IEICE TRANS. ELECTRON., VOL.E105–C, NO.7 JULY 2022

# FOREWORD

## Special Section on Solid-State Circuit Design — Architecture, Circuit, Device and Design Methodology

As advanced digitalization progresses with the expanding use of Artificial Intelligence (AI), fifth generation (5G) mobile networks, the Internet of Things (IoT), autonomous driving, and so on, the demand for semiconductors continues to increase. Meanwhile, the movement for realizing a carbon neutral society is becoming more active all over the world, and semiconductor development is facing major challenges in order to achieve a highly digitalized and sustainable society. Technological innovations are required in all layers of semiconductor development including at the circuit and system levels.

It is my great honor to announce the publication of this special section on solid-state circuit design. This section contains five papers (one invited, three regular, and one brief), all devoted to the distinctive exploration of novel techniques for sensor technology, mixed-signal integrated circuits, and systems. The first paper (invited) widely reviews and discusses principal circuit-based and charge-modulator-based lock-in pixels for indirect Time-of-Flight range imaging. The second paper proposes test techniques for ADCs and a ramp generator on a CMOS image sensor. The other three papers discuss a robust and process-scalable reference current source suitable for switched-capacitor circuits and a fully integrated compact receiver front-end for Sub-GHz applications including IoT and 5G, and propose a solar-cell-assisted wireless biosensing system.

On behalf of the editorial committee, I would like to express my sincere appreciation to all the authors for their contributions and to all the reviewers for their critical inputs. In addition, I would like to thank the editorial committee for their works on this special section.

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