

Table of Content PCIM Europe 2019

Technologies for DC Grids

Marine DC Power Distribution Networks

Seongil Kim, Gabriele Ulissi, Drazen Dujic, Power Electronics Laboratory, EPFL, CH;
Soo-Nam Kim, Hyundai Electric & Energy Systems, KP

Early Validation of Resonant DC-DC Converter for Wind Turbines Connected to MVDC Grids

Catalin Gabriel Dincan, Philip Kjaer, Aalborg University, DK

DC Grid Technology – Advances in Efficient Power Conversion, Multi-Node Control, and Medium Voltage DC Grid Design and Requirements for Planning and Operation

Peter Luerkens, Rik W. De Doncker, Asimena Korompili, Antonello Monti, Albert Moser, Jens Priebe, Johannes Voss, RWTH Aachen University, D

MVDC Applications and Technology

Jürgen Steinke, Francisco Canales, Philippe Maibach, Gabriel Ortiz, Peter Steimer, ABB Switzerland, CH

SiC MOSFET

Threshold Voltage Instability in SiC Power MOSFETs

Giuseppe Consentino, Esteban Guevara, Luis Sanchez, Felice Crupi, University of Calabria, I;
Susanna Reggiani, University of Bologna, I; Gaudenzio Meneghesso, University of Padova, I

Study on Transient Light Emission of SiC Power MOSFETs Regarding the Sensing of Source-Drain Currents in Hard Switched Power Electronic Applications

Jonathan Winkler, Jan Homoth, Holger Bartolf, Robert Bosch, D; Ingmar Kallfass, University of Stuttgart, D

Challenging the 2D-Short Circuit Detection Method for SiC MOSFETs

Patrick Hofstetter, Mark-M. Bakran, University of Bayreuth, D

Characterization of the Parasitic Turn-On Behaviour of Discrete CoolSiC™ MOSFETs

Klaus Sobe, Blaz Klobucar, Infineon Technologies, A; Thomas Basler, Infineon Technologies, D

DC-DC Hard and Soft Switched Converter I

Design of a High-Frequency DC-DC Converter with a Custom Power Module and Integrated Cooling Structures

Alexander Stippich, Lukas Fräger, Alexander Sewergin, Tobias Kamp, Rik W. De Doncker, RWTH Aachen University, D

GaN Based High-Density Unregulated 48 V to x V LLC Converters with = 98% Efficiency for Future Data Centers

Mohamed Ahmed, Virginia Polytechnic Institute and State University, USA; Fred Lee, Qiang Li, CPES, USA; Michael de Rooij, David Reusch, Efficient Power Conversion (EPC), USA

Partial-Load Optimization of a High-Voltage Residential Battery Converter with Silicon Carbide MOSFETs

Leonhard Probst, Daniel von Kutzleben, Cornelius Armbruster, Christian Schöner, Fraunhofer Institute ISE, D



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Traveling Wave Piezoelectric Transformer for Multi-Level Isolated Gate-Driver Power Supply

Thomas Martinez, Denis Labrousse, Francois Costa, Dejan Vasic, SATIE – Laboratory, F; Gael Pillonnet, CEA, F

Thermal Management

Accurate Prediction of Thermal Runaway at Blocking Conditions in Drives Applications

Alexander Philippou, Christian Müller, Franz-Josef Niedernostheide, Benjamin Sahan, Infineon Technologies, D



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On the Thermal Performance of Si₃N₄-Based Ceramic Multilayer Substrates

Tilo Welker, Markus Rüppel, Rainer Herrmann, Olivier Mathieu, Sebastian Polster, Andreas Meyer, Rogers Germany, D

Trend in Thermal Resistance of Advanced Power Modules

Nobuyuki Shishido, Masanori Tsukuda, Green Electronics Research Institute, J; Shin-ichi Nishizawa, Kyushu University, J

Redundant Liquid Cooled SiC Inverter with Highest Power-to-Weight Ratio for Electrical Drive Applications

Stefan Pfefferlein, Alexander Hensler, Philipp Oschmann, Ewgenij Ochs, Siemens, D; Marco Übelacker, Brose, D

Magnetic Components

Computationally Efficient Leakage Inductance Estimation of Multi-Winding Medium Frequency Transformers

Marko Mogorovic, Drazen Dujic, Power Electronics Laboratory, EPFL, CH



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Computer-Aided Design and Optimization of an Integrated Transformer with Distributed Air Gap and Leakage Path for LLC Resonant Converter

Lukas Keuck, Frank Schafmeister, Joachim Böcker, University of Paderborn, D; Herbert Jungwirth, Michael Schmidhuber, SUMIDA Components & Modules, D

Simulation Methods for the Design of Power Magnetics

Björn Riemer, Michael Krajda, Tim Villbusch, Frank Bürvenich, Schaffner Germany, D

Adaptation of the Jiles Atherton Model Based on Measurements on the Anhysteresis of Magnetic Material

Jörn Schlieve, Stefan Scheffler, Matthias Köppen, Stefan Weber, TDK Electronics, D

Special Session: Smart Functions in Power Electronics

SmartIPM - Innovation by Integration

Christian Daniel, Infineon Technologies, D

Drive as a Sensor and Condition-Based Monitoring

Jörg Dannehl, Norbert Hanigovszki, Sanjeet Kumar Dwivedi, Danfoss Drives, DK; Michael Burghardt, Danfoss Drives, D

Inverter Smart Operation: Combining Power Electronics and Internet Technology
David Martini, ABB/Power One, I

Advanced IGBTs

New 950-V IGBT and Diode Technology Integrated in a Low-Inductive ANPC Topology for Solar Applications
Christian Müller, Johannes Laven, Andressa Colvero Schittler, Infineon Technologies, D

1,700V 7th-Generation "X Series" RC-IGBT Modules for Industrial Applications
Akio Yamano, Hiroaki Ichikawa, Toru Ajiki, Yuichi Onozawa, Seiichi Takahashi, Makoto Isozaki, Soichi Okita, Shinichi Yoshiwatari, Yasuyuki Kobayashi, Fuji Electric, J

Potential of Passive Feedbacks to Reduce Dynamic Current Imbalances of Paralleled IGBTs
Robin Werner, Hans-Günter Eckel, University of Rostock, D; Jan Weigel, Jürgen Böhmer, Siemens, D

DC-DC Hard and Soft Switched Converter II

Cascaded Boost Converter to Achieve High Voltage Boost Rate - Conduction Loss Analysis
Ryoga Kiguchi, Yasuyuki Nishida, Chiba Institute of Technology, J

A DC-DC Converter Based on a Very High Frequency Power Tuned Oscillator
Charley Lanneluc, Xavier Maynard, Rawad Makhoul, Pierre Perichon, CEA, F
David Frey, Pierre-Olivier Jeannin, Yves Lembeye, CNRS, F

