

Li-ion Battery Specification

Model: NL1826R (USB chargeable battery)

Customer: _____

Confirm: _____

Date: 2017-4-10

Draft	Check	Approve

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Battery Specification

Company: This document describes the Product Specification of Li battery supplied by SYSMAX.

Battery medol:BAK 18650 2600MAH(USB chargeable battery)

Specification:

Rated Voltage:		3.6V
Capacity: (4.30V to 2.4V end , discharge current : 1300mA)		Type: 2600mAh@0.2C Minimum:2500mAh@0.2C
Charge	Mode	CC/CV
	Charge voltage	4.300±0.05V
	Standard charge current	500mA to 4.20V, until CC 4.2V charge,35mA (0.01C) end
	Max charge current	750mA
	Total charge time	Standard charge time: Max 5.2h (Ref.) Fast charge time: Max 3.5h (Ref.)
Discharge	Max discharge current	5A when $T \geq 0^{\circ}\text{C}$ 1C when $0^{\circ}\text{C} > T \geq -10^{\circ}\text{C}$ 0.5C when $-10^{\circ}\text{C} > T \geq -20^{\circ}\text{C}$ (discharge current must be less than 4.5A)
	Cutoff voltage	2.40±0.1V
Size	Diameter	≤18.8mm
	High	≤69.8mm
Inner resistor		≤100mΩ (AC impedance 1KHz)
Weight		47±2g
Working temperature	charge	0°C~45°C
	discharge	-20°C~60°C
Store temperature		-20°C~45°C (1month) -20°C~40°C (6months) -20°C~35°C (1 year)
Relative humidity		0~90%RH(non-condensing)

Note: *1 the text is in the following condition: temperature: $22.5 \pm 2.5^{\circ}\text{C}$, relative humidity: $65 \pm 20\% \text{RH}$, atmospheric pressure: 86kPa~106kPa

Appearance: Have no appearance as following:damaged, twisted, rusty, color changed, weeping and so on;

Guarantee period:

1 year after produced.

Responsibility:

Please use the battery following this specification condition, did not follow the guide, Shenzhen oriental vision company will not be responsible to any problem caused by incorrect operation.

Informing each change in advance

If the specification, material, manufacturing technique and controlling system is changed, we will inform our customers in black and white in advance.

Warning

In order to avoid leakage, fire and explosion, pls design the charge/discharge circuit, product construction and warning label according to this specification sheet.

Charging voltage must be no more than 4.2V

Do not place battery in a device with the (+) and (-) in the wrong way

Do not heat or burn the battery

Do not disassemble or modify the battery

Do not charge battery under high temperature, such as near the fire source

Do not short circuit the battery

Do not make your battery over-discharging. Voltage should be over 2.4V.

Do not get cells wet or throw them into water.

For storing the battery for long time, the temperature of surrounding needs be lower than 45°C

After long time storage, battery should be charged and discharged for several time and then regains the original capacity.

Picture of battery outlook (Dimension: length≤18.8MM, height≤69.8MM)



10. Tag size

Cell specification

Cell company:

Cell come from shenzhen bak battery company.

Cell Model: 18650 2600mah

Specification:

Item	Parameter
Rated capacity	2600 mAh@0.2C
Mix capacity	2500 mAh@0.2C (0.2C discharge from 4.2V to 2.5V)
Rated voltage	3.7V
Energy density	582Wh/L
Max charge voltage	4.2 ±0.05 V
Cutoff charge voltage	2.5±0.05 V
Standard charge current	0.5C(1300 mA)
Standard discharge current	0.5C(1300 mA)
Max charge current	1C (T≥10°C) 0.2C(10°C>T≥0°C)
Max discharge current	2C(T≥0°C) 1C(0°C>T≥-10°C) 0.5C(-10°C>T≥-20°C)
Surface temperature	charge: 0~45°C discharge: -20~60°C
Max surface temperature	charge: 60°C discharge: 75°C
Humidity range	0~90%RH
Inner resistor	≤50 mΩ(AC Impedance, 1000 Hz)
Size	High: 65.0 mm Diameter: 18.4 mm
Weight	43±2g

Electric function:

Cell using condition:

Charge temperature: 0~45°C

Discharge temperature: -20~60°C

Cell test condition:

Temperature: 22.5±2.5°C

Text instrument requirement:

Voltage instrument: internal resistance above 10KΩ /V

Temperature instrument: precision below 0.5°C

Electric function

NO.	Item	Standard of function		
4.4.1	Multiplying discharge function	$\frac{0.5C \text{ 放电容量}}{0.2C \text{ 放电容量}} \geq 90\%$	$\frac{1.0C \text{ 放电容量}}{0.2C \text{ 放电容量}} \geq 85\%$	$\frac{2.0C \text{ 放电容量}}{0.2C \text{ 放电容量}} \geq 80\%$
4.4.2	Cycle life	$\frac{\text{第310次循环的放电容量}}{\text{初始放电容量}} \geq 80\%$		
4.4.3	High and low temperature discharge function	$\frac{-10^{\circ}C \text{ 放电容量}}{25^{\circ}C \text{ 放电容量}} \geq 55\%$	$\frac{0^{\circ}C \text{ 放电容量}}{25^{\circ}C \text{ 放电容量}} \geq 75\%$	$\frac{60^{\circ}C \text{ 放电容量}}{25^{\circ}C \text{ 放电容量}} \geq 95\%$
4.4.4	Store function	$\frac{\text{残余容量}}{\text{初始放电容量}} \geq 90\%$ $\frac{\text{恢复容量}}{\text{初始放电容量}} \geq 95\%$		

Safety text:

NO.	Item	Text method	Standard
5.1	Short current	After full charge, use internal resistance below 30MΩ copper wire to make short current.	No explosion, no smoke, no fire
5.2	Over charge	After full charge, charge the battery CC/CV method 8 hour, the voltage is 4.2V, the current is 1.5CmA.	No explosion, no smoke, no fire, no leakage
5.3	Over discharge	Under the temperature 20±5°C condition, after 1.0CmA discharge, the use 30Ω load discharge 24 hour.	No explosion, no smoke, no fire, no leakage
5.4	Puncture	After full charge, use diameter 3mm nail punch the battery	No explosion, no smoke, no fire, no leakage
5.5	Extrusion	When the battery is full charged, put it between 2 boards and force 13kn pressure	No explosion, no smoke, no fire, no leakage
5.6	Vibration	When battery is fully charged, test it according to below conditions: Amplitude:0.8mm Frequency: 10~55Hz (Range:1Hz/min) Vibration direction: follow x/y/z directions and test 90~100 min	No explosion, no smoke, no fire, no leakage
5.7	Crush	After 5.2 7.0 text, fix the battery on a desk towards x/y/z coordinate orthogona l, then text as following: Acceleration at peak pulse:100m/s ² , pulse time:16ms crush frequency:40~80 次/min, crush time:1000±10	No explosion, no smoke, no fire, no leakage
5.8	Drop	1m high, flat cement floor, positive、negative、side ways each drop 2 times	No explosion, no smoke, no fire, no leakage, the function is OK
5.9	Constant hot and humid	When battery is full charged, put it in conditions with (40±2)°C temperature and (90%±3%) RH humidity for 48 hours. Then put the battery in conditions with 20±5°C temperature for 2 hours. At last, charge the battery quickly and then test the run time of quick discharging and check the outlook of battery.	Without defects in appearance, discharging time ≥36min

Warranty

Within one year since the date batteries are delivered from factory.

Appearance

Without following defects: damage, fracture, deformation, loose, rusty, leakage and discoloration etc..

Warning:

NO leakage , no hot, no explosion, some action is not allowed, please follow the guide:

Not allowed put battery into water, keep battery in dry condition.

Not allowed set battery near the hot thing, such as fire, hot pole

Please use the Li-ion battery charger.

Please do not confuse the positive and negative.

Please do not charge battery using the plug

Not allowed delivery and store with the metal things

Not allowed punch and broken battery.

Not allowed weld battery.

Please separate the different kind of battery

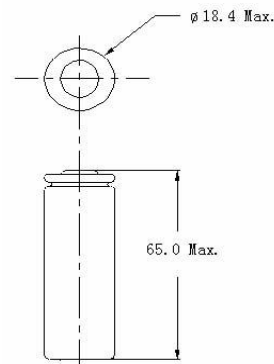
Please do not use the battery under the hot weather and condition, maybe will catch fire , make the cycle life shortness, or be broken.

If some leakage happening, hurt eye, please use clean water wash the eye, and ask for help to doctor.

