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Location: Fiesta 9-10

February 8, 2012 8:30 - 10:15

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Chuck Mullett, *Onsemi*

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Daniel Reist, *Advanced Cooling Technologies, Inc., United States*

Session T15: DC-DC Converters: Bidirectional

Location: Coronado A/B

February 8, 2012 14:00 - 17:30

Session Chairs: Chris Mi, *University of Michigan, Dearborn*
Peyman Asadi, *International Rectifier*

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Session T16: Applications of Power Electronics in Renewable Energy Harvesting I

Location: Coronado C/D

February 8, 2012 14:00 - 17:30

Session Chairs: Morgan Kiani, *Texas Christian University*
 Juan Carlos Balda, *University of Arkansas*

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Session T17: Electric Machines and Drives

Location: Coronado E/F

February 8, 2012 14:00 - 17:30

Session Chairs: Steve Pekarek, *Purdue University*
Kent Wanner, *Phoenix International*

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Julius Luukko, *Lappeenranta University of Technology, Finland*

Pertti Silventoinen, *Lappeenranta University of Technology, Finland*

Risto Komulainen, *Vacon Plc., Finland*

Hannu Sarén, *Vacon Plc., Finland*

Nicklas Södö, *Vacon Plc., Finland*

Dan Isaksson, *Vacon Plc., United States*

Session T18: Power Electronics Applications I

Location: Fiesta 1-2

February 8, 2012 14:00 - 17:30

Session Chairs: Miaosen Shen, *United Technologies*
Seon-Hwan Hwang, *Florida State University*

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Session T19: DC-DC Converters: Control I

Location: Fiesta 3-4

February 8, 2012 14:00 - 17:30

Session Chairs: Hamid Behjati, *University of Texas at Arlington*
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Session T20: Inverter Control for Key Issues Solution

Location: Fiesta 7-8

February 8, 2012 14:00 - 17:30

Session Chairs: Liming Liu, *Florida State University*

Guijia Su, *Oak Ridge National Laboratory*

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Session T21: AC-DC Converters II

Location: Fiesta 9-10

February 8, 2012 14:00 - 17:30

Session Chairs: Gerry Moschopoulos, *University of Western Ontario*

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Session T22: DC-DC Converters: Modeling

Location: Coronado A/B

February 9, 2012 8:30 - 11:30

Session Chairs: Chris Mi, *University of Michigan, Dearborn*
Peyman Asadi, *International Rectifier*

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Miroslav Vasić, *Universidad Politécnica de Madrid, Spain*

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Xiang Fang, *University of Central Florida, United States*

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John Shen, *University of Central Florida, United States*

Issa Batarseh, *University of Central Florida, United States*

Session T23: Applications of Power Electronics in Renewable Energy Harvesting II

Location: Coronado C/D

February 9, 2012 8:30 - 11:30

Session Chairs: Babak Fahimi, *University of Texas at Dallas*
Art Barnes, *University of Arkansas*

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Xiaonan Lu, *Tsinghua University, China*

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Souhib Harb, *Texas A&M University, United States*

Robert S. Balog, *Texas A&M University, United States*

Reactive Power Control in Three-Phase Grid-Connected Current Source Boost Inverter 904

Mahdi Saghaei, *Florida International University, United States*

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Ahmed Hassan, *South Valley University, Egypt*

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Mohamed Orabi, *South Valley University, Egypt*

Session T24: Motor Drives and Inverters I

Location: Coronado E/F

February 9, 2012 8:30 - 11:30

Session Chairs: Hamid Toliyat, *Texas A&M University*
Robert Shaw, *Phoenix International*

Combined Operation of Short-Primary Permanent Magnet Linear Synchronous Motor and Linear Induction Motor in Material Handling Applications 915

Tobias Rafael Fernandes Neto, *Darmstadt University of Technology, Germany*

Peter Mutschler, *Darmstadt University of Technology, Germany*

Modeling Semiconductor Losses for Population Based Electric Machinery Design 923

Jacob Krizan, *Purdue University, United States*

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February 9, 2012 8:30 - 11:30

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Matthew Wilkowski, *Enpirion*

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Location: Fiesta 7-8

February 9, 2012 8:30 - 11:30

Session Chairs: Jin Wang, *Ohio State University*
Yaosuo Xue, *Siemens Corporate Research Inc.*

