

# IEEE JOURNAL OF SOLID-STATE CIRCUITS

A PUBLICATION OF THE IEEE SOLID-STATE CIRCUITS SOCIETY



DECEMBER 2017

VOLUME 52

NUMBER 12

IJSCBC

(ISSN 0018-9200)

## SPECIAL ISSUE ON THE 2017 IEEE INTERNATIONAL SOLID-STATE CIRCUITS CONFERENCE

Introduction to the Special Issue on the 2017 IEEE International Solid-State Circuits Conference .....	3115
..... <i>T. Piessens, S.-T. Ryu, C.-M. Hung, A. Molnar, and M. Meghelli</i>	
ANALOG PAPERS	
A Wide Dynamic Range Buck Converter With Sub-nW Quiescent Power .... <i>A. Paidimarri and A. P. Chandrakasan</i>	3119
Design of Soft-Charging Switched-Capacitor DC–DC Converters Using Stage Outphasing and Multiphase Soft-Charging .....	3132
..... <i>N. Butzen and M. S. J. Steyaert</i>	
A Hybrid Switched-Capacitor Battery Management IC With Embedded Diagnostics for Series-Stacked Li–Ion Arrays .....	3142
..... <i>C. Schaef, E. Din, and J. T. Stauth</i>	
A Fully Integrated Counter Flow Energy Reservoir for Peak Power Delivery in Small Form-Factor Sensor Systems .....	3155
..... <i>X. Wu, K. Choo, Y. Shi, L.-X. Chuo, D. Sylvester, and D. Blaauw</i>	
Fully Integrated Inductor-Less Flipping-Capacitor Rectifier for Piezoelectric Energy Harvesting .....	3168
..... <i>Z. Chen, M.-K. Law, P.-I. Mak, W.-H. Ki, and R. P. Martins</i>	
A Multiphase Class-D Automotive Audio Amplifier With Integrated Low-Latency ADCs for Digitized Feedback After the Output Filter .....	3181
..... <i>D. Schinkel, W. Groothedde, F. Mostert, M.-J. Koerts, E. van Iersel, D. Groeneveld, and L. Breems</i>	
A 19 nV/ $\sqrt{\text{Hz}}$ Noise 2- $\mu\text{V}$ Offset 75- $\mu\text{A}$ Capacitive-Gain Amplifier With Switched-Capacitor ADC Driving Capability .....	3194
..... <i>H. Wang, G. Mora-Puchalt, C. Lyden, R. Maurino, and C. Birk</i>	
DATA CONVERTER PAPERS	
A 12-b 10-GS/s Interleaved Pipeline ADC in 28-nm CMOS Technology .....	3204
..... <i>S. Devarajan, L. Singer, D. Kelly, T. Pan, J. Silva, J. Brunsilius, D. Rey-Losada, F. Murden, C. Speir, J. Bray, E. Otte, N. Rakuljic, P. Brown, T. Weigandt, Q. Yu, D. Paterson, C. Petersen, J. Gealow, and G. Manganaro</i>	
A 9-GS/s 1.125-GHz BW Oversampling Continuous-Time Pipeline ADC Achieving –164-dBFS/Hz NSD .....	3219
..... <i>H. Shibata, V. Kozlov, Z. Ji, A. Ganesan, H. Zhu, D. Paterson, J. Zhao, S. Patil, and S. Pavan</i>	
A Non-Interleaved 12-b 330-MS/s Pipelined-SAR ADC With PVT-Stabilized Dynamic Amplifier Achieving Sub-1-dB SNDR Variation .....	3235
..... <i>H. Huang, H. Xu, B. Elies, and Y. Chiu</i>	
A 4th-Order Continuous-Time Delta-Sigma Modulator Using 6-bit Double Noise-Shaped Quantizer .....	3248
..... <i>T. Kim, C. Han, and N. Maghari</i>	
A 10-bit DC-20-GHz Multiple-Return-to-Zero DAC With >48-dB SFDR .....	3262
..... <i>L. Duncan, B. Dupaix, J. J. McCue, B. Mathieu, M. LaRue, V. J. Patel, M. Teshome, M.-J. Choe, and W. Khalil</i>	

(Contents Continued on Back Cover)

RF PAPERS

A Millimeter-Wave Non-Magnetic Passive SOI CMOS Circulator Based on Spatio-Temporal Conductivity Modulation .....	<i>T. Dinc, A. Nagulu, and H. Krishnaswamy</i>	3276
Analysis and Design of a Millimeter-Wave Cavity-Backed Circularly Polarized Radiator Based on Fundamental Theory of Multi-Port Oscillators .....	<i>P. Nazari, S. Jafarlou, and P. Heydari</i>	3293
An Intrinsically Linear Wideband Polar Digital Power Amplifier .....	<i>M. Hashemi, Y. Shen, M. Mehrpoo, M. S. Alavi, and L. C. N. de Vreede</i>	3312
A 50–66-GHz Phase-Domain Digital Frequency Synthesizer With Low Phase Noise and Low Fractional Spurs .....	<i>A. I. Hussein, S. Vasadi, and J. Paramesh</i>	3329
A Class-G Voltage-Mode Doherty Power Amplifier .....	<i>V. Vorapipat, C. S. Levy, and P. M. Asbeck</i>	3348
Dual-Terahertz-Comb Spectrometer on CMOS for Rapid, Wide-Range Gas Detection With Absolute Specificity ....	<i>C. Wang and R. Han</i>	3361

