

IEEE TRANSACTIONS ON VERY LARGE SCALE INTEGRATION (VLSI) SYSTEMS

A JOINT PUBLICATION OF THE IEEE CIRCUITS AND SYSTEMS SOCIETY 
THE IEEE COMPUTER SOCIETY 
THE IEEE SOLID-STATE CIRCUITS SOCIETY 

AUGUST 2016

VOLUME 24

NUMBER 8

ITCOB4

(ISSN 1063-8210)

EDITORIAL

- First TVLSI Best AE and Reviewer Awards *K. Chakrabarty and M. Alioto* 2613

REGULAR PAPERS

Memories

- Precharge-Free, Low-Power Content-Addressable Memory *M. Zackriya V and H. M. Kittur* 2614
A Low-Voltage Radiation-Hardened 13T SRAM Bitcell for Ultralow Power Space Applications
..... *L. Atias, A. Teman, R. Giterman, P. Meinerzhagen, and A. Fish* 2622
Single-Ended Schmitt-Trigger-Based Robust Low-Power SRAM Cell
..... *S. Ahmad, M. K. Gupta, N. Alam, and M. Hasan* 2634

Application-Specific Circuits and Subsystems

- Reduced-Complexity Nonbinary LDPC Decoder for High-Order Galois Fields Based on Trellis Min-Max
Algorithm *J. O. Lacruz, F. García-Herrero, M. J. Canet, and J. Valls* 2643
Exploiting Intracell Bit-Error Characteristics to Improve Min-Sum LDPC Decoding for MLC NAND Flash-Based
Storage in Mobile Device *H. Sun, W. Zhao, M. Lv, G. Dong, N. Zheng, and T. Zhang* 2654
Low-Power FPGA Design Using Memoization-Based Approximate Computing *S. Sinha and W. Zhang* 2665
Low-Power System for Detection of Symptomatic Patterns in Audio Biological Signals
..... *H. S. Markandeya and K. Roy* 2679
A Saliency-Driven LCD Power Management System
..... *Y. Xiao, S. Advani, D. Shin, N. Chang, J. Sampson, and V. Narayanan* 2689

Resiliency and Robust Design

- 2.31-Gb/s/ch Area-Efficient Crosstalk Canceled Hybrid Capacitive Coupling Interconnect for 3-D Integration
..... *M.-T.-L. Aung, T. H. Lim, T. Yoshikawa, and T. T.-H. Kim* 2703
System-Level Modeling of Microprocessor Reliability Degradation Due to Bias Temperature Instability and Hot Carrier
Injection *C.-C. Chen, T. Liu, and L. Milor* 2712
Enhanced Built-In Self-Repair Techniques for Improving Fabrication Yield and Reliability of Embedded
Memories *S.-K. Lu, C.-J. Tsai, and M. Hashizume* 2726
Reliable Power Gating With NBTI Aging Benefits
..... *D. Rossi, V. Tenentes S. Yang, S. Khursheed, and B. M. Al-Hashimi* 2735

(Contents Continued on Back Cover)

(Contents Continued from Front Cover)

Analysis and Mapping for Thermal and Energy Efficiency of 3-D Video Processing on 3-D Multicore Processors	A. K. Singh, M. Shafique, A. Kumar, and J. Henkel	2745
A Test Selection Procedure for Improving the Accuracy of Defect Diagnosis	I. Pomeranz	2759
<i>Timing and Intradie/Interdie Communication</i>		
A 4 × 5-Gb/s 1.12-μs Locking Time Reference-Less Receiver With Asynchronous Sampling-Based Frequency Acquisition and Clock Shared Subchannels	J. Song, S. Hwang, and C. Kim	2768
Noise Coupling Models in Heterogeneous 3-D ICs	B. Vaisband and E. G. Friedman	2778
Accelerated Accurate Timing Yield Estimation Based on Control Variates and Importance Sampling	A. A. Bayrakci	2787
TRANSACTIONS BRIEFS		
Efficient High-Level Synthesis for Nested Loops of Nonrectangular Iteration Spaces	H. Sim, A. Rahman, and J. Lee	2799
An Equalizer With Controllable Transfer Function for 6-Gb/s HDMI and 5.4-Gb/s DisplayPort Receivers in 28-nm UTBB-FDSOI	P. S. Sahni, S. C. Joshi, N. Gupta, and G. S. Visweswaran	2803
A Flexible-Weighted Nonbinary Searching Technique for High-Speed SAR-ADCs	L. Qiu, K. Tang, Y. Zheng, and L. Siek	2808