Conception and Command of a Three Phase Series Resonant Converter under Unbalanced Condition
Benjamin Loyer, Mickaël Petit, SATIE, F; Eric Laboure, GeePs, F

Advanced Device Technologies

Bidirectional Switch based on Silicon High Voltage Superjunction MOSFET and TVS Diode Used in Low Voltage DC Solid - State Circuit Breaker
Kenan Askan, Michael Bartonek, Eaton Industries, A; Franz Stueckler, Infineon Technologies, A

Diamond Schottky-Diode in a Non-Isolated Buck Converter
Richard Reiner, Verena Zübig, Lucas Pinti, Philipp Reinke, Dirk Meder, Stefan Moench, Fouad Benkhelifa, Volker Cimalla, Rüdiger Quay, Christoph Nebel, Oliver Ambacher, Fraunhofer Institute IAF, D

Short Circuit Detection Methods for Silicon Carbide (SiC) Power Semiconductors
Marco Liserre, Jonas Person, Markus Andresen, Christian-Albrechts-University of Kiel, D; Ole Mühlfeld, Tim Rettmann, Danfoss Silicon Power, D

Control Techniques and Electrical Drives

Sensorless Predictive Speed Control of Permanent-Magnet Synchronous Generators in Wind Turbine Applications
Mohamed Abdelrahem, Ralph Kennel, Technical University of Munich, D; Christoph Hackl, University of Applied Sciences Munich, D; Jose Rodriguez, University Andres Bello, RCH

Design Study and Prototype of 150 kW Inverter with Discrete SiC MOSFETs

Teresa Bertelshofer, Mark-M. Bakran, University of Bayreuth, D; Marco Denk, ZF Friedrichshafen, D

The Four-Pole Planetary Motor

Richard Spießberger, Andreas Brunner, Manfred Schrödl, TU Wien, A

Automotive Power Converters

A 6.6kW High Power Density Bi-directional EV On-Board Charger Based on SiC MOSFETs

Chen Wei, Dongfeng Zhu, Haitao Xie, Wolfspeed, A Cree Company, CN;
Jianwen Shao, Wolfspeed, A Cree Company, USA

Optimization of Air-Cooled On-Board Battery Chargers for Electric Vehicles Using Wide Bandgap Devices

Silvia Zulk, Axel Mertens, Leibniz University Hannover, D

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Electro-Thermal Co-Design of A 250 kW Silicon Carbide Traction Inverter for Heavy Equipment Applications

Yue Zhao, Alan Mantooh, Zhongjing Wang, University of Arkansas, USA;
Muhammad Jahidul Hoque, Nenad Miljkovic, Nithin Vinod Upot, University of Illinois, USA;
Brett Sparkman, John Fraley, Wolfspeed, A Cree Company, USA

Special Session: Safety in Motion

Optimized Solutions for Safe Motion Control Applications

Karim Jamal, Texas Instruments, D; Mike Hannah, Bahrat Rajaram, Texas Instruments, USA

Safety Related Current Monitoring for Multiphase Motors built with Digital Current Transducers

Jens Onno Krah, Cologne University of Applied Sciences, D; Jürgen Koß, LEM Europe, D;
Burkhard Köhler, Institut für Arbeitsschutz IFA/DGUV, D

Design Single Chip Mixed Criticality Motion Systems with ZYNQ Ultrascale+ SoC SIL3 HFT=1

Giulio Corradi, Xilinx, D

Use of Safety MCUs for Industrial and Automotive Applications

Roger Ungerer, NXP Semiconductors Germany, D

High Voltage SiC

Ultra-High Voltage (40kV) Switches Implemented using SiC Super Cascodes

Anup Bhalla, Xueqing Li, Pete Losee, Melvin Nava, United Silicon Carbide, USA

2nd Generation High Performance 4H-SiC MOSFETs with 1.7 kV Rating for High Power Applications

Kenichi Hamano, Masayoshi Tarutani, Yasunori Oritsuki, Toshikazu Tanioka,
Masayuki Imaizumi, Naohika Hanano, Eisuke Suekawa, Y. Miyazaki, Mitsubishi Electric, J





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A 3.3kV 1000A High Power Density SiC Power Module with Sintered Copper Die Attach Technology

Kan Yasui, Seiichi Hayakawa, Takashi Ishigaki, Toshiaki Morita, Toshihito Tabata, Yuji Takayanagi, Yuta Inoue, Tatsunori Murata, Akiyoshi Tadano, Koyo Kinoshita, Masahiko Hoshi, Katsuya Koseki, Kohei Shono, Kanya Hamada, Takashi Imaizumi, Katsuaki Saito, Hitachi Power Semiconductor Device, J; Hiroyuki Matsushima, Hiroshi Miki, Toru Masuda, Toshiyuki Kobayashi, Takashi Ando, Akitoyo Konno, Hitachi, J

All SiC Module with 2nd Generation Trench Gate SiC MOSFETs

Mikiya Chonabayashi, Makoto Isozaki, Susumu Iwamoto, M. Miyajima, Yasuyuki Kobayashi, Keishirou Kumada, T. Shiigi, H. Kimura, Y. Onishi, Keiji Okumura, Yusuke Sekino, H. Harada, S. Okita, Fuji Electric, J

New Packages



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Low Inductive SiC Mold Module with Direct Cooling

Christoph Marczok, Eckart Hoene, Tina Thomas, Fraunhofer Institute IZM, D; Andreas Meyer, Karsten Schmidt, Rogers Germany, D



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Characterization of 1.7 kV SiC MOSFET / Si IGBT cross-switch hybrid on the LinPak platform

Slavo Kicin, Francisco Canales, Jean-Yves Loisy, Stanislav Skibin, ABB Corporate Research, CH; Umamaheswara Vemulapati, Gernot Stampf, ABB Semiconductors, CH; Munaf Rahimo, MTAL, CH

Development of a Novel 600V/50A Power Package with Semiconductor Chips Sandwiched between PCB Substrates using Double-Side Ag-Sintering

Vladimir Polezhaev, Ankit Sharma, Till Huesgen, University of Applied Science Kempten, D; Alexander Schiffmacher, Lorenz Litzenberger, Jürgen Wilde, University of Freiburg, D



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High-Power SiC and Si Module Platform for Automotive Traction Inverter

Jürgen Schuderer, Chunlei Liu, Niko Pavlicek, Giovanni Antonio Salvatore, Jean-Yves Loisy, Daniele Torresin, Thomas Gradinger, Fabian Mohn, Arne Schröder, David Baumann, ABB Switzerland, CH; Andreas Apelsmeier, Audi, D

