

锂离子 电 池 规 格 书

Specification Of Lithium-ion Battery

产品型号: **ACC8100 (5103 108 79031)**

BATTERY MODEL: **ACC8100 (5103 108 79031)**

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规格变更记录

SPECIFICATION AMENDMENT RECORDS

版本 Edition	描述 Description	日期 Date	审核 Approved
A	New Edition	2012/12/9	
B	DW01+更改为 DW01B-G	2014/8/6	

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1. 适用范围

Apply for Scope

本规格说明书描述了深圳市比克电池有限公司生产的可充电锂电池便携式电池产品性能指标。

This specification manual describes the SHENZHEN BAK CO.,LTD. to produce of can refresh the product function index sign of the battery of Lithium-ion.

2. 电池规格

Battery Specification

电池参数规格

序号 No.	项 目 Items	规 格 Specifications
1	外 观 Appearance	电池外表面清洁, 无擦伤, 无机械损伤, 与主机配合良好 The surface is clear and no scratch, no mechanical abrasion, match well with the main machine
2	标称电压 (V) Normal Voltage(V)	3.7V
3	放电终止电压 (V) Discharge cut-off voltage to (V)	3.0 V
4	标称容量 (mAh) Normal Capacity (mAh)	1000mAh (0.2 C ₅ A 放电 0.2 C ₅ A Discharge)
5	充电电压 (V) Charge Voltage (V)	4.2V 标准充电方法: 恒流/恒压 Standard Charging Method CC/CV
6	充电电流 (mA) Charge Current (mA)	标准充电电流: 0.2 C ₅ A Standard charge: 0.2 C ₅ A
		最大充电电流: 1 C ₅ A Max charge: 1 C ₅ A
7	放电电流 (mA) Discharge Current (mA)	标准放电电流: 0.2 C ₅ A Standard Discharge: 0.2 C ₅ A
		最大放电电流: 1 C ₅ A Max Discharge: 1 C ₅ A
8	工作温度 (°C) Operating Temperature (°C)	充 电: 0°C ~ +45°C Charging: 0°C ~ +45°C 放 电: -20°C ~ +45°C Discharging: -20°C ~ +45°C
9	储存温度 (°C) / 湿度 (%) Storage Temperature / humidity	-10°C ~ + 45°C / ≤75%
10	循环寿命 (Cycles) Cycle Life Cycles	≥300 Cycles
11	内阻 (mΩ) Impedance (mΩ)	≤150mΩ
12	电池重量 (g) Battery Weight (g)	约: 22±1g Approx: 22±1g
13	电池尺寸 (mm) Battery Dimension (mm)	长度 Length: 54.50+0.20/-0.10mm 宽度 Width: 34.00±0.10mm 厚度 Thickness: 5.70mm±0.10mm
14	出货状态电压 (V) As of shipment Voltage (V)	3.80V ~ 3.92V

3、测试条件

Test Conditions

3.1 标准测试条件

Standard Test Conditions

若无特别要求，此规格书上的产品测试条件均为温度：20℃±5℃，湿度：65%±20% RH.

Unless otherwise specified, all tests stated in this Product Specification are conducted at temperature 20℃±5℃ and humidity 65%±20% RH.

3.2 标准充电制式

Standard Charge Method

“标准充电”即在环境温度为20℃±5℃的条件下,先以恒定电流0.2C₅A充电至4.2V,再以4.2V的恒压充电至电流小于0.02C₅A.

The "Standard Charge" means charging the Battery at a constant current of 0.2C₅A until the voltage is 4.2V, then charged at a constant voltage of 4.2V until its current is less than 0.02C₅A.

3.3 快速充电制式

Quick Charge Method

“快速充电”即在环境温度为20℃±5℃的条件下,先以恒定电流1C₅A充电至4.2V,再以4.2V的恒压充电至电流小于0.02C₅A.

The "Quick Charge" means charging the Battery at a constant current of 1C₅A (note: if the capacity is not less than 1200mAh, the charge current is 0.5C₅A) until the voltage is 4.2V, then charged at a constant voltage of 4.2V until its current is less than 0.02C₅A.

