## 2015 11th Conference on Ph.D. Research in Microelectronics and Electronics (PRIME 2015)

Glasgow, United Kingdom 29 June – 2 July 2015



**IEEE Catalog Number:** 

CFP15622-POD 978-1-4799-8230-1

**ISBN:** 

## **Table of Contents**

1 Techniques for Maximizing Input Handling and Improving Linearity of Gain Interpolating VGAs Mohammed El-Shennawy, Niko Joram and Frank Ellinger Chair for Circuit Design and Network Theory, Technische Universität Dresden 01062, Dresden, Germany  2 A low voltage operational amplifier cell with extended input common mode range for high voltage current sensing applications Răzvan Puşcaşu <sup>1,2</sup> , Pavel Brînzoi², Laurențiu Creoșteanu², Gheorghe Brezeanu¹ ¹Electronics, Telecommunications and Information Technology University Politehnica of Bucharest Bucharest, Romania ²ON Semiconductor Romania Bucharest, Romania  3 Reliability Analysis of Comparators Illani Mohd Nawi, Basel Halak and Mark Zwolinski Electronics and Computer Science, University of Southampton Southampton, S017 1BJ, U.K
Mohammed El-Shennawy, Niko Joram and Frank Ellinger Chair for Circuit Design and Network Theory, Technische Universität Dresden 01062, Dresden, Germany  2 A low voltage operational amplifier cell with extended input common mode range for high voltage current sensing applications Răzvan Puşcaşu <sup>1,2</sup> , Pavel Brînzoi², Laurenţiu Creoşteanu², Gheorghe Brezeanu¹ ¹Electronics, Telecommunications and Information Technology University Politehnica of Bucharest Bucharest, Romania ²ON Semiconductor Romania Bucharest, Romania  3 Reliability Analysis of Comparators Illani Mohd Nawi, Basel Halak and Mark Zwolinski Electronics and Computer Science, University of Southampton Southampton, SO17 1BJ, U.K
Chair for Circuit Design and Network Theory, Technische Universität Dresden 01062, Dresden, Germany  A low voltage operational amplifier cell with extended input common mode range for high voltage current sensing applications Răzvan Puşcaşu <sup>1,2</sup> , Pavel Brînzoi², Laurenţiu Creoşteanu², Gheorghe Brezeanu¹  ¹Electronics, Telecommunications and Information Technology University Politehnica of Bucharest Bucharest, Romania ²ON Semiconductor Romania Bucharest, Romania  Reliability Analysis of Comparators Illani Mohd Nawi, Basel Halak and Mark Zwolinski Electronics and Computer Science, University of Southampton Southampton, SO17 1BJ, U.K
Technische Universität Dresden 01062, Dresden, Germany  A low voltage operational amplifier cell with extended input common mode range for high voltage current sensing applications  Răzvan Puşcaşu <sup>1,2</sup> , Pavel Brînzoi <sup>2</sup> , Laurenţiu Creoşteanu <sup>2</sup> , Gheorghe Brezeanu <sup>1</sup> **IElectronics, Telecommunications and Information Technology  University Politehnica of Bucharest  Bucharest, Romania  **2ON Semiconductor Romania  Bucharest, Romania  **3  **Reliability Analysis of Comparators**  Illani Mohd Nawi, Basel Halak and Mark Zwolinski  Electronics and Computer Science, University of Southampton  Southampton, SO17 1BJ, U.K
A low voltage operational amplifier cell with extended input common mode range for high voltage current sensing applications  Răzvan Puşcaşu¹,², Pavel Brînzoi², Laurenţiu Creoşteanu², Gheorghe Brezeanu¹  ¹Electronics, Telecommunications and Information Technology  University Politehnica of Bucharest  Bucharest, Romania  ²ON Semiconductor Romania  Bucharest, Romania  3 Reliability Analysis of Comparators  Illani Mohd Nawi, Basel Halak and Mark Zwolinski  Electronics and Computer Science, University of Southampton  Southampton, SO17 1BJ, U.K
mode range for high voltage current sensing applications  Răzvan Puşcaşu <sup>1,2</sup> , Pavel Brînzoi <sup>2</sup> , Laurenţiu Creoşteanu <sup>2</sup> , Gheorghe  Brezeanu <sup>1</sup> <sup>1</sup> Electronics, Telecommunications and Information Technology  University Politehnica of Bucharest  Bucharest, Romania <sup>2</sup> ON Semiconductor Romania  Bucharest, Romania  3  Reliability Analysis of Comparators  Illani Mohd Nawi, Basel Halak and Mark Zwolinski  Electronics and Computer Science, University of Southampton  Southampton, SO17 1BJ, U.K
Răzvan Puşcaşu <sup>1,2</sup> , Pavel Brînzoi <sup>2</sup> , Laurenţiu Creoşteanu <sup>2</sup> , Gheorghe Brezeanu <sup>1</sup> <sup>1</sup> Electronics, Telecommunications and Information Technology University Politehnica of Bucharest Bucharest, Romania <sup>2</sup> ON Semiconductor Romania Bucharest, Romania  3  Reliability Analysis of Comparators Illani Mohd Nawi, Basel Halak and Mark Zwolinski Electronics and Computer Science, University of Southampton Southampton, SO17 1BJ, U.K
Brezeanu¹ ¹Electronics, Telecommunications and Information Technology University Politehnica of Bucharest Bucharest, Romania ²ON Semiconductor Romania Bucharest, Romania  3 Reliability Analysis of Comparators Illani Mohd Nawi, Basel Halak and Mark Zwolinski Electronics and Computer Science, University of Southampton Southampton, SO17 1BJ, U.K
<sup>1</sup> Electronics, Telecommunications and Information Technology University Politehnica of Bucharest Bucharest, Romania <sup>2</sup> ON Semiconductor Romania Bucharest, Romania  3 Reliability Analysis of Comparators Illani Mohd Nawi, Basel Halak and Mark Zwolinski Electronics and Computer Science, University of Southampton Southampton, SO17 1BJ, U.K
University Politehnica of Bucharest Bucharest, Romania  2ON Semiconductor Romania Bucharest, Romania  3 Reliability Analysis of Comparators Illani Mohd Nawi, Basel Halak and Mark Zwolinski Electronics and Computer Science, University of Southampton Southampton, SO17 1BJ, U.K
Bucharest, Romania  2ON Semiconductor Romania Bucharest, Romania  3 Reliability Analysis of Comparators Illani Mohd Nawi, Basel Halak and Mark Zwolinski Electronics and Computer Science, University of Southampton Southampton, SO17 1BJ, U.K
<sup>2</sup> ON Semiconductor Romania Bucharest, Romania  Reliability Analysis of Comparators Illani Mohd Nawi, Basel Halak and Mark Zwolinski Electronics and Computer Science, University of Southampton Southampton, SO17 1BJ, U.K
Bucharest, Romania  Reliability Analysis of Comparators Illani Mohd Nawi, Basel Halak and Mark Zwolinski Electronics and Computer Science, University of Southampton Southampton, SO17 1BJ, U.K
3 Reliability Analysis of Comparators  Illani Mohd Nawi, Basel Halak and Mark Zwolinski  Electronics and Computer Science, University of Southampton  Southampton, SO17 1BJ, U.K
Illani Mohd Nawi, Basel Halak and Mark Zwolinski  Electronics and Computer Science, University of Southampton  Southampton, SO17 1BJ, U.K
Electronics and Computer Science, University of Southampton Southampton, SO17 1BJ, U.K
Southampton, SO17 1BJ, U.K
4 Integrated Differential Three-Level High-Voltage Pulser Output Stage for 13-16
CMUTs
Pere Llim´os Muntal, Dennis Øland Larsen, Ivan H.H. Jørgensen and Erik
Bruun
Department of Electrical Engineering
Technical University of Denmark, Kgs. Lyngby, Denmark
5 Bio-functionalization study of Memristive- Biosensors for Early Detection 17-20
of Prostate Cancer
I. Tzouvadaki <sup>1</sup> , N. Madaboosi <sup>1,2</sup> , R.R.G. Soares <sup>3</sup> , V. Chu <sup>2</sup> , J.P. Conde <sup>2</sup> , G. De
Micheli <sup>1</sup> , S. Carrara <sup>1</sup>
1. Integrated System Laboratory EPFL Lausanne, Switzerland 2. WEST AND THE STATE OF THE STATE O
<sup>2</sup> INESC Microsystems and Nanotechnologies Lisbon, Portugal
<sup>3</sup> iBB–Institute for Bioengineering and Biosciences, Instituto Superior Técnico,
Universidade de Lisboa, Lisbon, Portugal
6 Communication Energy constrained spare core on NoC 21-24
B.Naresh Kumar Reddy, Dheeraj Sharma Dept. of Electronics and Communication Engineering, NIT Goa
7 Optimized Electrochemical Detection of Anti-Cancer Drug by Carbon 25-28
Nanotubes or Gold Nanoparticles
Nima Aliakbarinodehi*, Giovanni De Micheli, Sandro Carrara
Integrated Systems Laboratory, École Polytechnique Fédérale de Lausanne
(EPFL)
Lausanne, Switzerland
8 Acoustic Tweezing for Patterning and Discriminating Particles 29-32
G.D. Skotis <sup>1</sup> , J. Roberts <sup>2</sup> , D.R.S. Cumming <sup>1</sup> , M. O. Riehle <sup>2</sup> , A.L. Bernassau <sup>3</sup>
<sup>1</sup> School of Engineering, University of Glasgow, Glasgow, G12 8LT, UK

