Electrification and Power Semiconductors

Opening Remarks



U. Hansen
VP Power Component Development
Robert Bosch GmbH, Stuttgart, Germany

Abstract
Coming Soon

Biography
Uwe Hansen received his PhD in Physics at the Technical University from Munich. He specialized in theoretical semiconductor physics. Uwe started his career at Bosch as a process engineer in the Bosch automotive Waferfab, held various functions within Bosch related to semiconductors and was responsible for advanced packaging for CE and automotive MEMS. Since 2018 he is heading the department for power component and module development at Bosch.

References

The evolvement of the largest and most complex structure built by humans and its influence on Power Semiconductors



T. Keller
Vice President, Head of global Product Management, Portfolio & Marketing
Hitachi Energy Ltd, HESEM, Lenzburg, Switzerland

Abstract
The electrical power grid has been built up over decades and many previously isolated sub-grids are connected to each other. The integration of renewable energy sources now leads to a sharp increase in power semiconductors in the distribution network with technologically very interesting prospects.

Biography
Tobias Keller graduated in 2004, from University of applied science Aargau, the Electrical Engineering Faculty, with a degree in power electronics, thermodynamics and electrical machines. At the end of 2004, he joined ABB Excitation systems and Synchronizing equipment business (Turgi, Switzerland) and held various engineering position until 2008. He holds the first patent on MEGATROL, ABB's smart power package solution for reliable starts of gas turbines or any synchronous machine and another patent quenching arc faults in excitation systems. In 2008 he became the Head of global Technology and Support for ABB's Excitation systems and Synchronizing equipment business. Between 2009 and 2015 he was the Vice President global Products and Marketing ABB Excitation systems and Synchronizing equipment and High Power Rectifier business. Starting from 2016 until 2019 he held the Vice President position for Vehicle Integration Engineering business in ABB railway traction. Since April 2019, he is the Vice President of global Product Management in ABB Semiconductors (Lenzburg, Switzerland) now HITACHI ENERGY Semiconductors and a strong supporter of SiC used in power electronics based on his application know how from traction and industrial applications. Tobias is responsible for the global Product Management and Marketing of any Power Semiconductor from Hitachi Energy as well as responsible for BIMOS power semiconductors R&D (Chips and packages, Si and SiC). Tobias Keller is a senior member of IEEE (20127) and co-author of various papers.

References

Powering AI - Infineon's Smart PowerFab

N. Thyssen
Senior Director R&D Technology
Infineon Technologies Dresden AG & Co.KG, PS
CRD TIE DPI, Dresden, Germany

Abstract
The Power Management application field is driven by several market changes. Ai-Server do develop new power bus configurations and independant electrical machines, e.g. cars and humanoids need smart power configurations. Giving some insight on these developments and the consequences on technology needs will be connected to the newest Smart Power Fab in Dresden of Infineon, shwing how this will contrinute. The talk tries to show how dynamic and fast market changes search for a supply chain set-up that is able to deliver solutions.

Biography
- PhD in Physics (Diplom: RWTH Aachen / PhD: Research Center Jülich and University of Erlangen)
- 28 years of experience in semiconductor technologies with focus in Research & Development & Innovation in a manufacturing environment on 200mm and 300mm
- experienced in custoer partnership and joined projects with many partners in the European context
- Technology Knwoledge: DRAM. embedded Flash, BCD, MEMS, Optics, Sensors, Power, Smart Power, embedded Poser)

References

Future-proofing your fab: from automation (A) to impedance (Z)



D. Britz
Managing Director, Strategic & Product Marketing
Applied Materials, California, United States of America

Abstract
200 millimeter fabs are foundational for the semiconductor industry. As the semiconductor industry evolves, 200mm fabs also are evolving. This evolution includes building on learnings from 300mm fabs, as well as building specialized capabilities to handle new wafer types, improve existing tools, and even produce new device types. The power electronics industry has embraced these changes. In this talk, I will share examples of how Applied Materials has adapted our equipment offerings to support the future of 200mm fabs to support such improvements, from A to Z.

Biography
Dr. David Britz leads the Strategic Marketing & New Product organization for the ICAPS business at Applied Materials. Prior to Applied, David has experience at both Fortune 100 and startup companies in strategy, business development, and product management. David has an MBA from MIT Sloan and a DPhil in Materials from the University of Oxford.

References

Powering the Future with 8-Inch SiC Technology Across the Voltage Spectrum



X. Gong
A*Star, Institute of Microelectronics, Singapore, Singapore

Abstract
Silicon carbide (SiC) power devices are key enablers for the next generation of high-efficiency and high-voltage power electronics. In this work, we present our latest progress from A*STAR in developing an 8-inch SiC power device technology platform, spanning a broad range of voltages from 400 V to more htan 10 kV.

The platform encompasses the fabrication and characterization of 8-inch SiC planar MOSFETs, trench MOSFETs, superjunction MOSFETs, and Fin-MOSFETs, with a strong focus on improving device performance, scalability, process integration, and manufacturability on large-area wafers. In addition, the development of 6.5 kV SiC PiN diodes will be presented to address the requirements of high-voltage and high-power systems. Key advances in device architecture, process technology, and electrical performance will be highlighted, demonstrating the potential of 8-inch SiC technology to enable future energy-efficient power conversion systems for automotive, data-center, renewable-energy, grid, and industrial applications.

Biography
Prof. Xiao GONG is currently the Head of Department for Power Electronics in the Institute of Microelectronics, A*STAR, and is concurrently the GlobalFoundries Chair Associate Professor in the ECE Department of the National University of Singapore (NUS). He obtained his Ph. D Degree from NUS in 2023 and was a Visiting Scientist at MIT in the year of 2014. His research interest includes advanced transistors and emerging memories for in-memory computing, ultra-wide bandgap power device technology, monolithic 3D integration, and opto-electronic integrated circuits. He has won many awards, including the Bronze Medal at the 6th TSMC Outstanding Student Researcher Award, the Best Student Paper Award at VLSI Symposium (2017, 2021, 2024, and 2026), the Best Demo Paper Award at VLSI Symposium (2022, 2023, and 2025), the Best Paper Award in EDTM (2025), the Best Student Paper Award at ICICDT (2019, 2021, 2023, and 2024), Emerging Leaders in Journal of Physics D 2021, and NUS Engineering Teaching Excellence Award (2018, 2023, and 2024). He has more than 450 publications in international journals and conferences, including more than 120 papers in IEDM and VLSI Symposium. He has delivered over 40 short courses/tutorial/invited talks in major conferences, including DRC, EDTM, VLSI-TSA, SSDM, ECS, MRS, etc. He is the Technical Program Chair in ICICDT (2019, 2022, 2023, 2024) and Sub-committee Chair in ICICDT (2021) and EDTM (2022, 2023, 2025, 2026, 2027), and in the technical committees of IEDM (2021, 2022), IMW (2025, 2026, 2027), VLSI-TSA (2022, 2023, 2024, 2025, 2026, 2027), ECS (2014, 2016, 2018, 2020, 2022, 2024), ICMAT (2017), EDTM (2017 to 2021), IWJT (2021, 2023, 2025), IRPS (2026, 2027), IPFA (2026), etc. He is the Editor of IEEE Electron Device Letters.

References

Closing Remarks

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VP Power Component Development
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