



产品承认书

SPECIFICATION

客户名称 Customer Name			
产品型号 Product Type	XJ-D378-10A 三元启动源-电池控制板		
客户型号 Customer Type			
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1. 产品变更履历/Product change resume

版本 Release	日期 Date	变更内容 Change content	变更原因 Reason for Change
V0	2020、06、19		

1 概述

Outline

本规格书描述了锂电池线路的应用范围，电性能参数，接线说明，尺寸规格，等项目的相关内容。本规格书所描述的所有项目标准可作为品质检验标准及依据。

This specification describes the scope of lithium battery protection circuit, electrical performance parameters relevant content, wiring instructions, sizes, and other projects. All project standards described in this specification can be used as quality inspection standards and basis.

2 产品应用范围

Product Applications

可充电锂电池

Rechargeable lithium batteries

3 产品外观及工艺指标

Product appearance and process indicators

序号 No.	项目 Project	检验方法及手段 Test methods and tools	检验标准 Inspection standard
1	产品外观 Product appearance	目视 Visually	保护板外观应达到以下要求：布线合理，元件排列整齐，各焊盘及焊接点无氧化，无色泽异常，元件及 PCB 板表面干净，无污渍，不影响其商业价值。 Protective plate appearance should meet the following requirements: a reasonable wiring, components arranged in neat rows, each pad and welding point no oxidation, no abnormal color, components and PCB board surface clean, no stains, does not affect its commercial value
2	产品工艺 Product Process	焊接工艺 Welding Technology	目视，借助放大镜 Visually, with a magnifying glass 焊点圆滑，焊接牢固可靠，无假焊、虚焊、毛刺等焊接缺陷。 Joints sleek, solid and reliable welding, no false welding, Weld, burrs and other welding defects.
		板材材质 Sheet material	FR-4
		PCB 制作工艺 PCB production process	无铅松香工艺 Lead rosin process
		成品板焊接工艺 Finished plate welding process	无铅焊接制程 Lead welding process

4 产品电气性能指标

Product electrical performance



测试条件：常温 25℃；保护板过流值及内阻属于动态参数，测试时单节电池电压需 $\geq 3.6\text{ V}$

Test conditions: room temperature 25 °C; overcurrent protection board and the resistance value is the dynamic parameters of the test individual cell voltages required $\geq 3.6\text{ V}$

项目 Project	符号 Symbol	详细内容 The detailed content	标准 Standard
输入电压范围 input voltage range	V_{DET1}	单节电池电压 Single battery voltage	2.8V-4.20V
	tV_{DET1}	7 串总电压 7 series total voltage	0V-29.4V
电量平衡启动条件 Power balance start condition	V_{BU}	单节电池间电压差大于（同时要满足均衡停止条件） Voltage difference between batteries	压差 Voltage difference $\geq 45\text{mV} \pm 15\text{mV}$
均衡停止条件 Equilibrium stop condition	V_{DET2}	平均电池电压小于 The average battery voltage is less than	$3.15\text{V} \pm 15\text{mV}$
	tV_{DET2}	单节电池电压小于 The voltage of a single battery is less than	$2.8\text{V} \pm 15\text{mV}$
	V_{REL2}	压差小于 45mV 后均衡延时计 时完成 When the pressure difference is less than 45mV, the equalization delay meter is completed	延时可以设定 0.5, 1, 2, 4 小时
均衡电流 equalizing current	I_{DP1}	单节电流 (均衡电流和电池间电压差成正比) Single node current (The balance current is proportional to the voltage difference between cells)	4A (MAX)
均衡精度电 accuracy of equalization	tV_{DET1}	电池间电压差 Voltage difference between batteries	50mV
均衡静态功耗 Balanced static power consumption	I_{DP}	(均衡开起时自身功耗) (Power consumption during balanced startup)	5uA
单节充电电压 Single charging voltage	VOV	单节电池过充保护电压 Overcharge protection voltage for a single battery	$4.25\text{V} \pm 50\text{mV}$
电池充电电压 12.6V-16.8V	VOV	电池充满总电压 Battery fully charged total voltage	$29.4\text{V} \pm 100\text{mV}$
电池充电电流 Charging current	Vid	充电电流值 Charging current value	$10 \leq \text{充电电流} \leq 15\text{A}$
过充电保护解除电压 Overcharge protection release voltage	VOVR	电池充满后保护，解除保护电压值 After the battery is fully charged, it is protected and the protection voltage value is released	$4.1\text{V} \pm 100\text{mV}$

