
BMS
SPECIFICATION

EISTO-5-10SH

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1、介绍Introduction

EISTO -5-10SH 是专门针对电动工具/电动自行车等 5~10 串电池包而设计的保护板方案;可适用不同化学性的锂电芯,如锂离子、锂聚合物等。保护板带载能力强,持续电流最大可达 20A。

EISTO-5-10SH for a battery pack of 5~10 cells in series is a battery protection solution of EISTO's, which is designed for application in power tools/E-bike. It can be used for cells of different chemistry, for example Li-ion, Li-Polymer so on. The pack can support a load with very large current, in addition that the continuous current may be up to 20A.

2、特点 Features

- 5~10 节电芯串联保护

Provides protection for 5~10 cells in series

- 充电和放电的各种保护功能

Provides protections in charging and discharging

- 电芯的充电平衡处理,平衡电流可通过外部器件灵活调整

Processes the balance between cells smartly, the current of it can be set freely by external components.

- 硬件的过流、短路保护功能处理

Deals with over-current and short-circuit protection with circuit itself

- 极低的静态消耗电流

Low current consumption

3、实物图 Views

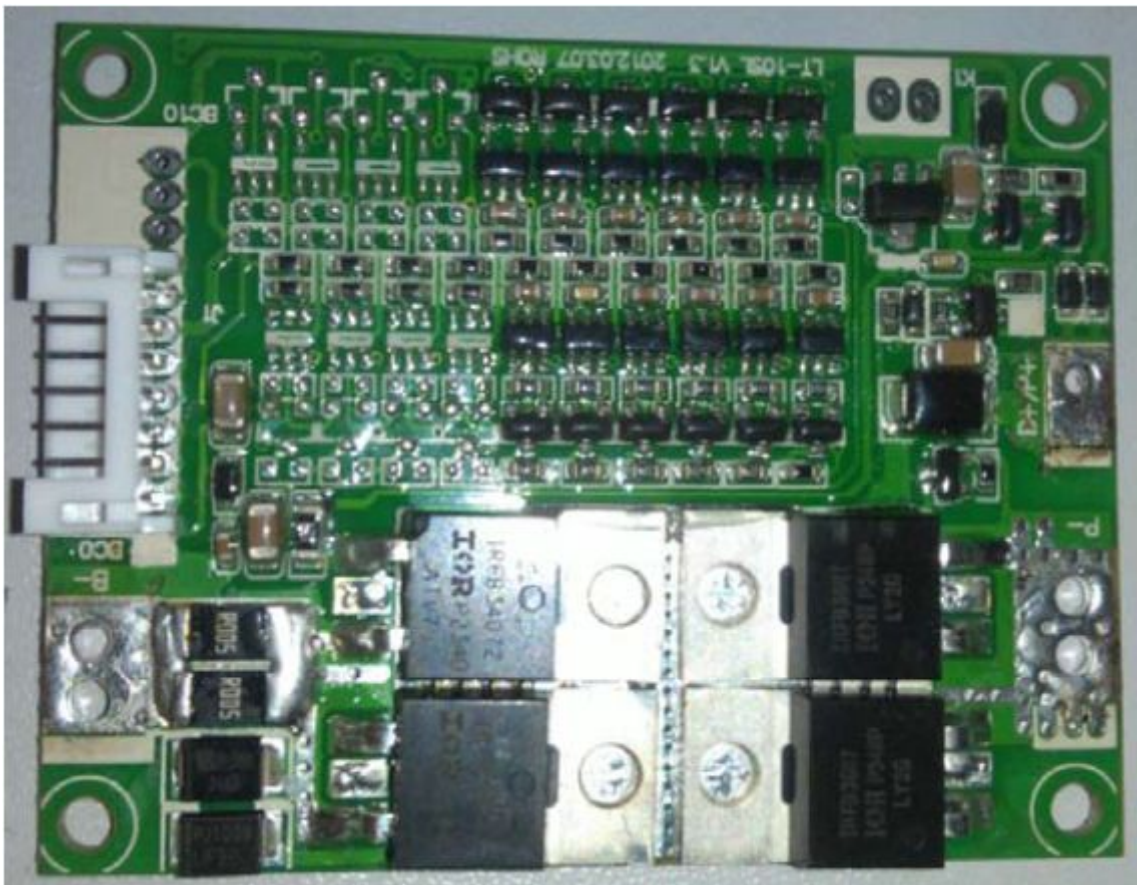


图1: 10SL 保护板实物正面示意图

Figure1: The top view of the protection PCB

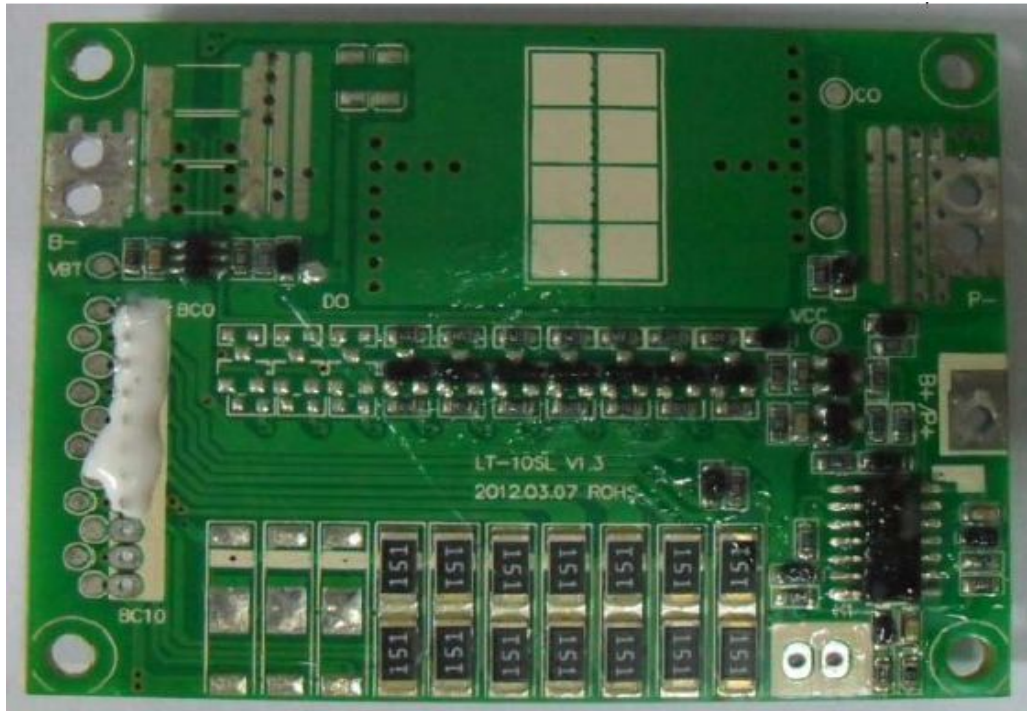


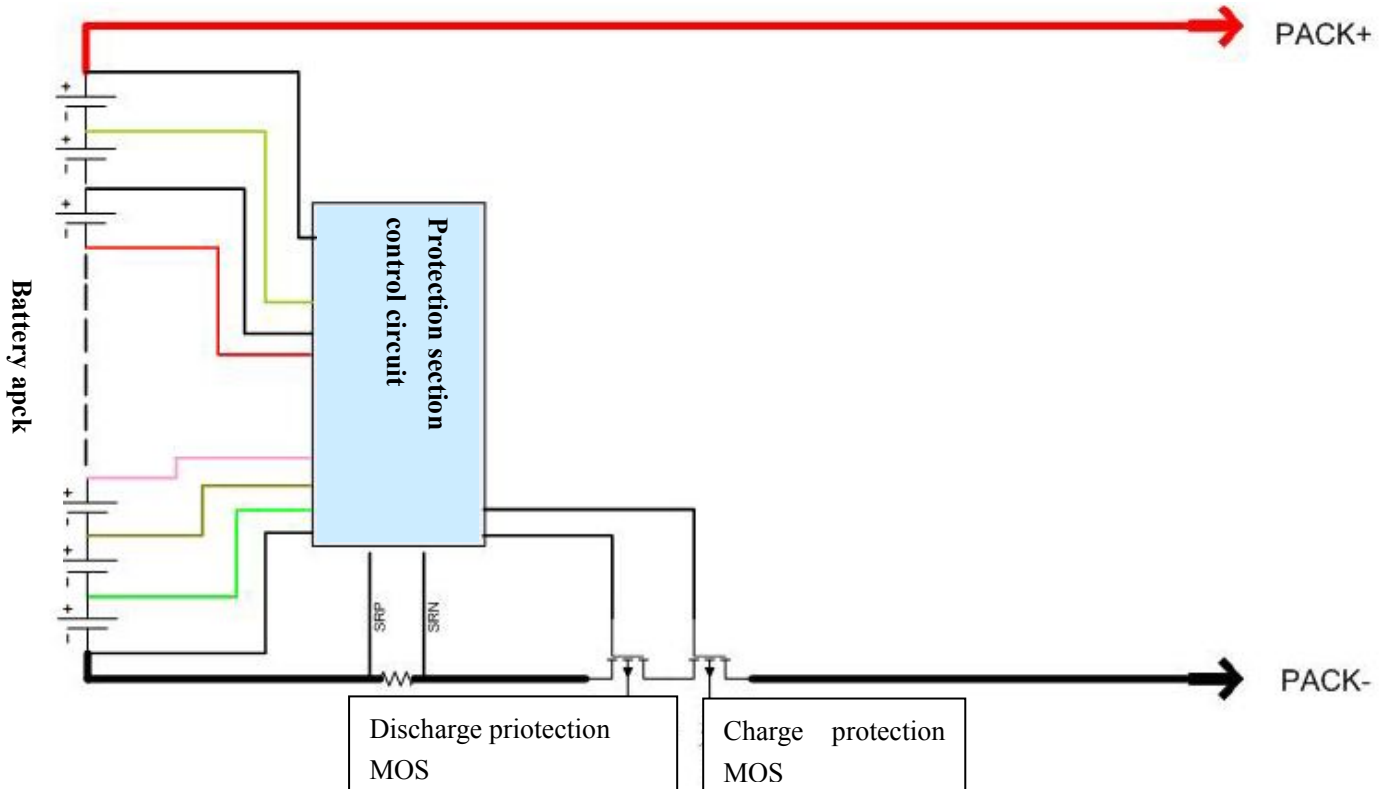
图 2: 10SL 保护板实物底面示意图

Figure2: The bottom view of the protection PCB

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

Details	Min.	Typ.	Max.	Error.	Unit.
Battery					
Battery Gas			LiFeP04		
Battery Links			6S		
Absolute Maximum Rating					
Input Charging Voltage		21.9		±1%	V
Input Charging Current		5	10		A
Output Discharging Voltage	12	19.2	21.9		V
Output Discharging Current		20			A
Continuous Output Discharging Current		≤20			
Ambient Condition					
Operating Temperature	-20		65		°C
Humidity (No Water-Drop)	0%				RH
Storage					
Temperature	-40		85		°C
Humidity (No Water-Drop)	0%				RH
Protection Parameters (for Individual Cell).					
Over-Charge Voltage Protection (OVP)		3.900		±30mV	V

Over-Charge Voltage Protection Release (OVPR)		3.800		$\pm 50\text{mV}$	V
Over-Discharge Voltage Protection (UVP)		2.000		$\pm 80\text{mV}$	V
Over-Discharge Voltage Protection Release (UVPR)		2.300 and remove the load		$\pm 100\text{mV}$	
Over-Current Discharge Protection (OCDP1)		60		± 6	A
Over-Current Protection Delay Time (OCPDT1)		9			mS
Over-Current Discharge Protection (OCDP2)		200			A
Over-Current Protection Delay Time (OCPDT2)		2.5			mS
Over-Current Protection Release		Remove the load			
Short circuit current protection		Normal protection			
Short circuit current protection Release		Remove the load			
Cell balance					
BleedStartPoint		3600		± 30	mV
BleedoffPoint		3590		+30/-50	mV
BleedCurrent	45		55		mA
Balance Mode		Idle			
Current Consumption					
Normal Mode		30	100		μA
UVP mode		40	100		μA

5、原理框图 Block Diagram.


