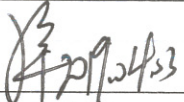
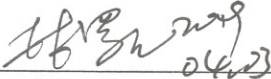


产品承认书

SPECIFICATION

客户名称 Customer	艾九		
产品型号 Product No.	SP-R13-068-A02-M13SY (CLY01.03.017232)		
客户型号 Customer No.	13串20A分口带弱电		
版 次 Version	V0	页 数 Page	5
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黄鹏			

客户确认栏 CUSTOMER APPROVED

确认意见 INSPEC.RESULT:

客户签章:

APPROVAL SIGNET:

日期 Date:

深圳市超力源科技有限公司

SHENZHEN SuperPower Technology CO.,LTD

地址: 深圳市宝安区沙井镇共和村丽城科技工业园第三期 J 栋 8/9 楼

ADDR: 8/9/F,J Buliding,Licheng High-tech Park ,Gonghe Village Shajing Town,Shenzhen City

办公地址: 深圳市宝安区沙井街道共和社区第六工业区 B 区二栋三楼

Office address: third floor, second building, zone B, no.6 industrial zone,Gonghe community, shajing street, baoan district, shenzhen city.

TEL: 86-755-6154 8101

FAX: 86-755-6154 8168

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.

客户承认签名处 Customer Approved:

Characteristics subject to change without notice. 1 of 5

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 13 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 13 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	Unit
Battery Gas 电池类型		3.7V 锂电池				
Battery Link 电池组组合方式		13S 分口				
Loop capability 回路性能						
Input Charging Voltage 充电电压			54.6		±1%	V
Input Charging Current 充电电流			2	MAX3A		A
Output Discharging Voltage 放电电压			48.1			V
Continuous Output Discharging Current（可持续工作电流）			20	MAX20A		A
Ambient Condition 工作环境	Operating Temperature 工作温度	-20	25	60		℃
	Humidity (No Water-Drop)工作湿度	0%		90%		RH
Storage Condition 存储环境	Temperature 存储温度	-40		85		℃
	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±300 ms			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			2.80		±80mV	V
过放延时			96±30ms			ms
Over-Discharge Voltage Protection Release (UVPR)过放恢复电压			2.85		±150mV	V
Over-Current Discharge Protection (OCDP)放电过流保护			70		±10	A
Over-Current Protection Delay Time (OCPDT)过流保护延时			40		±20	mS
Over-Current Discharge Protection Release 放电保护恢复方式		电门锁激活				
Over-Current Discharge Protection Release 放电过流保护恢复方式		电门锁激活				
Short circuit current protection 短路保护		20AH/18650 电芯短路 OK				
Short circuit current protection delay time 短路保护延时			100	400	600	uS
Short circuit protection Release 短路保护恢复方式		断开负载后电门锁激活				
Discharging Temperature 放电保护温度			90	内置	±5	℃
Discharging Temperature Protection Release 放电保护恢复温度			65		±15	℃
charging Temperature 充电保护温度			/		----	℃
弱电开关		有	L=200mm			
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		≤100(断开门锁)				uA
Main loop electrify resistance 主回路通态电阻 MOS-R _{DS}		≤30				mΩ
PCBA Size装配结构尺寸		60（±0.5）×32（±0.5）×<12				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.

