

产品承认书

SPECIFICATION

客户名称 Customer			
产品型号 Product No.	SP-M04-020-A01-M4ST		
客户型号 Customer No.	4S3A三元同口		
版 次 Version	V1	页 数 Page	5
文件编号 Document No.		送样日期 Sample Date	2017.09.26
编 制 PREPARED By	审 核 CHECKED By	批 准 APPROVED By	品质部 Quality department
黄鹏			

客户确认栏 CUSTOMER APPROVED

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APPROVAL SIGNET:

日期 Date:

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注: 客户收到样品以及规格书后, 请及时回复, 如在 7 天之内无回复, 我司将视客户已承认此规格书中的参数以及送样样机。规格书中的图片为通用机型的图片, 可能与送样样机有一定的差异; 此份规格书超力源保留最终解释权。

Notice: Give us feedback when customers are in receipt of the samples and specification. Once not any reply within seven days, it will be regarded as agreement of the parameters in the specification and samples. Superpower has the final authority to explain the photographs in the specification which is different from sample machine.

一、综述 Outline

本规格书适合于深圳市超力源科技有限公司研制的 4 串锂电动力电池保护板，本产品严格满足 ROHS 规范等。This specification applies to the 4 serial-cells lithium manganese battery protection board manufactured by Shen Zhen SuperPower technology CO.,LTD, which strictly conforms to the ROHS standard.

二、应用范围 Application

锂离子、聚合物锂电池等可充电锂电池包。Applies to the rechargeable Lithium battery packs and so on.

三、电气参数 Electrical Characteristic (Ta = 25 °C.)

Details 详细项目	Min.	Typ.	Max	Error	nit
Battery Gas 电池类型	3.7V				
Battery Link 电池组组合方式	4S 同口				
Loop capability 回路特性					
Input Charging Voltage 充电电压		16.8		±1%	V
Input Charging Current 充电电流		1	MAX3A		A
Output Discharging Voltage 放电电压		12.8			V
Continuous Output Discharging Current (可持续工作电流)		3	MAX3A		A
Ambient Condition 工作环境	Operating Temperature 工作温度	-20	25	60	°C
	Humidity (No Water-Drop)工作湿度	0%		90%	RH
Storage Condition 存储环境	Temperature 存储温度	-40		85	°C
	Humidity (No Water-Drop)存储湿度	0%		90%	RH
Protection Parameters (for Individual Cell).保护参数 (对于每节电芯)					
Over-Charge Voltage Protection (OVP) 过充保护电压		4.25		±25mV	V
过充延时		1000±500mS			mS
Over-Charge Voltage Protection Release (OVPR)过充恢复电压		4.15		±50mV	V
Over-Discharge Voltage Protection (UVP)过放保护电压		2.75		±80mV	V
过放延时		100±50mS			mS
Over-Discharge Voltage Protection Release (UVPR)过放恢复电压		3.00		±100mV	V
Over-Current Discharge Protection (OCDP)放电过流保护 1		14		±5	A
Over-Current Protection Delay Time (OCPDT)过流保护延时 1	11	22	33	----	mS
Over-Discharge Protection Release 过放保护恢复方式	Release load 断开负载				
Over-Current Discharge Protection Release 放电过流保护恢复方式	Release load 断开负载				
Short circuit current protection 短路保护	Enable 有短路保护				
Short circuit current protection delay time 短路保护延时		300	600		uS
Short circuit protection Release 短路保护恢复方式	Release load 断开负载				
Discharging Temperature 放电保护温度		----		----	----
Discharging Temperature Protection Release 放电保护恢复温度		----		----	----
charging Temperature 充电保护温度		----		----	----
charging Temperature Protection Release 充电保护恢复温度		----		----	----
Cell balance 均衡					
Bleed StartPoint 均衡开启电压		----		----	----
Bleed Current 均衡电流		----		----	----
Balance Mode 均衡方式	----				
Idle mode 静态模式		≤50			uA
Main loop electrify resistance 主回路通态电阻 MOS-R _{DS}		≤60			mΩ
PCBA Size 装配结构尺寸	34 (±0.5) × 34(±0.5) × <8				mm

备注: Notice:

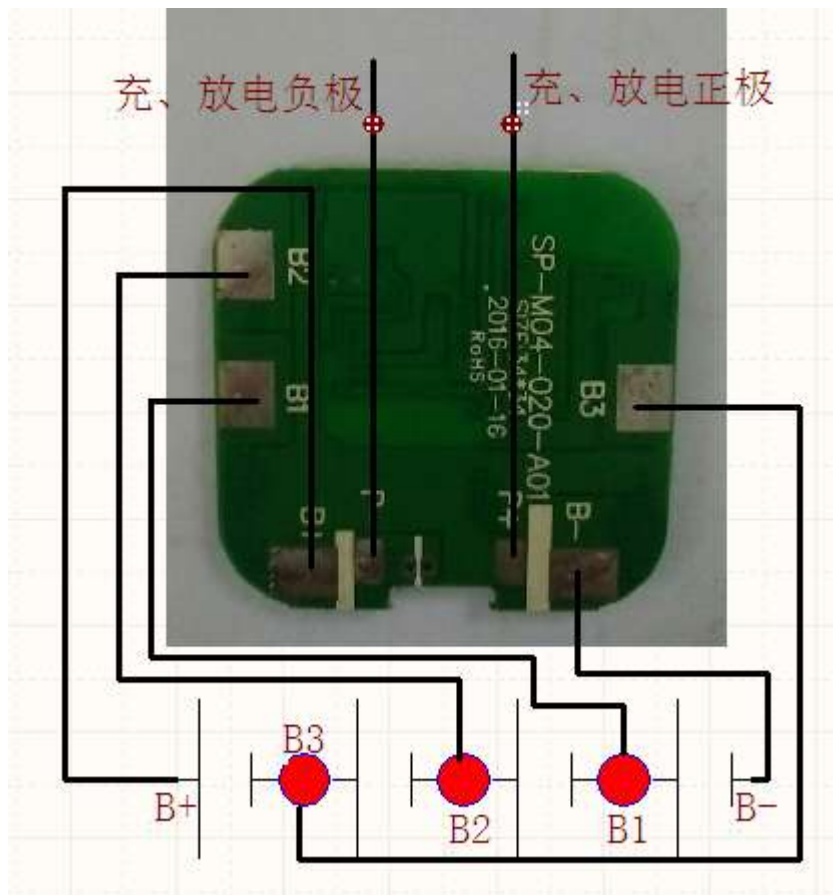
1、使用过程中请遵循设计参数及使用条件，不得超过本规格书中的值。

Make sure the design parameters and conditions of usage are under the values which are shown in the specification.

2、请客户注意:我司各型号保护板在批量出货过程中,不同批次的订单我司有可能更换不同品牌不同型号的MOS管,但是前提是在能满足上述性能指标的情况下而做出的更改。

四、连接方式 Connection To The Board

1、保护板连接示意图 Connection Diagram of PCM



注意: 此图仅供参考

2

3,

五、电路主要元件清单：

名称	型号	封装	位号	数量 (pcs)	品牌
采样电阻	SMD 电阻_2512_0.007R/2W_F_环保	2512		1	
IC	IC_MM3474GB2_TSSOP-20	TSSOP-20	U1	1	美之美
MOS	SMD_MOSN 管_SO-8_A04406A_环保	SO-8		2	

请客户注意：我司各型号保护板在批量出货过程中，不同批次的订单我司有可能更换不同品牌不同型号的MOS管，但是前提是在能满足上述性能指标的情况下而做出的更改

六、连接的注意事项 Matters need attention when connecting

警告：把保护板连接至电芯，或从电池组拆下保护板时，必须遵守以下连接顺序与规定；如果不按要求的顺序作业，会损坏保护板的元器件，从而导致保护板不能保护电芯，造成严重的后果。

Warning: Please remember to keep to the following order and rules when connecting cells to the PCM board and disconnecting them. If not, the PCM board will possibly be damaged, then the PCM board fails to protect battery cell which will cause terrible result.

准备工作：按照接线图所示，将J1对应的电压检测排线连接至电池组。请注意插座所标示的引顺序。

Preparation: Connect the flat cable, which is use to detect battery voltage, to cells as described in Figure 1 and Figure 2. Please pay attention to the pin order of the plug.

- 1) 连接电池组的负极B-; **Connect the negative of battery B-.**
- 2) 连接电池组的信号线B1、B2; **connect the signal wire B1 and B2.**
- 3) 连接电池组的正极B3+; **connect the positive of battery B3+.**
- 4) 连接充电器或者负载; **Connect the charger or load.**

B. 断开保护板的步骤 Removed PCM steps

- 1) 断开负载或者充电器; **Remove the load or charger.**
- 2) 断开电池组负极的B3+连接线; **Remove the B3+ wire.**
- 3) 断开B2、B1信号线; **Remove the signal wire B2 and B1.**
- 4) 断开电池组负极的B-连接线; **Remove the B- wire.**

特别说明：在此环节中要注意静电的防护。

Special Notice: Pay attention to the protection of static electricity.

七、其他说明 The other

- 1、在对装好保护板的电池组进行充放电测试时,请不要使用电池老化柜对电池组各节电池电压进行测量, 否则有可能损坏保护板和电池。

During the charging and discharging test on the battery packs assembled with protection board , please don't use battery aging ark to of the battery ark battery voltage measurement, otherwise you might damage and battery protection board.

- 2、本保护板没有0V充电功能, 电池一旦出现0V的情况下, 电池将严重退化直至损坏, 为了不损坏电池, 用户在长期(电池组容量大于2AH,储存超过3个月)不使用时请定期充电补充电量, 在使用过程中放电保护后, 须在12小时内及时充电, 防止电池因自耗电而放电至0V.

This protection board doesn't have 0 V charge function. Once the battery shows 0 V phenomenon, the battery will degenerate seriously even be damaged. In order not to do damage to the battery, users should charge power regularly when not using for a long time(the battery capacity is greater than 2 AH and the storage time is more than 3 months). During the process of discharge protection, it should be charged in time within 12 hours, preventing low power consumption and discharging to 0 V.

- 3、本保护板未配反充电保护功能, 使用时不可将充电输入反接, 否则可能损坏保护板和电池。

This protection board doesn't enjoy the charging protection function in the opposite position. Please don't charge it oppositely, otherwise it may damage the protection board and batteries.

八、产品修订记录表 Product Modified Record List

版本 Revision	变更内容 Modified Content	责任人 Principle	日期 Date	标记 Mark	备注 Note
A	设计 Design	C.QW	2017.09.26		