	<sup>2</sup> Centre for Cell Engineering, Institute for Molecular, Cell and Systems	
	Biology, CMVLS, University of Glasgow,	
	Glasgow G12 8QQ, UK	
	<sup>3</sup> School of Engineering and Physical Sciences, Heriot-Watt University,	
	Edinburgh, EH14 4AS, UK	
9	WarmPie: A Bare-Bones Implementation of Message Passing Interface for	33-36
	Embedded Many-Cores	
	Kui Wang_, Erno Salmineny, Jari Nurmi_ and Tapani Ahonen_	
	Department of Communications and Electronics Engineering	
	Tampere University of Technology, PO Box 527, FI-33101 Tampere Finland	
	Email: kui.wang@tut.fi, jari.nurmi@tut.fi, tapani.ahonen@tut.fi	
	yDepartment of Pervasive Computing	
	Tampere University of Technology, PO Box 527, FI-33101 Tampere Finland	
10	Design Of A High Gain Organic Comparator For Use In Low-Cost Smart	37-40
	Sensor Systems	
	R. W. Wanjau, D. Donaghy, M. Raja	
	University of Liverpool, Department of Electrical Engineering & Electronics,	
	Brownlow Hill, Liverpool L69 3GJ, UK.	
11	A Configurable Sawtooth Based PWM Generator with 2 ns On-Time for >50	41-44
	MHz DCDC Converters	
	Juergen Wittmann, Bernhard Wicht	
	Robert Bosch Center for Power Electronics, Reutlingen University, Reutlingen,	
	Germany	
12	Variable Latency Speculative Han–Carlson Adders Topologies	45-48
	Darjn Esposito, Davide De Caro, Michele De Martino, Antonio G. M. Strollo	
	Dept. of Electrical Engineering and Information Technology	
	University of Napoli "Federico II"	
	via Claudio, 21 – 80125 Napoli, Italy	
13	Effective control strategy for photovoltaic cascaded H-bridge inverters	49-52
	developed on FPGA platform	
	Fabio Di Napoli, Marino Coppola, Pierluigi Guerriero, Diego Iannuzzi, Santolo	
	Daliento	
	Department of Electrical Engineering and Information Technology	
	University Federico II	
	Naples, Italy	
14	Synthesis of Graphene on Ultra-Smooth Copper Foils for Large Area	53-56
	Flexible Electronics	
	Emre O. Polat <sup>1</sup> , Osman Balci <sup>2</sup> , Nurbek Kakenov <sup>2</sup> , Coskun Kocabas <sup>2†,</sup> Ravinder	
	Dahiya <sup>1</sup>	
	<sup>1</sup> Electronics and Nanoscale Engineering, University of Glasgow, Glasgow, G12	
	8QQ, UK	
	<sup>2</sup> Department of Physics, Bilkent University, Ankara, Turkey	
15	Fully Integrated Wideband sub-10 GHz Radio Frequency Front End with	57-60
	Active Matching	
	Niko Joram, Jens Wagner, Elena Sobotta and Frank Ellinger	
	Chair for Circuit Design and Network Theory	
	Technische Universität Dresden, 01062 Dresden, Germany	