Intelligent Gate Drivers

Simple Slew-Rate Control Technique Cuts Switching Losses

Wolfgang Frank, Infineon Technologies, D

Communication Using the Isolated Power Supply of the Gate Drivers for SiC Semiconductors Monitoring Applications

Julien Weckbrodt, Nicolas Ginot, Christophe Batard, University of Nantes, F; Thanh Long Le, Safran Tech, F

Centralized Short-Circuit Detection for Multiphase Inverters

Thomas Huber, Alexander Kleimaier, University of Applied Sciences Landshut, D; Ralph Kennel, Technical University of Munich, D

A Predictive Model to Investigate the Effects of Gate Driver on dV/dt in Series Connected SiC MOSFETs

Pierre Lefranc, Luciano Alves, Pierre-Olivier Jeannin, Benoit Sarrazin, Van-Sang Nguyen, Jean-Christophe Crebier, G2Elab, F

Automotive DC-DC Converters

3.3kW High-Frequency Full-Bridge LLC DC-DC Converter with SiC MOSFETS

Yuequan Hu, Jianwen Shao, Wolfspeed/Cree, USA

Development of Bi-Directional Isolated DC-DC Converter for Battery Test Equipment

Bahram Ashrafinia, Roland Robrecht, Andreas Dahm, Markus Scherey, Digatron Industrie Elektronik, D

Design of Integrated Inductors in Multi-Phase Buck/Boost Converters Including Operation with Deactivated Phases

Willy May, Johannes Pforr, Technical University of Ingolstadt, D

An Interleaved DC-DC Converter for Automotive Applications with GaN Power Semiconductors

Anton Chupryn, Andreas Lindemann, Lars Middelstaedt, Otto-von-Guericke-University, D

High Power Converters

Model-Based Synchronous Optimal Modulation for Three-Level Inverters Applied to Electrical Submersible Pumps Systems

Marcelo Lobo Heldwein, Lucio Steckling, Federal University of Santa Catarina, BR

Submodule Capacitor Reduction for a 1-MVA SiC-Based Modular Multilevel Converter Motor Drive using High Frequency Common-Mode Voltage Injection

Karun Arjun Potty, He Li, Muneer Al-Sabbagh, Ziwei Ke, Jianyu Pan, Risha Na, Daniel Yue, Julia Zhang, Longya Xu, Jin Wang, The Ohio State University, USA

Low Voltage Modular Multilevel Converter Submodule for Medium Voltage Applications

Milan Utvic, Drazen Dujic, Ignacio Polcano, Power Electronics Laboratory, EPFL, CH

Generic Design and Implementation of Multi-Cell Multi-Phase Voltage Source Inverters

Thanh Hai Phung, Lyubomir Kerachev, Jean-Christophe Crebier, Sang Nguyen, CMP, F; Yves Lembeye, G2Elab, F; Sergio Busquets-Monge, Joan Nicolas-Apruzzese, University Polytechnic of Catalonia, E

GaN System Integration

Efficiency Optimization in Highly Resonant Wireless Power Systems

Michael de Rooij, Yuanzhe Zhang, Efficient Power Conversion, USA

Highly-Efficient MHz-Class Operation of Boost DC-DC Converters by Using GaN Transistors on GaN with Reduced RonQoss

Shinji Ujita, Hiroyuki Handa, Jongruey Yang, Daisuke Shibata, Masahiro Ogawa, Kenichiro Tanaka, Satoshi Tamura, Tsuguyasu Hatsuda, Panasonic, J

A 3-Phase T-Type 3-Level Inverter Using GaN Bidirectional Switch with Very Low On-State Resistance

Hiroaki Ueno, Yusuke Kinoshita, Yasuhiro Yamada, Asamira Suzuki, Takashi Ichiryu, Masanori Nomura, Hideaki Fujiwara, Hidetoshi Ishida, Tsuguyasu Hatsuda, Panasonic, J

System Integration Benefits in GaN Power IC

Marco Giandalia, Dan Kinzer, Navitas Semiconductor, USA

Reliability

Defining the Ruggedness of Power MOSFETs used in Repetitive Avalanche for Automotive Applications

Andy Berry, Wayne Lawson, Nexperia, GB



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VGE,th(T) and VCE(T)-Method to Measure the Cooling of an IGBT After Short Circuit in an Inverter

Sebastian Hiller, Semikron, D; Josef Lutz, Jianjie Zhang, Technical University of Chemnitz, D

Advanced Temperature Estimation in Low Rds,on p-GaN HEMT Devices for Performing Power Cycling Tests

Jörg Franke, Josef Lutz, Christian Bäuml, Danny Kretschmar, Technical University of Chemnitz, D



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Investigating the Mold Compounds Influence on Power Cycling Lifetime of Discrete Power Devices

Alexander Otto, Rainer Dudek, Ralf Döring, Sven Rzepka, Fraunhofer Institute ENAS, D

Current Sensing

Applicability of New Current Sensing Techniques in Motor Control

Frank Lautner, Mark-M. Bakran, University of Bayreuth, D

Novel Current Measurement Concept for Half Bridge Topologies Based on Simple-to-Implement Digital Current Observer

Mohsin Ejaz Ahmad, Frank Schafmeister, Joachim Böcker, University of Paderborn, D

Very Efficient Current Observer for Sigma Delta Modulation based Current Transducers for High Bandwidth Current Control

Jens Onno Krah, Eduard Fitz, Cologne University of Applied Sciences, D; Pascal Maeder, LEM International, CH

A Derivative Pulsed-Current Sensor and its Application for Protection and Monitoring of GaN HEMTs

Shmuel Ben-Yaakov, Ben Gurion University, IL; David Shapiro, Sharon Apter, VISIC Technologies, IL

High Voltage IGBTs

Enhancing Short-Circuit Capability of High-Performance IGBTs by Gate-Drive Unit

Jan Fuhrmann, Julian da Cunha, Hans-Günter Eckel, Robin Werner, University of Rostock, D

Humidity Robustness of IGBT Guard Ring Termination

Boni Boksteen, Charalampos Papadopoulos, Chiara Corvasce, Gontran Pâques, ABB Switzerland, CH

New 6.5kV/1000A Module with LOCOS Trench Oxide IGBT Chips and Design Variation for Traction and HVDC Applications

Luther-King Ngwendson, Owen Basset, Mark Birkett, Mark Briggs, Lee Coulbeck, Ian Deviny, Tony Garraway, John Hutchings, Chris Kong, Imran Saddiqui, Jim Thomson, Yangang Wang, Chunlin Zhu, Dynex Semiconductor, GB

High Power Density Oscillation Free 1800A/3300V E2 IGBT Module with TMOS+ IGBT and PIC FRD Technology