3.4 放电

Discharge

放电终止电压为 3.0V, 标准放电电流 0.2 C₅A, 最大恒流放电电流为 1C₅A.

Discharge cut-off voltage to 3.0V. Standard Discharge: 0.2 C₅A, Max discharge rate is 1C₅A at constant current.

4、电性能

Electrical Characteristics

测试项目 Test Item	测试方法 Test Method	检验标准 Criteria
放电性能(0.2C ₅ A) 0.2C ₅ A Discharge Performance (0.2C ₅ A) 0.2C ₅ A	电池按 3.2 或 3.3 规定充电后在环境温度为 20℃±5℃ 的条件下搁置 0.5h~1h, 而后以 0.2C ₅ A 电流放电到终止电压。 A battery is charged in accordance with 3.2 or 3.3, and then stored in an ambient temperature of 20℃±5℃ for 0.5h~1h, finally discharged to cut-off voltage at a constant current of 0.2C ₅ A.	放电时间不低于 5h. the discharging time is not less than 5h.

<p>1C₅A 放电性能 Discharge Performance (1C₅A)</p>	<p>电池按 3.2 或 3.3 规定充电后在环境温度 20℃±5℃ 的条件下搁置 0.5h~1h, 而后以 1C₅A 电流放电到终止电压。 A battery is charged in accordance with 3.2 or 3.3, and then stored in an ambient temperature of 20℃±5℃ for 0.5h~1h, finally discharged to cut-off voltage at a constant current of 1C₅A</p>	<p>放电时间不低于 51min. the discharging time is not less than 51min.</p>
<p>高温性能 High Temperature Performance</p>	<p>电池按 3.2 或 3.3 规定充电结束后, 将电池放入 55℃±2℃ 的高温箱中恒温 2h, 然后以 1C₅A 电流放电至终止电压, 实验结束后, 将电池取出在环境温度为 20℃±5℃ 的条件下搁置 2h, 然后目测电池外观。 A battery is charged in accordance with 3.2 or 3.3, and stored in an ambient temperature of 55℃±2℃ for 2h, then discharged to cut-off voltage at a constant current of 1C₅A. After that, fetch out the battery and place it in the ambient temperature of 20℃±5℃ for 2h, then check its appearance.</p>	<p>1. 放电时间不低于 51min; 2. 电池外观无变形, 无爆裂。 1. the discharging time is not less than 51min; 2. no distortion, no rupture.</p>
<p>低温性能 Low Temperature Performance</p>	<p>电池按 3.2 或 3.3 规定充电结束后, 将电池放入 -20℃±2℃ 的低温箱中恒温 16~24h, 然后以 0.2C₅A 电流放电至终止电压, 实验结束后, 将电池取出在环境温度为 20℃±5℃ 的条件下搁置 2h, 然后目测电池外观。 A battery is charged in accordance with 3.2 or 3.3, and stored in an ambient temperature of -20℃±2℃ for 16h~24h, then discharged to cut-off voltage at a constant current of 0.2C₅A. After that, fetch out the battery and place it in the ambient temperature of 20℃±5℃ for 2h, then check its appearance.</p>	<p>1. 放电时间不低于 3h; 2. 电池外观无变形, 无爆裂。 1. the discharging time is not less than 3h; 2. no distortion, no rupture.</p>
<p>荷电保持能力 Charge(Capacity) Retention</p>	<p>电池按 3.2 或 3.3 规定充电结束后, 在环境温度为 20℃±5℃ 条件下, 将电池搁置 28 天, 再以 0.2C₅A 电流放电至终止电压。 A battery is charged in accordance with 3.2 or 3.3, and stored in an ambient temperature of 20℃±5℃ for 28d, then discharged to cut-off voltage at a constant current of 0.2C₅A.</p>	<p>容量保持率: 85% C₅Ah Retention: 85% C₅Ah</p>
<p>循环寿命 Cycle Life</p>	<p>电池按 3.3 规定充电, 而后搁置 0.5~1h, 然后以 1C₅A (容量 ≥ 1200mAh 以 0.5C₅A) 电流放电至终止电压, 放电结束后, 搁置 0.5~1h, 再进行下一次充放电循环, 连续进行充放电循环 300 次。 A battery is charged in accordance with 3.3, and stored for 0.5h~1h, then discharged to the cut-off voltage with the current of 1C₅A (note: if the capacity is not less than</p>	<p>容量保持率 ≥ 80% capacity retention ≥ 80%</p>

