

onsemi™

系统方案指南——预览

超快充电桩



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立即注册，解锁全部系统方案指南



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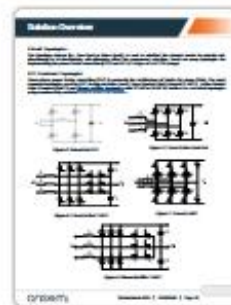
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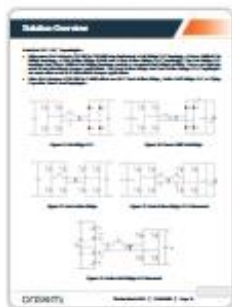
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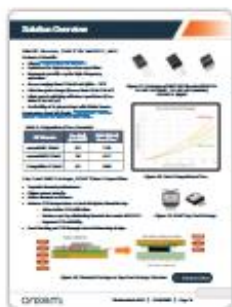
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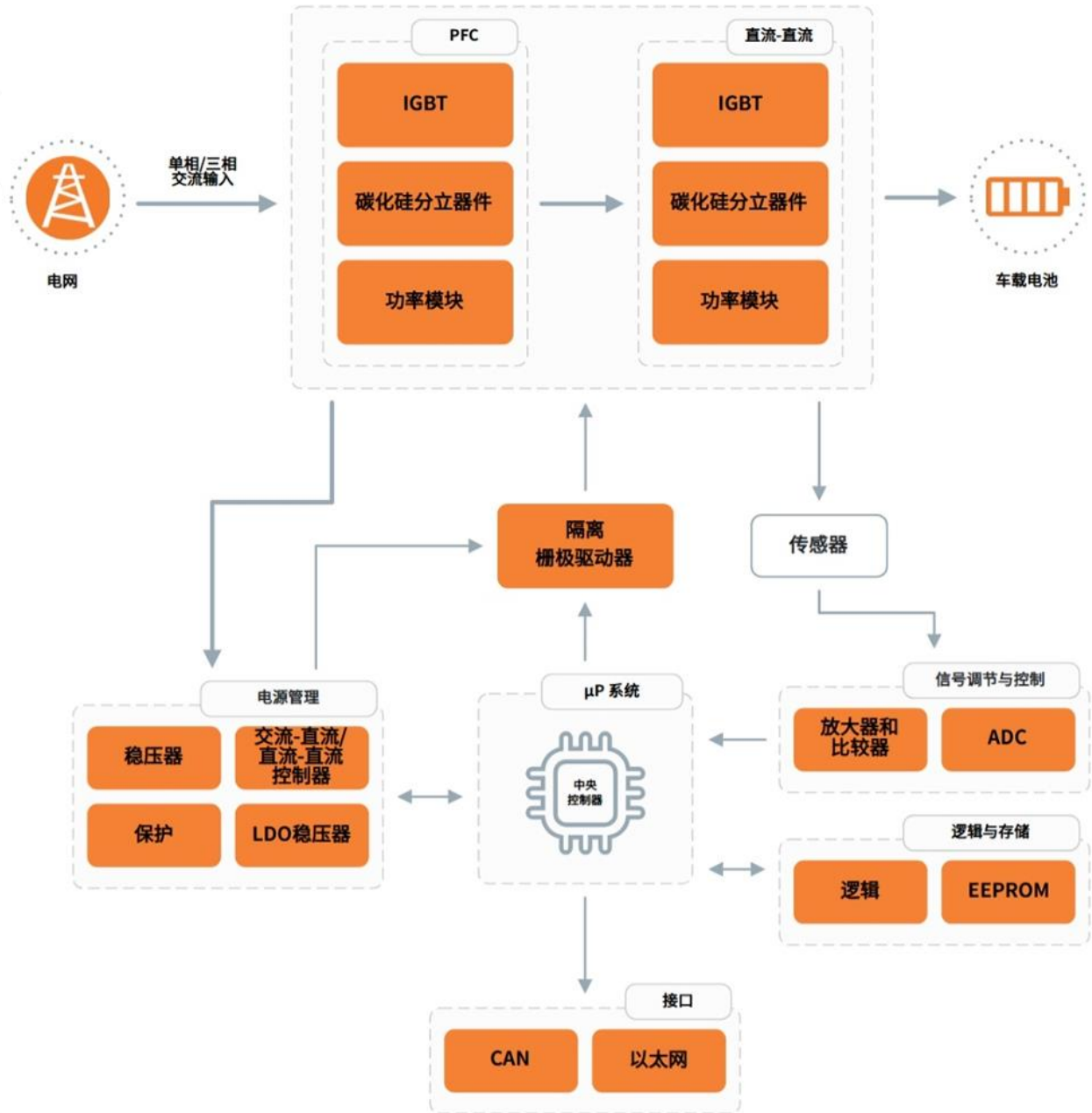
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电动汽车直流充电桩框图

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电动汽车直流充电桩框图

下图展示了安森美 (onsemi) 设计的直流电动汽车 (DC EV) 充电桩解决方案。该图阐释了直流电动汽车充电桩中所采用的功率转换与电源管理技术。其中包含碳化硅 (SiC) 分立MOSFET、IGBT、电源模块、隔离栅极驱动器等主要元器件, 以及其他相关产品。如下述推荐产品表所示, 该框图中大部分功能块都可采用安森美的器件/方案。