Xubin Ning, Haihui Luo, Yao Yao, Rongzhen Qin, Qiang Xiao, Feiyu Zhou, CanJian Tan, Yuan Teng, Pengfei Liu, Haibo Xiao, Zhuzhou CRRC Times Electric, CN; Ian Deviny, Luther-King Ngwendson, Dynex Semiconductor, GB

Novel 550A_3300V Module with IGBT4 and .XT Technology in XHP3 Package to Enhance Power Density and Lifetime for Next Generation Power Converters

Vishal Jadhav, Ulrich Schwarzer, Sven S. Buchholz, Waleri Brekel, Infineon Technologies, D



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Special Session: Smart Transformers

Requirements for Smart Transformer

Marco Liserre, Rongwu Zhu, Christian-Albrechts-University of Kiel, D

Solid State Transformers with SiC Building Blocks

Ravi Raju, General Electric, USA

Power Electronic Traction Transformers in 25 kV / 50 Hz Systems: Optimisation of DC-DC Isolated Converters with 3.3 kV SiC MOSFETs

Florent Morel, Alexis Fouineau, Laboratoire Ampère, F; Philippe Ladoux, University of Toulouse, F; Caroline Stackler, Piotr Dworakowski, Nathan Evans, François Wallart, Supergrid Institute, F

100kW Bi-Directional DC-DC Converter Using SiC Mosfets

Jamie Lamb, David Gurwicz, Nigel Jakeman, Turbo Power Systems, GB

Technical Requirements and Challenges for Grid Applications of Smart Transformers

Marius Langwasser, Christian-Albrechts-University of Kiel, D; Ali Kazerooni, WSP, GB

Control Methods for Power Converters

Decentralized Controller for the Cell-Voltage Balancing of a Multilevel Flying Cap Converter

Miguel Vivert, Pontificia Universidad Javeriana, CO; Marc Cousineau, Philippe Ladoux, University of Toulouse, F; Joseph Fabre, LAPLACE laboratory, F

Predictive Resonant Converter for Computing Applications

Xiaomin Wu, Tobias Raimar, ON Semiconductor, D; Alessandro Zafarana, ON Semiconductor, I

Model-Based Control of an Inverter for Wide Range Soft-Switching Operation

Felix Manthey, Anton Gorodnichev, Eivind Langnes, Georg Pangalos, Frerk Haase, Fraunhofer Institute ISIT, D

Continuously Variable Controlled Transformer for Grid Voltage Stabilization

Bernhard Girardi, Kurt Schenk, NTB, CH

Adaptive Switching Sequence Selection in Space Vector Modulation of Buck-Type PWM Rectifiers

Lorenzo Giuntini, ABB Industrial Solutions, CH

Power Quality and EMC

EMC Improvement with New Architectures of Gate Drivers for SiC MOSFET Devices

Luciano Alves, Pierre Lefranc, Pierre-Olivier Jeannin, Benoit Sarrazin, Van-Sang Nguyen, G2Elab, F

Multi-cell DC-DC Converters - Input Differential Mode Filtering Generic Design Rules and Implementation

Théo Lamorelle, Jean-Christophe Crebier, Yves Lembeye, G2Elab, F; Sang Nguyen, CMP, F; Jean Christophe Podvin, David Rubio, Maatel, F

Input Filter Protection in Current Source Rectifiers

Lorenzo Giuntini, ABB Industrial Solutions, CH



A Novel Approach to Reduce EMI in Switched-Mode Power Supplies Operating at Fixed Switching Frequencies

Florian Hubert, Thomas Dürbaum, Philipp Dorsch, Stefan J. Rupitsch, Friedrich-Alexander-University of Erlangen-Nuremberg, D

Design of a Hybrid Common - Mode EMI Filter for Traction Inverters in Electrical Vehicles

Denis Müller, Michael Beltle, Stefan Tenbohlen, University of Stuttgart, D; Konstantin Spanos, Robert Bosch, D

GaN Devices

Improvements on Dynamic On-State Resistance in Normally-off GaN HEMTs

Carsten Kuring, Sibylle Dieckerhoff, Technical University of Berlin, D; Marvin Tannhäuser, Siemens, D

Reliability Test Results of PCB Soldered GaN GIT Devices

Roman Boldyrjew-Mast, Josef Lutz, Jörg Franke, Danny Kretzschmar, Technical University of Chemnitz, D

GaN-GIT Power Transistor Switching Behavior and Application in a Motor Drive Inverter

Michael Lutz, Jörg Weiß, Siemens, D; Josef Lutz, Technical University of Chemnitz, D

The Effect of Dynamic On-State Resistance to System Losses in GaN-based Hard-Switching Applications

Ruoyu Hou, Juncheng Lu, GaN Systems, CDN

AC-DC and DC-AC Converters

Design Considerations of a Single Stage LLC Battery Charger

Wenqi Zhou, Robert Bosch, D; Martin Wattenberg, Robert Bosch Center for Power Electronics, D; Ulf Schwalbe, University of Applied Sciences Fulda, D

Experimental Evaluation of Boost and Flyback based Resistor Emulators for Ferroresonance Damping in Isolated Neutral MV Distribution Grids

Francisco Azcondo, Eduardo Bayona, Raquel Martínez, Mario Manana, Alberto Pigazo, University of Cantabria, E; Rafael Minguez, Viesgo, E

Converter Loss Evaluation of Flyback Converter Applying Power Decoupling Capability with ZVS Operation

Hiroki Watanabe, Jun-ichi Itoh, Nagaoka University of Technology, J; Shinichiro Nagai, Naoki Koike, Pony Electric, J

Combining the Benefits of SiC T-MOSFET and Si IGBT in a Novel ANPC Power Module for Highly Compact 1500-V Grid-Tied Inverters

Benjamin Sahan, Andre Lenze, Christian Müller, Jens Czichon, Maximilian Slawinski, Infineon Technologies, D

Chip Bond Technologies

104 Failure Mechanisms of Sintered Die Top Systems under Power Cycling Tests

Andreas Hinrich, Heraeus Germany, D; Nan Jiang, Josef Lutz, Technical University of Chemnitz, D; Benjamin Fabian, Anna Wolf, Marko Kalajica, Andreas Klein, Heraeus; D; Anton Miric, Heraeus Materials Technology, D; Martin Becker, Danfoss Silicon Power, D

Reliability of SiC MOSFET with Danfoss Bond Buffer in Automotive Traction Power Modules

Alexander Streibel, Martin Becker, Ole Mühlfeld, Danfoss Silicon Power; D; Jeffrey Casady, Brett Hull, Shadi Sabri, Daniel J. Lichtenwalner, Wolfspeed, USA