16	Analog IC Placement using Absolute Coordinates and a Hierarchical	61-64
	Combination of Pareto Optimal Fronts	
	Ricardo Martins, Nuno Lourenço and Nuno Horta Instituto de Telecomunicações, Instituto Superior Técnico – ULisbon	
	Lisboa, Portugal	
17	EMG analysis for identifying walking pattern in healthy males	65-68
17	Manvinder Kaur <sup>1</sup> , Shilpi Mathur <sup>1</sup> , Dinesh Bhatia <sup>1</sup> , Suresh Verma <sup>2</sup>	05 00
	<sup>1</sup> Biomedical Engineering Department, North Eastern Hill University (NEHU)	
	Shillong-793022, Meghalaya, India	
	<sup>2</sup> Deenbandhu Chhotu Raam University of Science and technology, Haryana,	
	India	
18	Broadband Variable Gain Amplifier with Very Low Phase Variation in 28 nm	69-72
	CMOS	
	Elena Sobotta, Robert Wolf, Niko Joram and Frank Ellinger	
	Chair for Circuit Design and Network Theory	
	Technische Universit at Dresden, 01062 Dresden, Germany	
19	Fast Switch Bootstrapping for GS/s High-Resolution Analog-to-Digital	73-76
	Converter	
	Athanasios Ramkaj, Filip Tavernier and Michiel Steyaert	
20	KU Leuven ESAT/MICAS, Kasteelpark Arenberg 10, 3001 Heverle Belgium	77.00
20	A Generic Topology Selection Method for Analog Circuits Demonstrated on	77-80
	the OTA Example	
	Andreas Gerlach, Juergen Scheible, Thoralf Rosahl, Frank-Thomas Eitrich	
	Robert Bosch Centre for Power Electronics, Oferdingerstr. 50 72768 Reutlingen, Germany	
	Robert Bosch GmbH, Tuebinger Strasse 123	
	72762 Reutlingen, Germany	
21	Interleaved SAR ADC for in-pixel conversion in future X-ray FEL application	81-84
	Luca Lodola	0101
	Università di Pavia, Dip. di Ingegneria Industriale e dell'Informazione,	
	Via Ferrata 5, I-27100 Pavia, Italy, INFN, Sezione di Pavia,	
	Via Bassi 6, I-27100 Pavia, Italy	
22	Ultra Low Voltage Supervisors for Energy Scavenging Systems	85-89
	A.Liberale, E.Dallago, A.Lazzarini Barnabei, G.Torelli, G.Venchi	
	Department of Electrical, Computer and Biomedical Engineering	
	Via Ferrata 5, I-27100 Pavia, Italy,	
23	A High Speed High Resolution Readout with 14- bits Area Efficient SAR-ADC	89-92
	Adapted for New Generations of CMOS Image Sensors	
	Sassi BEN AZIZA <sup>1</sup> , Daniel DZAHINI, Laurent <sup>2</sup> GALLIN-MARTEL <sup>2</sup>	
	<sup>1</sup> STMicroelectronics, LPSC Laboratory	
	12 rue Jules Horowitz, 38000 Grenoble, France	
	53, rue des Martyrs 38026 Grenoble France	
	<sup>2</sup> LPSC Laboratory	
	53, rue des Martyrs 38026 Grenoble	
24	A Hybrid TDoA/RSSI Model for Mitigating NLOS Errors in FMCW Based	93-96
	Indoor Positioning Systems	

