

2006 IEEE Radio Frequency Integrated Circuits Symposium

**San Francisco, CA
11-13 June 2006**



**IEEE Catalog Number:
ISBN:**

**06CH37741
0-7803-9572-7**

**Copyright © 2006 by The Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republications permission, write to IEEE Copyrights Manager, IEEE Operations Center, 445 Hoes Lane, Piscataway, New Jersey USA 08854. All rights reserved.

IEEE Catalog Number: 06CH37741
ISBN: 0-7803-9572-7
ISSN: 1529-2517

Additional Copies of This Publication Are Available from:

IEEE Service Center
445 Hoes Lane
Piscataway, NJ 08854
IEEE Service Center
445 Hoes Lane
Piscataway, NJ 08854
Phone: (800) 678-IEEE
 (732) 981-1393
Fax: (732) 981-9667
E-mail: customer-service@ieee.org

Table of Contents

Tri-mode Integrated Receiver for GPS, GSM 1800, and WCDMA	1
<i>N. Darbanian, S. Farahani, S. Kiaei, Bertan Bakkaloglu, M. Smith</i>	
A Low Power Low Noise Figure GPS/GALILEO Front-End for Handheld Applications in a 0.35μm SiGe Process	5
<i>R. Berenguer, J. Mendizabal, U. Alvarado, D. Valderas, A. García-Alonso</i>	
A WCDMA, GSM/GPRS/EDGE Receiver Front End without Interstage SAW Filter	9
<i>Naveen K. Yanduru, Danielle Griffith, Shanthi Bhagavatheeswaran, Chien-Chung Chen, Fikret Dulger, Sher-Jiun Fang, Yo-Chuol Ho, Kah Mun Low</i>	
A 1-to-4 Channel Receiver for WCDMA Base-Station Applications	13
<i>Tero Tikka, Jussi Mustola, Ville Saari, Jussi Ryy%onen, Mikko Hotti, Jarkko Jussila, Kari Halonen</i>	
Evolution of a Software-De. ned Radio Receiver's RF Front-End	17
<i>Asad A. Abidi</i>	
Taming Electrical Solitons - A New Direction in Picosecond Electronics	21
<i>David S. Ricketts, Xiaofeng Li, Donhee Ham</i>	
A 5 GHz above-IC FBAR Low Phase Noise Balanced Oscillator	25
<i>Mohammed Aissi, Eric Tournier, Marc Alexandre Dubois, Christophe Billard, Hocine Ziad, Robert Plana</i>	
A 17 dBm 64 GHz Voltage Controlled Oscillator with Power Amplifier in a 0.13 μm SiGe BiCMOS Technology	29
<i>Brian Welch, Ullrich Pfeiffer</i>	
Differential VCO and Passive Frequency Doubler in 0.18m CMOS for 24GHz Applications	33
<i>Dicle Ozis, Nathan M. Neihart, David J. Allstot</i>	
A 2.4-GHz Sub-mW Frequency Source with Current-Reused Frequency Multiplier	37
<i>Taeksang Song, Hyoung-Seok Oh, Jaemo Yang, Euisik Yoon, Songcheol Hong</i>	
A 1.2 V Reactive-Feedback 3.1-10.6 GHz Ultrawideband Low-Noise Amplifier in 0.13 m CMOS	41
<i>Michael T. Reiha, John R. Long, John J. Pekarik</i>	
A 1.8-3.1 dB Noise Figure (3-10 GHz) SiGe HBT LNA For UWB Applications	45
<i>Yuan Lu, Ramkumar Krithivasan, Wei-Min Lance Kuo, John D. Cressler</i>	
A CMOS 3.1-10.6GHz UWB LNA Employing Stagger- Compensated Series Peaking	49
<i>S. Shekhar, X. Li, D.J. Allstot</i>	
3~11-GHz CMOS UWB LNA Using Dual Feedback for Broadband Matching	53
<i>Chang-Tsung Fu, Chien-Nan Kuo</i>	
A SiGe Low-Noise Amplifier for 3.1-10.6 GHz Ultra-Wideband Wireless Receivers	57
<i>Bo Shi, Michael Yan Wah Chia</i>	
DC/DC Converter Controlled Power Amplifier Module for WCDMA Applications	61
<i>Jongsoo Lee, Jeff Potts, Eddie Spears</i>	
Coupling Effects of Dual SiGe Power Amplifiers for 802.11n MIMO Applications	65
<i>Wei-Chun Hua, Po-Tsung Lin, Chun-Ping Lin, Che-Yung Lin, Huan-Lin Chang, Chee Wee Liu, Tzu-Yi Yang, Gin-Kou Ma</i>	
Integrated Transformer Baluns for RF Low Noise and Power Amplifiers	69
<i>Haitao Gan, S. Simon Wong</i>	
RF Components with High Reliability and Low Loss by Partial Trench Isolation of SOI-CMOS Technology	73
<i>A. Furukawa, Y. Hirano, T. Ohnakado, T. Ikeda, Y. Kagawa, K. Shintani, K. Nishikawa, S. Yamakawa, T. Ipposhi, S. Maegawa, M. Takeda, H. Arima</i>	
Silicon full integrated LNA, Filter and Antenna system beyond 40 GHz for MMW wireless communication links in advanced CMOS technologies	77
<i>Sébastien Montusclat, Frédéric Ganesello, Daniel Gloria</i>	
A Fully-Integrated Dual-Band MIMO Transceiver IC	81
<i>G. Chien, P-B. Leong, S. W. Son, M. Tsai, L. Tse</i>	

