南京能驰科技有限公司
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Senior PCB Design and Circuit Design Engineer for HV PCB incl. Components
高压 PCB（含元器件）设计与电路设计高级工程师

Working place: Tianjin

Recruiting number:1

Role overview

As a Senior Engineer for PCB design and circuit design of HV PCBs including components, you will take end-to-end technical responsibility for the schematic design, PCB layout and component engineering of high-voltage printed circuit boards for battery electric and plug-in hybrid vehicles. You will lead the development of HV circuits such as gate drivers, voltage and current sensing and auxiliary power supplies, select and qualify power semiconductors and passives, and ensure insulation coordination, thermal and EMC compliance of the board design. Working closely with ECU system design, mechanical, testing and manufacturing teams as well as global suppliers, you will drive the design from concept to series production (SOP) and safeguard robust, safe and high-performance HV electronics.

Key Responsibilities

- Lead the circuit and schematic design of HV PCBs for HV ECUs, including gate driver circuits, voltage and current sensing, auxiliary power supplies and protection circuits.
- Select, specify and qualify components for HV PCBs, including power semiconductors (SiC, GaN, IGBT), capacitors, resistors and magnetics, considering derating, availability and automotive qualification (AEC-Q).
- Design and review PCB layouts for HV boards, ensuring insulation coordination (creepage and clearance), thermal management, EMC behavior and high-current capability.
- Perform circuit simulations and worst-case analyses (e.g., SPICE, thermal and power loss simulations) to verify design robustness.
- Define and execute design verification plans (DVPs) for HV PCBs and components, support prototype bring-up, debugging and failure analysis in the laboratory.
- Coordinate with bare board and PCBA suppliers regarding design for manufacturing (DFM), testability and quality topics, and manage technical issue resolution.
- Ensure all designs comply with IPC standards (e.g., IPC-2221, IPC-A-610), insulation coordination requirements and automotive EMC regulations.
- Provide technical guidance and mentorship to junior engineers, and support team capability building in HV circuit and PCB design methodologies.

Qualifications & Requirements

Education

- Bachelor’s degree or Master’s degree in Electrical Engineering, Automotive Engineering, Mechatronics or a related field.
- Excellent fresh graduates with English as a working language are also welcome.

Professional Experience

- 4+ years of professional engineering experience in circuit and PCB design for automotive or industrial power electronics, ideally HV boards; OEM or Tier 1 supplier background preferred.

- Proven track record in schematic design, layout and component engineering of power electronic boards for battery electric or plug-in hybrid vehicles.
- Solid project experience covering the full development lifecycle from concept phase to series production launch.

Technical & Tool Proficiency

- In-depth knowledge of HV circuit design, including gate drivers, sensing circuits, switched-mode power supplies and protection concepts.
- Strong understanding of power semiconductors (SiC, GaN, IGBT), their switching behavior, losses and driver requirements.
- Proficiency in PCB design tools (e.g., Altium Designer, Cadence) and in HV-relevant layout rules such as creepage and clearance.
- Good working knowledge of insulation coordination, thermal design and EMC optimization on board level.
- Experience with laboratory equipment such as oscilloscopes, HV probes and power analyzers for bring-up and debugging.
- Familiar with automotive component qualification standards (AEC-Q101/Q200) and PCB standards (IPC-2221, IPC-A-600/610).

Language Proficiency

- Native proficiency in Chinese.
- Fluent command of English (speaking, writing and reading) for cross-team and cross-border technical communication.
- German language skills are a strong plus.

Core Competencies

- Strong analytical and systems thinking ability to solve complex circuit and board-level design challenges.
- Structured working style, highly detail-oriented with strict standards for design quality and technical accuracy.
- Excellent communication and coordination skills to collaborate effectively with internal teams and global suppliers.
- Proactive problem-solving mindset, able to independently identify technical bottlenecks and drive solution implementation.
- Highly motivated, fast learner with an open mindset, able to manage multiple priorities in a fast-paced environment.

