

## Product specification document

(Chinese version)

Customer name: \_\_\_\_\_

Customer model number: \_\_\_\_\_

Product name: Lithium battery battery pack

Product model: GD004-030

Product specification: 18V / 3Ah

Customer confirmation signature:

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protocol	examine and verify	ratify

This acceptance is applicable to the GD004-030 battery pack manufactured by Shenzhen Chuangcheng Technology Electronics Co., LTD.

一、 testing environment

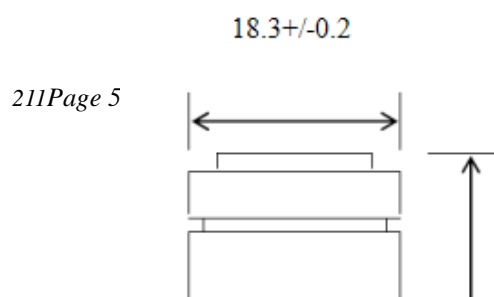
temperature: 15~25°C

Humidity: 45~85%

Air pressure: 86 ~ 106 Kpa

二、 Cell specification: Samsung 18650

1. Cell size: (as shown)



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2. qualification:

NO:	project		specification	remarks
1	nominal voltage		3.6V	
2	capacity	discharge current	7.5A	
		rated capacity	1500mAh	
3	size	diameter	18.15mm	Diameter: standard value $\pm$ 0.10mm  Height: standard value $\pm$ 0.15mm
		altitude	64.85mm	
4	internal resistance		$\leq 30 \text{ m } \Omega$	
5	charge	Charging method	CC-CV	Constant flow-constant pressure
		Constant voltage charging voltage	$4.2 \pm 0.05\text{V}$	
		Standard charging current	0.5C/0.75A	
		Fast charging current	2C/3.0A	

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6	discharge	Discharge cut-off voltage	2.50V	
		Standard discharge current	5C/7.5A	
		Fast discharge current	10C/15A	
7	Use environmental requirements	charge	0~50°C	
		discharge	-20~75°C	
		lay in	-30~45°C	
8	weight		About 45g	

3. Battery pack finished product drawing:



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.13. 1>. Main parameters of finished battery pack:

order number	project	specifications	remarks
1	open circuit voltage	18V~20.5V	Shipping battery voltage
2	rated capacity	3Ah	
4	charging current	1.5A	
5	Overcharge to protect voltage	21.25V	Machine protection
6	Overdischarge protection voltage	15V	Machine protection
8	Maximum continuous discharge current	20A	Machine protection
9	overcurrent protection	30A	Machine protection
10	final dimension	112.40*78.05*63.50mm	
11	weight	581g	
12	Internal resistance of finished products	$\leq 90m \Omega$	

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13	storage temperature	-30~45℃	
14	Storage humidity	0-85 %	

### 4.1. An Overview

This product adopts NTC to realize the temperature protection function.

### . Five main functions

#### 5.1. Rated current

When the battery pack is charged or discharged through the protection plate, the protection plate can work continuously for a long time; the maximum current of charging is called the rated current of charging, and the rated current of discharging is called the discharge rated current.

#### 5.2. Internal resistance

All battery cells are within the normal operating voltage range, the protection plate is in the normal operating conduction state, and the resistance value between the battery terminal of the protection plate and the load terminal of the protection plate or the charger terminal of the protection plate. The resistance of battery terminal and load terminal is called the internal resistance of discharge circuit, and the resistance of battery terminal and charger terminal is called the internal resistance of charging circuit. Unstated internal resistance by default is the internal resistance of the discharge circuit.

#### 5.5. Temperature protection

### Vi. Reliability performance of the battery pack:

project	Standard requirements	remarks
elevated	Under the condition of $20 \pm 5^{\circ}\text{C}$ , after charging the	


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temperature property	battery pack with the matching charger, put the battery in a $55 \pm 5^{\circ}\text{C}$ constant temperature and humidity box for 2h, and then discharge to the battery pack protection device. The discharge time is 55min, and the appearance of the battery is without deformation and burst.	
cryogenic property	Under the condition of $20 \pm 5^{\circ}\text{C}$ , after charging the battery pack with the matching charger, put the battery into the $-22 \pm 2^{\circ}\text{C}$ constant temperature and humidity box for 16~24h, and then discharge to the battery pack protection device with 0.2C. The discharge time is 3.0h, and the appearance of the battery is without deformation and burst.	
Charge retention capacity	After charging the battery pack is finished with the supporting charger, the open circuit is placed at $20 \pm 5^{\circ}\text{C}$ for 28 days, and the battery pack is discharged to the battery pack protection device with 1C, requiring the discharge time of 50min.	
Overcharge protection performance	After the battery pack is charged with the supporting charger, the battery is continuously loaded for 8H with the constant current and constant voltage source. The voltage of the constant current and constant voltage source is set at 1.5 times the nominal voltage of the battery pack, and the current is set to 2C. The battery should not leak liquid, fire, smoke and explosion during the test.	not have
Over-release protection performance	Under the condition of $20 \pm 5^{\circ}\text{C}$ , the battery is discharged with 1C to the battery pack protection device, and the external $30 \Omega$ load is discharged for 24h, and the battery does not leak liquid, fire, smoke and explosion during the test.	not have
Short circuit protection	Under the condition of $20 \pm 5^{\circ}\text{C}$ , after the battery pack is charged with the supporting charger, discharge 1C for	not have



