



Current Status and Future Trends for Si and Compound MMICs in Millimeter-wave Regime and Related Issues for System on Chip (SOC) and/or System in Package (SIP) Applications

Presented by:

The IEEE Orlando Section EDS Chapter
and the IEEE Orlando Section MTT Chapter

Speaker

Huei Wang (S'83-M'87-SM'95-F'06) was born in Tainan, Taiwan, on March 9, 1958. He received the B. S. degree in electrical engineering from National Taiwan University, Taipei, Taiwan, in 1980, and the M. S. and Ph. D. degrees in electrical engineering from Michigan State University, East Lansing, Michigan in 1984 and 1987, respectively.

During his graduate study, he was engaged in the research on theoretical and numerical analysis of electromagnetic radiation and scattering problems. He was also involved in the development of microwave remote detecting/sensing systems. Dr. Wang joined Electronic Systems and Technology Division of TRW Inc. since 1987. He has been an MTS and Staff Engineer responsible for MMIC modeling of CAD tools, MMIC testing evaluation and design and became the Senior Section Manager of MMW Sensor Product Section in RF Product Center. He visited the Institute of Electronics, National Chiao-Tung University, Hsin-Chu, Taiwan, in 1993 to teach MMIC related topics and returned to TRW in 1994. He joined the faculty of the Department of Electrical Engineering of National Taiwan University, Taipei, Taiwan, Republic of China, as a Professor in February 1998. He served as the Director of Graduate Institute of Communication Engineering of National Taiwan University from Aug. 2006 to July 2009.

Dr. Wang is a member of the honor society Phi Kappa Phi and Tau Beta Pi. He received the Distinguished Research Award of National Science Council, Taiwan, at 2003. He was the Richard M. Hong Endowed Chair Professor of National Taiwan University in 2005-2007. He was elected as an IEEE Fellow in 2006, and has been appointed as an IEEE Distinguished Microwave Lecturer for the term of 2007-2009. Dr. Wang received the Academic Achievement Award from Ministry of Education, Taiwan, in 2007, and the Distinguished Research Award from Pan Wen-Yuan's Foundation in 2008.

Time and Location

Monday, November 9th, 11am
HEC-101

Abstract

The anticipated presentation will cover the current status and future trends of millimeter-wave MMICs, including those using III-V compound (GaAs, InP, GaN, etc.) and Si-based (CMOS, SiGe HBT and BiCMOS) MMIC technologies. Millimeter-wave MMICs used to be applied to military and astronomy systems for long time and started to be utilized for civil applications in the decade, such as communications and automotive radars. The evolution of IC technologies has enabled the performance of Si-based MMICs over 100 GHz, even in standard bulk CMOS processes. This is believed to have a major impact in the future development of millimeter-wave systems. Since low-cost mass-production potential pushes forward the technology, a very high integration of circuit functions on a chip, such as RF, base-bandcircuitry, automatic-control for a steady operation, and maybe even the antenna, etc. should be included, and thus the system on chip (SOC) issues should be addressed, especially in MMW regime. Moreover, millimeter-wave packaging cost always dominated in the module development. In order to simplify the assembly and reduced cost, the concept of system in package (SIP) has been proposed.

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