Embedded Hardware Design Engineer

SELECTION PROCESS

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Contents

Version History

VERSION NO.	DETAILS	PREPARED BY	VERIFIED BY	APPROVED BY	DATE
1.0	Document	Priya Nair	Hardik Mewada	Hardik Mewada	June 2019

Job Description for Embedded Hardware Design Engineer

Job Brief

We are looking for a high-performing Embedded Hardware design Engineer, who will be responsible for developing and maintaining circuitry through testing and troubleshooting and may also provide cost assessments.

Responsibilities

- Design and develop Embedded Product design.

- Design and Develop Analog and Digital systems.

- Testing of Analog and Digital Circuit designs.

- Prepare and maintenance of Product Documents.

- Maintain and follow Work Flow Systems.

- Design analogue and digital circuits for low-powered, battery-powered, and high-powered systems.

- Design and Development of product with wired and wireless communication.

- Develop layout designs, perform component placements and determine wire routings.

Requirements

- Bachelor/ Master degree in Electronics/Electrical Engineering

- Demonstrated abilities in Analog circuit design to include Analog to Digital and Digital to Analog Encoding/Decoding, Schematic Capture, Circuit Simulation and PCB layout guidance

- RF Fundamentals

- EMC theory and troubleshooting

- Proficient in Matlab, or equivalent

- Ability to operate general lab equipment (DMM, oscilloscope, network analyser, power supplies)

- Strong verbal and written communication skills;

- ability to articulate and present ideas internally as well as externally

- Previous project leadership experience

- Extensive experience in Analog and Digital design and developing of Embedded products

- Experience in Analog signals processing, conditioning and handling

- Experience in microcontroller based designs

- hands on experience with linear and switching power supply designs

- experienced in development of small signals and audio signals based designs

- knowledge of wired and wireless communication protocols

- Experience with electromagnetic compliant EMC designs

- Capable of analysing various electronic solutions to carry out a required task.

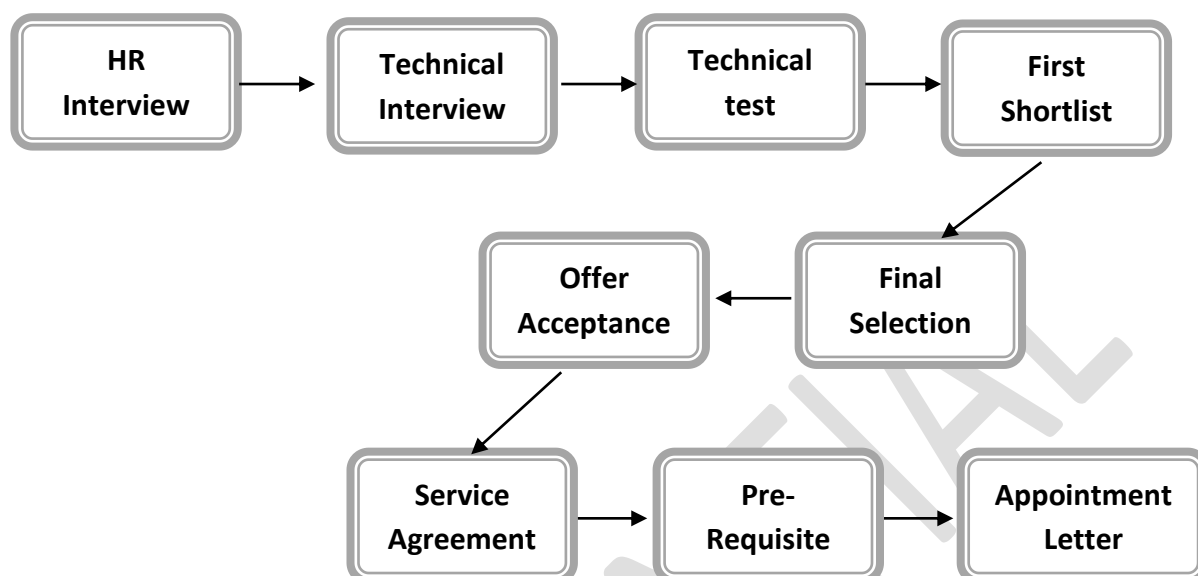- capable of designing cost sensitive high volume product designs