33	AIDA-PEx: Accurate Parasitic Extraction for Layout-Aware Analog Integrated Circuit Sizing	129-132
	•	
	<sup>3</sup> Univ. Grenoble Alpes, TIMA, F-38031, Grenoble	
	<sup>2</sup> Univ. Grenoble Alpes, CEA, LETI, MINATEC Campus, F-38054, Grenoble	
	Rabih Kazma <sup>1,3</sup> , Olivier Rossetto <sup>1</sup> , Gilles Sicard <sup>2</sup> <sup>1</sup> Univ. Grenoble Alpes, LPSC, CNRS/IN2P3, F-38026, Grenoble	
32	High Level Model of SPAD based Pixel	125-128
	Pohang, Gyeongbuk, 790-784, Republic of Korea	
	Science and Technology	
	Department of Electronic and Electrical Engineering, Pohang University of	
	Kai Chen, and Young Hwan Kim	
J.	Gate for Timing Analysis	121 127
31	Balanced Current Source Model of the Three-input Combinational Loigo	121-124
	University of Baghdad, Baghdad, Iraq <sup>3</sup> ECE Department, Univ. of Virginia, Virginia, U.S.A	
	<sup>2</sup> Dept. of Computer Engineering, College of Engineering University of Raphdad, Raphdad, Iraq	
	<sup>1</sup> Faculty of Engineering, University Putra Malaysia, Serdang, Malaysia	
	Smart Systems and System-on-Chip Group (S3oC),	
	Stan², Fakhrul Zaman Rohani¹,	
	Somayeh Rahimipour <sup>1</sup> , Wameedh Nazar Flayyih <sup>2</sup> , Noor Ain Kamsani <sup>1</sup> , Mircea	
	Thermal Management Efficiency	
30	Investigating The Impact of On-Chip Interconnection Noise on Dynamic	117-120
	Graz, Austria	
	Institute of Electronics, Graz University of Technology	
	Timuc,in Karaca and Bernd Deutschmann	
29	Electromagnetic Evaluation of Class-D Switching Schemes	113-116
	Derby, UK	
	School of Engineering and Technology, University of Derby	
40	Prasanthi Rathnala, Ahmad Kharaz, Tim Wilmshurst	103-117
28	University of Southampton, United Kingdom  An Efficient Adaptive Voltage Scaling using Delay Monitor Unit	109-112
	Electronics and Computer Science University of Southampton, United Kingdom	
	Mohd Syafiq Mispan, Basel Halak, Zufu Chen, Mark Zwolinski	
27	TCO-PUF: A Subthreshold Physical Unclonable Function	105-108
	Worcester Polytechnic Institute, Worcester, MA 01609	105 :5-
	Electrical and Computer Engineering Department	
	Jianping Gong, John A. McNeill	
26	Sub-Picosecond-Jitter Clock Generation for Interleaved ADC	101-104
	Department of Computer Science, University of York, York, United Kingdom	
	Chengliang Dai, Christopher Bailey	
	Wearable Biometric Devices	
25	Power Analysis of a Lossless Data Compression Technique for Wireless	97-100
	Technische Universität Dresden, 01062 Dresden, Germany	
	Chair for Circuit Design and Network Theory	
	Belal Al-Qudsi, Mohammed El-Shennawy, Yan Wu, Niko Joram, and Frank Ellinger	

	Instituto de Telecomunicações Instituto Superior Técnico — ULisbon Lisboa, Portugal	
34	Conduction mechanisms in Al-Ta2O5-Al2O3-Al rectifiers	133-136
J <del>4</del>	A.D. Weerakkody, N. Sedghi, X. Zhan, I.Z. Mitrovic, S. Hall	133-130
	Department of Electrical Engineering and Electronics,	
	University of Liverpool, Liverpool, L69 3GJ, UK	
35	Finite Element Analysis of uniaxial bending of ultrathin Silicon dies	137-140
	embedded in flexible foil substrates	
	Nagarajan Palavesam, Christof Landesberger, Christoph Kutter, Karlheinz Bock	
	Fraunhofer Research Institution for Microsystems and Solid State	
	Technologies EMFT, Hansastr. 27d, 80686 Munich, Germany	
	Electronics Packaging Lab, Faculty of Electrical and Computer Engineering,	
	Dresden University of Technology, Helmholtzstr. 18, 01062 Dresden,	
36	Germany  Accurate Day Ahead Temperature Prediction Using A 24 Hour Kalman Filter	141-144
30	Estimator	141-144
	Conor Lynch M.IEI, Michael J. O'Mahony M.IEI, Richard A. Guinee M.IEEE,	
	M.AMS	
	Dept. of Process, Energy and Transport Engineering	
	Cork Institute of Technology	
	Bishopstown, Cork, Ireland	
37	Investigation of an AGC for Audio Applications	145-148
	Seyediman Haerizadeh, Ivan H. H. Jørgensen, Niels Marker-Villumsen and	
	Erik Bruun  Tank ping   University of December   Deat of Stantwing   Engineering   DK 2800	
	Technical University of Denmark, Dept. of Electrical Engineering, DK-2800	
38	Kgs. Lyngby, Denmark  A High-SensitivityReconfigurable Integrating Dual-Slope CDC for MEMS	149-152
50	Capacitive Sensors	149-132
	J.P.Sanjurjo, E. Prefasi	
	Carlos III University, Electronic Technology Department, Madrid, Spain	
39	Characterisation and Modelling of Mg Doped ZnO TFTs	153-156
	A. Shaw, C. Gao, J. D. Jin, I. Z. Mitrovic and S. Hall	100 100
	Department of Electrical and Electronic Engineering,	
	University of Liverpool, Liverpool, UK.	
40	Barrier Non-Uniformity of Annealed Ni/4H-SiC Schottky Contacts with	157-160
	Temperature	
	G. Pristavu, G. Brezeanu, M. Badila, A. Vasilica, R. Pascu	
	ETTI Faculty, University Politehnica Bucharest, Bucharest, Romania	
	IMT Bucharest, Bucharest, Romania	464 460
41	Band Alignment of Ta2O5 on Sulphur Passivated Germanium by X-ray	161-163
	Photoelectron Spectroscopy  M.C. Althobaiti, I. Stoper and V. R. Dhanak, R. I. Better, I. 7. Mitrovice	
	M.G. Althobaiti, J. Stoner and V. R. Dhanak, R. J. Potter, I. Z. Mitrovic	
	Department of Physics and Stephenson Institute of Renewable Energy University of Liverpool, Liverpool L69 7ZF, UK	
	School of Engineering	
	School of Engineering	1

