

3/4 串锂电池可堆积电感式主动均衡模块

3 / 4 Series of Lithium Battery accumulative inductance active Equalization Module

产品特点 FEATURES

- 采用美国 TI 集成电路方案二次开发
The Secondary Development of TI IC Scheme
- 任意两个电芯不平衡压差 5-50mV 调配
5-50mV deployment of unbalanced pressure difference between two arbitrary cores
- 可配置为充电，放电，静止状态下启动均衡
Can be configured to charge, discharge, start equalization at rest
- 主动均衡电感高频电流峰值高达 3A
High Frequency current Peak of active Equalization inductor up to 3A
- 主动均衡频率高达 200KHz
Active equalization frequency up to 200KHz
- 建韬 KB 级 94V-0 高防火等级双面玻璃纤维板
Jiantao, 94 V-0 level KB high fire prevention level double glass fiber board
- 支持多化合物锂电池不平衡度的主动均衡
Active Equalization to support Unbalance of Multicompound Lithium Battery
- 最高可级联堆积至 16 串主动均衡
Maximum cascade stacking to 16-string active equalization
- 极低的耗电，SHIP 模式耗电 85uA；Standby 模式耗电 185uA；Active 模式耗电 400uA
Very low power consumption, SHIP mode power consumption 85uA Standby mode power consumption 185uA Active mode power consumption 400uA
- 标准的 I2C 通讯接口支持，符合 SMBus 通讯协议
Standard I2C communication interface support, accord with SMBus communication protocol
- 每一均衡通道均有对应温度探头
Each equalization channel has a corresponding temperature probe

产品应用 APPLICATION

- 移动电源或测试设备电源

Mobile power or test equipment power supply

- 电动自行车

electric bicycle

- 电动工具

electric power tool

产品说明 DESCRIPTION

CPR-BAL01-M/S 是一款专门针对电动自行车，电动工具，后备电源而开发的一款集成 IC 技术的多化合物锂电池均衡板，具有温度探头功能，电感式主动平衡管理功能。

当均衡模块采用 OCV 法侦测到电池组中任意两个电芯之间不平衡度超过设定的 5-50mV 时，均衡模块开启对应电芯的电感脉冲充电或者放电过程。采用电荷泵方式让任意两节电芯不平衡度控制在设定的 5-50mV 内，尽可能的让整组电池中的各节电压趋于一致。

CPR-BAL01-M/S is a multi-compound lithium battery equalizer which is specially developed for electric bicycle, power tools and backup power supply. It has the function of temperature probe and inductive active balance management.

When the OCV method is used to detect that the imbalance between any two cores in the battery pack exceeds the set 5-50mV, the equalization module opens the charging or discharging process of the inductance pulse corresponding to the core. The charge pump is used to control the imbalance of any two cores in the set 5-50mV, and the voltage in the whole battery is consistent as much as possible.

产品图片 PICTURE



3/4串可编程电感式主动均衡主模块
3/4 series programmable inductive active balance module
CPR-BAL01-M/4S

CPR-BAL01-M/S 产品实物图

Physical drawing of CPR-BAL01-M/S products

产品端口定义 Product definition port

BAT- ---PCBA 的总地线

The total ground PCBA

B1+至 B16+ ---PCBA 的电芯检测线，每个电芯的正极均要接入，上电顺序为自低而高

Core PCBA testing lines, each core positive all should access, power for the low and high order

DSG- ---PCBA 的分口放电负极

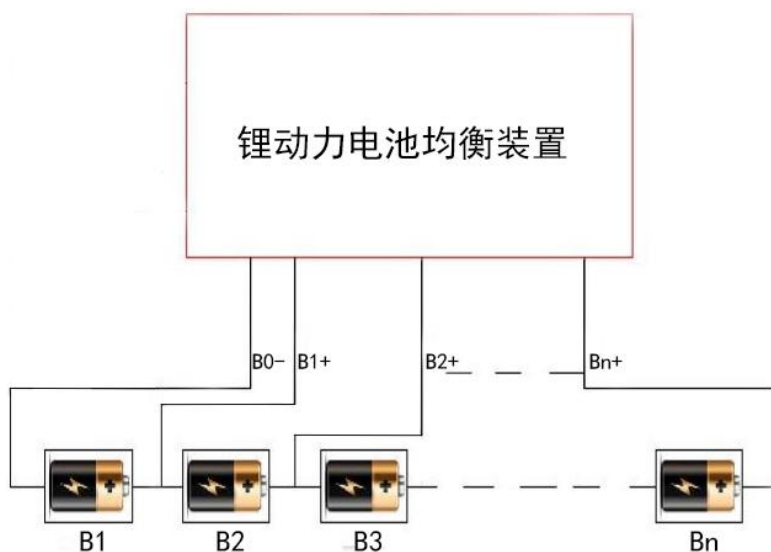
The points across the discharge PCBA mouth

