



地址：深圳市龙华区观澜街道观城横坑河东村 126 号 3 楼
Address: 3/F, NO.126, Hengkenghedong Village, Guanlan, Longhua, Shenzhen 518110
TEL: 0755-33148866 FAX: 0755-29644707

产品承认书

SPECIFICATION

客户名称 Customer Name			
产品型号 Product Type	GW-CM1041-X70165A-V1.1 4串三元保护板/4S NCM BMS		
客户型号 Customer Type			
版 次 Edition	A0		
文件编号 File No.		送样日期 Preparation Date	2022/6/8
批 准 Approval	审 核 Audit	编 制 Prepared by	
	颜涛 Yantao	邓春华 Dengchunhua	
客户确认栏 Customer acknowledges column			
确认意见： confirmation:		客户签章： signature:	
日期： Date:		日期： Date:	



深圳市金龙格王电子有限公司
Shenzhen Jinlonggewang Electronics CO., LTD

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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
V1	2022.6.8		



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1 概述

Outline

本规格书描述了锂电池保护线路的应用范围，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	FR4
		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



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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
过充保护 Overcharge protection	V_{DET1}	单节过充电检测电压 Single overcharge detection voltage	$4.25\text{V} \pm 0.03\text{V}$
	tV_{DET1}	过充电检测延迟时间 Overcharge detection delay time	1.5s (MAX)
	V_{REL1}	单节过充电解除电压 Single overcharge release voltage	$4.15\text{V} \pm 0.05\text{V}$
电量平衡 Cell balance	V_{BU}	电量平衡检测电压 Cell-balance detection voltage	/
	V_{BL}	电量平衡解除电压 Cell-balance release voltage	/
	I_B	电量平衡电流 Balance current	/
过放保护 Over-discharge protection	V_{DET2}	单节过放电检测电压 Single over-discharge detection voltage	$2.70\text{V} \pm 0.10\text{V}$
	tV_{DET2}	过放电检测延迟时间 Overdischarge detection delay time	1.5s (MAX)
	V_{REL2}	单节过放解除电压 Single overdischarge release voltage	$3.0\text{V} \pm 0.1\text{V}$
过流保护 Over current protection	I_{DP1}	一级过电流保护电流（电池电压=3.4V） Level 1 overcurrent protection current (battery voltage = 3.4V)	$20\text{A} \pm 3\text{A}$
	tV_{DET1}	检测延迟时间 Detection delay time	1.5s (MAX)
	I_{DP2}	二级过电流保护电流（电池电压=3.7V/3C） Level 2 overcurrent protection current (battery voltage = 3.7V/3C)	$40\text{A} \pm 5\text{A}$
	tV_{DET2}	检测延迟时间 Detection delay time	300ms (MAX)
短路保护 Short circuit protection		外部电路短路 Exterior short circuit	/
	T_{SHORT}	检测延迟时间 Detection delay time	1000us (MAX)
		保护解除条件 Protection of release condition	断开负载 Disconnecting the load
内阻 Resistance	R_{DS}	主回路通态电阻（电池电压=3.4V） Main loop resistance (battery voltage = 3.4V)	B-至 P- $R_{DS} \leq 50\text{m}\Omega$



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消耗电流 Current consumption	I_{DD}	工作时电路内部消耗 Internal consumption during operation of the circuit	$\leq 40 \mu A$
充电最高耐压 Charging maximum Voltage	V_{DS}	充电端口接充电器最高承受的电压值 Charging port connected to the charger maximum	DC30V
芯片最高耐压 Chip maximum Voltage	V_{DS}	每串电池节点 VDD-VSS 之间输入电压 Input voltage between each string battery node	DC 5V
持续放电电流 Continuous Discharge Current		可持续放电电流 Sustainable discharge current	6A
持续充电电流 Continuous charge current		可持续充电电流 Sustainable charging current	6A
额定电流 Mosfet 温升 Rated current temperature Mosfet		在额定电流放电过程 MOSFET 表面温升 Rated current discharge MOSFET surface temperature	$< 35^{\circ}$
温度控制开关 Temperature control switch		在额定温度下关闭充放电功能。 Close the charging and discharging function at above rated temperature	无/NO
充电反向保护 Charging reverse protection		充电时，避免充电的正极性和负极性反接。 When charging, avoid the positive polarity and negative polarity reversal of charging.	无/NO
PCB 尺寸 PCB Size		PCM 长、宽、高 PCB Length, Width, Thickness	71.2*16*2.6mm

5 接线说明:

Wiring instructions:

一、主线焊接说明:

Mainline welding Description:

- | | |
|----------------|----------------------------|
| 1. B-: 接电池组的负极 | B-: With battery negative |
| 2. P-: 接负载负极 | P-: With the load negative |
| 3. P-: 接充电器负极 | P-: With chargers negative |
| 4. B+: 接电池组正极 | B+: With battery positive |
| 5. P+: 接负载正极 | P+: With the load positive |

二、电压采集线:

Voltage acquisition wires:

保护板焊盘依次为:

PCM Board PCB Pads

B-、B1..... (B+)



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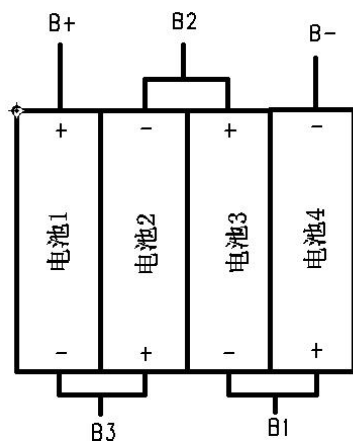
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三、接线指示图：

Wire instruction Diagram



B-、P+、P-导线必需使用电流 $\geq 5A$ 耐高低温线。

6 产品实物图

Mainline connection diagram