	1200mAh, the discharge current is 0.5C ₅ A),after that, stored 0.5h~1h prior to next charge-discharge cycle.The battery shall be continuously charged and discharged for 300 times.	
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5、环境性能

Environment Characteristic

测试项目 Test Item	测试方法 Test Method	检验标准 Criteria
恒定湿热性能 Constant Temperature and Humidity	电池按3.2或3.3规定充电结束后,将电池放入40±2℃(90~95%RH)的恒温恒湿箱中搁置48h后,将电池取出在室温下搁置2h,目测电池外观,再以1C ₅ A电流放电至终止电压。 A battery is charged in accordance with 3.2 or 3.3,and stored in an ambient temperature of 40±2℃(90~95%RH) for 48h,then placed in room temperature for 2h. After that,check its appearance prior to being discharged to cut-off voltage at a constant current of 1C ₅ A.	1.电池外观应无变形,锈蚀,冒烟或爆炸;2.放电时间应不低于36min. 1.no distorsion,no rust,no fume,no explosion;2.the discharging time is not less than 36min.
振动测试 Vibration Test	电池按3.2或3.3的规定充电结束后,将电池用夹具安装在振动台的台面上,按下面的振动频率和对应的振幅调整好实验设备.X,Y,Z三个方向每个方向上从10~55Hz循环扫频振动30min,扫频速率为1oct/min: 振动频率: 10Hz~30Hz 位移幅值(单振幅): 0.38mm; 振动频率: 30Hz~55Hz 位移幅值(单振幅): 0.19mm. A battery is charged in accordance with 3.2 or 3.3,then installed onto the vibration desk with clamps. Equipment parameters of frequency and amplitude are as follows(the frequency is to be varied at the rate of 1oct/min between 10 and 55 herts,and repeat vibration for 30min.The battery is to be tested in three mutually perpendicular directions): frequency:10Hz~30Hz amplitude: 0.38mm frequency:30Hz~55Hz amplitude: 0.19mm	1.电池外观应无明显损伤,漏液,冒烟或爆炸; 2.电池电压不低于3.6V. 1.no scratch,no leakage,no fume,no explosion;2.the voltage is min3.6V.
碰撞测试 Shock Test	电池按振动测试的规定试验结束后,将电池分别按X,Y,Z三个互相垂直轴通过夹具固定在振动台面上,按下述要求调整好加速度,脉冲持续时间进行碰撞实验:脉冲峰值加速度:100m/s ² ,每min碰撞次数:40~80,脉冲持续时间:16ms,碰撞次数: 1000±10. A battery is tested in accordance with Vibration Test,then	1.电池外观应无明显损伤,漏液,冒烟或爆炸; 2.电池电压不低于3.6V. 1.no scratch,no leakage,no fume,no

	<p>secured to the testing machine by means of rigid mount which supports all mounting surfaces of the battery. Each battery shall be subjected to a total of three shocks of equal magnitude. The shocks are to be applied in each of three mutually perpendicular directions. The acceleration and impulse time are as follows: acceleration of impulse peak value:100m/s², shock frequency: 40~80times/min, impulse lasting time:16min, shock times:1000 ±10</p>	<p>explosion;2.the voltage is min3.6V.</p>
<p>自由跌落 Drop test</p>	<p>电池按碰撞测试的规定试验结束后,将电池样品由高度为1000mm的位置自由跌落到置于水泥地面上的18-20mm厚的木板上,从X,Y,Z正负方向(六个方向)每个方向自由跌落1次.自由跌落结束后,将电池以1C₅A电流放电至终止电压,然后以1C₅A的电流进行放电循环,直至放电时间不低于51min,即可终止充放电循环,充放电循环次数应不多于3次.</p> <p>A battery is charged in accordance with Shock Test,then dropped from a height of 1000mm to a wooden board(18-20mm thick) which is placed on the concrete ground.Batterys shall be dropped in each of three mutually perpendicular directions.Total drop times are 6.After that,the battery is discharged to cut-off voltage at CC of 1C₅A,then repeat charge & discharge at a current of 1C₅A until the discharge time is not less than 51min,the cycle times should be not more than 3.</p>	<p>电池应不漏液、不起火,不爆炸 no leakage,no fire,no Explosion</p>

