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## Tutorial

# Integrated Circuits for Power Electronics Applications

Presented by

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### Synopsis

Integrated circuits are used more and more in power electronic applications in an attempt to reduce size and increase versatility and reliability. In 2006, the analog power ICs constitute about 38% of the \$19B power management market. The power management market is one of the most dynamic sectors of the semiconductor industry, with around 13% yearly rises since 2001. A broad range of applications and technologies pushed many corporations to look recently into a systematic and educational approach to Power IC technologies. Despite the increasing demand for power ICs in both production volume and application expansion, there are not too many good references for study. This tutorial is intended to fill this gap and to provide an introduction to the field, including business and market information, technology update, and a comprehensive discussion of the existing and future applications. The tutorial is developed in a very academic way, from a pure technological perspective, and this is supposed to smooth the learning process. A seminar every power electronics engineer should attend. At the Author's best knowledge, this is the only tutorial about Power IC technologies ever presented within an IEEE event.

### About Presenter

Dorin O. Neacsu (M'95, SM'00) received the MSc and PhD degrees in electrical engineering from the Technical University of Iasi, Romania, in 1988 and 1994, respectively. In 2005, Dr. Neacsu has also graduated MSc program in Engineering Management at Gordon Institute, Tufts University, USA. The Author has 21 years of R&D experience in power electronics, including 10 years of US industrial exposure. The Author's technical work emerged in a large number of IEEE papers and patents, in various fields from power/control semiconductors, electrical drives, multi-kW converters and low power DC/DC converters. Some of the Author's R&D results have been previously presented as seminars/tutorials at PESC2001, IECON2001, APEC2003, APEC2004, PESC2005, and APEC2006.