Theo Hatzis, MSc

+49 1573 0889220 ▫ theohatzis@gmail.com ▫ contract, 100% entirely on-site possible
USt-IdNr: DE259921718 ▫ Languages: English and Greek. Available contracts starting March 2023

Engineer looking for upcoming projects in hardware design and testing or post-silicon semiconductor verification testing and validation has experience with mobile platform design verification, post-silicon component verification, silicon DCDC validation, and schematic hardware design capture work gained during design career.

- Engineering experience includes electronics design and development on medical devices and diagnostic equipment, scientific instruments, highway informatics, and wireless handheld terminals. Hardware verification on 3G/4G modems; Validation and Verification on DCDC converters and PMICs; and IBJT and SiC gate drivers
- My interests include test-related work on sensor-based systems, sensor conditioning and interfaces, component verification of power devices (DCDC/PMICs, MOSFETs, IBJTs, SiC, GaN, and gate drivers), ADC and RF blocks, and Power and Battery. Spice simulation. Automated testing with MATLAB, Python, Teststand, and LabVIEW. Analysis of test data and visualization with libraries, including Pandas, Numpy, Matplotlib, Plotly, and Spotfire.
- Industry sectors where I have worked during my career include semiconductor testing, electronics design for 3G/4G hardware, medical devices and medical diagnostics, industrial materials analysis (oils, fats, chocolate, and cements), traffic data and highway informatics subsystems, and electronics hardware design engineering with OrCAD, Mentor Graphics, and Protel CAD schematic capture tools.
- I was recently a member of a consortium formed by a friend's project company to compete for EU Horizon project funding, assisting in writing technical proposals for a project involving lithium-battery formation processing improvements (energy use, safety, and green) through simulation, cell testing and HiL (digital twin) for BEV and energy storage applications. Other work involved helping with the proposals, including reviewing GaN and SiC drivers and DCDC conversion technology applications in energy storage, traction-power, inverters and charging.
- In a purely advisory capacity, I ran a literature survey ahead of a students' machine-learning project advocating using TensorFlow with the Keras library in deep learning modelling and training using available battery datasets.

Experience Areas

Semiconductors

- Component verification of IBJT and SiC high-voltage gate drivers
- Validation of DCDC, Buck-Boost, Charge Pumps, PMIC Chipsets, and Modems PMU
- Creation of test cases and scripting
- Correlations with design simulation, ATE and bench
- Datasheets and PRQ Verification
- Creation of automation of test cases with MATLAB, Python/PyVISA/Pandas, Teststand, LabVIEW and C#/VISA
- Use of in-house test-automation frameworks and APIs, including bare scripting for automation and visualisation
- Issues, investigations and FMEDA, including alignment with the PRQs and datasheets
- Competitive analysis and side-by-side work
- Dynamic measurements on DCDC, Boosts/Buck-boosts and static measurements on custom silicon
- ADC measurements (INL & DNL) on delta-sigma

Hardware Design and Verification

- Architecture and Concept design and design captures
- Component technology selection
- Design of 8/16/32 embedded microprocessor applications, analogue, digital, ADCs, DACs and interfaces
- JTAG, Lauterbach Power Trace32, I2C Analyser, Logic Analyser, Clocks Jitter, SIM test, USB test
- Multiphase, master-slave DCDC FPGA core supply design for Stratix III FPGA and Power routing
- Schematic design capture with Mentor Graphics (Expedition), Protel SE (or Altium) and OrCAD
- Design simulation with LTSPICE and SIMetrix

Equipment, Tools, and Software

- Python libraries, Pandas, Numpy, Plotly, MATPLOTLIB, YAML, PyVISA, Ninja2 and CV2
- Visual Studio, VSC, PyCharm, Teststand, LabVIEW, GIT, Matlab, C# and Teststand
- Mentor Graphics (Expedition), Protel SE (or Altium) and with OrCAD windows and DOS

- Bench (with VISA mainly) includes Keithley 2400, 2450/ 2460, 2000/2001, Agilent B2912, 335600, 34465A, N6705A, 90408A, 91600X, Tektronix 3022, Lecroy HDO8108A, Tektronix 4000/5000, Rohde Schwarz FSW8 and CMW500; Lauterbach Power-Trace and the JTAG debugger
- Spotfire for Windows
- JAMA, Jira with Kanban
- MSOffice automation (C#/.NET), WinForms, PyQT
- LTSPICE and SIMetrix SPICE

Training

Courses in RF Circuit and System Design, Teststand, LabVIEW, EMI, ESD, Spectrum Analyzer, Allegro/Cadence, and TIBCO Spotfire. School MSc (distinction), BSc (Hons) and HNC(BTEC). Roads Signing and Guarding and Highways Safety courses.

Projects

Contractor customer mixed-signal, Dialog Semiconductor GmbH, (Germering), August 2022 – January 2023
- Static measurements on boost DCDC converters with PXI and Python test setups and test reports

Component Verification Engineer, Infineon Technologies AG, PS ATV, (Am Campeon) October 2021 – June 2022
- Component verification on high-voltage IBJT/SiC gate drivers, Test reports, and verification reviews.