Role Clarity Document

Role Definition	**Embedded Hardware design engineers** are responsible for Design, Develop and Test the Analog and Digital circuitry.
Responsibility Deliverable	Analog design and developing of analog electronic products • Understand the requirement • Visualization of Product • Analyze and enhance efficiency, stability and scalability of a product Communication • Interact with the team • Provide support to customer. • Provide support to QA and Post Production. Verification and Documentation • Creation and Maintenance of Documentation Work Flow Systems • Complete the EPIC's according to planned LEG. • Update the work to Product Manager and seniors. • Put your queries in con-call. • Put the work update on official group on daily basis.
Task and Activity	Understand the requirement • Understand the requirement from product manager • Discuss and develop scope of work. • Plan accordingly with story point and timeline. • Realization of complex system requirements to provide robust and reliable hardware solutions. Visualization/Development for specific products • Design analogue and digital circuits for low-powered, battery-powered, and high-powered systems. • Design and Development of product with wired and wireless communication • Electromagnetic compliant EMC product designs • Develop layout designs, perform component placements and determine wire routings. • Verify existing designs and recommend improvements. • Recommend new design concepts and validate the concept feasibility using circuit simulations. • Prepare design documentations, requirements specifications • Prepare test specifications and test procedures and develop test fixtures. • Follow the Design policy of company. • Research and Study required documents. • Support Hardware Engineer for testing • Perform Bare Board Test

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Analyze and enhance efficiency, stability and scalability of a product

- Enhance the efficiency, stability and scalability
- Define Test cases.
- Cost sensitive high volume product designs

Communication:

Interaction with team

- Collaboration with other team members (including both hardware and software engineers) to agree system designs, interfaces and protocols etc.
- Discuss the requirement with embedded team for proper hardware functioning.

Provide support to customer

- Help customer to integrate the product according to their requirement and condition.

Provide support to QA and Post Production.

- Provide support to QA so that they can check as per requirement.
- Provide support and process to production so that they can enhance the speed of production and provide better quality.

Documentation:

Make Product Documentations

- Make Document of every stage and put it into product file.
- Maintain the product file.

Work Flow Systems:

Complete the EPIC's according to planned LEG.

- Make sure the EPIC's are completed and delivered as planned.

Update the work to Product Manager and seniors.

- Update the task completed or issues to PM and to your team above.

Put your queries in con-call or during sprint discussion.

- If you are stuck somewhere or you need support mail it to seniors and PM. Also you can raise it on con-call/sprint discussion that happens regularly.

Put the work update on official group on daily basis.

- Every day update (closures) your work on official group as per policy.

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Measurement Matrices	- EPIC's completed - Story point covered in each LEG - Efficiency, stability, scalability of Analog and Digital designs/Application - Number of Issue raised on the hardware Application - Efforts made to complete the tasks - Planning of work/updating sprints regularly - Suggestion given for better standards - Customer's Feedback - Review from Team members - Quality of Documentation - Team development

Growth Scale	Design and Development team	
	Grade A	Director -Technical
	Grade B	VP-Design and Development
	Grade B	General Manager-Design
	Grade C	Team lead-Project Manager
	Grade C	Project Engineer
	Grade D	Senior Engineer
	Grade D	Junior Engineer
	Grade E	Core Design Trainee-Programming/Analog Design/Circuit Design/QC

