

Staff Power Device Characterization Engineer

Type: Full-time
Reports To: Senior Manager, Modeling and Characterization
Location: San Diego, CA

AS A STAFF POWER DEVICE CHARACTERIZATION ENGINEER, YOU WILL DRIVE AND SUPPORT PROJECTS WITH A MAJOR FOCUS ON THE ELECTRICAL CHARACTERIZATION OF POWER SEMICONDUCTOR DEVICES. THIS IS A LEADERSHIP POSITION WHERE THE ENGINEER WILL MANAGE ALL TECHNICAL AND MANAGERIAL ASPECTS OF LABORATORY METHODOLOGY AND PROJECT DEVELOPMENT. THE ROLE REQUIRES BOTH A DEEP UNDERSTANDING OF SEMICONDUCTOR POWER DEVICE CHARACTERIZATION AND THE ABILITY TO PROVIDE LEADERSHIP IN ALL ASPECTS OF TEST DEVELOPMENT. THE KEY OBJECTIVE OF THE POSITION IS TO SUPPORT THE DEVELOPMENT OF SILANNA'S INTERNAL TECHNOLOGY DEVELOPMENT AND VALIDATION AND ENHANCEMENT OF FOUNDRY SEMICONDUCTOR MODELS. TEST PROGRAMMING AND AUTOMATION, AND SUPPORT FOR COMPACT SPICE MODELING CHARACTERIZATION, ARE PARTS OF THE ROLE. SPECIFIC DUTIES WILL INCLUDE THE FOLLOWING:

- Lead development and implementation of equipment and software to create a lab environment for engineering characterization of power semiconductor devices
- Support characterization for the modeling group to create custom compact and behavioral models for integrated BCD and UHV semiconductor technologies
- Enable the acquisition of large quantities of electrical test data in support of the development of new technologies and model development. This will include development of post-processing tools to facilitate analysis
- Design structures for test chips to enable the measurement and modeling of semiconductor devices
- Develop characterization solutions to measure all aspects of electrical device behavior including DC, Capacitance, Charge, Pulse/Transient, and Self-Heating measurements. The role will include testing all different classes of semiconductor devices including UHV, HVMOS, LVMOS, Bipolars, Resistors, Diodes, and JFETS, on silicon, SiC and GaN
- Work with the Device and Reliability groups to perform reliability characterization of power devices including defining the of SOA (Safe Operating Area) region of operation under different application conditions
- As an integral part of the team that helps analyze device behavior you will work closely with device and modeling engineers to explain observed physical phenomena
- Drive the development of novel test solutions to enable Silanna to push the envelope of product performance
- Responsible for all aspects of laboratory management. This includes management of inventory, equipment maintenance, safety procedures, organization, and equipment purchases
- Drive all project management related aspects of test projects. These include coordination with internal customers, setting priorities, scheduling, and facilitating communication
- Train and mentor junior engineers and/or technicians in the Characterization group
- Drive improvements in measurement metrics related to measurement accuracy, test time, and new capabilities
- The role is multi-faceted. We are looking for someone who enjoys the challenge and possesses the initiative to drive technical and managerial solutions to develop a state-of-the-art power lab without needing a large supporting organization

QUALIFICATIONS AND EDUCATION REQUIREMENTS

- Minimum M.S. in Electrical Engineering, Physics, Materials Science, Solid State Electronics, or equivalent
- 8 years of experience in electrically characterizing devices in integrated BCD processes. Experience with integrated UHV processes preferred. Experience with compound semiconductor devices is a plus
- Experience using semiconductor probe stations and understanding how to use SPA's (Semiconductor Parameter Analyzers) to take device data is essential
- Extensive experience in semiconductor Power Device characterization (Rdson, Ciss, Coss, Crss, Qg, UIS, reverse recovery, SOA, etc.)
- Demonstrated experience in the characterization of other classes of semiconductor devices such as LVMOS, Bipolars, Resistors, Capacitors, and JFET's
- Experience working with engineering ATE (Automatic Test Equipment) including the development of test programs to enable acquisition of large amounts of statistical data
- Experience with Labview and/or use of Python to automate lab functions is a strong plus.
- Ability to multi-task various projects and work with different groups
- A solid understanding of semiconductor power device physics. Be able to look at device cross-sections and understand, with support from other device engineers, how to create test plans to extract key electrical data
- Experience in support of SPICE modeling characterization is highly applicable. Any experience in software tools such as ICCAP is a strong plus
- Experience with test structure design with an emphasis on how to recommend test structures be best laid out for accurate measurement is a strong plus
- Ability to mentor and/or manage junior engineers and technicians. Ability to work well in a team-oriented environment
- A demonstrated ability to take the initiative and develop solutions without need of a large support organization. We are looking for an engineer that has a strong take-charge mindset and attitude
- Acceptable candidates must be self-motivated, disciplined, and able to work well in a fast-paced, multifunctional environment