Relationship Between Bonding Properties and Porosity of Sintered Cu Bonding

Hideo Nakako, Dai Ishikawa, Yoshinor Ejiri, Chie Sugama, Yuki Kawana, Motohiro Negishi, Yuichi Yanaka, Hitachi Chemical, J

Silver Alloy Wire Bonding Interconnection Technology used in Power Module

Kazuhiko Sakutani, Satoshi Kondo, Taketoshi Shikano, Koji Yamazaki, Mitsubishi, J

Power Modules Design

Pin-Fin Design and Optimization for Direct Cooling of Electric-Vehicle Traction Inverters

Thomas Gradinger, Daniele Torresin, ABB Switzerland, CH

Comparative Study on the Dynamic Behavior of Next Generation IGBT Modules and Freewheeling Diode Optimization

Uwe Schilling, Peter Beckedahl, Semikron, D

Parasitics Optimization for GaN HEMTs in Conventional Housing-Type Power Modules

Juncheng Lu, Ruoyu Hou, GaN Systems, CDN

Retrofitting Wide Band Gap Devices to Classic Power Modules using Silicon RC Snubbers

Stefan Matlok, Norman Boettcher, Bernd Eckardt, Tobias Erlbacher, Philipp Hörauf, Markus Jahn, Martin März, Fraunhofer Institute IISB, D

High Power Semiconductors

Thyristors with Low Circuit Commutated Turn-Off Time for HVDC and FACTS

Jan Vobecky, ABB Switzerland, CH

IGCTs in HVDC Systems: Analysis and Assessment of Losses

Davin Guédon, Philippe Ladoux, University of Toulouse, F; Sébastien Sanchez, Laplace Laboratory, F; Mehdi Kanoun, EDF, F

High Voltage Thyristors with Self-Protection Elements in Cases Beyond Safe Operation Mode

Dmitry Titushkin, Alexey Surma, Vladimir Verevkin, Konstantin Stavtsev, JSC Proton-Electrotex, RUS

High Current Welding Diodes: Impact of Silicon Wafer Thickness and Diffusion Profile on Forward Voltage Drop

Adela Vosvrdoва, Libor Pina, Ladislav Radvan, ABB, CZ

Investigation of Power LTTs in Utmost Pulse Modes

Aleksey Khapugin, Alexander Plotnikov, Valentin A. Martynenko, Alexey Grishanin, Vladimir Kartaev, Stanislav Kostritskii, PJSC Electroprivyarnitel, RUS

High Reliability 6500V IGBT with Low-Stress Copper Metallization

Hongxin Zhang, Yu Feng, Haihui Luo, Guoyou Liu, Canjian Tan, Xingyao Han, Jie Ding, Zhihui Tang, Honglu He, Zhaohai Pan, Zhuzhou CRRC Times Electric, CN; Ian Deviny, Dynex Semiconductor, GB

Parallel Short-Circuits in Three-Level ANPC Converters

David Hammes, Hans-Günter Eckel, Robin Werner, University of Rostock, D; Dietmar Krug, Siemens, D

Field Stop Press-Pack Diodes in Half Bridge Submodules for Increased Efficiency in MMC Applications

Fabian Hohmann, Mark-M. Bakran, University of Bayreuth, D

Advanced IGBTs and MOSFETs

New, Best-In-Class 900-A 1200-V EconoDUAL™ 3 with IGBT 7: Highest Power Density and Performance

Klaus Vogel, Christoph Urban, Infineon Technologies, D

Low Loss 820A/750V S3+ IGBT Module with New IGBT and Diode Technology for EV/HEV Application

Yao Yao, Haihui Luo, Qiang Xiao, Zhonghua Zhang, Zhenhua Tan, Haibo Xiao, Rongzhen Qin, Xubin Ning, Ninghua Xu, CanJian Tan, Zhuzhou CRRC Times Electric, CN; Chunlin Zhu, Dynex Semiconductor, GB

Interaction of Power Module Design and Modulation Scheme for Active Neutral Point Clamped Inverters

Andressa Colvero Schittler, Daniel Heer, Christian Müller, Infineon Technologies, D

Ultra-High Accuracy On-Chip Temperature Sensor in RC-IGBT Module for xEV

Eri Ogawa, Tomoya Nakayama, Souichi Yoshida, Shunji Takenoiri, Masahito Otsuki, Fuji Electric, J; Steffen Ewald, Fuji Electric Europe, D

Interaction of Inverter Performance and Selection Criteria for Paralleled Modules

Matthias Wissen, Daniel Domes, Waleri Brekel, Infineon Technologies, D

ST's MDmesh™ M6 Technology Improves Efficiency in LLC Resonant Half-Bridge Converters

Filippo Scrimizzi, Alfio Scuto, Domenico Nardo, Simone Buonomo, STMicroelectronics, I

MDmesh™ DM6: The Latest Super-Junction MOSFET Technology with Improved Fast Recovery Diode

Carmelo Parisi, Maurizio Melito, Filadelfo Fusillo, Domenico Nardo, STMicroelectronics, I

Evaluation of Low Voltage MOSFETs Optimised for Improved Current Sharing

Steven Waterhouse, Ilian Bonov, Nexperia Semiconductors, GB

Intelligent Power Modules

New PFC Integrated Intelligent Power Module for Home Appliances

Jaewook Lee, Taejin Lee, Junbae Lee, Daewoong Chung, Infineon Technologies, KP

IGBT Power Module with Integrated Current and Temperature Sensor for HEV/EV Traction Inverter

Arun Kumar Sessa, John Mookken, Leon Zhang, ON Semiconductor, USA

High Efficiency Conversion for Supply the MCU

Zdenek Pfof, ON Semiconductor, CZ

Thermal Performance Comparison between New 650V Automotive Smart Power Module and Conventional Automotive Discrete IGBT

David Jo, Kangyoon Lee, Jang Shawn, Lee ByoungOk, Thomas Yim, JunHo Lee, ON Semiconductor, KP

A New Compact SMD-Type Intelligent Power Module for Motor Drive Applications

Bum-Seok Suh, In Wha Jeong, Wanki Hong, Junho Lee, Jaesung Ko, Son Tran, Zhiqiang Niu, Alpha and Omega Semiconductor, USA

Development of Enhanced Interleaved PFC Boost Converter typed 650V Intelligent Power Module for HVAC Systems

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New 1200V SiC MOSFET Intelligent Power Module

Miran Baek, Minsub Lee, Soohyuk Han, Junbae Lee, Deawoong Chung, Infineon Technologies, KP

Thermal Management and Cooling

Thermal Conductivity and Interface Thermal Resistance Evaluation of DBC/DBA in Power Die Attach Modules

Chuantong Chen, Naoki Sato, Shijo Nagao, Katsuaki Suganuma, University of Osaka, J; Tetsuro Ogushi, Advanced Knowledge Laboratory, J

