
FOREWORD

Special Section on Analog Circuits and Related SoC Integration Technologies

On the advent of system-level integration in such technical fields as information systems, health and biomedicine, automotive and energy control, the role of analog-related systems and circuits has become increasingly important. The progress in sensors, amplifiers, high-frequency telecommunication circuits, successive approximation register (SAR) ADCs, PLLs and DLLs have made a great contribution to the fields. However, challenges remain in the progress toward enhanced functionality as well as in the performance of analog circuits. I hope readers find those challenges in the papers of this special issue.

Considering the strong and steady demand for analog and high-frequency circuit technologies for use in SoC, the editorial committee is happy to publish a “Special Section on Analog Circuits and Related SoC Integration Technologies” this year. Special sections include two invited papers and seven submitted papers. The first invited paper, entitled “Cooperation Between Distributed Power Modules for SoC Power Management”, proposes a method of power delivery control by effectively turning on and off the distributed power modules on an SoC chip using the system command from the management system with distributed sensors. The other invited paper, entitled “A Study of Striped Inductors for K- and Ka-band Voltage Controlled Oscillators”, improves the phase noise of a VCO in the K- and Ka- frequency bands. The paper demonstrates the design of a high-quality-factor (high-Q) inductor of a VCO with a 65-nm CMOS process, and achieves approximately 3.5-dB lower phase noise than conventional VCOs in oscillation frequencies of 23 GHz and 40 GHz.

The seven submitted papers describe various interesting circuit techniques related to an SAR ADC that incorporates noise-shaping function using only passive capacitors, an all-digital phase locked loop (AD-PLL) realized using an automatic place and route tools, a high-frequency open-loop amplifier that reveals superior linearity over a wide range of input, a DLL, an asynchronous SAR ADC, an LC-VCO, and the high-density realization of an electrochemical sensor.

On behalf of the editorial committee of this special section, I would like to express our sincere appreciation to all the authors of the submitted papers. I would also like to thank all the reviewers and all the committee members of this special section for their important contribution to the editorial work. Finally, I would like to thank professor Hao San and Dr. Takeshi Ueno for their extensive work as guest editors.

Guest Associate Editors:

Ippei Akita (Toyohashi Univ. of Tech.), Masao Ito (Renesas System Design), Kenichi Okada (Tokyo Inst. of Technology), Keita Yasutomi (Shizuoka Univ.), Takahide Sato (Univ. of Yamanashi), Takeshi Shima (Kanagawa Univ.), Hiroshi Tanimoto (Kitami Inst. of Technology), Koji Takinami (Panasonic), Takahiro Nakamura (Hitachi), Kiichi Niitsu (Nagoya Univ.), Tatsuji Matsuura (Tokyo Univ. of Science), Tetsuya Hirose (Kobe Univ.), Ryuichi Fujimoto (Toshiba), Shoichi Masui (Fujitsu Laboratories), Tadashi Minotani (NTT Telecon), Cosy Muto (Nagasaki Univ.), Ryuji Yoshimura (Rohm)

Guest Editors:

Takeshi Ueno (Toshiba), Hao San (Tokyo City Univ.)

Yasuhiro Sugimoto (Chuo Univ.), Guest Editor-in-Chief

Yasuhiro Sugimoto (*Fellow*) received his B.E. from the Tokyo Institute of Technology, Tokyo, Japan (1973), his M.E. from the University of Michigan, Ann Arbor, Michigan (1980), and his Doctor of Engineering degree from the Tokyo Institute of Technology, Tokyo, Japan (1991). He joined the Toshiba Semiconductor Group in 1973, and has been engaged in the development of analog VLSIs. Since 1992, he has been with the Faculty of Science and Engineering, Chuo University where he is currently a professor in the Department of Electrical, Electronic, and Communication Engineering. His main interest is the design and development of new circuits in mixed-signal and RF LSIs. Dr. Sugimoto is the recipient of the 1989 Best Papers Award from the European Solid-State Circuits Conference, and the 1998 IEICE Best Papers Award. He is the author of seven books. Dr. Sugimoto is the senior member of the Institute of Electrical and Electronics Engineers, INC., a fellow of the Institute of Electronics, Information and Communication Engineers of Japan, and a member of the Japan Consulting Engineers Association.