Selection Process

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┌──────────┐     ┌──────────┐     ┌──────────┐     ┌──────────┐
│   HR     │ ──► │Technical │ ──► │Technical │ ──► │  First   │
│Interview │     │Interview │     │   test   │     │Shortlist │
└──────────┘     └──────────┘     └──────────┘     └──────────┘
                                                          │
                                                          ▼
              ┌──────────┐                          ┌──────────┐
              │  Offer   │ ◄─────────────────────── │  Final   │
              │Acceptance│                          │Selection │
              └──────────┘                          └──────────┘
                    │
                    ▼
┌──────────┐     ┌──────────┐     ┌──────────┐
│ Service  │ ──► │   Pre-   │ ──► │Appointment│
│Agreement │     │Requisite │     │  Letter  │
└──────────┘     └──────────┘     └──────────┘
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Documents required at the time of interview

1. Updated Resume
2. Photograph
3. Salary slips of last three months

Post Offer Acceptance Process

- The selected Candidates who are willing to accept the Service Agreement will have to submit 2 Revenue Stamp Papers of value 100 Rupees purchased in the name of the candidate and his surety.

- The selected Candidates (freshers) will have to submit their original documents (LC / marksheet / Diploma or Degree Certificates) as well as three bond cheques in the name of the company as part of two years of service agreement.

- For experienced three cheques submission in the name of the company as part of two years of service agreement.

- The marksheet and cheques submitted will be returned to the candidate after completion of two years.

- Each candidate will be required to complete certain Pre-Requisite training –for fresher's before receiving the Appointment Letter.

- Complete Support in terms of Theoretical and Practical Sessions will be provided by the Team for all candidates during the pre-requisite training period.

- It is not necessary that two candidates selected for the same profile be given the same starting package. The Package will depend completely on your skill set and dedication towards the Pre-requisite training.

Documents required at the time of joining

- ✓ Degree/ Diploma Mark sheets original as well as copy
- ✓ 3 Cheques submitted in the name of the company
- ✓ Id and address proof copy
- ✓ Reliving letter, if applicable
- ✓ last three month's salary slips, for experienced
- ✓ Joining form to be filled for company records
- ✓ Declaration sheet to be signed by the surety
- ✓ Undertaking letter signed by the candidate

Retention Policy

- Understanding and valuing the efforts of all team members towards the making and growing of this company, the team members are rewarded with a retention bonus who complete 3 years within the company at a stretch.

- We herewith commit to award each employee a lumpsum retention bonus of the amount equivalent to the sum of average annual salaries drawn by the employee during the first, second and the third year at the completion of 36 months of active service.

Pre-Requisite

- C – Programming
  - (INCLUDING - File Handling, Pointers, Link List, Binary Tree, Graphic Programming)

- R / L / C / RL / RC / LC / RLC networks & Filter Design.

- Transistor (as an amplifier and as a switch), SCR / Triac / DIAC / Mosfets.

- PCB Designs (single and Dual layer)

- Power Supply design
  - (INCLUDING – SMPS / DC – DC in Constant Voltage and Constant Current configurations)

- Magnetics of Inductors and Transformers.

- 8085 & 8086 (minimum system design)

- 8051 Microcontroller
  - (INCLUDING – Architecture, GPIO / Timer / Counter / Interrupt programming in C & Assembly)
  - (INCLUDING – Communication Interfaces like Serial, parallel, I2C, SPI, Bit banding, Power Modes)
  - (INCLUDING – Testing on breadboard, PCB design and soldering and Testing)
  - (INCLUDING – GLCD, GSM, GPS, 7-Seg, ADC, DAC, EEPROM, Relay, 4x4 keypad, stepper Motor)

- 8 Bit MCU (AVR)

Training Program

Under Professional Training Program on Hardware the company expects you to acquire thorough knowledge of the following modules:-

