

MICHAEL H HERMAN, PHD

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DEVICE CHARACTERIZATION ENGINEERING

Solid state and optical technology device engineering, characterization, and reliability professional. Experienced in analog, photonic, and non-volatile memory technologies. Skilled in yield improvement, wafer and product level reliability testing, statistical, Spice and physical modeling and prediction. Expert in Q&R engineering procedures, qualification plans and reports, failure analysis, customer presentations.

SELECTED ACHIEVEMENTS

- Hands-on reliability engineering, memory cell design, and quality management leading to qualification and volume manufacturing of dozens of Si & GaAs chips and packages, and processes.
- Developed spectroscopic characterization of optically-triggered GaAs BASS megawatt switch that improved Reliability 1000X and power 10X.
- Optical telecom experience in characterization of solid state GaAs and InP laser diode reliability qualification for EDFA and Raman optical pumps.
- Established screening that improved outgoing quality 100X for floating gate based analog data recording.
- Developed and characterized oxide antifuse memory in 65nm+40nm FPGAs.
- Built advanced device engineering test systems for specialized development of SmartCard ICs, analog product hot carrier studies, dielectric TDDB analysis.

PROFESSIONAL EXPERIENCE

- 2016 **Consultant** **Semiconductor Sages (San Jose, CA)**
- Technical software and engineering consulting; business development.
- 2012-2015 **Quality and Reliability Director / Principal Engineer** **Crossbar, Kilopass (San Jose, CA)**
- R&D testing and development of Resistive and Thyristor based RAM memory technologies.
- 2006-2012 **Technology Development Director** **SiliconBlue /Lattice Semiconductor, San Jose, CA**
- In charge development and planning of 28nm and 40nm testing, Cadence Virtuoso circuit design schematics, and layout. Responsible for development of antifuse NVM memory to TD and Design engineering, and evaluation of future analog foundries for new products.
- 2002-2006 **Director, Quality, Reliability, & Technology** **Emosyn (acquired by SST) Sunnyvale, CA**
- Responsible for all silicon and package Qualification, Reliability, and Quality systems, including establishing and maintaining ISO-9001 certification and QMS maintenance, for 100M+ smartcard IC sales via Quality and Reliability testing and qualification and ISO7816 compliance. Reviewed SPC of foundries and suppliers during worldwide ISO quality audits. Led test and product engineering groups by review of plans, experimental results, to establish 6-sigma test guardbands.
- 2001-2002 **Manager, Laser Pump Module Reliability** **JDS Uniphase, San Jose, CA**
- In charge of package and laser-fiber qualification of Er-doped GaAs EDFA and InP laser Raman pump modules per Telcordia and JDSU specifications.
 - Responsible for external and internal Qualification Plans and Reports, execution of hermeticity and optical fiber reliability experiments.
- 1998-2001 **Director, Process and Package Reliability** **Maxim Integrated Products, Sunnyvale, CA**
- Responsible for all Process Qualification Plans and Reports for all products, processes, and packages at two sites. Managed customer presentations and internal training; prepared annual Reliability Reports. Established WLR Wafer Level Rel testing.

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ADDITIONAL EXPERIENCE

Reliability Manager

Information Storage Devices (ISD), San Jose, CA

- Reliability Engineering of Analog Multi-level Storage in Floating Gate EEPROMs.
- Product qualification studies and reports, reliability predictions, quality engineering improvements, and solving customer package troubles.
- FMEA analysis of product failure modes, and automotive qualification efforts.

EDUCATION, AFFILIATIONS, AWARDS

PhD, Physics, Pennsylvania State University, University Park, PA.

BA, Physics, Grinnell College, Grinnell IA.

IEEE Electron Devices Society

Phi Beta Kappa

Phi Kappa Phi

Intel Achievement Award

Grinnell H. George Apostle Prize for Physics

Intel Teaching Award

Power Spectra Reliability Achievement

Penn State Teaching Award

Who's Who in Science and Engineering

PATENTS

Lawrence D Engh and Michael H Herman, "Method and apparatus for detecting the end of message recorded onto an array of analog memory element," European patent. #98306892.5, 11/18/1998

SKILLS

- Expert in qualification, reliability, statistics, modeling, semiconductor device physics and Spice modeling
- Specialist in Lab Test automation, mathematical modeling, physics theory and application to real-world engineering
- Skilled at interfacing electronic test equipment, probe stations, designing test boards, and automating their operation
- Skilled in software languages: C, C++, multi-threaded Visual Studio.net, Java, Linux.
- Proficient in Microsoft Project, Office, Word, Powerpoint, Excel and Access databases and programming

PUBLICATIONS & PRESENTATIONS

- Author of over 30 journal publications, and a book chapter, numerous internal, confidential studies and reports published at all employers –kept trade secret, and many conference presentations, board presentations, governmental agency presentations. Frequent internal instructor for semiconductor device physics and reliability, memory cell engineering, quality and reliability engineering.