

MOHAN KUMAR C B.E., M.Tech(PE),

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Hardware Design Engineer

SUMMARY OF EXPERIENCE

Extensive experience of 4+ years in Product Designing Cycle from Microprocessor, Microcontroller, Analog EMI/EMC certifications, Testing.

Current Roles & responsibilities:

- Hardware Schematic Design.
- PCB layout design up to 8 layer.
- Component Selection and BOM preparations.
- Electrical CAD layout review & components placement.
- Board bring-up and software team co-ordination for board bring-up activity.
- EMI/EMC Certification support.

Significant Strength:

1. Strong exposure to High-speed board design with digital, analog & mixed signal components
2. Experience with **Schematic Design**, and **Layout Design High Speed Board design** for Products.
3. Experience with **Board power design and Power sequencing issues**.
4. Hand on experience with Variant BOM generation using ORCAD CIS and Altium 365 Manufacturing Issues (DFM/DVT), and Production issues.
5. Signal integrity, Power integrity and Thermal analysis support.
6. Bus Interfaces -SPI, I2C, USB2.0, CAN, UART.
7. Memory Interfaces - SDRAM/DDR1/DDR2/DDR3/DDR3L/DDR4, SDRAM, NAND and NOR FLASH, SD/MMC Card.
8. Peripheral Interface - RS-232, RS 485.
9. Hands on Board testing experience using JTAG tools, Oscilloscope, Logic analyzers, Multimeters.
10. FPGAs Used - Altera Semiconductors.
11. Micro-Controllers Used - Texas Instruments, STMicroelectronics, Microchip.

Technical Exposure:

EDA-Tools: -

Schematic Tools	-	Orcad Capture, Altium 365.
Simulation Tools	-	Pspice, LT Spice, Tina.
Layout Tools	-	Allegro, Altium 365.
Gerber Tools	-	Gerber-magic, CAM350, Gerbtool.
Testing Tools	-	Oscilloscope.
BOM Scrubbling	-	Silicon Expert

Operating System : Ms-Dos, Win 9X/2K/XP/2007/2010.

Academic Details:

- BE in Electrical & Electronics.
- M.Tech in Power Electronics

Project Details:

1. Bio Smart Detector

Hardware Used: MCU + Bluetooth (ESP32-PICO)

Responsibilities:

- Architecture Description at Block Level
- Component selection
- Schematic Design
- Mechanical Requirement Specification
- PCB Design verification
- Board bring-up

Description:

The ESP32-PICO is providing complete Wi-Fi and Bluetooth functionalities module. When chemical is drop on the Bio-strip, the chemical reaction will take place than compare it by using the op-amp. The results are send through Bluetooth.

2. 14-Cells Battery monitoring and Balancing

Hardware Used: L9963E, MCU(SPC574S64E3), CAN

Responsibilities:

- Architecture Description at Block Level.
- Component selection
- Schematic Design
- Mechanical Requirement Specification
- PCB Design verification
- Board bring-up

Description:

The L9963E is used to battery monitoring and Balancing in the system. We connect upto 14 stacked battery cells can be monitored to meet the requirements of 48 V and higher voltage systems. We interfaced the CAN protocols for the communication purpose.

3. Utility Box

Hardware Used: LT8304IS8E#PBF, LM1117IDT-5.0/NOPB(LDO). MAX3227EAAE+, MAX490ESA+T

Responsibilities:

- Architecture Description at Block Level.
- Component selection
- Schematic Design
- Mechanical Requirement Specification
- PCB Design verification
- Board bring-up

Description:

In this project to the communication RS485 is converted to the RS232 and the another is communication is converted from RS485 to RS422 at the voltage is 5V.

From converted the RS485 to TTL and again TTL to RS232.
From converted the RS485 to TTL and again TTL to RS422.

4. Carrier Board

Hardware Used: Toradex Apalis i.MX8, FT4232HL-REEL, TRSF3232EIPWR, ISL83490IBZ-T.

Responsibilities:

- Architecture Description at Block Level.
- Component selection
- Schematic Design
- Mechanical Requirement Specification
- PCB Design verification
- Board bring-up

Description:

In this project i.MX8 SIP is used.
Converted the USB to 4xUART.
Converted the 4xUART to 4xRS232.
Converted the 4xUART to 4xRS422. At the input voltage is 24V DC.