If you find something wrong with battery , please do not use them.

If some cells is dirty, please use the dry cloth to clear them

The cell size:

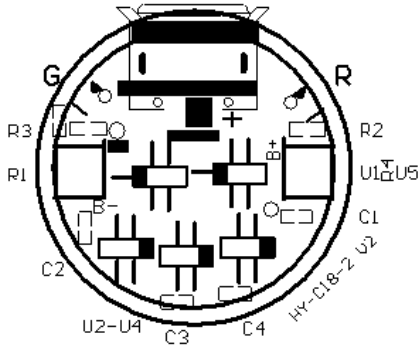


■ Electric function

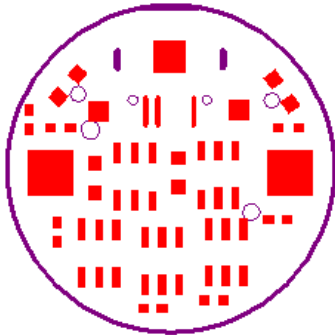
Item	Symbol	Content	Criterion
Over charge Protection	V_{DET1}	Over charge detection voltage	$4.30 \pm 0.05V$
	tV_{DET1}	Over charge detection delay time	300ms Max
	V_{REL1}	Over charge release voltage	$4.10 \pm 0.05V$
Over discharge protection	V_{DET2}	Over discharge detection voltage	$2.40 \pm 0.1V$
	tV_{DET2}	Over discharge detection delay time	20ms Max
	V_{REL2}	Over discharge release voltage	/
			$\leq 6A$
Over current protection	V_{DET3}	Over current detection voltage	/
	I_{DP}	Over current detection current	8~10A
	tV_{DET3}	Detection delay time	10ms Max
		Release condition	Cut load
Short protection		Detection condition	Exterior short circuit
		Release condition	Cut short circuit
Interior resistance	R_{DS}	Main loop electrify resistance	$V_C=4.2V, R_{DS} \leq 60m\Omega$
Charge voltage current	V、A		DC 5V, 700MA \pm 50MA
Current consumption	I_{DD}	Current consume in normal operation	$\leq 20\mu A$

■ PCB Board principle (positive USB protect board: 8036, 14V)

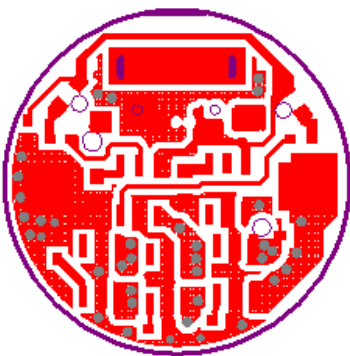
■ TOP drawing



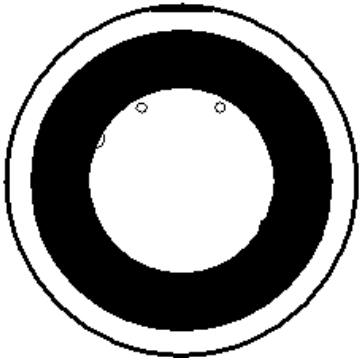
■ TOP MASK drawing



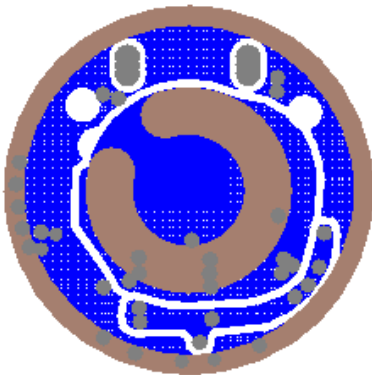
■ TOP drawing



■ BOTTOM drawing



■ BOTTOM drawing



■ TOP DRAWING

■ PCB SIZE

1. unit: mm tolerance: ± 0.1 mm

2. copper thickness :30~35 μ m

Port marking:

- 1、 B+: Connect battery positive
- 2、 B-: Connect battery negative

■ Using condition

Parameter	Rating	unit
Working temperature	-40~85	°C
Ambient humidity	below 85% RH	%RH
Store temperature	-55~125	°C
Store humidity	Below 85% RH	%RH
P+ and P- max voltage	VSS -0.3 to VSS +12	V
B+ and B- max voltage	VSS -0.3 to VSS +12	V