We are looking forward to your application! Please send us your complete application file in English mentioning your earliest possible entry date by e-mail to: careers@cenergy.asia

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工作地点：天津

招聘人数：1 人

岗位概述

作为高压 PCB（含元器件）设计与电路设计高级工程师，你将全面负责纯电动及插电混动汽车高压印刷电路板的原理图设计、PCB 布局设计与元器件工程的端到端技术工作。你将主导栅极驱动、电压电流采样、辅助电源等高压电路的开发，选择并认可功率半导体与无源器件，确保板级设计的绝缘配合、热性能与 EMC 合规。你将与 ECU 系统设计、机械、测试、制造团队及全球供应商紧密协作，推动设计从概念阶段到量产（SOP），保障高压电子部件稳健、安全、高性能。

主要工作职责

- 主导高压 ECU 用高压 PCB 的电路与原理图设计，包括栅极驱动电路、电压电流采样、辅助电源与保护电路。
- 为高压 PCB 选择、定义并认可元器件，包括功率半导体（SiC、GaN、IGBT）、电容、电阻与磁性元件，综合考虑降额、供货与汽车级认证（AEC-Q）。
- 设计并评审高压板 PCB 布局，确保绝缘配合（爬电距离与电气间隙）、热管理、EMC 性能与大电流承载能力。
- 开展电路仿真与最坏情况分析（如 SPICE、热与损耗仿真），验证设计的鲁棒性。
- 制定并执行高压 PCB 与元器件的设计验证计划（DVP），支持样机调试、问题定位与实验室失效分析。
- 与裸板及 PCBA 供应商协调可制造性设计（DFM）、可测试性与质量议题，管理技术问题的解决。
- 确保所有设计符合 IPC 标准（如 IPC-2221、IPC-A-610）、绝缘配合要求及汽车 EMC 法规。
- 为初级工程师提供技术指导与带教，助力团队在高压电路与 PCB 设计方法上的能力建设。

任职资格与要求

教育背景

- 电气工程、汽车工程、机电一体化或相关专业本科及以上学历。
- 能将英语作为工作语言的优秀应届毕业生也可投递。

专业经验

- 4 年以上汽车或工业电力电子电路与 PCB 设计领域工程经验，有高压板方向经验者优先，有主机厂或一级供应商背景优先。
- 具备纯电动或插电混动车型电力电子板卡原理图设计、布局与元器件工程的成熟项目经验。
- 拥有覆盖从概念阶段到量产启动全开发周期的项目经历。

专业技能与工具能力

- 深入掌握高压电路设计知识，包括栅极驱动、采样电路、开关电源与保护概念。
- 深入理解功率半导体（SiC、GaN、IGBT）的开关行为、损耗特性与驱动要求。
- 熟练使用 Altium Designer、Cadence 等 PCB 设计工具，掌握爬电距离与电气间隙等高压布局规则。
- 熟悉板级绝缘配合、热设计与 EMC 优化。

- 熟练使用示波器、高压探头、功率分析仪等实验室设备进行调试与问题定位。
- 熟悉汽车元器件认证标准（AEC-Q101/Q200）与 PCB 标准（IPC-2221、IPC-A-600/610）。

语言能力

- 中文母语水平，听说读写流利。
- 英语流利，可胜任跨团队、跨国界的技术沟通与文档工作。
- 具备德语能力者优先。

核心胜任力

- 优秀的分析与系统思维能力，能够解决复杂的电路与板级设计挑战。
- 工作方式结构化，注重细节，对设计质量与技术准确性有严格标准。
- 出色的沟通协调能力，可高效对接内部团队与全球供应商。
- 积极主动的问题解决思维，能独立识别技术瓶颈并推动方案落地。
- 自驱力强，学习速度快，心态开放，能在快节奏环境中管理多项优先级任务。

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