6、PCB and Size

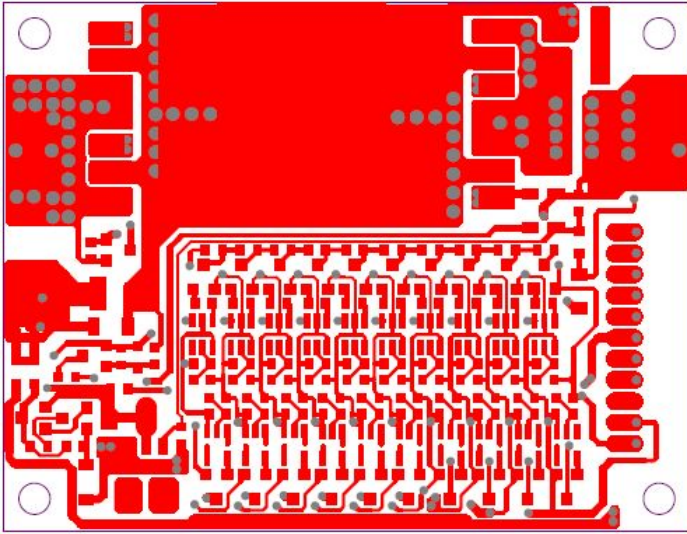


图4：保护板顶层走线图

Fig 4: Top Layer of The protection PCB

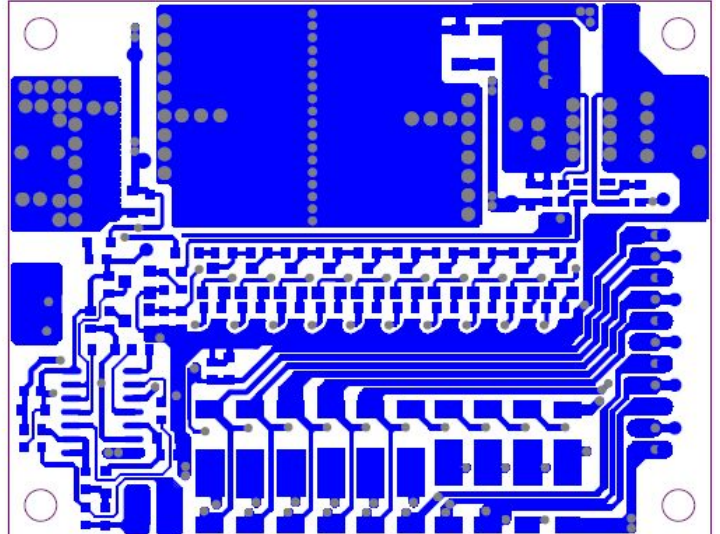


