NAVIN KUMAR G

Chennai, Tamil Nadu-600119, India

Hardware Design | Embedded Hardware | Component & Conformity | Electronics & Electrical | PCB

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PROFESSIONAL SUMMARY

Hardware Design Engineer with strong expertise in analog & digital circuit design, embedded hardware development, and PCB design & validation. Experienced in board-level design, system integration, and hardware architecture development with hands-on exposure to microcontrollers, power electronics (DC-DC converters, LDOs), OPAMP-based analog design, and mixed-signal systems. Proficient in hardware debugging Testing, design verification, signal integrity basics, Strong background in component engineering, lifecycle management (LCA), obsolescence handling, and regulatory compliance (ROHS, REACH).

PROFESSIONAL EXPERIENCE / PROJECTS,

Company – *HCLTech* **Total Experience -** *2 years*

Project 1: Client - *Siemens Healthineers*

Lifecycle Assessment – Medical Device (Component Engineering & Compliance)

- Performed component lifecycle assessment (LCA) for 4500+ electronic components.
- Executed obsolescence management, handling EOL, discontinued components, and PCN analysis
- Verified and maintained compliance documentation (ROHS, REACH, regulatory standards)
- Coordinated with manufacturers and suppliers for lifecycle data and risk mitigation
- Identified and qualified alternate components (Form-Fit-Function / FFF, FEA analysis)
- Contributed to BOM optimization, risk analysis, and long-term supply continuity
- Utilized SiliconExpert and IHS BOM Intelligence (Accuris) for component validation

Project 2: Client- *Halkey Roberts*

Design & Testing (NPD) – Safety Equipment (Hardware Design & Validation)

- Designed digital circuits including batteries, microcontroller-based embedded systems
- Performed schematic capture, PCB design support, and hardware architecture definition
- Conducted circuit simulation using LTSpice and validated designs via prototype testing (breadboard/PoC)
- Developed Bill of Materials (BOM) and supported component selection & sourcing
- Created High-Level Design (HLD), DFMEA, DFT, and power budgeting documents
- Collaborated with PCB team on layout design, library creation, and board constraints
- Performed impedance analysis, signal validation, and hardware debugging
- Executed functional testing, board bring-up, and system validation
- Worked with firmware team on hardware-software co-design and microcontroller integration
- Supported EMI/EMC compliance testing and regulatory documentation

Project 3: Client - *Siemens Healthineers*

R&D – Medical Device (Embedded Hardware & System Integration)

- Replaced obsolete microcontroller with optimized embedded solution, ensuring compatibility
- Collaborated with firmware team for hardware-software integration and validation
- Developed functional specification documents through detailed PCB testing and analysis
- Designed high-speed interface (HDMI to LVDS) including schematic and BOM development
- Redesigned PCB with analog front-end (OPAMP), ADC, and I2C communication interface

- Improved system performance, reliability, and component availability

TECHNICAL SKILLS

Hardware Design & Engineering	Circuit Design, Analysis, Schematic Capture, Hardware Architecture, DFMEA, Stress Analysis, Power Budgeting, Design Verification, Microcontrollers, OPAMPs, ADC/DAC, Sensors, Power Regulators (LDO, DC-DC Converters) DFMEA / FMEA / WCCA / Derating / Power Budgeting, ROHS, REACH
Tools & Platforms	Altium Designer, KiCad, EasyEDA, LTSpice, SAP, Azure, SiliconExpert, IHS BOM Intelligence (Accuris), AI tools, VS code, Github
Simulation & Testing	LTSPICE, Falstd, Board Bring-up, Functional Testing, Debugging, basic of EMI/EMC Testing, Environmental Testing, Oscilloscope, multimeter & Lab Tools
Protocols & Interfaces	SPI, I2C, UART, LVDS, HDMI, Arduino, ESP32
Programming	Python, C

EDUCATION

Bachelor of Engineering – Electronics and Communication Engineering (2019 – 2023) **– 81%**

Always ready to upskill & take responsibility.