.5 Battery replacement

The battery replacement shall be done only by either Battery supplier or device supplier and never be done by the user.

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7.6 Prohibition of use of damaged Battery

The Battery might be damaged during shipping because of shock. If any abnormal features of the Battery are found such as damages to a Al foil of the Battery, deformation of the Battery package, smelling of an electrolyte, an electrolyte leakage and others, the Battery shall never be used any more. The Battery with a smell of the electrolyte or a leakage shall be placed away from fire to avoid firing.