EP022-S 超级电容应用产品规格书

可编程超级电容应用均衡模块板

Programmable equalization module board for application of super capacitor

产品特点 FEATURES

- 采用 A 级高精度保护芯片

  A high precision protection chip is adopted

- TI 平台的二次原创开发适应超级电容应用均衡

  TI platform two original development, adapt to super capacitor application balance

- 高 VDS 耐压，低 RDS 导通内阻，低 CGD 密勒电容，TO-263 封装功率 MOSFET

  High voltage VDS, low RDS conduction internal resistance, low CGD mueller capacitance,-263 packages TO power MOSFET

- 温漂极小，精度为 1%高功率 2512 封装合金检测电阻

  WenPiao tiny, the accuracy is 1% high power 2512 encapsulation alloy measuring resistance

- 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

- 标准铝合金高导热性散热片

  Standard high thermal conductivity aluminum heat sink

- 最大工作电流 25A，持续额定电流 15A

  The maximum working current 25 A, continuous rated current 15 A

- 极低的耗电，静态待机耗电 10uA. 工作耗电 80uA

  均衡启动时耗电 50mA+10uA(单个电池)

  Very low power consumption, static standby power consumption and 10uA. Work power consumption and balanced start-up power consumption uA 50 mA + 10 uA (single battery)

- 整体 PCBA 放电通态内阻＜25mΩ，充电通态内阻＜35mΩ

  The state overall PCBA discharge resistance < 25 m Ω, charging the state 35 m Ω resistance

- 具有典型的电压侦测方式的过充电保护，过放电保护，过电流保护，短路保护,均衡管理

  The typical voltage of the detection methods of charging protection, a discharge protection, over current protection, short circuit protection,balanced management

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

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产品说明 DESCRIPTION

EP022 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 技术的多化合物锂动力电池保护板，具有过充电保护功能，过放电保护功能，过电流保护功能，温度保护功能，充电电量平衡管理功能。

具有工作电流的高承受能力，但是无论是放电还是充电通路的通态内阻都相当低，保证了在整个工作运行过程中的温度安全。

均衡管理电路在充电末端能对多化合物锂动力电池进行单组电压侦测，同时在均衡点启动耗能式电路对不平衡性电池进行放电耗能，辅助促使电池小电流放电，尽可能的让电池的电压趋于一致。

而充电和放电保护功能均能使电池在一个特定的安全范围内工作。

过电流和短路保护功能当然更能使得用户在非意愿条件下的非法工作更快切断电路而保护当事人或当事物，让人或物不至于受损。

EP022 is a special for electric bicycle, electric tools, the back-up power source and the development of a more integrated IC technology compounds lithium power battery protection board, has the charging protection function, discharge protection function, over current protection function, temperature protection function, balance charge capacity management functions

Has the work of the current high bear ability, but whether discharge or charging pathways is quite low resistance through state, had guaranteed in the whole work in the process of operation temperature security

Balanced management in charge of circuit end more than lithium battery power compounds ca voltage detection, at the same time, the equilibrium start in energy consumption of imbalance type circuit battery discharge energy dissipation, auxiliary prompted battery small current discharge, as far as possible let the battery voltage to the agreement