6. 安全测试

Safety Test

下述试验应在有强制排风条件及防爆措施的装置内进行,在试验前所有的电池都按3.2或3.3规定充电,并搁置24h后,再进行以下试验.

All below tests are carried out on the equipments with forced ventilation and explosion-proof device.Before test, all batterys are charged in accordance with 3.2 or 3.3, and stored 24h prior to testing.

测试项目 Test Item	测试方法 Test Method	检验标准 Criteria
重物冲击 Impact Test	<p>将电池放在冲击台上,将10kg重锤自1m高度自由落下,冲击电池,电池允许发生变形.</p> <p>A battery is to be placed on the impact flat.A 10 kg weight is to be dropped from a height of 1m onto the battery, the distortion is allowed.</p>	<p>电池不起火,不爆炸 no fire,no explosion</p>

热冲击 Heating Test	将电池放在电热鼓风干燥箱中,温度以 $5^{\circ}\text{C}\pm 2^{\circ}\text{C}/\text{min}$ 的速率由室温升至 $130^{\circ}\text{C}\pm 2^{\circ}\text{C}$ 并保持30min. A battery is to be heated in a circulating air oven. The temperature of the oven is to be raised at a rate of $5^{\circ}\text{C}\pm 2^{\circ}\text{C}$ per minute to a temperature of $130^{\circ}\text{C}\pm 2^{\circ}\text{C}$ and remain for 30min at that temperature before the test is discontinued.	电池不起火,不爆炸 no fire,no explosion
过充电 overcharge test (3C/4.6V)	将电池正负极连接于恒压电源,调节电流至3C5A,电压为4.6V, 然后对电池以3C5A充电,直到电压为4.6V,并恒压保持2h. A battery is to be subjected to CC/CV power by connecting its positive & negative terminal, then set the current as 3C5A,the voltage as 4.6V,after that,Charge the battery up to 4.6V at CC of 3C5A and last 2h at the voltage of 4.6V.	电池不起火,不爆炸 no fire,no explosion
短路测试 Short-circuit test	将接有热电偶的电池置于通风橱中,用铜线短路其正负极(线路总电阻不大于50毫欧),实验过程中监视电池温度变化,当电池温度下降到比峰值低约 10°C 时,结束实验. A Battery is to be short-circuited by connecting the positive and negative terminals of the battery with copper wire having a maximum resistance load of 50mΩ.Monitor its temperature while testing,the battery is to be discharged until the battery case temperature has returned to be 10°C less then peak temperature.	1.电池不起火,不爆炸 2. 电池的外部温度不得高于 150°C .1.no fire,no explosion.2. The external battery temperature not higher than 150°C .

7. 电池防范措施

Standard battery Precaution

- a. 不要将电池暴露在极热或有火源的环境中.
Do not expose the battery to extreme heat or flame.
- b. 不要将电池短路,过充或过放.
Do not short circuit, over-charge or over-discharge the battery.
- c. 不要将电池浸入海水或水中,或者使其吸湿.
Do not immerse the battery in water or sea water, or get it wet..
- d. 不要颠倒电池的正负极. 不要拆卸或修整电池.
Do not reverse the polarity of the battery for any reason.
- e. 不要和项链,硬币或发夹等金属物品放置在一起.
Do not handle or store with metallic like necklaces, coins or hairpins, etc.
- f. 不要使电池受到明显的损害或变形.
Do not use the battery with conspicuous damage or deformation.
- g. 不要将电池与插座连接.
Do not connect battery to the plug socket or car-cigarette-plug.
- h. 不要将电池放置在太阳光直射的地方.
Do not use or leave the battery under the blazing sun (or in heated car by sunshine).

i. 将电池放置在远离儿童的地方.

