



Exponent[®]
Engineering & Scientific Consulting

Xiang Wang, Ph.D.

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Professional Profile

Dr. Wang is trained in Electrical engineering and his area of expertise is in reliability testing and test system design of power electronics devices, with an emphasis on the double-pulse test of the Metal-Oxide Semiconductor Field Effect Transistors (MOSFETs). He has years of experience in switching transient optimization and threshold voltage shift of Silicon Carbide (SiC) MOSFETs.

Dr. Wang also has hands-on experience in double-pulse test system design including GUI design for the control system using python and LabVIEW, control program of the embedded system using C and C++, design of the hardware power circuit and the gate driver circuit, data processing using MATLAB.

Before joining Exponent, Dr. Wang was a research engineer at Toshiba Bristol Research and Innovation Laboratory, where he developed an Active Gate Driver (AGD) test platform for super junction MOSFETs. He investigated the dynamic performance of MOSFETs under different AGD signals and proposed an optimized AGD signal to turn on an MOSFET with less ringing and less switching loss. Also, he designed an automated test program for AGD signals on a boost converter with the function of a user-friendly interface, automated test and data processing, data visualization.

Academic Credentials & Professional Honors

Ph.D., Science, Agriculture and Engineering, University of Newcastle upon Tyne, Bus School, 2022

M.Sc., Power Electronics and Electric Drives, Zhejiang University, China, 2017

B.S., Electrical Engineering, Huazhong University of Science and Technology, 2014

Prior Experience

Research Engineer, Toshiba, 2021–2022

Languages

Mandarin Chinese

Publications

Lu X, Pickert V, Al-Greer M, Chen C, Wang X, Tsimenidis C. Temperature Estimation of SiC Power Devices Using High Frequency Chirp Signals. *Energies*. 2021; 14(16):4912.

Zhang W, Wang X, Dahidah M S A, et al. An investigation of gate voltage oscillation and its suppression for SiC MOSFET[J]. IEEE Access, 2020, 8: 127781-127788.

Luo H, Wang X, Zhu C, et al. Investigation and emulation of junction temperature for high-power IGBT modules considering grid codes[J]. IEEE Journal of Emerging and Selected Topics in Power Electronics, 2017, 6(2): 930-940.

Zhu C, Wang X, Luo H, et al. Dynamical junction temperature online extraction with thermal sensitive electrical parameters for high power IGBT modules[J]. Proc. CSEE, 2017, 37: 2686-2693.

Wang X, Zhu C, Luo H, et al. Elimination of collector current impact in TSEP-based junction temperature extraction method for high-power IGBT modules[J]. Chinese Journal of Electrical Engineering, 2016, 2(1): 85-90.

Published Abstracts and Presentations

Wang X, Wu H, Pickert V. Phenomenon of Short-Time Threshold Voltage Shift and Its Application in Junction Temperature Estimation. Poster presentation, 1st International Power Electronics and Application Symposium, Shanghai, 2021

Wang X, Wu H, Pickert V. A Cost-efficient Current-Source Gate Driver for SiC MOSFET Module and its Comparison with Voltage-Source Gate Driver. Poster presentation, 9th International Power Electronics and Motion Control Conference, Nanjing, 2020

Wang X, Wu H, Pickert V. Gate Threshold Voltage Measurement Method for SiC MOSFET with Current-Source Gate Driver. Oral presentation, 10th International Conference on Power Electronics, Machines and Drives, Online Conference, 2020

Wang X, Wu H, Pickert V. Design of an Advanced Programmable Current-Source Gate Driver for Dynamic Control of SiC Device. Oral presentation, 2019 IEEE Applied Power Electronics Conference and Exposition, Anaheim, CA, 2019

Wang X, Zhu C, Luo H, et al. IGBT junction temperature measurement via combined TSEPs with collector current impact elimination. Oral presentation, 2016 IEEE Energy Conversion Congress and Exposition, Milwaukee, WI, 2016