Career Opportunities for ECEs in the Semiconductor Industry

Daniel Braunworth: Technical Marketing – Power Management Products

Ken Rabold: Software Engineering Manager – Mobile Computing Business Unit

Texas Instruments: Silicon Valley, CA & Redmond, WA

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Ken Rabold

- BSEE ‘90 Seattle University; MSEE ‘92 University of Washington
- Software Engineer for a variety of Medical and Embedded Device companies
- Joined TI OMAP in 2003 to lead the TI Redmond R&D site with focus on enabling Microsoft Operating Systems on OMAP processors
Overview of a Semiconductor Company
Case Study: TI

+ Audio, LED Drivers, RF / Wireless, ASICs, and more...
B2B vs. B2C

Electronics Equipment

End Products
EE Jobs: IC Product Cycle Perspective

Sales
Field Apps

Applications Engineer

Technical Marketing
Product Definers

Management

Test Engineer
Quality/Reliability

IC Designer
SW / Firmware

Product Engineer

Process Development

R&D (Kilby Labs)
Sales/Field Apps

• Sales:
  – Manage customer relationships & business activities
  – Drive the design-in process

• FAE:
  – Pre-sales technical support to customers
  – Technical advisor on TI product portfolio
  – Identifies and understands opportunities/customers needs and provides appropriate technical solutions
  – Build reference designs

• Requirements:
  – Excellent verbal, written, and presentation skills
  – Domestic travel
  – Must be self-motivated and well-suited for operating in a team environment
Technical Sales & Field Applications Rotation Programs

• 1 – 1.5yr program

• At least three rotations through a Field Sales Office and Product Marketing/Business Development in Analog and Embedded Processing businesses

• Personal coaching and mentoring

• Requirements:
  – Excellent communication skills, a balanced level of assertiveness
  – Effective balance of strong technical skills with solid relationship-building abilities
  – Open to relocating to a variety of TI Field Sales Offices in or near major cities within your region
Technical Marketing

Job responsibilities include:

• Research electronics markets and trends
• Manage a product portfolio
• Identify new product ideas and create business cases
• Support and drive customer engagement and design-in
• Product launch and promotion

• Requirements:
  – Excellent verbal, written, and presentation skills
  – Must be self-motivated and well-suited for operating in a team environment
  – Aptitude for quick technical learning and application
IC Design Engineer

Job responsibilities include:

• Develop, modify, and evaluate electronic components of integrated circuitry

• Hone design through simulation and collaboration

• Guide layout artist to convert schematics to IC layouts

• Conduct silicon-level experimental tests and evaluate results

What you’ll learn in this position:

• How to collaborate with, and influence, highly-skilled engineers

• How to work effectively with international teams
Product Engineer

Job responsibilities include:

• Managing the new product development process
• Influencing design for test and manufacturability
• Generating masks, initiating wafer starts, and maintaining engineering inventory
• Package selection and development
• Device characterization, reliability studies, and debug
• Release to manufacturing, yields, and sustaining during the early life of the part

What you’ll learn in this position:

• The entire IC development process from design product launch
• How to work effectively with design, test, and manufacturing teams world wide
Test Engineer

Job responsibilities include:

• Development and implementation of package unit test programs and hardware, characterization, yield improvement and cost reduction

• Design, develop and implement cost-effective methods of testing and troubleshooting systems and equipment

• Prepare test and diagnostic programs, design test fixtures and equipment, and complete specifications and procedures for new products

• Implement procedures in analyzing situations or data

What you’ll learn in this position:

• Problem solving through data analysis

• Collaborate across QA, Operations, and Manufacturing teams and Design for Manufacturability.

• Collaborate with Design for all Design for test activities
Software/Systems Engineer

Job responsibilities include:

• Work closely with hardware teams and customers to design, develop, implement and debug software programs.

• Design and develop real-time application software and leading-edge software tools that enable customer development of a broad range of products across TI processors.

• Define system software design and architecture and influence hardware design to ensure TI meets the customers’ system requirements and needs.

What you’ll learn in this position:

• How to work collaboratively with TI teams and customers.

• In-depth knowledge of customer and systems/equipment requirements.

• How to identify and communicate technical issues.

• How to work effectively across cross-functional teams.
Applications Engineer

*Job responsibilities include:*

- Work with product (device) development teams and customers to solve device-related issues and propose solutions

- Generate application collateral, technical documentation and hardware/software specifications

- Write reports on device behavior, performance and benchmarking

*What you’ll learn in this position:*

- You’ll develop a deep understanding of customer, systems/equipment requirements

- How to translate requirements into product specifications

- How to interact with cross-functional teams, including Sales & Design, to solve customers’ problems

- How to establish and maintain customer relationships
Working at TI

• Innovation is encouraged and expected for all employees!

• Career path that includes technical and management track

• Flexibility and growth while staying at TI
  – Many employees reinvent their career on a regular basis
  – Movement between job functions and organizations

• Full benefits package that includes:
  – Immediate participation in 401(k) and ESPP
  – Potential to receive profit sharing, based on overall TI performance
  – Potential to receive bonuses and stock options
TI has manufacturing, design or sales operations in more than 30 countries worldwide.
Working in Silicon Valley
Working in Seattle
Questions?
Appendix
Rich History Over 80 Years

Innovation in signal processing has been the technology thread throughout TI’s 80+ year history.

- **1930s**: Revolutionizes oil exploration by measuring reflected signals
- **1940s**: Applies signal measurement to magnetic anomaly detection
- **1950s**: Invents the Integrated Circuit
- **1960s**: Invents the handheld calculator
- **1970s**: Applies signal processing to consumer products
- **1980s**: Introduces single-chip digital signal processor
- **1990s**: Creates first apps processor for multi-media cell phones
- **2000s**: Introduces world’s fastest analog-to-digital converter and lowest-power DC-DC converter
- **2010s**: Industry’s first 300mm Analog wafer fab
Applications Engineer

Stephanie, Applications Engineering Program
The Applications Engineering Program is the perfect transition between college and the real world. The ability to “test run” different positions inside of TI via a rotational program allows you to discover your strengths as well as the many career paths TI has to offer. You are given an opportunity to work along side some of the best engineers in the industry and take responsibility for many high profile projects with big customers. The deep technical training and customer experience you gain while in the program will stay with you throughout your entire career.