Table of Contents

A Low-power Full-band 802.11abg CMOS Transceiver with Onchip PA.....	85
<i>Shih-Chieh Yen, Ying-Yao Lin, Tzung-Ming Chen, Yung-Ming Chiu, Bin-I Chang, Ka-Un Chan, Ying-Hsi-Lin, Ming-Chong Huang, Jiun-Zen Huang, Chao-Hua Lu, Wen-Shan Wang, Che-Sheng Hu, Chao-Cheng Lee</i>	
An Area-Efficient 5-GHz Multiple Receiver RFIC for MIMO WLAN Applications.....	89
<i>Lunal Khuon, Charles G. Sodini</i>	
A Compact High Rejection 2.4 GHz WLAN Front-End Module Enables Multi-Radio Co-existence UP to 2.17 GHz	93
<i>Chun-Wen Paul Huang, William Vaillancourt, Andrew Parolin, Chris Zelley, Zeji Gu</i>	
MBOA/WiMedia UWB Transceiver Design in 0.13μm CMOS.....	97
<i>C. Sandner, S.Derksen, D.Draxelmayr, S.Ek, V.Filimon, G.Leach, S.Marsili, D.Matveev, K.Mertens, H.Paule, M.Punzenberger, C.Reindl, R.Salerno, M.Tiebout, A.Wiesbauer, I.Winter, Z.Zhang</i>	
VCO Phase Noise and Sideband Spurs due to Substrate Noise Generated by On-chip Digital Circuits.....	101
<i>M.A. Méndez, J.F. Osorio, D. Mateo, X. Aragonés, J.L. González</i>	
AM-FM Conversion by the Active Devices in MOS LC-VCOs and its Effect on the Optimal Amplitude	105
<i>Babak Soltanian, Peter Kinget</i>	
Fully-Integrated Multi-Standard VCOs with switched LC tank and Power Controlled by Body Voltage in 130nm CMOS/SOI.....	109
<i>L.Geynet, E. De Foucauld, P. Vincent, G. Jacquemod</i>	
A 5GHz CMOS Low Phase Noise Transformer Power Combining VCO	113
<i>Ping Wing Lai, Stephen I. Long</i>	
A Double-Balanced Injection-Locked Frequency Divider for Tunable Dual-Phase Signal Generation	117
<i>Lin Zhang, Hui Wu</i>	
31-34GHz Low Noise Amplifier with On-chip Microstrip Lines and Inter-stage Matching in 90-nm Baseline CMOS	121
<i>Mihai A.T. Sanduleanu, Gang Zhang, John R. Long</i>	
60-GHz PA and LNA in 90-nm RF-CMOS	125
<i>Terry Yao, Michael Gordon, Kenneth Yau, M.T. Yang, Sorin P. Voinigescu</i>	
An 800-W 26-GHz CMOS Tuned Amplifier	129
<i>Yu Su, Kenneth K. O</i>	
A 27.7dBm OIP3 SiGe HBT Cascode LNA using IM3 cancellation technique	133
<i>Sungmin Ock, Seokyeong Hong, Sangwoo Han, Joonsuk Lee</i>	
A wideband Noise-Canceling CMOS LNA exploiting a transformer	137
<i>Stephan C. Blaakmeer, Eric A.M. Klumperink, Domine M.W. Leenaerts, Bram Nauta</i>	
A Fully-Integrated +23-dBm CMOS Triple Cascode Linear Power Amplifier with Inner-Parallel Power Control Scheme.....	141
<i>Hyoung-Seok Oh, Cheon-Soo Kim, Hyun-Kyu Yu, Choong-Ki Kim</i>	
A Dynamic Supply CMOS RF Power Amplifier for 2.4GHz and 5.2GHz Frequency Bands.....	145
<i>Paulo Augusto Dal Fabbro, Cédric Meinen, Maher Kayal, Kazuhiko Kobayashi, Yuu Watanabe</i>	
Impedance Optimization of Linearizer to Suppress Intermodulation Distortion in 2.45GHz SiGe WLAN Power Amplifier	149
<i>Ji Hoon Kim, Ki Young Kim, Seung Hwan Won, Jae Jin Lee, Yun Hwi Park, Yul Kyo Jung, Seok Tae Kim, Chul Soon Park</i>	
Fully Integrated Doherty Power Amplifiers for 5 GHz Wireless-LANs.....	153
<i>Daekyu Yu, Young-woong Kim, Kichon Han, Jin-ho Shin, Bumman Kim</i>	
A 5.8GHz, 47% Efficiency, Linear Outphase Power Amplifier with Fully Integrated Power Combiner	157
<i>Anh Pham, Charles G. Sodini</i>	
A Single-chip 0.13 μm CMOS UMTS W-CDMA Multi-band Transceiver	161
<i>R. Koller, T. Ruhlicke, D. Pimingsdorfer, B. Adler</i>	