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Session T28: DC-DC Converters: Control II

Location: Fiesta 9-10

February 9, 2012 8:30 - 11:30

Session Chairs: Jim Spangler, *Argonne National Laboratory*
Amir Rahimi, *International Rectifier*

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Location: Veracruz

February 9, 2012 11:30 - 13:30

Session Chairs: Alireza Khaligh, *IIT-Chicago*

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Location: Veracruz

February 9, 2012 11:30 - 13:30

Session Chairs: Alireza Khaligh, *IIT-Chicago*

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Location: Veracruz

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Location: Veracruz

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Location: Veracruz

February 9, 2012 11:30 - 13:30

Session Chairs: Alireza Khaligh, *IIT-Chicago*

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Session D07: Modeling, Simulation and Control

Location: Veracruz

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Location: Veracruz

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Session Chairs: Alireza Khaligh, *IIT-Chicago*

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Location: Veracruz

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Dushan Boroyevich, <i>Virginia Polytechnic Institute and State University, United States</i>	
Handy Fortin Blanchette, <i>École de Technologie Supérieure, Montréal, Canada</i>	
Paolo Mattavelli, <i>Virginia Polytechnic Institute and State University, United States</i>	

Session D11: Packaging

Location: Veracruz

February 9, 2012 11:30 - 13:30

Session Chairs: Alireza Khaligh, *IIT-Chicago*

Electromigration Study on the Interconnects of High Density Power Modules	2290
Yakup Bulur, <i>IBM, United States</i>	
Richard J. Fishbune, <i>IBM, United States</i>	
Michael A. Vaughn, <i>IBM, United States</i>	
Jerry Fitzpatrick, <i>IBM, United States</i>	
Edmund Blackshear, <i>IBM, United States</i>	

A Comprehensive Analytical and Experimental Investigation of Wire Bond Life for IGBT Modules	2298
Yan Chen, <i>United Technologies Corporation, United States</i>	
Xin Wu, <i>United Technologies Corporation, United States</i>	
Igor Fedchenia, <i>United Technologies Corporation, United States</i>	
Mikhail Gorbounov, <i>United Technologies Corporation, United States</i>	
Vladimir Blasko, <i>United Technologies Corporation, United States</i>	
William Veronesi, <i>United Technologies Corporation, United States</i>	
Culp Slade, <i>United Technologies Corporation, United States</i>	

Development of a Predictive Observer Thermal Model for Power Semiconductor Devices for Overload Monitoring in High Power High Frequency Converters	2305
Sumit Dutta, <i>North Carolina State University, United States</i>	
Babak Parkhideh, <i>North Carolina State University, United States</i>	
Subhashish Bhattacharya, <i>North Carolina State University, United States</i>	
Giti Karimi Moghaddam, <i>North Carolina State University, United States</i>	
Richard Gould, <i>North Carolina State University, United States</i>	

Session T29: DC-DC Converters: High Performance

Location: Coronado A/B

February 9, 2012 14:00 - 17:30

Session Chairs: Arnold Alderman, *Anagenesis Inc*

Flying-Capacitor Boost Converter	2311
Hamidreza Keyhani, <i>Texas A&M University, United States</i>	
Hamid A. Toliyat, <i>Texas A&M University, United States</i>	

Analysis and Design of a New Multilevel-Based Dual-Type DC/DC Converter for Switch-Mode Power Supplies	2319
Mehdi Narimani, <i>University of Western Ontario, Canada</i>	
Gerry Moschopoulos, <i>University of Western Ontario, Canada</i>	

Power-Density Development of a 5MHz-Switching DC-DC Converter	2326
Ken Matsuura, <i>TDK-Lambda Corporation, Japan</i>	
Hiroshige Yanagi, <i>TDK-Lambda Corporation, Japan</i>	
Satoshi Tomioka, <i>TDK-Lambda Corporation, Japan</i>	
Tamotsu Ninomiya, <i>Nagasaki University, Japan</i>	

A SEPIC Fed Buck Converter	2333
Don Li, <i>CUI Inc., United States</i>	
Jeff Smoot, <i>CUI Inc., United States</i>	