Safe Operating Area of Medium-Power Discrete Rectifiers, a Key Differentiator in High Power Density Applications

Reza Behtash, Tim Böttcher, Martin Röver, Olaf Vogt, Nexperia Germany, D

An Experimental Setup to Evaluate the Efficiency and Cooling Capability of IGBT and SiC Power Modules

Simon Ravyts, Jeroen Zwysen, Giel Van den Broeck, Leonie Halleman, Johan Driesen, KULeuven, B; Stephan Schlimpert, Flanders Make, B

Thermal Behavior of the High Power Automotive Dual Sided Cooled Module

Udaykumar Vangaveti, Pradeep Kumar Tamma, John Mookken, ON Semiconductor, D

Online Junction Temperature Measurement via Internal Gate Resistance Using the High Frequency Gate Signal Injection Method

Johannes Ruthardt, Kevin Muñoz Barón, Philipp Marx, Kanuj Sharma, Maximilian Nitzsche, Manuel Fischer, Jörg Roth-Stielow, University of Stuttgart, D

Using the Case Temperature to Identify the Cauer-Type Thermal Parameters of IGBT Module

Xiong Du, Jun Zhang, Xiao Du, Wenshan Xiao, Rui Du, Jie Cai, Chongqing University, CN

Methods for Cooling Power Semiconductors in SMD Packages

Jakub Jirsa, Jakub Hajek, STMicroelectronics, CZ

Enhanced Thermal Couple Term Model for Power Modules

Henning Ströbel-Maier, Danfoss Silicon Power, D

Improving the Cooling Performance of Power Modules by Using Anisotropic Materials

Shunsuke Kurahashi, Ichiro Ota, Yoshishige Okuno, Showa Denko, J

Simulation Analysis of Selective Cooling for Correcting Unbalanced Temperature of Multiple Power Dies in SiC Power Modules

Sang Won Yoon, Sangyoo Lee, Hanyang University, ROK

Combined Solutions for Thermal Management and Electromagnetic Shielding

Sebastian Mirasol-Menacho, Antonio Alcarria, Jorge Victoria, Würth Elektronik eiSos, D; Adrian Suarez, Pedro A. Martinez, Jose Torres, Julio Martos, Raimundo Olcina, Jesus Soret, ETSE University Valencia, E

Packaging and Integration Technologies



Power Module Design for Utilizing of WBG Switching Performance

Kirill Klein, Klaus-Dieter Lang, Technical University of Berlin, D; Eckart Hoene, Fraunhofer Institute IZM, D

Interconnection Technology for 10kV SiC Power Module

Cyrille Duchesne, Julie Tarrieu, Philippe Lasserre, DEEP Concept, F

An EMI Performance Improved Stacked Substrate Packaging Structure with Ultra-Low Parasitics for SiC Half-Bridge Power Module

Yue Xie, Zhizhao Huang, Cai Chen, Yong Kang, Huazhong University of Science and Technology, CN

Performance of a GaN Half Bridge Switching Cell with Substrate Integrated Chips

Eduard Dechant, Norbert Seliger, University of Applied Sciences Rosenheim, D; Ralph Kennel, Technical University of Munich, D

Optimization for the Number of Parallel-Connected Switching Devices in High-Efficiency High-Power Converters

Koroku Nishizawa, Tetsunori Kinoshita, Jun-ichi Itoh, Nagaoka University of Technology, J

Thermal Conductivity and Reliability of Al/C Composite for Cold Plates

Katsumasa Hirose, Kazuhiko Minami, Shoichiro Wakabayashi, Ichiro Ota, Showa Denko, J

The Thermal and Mechanical Properties of Reinforced AlN with Metal Bonding Types

Manseok Kwak, Kyong Hwan Kim, Myoung-Ki Joung, KCC, KP

Bridging The Void Between Semiconductor Discretes and Modules in Automotive Traction Inverters

Asantha Kempitiya, Wibawa Chou, Infineon Technologies, USA

High Temperature Packaging for Sensors

Lars Rebenklau, Paul Girth, Henry Barth, Fraunhofer Institute IKTS, D

Silver and Copper Sinter Technologies

High Temperature Wireless Packaging of SiC Power Device by Organic-Free die Attach Material Sintering

Lei Liu, Hui Ren, Guisheng Zou, Zhongyang Deng, Zhenyu Zhao, Tsinghua University, CN

Direct Bonding to Aluminum and Nickel Surfaces by Pressure Silver Sintering

Ly May Chew, Wolfgang Schmitt, Heraeus Germany, D; Monique Dubis, Tamira Stegmann, Erika Schwenk, University of Applied Sciences Aschaffenburg, D

The Characteristics of Sintered Copper layer by Pressure Sintering Process for Power Module Application

Shinichi Yamauchi, Kei Anai, Jung-Lae Jo, Takahiko Sakaue, Mitsui Mining & Smelting, J; J.Y. Chang, S.Y. Fun, K.H. Cheng, H.W. Cheng, H.H. Lin, W.K. Han, S.F. Hsu, C.M. Tseng, T.C. Chang, ITRI Industrial Technology Research Institute, CN

Selective Silver Sintering on Organic-Based Circuit Boards

Jonas Müller, Fabian Dresel, Martin März, Christoph Friedrich Bayer, Andreas Schletz, Fraunhofer Institute IISB, D; Michael Novak, Conti Temic microelectronic, D; Thomas Hofmann, Hofmann Leiterplatten, D

Stable Microstructure and Mechanical Properties of Pressureless Sintered Silver at a Temperature of 250 °C

Masafumi Takesue, Tomofumi Watanabe, Keisuke Tanaka, Miki Matsui, Bando Chemical Industries, J

GaN Micro-Heater Chip for Power Cycling of Die Attach Modules with Ag Sinter Joint and High Temperature Solder

Dongjin Kim, Shijo Nagao, Katsuaki Suganuma, Chuantong Chen, Yukiharu Kimoto, Tohru Sugahara, University of Osaka, J; Tetsu Takemasa, Senju Metal Industry, J; Yasuyuki Yamamoto, Tokuyama, J; Naoki Wakasugi, Yamato Science, J

Sintering Cu Paste on Cu Plates with Different Metallization

Shuhei Takata, Chuantong Chen, Yue Gao, Katsuaki Suganuma, University of Osaka, J

Highly Reliable Package using Cu Particles Sinter Paste for Next Generation Power Devices

Yue Gao, Chuantong Chen, Shijo Nagao, Katsuaki Suganuma, University of Osaka, J; Amir Sajjad Bahman, Francesco Iannuzzo, Aalborg University, DK

Reliability

Fast Active Cycling Power Test Bench using Dedicated Modules Assemblies for Studying Wire Bond Ageing