图5：保护板底层走线图

Fig 5: Bottom Layer of The protection PCB

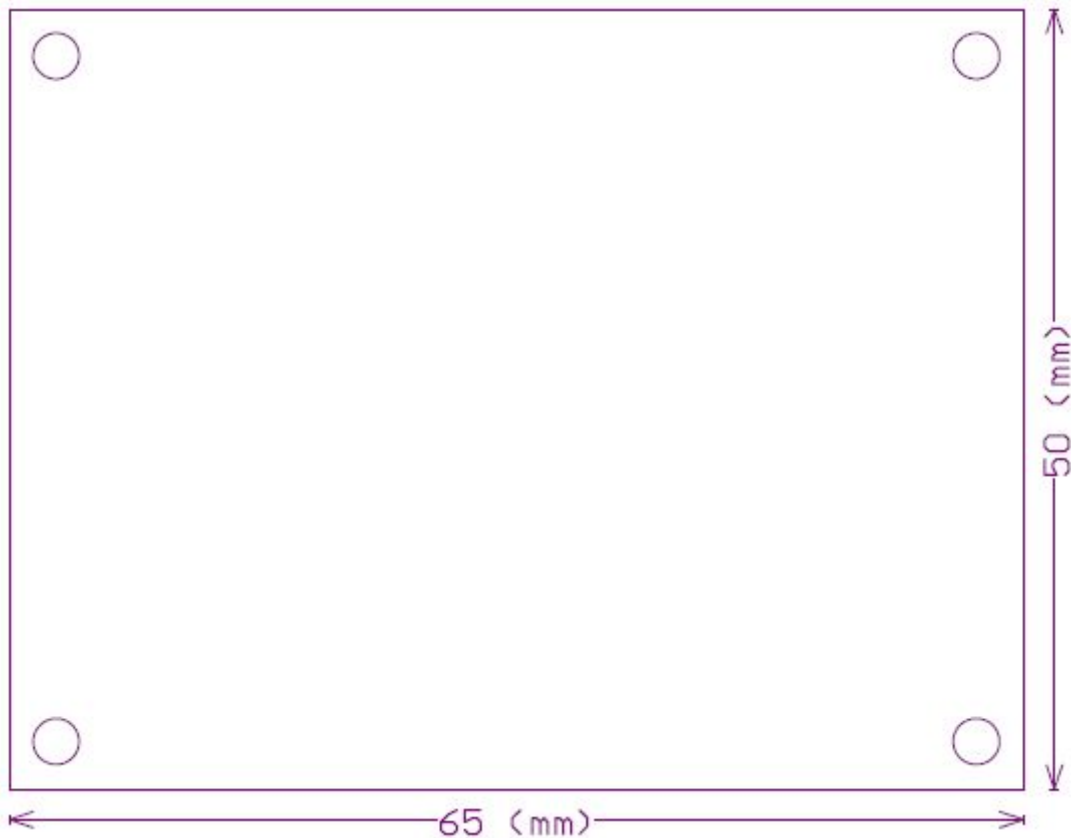


图3：PCB 尺寸图

Fig 3: PCB SIZE 单位：mm 公差：±0.5mm

主板厚度：8±1mm(含元器件)