Keep battery away from children.

j. 不要撞击或投掷电池.

Do not give battery impact or fling it.

k. 电池长期不使用，建议每6个月充电一次.

Long-term unused battery, we recommend charging once every 6 months.

8. 电池主要部件清单

The Main Materials List Of Battery

主要部件清单				
The main materials list				
序号 NO.	名称 Material	型号及规格 Specification	等同规格备用品 Substitute	备注 Remark
1	电芯 Cell	BAK 523450AR 3.7V/1000mAh	/	BAK
2	保护板 PCM	ACC8100 (10128001)	/	拓邦/超思维/广泰博
3	商标 Label	ACC8100 (10128001)	/	佳雅/普瑞达/鹏飞达
4	胶框	S165(10120001)	/	华伟达/裕鑫发
5				

9. 保护板规格

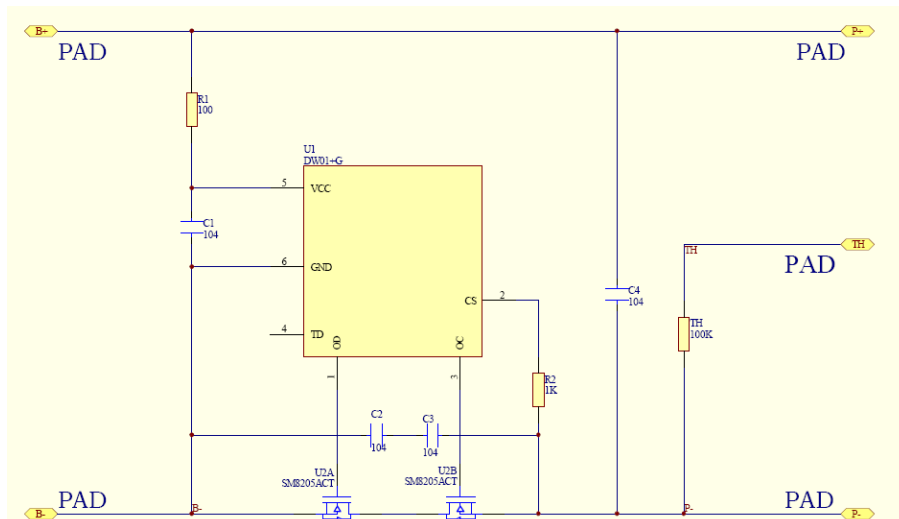
PCM Specification

这线路板是为单一电芯设计保护线路.

The PCM provides protection for single-cell Li-ion battery.