Table of Contents

A Low Voltage (1.8V) Operation Triple Band WCDMA Transceiver IC	165
<i>Hitoshi Tomiyama, Chikara Nishi, Nobuhisa Ozawa, Yasunobu Kamikubo, Hiroyasu Honda, Hiroaki Fujita, Yuya Kondo, Hiroshi Iizuka, Tomohiro Takahashi</i>	
Fully Integrated CMOS GPS Receiver for System-on-Chip Solutions	169
<i>Christian Grewing, Bo Bokinge, Wenche Einerman, Anders Emericks, Detlev Theil, Stefan van Waasen</i>	
High-Performance Crest Factor Reduction Processor for W-CDMA and OFDM Applications	173
<i>Al Wegener</i>	
GSM/GPRS Single-Chip in 130nm CMOS: Challenges on RF for SoC Integration	177
<i>Dietolf Seippel, Markus Hammes, Andre Hanke, Jens Kissing</i>	
A Low-Power FSK Modulator using Fractional-N Synthesizer for Wireless Sensor Network Application	181
<i>Dan Lei Yan, T. Hui Teo, Bin Zhao, Yeung Bun Choi, Wooi Gan Yeoh</i>	
A -85dBc Reference Spurs Quadrature 1-2.5GHz Dual-Path Sampled Loop Filter CMOS PLL with sub-1°rms Phase Noise	185
<i>A. Maxim, M. Gheorghe</i>	
A Low Power Bandpass Modulator Injection Locked Synthesizer	189
<i>Hoon Hee Chung, Umar Lyles, Tino Copani, Bertan Bakaloglu, Sayfe Kiaei</i>	
A Carrier Frequency Generator for Multi-B and UWB Radios.....	193
<i>Qhinmaya Mishra, Alberto Valdes-Garcia, Edgar Sánchez-Sinencio, Jose Silva-Martinez</i>	
A Dual-Band Four-Mode Δ-Σ Frequency Synthesizer	197
<i>Wei-Zen Chen, Dai-Yuan Yu</i>	
CMOS Transceivers for the 60-GHz Band.....	201
<i>Behzad Razavi</i>	
A Highly Linear SiGe Double-Balanced Mixer for 77 GHz Automotive Radar Applications.....	205
<i>B. Dehlink, H.-D. Wohlmuth, H.-P. Forstner, H. Knapp, S. Trotta, K. Aufinger, T. F. Meister, J. Bock, A. L. Scholtz</i>	
A 28 GHz Sub-harmonic Mixer Using LO Doubler in 0.18-μm CMOS Technology.....	209
<i>Tsung-Yu Yang, Hwann-Kaeo Chiou</i>	
A Compact 35-65 GHz Up-Conversion Mixer with Integrated Broadband Transformers in 0.18-μm SiGe BiCMOS Technology	213
<i>Ping-Chen Huang, Ren-Chieh Liu, Jeng-Han Tsai, Hong-Yeh Chang, Huei Wang, John Yeh, Chwan-Ying Lee, John Chern</i>	
1 to 20 GHz CMOS Distributed Mixer using Asymmetric Coplanar Strip Transmission Lines.....	217
<i>N. Garg, L. B. Lok, I. D. Robertson, M. Chongcheawchamnan, A. Worapishet</i>	
An Analytical Approach to Parameter Extraction for On-Chip Spiral Inductors With Double-π Equivalent Circuit	221
<i>Jingxue Lu, Fengyi Huang, Yusong Chi</i>	
High Coupling Transformer in CMOS Technology	225
<i>Heng-Ming Hsu, Ming-Ming Hsieh, Chien-Wen Tseng, Kuo-Hsun Huang</i>	
Characterization of Si-Based Monolithic Transformers with Patterned Ground Shield.....	229
<i>Ouail El-Gharniti, Eric Kerhervé, Jean-Baptiste Bégueret</i>	
Design of Coplanar Waveguide On-Chip Impedance-Matching Circuit for Wireless Receiver Front-End	233
<i>H. Kanaya, R. K. Pokharel, F. Koga, Z. Arima, S. Kim, K. Yoshida</i>	
Novel 3 Port Characterisation and De-embedding for High Performance On-Silicon Ka Band Balun	237
<i>John A. O'Sullivan, Kevin G. McCarthy, Patrick J. Murphy</i>	
A Fully Integrated 2.4-GHz CMOS RF Transceiver for IEEE 802.15.4.....	241
<i>Ickjin Kwon, Yunseong Eo, Seong-Sik Song, Kyudon Choi, Heungbae Lee, Kwyro Lee</i>	
An Energy Efficient OOK Transceiver for Wireless Sensor Networks	245
<i>Denis C. Daly, Anantha P. Chandrakasan</i>	