CHG- ---PCBA 的分口充电负极

The points of negative charge PCBA mouth

产品接线图 Product the wiring diagram

产品接线图



CPR-BAL01-M 主板接线图

CPR-BAL01-M Mainboard wiring diagram

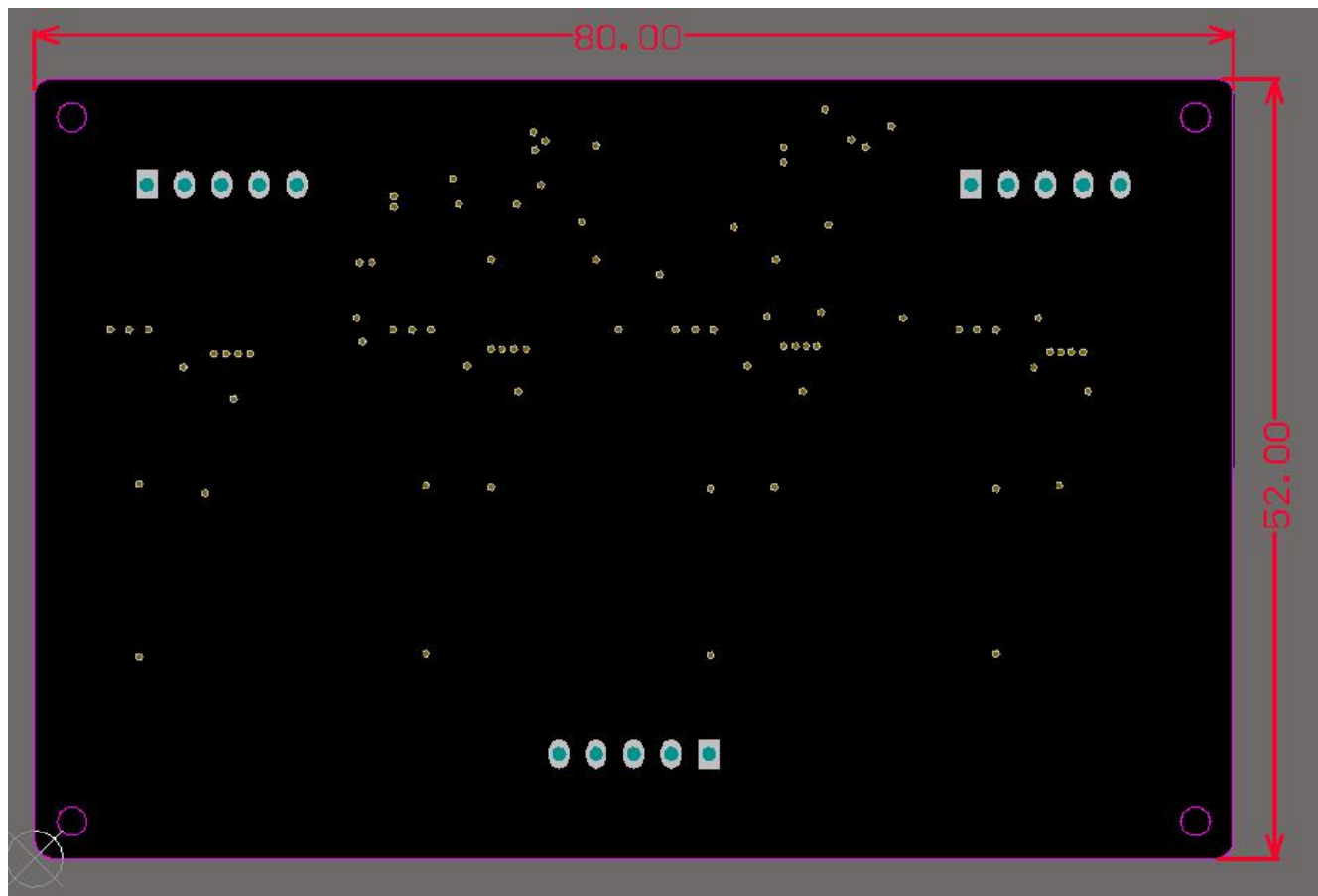
产品绝对参数 Absolute parameters T=25℃

不平衡度 Out-off balance	Vdiff	不平衡度设定 Imbalance setting	5~50mV
耗电 Power consumption	IDD	Active	≤400uA
		Standby	≤200uA
		SHIP	≤100uA
通讯特征 Communication feature	Communication	通讯频率 通讯协议	100KHz SMBus

最大额定值 Absolute maximum rating

Parmeter 参数	Rating 额定值	Unit 单位
Operating temperature range 工作温度范围	-20~70	℃
Operating humidity range 工作湿度范围	Less than 85% RH	%RH
Storage temperature range 储存温度范围	-40~125	℃
Storage humidity range 储存湿度范围	Less than 85% RH	%RH
Module start voltage 模块启动电压	Vcell>3.0	V

产品结构图 Structure Chart



CPR-BAL01-M/S 产品结构图 材质 94V-0 玻璃纤维板

CPR-BAL01-M/S Product structure drawing material 94V-0 Glass Fiberboard

PCBA 整体尺寸: 80*52*8mm

PCBA size: 80*52*8mm

保护板与电芯的安装连接注意事项

Notice for fixing and connection of PCM and cell

警告

Warning

把保护板连接电池组，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。

When connecting PCM to battery pack, or dismantling PCM from battery pack, we should comply with connection sequences and rules. If the operating sequences go against required sequences, chips probably work abnormal and protection functions stop moving after power on. It will result in serious consequences.

安装保护板至电池组须带有可靠接地的防静电手腕，保护板不得与电池组的带电极性引线短路，不得挤压保护板及各种有可能破坏保护板的操作。准备工作及保护板安装顺序：将保护板的B-焊接至电池组的负极再将电池组的电压检测线的连接器插到保护板的J1 插座上→请注意J1 插座标示的引脚顺序。

When fixing PCM to battery pack, we should wear reliable earth wrist strap. PCM should not short circuit with charged polar wires of battery pack. PCM should not be squeezed and various operations that probably destroy PCM should not be allowed.

Preparation work and PCM fixing sequences: B- of PCM weld to the negative of battery pack, then insert the connector of the voltage detection line to J1 socket of PCM. Notice pin sequences of J1 socket marks.

拆除保护板顺序：将连接在保护板上的连接器拆下，再焊下保护板上电池组的负极引线。

Sequences of dismantle PCM: Dismantle the connector connected on the PCM, then weld off negative wire of the battery pack.

