Journal of Integrated Circuits and Systems

Volume 9 • Number 1 • March 2014 • ISSN 1807-1953

An RF-Powered Temperature Sensor Designed for Biomedical Applications
G. C. Martins and F. R. de Sousa

A CMOS Bandgap Reference Circuit with a Temperature Coefficient Adjustment Block
E. I. Ishibe and J. Navarro

Low-Cost and High-Throughput Hardware Design for the HEVC 16x16 2-D DCT Transform
R. Conceição, J. C. Souza Jr, R. Jeske, B. Zatt, M. Porto and L. Agostini

Gray Encoded Harmonics Power Line Interference Cancelling Structure Using LMS and NLMS Adaptive Algorithms
E. da Costa, S. Almeida, M. Matzenauer and M. Fonseca

Analysis of Pel Decimation and Technology Choices to Reduce Energy on SAD Calculation;
I. Seidel, A. B. Bräscher, B. G. Moraes, M. Monteiro and J. L. Güntzel

A Domain-Transformation Approach to Synthesize Read-Polarity-Once Boolean Functions
V. Callegaro, M. G. A. Martins, R. P. Ribas and A. I. Reis

Reliability Analysis of 0.5$_{\mu}$m CMOS Operational Amplifiers under TID Effects
G. Cardoso, T. Balen, M. Lubaszewski and O. Gonçalez

SBC Sociedade Brasileira de Computação

SBμ

www.sbc.org.br/jics
www.sbmicro.org.br/jics

ISSN 1807-1953
9 771807 195008

The **Journal of Integrated Circuits and Systems** (**JICS**) is a publication from SBMicro – Brazilian Microelectronics Society and SBC – Brazilian Computer Society whose are non-profit scientific societies aiming to foster the microelectronics and computer science teaching, research and development.

Editor-in-chief:

Marcelo Antonio Pavanello, FEI University, Brazil

Co-Editor:

Fernanda Kastensmidt, UFRGS, Brazil

Associate Editors:

Process and Materials

Jacobus Swart, State University of Campinas, Brazil
Magali Estrada, CINVESTAV, Mexico
Olivier Bonnaud, University of Rennes, France

Devices and Characterization

Cor Claeys, IMEC, Belgium
João Antonio Martino, USP, Brazil

Design

Elmar Uwe Kurt Melcher, Federal University of Campina Grande, Brazil
Jürgen Becker, Karlsruhe Institute of Technology, Germany
Guido Araújo, State University of Campinas, Brazil

Test

Alex Orailoglu, UCSD, USA
Michel Renovell, LIRMM, France

Sponsored by:

Brazilian Computer Society
Av. Bento Gonçalves, 9500
Porto Alegre, Brazil
Caixa Postal 15012 – CEP 91501-970

Brazilian Microelectronics Society
Av. Prof. Luciano Gualberto, trav. 3 n. 158
CEP 05508-900, São Paulo, Brazil

JICS - Journal of Integrated Circuits and Systems

Professor Marcelo Antonio Pavanello, Editor
Departament of Electrical Engineering, Centro Universitario da FEI
Av. Humberto de Alencar Castelo Branco, 3972
CEP 09850-901, São Bernardo do Campo - SP – Brazil

Manuscript Preparation:

General:
Editors reserve the right to adjust style to certain standards of uniformity. Original manuscripts are discarded one month after publication unless the Publisher is asked to return original material after use. Please use Word or Word Perfect files for the text of your manuscript.

Structure:
We suggest following this order when typing manuscripts: Title, Authors, Affiliations, Abstract, Keywords, Main text, Acknowledgements, Appendix, References, Figure Captions and then Tables. Please supply figures imported into the text AND also separately as original graphics files. Collate acknowledgements in a separate section at the end of the article and do not include them on the title page, as a footnote to the title or otherwise.

Text Layout:
The manuscript must be typed using double spacing and wide A4 paper (3 cm) margins (Top, Bottom, Left, Right) with 12 pt Times New Roman font size up to 18 pages (maximum). Present tables and figure legends on separate pages at the end of the manuscript. All the manuscript pages must be numbered consecutively.

Abstract:
A self-contained abstract outlining in a single paragraph the aims, scope and conclusions of the paper must be supplied.

Keywords:
Immediately after the abstract, please provide a maximum of six keywords (avoid, for example, ‘and’, ‘of’). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible.

Symbols:
As there is considerable variation in nomenclature and unit systems from country to country, authors are required to include a list of symbols, which they have used in their manuscripts, and of the units in which the corresponding qualities are measured. Another possibility is to define the symbols along the manuscript. SI units should be used where possible.

Units:
Follow internationally accepted rules and conventions: use the international system of units (SI). If other quantities are mentioned, give their equivalent in SI.

Maths:
Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text).

References:
All publications cited in the text should be presented in a list of references following the text of the manuscript. Along the text, indicate references by number(s) in square brackets in line with the text.

The papers are submitted online following the link www.sbmicro.org.br/jics.

After acceptance, the author will be notified about the final paper format to be submitted for printing.

Journal of Integrated Circuits and Systems

Volume 9 • Number 1 • March 2014 • ISSN 1807-1953

CONTENTS

Foreword 5

An RF-Powered Temperature Sensor Designed for Biomedical Applications
G. C. Martins and F. R. de Sousa 7

A CMOS Bandgap Reference Circuit with a Temperature Coefficient Adjustment Block
E. I. Ishibe and J. Navarro 16

Low-Cost and High-Throughput Hardware Design for the HEVC 16x16 2-D DCT Transform
R. Conceição, J. C. Souza Jr, R. Jeske, B. Zatt, M. Porto and L. Agostini 25

Gray Encoded Harmonics Power Line Interference Cancelling Structure Using LMS and NLMS Adaptive Algorithms
E. da Costa, S. Almeida, M. Matzenauer and M. Fonseca 36

Analysis of Pel Decimation and Technology Choices to Reduce Energy on SAD Calculation;
I. Seidel, A. B. Bräscher, B. G. Moraes, M. Monteiro and J. L. Güntzel 48

A Domain-Transformation Approach to Synthesize Read-Polarity-Once Boolean Functions
V. Callegaro, M. G. A. Martins, R. P. Ribas and A. I. Reis 60

Reliability Analysis of 0.5µm CMOS Operational Amplifiers under TID Effects
G. Cardoso, T. Balen, M. Lubaszewski and O. Gonçalez 70

FOREWORD

In this issue of JICS some of the papers on this issue have been selected from the presented at SBCCI2013 (26th Symposium on Integrated Circuits and Systems Design), which has been held in Curitiba, Brazil, in 2013. Among the contributions presented at this conference, only a few best rated were selected by the JICS Editorial Board and have been invited to submit an extended version to the Journal. These extended papers have passed through the usual reviewing process before acceptance. In addition to the best papers presented at the mentioned conference, spontaneous submissions passed through the usual reviewing process and have been accepted as regular papers.

We would like to thank the authors for their effort in preparing these high quality papers, as well as the reviewers for their valuable contribution on paper evaluation and selection, which guarantees the scientific level of this issue. We sincerely hope that JICS readers will enjoy these contributions.

Marcelo Antonio Pavanello
JICS Editor-in-chief

Fernanda Kastensmidt
JICS Co-Editor