1. Basic Theory

• Basic Concepts Of Electricity • Ohm's Law • Series And Parallel Circuits • Passive Elements: Diode, Light-emitting diode (LED) • RC and L/R Time Constants • Divider Circuits And Kirchhoff's Laws • Series-parallel Combination Circuits	• DC Network Analysis • Magnetism and Electromagnetism • Coupled Circuits • Network Theorems : DC Analaysis • Physics Of Conductors And Insulators • Passive Elements: Resistor , Capacitors ,Capacitor (component) • Inductors

2. Basic AC Theory

	Practical's
• Root Mean Square, Average electrical power • Transformers • Reactance and Impedance -- Inductive • Power Factor • Reactance And Impedance -- Capacitive • Reactance And Impedance -- R, L, And C • Filters	• Introduction • Basic Concepts and Test Equipment • DC Circuits, AC Circuits • 555 Timer Circuits

3. Regulator & SMPS

1. Linear regulator	2. SMPS Design	3. DC To DC Regulator
• Zener diode • Low dropout (LDO) regulator • Band gap voltage reference	• Fly back - 9W, 18W	• 5V DC Regulated Supply • 12V DC Regulated Supply • Variable 3V to 6V Regulated Supply

4. Semiconductor Related

• Solid-state Device • Diodes and Rectifiers • Bipolar Junction Transistors • Thyristors and Operational Amplifiers	• Junction Field-effect Transistors • Amplifiers and Active Devices • Active Filters • MOS Field-effect Transistors

5. Digital Theory

• Numeration Systems • Binary Arithmetic • Logic Gates • Multivibrators • Ladder Logic • Boolean Algebra and Karnaugh Mapping	• Switches • Electromechanical Relays • Combinational Logic Functions • Sequential Circuits • Shift Registers Digital-Analog Conversion

6. Oscillator - Related

• 555 timer IC • Multivibrator • Flip–flop	• Latch • Relaxation oscillator • Schmitt trigger

7. Amplifiers

1. Amplifier classes		2. Crossover distortion
• Class A, Class B and AB , Class C, Class D • Common Collector	• Differential Amplifier , Common Emiiter Amplifier • Push Pull	**3. Switching amplifier**

8. Control Systems/Transducers/Conversion

• PID control using Hardware and Software. • System Stability consideration aspects.	• Understanding and Implementation of Transducers and Sensors. • Conversion from Voltage to Current Source and Vice Versa.

Company Profile

Leons Integrations Pvt. Ltd. is a complete automation developer unit based in Vadodara, India. Within just 15 years of existence, we've generated a reputation in the industry as a Design House and Solutions Provider. We provide tailor-made solutions in Electronic and Mechanical Hardware as well as Software for each of our esteemed clients across the global.

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We create Value Preposition for our customers by:

- ✓ Flexibility in the Design
- ✓ Seamlessly understanding the clients' needs and limitations
- ✓ Using Agile Methodology at every stage to make every interaction Transparent at every stage
- ✓ Reliability and Continuous Improvement
- ✓ Simple and Durable Solutions

Our Products

Banking Products
- *Credit Card Swipe Machine*
- *Kiosk*
- *Pin Pen Devices*
- *Tablet POS Products*

Smart Energy Management
- *Energy Meter*
- *BLDC Ceiling Fan Driver Card*
- *Street Light Solutions*
- *Solar Monitoring*
- *HVDC Motor Solutions*
- *Solar MPPT Driver Card*
- *MPPT Charger with Inverter*

Social Welfare
- *Electronic Baby Weight Scale*
- *Human Safety Devices*

Thermal Printers
- *2" Bluetooth TP*
- *2 " Mechanism*
- *2 " Desktop TP*
- *3" Bluetooth TP*
- *2" Panel Mount TP*
- *3" Desktop TP*

IoT/IIoT Modules
- *SMBT- 1T01*
- *SMBT- 1T07*
- *GSM Modem -3G*
- *SMBT -1T 02*
- *SMBT -1N 01*
- *GSM Modem -4G*
- *SMBT-1T06*

IoT Solutions
- *Smart Switches*

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