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用于1200V M3S 4-PACK F2 EliteSiC MOSFET模块的评估板 | EVBUM2878G-EVB

该评估板专为评估安森美采用F2封装的1200V M3S 4-PACK模块而设计。其主要用途是对以下全桥模块进行双脉冲开关测试和开环功率测试：
[NXH011F120M3F2PTHG](#),
[NXH007F120M3F2PTHG](#)

该评估板可连接外部控制器，来接收PWM输入信号并处理故障信号。

主要特点：

- 4层FR4印制电路板，铜箔厚70 μ m
- 采用黑色PCB面板，具有高热辐射率
- 4个隔离式单栅极驱动器，具备2.5 kV绝缘等级
- 用于输入和输出信号的连接器接口
- 集成薄膜直流母线
- 预留安装孔，便于连接罗氏线圈和测量探头
- 低寄生电感PCB布局设计



图14: EVBUM2878G 评估板正面与背面视图

[查看开发板](#)

用于1200V M3S 2-PACK F1 EliteSiC MOSFET模块的评估板 | EVBUM2880G-EVB

该评估板专为评估安森美采用F1封装的1200V M3S（半桥）2-PACK模块而设计。其主要用途是对以下半桥模块进行双脉冲开关测试和开环功率测试：
[NXH008P120M3F1PTG](#), [NXH010P120M3F1PTG](#),
[NXH015P120M3F1PTG](#), [NXH030P120M3F1PTG](#)

该评估板可连接外部控制器，来接收PWM输入信号并处理故障信号。

主要特点：

- 采用F1 封装双 M3S 2-PACK 模块插座
- 集成260 μ F直流母线，供两个2-PACK模块共用（适用于全桥应用设计）
- 为每个2-PACK模块配备具有5 kV_{RMS}隔离等级的隔离栅极驱动器 [NCP51561](#)
- 采用黑色PCB，具备高热辐射率
- 四路独立 DC-DC 电源插座
- 低寄生电感PCB布局设计
- 通过单路 PWM 输入信号生成死区时间，控制双 2-PACK 模块（可选）
- 通过两路独立PWM 输入信号确保死区时间，控制双 2-PACK 模块（可选）
- 通过两路独立PWM输入信号直接控制2-PACK模块，无需修改输出逻辑（可选）



图15: EVBUM2880G 正面与背面视图



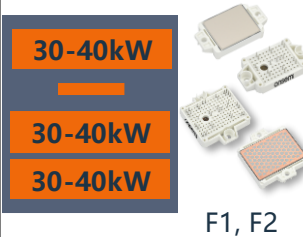
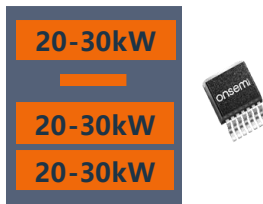
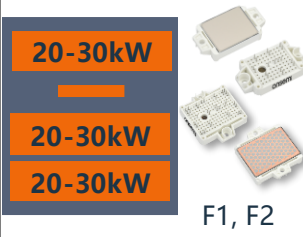
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安森美直流电动汽车充电桩解决方案推荐

直流电动汽车充电桩市场涵盖多种应用场景，服务于住宅和商业应用中不同的功率等级和充电时间需求。

作为功率半导体行业的领军企业，安森美针对直流快充（DCFC）应用提供定制化解决方案，并针对各种功率等级提供了全面的建议。从功率低于22 kW的直流壁挂式充电系统，到功率超过350 kW的超快速电动汽车充电系统，安森美的EliteSiC MOSFET和Field Stop 7 IGBT可实现更高效率与功率密度，同时搭配隔离栅极驱动器，显著提升系统安全性与可靠性。

表2: 安森美解决方案推荐

| 直流电动汽车充电桩功率等级 | 相位输入 | 分立器件解决方案 | 模块解决方案 | 栅极驱动器解决方案 |
|-----------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| > 350 kW (超快充电桩) | 3相 | 通常，不推荐用于大功率应用 |  50-100kW 50-100kW 50-100kW F2 PIM | NCP51563/ NCP51561 <ul style="list-style-type: none"> • 隔离型 • 双通道 - 双低边 / 高边或半桥 |
| 150 - 350 kW | 3相 | 组合解决方案  30-40kW 30-40kW 30-40kW |  30-40kW 30-40kW 30-40kW F1, F2 | NCP51563/ NCP51561 <ul style="list-style-type: none"> • 隔离型 • 双通道 - 双低边 / 高边或半桥 |
| 50 - 150 kW | 3相 | |  20-30kW 20-30kW 20-30kW |  20-30kW 20-30kW 20-30kW F1, F2 |
| < 22 kW (直流壁挂式充电箱) | 单相 | <ul style="list-style-type: none"> • 1200V FS7 IGBT • 650V & 1200V M3S & M3P EliteSiC MOSFET | 通常，不推荐用于低功率应用 | NCP57080/ NCP57090 <ul style="list-style-type: none"> • 隔离型 • 单通道 |

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