7、端口定义 Port Definition

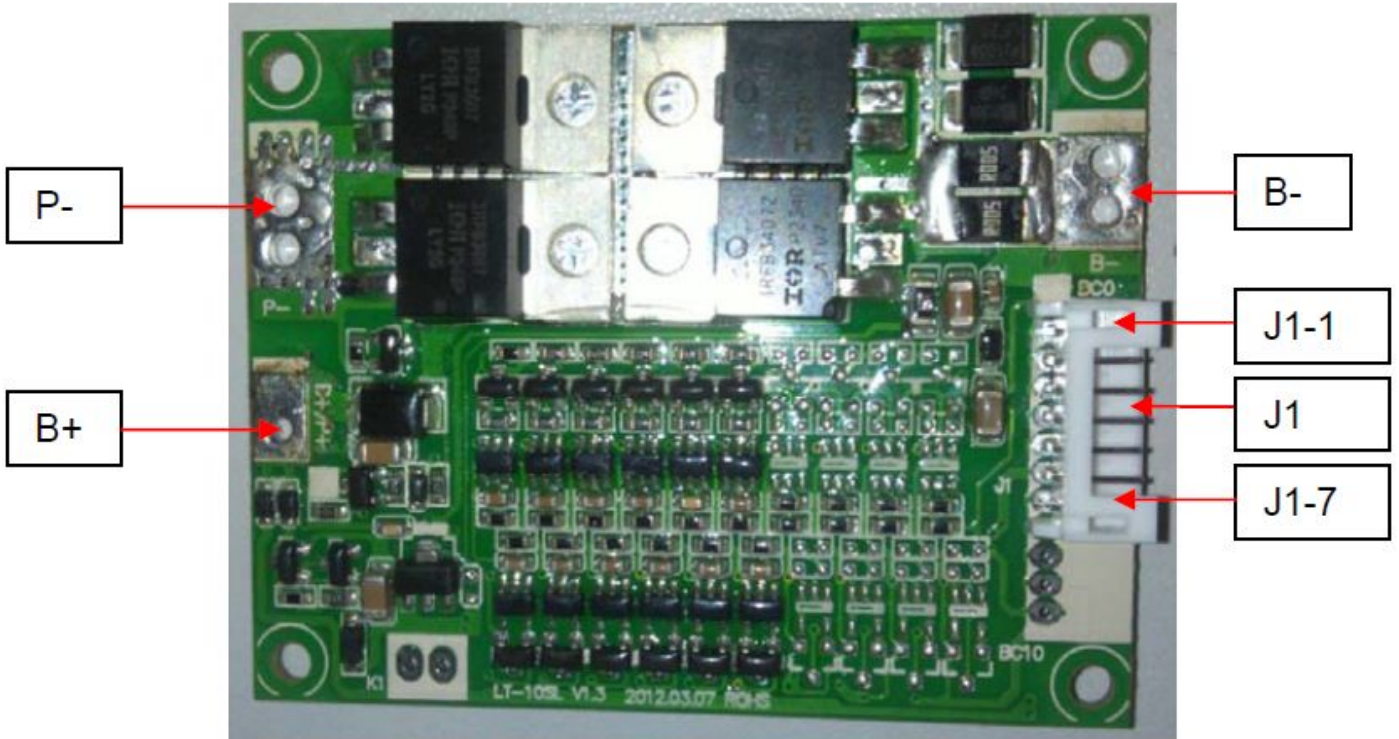


图 6： 保护板端口定义图

Port Definition Description:

Item	Details
电池组正极	充放电正极端口 Charging and Discharging Positive Port
B-	连接到第 1 节电芯的负极 Connect to Negative Side of Cell 1.
P-	充放电负极端口 Charging and Discharging Negative Port.
J1	1 连接到第 1 节电芯的负极 Connect to Negative Side of Cell 1.
	2 连接到第 1 节电芯的正极 Connect to positive Side of Cell1.
	3 连接到第 2 节电芯的正极 Connect to positive Side of Cell 2.
	4 连接到第 3 节电芯的正极 Connect to positive Side of Cell3.
	5 连接到第 4 节电芯的正极 Connect to positive Side of Cell4.
	6 连接到第 5 节电芯的正极 Connect to positive Side of Cell5.
	7 连接到第 6 节电芯的正极 Connect to positive Side of Cell6.
J1	连接到电芯组正极端口

