

ESD Design for Analog Circuits

By Vladislav A. Vashchenko, Andrei Shibkov

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Editorial Review

From the Back Cover
ESD Design for Analog Circuits covers many challenging topics related to analog circuit design for both ESD device and ESD circuits at the network level. The chapters cover technical material on seven different hierarchical levels starting from elementary semiconductor structures, ESD device and clamp levels up to ESD protection network design followed by complex case studies for analog circuit design examples. Included is an extensive discussion of ESD design aspects for analog design for signal path products covering both major principles and specific case studies for DC-DC buck/boost converters, level shifters, digital-analog converters, high speed and precision power amplifiers, interface applications and system level protection. At the same time, the authors introduce a novel companion study tool for ESD protection solutions. Quick-start learning is combined with in-depth understanding for the whole spectrum of cross-disciplinary knowledge needed for excelling in the ESD field. The material combines textbook material with optional numerical simulation experience. Instructions for obtaining the simulation examples and trial version of DECIMMTM software can be found on the book's companion website www.analogesd.com. The simulation examples prepared by the authors support the specific examples discussed across the book chapters. ESD Design for Analog Circuits is a useful reference for device engineers and circuit designers addressing Analog IC Design problems.

About the Author
Dr. Vladislav Vashchenko received MS, Engineer-Physicist (1986) followed by “Ph.D. in Physics of Semiconductors” (1990) from Moscow Institute of Physics and Technology for the study of self-organization phenomena in semiconductor structures under breakdown. Since 1984 he was working in reliability department of State Research Institute “Pulsar” (Moscow) occupying positions from the student intern to head of laboratory. In 1997 he was awarded the “Doctor of Science in Microelectronics” degree for the cycle of studies and new solutions of the reliability problems in power GaAs MESFET’s, microwave silicon devices and the developed test methods. In the period 1995-1997 he managed the work on contracts for high reliability components for Russian Space Agency, commercial and military customers. In 2000 he joined Advanced Process Development Group in National Semiconductor Corp. to work on design of the ESD protection solutions for analog products. Currently he is leader and manager of R&D group responsible for ESD development for new processes and products. His current research interests are mainly focused on the power devices, device level reliability, ESD solutions, physical process and device simulation for ESD. His studies are widely presented in major device research forums. He author of 108 U.S. patents and over 80 research and review papers in the fields of reliability and ESD.

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