	Dept. of Electrical Eng. & Electronics	
	University of Liverpool, Liverpool L69 3GJ, UK	
42	Hot Carrier injection effect on threshold voltage of NMOSFETs	164-167
	Insaf Lahbib, Aziz Doukkali, Patrick Martin, Guy Imbert, Denis Raoulx	
	Normandie Université ENSICAEN/ CRISMAT/UMR 6508	
	6 boulevard Maréchal Juin, 14050 Caen cedex 04, France	
	NXP Semiconductors	
	Campus Efficience, 14460 Colombelles, France	
43	Bow-tie Antenna for Terahertz Resonant Tunnelling Diode Based	168-171
	Oscillators on High Dielectric Constant Substrate	
	Khalid Hamed Alharbi, Afesomeh Ofiare, Monageng Kgwadi, Ata Khalid, and	
	Edward Wasige	
	High Frequency Electronics Group, Division of Electronics and Nanoscale	
	Engineering, School of Engineering	
	University of Glasgow, Oakfield Avenue, G12 8LP Glasgow, Scotland, UK	
44	Design study on a SAR ADC using an incremental ΣΔ-DAC	172-175
	Ahmad AlMarashli, Jens Anders and Maurits Ortmanns	
	Institute of Microelectronics, University of Ulm, Albert-Einstein Allee 43, Ulm,	
	Germany	
45	A CMOS Laser Radar Receiver for Sub-ns Optical Pulses	176-179
	Mikko Hintikka and Juha Kostamovaara	
	Department of Information and Electrical, Engineering Electronics laboratory	
	University of Oulu, Finland	
46	Development of mid-infrared light-emitting diodes for low-power optical	180-183
	gas sensors	
	Laura Meriggi, Matthew J. Steer, Ying Ding_, Iain G. Thayne, Calum	
	MacGregory, Charles N. Ironsidez and Marc Sorel	
	Electronic and Nanoscale Engineering, School of Engineering, University of	
	Glasgow, Glasgow, G12 8LT, UK	
	Quantum Device Solutions, The West of Scotland Science Park, Block 7 Kelvin	
	Campus, Glasgow G20 0TH, UK	
	Department of Imaging and Applied Physics, Curtin University, Perth,	
	Western Australia 6845, Australia	
47	Concept of a Stacked Feedback PA with On-Chip Auto-Adjusted Base	184-187
	Voltage of Upper Transistor	
	Robert Paulo, Jens Wagner, Frank Ellinger	
	Technische Universit¨at Dresden Dresden, Germany	
48	Image Segmentation using Linked Mean-Shift Vectors with Region	188-191
	Attribution Analysis	
	Hanjoo Cho and Young Hwan Kim	
	Department of Electrical Engineering, POSTECH, Pohang, Republic of Korea	
49	A Fuzzy-Logic based Voltage-Frequency Controller for Network-on-Chip	192-195
	Routers	
	1	1
	Hai-Phong Phan, Xuan-Tu Tran	
	Hai-Phong Phan, Xuan-Tu Tran  SIS Laboratory, VNU University of Engineering and Technology – 144 Xuan	

50	Improved Lookup-Table-Based Algorithm for Background Linearization of VCO-Based ADCs	196-199
	Long Pham, John McNeill	
51	Platform Based Design of 3D Hall Sensor Conditioning Electronics	200-203
	Luca Sarti, Arcangelo Sisto, Luca Pilato, Luigi Di Piroy and Luca Fanucci	
	Department of Information Engineering, University of Pisa, Via Caruso, I-	
	56122 Pisa, Italy	
	Ams, Italy S.r.l, Via Giuntini 25, I-56123 Navacchio (Pisa), Italy	
52	Analyses of Phase Noise Reduction Techniques in CMOS Colpitts Oscillator	204-207
	Topology at the mmwaves: Noise Filter and Optimum Current Density	
	Ilias Chlis <sup>1,2</sup> , Domenico Pepe <sup>1</sup> , and Domenico Zito <sup>1,2</sup>	
	<sup>1</sup> Marconi Lab, Micro & Nano Systems Centre, Tyndall National Institute, Dyke Parade, Cork, Ireland	
	<sup>2</sup> Electrical & Electronic Engineering, School of Engineering, University College	
	Cork, Cork, Ireland	
53	An ultra-low power, 2mA lout buck converter optimized for <50mV ripple	208-211
<b>J</b> J	at a load cap of only 27nF	200-211
	Santoro F. and Schmitt-Landsiedel D.	
	Institute for Technical Electronics (LTE), Technical University of Munich	
	Munich, Germany	
	Gibson N., Kuhn R., Tost T. and Brederlow R.	
	Texas Instruments Deutschland, Freising, Germany	
54	Thermal Treatment and Encapsulation of Carbon Nanotube Based	212-215
	Temperature Sensors	
	Engin Cagatay*, Alaa Abdellah, and Paolo Lugli	
	Institute for Nanoelectronics, Technische Universit¨at Munchen	
	Arcisstrasse 21 80333 Munich, Germany	
55	Hardware-assisted Secure Communication for FPGA-based Embedded	216-219
	Systems	
	Ahmed Saeed, Ali Ahmadinia, Mike Just	
	School of Mathematical and Computer Sciences, Heriot-Watt University	
F.C.	Edinburgh,UK	220 222
56	A Multi-Functional Reconfigurable Low-Power Ultra-High PSRR CMOS	220-223
	Reference-System Christopher Soell, Andreas Baenisch, Juergen Roeber, Lan Shi, Robert Weigel	
	Institute for Electronics Engineering, Friedrich-Alexander University Erlangen-	
	Nuremberg, Erlangen, Germany	
57	High Efficiency Magnetic Resonance Wireless Power Transfer System and	224-227
37	Charging IC for Mobile Devices	
	Jinhwan Youn and Jun Rim Choi	
	School of Electronics Engineering, Kyungpook National University	
	Daegu, Republic of Korea	
58	Network Traffic Exploration on a Many-Core Computing Platform	228-231
	Gengting Liu, Patrick Camilleri, Steve Furber, Jim Garside	
	School of Computer Science, University of Manchester	
	Manchester, United Kingdom	
59	Memristor-Based Comparator with Programmable Hysteresis	232-235