Implementation Aspects of a New Linear Regulator Topology Based on Low Frequency Supercapacitor Circulation	2340
Kosala Kankanamge, <i>University of Waikato, New Zealand</i>	
Nihal Kularatna, <i>University of Waikato, New Zealand</i>	

Current Driven Synchronous Rectifier with Saturable Current Transformer and Dynamice Gate Voltage Control for LLC Resonant Converter	2345
Godwin Kwun Yuan Ho, <i>University of Hong Kong, Hong Kong</i>	
Ruiyang Yu, <i>University of Hong Kong, Hong Kong</i>	
Bryan Man Hay Pong, <i>University of Hong Kong, Hong Kong</i>	

Novel Switched Capacitor Based Triple Output Fixed Ratio Converter (TOFRC) 2352

Pavan Kumar, *Intel Corporation, United States*

Wayne Proefrock, *Intel Corporation, United States*

Session T30: Lighting II

Location: Coronado C/D

February 9, 2012 14:00 - 17:30

Session Chairs: Berker Bilgin, *MacAUTO, Canada Excellence Research Center*
Donald Boughton, *International Rectifier*

A Transformerless Galvanically Isolated Switched Capacitor LED Driver 2357

Mitchell Kline, *University of California, Berkeley, United States*

Igor Izyumin, *University of California, Berkeley, United States*

Bernhard Boser, *University of California, Berkeley, United States*

Seth Sanders, *University of California, Berkeley, United States*

New Multi-Channel LEDs Driving Methods Using Current Transformer in Electrolytic Capacitor-Less AC-DC Drivers 2361

Myunghyo Ryu, *Korea Electrotechnology Research Institute, Korea, South*

Jonghyun Kim, *Korea Electrotechnology Research Institute, Korea, South*

Juwon Baek, *Korea Electrotechnology Research Institute, Korea, South*

Heung-Geun Kim, *Kyungpook National University, Korea, South*

A Single-Stage Off-Line LED Driver IC with Hysteretic Power Factor Correction Control ... 2368

Eunchul Kang, *Inter-University Semiconductor Research Center, Korea, South*

Jaeha Kim, *Inter-University Semiconductor Research Center, Korea, South*

Optimal Design Methodology for the Current-Sharing Transformer in a Quasi-Resonant (QR) Flyback LED Driver 2372

Zhaohui Wang, *Zhejiang University, China*

Xinke Wu, *Zhejiang University, China*

Min Chen, *Zhejiang University, China*

Junming Zhang, *Zhejiang University, China*

High Input Voltage Single-Stage Flyback AC/DC LED Driver Using Series-Connected MOSFETs 2379

Li Wang, *Zhejiang University, China*

Xinke Wu, *Zhejiang University, China*

Fang Z. Peng, *Michigan State University, United States*

A Two-Stage LED Driver for High-Performance High-Voltage LED Fixtures 2385

Praneet Athalye, *Cree, Inc., United States*

Mike Harris, *Cree, Inc., United States*

Gerry Negley, *Cree, Inc., United States*

An Automatic Fluorescent Lamp Detection Method without Igniting the Lamps 2392

Zirui Jia, *Zhejiang University, China*

Xiaofeng Lv, *Zhejiang University, China*

Biwen Xu, *Zhejiang University, China*

Chongguang Ma, *Zhejiang University, China*

Min Chen, *Zhejiang University, China*

Zhaoming Qian, *Zhejiang University, China*

Session T31: Converter Topology II

Location: Coronado E/F

February 9, 2012 14:00 - 17:30

Session Chairs: Jin Wang, *Ohio State University*

Bill Wu, *Ryerson University*

Multi Carrier PWM of the Modular Multilevel VSC for Medium Voltage Applications 2398

Emmanuel K. Amankwah, *University of Nottingham, United Kingdom*

Jon C. Clare, *University of Nottingham, United Kingdom*

Patrick W. Wheeler, *University of Nottingham, United Kingdom*

Alan J. Watson, *University of Nottingham, United Kingdom*

Novel SVPWM Switching Pattern for High Efficiency 15kW Current-Fed Quasi-Z-Source Inverter in HEV Motor Drive Application 2407

Qin Lei, *Michigan State University, United States*

Dong Cao, *Michigan State University, United States*

Fang Z. Peng, *Michigan State University, United States*

A Transformer Assisted Zero-Voltage Soft-Switching Three-Level Active Neutral-Point-Clamped Converter 2421