Table of Contents

A 8.0-mW 1-Mbps ASK Transmitter for Wireless Capsule Endoscope Applications	249
<i>Han Shuguang, Chi Baoyong, Wang Zhihua</i>	
A 2.45-GHz RFID Tag with On-Chip Antenna	253
<i>Wooi Gan Yeoh, Yeung Bun Choi, Li Hui Guo, Alexander P. Popov, Kok Yin Tham, Bin Zhao, Xuesong Chen</i>	
Design of Multistage Rectifiers with Low-Cost Impedance Matching for Passive RFID Tags	257
<i>Ray Barnett, Steve Lazar, Jin Liu</i>	
A 0.18μm CMOS Receiver for 3.1 to 10.6GHz MB-OFDM UWB Communication systems	261
<i>Yen-Horng Chen, Chih-Wei Wang, Ching-Feng Lee, Tzu-Yi Yang, Chih-Fan Liao, Gin-Kou Ma, Shen-Iuan Liu</i>	
A Fully Integrated 3-band OFDM UWB Transceiver in 0.25μm SiGe BiCMOS	265
<i>J. Bergervoet, H. Kundur, D.M.W. Leenaerts, R.C.H. van de Beek, R. Roovers, G. van der Weide, H. Waite, S. Aggarwal</i>	
A Novel Low Power UWB Transmitter IC	269
<i>Gui-Duo Lim, Yuanjin Zheng, Wooi-Gan Yeoh, Yong Lian</i>	
A Schottky Barrier Diode Ultra-Wideband Amplitude Modulation (AM) Detector in Foundry CMOS Technology	273
<i>Swaminathan Sankaran, Kenneth. K. O.</i>	
An Analog Correlator with Dynamic Bias Control for Pulse Based UWB Receiver in 0.18μm CMOS Technology	277
<i>Dan Shen, Fujiang Lin, Wooi Gan Yeoh</i>	
Fully integrated Receiver Front-Ends for Cell-Phones in Deep submicron CMOS	281
<i>Francesco Svelto</i>	
A Low-Noise 40-GS/s Continuous-Time Bandpass $\Delta\Sigma$ ADC Centered at 2GHz	285
<i>Theodoros Chalvatzis, Sorin P. Voinigescu</i>	
A Novel IP2 Calibration Method for Low-Voltage Downconversion Mixers	289
<i>Krzysztof Dufrène, Robert Weigel</i>	
A 2.4-GHz Sub-mW CMOS Current-Reused Receiver Front-End for Wireless Sensor Network	293
<i>Taeksang Song, Hyoung-Seok Oh, Sang-Hyun Baek, Songcheol Hong, Euisik Yoon</i>	
A transformer based 1.8 - 1.9GHz low-IF receiver for 1V in 0.13μm CMOS	297
<i>Carsten Hermann, Christian Munker, Heinrich Klar</i>	
An Analytical Method to Determine MOSFET's High Frequency Noise Parameters from 50-Ω Noise Figure Measurements	301
<i>Saman Asgaran, M. Jamal Deen, Chih-Hung Chen</i>	
Reverse Noise Measurement and Use in Device Characterization	305
<i>James Randa, Tom McKay, Susan L. Sweeney, David K. Walker, Lawrence Wagner, David R. Greenberg, Jon Tao, G. Ali Rezvani</i>	
65-nm 160-GHz FT RF n-MOSFET Intrinsic Noise Extraction and Modeling using Lossy Substrate De-embedding Method	309
<i>J. C. Guo, Y. M. Lin</i>	
A 0.18 μm Dual-Gate CMOS Model for the Design of 2.4 GHz Low Noise Amplifier	313
<i>Kung-Hao Liang, Yi-Jen Chan</i>	
Power Supply Rejection for Common-Source Linear RF Amplifiers: Theory and Measurements	317
<i>Jason T. Stauth, Seth R. Sanders</i>	
A CMOS quadrature down-conversion mixer with analog I/Q correction obtaining 55 dB of image rejection for TV on Mobile applications	321
<i>Marc Notten, Maxime Bernard, Vincent Rambeau, Jan van Sinderen</i>	
Distributed Amplifiers with Non-Uniform Filtering Structures	325
<i>Yunliang Zhu, Hui Wu</i>	