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performance	1min, then connect the positive and negative poles to 30mΩ load for 1h, and then break the load between the positive and negative batteries, the battery voltage should be restored to the normal output voltage within 3s, and the battery does not leak, fire, smoke and explosion.	
Constant humidity and heat performance	Under the condition of $20 \pm 5^{\circ}\text{C}$ , the battery pack is charging with the matching charger, put into the constant temperature and humidity box of $40 \pm 2^{\circ}\text{C}$ and humidity of 90~95% for 48h, the battery should have no obvious deformation, leakage, rust, smoke and explosion. After the test, remove the battery and place it for 2h, and then discharge the battery at 1C to the battery pack protection device at $20 \pm 5^{\circ}\text{C}$ , requiring the discharge time of 55min.	
fall-down test	Under the condition of $20 \pm 5^{\circ}\text{C}$ , the battery with charger charging, the battery from 1 m height to 18~20mm thickness of hard board, (X, Y, Z, positive and negative six direction drop once respectively) battery is not smoke, explosion, still can load into the machine, good contact, firm lock, after the test, the battery 1C discharge performance test, discharge time 40min (up to 3 cycles, including any one qualified can stop).	
cycle life	Under the condition of $20 \pm 5^{\circ}\text{C}$ , the battery pack is charging with the matching charger, open the open circuit for 0.5h, and then discharge the battery at 1C to the battery pack protection device protection, so cycle test. Battery life ends when the cycle to the discharge time is less than 36min. 250 cycles are required.	
	If the production date is less than 3 months, the battery pack shall be charged with the supporting charger to 40~50% of the capacity, placed in $20 \pm 5^{\circ}\text{C}$ , humidity	

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	35~75% environment for 12 months, then charged with the supporting charger, the open circuit for 0.5h, then discharge 1C to the battery pack protection device, the discharge time is 40 minutes.	
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seven,. Read the instructions below before use. Incorrect use of the battery will lead to heat, ignition, rupture, damage, and energy attenuation of the battery.

### warn

- a) The battery cannot be placed in the fire or heated, nor can it be stored in a high temperature environment ( $> 80^{\circ}\text{C}$ );
- b) The positive and negative electrodes of the battery cannot be connected to the power supply facilities;
- c) No metal wire or metal objects can be directly connected to the positive and negative poles of the battery;
- d) Do not nail a nail into the battery or hit the battery with a hammer;
- e) Do not disassemble the battery or transform the internal and external structure of the battery;
- f) Do not immerse the battery in water or wet the battery when stored;
- g) Should try to use the battery as far as possible away from the child, to avoid its swallowing;
- h) If there is an abnormal battery after the purchase of the battery, such as the battery surface heat, drum shell, leakage and other abnormal, please contact us in time;
- i) If the battery needs to be stored for a long time, please charge with 0.5C for more than 1 hour in advance, that is, let the battery have more than 50% power;

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pay attention to

- 1、 Correct use of matching charging device, prohibit the use of exceeding the specified voltage, current or modified charger;
- 2、 Do not use or place the battery near the fire or other heat sources (more than 80°C), easy to melt the diaphragm paper of the battery at high temperature, causing internal short circuit, may make the battery have heat, smoke, explosion or fire, etc.;
- 3、 Do not immerse the battery in water or sea water, or wet it, if the protection circuit in the battery fails, the battery will be charged under excessive current or voltage, there will be abnormal chemical reactions, heat, smoke, explosion or fire and other phenomena;
- 4、 Do not charge the battery near the fire source or under the strong exposure, at high temperature, the protection circuit may fail, the battery in the abnormal current (or voltage) charging, there will be abnormal chemical reaction, resulting in heat, smoke, explosion or fire and other phenomena;

5. Operating or storage environment:

Charge 0 —— + 50°C; the humidity is 35~75%

Discharge-20 —— + 75°C; humidity is 35~75%

Store within 3 months: -30 —— + 45°C; humidity is 35~75%

One-year storage is-20 —— + 25°C; humidity is 35~75%