

IEEE

# ELECTRON DEVICE LETTERS

A PUBLICATION OF THE IEEE ELECTRON DEVICES SOCIETY



OCTOBER 2016

VOLUME 37

NUMBER 10

EDLEDZ

(ISSN 0741-3106)

---

LETTERS

**Compound Semiconductor Devices**

Low-Subthreshold-Slope Asymmetric Double-Gate GaAs-on-Insulator Field-Effect-Transistors on Si .....	1261
..... <i>S. Kim, D.-M. Geum, S. K. Kim, H.-J. Kim, J. D. Song, and W. J. Choi</i>	
High-Performance Lateral Nanowire InGaAs MOSFETs With Improved On-Current .....	1264
..... <i>C. B. Zota, L.-E. Wernersson, and E. Lind</i>	

**Memory Devices and Technology**

Analytical Modeling of Current Overshoot in Oxide-Based Resistive Switching Memory (RRAM) .....	1268
..... <i>S. Ambrogio, V. Milo, Z. Wang, S. Balatti, and D. Ielmini</i>	
Improved Data Retention of InSnZnO Nonvolatile Memory by H <sub>2</sub> O <sub>2</sub> Treated Al <sub>2</sub> O <sub>3</sub> Tunneling Layer: A Cost-Effective Method .....	1272
..... <i>J. Raja, C. P. T. Nguyen, C. Lee, N. Balaji, S. Chatterjee, K. Jang, H. Kim, and J. Yi</i>	
Ultra-Low Switching Voltage Induced by Inserting SiO <sub>2</sub> Layer in Indium-Tin-Oxide-Based Resistance Random Access Memory .....	1276
..... <i>C.-C. Shih, W.-J. Chen, K.-C. Chang, T.-C. Chang, T.-M. Tsai, T.-J. Chu, Y.-T. Tseng, C.-H. Wu, W.-C. Su, M.-C. Chen, H.-C. Huang, M.-H. Wang, J.-H. Chen, J.-C. Zheng, and S. M. Sze</i>	
Extraction of the Defect Distributions in DRAM Capacitor Using <i>I-V</i> and <i>C-V</i> Sensitivity Maps .....	1280
..... <i>G. Sereni, L. Larcher, B. Kaczer, and M. I. Popovici</i>	
Enhanced Properties in Conductive-Bridge Resistive Switching Memory With Oxide-Nitride Bilayer Structure .....	1284
..... <i>T.-L. Tsai, F.-S. Jiang, C.-H. Ho, C.-H. Lin, and T.-Y. Tseng</i>	
A Disturbance-Free Energy-Efficient STT-MRAM Based on Complementary Polarizers .....	1288
..... <i>L. Qu, Z. Zhao, Y. Wang, H. Tang, H. Li, Q. Deng, and P. Li</i>	

**Thin-Film Transistors**

Advanced Four-Mask Process Bottom-Gate Poly-Si TFT via Self-Aligned NiSi <sub>2</sub> Seed-Induced Lateral Crystallization .....	1292
..... <i>S. K. Lee, K. H. Seok, H. Y. Kim, Z. Kiaee, H. J. Chae, Y. H. Lee, and S. K. Joo</i>	
InZnO/AlSnZnInO Bilayer Oxide Thin-Film Transistors With High Mobility and High Uniformity .....	1295
..... <i>J. H. Choi, J.-H. Yang, S. Nam, J.-E. Pi, H.-O. Kim, O.-S. Kwon, E.-S. Park, C.-S. Hwang, and S. H. Cho</i>	

---

(Contents Continued on Back Cover)