Table of Contents

A Fully Integrated 24 GHz SiGe Receiver Chip in a Low-cost QFN Plastic Package	329
<i>Ian Gresham, Noyan Kinayman, Alan Jenkins, Robert Point, Andy Street, Yumin Lu, Adil Khalil, Ryosuke Ito, Richard Anderson</i>	
A Fully-Integrated 0.13μm CMOS Low-IF DBS Satellite Tuner Using a Ring Oscillator Based Frequency Synthesizer	333
<i>A. Maxim, R. Poorfard, R. Johnson, P. Crawley, J. Kao, Z. Dong, M. Chennam, T. Nutt, D. Trager</i>	
Millimeter-Wave Wireless Personal Area Network Systems	337
<i>Hiroyo Ogawa</i>	
A 9.953-12.5GHz 0.13μm Standard CMOS Bondwire LC Oscillator Using a Resistor-Tuned Varactor and a Low-Noise Dual-Regulator	341
<i>A. Maxim, C. Turinici</i>	
10 GHz VCO for 0.13μm CMOS Sonet CDR	345
<i>Ward S. Titus, John G. Kenney</i>	
A 40-Gb/s, Digitally Programmable Peaking Limiting Amplifier with 20-dB Differential Gain in 90-nm CMOS	349
<i>Jonas R. M. Weiss, Martin L. Schmatz, Heinz Jaeckel</i>	
Transmitter and Receiver Circuits for Serial Data Transmission over Lossy Copper Channels for 10 Gb/s in 0.13 μm CMOS	353
<i>Franz Weiss, Daniel Kehrer, Arpad L. Scholtz</i>	
An SOI CMOS, High Gain and Low Noise Transimpedance-Limiting Amplifier for 10Gb/s Applications	357
<i>Florin Pera, Sorin P. Voinigescu</i>	
Verification of RF SoCs: RF, Analog, Baseband and Software	361
<i>K. Muhammad, T. Murphy, R. B. Staszewski</i>	
Next-Generation Silicon Analysis Tools for RF Integrated-Circuits	365
<i>Amit Mehrotra, Amit Narayan, Ravi Subramanian</i>	
A Unified Modeling and Design Methodology for RFICs Using Parameterized Sub-Circuit Cells	369
<i>Dong Hun Shin, C. Patrick Yue</i>	
Layout Optimization of RF CMOS in the 90nm Generation by a Physics-Based Model Including the Multi-Finger Wiring Effect	373
<i>A. Nakamura, N. Yoshikawa, T. Miyazako, T. Oishi, H. Ammo, K. Takeshita</i>	
Circuit Model of a SiGe HBT Flip-Chip Mounted onto a Silicon Carrier	377
<i>Martin Norling, Spartak Gevorgian</i>	
Average Current Reduction in (W)CDMA Power Amplifiers	381
<i>Douglas A. Teeter, Edward T. Spears, Hien D. Bui, Hong Jiang, David Widay</i>	
A 2.4-V Low-Reference-Voltage Operation, InGaP HBT-MMIC Power Amplifier Module for CDMA Applications	385
<i>T. Moriwaki, K. Yamamoto, H. Otsuka, S. Suzuki, N. Ogawa, K. Maemura, T. Shimura</i>	
Large-Signal Characterization of an 870MHz Inverse Class-F Cross-Coupled Push-Pull PA using Active Mixed-Mode Load-Pull	389
<i>M. P. van der Heijden, D. M. H. Hartskeerl, I. Volokhine, V. Teppati, A. Ferrero</i>	
A Fully-Integrated 900-MHz CMOS Power Amplifier for Mobile RFID Reader Applications	393
<i>Jeonghu Han, Younsuk Kim, Changkun Park, Dongho Lee, Songcheol Hong</i>	
A CMOS Power Amplifier for Full-Band UWB Transmitters	397
<i>Chao Lu, Anh-Vu Pham, Michael Shaw</i>	
A 2.4GHz Direct Conversion Transmitter for Wimax Applications	401
<i>Cecile Masse</i>	
A 2.4-GHz CMOS RF front-end for Wireless Sensor Network Applications	405
<i>M. Annamalai Arasu, Henry Kok Fong Ong, Yeung Bun Choi, Wooi Gan Yeoh</i>	