9.1 电气图：

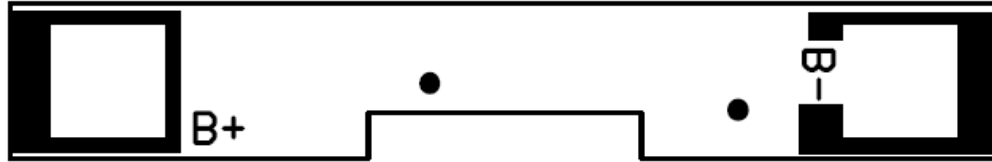
Circuit diagram



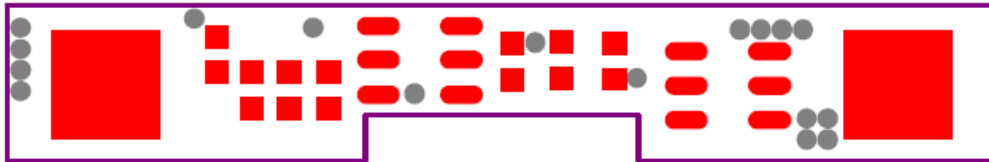
顶层走线图



顶层丝印图



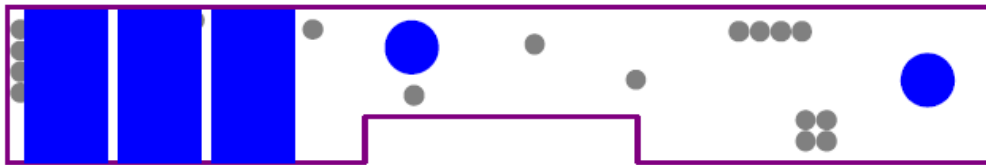
顶层焊盘图



底层走线图



底层焊盘图



安装图



9.2 元件清单：

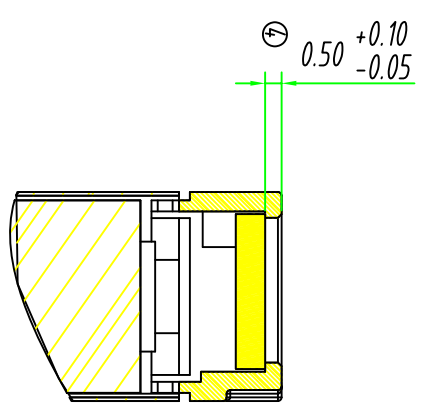
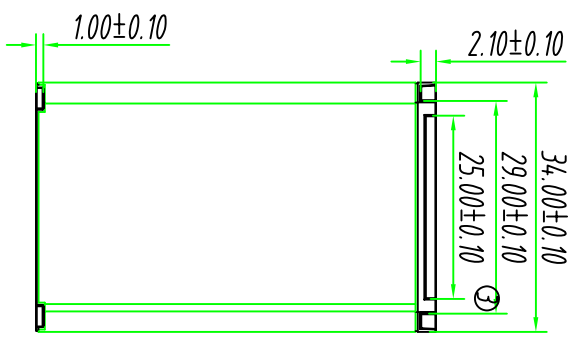
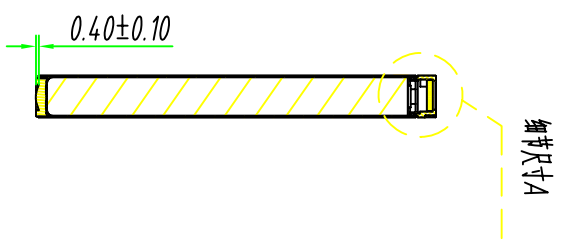
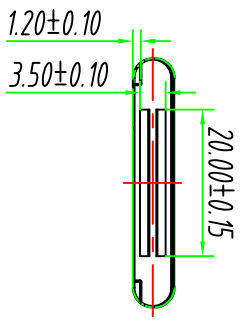
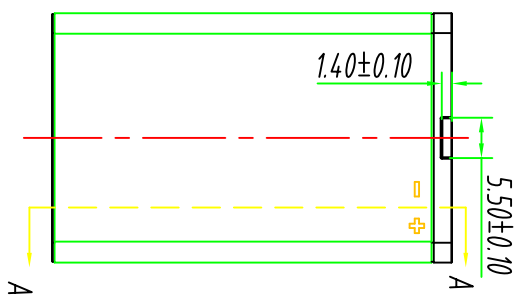
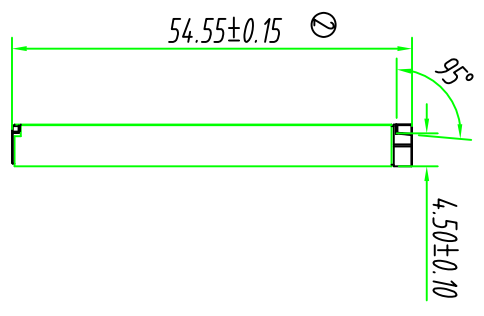
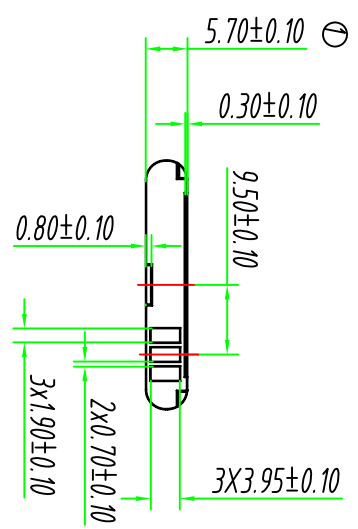
PCM Bill of materials