Guillaume Pellecuer, Jean-Jacques Huselstein, Francois Forest, André Chysochoos, University of Montpellier, F; Serge Bontemps, Microsemi Power Module Products, F

Technology Advances and Wear-out Evaluation of 3300V/1500A High-Power IGBT Module

Yue Huang, Daohui Li, Haoze Luo, Helong Li, Fang Qi, Xiang Li, Yangang Wang, Dynex Semiconductor, GB

Reliability Considerations of High Power IGBT Modules under High Temperature/Humidity/Bias (HTHB) Condition

Kongjing Li, Lee Coulbeck, Daohui Li, Mark Birkett, Haoze Luo, Helong Li, Yangang Wang, Dynex Semiconductor, GB; Xiaoping Dai, Guoyou Liu, Zhuzhou CRRC Times Electric, CN

Reliability Analysis and Optimization of Aluminum Bonding Wire for SiC Power Module with Stacked Substrates

Yifan Tan, Cai Chen, Zhizhao Huang, Chi Zhang, Teng Liu, Yong Kang, Huazhong University of Science and Technology, CN

Development of TCT Life Prediction Model of Solder for Power Module

Gary Chi, Ian Chen, Andy Liao, Delta Electronics, CN

A Long Duration Test-Bench for a 6.5kV RC-IGBT Full Bridge Inverter

Julian da Cunha, Hans-Günter Eckel, Daniel Lexow, University of Rostock, D

The Influence of Solder Paste Formulation and Soldering Process Factors on Voiding Under Large QFN Devices

Rodrigo Aguilar, Henkel, F; Matthew Jones, Barry Wenham, Richard Boyle, Henkel, GB

Indirect On-State Voltage Estimation Using a Voltage Sensitive Electrical Parameter through the Gate Driver

Julio Brandelero, Luis Maria Alonso, Jeffrey Ewanchuk, Stefan Mollov, Mitsubishi Electric, F

Estimating the Chip Temperature in an Inverter by Measuring the Temperature Sensitive Miller Plateau during Turn-Off

Sebastian Hiller, Semikron, D; Jianjie Zhang, Josef Lutz, Technical University of Chemnitz, D

In-Situ Thermal Impedance Spectroscopy of Power Electronic Modules for Localized Degradation Identification

Christoph van der Broeck, Sven Kalker, Rik W. De Doncker, RWTH Aachen University, D; Tomothy A. Polom, Robert D. Lorenz, University of Wisconsin-Madison WEMPEC, USA

Automotive and Electromobility

GaN HEMT Based High Power Density Integrated Inverter for a Six-Phase Permanent Magnet Synchronous Motor without Forced Convection

Zongheng Wu, Yi Zhang, Cai Chen, Peng Han, Yong Kang, Huazhong University of Science and Technology, CN

A Bi-Directional AC/DC Converter for Electric Vehicle Charging Application Using a Bi-Directional Fixed Frequency CLLC Converter Based on SiC Device

Jianwen Shao, Guy Moxey, Wolfspeed, A Cree Company, USA; Binod Agrawal, Cree India, IND

A Modified 12-Pulse Three-Phase Bidirectional Dual Active Bridge DC-DC Converter for E-Vehicles Applications

Eduardo Facanha de Oliveira, Peter Zacharias, University of Kassel, D

Multi-Engine in Modular Multilevel Converter Based Split Battery Systems for Electric Vehicles

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A 60kW, 0,6l SiC PowerCore with 5nH Total Commutation Inductance for Automotive Applications

Nicola Burani, Roland Bittner, Alexander Wehner, Matthias Kujath, Sven Bütow, Semikron Elektronik, D; Serhij Matichyn, Matthias Köppen, TDK Electronics, D

Real Time Balancing for Modular Passive Battery Management System

Francesco Porpora, Umberto Abronzini, Ciro Attaianese, Mauro Di Monaco, Giuseppe Tomasso, University of Cassino and Southern Lazio, I

A Novel Application Kit Design Accelerating the Performance of Danfoss' 1.2 kV SiC CMTM1000X for EV Drivetrains

Fabio Carastro, Tim Rettman, Ole Mühlfeld, Danfoss Silicon Power, D; Michael Brubaker, SBE, USA

Common Mode Analysis of Non-Isolated Three-Phase EV-Charger for Bi-Directional Vehicle-to-Grid Operation

Benjamin Strothmann, Frank Schafmeister, Joachim Böcker, University of Paderborn, D

Design of a GaN based CLLC Converter with Synchronous Rectification for On-Board Vehicle Charger

Thorben Schobre, Konstantin Siebke, Regine Mallwitz, Technical University of Braunschweig, D

Interleaved Active Clamp Forward Converters as Single Stage On- Board DC-DC Converters for EVs – an Accurate Model and Design Considerations

Philipp Rehlaender, Joachim Böcker, Frank Schafmeister, University of Paderborn, D; Tobias Grote, Delta Energy Systems, D

Evaluation of 800V Traction Inverter with SiC-MOSFET versus Si-IGBT Power Semiconductor Technology

Stefan Hain, Marco Denk, Michael Meiler, ZF Friedrichshafen, D

Thermal Aspects of Designing a 48V 10KW Belt Starter Generator using LFPACs Compared to Bare Die

Clement Magnien, Ian Kennedy, Mirela Soca, Nexperia Semiconductors, GB

Power Electronics in Transportation

Optimal Design Methodology of a Bidirectional Three- Phase CLLC Resonant Converter using Computer-Based Circuit Simulation

Xiao Yu, Eduardo Facanha de Oliveira, Peter Zacharias, University of Kassel, D

DC-Bus Capacitors Influence in a GaN Motor Drive Inverter

Charley Lanneluc, Dominique Bergogne, Pierre Perichon, CEA, F

Highly Efficient SiC Inverter for Aircraft Application with Innovative Thermal Management

Florian Hilpert, Christian Benteimer, Albanik Islami, Sandra Mainusch, Bernd Eckardt, Fraunhofer Institute IISB, D; Martin März, Friedrich-Alexander-University Erlangen-Nuremberg, D

ESPRIT Project: An Innovative Electric Car Sharing Solution

Laurent Garnier, Julien Dauchy, Daniel Chatroux, Valery Cervantes, CEA, F

Supercapacitor-Based Energy Recovery System for Elevators with a Modular DC-DC Converter

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Propagation Paths and Filter Methods for Common Mode (CM) Currents in Wireless Power Transfer Systems (WPT) for Electrical Vehicles (EV)

Christof Ziegler, Stefan Weber, TDK Electronics, D; Georg Heiland, Finpower, D

A 50kW Fast Charger Based on a Series-Resonant Converter with Variable Input-to-Output Voltage Conversion Ratio