Jin Li, *Xi'an Jiaotong University, China*

Jinjun Liu, *Xi'an Jiaotong University, China*

Dong Dong, *Virginia Polytechnic Institute and State University, United States*

Paolo Mattavelli, *Virginia Polytechnic Institute and State University, United States*

Dushan Boroyevich, *Virginia Polytechnic Institute and State University, United States*

Yaosuo Xue, *Siemens Corporate Research, United States*

Spread Spectrum Modulation Scheme for Multilevel Inverters Using Vector Quantized Sigma Delta Modulation 2428

Biji Jacob, *College of Engineering Trivandrum, India*

M.R. Baiju, *College of Engineering Trivandrum, India*

Carrier-Based PWM Modulation for THD and Losses Reduction on Multilevel Inverters 2436

L.H.S.C. Barreto, *Universidade Federal do Ceará, Brazil*

G.A.L. Henn, *Universidade Federal do Ceará, Brazil*

P.P. Praça, *Universidade Federal do Ceará, Brazil*

R.N.A.L. Silva, *Universidade Federal do Ceará, Brazil*

D.S. Oliveira, Jr., *Universidade Federal do Ceará, Brazil*

E.R.C. da Silva, *Universidade Federal de Campina Grande, Brazil*

A Novel Hybrid-Clamped Four-Level Converter 2442

Kui Wang, *Tsinghua University, China*

Yongdong Li, *Tsinghua University, China*

Zedong Zheng, *Tsinghua University, China*

Lie Xu, *Tsinghua University, China*

Circulating Currents and CM EMI Reduction for Interleaved Three-Phase VSC 2448

Tao Qi, *Rensselaer Polytechnic Institute, United States*

Jian Sun, *Rensselaer Polytechnic Institute, United States*

Session T32: Power Electronics Applications II

Location: Fiesta 1-2

February 9, 2012 14:00 - 17:30

Session Chairs: Jim Marinos, *Payton America Inc*
Omer Onar, *Oak Ridge National Laboratory*

High-Density Bidirectional Rectifier for Next Generation 380-V DC Distribution System 2455

Yusuke Hahashi, *NTT Facilities, Inc., Japan*

Masato Mino, *NTT Facilities, Inc., Japan*

Closed-Loop Regenerative Efficiency Testing with Electric Vehicle Bidirectional DC-DC Converter 2461

Seung-Ryul Moon, *Virginia Tech, United States*

Ki-Chang Lee, *Korea Electrotechnology Research Institute, Korea, South*

Jong-Moo Kim, *Korea Electrotechnology Research Institute, Korea, South*

Dae-Hyun Koo, *Korea Electrotechnology Research Institute, Korea, South*

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Youhao Xi, *Texas Instruments, United States*

Min Chen, *Texas Instruments, United States*

Kim Nielson, *Texas Instruments, United States*

Robert Bell, *Texas Instruments, United States*

Design and Control of a Demagnetization Circuit for Permanent ON OFF Operation in Pulse Transformer Gate Driver 2472

Van Nguyen, *Grenoble Electrical Engineering Laboratory, France*

Jean-Christophe Crebier, *Grenoble Electrical Engineering Laboratory, France*

Pierre-Olivier Jeannin, *Grenoble Electrical Engineering Laboratory, France*

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Heratch A. Namagerdi, *International Rectifier, United States*

Hemal Shah, *International Rectifier, United States*

Steve Oknaian, *International Rectifier, United States*

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Yingyi Yan, *Virginia Polytechnic Institute and State University, United States*

Fred C. Lee, *Virginia Polytechnic Institute and State University, United States*

Paolo Mattavelli, *Virginia Polytechnic Institute and State University, United States*

Results for an Al/AlN Composite 350°C SiC Solid-State Circuit Beaker Module 2492

Krishna P. Bhat, *Ford Motor Company, United States*

Yuan-Bo Guo, *University at Buffalo, United States*

Yang Xu, *North Carolina State University, United States*

Theodore Baltis, *Binghamton University, United States*

Donald R. Hazelmyer, *DensePower, LLC, United States*

Douglas C. Hopkins, *North Carolina State University and DensePower, LLC, United States*