NO.	元件编号 Location	元件名称 Part name	元件规格 Specification	封装式 Pack type	数量 Q'ty	厂商 / 备注 Maker/Remark
1	U1	Battery protection IC	DW01B-G	SOT-23-6	1	富晶
2	U2	Silicon MOSFET	SM8205ACT	SOT-23-6	1	SINOPOWER
3	R1	Resistance	100 Ω ±5% 1/16W	0402	1	YAGEOSKYWELL
4	R2	Resistance	1K ±5% 1/16W	0402	1	ANY APPROVED
5	C1-C4	Capacitance	104 16V	0402	4	VENDOR
6	NTC	Resistance	CN0402R104B4100FT	0402	1	sensicom
7		Print circuit board	ACC8100 (10128001), 镀金 0.1um	10128001	1	爱升精密

9.3 保护板参数规格

PCM Specification Parameter:

序号 No.	项目 Items	参 数 Parameter		
		最小值 MIN	典型值 Typ	最大值 MAX
1	过充电保护电压 (V) Overcharge Protection Voltage	4.25	4.30	4.35
2	过充电恢复电压 (V) Overcharge Release Voltage	4.05	4.10	4.15
3	过放电保护电压 (V) Overdischarge Protection Voltage	2.30	2.40	2.50
4	过放电恢复电压 (V) Overdischarge Release Voltage	2.90	3.00	3.10
5	过电流保护 (A) Discharge Current Protection	2	4.2	6
6	过电流保护电压 (mv) OverCurrent Protection Voltage	120	150	180
7	过充电延时时间 (ms) Overcharge Delay Time	/	80	200
8	过放电延时时间 (ms) Overdischarge Delay Time	/	40	100
9	过电流延时时间 (1) (ms) Overcurrent DelayTime (1)	/	10	20
10	NTC 电阻(K Ω) \pm 1% (25 $^{\circ}$ C) NTC Resistor	99K	100K	101K
11	工作时电路内部消耗 (μ A) Current Consume In Normal Operation			6
12	内 阻 (m Ω) Interior Resistance			65
13	0V 充电功能 0V charging function	YES		
14	ESD 测试 ESD test	ESD 测试在 \pm 2 kV (触点 10 次), \pm 4kV (空气 10 次) 条件正常可运作。 ESD test normal operation in all parts at \pm 2KV (CONTACT 10 times), \pm 4KV (AIR 10 times) condition.		