---

A New Precursor Route to Semiconducting Zinc Oxide .....	<i>T. M. Althagafi, A. F. Al Baroot, and M. Grell</i>	1299
<b>Optoelectronics, Display, Imaging</b>		
High Light Extraction Efficiency AlGaInP LEDs With Proton Implanted Current Blocking Layer .....	<i>Y. Dong, J. Han, C. Xu, Y. Xie, M. Xun, G. Pan, and J. Sun</i>	1303
Theoretical Modeling for the Interaction of Tin Alloying With N-Type Doping and Tensile Strain for GeSn Lasers .....	<i>D. Sukhdeo, Y. Kim, S. Gupta, K. Saraswat, B. Dutt, and D. Nam</i>	1307
<b>Solid-State Power and High-Voltage Devices</b>		
A New High Holding Voltage Dual-Direction SCR With Optimized Segmented Topology .....	<i>X. Huang, J. J. Liou, Z. Liu, F. Liu, J. Liu, and H. Cheng</i>	1311
GaN High Electron Mobility Transistor Track-and-Hold Sampling Circuit With Over 100-dB Signal-to-Noise Ratio .....	<i>P. Srivastava, S. Chung, D. Piedra, H.-S. Lee, and T. Palacios</i>	1314
Ultra-Thin Epitaxial Tungsten Carbide Schottky Contacts in 4H-SiC .....	<i>L. Knoll, V. Teodorescu, and R. A. Minamisawa</i>	1318
An Accumulation Mode RF Laterally Double Diffused MOSFET With Improved Performance .....	<i>X. Deng, X. Chen, D. Liu, K. Liang, Z. Gan, Z. Li, and B. Zhang</i>	1321
SiC Trench MOSFET With Shielded Fin-Shaped Gate to Reduce Oxide Field and Switching Loss .....	<i>H. Jiang, J. Wei, X. Dai, M. Ke, I. Deviny, and P. Mawby</i>	1324
<b>Solid-State Device Phenomena</b>		
A New MOS Capacitance Correction Method Based on Five-Element Model by Combining Double-Frequency <i>C-V</i> and <i>I-V</i> Measurements .....	<i>X. Zhang, C. Cheng, H. Zhu, T. Yu, D. Zhang, and B. Chen</i>	1328
<b>Molecular and Organic Devices</b>		
Improved Electrical Properties of Pentacene MIS Capacitor With OTS Modified Ta <sub>2</sub> O <sub>5</sub> Dielectric .....	<i>W. Wang, X. Shi, X. Li, and Y. Zhang</i>	1332
<b>Sensors and Actuators</b>		
RF-MEMS Technology for 5G: Series and Shunt Attenuator Modules Demonstrated up to 110 GHz .....	<i>J. Iannacci, M. Huhn, C. Tschoban, and H. Pötter</i>	1336
RF MEMS Zipping Varactor With High Quality Factor and Very Large Tuning Range .....	<i>S. H. Pu, D. A. Darbyshire, R. V. Wright, P. B. Kirby, M. D. Rotaru, A. S. Holmes, and E. M. Yeatman</i>	1340
A High Coupling Coefficient 2.3-GHz AlN Resonator for High Band LTE Filtering Application .....	<i>Y. Zhu, N. Wang, C. Sun, S. Merugu, N. Singh, and Y. Gu</i>	1344
E-beam Evaporated Polysilicon for Lead Zirconate Titanate-Based Micro-Actuators .....	<i>S.-H. Chen, A. Michael, and C. Y. Kwok</i>	1347
<b>Emerging Technologies and Devices</b>		
Organic Relay Carry Generator and Logic Gates .....	<i>Y. Pan, M. Lu, and J. Jeon</i>	1351
A Numerical Study on Graphene Nanoribbon Heterojunction Dual-Material Gate Tunnel FET .....	<i>Y. Lv, Q. Huang, H. Wang, S. Chang, and J. He</i>	1354
Fabrication of Thin-Film Silicon Membranes With Phononic Crystals for Thermal Conductivity Measurements .....	<i>M. Haras, V. Lacatena, T. M. Bah, S. Didenko, J.-F. Robillard, S. Monfray, T. Skotnicki, and E. Dubois</i>	1358
IEEE ELECTRON DEVICES SOCIETY MEETINGS CALENDAR .....		1362
Information for Authors .....		1364
ANNOUNCEMENTS		
Call for Papers—IEEE TRANSACTIONS ON ELECTRON DEVICES Special Issue on Power Semiconductor Devices and Smart Power IC Technologies .....		1365
Call for Papers—IEEE TRANSACTIONS ON ELECTRON DEVICES Special Issue on Flexible Electronics .....		1366

---