过充电保护延时 Overcharge protection delay	TOV	当电池充满电，停止充电的过程时间 The process time of stopping charging when the battery is fully charged	500-1500ms
静态功耗 Static power consumption	uA	停止工作的自损耗 Self depletion caused by stopping work	≤100uA
过放电保护电压 Over discharge protection voltage	VUV	单节电池截止电压 Single cell battery cut-off voltage	2.70v±100mV
过放电保护解除电压 Over discharge protection release voltage	VUVR	过放电后，自动恢复电压值 Automatically restore voltage value after over discharge	3.0V±100mV
充电温度保护 Charging temperature protection	TCOT	充电时电池的温度保护值 Temperature protection value of battery during charging	高温：55℃±3℃ 低温：-5℃±3℃
放电温度保护 Discharge temperature protection	TDOT	放电时电池的温度保护值 Temperature protection value of battery during discharge	高温：75℃±3℃
继电器防充电保护 Relay anti charging protection		继电器接口充电也具有保护，当电池达到保护值继电器断开保护 Relay interface charging also has protection. When the battery reaches the protection value, the relay will disconnect for protection	单节 4.25V±100mV
低电压保护 Low voltage protection		当电池电压单节电池低于 2.75V 时，继电器断开不具备输出功能 When the voltage of a single battery is below 2.75V, the relay disconnects and does not have output function	单节低于 2.75V±100mV
放电温度保护 Discharge temperature protection		当放电温度超越 75℃±3℃，继电器自动断开，停止放电 When the discharge temperature exceeds 75℃±3℃, the relay will automatically disconnect and stop discharging	75℃±3℃
电量指示提示灯 Power indicator light		电量显示 4 串电池电压和电池 7 串总电压 Power display shows the voltage of 4 battery strings and the total voltage of 7 battery strings	0V-28V

电池电量切换开关 Battery level switch		4 串电池和 7 串电池电压切换显示 Voltage switching display between 4-series and 7-series batteries	1 当 2 当
主动均衡接口 Active balancing interface		外接主动均衡器接口座子 External active equalizer interface mount	
继电器接口控制座 Relay interface control seat		过放温度, 欠压, 反过充。通过继电器控制实现保护机制 Temperature, undervoltage, and overcharge. Implementing protection mechanism through relay control	
环境要求	℃	工作/储存温度 Operating/storage temperature	-15℃—65℃
	0%RH	工作/储存湿度 Operating/storage humidity	10%RH—70%RH
PCB 尺寸 PCB Size		PCM 长、宽、高 PCB Length, Width, Thickness	≦ 102*55*1.6mm

5 接线说明:

Wiring instructions:

二、电压均衡采集线:

Voltage acquisition wires:

保护板焊盘依次为:

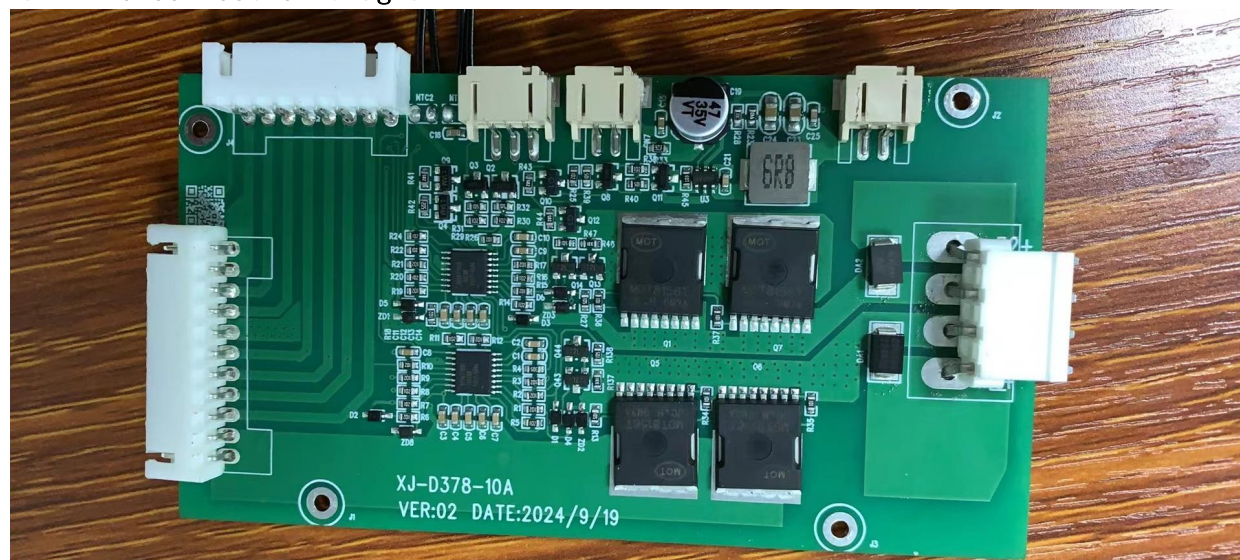
PCM Board PCB Pads

B0、B1..... (B+)

1. 电芯连接顺序为:先接 B-, 再按顺序从 B1 到 B+连接电芯电压检测线, 拆下时顺序相反。
2. 电芯电压检测线使用标准的排线, 推荐使用≤22AWG 的导线 (如 20AWG、18AWG), 建议 4A 电流 损耗不超过 50mV。
3. 电池的正负极及每节电池的引线不能与外部安装盒短路

6 产品实物图

Mainline connection diagram





7 警告及注意事项

1. 请避免机械损伤保护板，在规范内使用产品！
2. 使用中的铅. 锡渣. 铁屑等请勿落入保护板，否则可能损坏保护板！
3. 使用中有问题，请联系我们！

8 包装

1. 运输过程中，应注意防潮、防湿，避免挤压、碰撞等，以免保护板变形。
2. 用快递或派专人送货到客户仓库。