Test and Verification Engineer for Radar Applications, Infineon Technologies AG, (Am Campeon) October 20 – March 21
- Software development, 60GHz Radar Sensors SDK and GUI tests

Validation Expert, Texas Instruments GmbH, (Freising), (Germering), July 2018 – June 2020
- Device characterization and Bench validation of DCDC converters

Application Engineer, Dialog Semiconductor GmbH, (Germering), October 2017 – April 2018
- Mixed-signal PMIC Chipset DCDC Buck evaluation and documentation

Validation Engineer, TI Deutschland GmbH, (Freising), August 2014 – September 2017
- Device Characterization and Bench validation of DCDC Buck, Buck-boost and Charge pump devices

Senior Baseband Designer (Digital), Intel Mobile Communications GmbH, (Nürnberg), February 2011 – January 2014
- Intel XMM series XGOLD 2-4G modem reference designs verification

Senior Baseband Designer (Digital), Infineon Comneon GmbH, (Nürnberg), August 2010 – February 2011
- Infineon XMM series XGOLD 2-4G modem reference designs verification

Hardware Consultant, ST Ericsson AT (Ericsson GmbH), Nürnberg, January 2006 – December 2009
- Concept design and power distribution implementation on early access 3GPP protocol FPGA-based boards intended for 3G+ and 4G protocol stack development and involved in power object design on an early LTE demonstrator phone previewed at the 3GSM conference.

Baseband Engineer, Texas Instruments A/S (Aalborg), October 2004 – December 2005
- 3G Mobile platforms designs verification. Validation test documentation.

Employment Career

Baseband Engineer, Sendo (UK) Ltd., Birmingham, June 2003 – July 2004
Senior Electronics Engineer, Psion Teklogix (was Psion Enterprise Computers), Abingdon, May 2000 – February 2003
Senior Electronics Engineer, Resonance Instruments Ltd., Witney, February 1999 – December 2000
Electronics Hardware Engineer, Golden River (Traffic), Bicester, June 1992 – January 1999
Electronics Engineer (contract), Oakfield Scientific Instruments, Eynsham, November 1991 – May 1992
Electronics (and Software) Design Engineer, ISYS Medical, (was IMED UK), Abingdon, December 1987 – November 1991
Development Engineer, Oxford Analytical Instruments Ltd., Abingdon, May 1985 – December 1987
Development Engineer, Beta Instruments Co. Ltd., High-Wycombe, March 1985 – May 1985
Senior Electronics Engineer, Innotron Diagnostics (UK) Ltd., Oxford, July 1984 – January 1985
Career break, London, November 1983 – June 1984
Solar Systems Technologist, Venture Technology Ltd., (was BEREC), Abingdon, May 1981-November 1983
Project Chemist/Electronics, BEREC Advanced Projects Group, November 1980 – May 1981

(See also my profile section on my Linked In)

Career areas

- Component technology selection
- Analog and digital circuit design, Mentor Expedition, Orcad, Protel(Altium)
- Circuit simulation and modelling
- Architecture, Electronics concept design and schematic capture
- Bluetooth (BT) and WIFI
- ARM Application Processors and ARM architecture
- MIPI interfaces
- Smartphone architectures
- Industrial Wireless terminals and ruggedized tablets design
- FPGA Power Supplies
- Touchscreen interfaces
- Verification on HV IBJT and SIC Gate drivers
- Communications rack equipment on RS485, modem copper infrastructure
- Batteries and Chargers for portable measurement products
- Creation of automation test cases and scripting in python and Matlab
- Wireless connectivity (BT, WIFI, 2G, 3G, 4G)
- Nuclear Magnetic Resonance (NMR) Equipment
- Highways management informatics systems
- Traffic pollution monitoring
- Weigh-in-Motion (WIM) systems
- Inductive loops detectors
- Magnetometers for traffic monitoring
- RF technology and RF measurements
- Traffic sensors
- Scintillation Camera equipment and radiation pulse height discriminators and counting
- Some FMEDA work
- PC Card design
- Photomultiplier measurements and interfaces
- Medical infusion pumps
- ADC. DAC and interfacing. ADC INL and DNL measurements
- 8/16/32 microprocessor based product design
- X-ray Fluorescence (XRF) bench-top equipment
- Immunoassaying bench equipment
- Photovoltaic (PV) technology
- Post-Silicon IC verification and validation
- Functional board-test
- Visualisation of Lab data in plotly and matplotlib
- Board-level power supplies, DCDC (bucks, boost, pumps and SIMO)
- Visualisation in Tibco Spotfire
- Mult-Channel Scaling, XRF proportional detectors
- Lock-in amplifier
- Optical bench characterisation on chalcogenide semiconductors
- Potentiostatatic measurements, cyclic voltammetry, on semiconductor liquid junctions
- C#, python, pandas, numpy in bench testing
- Antenna matching and tuning
- Teststand with python
- Power Semiconductor functional test
- Power management, low-power battery
- Thermal management
- EMI/EMC testing
- Sensor conditioning and interfaces
- Semiconductor components (DC-DC converters, sensors, interfaces)
- Wireless connectivity (BT, WIFI, 2G, WLAN)
- Digital and analogue circuit design
- Research for business proposals, project funding