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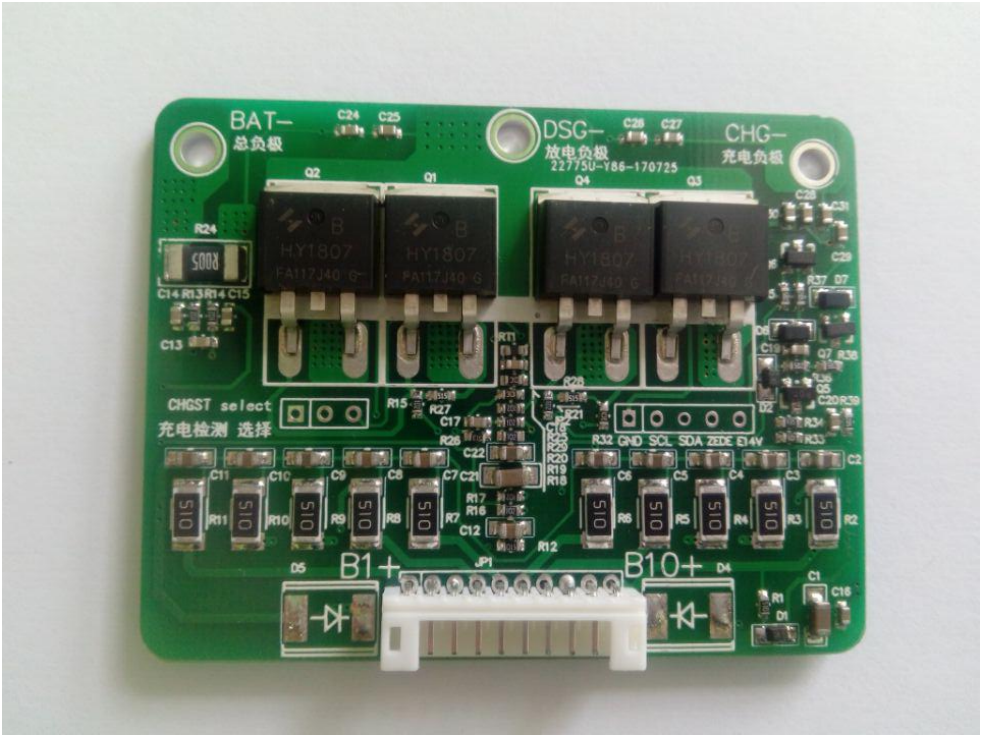
产品图片 PICTURE



EP022-S 超级电容均衡控制模块产品实物图

EP022-S product figure

产品端口定义 Product definition port

BAT- ---PCBA 的总地线

The total ground PCBA

B1+至 B10+ ---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

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产品绝对参数 Absolute parameters T=25℃ 三元锂聚合物，磷酸铁锂，钛酸锂可编程参数

Item 项目	Symbol 符号	Content 详细内容	Criterion 标准
Over charge Protection 过充保护	VDET1	Over charge detection voltage 过充电检测电压	2.800-4.375V 可编程
	tCU	Over charge detection delay time 过充电检测延迟时间	0.5s～2.25s 可编程
	VREL1	Over charge release voltage 过充电解除电压	0-300mV 可编程
Over discharge protection 过放保护	VDET2	Over discharge detection voltage 过放电检测电压	1.400-2.900V 可编程
	tDL	Over discharge detection delay time 过放电检测延迟时间	OFF-32s 可编程
	VREL2	Over discharge release voltage 过放电解除电压	0.400-1.600V 可编程
Over current protection 过流保护	VDET3	Over current detection voltage 过电流检测电压	依实际应用可 配置编程
	IDP	Over current detection current 过电流保护电流	依实际应用可 配置编程
	tIOV1	Over current detection delay time 过电流检测延迟时间	依实际应用可 配置编程
	---	Release condition	Cut load

		保护解除条件	断开负载及充电
Short protection 短路保护	---	Detection condition 保护条件	Extershort cioruit 外部电路短路
	---	Release condition 保护解除条件	Cut short circuit 断开短路电路及充电
TemperatureProtectin 温度保护	Tp	Temperature protection point 温度保护点	依实际应用可 配置编程
Balance function 均衡功能		Start balance level 均衡启动点	2.4-2.9V 可编程

