FOREWORD

Special Section on Analog Circuits and Their Application Technologies

It is my great honor and pleasure to announce the publication of this special section on analog circuits and their application technologies. In this era of digital processing including AI (Artificial Intelligence), analog circuits are still crucial parts since they affect overall signal fidelity and power/area efficiency. Especially, fueled by the wide and flexible communication band of 5G and post 5G, the fusion of sensing, AI and communication is expected to create a variety of new applications both in industries and in daily life. Analog circuits obviously play an essential role in such prospective scenarios. Thus, this special section aims to advance the state of the art in analog circuits and their application technologies.

This year the special section includes 3 excellent papers that have gone through a rigorous review process. The papers present innovative and promising techniques for a CMOS image sensor, adaptive body biasing and a compact low-noise PLL (Phase Locked Loop). These techniques will be useful for many existing and new applications.

In addition to these interesting papers, this special section includes an outstanding invited paper by Dr. Takahiro Miki. The paper presents in-depth and clear analysis on a continuous-time comparator. In spite of its versatility, the behavior of the continuous-time comparator is far from well understood. I expect the paper will give an excellent design guideline.

On behalf of the editorial committee, I would like to express our sincere appreciation to all the authors who submitted their manuscripts for this special section. I would also like to take this opportunity to thank all the reviewers and all of the editorial committee members, as listed below, for their enthusiastic support. Finally, I would like to thank Mr. Yohei Nakamura and Dr. Nicodimus Retdian for their extensive contribution as guest editors.

Takashi Oshima (Hitachi, Ltd.), Guest Editor-in-Chief

Takashi Oshima *(Member)* received the B.S., M.S., and Ph.D. degrees in physics from the University of Tokyo, Tokyo, Japan, in 1996, 1998, and 2001, respectively. He joined the Central Research Laboratory, Hitachi, Ltd., Tokyo, Japan, in 2001, where he is currently a researcher of analog and digital circuits and edge-AI computing. From 2005 to 2006, he was a visiting researcher with University of California, Berkeley, CA, USA. Dr. Oshima served as an associate editor of IEICE (Institute of Electronics, Information and Communication Engineers) Transactions on Fundamentals of Electronics, Communications and Computer Sciences, and also served as the secretary of the IEEE Solid-State Circuits Society Japan Chapter. He was a technical program committee member of the IEEE European Solid-State Circuits Conference (ESSCIRC) and the IEEE International Solid-State Circuits Conference (ISSCC). He is a member of IEICE, Institute of Electrical Engineers of Japan (IEEJ), IEEE and the Physical Society of Japan. He received several awards, including the 2003 R&D100 Award, the 2010 Best Invited Paper Award of IEICE Electronics Society and the ISSCC2016 Outstanding Evening Session Award. His research interest includes data converters, MEMS sensors, AI, and their collaboration.