Table of Contents

1-11 GHz Ultra-Wideband Resistive Ring Mixer in 0.18-μm CMOS Technology.....	409
<i>Tienyu Chang, Jenshan Lin</i>	
Receiver RF Front-End with 5GHz-Band LC Voltage-Controlled Oscillator and Subharmonically-Locked Ring Oscillator for 17GHz Wireless Applications	413
<i>Aleksandar Tasic, Stephen S.Y. Yue, Dennis K.L. Ma, Wouter A. Serdijn, John R. Long, David L. Harame</i>	
A Transformer-Based Receiver Front-End for 5-GHz WLANs.....	417
<i>Egidio Ragonese, Alessandro Italia, Maria Francesca Seminara, Giuseppe Palmisano</i>	
A Miniature 15-50-GHz Medium Power Amplifier	421
<i>Mei-Chen Chuang, Pei-Si Wu, Ming-Fong Lei, Huei Wang, Yu-Chi Wang, Chan Shin Wu</i>	
Linear RF Polar Modulated SiGe Class E and F Power Amplifiers	425
<i>Jennifer Desai Kitchen, Ilker Deligoz, Sayfe Kiaei, Bertan Bakkaloglu</i>	
High Power LDMOS Integrated Doherty Amplifier for W-CDMA.	429
<i>Blednov I.I., Jos van der Zanden</i>	
SiGe Integrated mm-Wave Push-Push VCOs with Reduced Power Consumption	433
<i>Robert Wanner, Rudolf Lachner, Gerhard R. Olbrich</i>	
A Wide Operation Range CMOS Frequency Divider for 60GHz Dual-Conversion Receiver.....	437
<i>Yi-Jan Emery Chen, Shuen-Yin Bai, Tang-Nian Luo, Yueh-Hua Yu, Deukhyoun Heo</i>	
A 18-GHz Silicon Bipolar VCO with Transformer-Based Resonator.....	441
<i>Angelo Scuderi, Egidio Ragonese, Tonio Biondi, Giuseppe Palmisano</i>	
A Sub-mA FH Frequency Synthesizer Technique	445
<i>Emanuele Lopelli, Johan van der Tang, Arthur van Roermund</i>	
14-mW 5-GHz Frequency Synthesizer With CMOS Logic Divider and phase-switching dual-modulus prescaler	449
<i>Myeungsu Kim, T.J. Park, Yongil Kwon, Joonhyung Lim, Sang-Gyu Park, Sung-Han Kim</i>	
A 1 GHz $\Sigma\Delta$ Noise Shaper for All Digital PLLs with Multiband UMTS Modulation Capability	453
<i>Thomas Mayer, Volker Neubauer, Ulrich Vollenbruch, Tindaro Pittorino, Linus Maurer, Andreas Springer</i>	
Tailoring On-Chip Inductors For Low-Noise Ultra-Wide-Band Receiver Applications.....	457
<i>Francis K. Chai, Ivan To, Donna Hammock, Margaret Huang</i>	
High Performance NPN BJTs in Standard CMOS Process for GSM Transceiver and DVB-H Tuner.....	461