	Olufemi A. Olumodeji <sup>1, 2</sup> , Massimo Gottardi <sup>1</sup>	
	<sup>1</sup> Integrated Radiation and Image Sensors, Fondazione Bruno Kessler (FBK)	
	Trento, Italy	
	<sup>2</sup> Department of Industrial Engineering, University of Trento, Trento, Italy	
60	Analysis and Mitigation of SEUs in ARM-based SoC on Xilinx Virtex-V	236-239
	SRAM-based FPGAs	
	Boyang Du, Marco Desogus, Luca Sterpone	
	Department of Control and Computer Engineering, Politecnico di Torino	
	Torino, Italy	
61	Very High-Speed CMOS Comparators for multi-GS/s A/D Converters	240-243
	Dante Gabriel Muratore <sup>1</sup> , Alper Akdikmen <sup>2</sup> , Franco Maloberti <sup>1</sup>	
	Department of Electrical, Computer and Biomedical Engineering	
	<sup>1</sup> University of Pavia, Pavia, Italy	
62	<sup>2</sup> Istanbul Technical University, Istanbul, Turkey  Floating Point Adder/Subtractor Units Realization by Efficient Arithmetic	244-246
62	Circuits	244-246
	Sreehari Veeramachaneni, M. B. Srinivas	
	Department of Electrical and Electronics Engineering,	
	Birla Institute of Technology and Science-Pilani, Hyderabad Campus,	
	Hyderabad, India-50078	
63	Stretchable Interconnects using Screen Printed Nanocomposites of	247-250
	MWCNTs with PDMS and P(VDF-TrFE)	,
	Wenting Dang <sup>1,2</sup> , Saleem Khan <sup>1</sup> , Leandro Lorenzelli <sup>1</sup> , Vincenzo Vinciguerra <sup>3</sup>	
	and Ravinder Dahiya <sup>2*</sup>	
	<sup>1</sup> Fondazione Bruno Kessler, Trento. 38123, Italy	
	<sup>2</sup> Electronics and Nanoscale Engineering, School of Engineering, University of	
	Glasgow, G128QQ, UK	
	<sup>3</sup> ST Microelectronics, Catania, Italy	
64	AIN/GaN HEMT Technology with in-situ SiNx Passivation	251-253
	Abdullah Al-Khalidi, Ata Khalid and Edward Wasige	
	High Frequency Electronics Group, School of Engineering, University of	
	Glasgow, Glasgow, United Kingdom	
65	Modelling and Experimental Verification of a Ge/SiGe Thermoelectric	254-257
	Generator	
	Ameze Odia <sup>1</sup> , Lourdes Ferre Llin <sup>1</sup> , Douglas J. Paul <sup>1</sup> , Stefano Cecchi <sup>2</sup> and	
	Giovanni Isella <sup>2</sup>	
	<sup>1</sup> School of Engineering, University of Glasgow, Rankine, Building, Oakfield	
	Avenue, Glasgow, G12 8LT, U.K.	
	<sup>2</sup> Dept. L-NESS, Dipartimento di Fisica, Politecnico di Milano, Polo di Como,	
<i>CC</i>	Como, Italy	250 261
66	An 8-phase 10 GHz Voltage Controlled Ring Oscillator for 40 Gbit/s	258-261
	BiPON Clock-and-Data Recovery	
67	Arno Vyncke, Guy Torfs, Marijn Verbeke, Xin Yin	262-265
07	MMIC Resonant Tunneling Diode Oscillators for THz applications  Jue Wang, Afesomeh Ofiare, Khalid Alharbi, Raphael Brown, Ata Khalid,	202-203
	David Cumming and Edward Wasige	
	High Frequency Electronics Group, School of Engineering	
	ingit it equality ficetionics droup, school of fingiticeling	

	University of Glasgow Glasgow, United Kingdom	
68	Pressure-based intelligent stent for restenosis control	266-269
	J.A. Miguel, D. Rivas, Y. Lechuga, M.A. Allende and M. Martinez	
	Microelectronics Engineering Group, University of Cantabria, Santander,	
	Spain	
	TCAD-based Methodology for Reliability Assessment of nanoscaled	270-273
69	MOSFETS	
	R. Hussin <sup>1, 2</sup> , L. Gerrer <sup>1</sup> , S. M. Amoroso <sup>3</sup> , L. Wang <sup>1</sup> , P. Weckx <sup>4</sup> , J. Franco <sup>4</sup> , A.	
	Vanderheyden <sup>4</sup> , D. Vanhaeren <sup>4</sup> , N. Horiguchi <sup>4</sup> , B. Kaczer <sup>4</sup> and A. Asenov <sup>1, 3</sup> .	
	<sup>1</sup> University of Glasgow, Glasgow G12 8LT, U.K	
	<sup>2</sup> School of Microelectronic Engneering, Universiti Malaysia Perlis, Malaysia	
	<sup>3</sup> Gold Standard Simulations Ltd, Glasgow G12 8LT, U.K	
70	<sup>4</sup> Imec, 3001, Leuven, Belgium	274 277
70	A 10-bit 150 MS/s Current Mode SAR ADC in 90 nm CMOS	274-277
	Abdelrahman Elkafrawy, Jens Anders and Maurits Ortmanns	
	Institute of Microelectronics, University of Ulm, Albert-Einstein Allee 43, Ulm,	
74	Germany	270 204
71	Flexible Temperature sensors based on Charge Modulated Organic Thin	278-281
	Film Transistors	
	Fabrizio Antonio Viola <sup>1</sup> , Piero Cosseddu <sup>2</sup> , Stefano Lai1, Andrea Spanu <sup>1</sup> ,	
	Annalisa Bonfiglio <sup>1, 2</sup>	
	<sup>1</sup> Department of Electrical and Electronic Engineering	
	University of Cagliari, Piazza d'Armi, 09123, Cagliari, Italy	
	<sup>2</sup> CNR– Institute of Nanoscience, S3 Centre, Via Campi 213A, 41100, Modena,	
72	Italy	202 205
72	A Circuit for Linearly Decreasing Temperature SET Programming of PCM	282-285
	based on Ge-rich GST	
	A. Kiouseloglou_†, E. Covi‡, G. Navarro_, A. Cabrini†, L. Perniola_ and G.	
	Torelli†	
	_CEA-LETI, MINATEC Campus, 17 rue des Martyrs, F-38054 GRENOBLE Cedex	
	9, France.	
	†Dipartimento di Ingegneria Industriale e dell'Informazione, University of	
	Pavia, via Ferrata 5, 27100 Pavia, Italy.	
	‡Laboratorio MDM, IMM - CNR, Via C. Olivetti 2, 20864 Agrate Brianza (MB),	
73	Pulsed I-V and Small Signal Characterisation and Modelling of Resonant	286-289
/ 3	Tunneling Diodes	200-203
	Afesomeh Ofiare, Ata Khalid, Jue Wang, and Edward Wasige	
	High Frequency Electronics Group, School of Engineering,	
	University of Glasgow, Glasgow G12 8LT, U.K.	
74	Exploring the Noise Limits of Fully-Differential Micro-Watt Transimpedance	290-293
, 4	Amplifiers for Sub-pA/Hz Sensitivity	230-233
	Ka-Meng Lei , Hadi Heidariz Pui-In Mak, Man-Kay Law, Franco Maloberti	
	The State Key Laboratory of Analog and Mixed-Signal VLSI, University of	
	Macau, Macao, China	
	Department of Electrical, Computer, and Biomedical Engineering, University	
		•