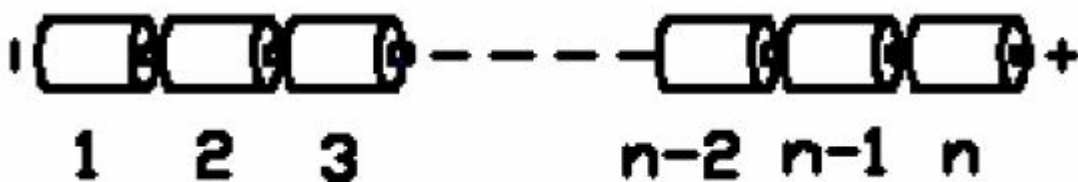


图9. 电池连接顺序示意图

Figure 9. The order of cells in serial

8、保护板连接示意图 Protection board connection diagram

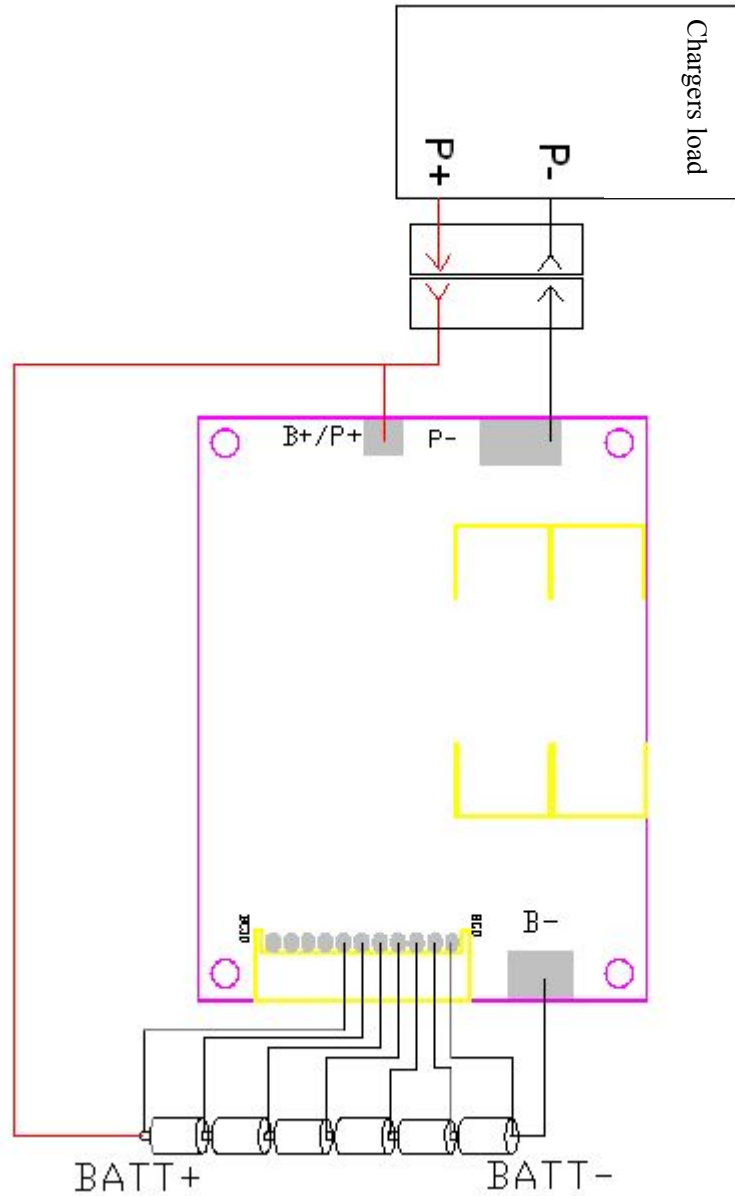


图 10：保护板连接示意图

Protection board connection diagram

随货发出线材规格：1430 24AWG 2.0mm间距 7PIN 300±10mm

9、保护板与电芯连接的注意事项

把保护板连接电芯，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，上电后芯片有可能出现工作不正常，保护功能不动作的情况，造成严重的后果。

安装保护板顺序：

- 连接电芯最低节负极到保护板的B-端；
- 连接负载\充电器的负极到保护板的P-；
- 连接电芯的正极到保护板的B+，充电器\负载的正极直接连接到电芯组的正极不需要经过保护板；
- 将连接好的电压检测线插头插至保护板的J1插座中。

拆除保护板顺序：

- 移除所有负载和充电器，断开电芯组正极与B+的连接；

- f) 拔下J1插头;
- g) 断开电芯最低节电芯负极与 B-。

Wire Specifications issued with the goods: 1430 24AWG 2.0mm pitch 7PIN 300 ± 10mm

9 Notes protection board and batteries connected

The protection board connected batteries, or remove the protective sheet from the battery pack, you must comply with the provisions of the following connection sequence; If you do not follow the requirements of the order

Operations after power chip may not work properly, the protection function does not operate in the situation, resulting in serious consequences.

Install a protective plate in order:

- a) connecting the batteries to the lowest section of the negative B- end protection board;
- b) connected load \ charger to protect the negative plate P-;
- c) a positive electrode electrically connected to the protective plate of the core B +, the positive charger \ directly connected to the load group, the positive electrode does not require the protection of the core plate;
- d) good voltage detection line will connect the plug to protect the board J1 socket.

Remove the protective plate in order:

- e) Remove all load and battery charger, disconnect the batteries with the positive group B + connection;
- f) Disconnect the J1 connector;
- g) Disconnect the batteries negative and lowest power-saving core B-.