<i>Jedon Kim, Hansu Oh, Chulho Chung, Joo-Hyun jeong, Hyunwoo Lee, Seok-Hee Hwang, In-Chul Hwang, Young-Jin Kim, Kyushik Hong, Eunseung Jung, Kwang-Pyuk Suh</i>	
Why Reciprocal Procedure Works?.....	465
<i>Tiberiu Jamneala, David A. Feld, David Blackham, Kenneth H. Wong, Burhan Zaini</i>	
Ultra-Low Power RFIC Design Using Moderately Inverted MOSFETs: An Analytical/Experimental Study	470
<i>Amin Shameli, Payam Heydari</i>	
High Linearity Performance of 0.13 μm CMOS Devices using Field-Plate Technology	474
<i>Chien-Cheng Wei, Hsien-Chin Chiu, Wu-Shiung Feng</i>	
Wideband Lumped Element Model for On-Chip Interconnects on Lossy Silicon Substrate	478
<i>Sheng Sun, Rakesh Kumar, Subhash C. Rustagi, Koen Mouthaan, T. K. S. Wong</i>	
Systematic Design Methodology for On-Chip Transformers with Patterned Ground Shield	482
<i>Ouail El-Gharniti, Eric Kerhervé, Jean-Baptiste Bégueret</i>	
A Broadband and Scalable On-chip Inductor Model Appropriate for Operation Modes of Varying Substrate Resistivities.....	486
<i>J. C. Guo, T. Y. Tan</i>	
Minimization of Via Count in Multiple-Metal Inductors: Performance Characterization and Physical Modelling.....	490
<i>Olive H. Murphy, Kevin G. McCarthy, Patrick J. Murphy</i>	

Table of Contents

A 3GHz Subthreshold CMOS Low Noise Amplifier	494
<i>Hanil Lee, Saeed Mohammadi</i>	
An X-Band SiGe LNA with 1.36 dB Mean Noise Figure for Monolithic Phased Array Transmit/Receive Radar Modules.....	498
<i>Wei-Min Lance Kuo, Qingqing Liang, John D. Cressler, Mark A. Mitchell</i>	
A +7.9dBm IIP3 LNA for CDMA2000 in a 90nm Digital CMOS Process.....	502
<i>Danielle Griffith</i>	
A 0.18μm RF CMOS Ultra Wide Band Transmitter Front End RFIC	506
<i>Jun Zhao, Sanjay Raman</i>	
Low-Power Full-Band UWB Active Pulse Shaping Circuit Using 0.18-μm CMOS Technology.....	510
<i>King Wah Wong, Satyanarayana Reddy Karri, Yuanjin Zheng</i>	
Frequency Characterization of a 2.4 GHz CMOS LNA by Thermal Measurements.....	514
<i>Diego Mateo, Josep Altet, Eduardo Aldrete-Vidrio, José Luis González</i>	
Optimization of PGS Pattern of Transformers/Inductors in Standard RF BiCMOS Technology for RFIC Applications.....	518
<i>Hsiao-Bin Liang, Yo-Sheng Lin, Chi-Chen Chen, Jen-How Lee</i>	