5. Power sequences Board

Hardware Used: V24A28T500BL2, UWE-12/10-Q48N-C, LM3880MF-1AA/NOPB, TXB0108PWR

Responsibilities:

- Architecture Description at Block Level.
- Component selection
- Schematic Design
- Mechanical Requirement Specification
- PCB Design verification
- Board bring-up

Description:

In this project input voltage is 24V DC,
Converted the 24V DC to 28V DC and 12VDC.
Converted the 12V DC to 5V DC and 5.5V DC.
Converted the 5V DC to 3.3V DC and 1.8V DC.
All converter is maintained by the power sequence logic.

6. AM3354 & DDR3 Interface

Hardware Used: AM3354 and H5TC4G63AFR (DDR3), LORA, eMMC, HMI Interface, IMU and Ethernet.

Responsibilities:

- Architecture Description at Block Level.
- Component selection
- Schematic Design
- Mechanical Requirement Specification
- PCB Design verification
- Board bring-up

Description:

In this project we used AM3354 as Microprocessor which connect to the LORA, DDR3, eMMC, HMI interface and Ethernet at the speed of 1Gbps. Inertial Measurements Units are used for Navigation and angular measurement and calculate the distance moved.

7. Analog Filter Board

Hardware Used: 5CGXFC5C6U19I7N (FPGA), LTC2311CMSE-16, DAC8311IDCKT.

Responsibilities:

- Architecture Description at Block Level.
- Component selection
- Schematic Design
- Mechanical Requirement Specification
- PCB Design verification
- Board bring-up

Description:

In this project we used 5CGXFC5C6U19I7N as FPGA. The mainly converting ADC TO DAC in the system. The FIR filter is used in the system filter the Analog and Digital data.

8. Carrier Board for Solenoid drivers.

Hardware Used: AUIPS7091GTR, ADS1255IDBR, TL072BCDR, Ethernet Interface, USB Interface, CAN interface, RS232 Interface, EEPROM, RS 485 interface.

Responsibilities:

- Architecture Description at Block Level.
- Component selection
- Schematic Design
- Mechanical Requirement Specification
- PCB Design verification
- Board bring-up

Description:

In this project we used the SOM i.e., MIMXRT1062CVJ5B as a Microcontroller. This microcontroller interface with CAN interface, Ethernet Interface, USB interface, RS 232 interface, RS 485 interface is connected the SOM. The ADC and DAC conversion are made to driver the solenoid valves by using SPI interface.

9. LCD Hardness.

Hardware Used: PIC32MZ2048EFH144-250I/PH, AD7192BRUZ (ADC), ESP-01 ESP8266 (Wi-Fi Module), Ethernet Interface, USB, Interface, RS232 Interface, EEPROM, RTC.

Responsibilities:

- Architecture Description at Block Level.
- Component selection
- Schematic Design
- Mechanical Requirement Specification
- PCB Design verification
- Board bring-up

Description:

In this project we used the PIC32MZ2048EFH144-250I/PH as a Microcontroller. The Microcontroller controls the Analog section, Touch RS232, RS 232 serial printer. ESP-01 ESP8266 (Wi-Fi Module) is RX/TX signal are connecting to Microcontroller. In the system Motor driver is used to control the motor through Microcontroller.

10. Tab Density.

Hardware Used: PIC32MX320F128H-80I/PT, RS232 Interface, EEPROM, RTC, Opto couplers.

Responsibilities:

- Architecture Description at Block Level.
- Component selection
- Schematic Design
- Mechanical Requirement Specification
- PCB Design verification
- Board bring-up

Description:

In this project we used the PIC32MX320F128H-80I/PT as a Microcontroller. The Opto couplers has proximity sensor are connected to Microcontroller. RS232 is used to connected the serial printer connector and touch connector.

11. LoRa Project.

Hardware Used: LLCC68IMLTRT(LoRa), ESP32-WROOM-32E-H4 (Wi-Fi), KXTJ3-1057 (Accelerometer Interface), USB to UART converter.

Responsibilities:

- Architecture Description at Block Level.
- Component selection
- Schematic Design
- Mechanical Requirement Specification
- PCB Design verification
- Board bring-up

Description:

In this project we used the LLCC68IMLTRT LoRa chip used to long-range and low-power communication. The Accelerometer is connected to the Wi-Fi Interface through I2C Communication. The Wi-Fi Interface and LoRa are connected through SPI communication. In this system USB to UART converter for communication purpose.

Personal Details:

Date of Birth : 17-NOV-1995.

Languages Known: KANNADA, ENGLISH.

Hobbies and Interests:

- Learning new tools in Electronics
- Playing Cricket
- Listening to Music
- Meditation
- Yoga

About Myself:

- Team Player
- Positive attitude towards HARDWORK
- Willingness to learn new things in a rapid manner.
- Motivated, Attitude to Perform Better, helping nature and Team oriented.