UCF DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCEINCE

Spring 2015 Seminar Series

Presented by the ECE Division

SMART POWER SEMICONDUCTOR DEVICES FOR POWER MANAGEMENT ICs

MONDAY APRIL 13, 2015

11:00 AM – HEC 356

With the increasing needs to incorporate more complex mixed-signal controller for switched mode power supplies, Smart Power ICs designers need to examine various considerations for the implementation of integrated DC-DC converters, including switched-mode power supply topology, digital versus analog controller, power conversion efficiency, and power transistors for the output stages. In particular, EDMOS device structures, fabrication techniques and compatibility issues with CMOS process must be considered. Key device characteristics such as ruggedness, on-resistance, gate capacitance, switching speed and layout strategies are required for optimum power conversion efficiencies. In this talk, through different integrated DC-DC converter design examples, we will take a quick look at some of the challenges for smart power semiconductor devices suitable for the implementation of integrated DC-DC converters.

DR. WAI TUNG NG

University of Toronto

Dr. Wai Tung Ng is a Professor at The Edward S. Rogers. Sr. Department of Electrical & Computer Engineering, University of Toronto in Canada. His current research work covers smart power semiconductor devices and fabrication processes. Another main focus is in the development of power management circuits including integrated switch-mode power supplies (SMPS) and integrated class-D audio power amplifiers. After obtaining his Ph.D. degree from the University of Toronto in 1990, Professor Ng joined Texas Instruments in Dallas to work on LDMOS power transistors for automotive applications. He started his academic career with the University of Hong Kong in 1992. In 1993, Professor Ng joined the University of Toronto and established the Smart Power Integration & Semiconductor Devices Research Group. He was promoted to associate and full professor in 1998 and 2008, respectively. He has extensive experience in working with the industry to modify standard CMOS technology for smart PIC and RF applications. Prof. Ng is the director of the Toronto Nanofabrication Centre, an open access research facility at the University of Toronto. He also serves as an associate editor for the IEEE Electron Device Letters since 2009.

Hosted by: Dr. Jiann-Shiun Yuan, NSF MIST Center Director

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