WIRELESS PAPERS

A 28-GHz 32-Element TRX Phased-Array IC With Concurrent Dual-Polarized Operation and Orthogonal Phase and Gain Control for 5G Communications .....	<i>B. Sadhu, Y. Tousi, J. Hallin, S. Sahl, S. K. Reynolds, Ö. Renström, K. Sjögren, O. Haapalahti, N. Mazar, B. Bokinge, G. Weibull, H. Bengtsson, A. Carlinger, E. Westesson, J.-E. Thillberg, L. Rexberg, M. Yeck, X. Gu, M. Ferriss, D. Liu, D. Friedman, and A. Valdes-Garcia</i>	3373
Arbitrary Analog/RF Spatial Filtering for Digital MIMO Receiver Arrays .....	<i>L. Zhang and H. Krishnaswamy</i>	3392
Wideband Mixed-Domain Multi-Tap Finite-Impulse Response Filtering of Out-of-Band Noise Floor in Watt-Class Digital Transmitters .....	<i>R. Bhat, J. Zhou, and H. Krishnaswamy</i>	3405
A 118-mW Pulse-Based Radar SoC in 55-nm CMOS for Non-Contact Human Vital Signs Detection .....	<i>N. Andersen, K. Granhaug, J. A. Michaelsen, S. Bagga, H. A. Hjortland, M. R. Knutsen, T. S. Lande, and D. T. Wisland</i>	3421
All-Digital LTE SAW-Less Transmitter With DSP-Based Programming of RX-Band Noise .....	<i>E. Roverato, M. Kosunen, K. Cornelissens, S. Vatti, P. Stynen, K. Bertrand, T. Korhonen, H. Samsom, P. Vandenameele, and J. Rynnänen</i>	3434
A 14-nm 0.14-ps <sub>rms</sub> Fractional-N Digital PLL With a 0.2-ps Resolution ADC-Assisted Coarse/Fine-Conversion Chopping TDC and TDC Nonlinearity Calibration .....	<i>C.-W. Yao, R. Ni, C. Lau, W. Wu, K. Godbole, Y. Zuo, S. Ko, N.-S. Kim, S. Han, I. Jo, J. Lee, J. Han, D. Kwon, C. Kim, S. Kim, S. W. Son, and T. B. Cho</i>	3446

WIRELINE PAPERS

A 64-Gb/s 1.4-pJ/b NRZ Optical Receiver Data-Path in 14-nm CMOS FinFET .....	<i>I. Ozkaya, A. Cevrero, P. A. Francese, C. Menolfi, T. Morf, M. Brändli, D. M. Kuchta, L. Kull, C. W. Baks, J. E. Proesel, M. Kossel, D. Luu, B. G. Lee, F. E. Doany, M. Meghelli, Y. Leblebici, and T. Toifl</i>	3458
Design Techniques for a 60-Gb/s 288-mW NRZ Transceiver With Adaptive Equalization and Baud-Rate Clock and Data Recovery in 65-nm CMOS Technology .....	<i>J. Han, N. Sutardja, Y. Lu, and E. Alon</i>	3474
A 40-to-56 Gb/s PAM-4 Receiver With Ten-Tap Direct Decision-Feedback Equalization in 16-nm FinFET .....	<i>J. Im, D. Freitas, A. B. Roldan, R. Casey, S. Chen, C.-H. A. Chou, T. Cronin, K. Geary, S. McLeod, L. Zhou, I. Zhuang, J. Han, S. Lin, P. Upadhyaya, G. Zhang, Y. Frans, and K. Chang</i>	3486
A 40-Gb/s PAM-4 Transmitter Based on a Ring-Resonator Optical DAC in 45-nm SOI CMOS .....	<i>S. Moazeni, S. Lin, M. Wade, L. Alloatti, R. J. Ram, M. Popović, and V. Stojanović</i>	3503
A 22.5-to-32-Gb/s 3.2-pJ/b Referenceless Baud-Rate Digital CDR With DFE and CTLE in 28-nm CMOS .....	<i>W. Rahman, D. Yoo, J. Liang, A. Sheikholeslami, H. Tamura, T. Shibasaki, and H. Yamaguchi</i>	3517

2017 INDEX .....	Available online at <a href="http://ieeexplore.ieee.org">http://ieeexplore.ieee.org</a>	
------------------	---	--