

ABSTRACT

For nearly five decades, silicon has remained as the industry workhorse for electrical power switching. In the past two decades, there has been a concerted effort to develop Silicon Carbide (SiC) and Gallium Nitride (GaN) power switching devices because of their superior electrical and thermal performances compared to silicon power devices. However, the progress has been slow despite heavy R&D investment. This talk will unravel critical issues that have hindered the development and commercialization of reliable low-cost power switches on SiC and GaN materials. We will also identify “game changing” technical approaches that promise to “unlock” the enormous potential of wide bandgap semiconductors for power electronic switching applications.

SPEAKER BIOGRAPHY

Krishna Shenai earned his B. Tech. (electronics) degree from the Indian Institute of Technology in Madras, India in 1979, MS (EE) degree from the University of Maryland - College Park, MD in 1981, and Ph.D. (EE) from Stanford University, Stanford, CA in 1986.

Dr. Shenai's employment experience included COMSAT Labs, General Electric Corporate R&D Center, Intel Corporation, University of Wisconsin - Madison, University of Illinois - Chicago, and Utah State University. For nearly 30 years, he has pioneered and made seminal contributions to the development and manufacturing of reliable power semiconductor materials and devices, and power electronics circuits.

He is a Fellow of the American Physical Society (APS), a Fellow of the Institution of Electrical and Electronics Engineers (IEEE), a Fellow of the American Association for the Advancement of Science (AAAS), a Fellow of the Institution of Electrical and Telecommunication Engineers of India (IETE-India), and a member of the Serbian Academy of Engineering. Dr. Shenai has authored or co-authored more than 350 peer-reviewed archival papers and 10 book chapters; edited four books; and, is a named inventor in 13 issued US patents. He was the Editor of IEEE Trans. Electron Devices (1990-2000), founding Editor-in-Chief of IEEE Electron Devices Society Newsletter (1994-2002), and served as the invited guest editor for a Special Issue of IEEE Trans. Electron Devices and two Special Issues of IEEE J. Solid-State Circuits. He is a seasoned entrepreneur having founded and managed two venture financed startup companies to successful liquidation events. Dr. Shenai is a recipient of several professional research and teaching awards including the Best Paper Award at the 1995 IEEE BCTM Conference and the University Scholar Award from the University of Illinois. Dr. Shenai is a Distinguished Lecturer of IEEE Electron Devices Society and is listed in Marquis Who's Who in America 2011 edition.