	Electronics and Nanoscale Engineering Research Division, University of Glasgow, G128QQ, UK	
755	Compressed Fresnel Beamformer for Portable Ultrasound Imaging System Avinash S. Vaidya, M.B. Srinivas Dept. of Electrical and Electronics Engineering ,BITS Pilani, Hyderabd Campus	294-297
76	Analysis of the Source/Drain Parasitic Resistance and Capacitance depending on geometry of FinFET Pathak Jay, . D. Darji Electronic Engineering Dept. SVNIT, Surat, INDIA	298-301
77	A Reliable Protocol For Multimedia Transmission Over Wireless Sensor Networks Xuan-Thuan Nguyen, Hong-Thu Nguyen, Cong-Kha Pham Department of Engineering Science, University of Electro-Communications Chofu, Tokyo, Japan	302-305
78	Application-Specific Optimization of Optical Sensors Based on Single-Photon Avalanche Diodes  Alexander Schwinger, Benjamin Bechen, Christian Nitta, Bedrich J. Hosticka, and Rainer Kokozinski  Fraunhofer Institute for Microelectronic Circuits and Systems (IMS)  Finkenstrasse 61, 47057 Duisburg, Germany	306-309
79	Conductive Reliability Modelling of Capacitive MEMS  Panagiotis Giounanlis <sup>1</sup> , Peter McGlynn <sup>1</sup> , Elena Blokhina <sup>1</sup> , Orla Feely <sup>1</sup> and George Papaioannou <sup>2</sup> <sup>1</sup> School of Electrical, Electronic and Communications Engineering, University College Dublin, Ireland <sup>2</sup> Solid State Section, Physics Department National and Kapodistrian University of Athens, Greece	310-313
80	Towards Bendable CMOS Magnetic Sensors  Hadi Heidari, Nicoleta Wacker, Scott Roy, Ravinder Dahiya  Electronics and Nanoscale Engineering Division, University of Glasgow, G12  8QQ, UK	314-317
81	FPGA Implementation of Fixed Point CORDICSVD for E-skin Systems Ali Ibrahim, Maurizio Valle, Luca Noli, DITEN, COSMIC Lab, University of Genova, Genova, Italy Hussein Chible Microelectronics Research Lab, Lebanese University, Beirut, Lebanon	318-321
82	Low Complexity All-Pass Based Polyphase Decimation Filters for ECG  Monitoring  Yaprak Eminaga <sup>1</sup> , Adem Coskun <sup>1</sup> , Sterghios A. Moschos <sup>2</sup> , and Izzet Kale <sup>1</sup> <sup>1</sup> Applied DSP and VLSI Research Group <sup>1</sup> Department of Engineering <sup>2</sup> Department of Biomedical Sciences  University of Westminster, London, W1W 6UW, United Kingdom	322-325
83	Stretchable Resistive Pressure Sensor based on CNT-PDMS Nanocomposites N. Yogeswaran <sup>1,2</sup> , S. Tinku <sup>2</sup> , S. Khan <sup>2</sup> , L. Lorenzelli <sup>2</sup> , V. Vinciguerra <sup>3</sup> , R. Dahiya <sup>1*</sup>	326-329