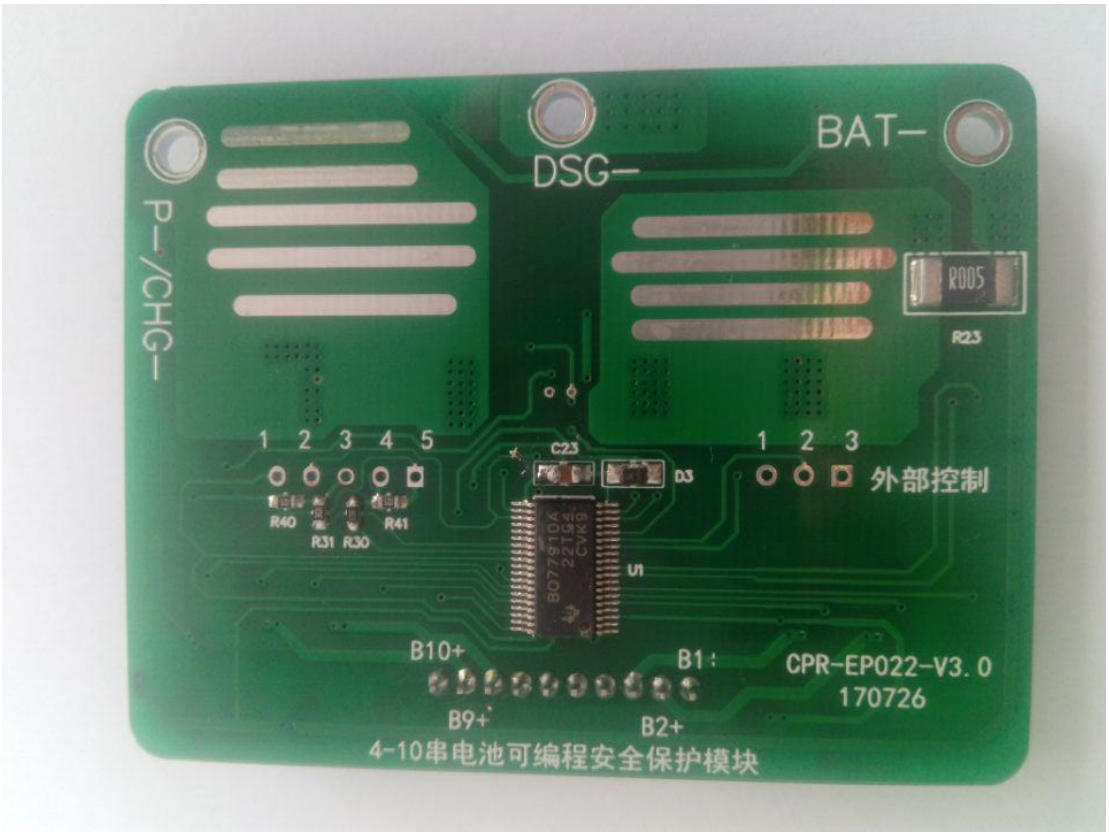
Interior resistance 内阻	RDS	Main loop electrify resistance 主回路通态电阻	VC=3.2V,RDS≤35mΩ
Current consumption 消耗电流	IDD	Current consume in normal operation 工作时电路内部消耗	≤80uA
充电电流 Charge current	I-chg	最大持续充电电流 Max continuous Charge current	15A
放电电流 Discharge current	I-dchg	最大持续放电电流 Max continuous Discharge current	15A

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
Voltage between terminals of P+ and P- P+和P-端子间电压（同口）	等同于电芯总和电压	V
Voltage between terminals of P+ and P- P+和CHGP-，P+和DCHGP-端子间电压（分口）	等同于电芯总和电压	V

*可改变保护参数，既可成为三元材料，磷酸铁锂，锰酸锂等电芯的 BMS

串数配置说明：



此板是 4-10 串通用，当然可以配置为 4，5,6,7,8,9,10 串使用，只要你愿意，并且很方便的自行硬件调配。

如：

当配置为 4 串时，只需将从左边开始排插引脚 PIN 的 B10+，B9+一直到 B4+全部短路，余下 B1+到 B4+正常连接各自电芯就可。其余输入输出线正常接驳。

依次类推，接 5 串，6 串，7 串，8 串，10 串时，均如此。

而直接 10 串使用的时候，B1+到 B10+的 10 根电芯正极检测线则均需要连接各自对应的电芯正极，其余输入输出线正常接驳。

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产品结构图 structure chart

65*50mm

以实物为准

EP019 产品结构图 材质 94V-0 玻璃纤维板

CNL-EP600 product structure material 94 V-0 glass fiber board

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

Warnning

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。

您的“芯”，我们用心来呵护!