四、连接方式 Connection To The Board

1、保护板连接示意图 Connection Diagram of P

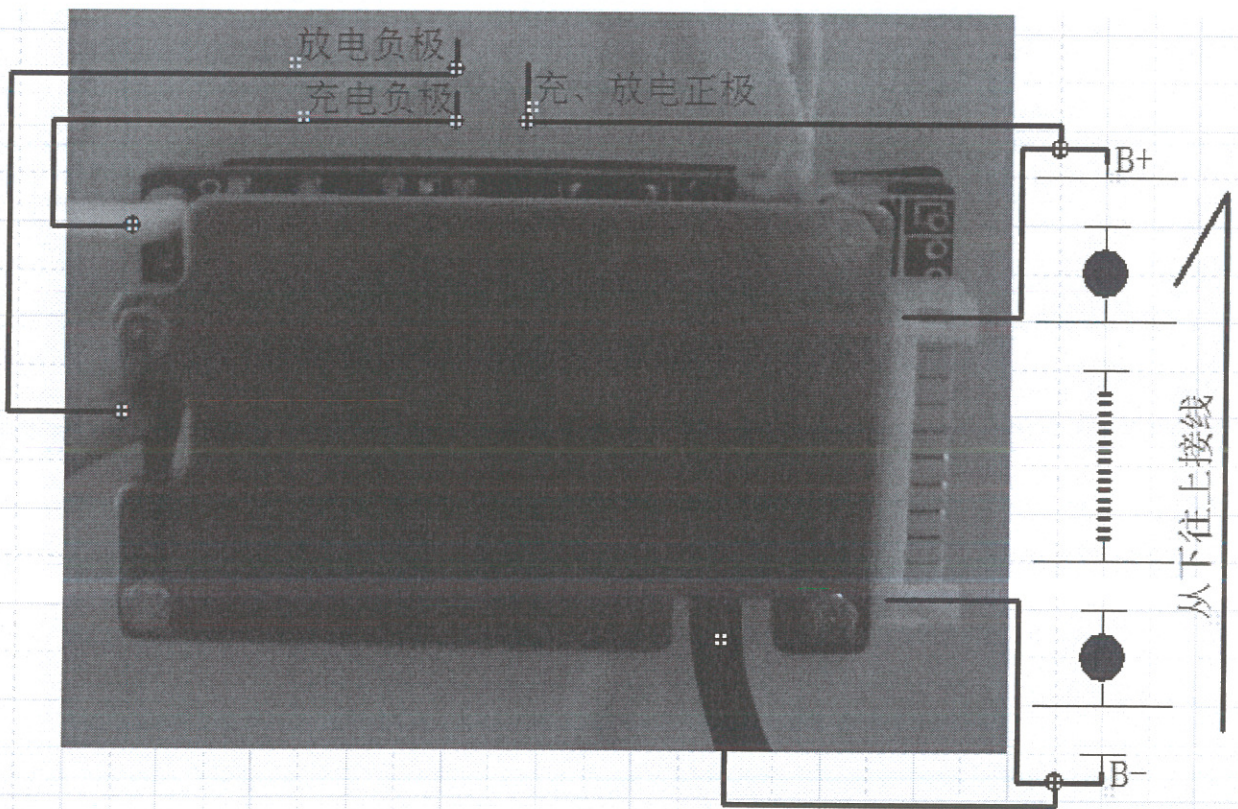


图1. 保护板连接示意图 Figure1 Diagram connection of PCM

图1.仅供接线参考，样品以实物为准

散线: 350mm

硅胶线: B- (总负极) 14#黑线150mm

P- (放电负极) 14#蓝线150mm

C-(充电负极) 18#白线150mm

电门锁开关关闭后可正常充电，电压达到过放电恢复值以上时，过放电保护后输出端如有假负载或没有电压输出，电门锁开关可以激活输出

备注：充电口无放电保护与短路保护

五、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.

A. 连接保护板步骤 Connection PCM steps

- 1) 连接电池组的负极B-; **Connect the negative of battery B-.**
- 2) 连接电池组的排线（注意正、负极方向）; **connect the flat cable (Notice: Port polarity) .**
- 3) 连接电池组的正极B+; **connect the positive of battery B+.**
- 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B+连接线; **Remove the B+ wire.**
- 3) 拔下J1插头里的电压检测线; **Remove the flat cable.**
- 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.

六、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.

七、主要元器件

类型	名称
保护 IC	MM3280J15
充电 MOS 管	ME55N06 或 CRTD084EN6N*1
放电 MOS 管	CRSS052N08N*3
功率电阻	2512_0.007R/2W*3

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。

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.Q.W	2019.04.03		