	<sup>1</sup> Electronics & Nanoscale Engineering Division, School of Engineering,	
	University of Glasgow, G12 8QQ, UK.	
	<sup>2</sup> Fondazione Bruno Kessler, Trento, 38123, Italy	
	<sup>3</sup> ST Microelectronics, Catania, Italy	
84	Sensitivity Characteristics of Horizontal and Vertical Hall Sensors in the	330-333
	Voltage- and Current-Mode	
	Hadi Heidari, Umberto Gatti, and Franco Maloberti	
	Department of Electrical, Computer, and Biomedical Engineering, University	
	of Pavia, Italy	
	Electronics and Nanoscale Engineering Division, University of Glasgow, G12	
0.5	8QQ, UK	224 227
85	Spice Model of a Piezo-Electric Transducer for Pulse- Echo System	334-337
	Saleem Khan <sup>1</sup> , William Taube <sup>2</sup> , , Nivasan Yogeswaran <sup>1,2</sup> , Hadi Heidari <sup>2</sup> , Ravinder Dahiya <sup>2</sup>	
	<sup>1</sup> Fondazione Bruno Kessler, Trento, 38123, Italy	
	<sup>2</sup> Bendable Electronics and Sensors Technologies (BEST) Group, School of	
	Engineering, University of Glasgow, G128QQ, UK	
86	Si Microwires based FETs on Flexible Substrates	338-341
	Saleem Khan <sup>1, 2</sup> , Nivasan Yogeswaran <sup>2, 3</sup> , Leandro Lorenzelli <sup>2</sup> , Ravinder	330 3 12
	Dahiya <sup>3</sup>	
	<sup>1</sup> University of Trento, 38123, Italy	
	<sup>2</sup> Fondazione Bruno Kessler, Trento, 38123, Italy	
	<sup>3</sup> Bendable Electronics and Sensors Technologies (BEST) Group, School of	
	Engineering, University of Glasgow, G128QQ, UK	
87	Power Gating in Asynchronous Micro-piplines for Low Power Data	342-345
	Driven Computing	
	Austin Ogweno, Alex Yakovlev, and Patrick Degenaar	
	School of Electrical & Electronic Engineering, Newcastle University.	
88	Energy-band parameter of atomic layer deposited Al2O3 & sulphur	346-348
	passivated molecular beam epitaxially grown (110) In0.53Ga0.47As	
	surfaces	
	Yen-Chun Fu, Uthayasankaran Peralagu, Olesya Ignatova, Xu Li, Ravi	
	Droopad, lain Thayne	
	School of Engineering, , University of Glasgow Scotland,	
	Department of Physics, Texas State University, Texas, USA  Typicall National Institute, University College Cody, Cody, Iroland	
89	Tyndall National Institute, University College Cork, Cork, Ireland  VLS Growth Mechanism of Si-Nanowires for Flexible Electronics	349-352
69	D. Shakthivel <sup>1</sup> , W. Taube <sup>1</sup> , S. Raghavan <sup>2</sup> , R. Dahiya <sup>1*</sup>	349-332
	<sup>1</sup> Electronics and Nanoscale Engineering, School of Engineering, University of	
	Glasgow, G12 8QQ, UK.	
	<sup>2</sup> Centre for Nano Science and Engineering, Indian Institute of Science,	
	Bangalore-560012, India.	
90	Polarisation selective Bragg filters on silicon-on-insulator	353-356
	Charalambos Klitis, Giuseppe Cantarella, Michael J. Strain and Marc Sorel	
	School of Engineering, University of Glasgow, Rankine Building, Oakfield	
		1

	Institute of Photonics, University of Strathclyde, Wolfson Centre, 106	
01	Rottenrow East, Glasgow G4 ONW, UK	257.260
91	A 90-dB DC Gain High-Speed Nested Gain-Boosted Folded-Cascode Opamp Sanfeng Zhang, Zheng Zhu, Hui Zhang, Zhou Xiong, Qiang Li	357-360
	Integrated Systems Lab	
	University of Electronic Science and Technology of China	
92	SMDAC Design With Nested Gain Boosted Opamp for a 14-Bit 200-MS/s	361-364
32	Pipelined ADC	301 304
	Hailiang Yao, Zheng Zhu, Yong Wang, Xiong Zhou, Qiang Li	
	Integrated Systems Lab, University of Electronic Science and Technology of	
	China.	
93	Connection and Resource allocation of IoT Sensors to cellular technology-	365-368
	LTE	
	Darshana Thomas, James Irvine	
	Department of Electronic and Electrical Engineering	
	Strathclyde University, Glasgow, G1 1XW	
94	Response of P(VDF-TrFE) Sensor to Force and Temperature	369-372
	Stuart Hannah <sup>1</sup> , Deepak Uttamchandani <sup>1</sup> , Helena Gleskova <sup>1</sup> , Saleem khan <sup>2</sup> ,	
	Ravinder Dahiya <sup>2</sup>	
	1Department of Electronic and Electrical Engineering, University of	
	S.trathclyde, Glasgow, G1 1XW, UK	
	2.Fondazione Bruno Kessler, Trento, 38123, Italy	
	3. Electronics and Nanoscale Engineering Division, School of Engineering,	
	University of Glasgow, G12 8QQ, UK	
95	Effects of Autonomic Nervous System on the Quality of Non-invasive Blood	373-376
	Diagnosis by PPG-based Sensor System	
	Hongwei Yuan, Gabriel Leen, and Elfed Lewis	
	Optical Fibre Sensor Research Center, University of Limerick, Limerick, Ireland	
96	An Extended Temperature Range UHF RFID Front-end in CMOS 350 nm	377-380
	Michele Caselli*, Alessandro Magnanini†, Andrea Boni*, Luca Giuffredi*	
	*Department of Information Engineering University of Parma, I-43124,	
	Parma, Italy	
07	† Silis S.r.l., Parma, Italy	204 204
97	A programmable Power-on-Reset circuit for automotive applications	381-384
	Luca Giuffredi*, Matteo Tonelli*, Alessandro Magnanini†, Michele Caselli*	
	*Department of Information Engineering University of Parma, I-43124,	
	Parma, Italy	
	† Silis S.r.l., Parma, Italy	205 200
98	Nanostructured P3HT layers fabricated by selfassembly as promising gas	385-388
	sensors	
	Emanuele Viviani <sup>1</sup> , Simone Dal Zilio <sup>2</sup> , Cristina Bertoni <sup>3,4</sup> , Alessandro Fraleoni-	
	Morgera <sup>5,6,7</sup> *	
	1: Artificial Perception Laboratory, Dept. of Engineering and Architecture,	
	Univ. of Trieste, Trieste, Italy	
	2: IOM-TASC CNR, Basovizza (TS), Italy	
	3: Global Technology Centre (GTC), Electrolux Italia SpA, C.so Lino Zanussi 30,	
	33080 Porcia (PN), Italy	

4: Sensors And Innovation Laboratory (SAIL), Dept. of Engineering and Architecture, Univ. of Trieste, Trieste, Italy
5: Flextronics Laboratory, Dept. of Engineering and Architecture, Univ. of Trieste, Trieste, Italy.
6: Organic OptoElectronics Laboratory, Elettra Sincrotrone Trieste, Basovizza (TS), Italy
7: CNR Nano S3, Modena, Italy