细节 A 比例 5:1

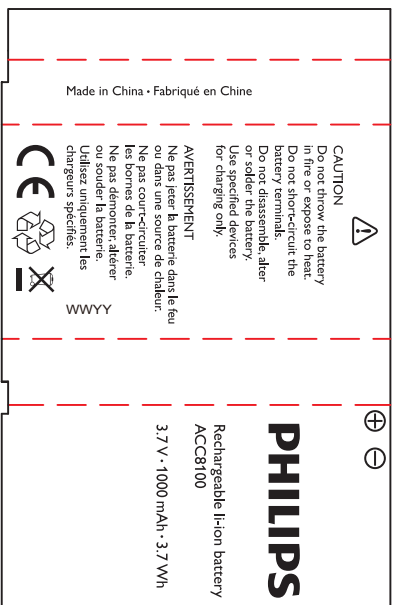
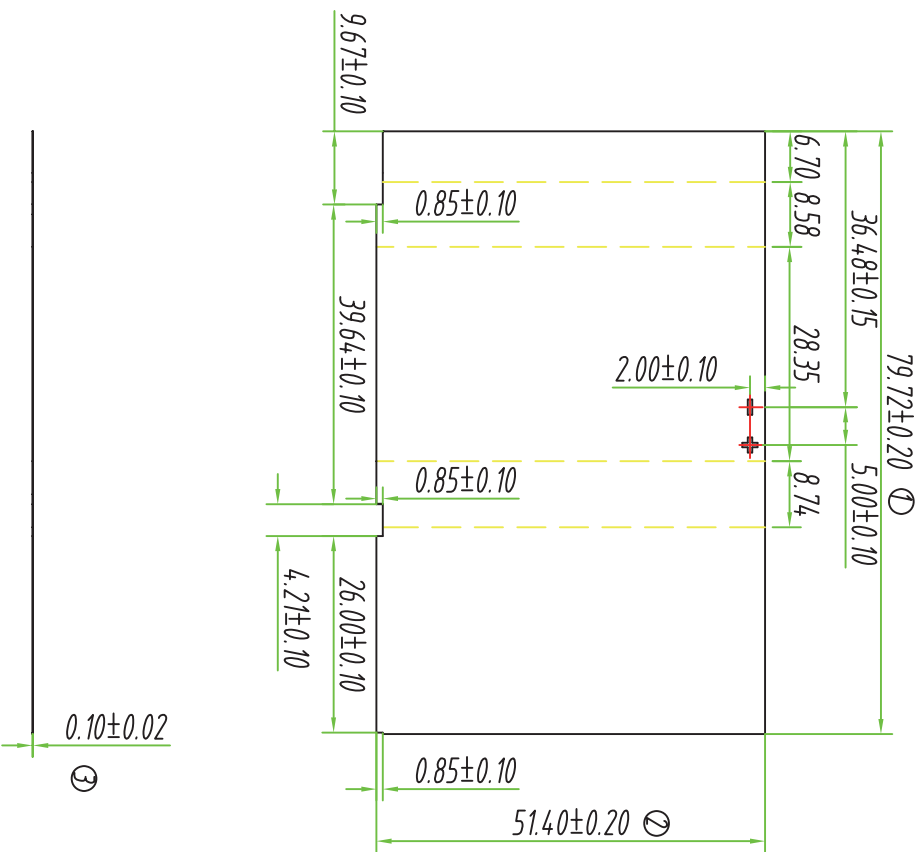
细节尺寸 A

- 技术要求:**
- 1 外观要求: 需标识的颜色、号, 字体清晰, 无脏污, 无划伤, 无漏液, 无异物, 无变形, 五金零件表面不允许有锈蚀、氧化、锈蚀、油污、回弹不良等
 - 2 制程转移台帐: BOM 需求要求;
 - 3 标有数字序号的尺寸为重点控制尺寸, 未注尺寸请参考 3D, 未注尺寸公差参照公差表;
 - 4 本零件符合本公司《环境健康安全标准》要求;
 - 5 其它要求:

常用公差	
公差 (mm)	Tolerance
0~10	±0.08
10~50	±0.10
50~100	±0.15
100以上	±0.20
Angle	±0.5°

设计	被设计	日期	12-09-12	名称	产品图	视	角
审核		日期		型号	ACC8100 (10128001)		比例 1:1
批准		日期		料号	10128001		
				材料		单位	mm
				图号	P4-P/PACK-JGT-xxx-A/A		





技术要求:

1. 材质: PET(厚度: 0.1±0.02)表面哑膜处理; 粘性达到3M 310性能;
2. 外观要求: 背景颜色为白色, 文字为黑色; 文字字型字高及位置参照图面; 商标四周边缘整齐切离, 密封圈孔必须平整冲穿成通孔, 四周边缘及中心孔边缘平整光滑, 无毛刺;
3. 喷码方式:
4. 底纸采用格拉辛纸 (0.07T+/-0.02mm), 商标在底纸居中, 位置允许左右偏移0.4mm;
5. 标注有序号的尺寸为重点监测尺寸;
6. 商标之间的间隔为: 3.0+/-0.1mm; 卷料最大外径尺寸<300mm, 同卷卷料中不能有人为连接的痕迹;
7. 符合ROHS要求, 本零件满足我司“环境物质控制标准”要求.

常规公差		设计		名称		商标		视	
长度 (mm)	TOL.	审核	赵建民	型号	ACC8100 (10128001)	材料	PET	角	
0-5	±0.1	批准		生效日期	20120912			mm	
5-50	±0.15			生效日期				比例	1:1
50-100	±0.20			料号	S30A****			单位	mm
100以上	±0.25			角度	±0.5°			图纸编号	P4-P/PACK-SB-449-A/A