Session T33: Gan and SiC Devices and Applications

Location: Fiesta 3-4

February 9, 2012 14:00 - 17:30

Session Chairs: Carl Blake, *Transphorm, Inc.*

Doug Hopkins, *University at Buffalo*

Application Study of the Benefits for Using Silicon-Carbide Versus Silicon in Power Modules 2499

Robert A. Wood, *US Army Research Laboratory, United States*

Thomas E. Salem, *US Naval Academy, United States*

GaN HFET Switching Characteristics at 350V/20A and Synchronous Boost Converter Performance at 1MHz 2506

Brian Hughes, *HRL Laboratories LLC, United States*

James Lazar, *HRL Laboratories LLC, United States*

Stephen Hulsey, *HRL Laboratories LLC, United States*

Daniel Zehnder, *HRL Laboratories LLC, United States*

Daniel Matic, *HRL Laboratories LLC, United States*

Karim Boutros, *HRL Laboratories LLC, United States*

Comparative Analysis of Commercially Available Silicon Carbide Transistors 2509

Andrew Lemmon, *Mississippi State University, United States*

Michael Mazzola, *Mississippi State University, United States*

James Gafford, *Mississippi State University, United States*

Kevin M. Speer, *SemiSouth Laboratories, Inc., United States*

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Ranbir Singh, *GeneSiC Semiconductor, Inc., United States*

Siddarth Sundaresan, *GeneSiC Semiconductor, Inc., United States*

Eric Lieser, *GeneSiC Semiconductor, Inc., United States*

Michael Digangi, *GeneSiC Semiconductor, Inc., United States*

On Understanding and Using SiC Power JFETs to Design a 100 W Active Clamp Forward Converter 2521

Supratim Basu, *Bose Research, India*

Tore M. Undeland, *Norwegian University of Science and Technology, Norway*

Multi-Chip SiC DMOSFET Half-Bridge Power Module for High Temperature Operation 2525

Tsuyoshi Funaki, *Osaka University, Japan*

Masashi Sasagawa, *ROHM Co., Ltd., Japan*

Takashi Nakamura, *ROHM Co., Ltd., Japan*

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Adam Meyer, *University of Illinois at Chicago, United States*

Sudip K. Mazumder, *University of Illinois at Chicago, United States*

Hossein Riazmontazer, *University of Illinois at Chicago, United States*

Session T34: Misc. Modeling, Simulation and Control

Location: Fiesta 7-8

February 9, 2012 14:00 - 17:30

Session Chairs: Omer Onar, *Oak Ridge National Laboratory*

- A Flat Linear Generator with Axial Magnetized Permanent Magnets with Reduced Accelerative Force for Backpack Energy Harvesting** 2534
Zhi Yang, *Illinois Institute of Technology, United States*
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- Modeling and Design of Tubular Linear Electric Drives** 2542
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- A Variational Thermodynamic Approach for Modeling Internal Capacitances of Trench Insulated Gate Bipolar Transistors (TIGBTs) to Interpret Measured Capacitance-Voltage Characteristics** 2556
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Norman G. Gunther, *Santa Clara University, United States*
Mahmudur Rahman, *Santa Clara University, United States*
- A Novel Passivity-Based Stability Criterion (PBSC) for Switching Converter DC Distribution Systems** 2560
Antonino Riccobono, *University of South Carolina, United States*
Enrico Santi, *University of South Carolina, United States*
- Generic Average Modeling and Simulation of the Static and Dynamic Behavior of Switched Capacitor Converters** 2568
Sam Ben-Yaakov, *Ben-Gurion University of the Negev, Israel*
Michael Evzelman, *Ben-Gurion University of the Negev, Israel*
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Nathan A. Pallo, *Massachusetts Institute of Technology, United States*
Srinivas Devadas, *Massachusetts Institute of Technology, United States*
Ivan L. Celanovic, *Massachusetts Institute of Technology, United States*

Session T35: Vehicular Electronics I

Location: Fiesta 9-10

February 9, 2012 14:00 - 17:30

Session Chairs: Alireza Khaligh, *IIT-Chicago*
Jim Spangler, *Argonne National Laboratory*

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R. Sadoun, <i>Ecole Supérieure des Techniques Aéronautiques et de Construction Automobile, France</i>	
G. Feld, <i>Ecole Normale Supérieure, Cachan, France</i>	
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