Martin Nießen, Patrick Deck, Christian Peter Dick, Cologne University of Applied Sciences, D; Marcus Conrad, AixControl, D

Investigation of New Battery Cells for Prospective Use in Electric Cars

Ansgar Reuning, Andreas Lindemann, Otto-von-Guericke-University, D; Christoph Pohling, Volkswagen, D

Smart Energy Management of Li-ion Battery / Supercapacitor Hybrid Energy Storage System for Electric Vehicle Applications

Théophile Paul, Tedjani Mesbahi, Sylvain Durand, Damien Flieller, INSA Strasbourg, F; Wilfried Uhring, University of Strasbourg, F

Safety-Related Interfaces for Position Encoders – a Survey

Timo Wilkening, Jens Onno Krahl, Cologne University of Applied Sciences, D; Holger Goergen, SEW-Eurodrive, D

Renewable Energy, Storage and Grid Control

Three Phase Semi-Z-Source Inverter for PV Applications

Mohamed Abdelrahem, Ralph Kennel, Technical University of Munich, D; Mohamed Ismeil, South Valley University, ET; Mohamed Orabi, Aswan University, ET

Implementation and Design of an Autonomous Residential DC Nano-Grid

Mohammed Azharuddin Shamshuddin, **Ralph Kennel, Technical University of Munich, D;** Sudhakar Babu Thanikanti, Ramachandramurthy Vigna K, Tenaga National University, MAL

Comparative Analysis Between AC and DC Distribution Systems in a Photovoltaic System: A Case Study of a School in Ireland

Meshari Alshammari, Maeve Duffy, National University of Ireland, IRL

Battery Energy Storage System to Provide Ancillary Services to the Grid with High Intermittent Electric Generation Penetration

Felipe Marques, Sender Rocha dos Santos, Raul Fernando Beck, Juliana C. M. de Souza Aranha, Thiago Chiachio do Nascimento, Maria de Fatima Rosolem, Bruno Cesar de Camargo Angeli, CPqD, BR; Mauro Fernando Basquera, PHB Electronica, BR

Requirement Analysis of Circuit Breakers in Future Hybrid AC-DC Grids

Marius Langwasser, Giovanni De Carne, Marco Liserre, Christian-Albrechts-University of Kiel, D; Thorsten Schindler, Aydin Boyaci, Christian Simonidis, Dietmar Gentsch, ABB, D; Horst Günter Bender, TenneT TSO, D

Investigation of Stability Issues in Droop-Controlled DC Microgrids with Intermediate Bus Architecture

Leopold Ott, Matthias Schulz, Bernd Wunder, Fraunhofer Institute IISB, D; Martin März, Friedrich-Alexander-University Erlangen-Nuremberg, D

Bidirectional Bipolar Electronic Overcurrent Safety Elements for Bipolar DC Grids

Matthias Schulz, Julian Kaiser, Kilian Gosses, Fraunhofer Institute IISB, D; Rafael Conz, Martin März, Friedrich-Alexander-University Erlangen-Nuremberg, D

Controlling Strategies for Meshed Offshore DC Collector Grids

Steffen Menzel, René Reimann, Holger Raffel, Bernd Orlik, University of Bremen, D; Reinhard Kruse, wpd offshore solutions, D

Dimensioning and Lifespan Estimation of Electrolytic Capacitors in Industrial DC Micro Grids

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Demonstrator for Bipolar Point-to-Point DC Link with MMC

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Transformers, Inductors, Capacitors

An Investigation in DC-link Film Capacitors for Reduced Parasitic Inductances

Jasper Schnack, Ulf Schümann, Victor Golev, University of Applied Sciences Kiel, D; Regina Mallwitz, Technical University of Braunschweig, D

Novel Fit Formula for the Calculation of Hysteresis Losses Including DC-Premagnetization

Erika Stenglein, Daniel Kübrich, Manfred Albach, Thomas Duerbaum, Friedrich-Alexander-University Erlangen-Nuremberg, D

Modelling of Frequency-Dependent Winding Resistance for Inductive Components

Michael Schmidhuber, Andreas Marquardt, Manfred Wohlstreicher, Philemon Wrensch, SUMIDA Components & Modules, D

Calculation, Simulation and Production of PCB Integrated Inductors with Focus on Fringing Effect

Gerald Weis, Ivan Salkovic, AT&S Austria, A

A Novel Design for a 3.6KW LLC Transformer with Tight Tolerance, Primary Side Concentrated Leakage Inductance to Replace a Discrete Resonant Inductor for Improved EV/HEV Onboard Charger Performance

Gerard Healy, Pulse Electronics, IRL; Tyler Wang, Pulse Electronics, CN

High Frequency Inductor for GaN Applications: Construction Analysis and Efficiency Comparison

John Gallagher, Pulse Electronics, CDN; Omara M Aziz, Pulse Electronics, D

Modeling Joule Losses in Planar Transformers Operating in High-Frequency Flyward Converter

Lucas de Souza, Yves Lembeye, Jean-Paul Ferrieux, G2Elab, F; Bruno Cogitore, EXXELIA, F; Mimoun Askeur, VALEO, F

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Siqi Lin, Jens Friebe, Leibniz University Hannover, D; Sascha Langfermann, Michael Owzareck, BLOCK Transformatoren-Elektronik, D

Calculation Model for the Transient Voltage Distribution in Inductor Windings Effected by High dv/dt

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High Flux Density Amorphous Materials for High-Frequency Power Applications

Cathal Sheehan, Bourns Electronics, IRL; Hasan Ahmadian Baghbaderani, Ansar Masood, Zoran Pavlovic, Paul McCloskey, Tyndall National Institute, IRL

Design of an Unbalanced High Power Three-Winding Planar Transformer for Electric Vehicle Application

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SiC Devices

Fully Automated Measurement of Losses on Wide Bandgap Power Semiconductors

Daniel Stracke, Matthias Klee, Axel Seibel, Fabian Schnabel, Marco Jung, Fraunhofer Institute IEE, D

Increased Short-Circuit Capability of SiC-MOSFET by Gate-Drive Unit

Florian Störmer, Hans-Günter Eckel, Jan Fuhrmann, University of Rostock, D

Virtual Double Pulse Tests to Reduce Measuring Time and Effort in Semiconductor Modeling

Daniel Goldmann, Marek Galek, Simon Schramm, University of Applied Sciences Munich, D; Hans-Georg Herzog, Technical University of Munich, D

A Multi-Dimensional Full Automatic Power Semiconductor Test Bench for Accurate Semiconductor Loss Calculation

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Benefits and Advantages of Using SiC

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Suppressing Voltage Glitches in SiC MOSFETs

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Improving Energy Efficiency in Industrial Drives using SiC MOSFETs

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A Fast and Accurate SiC MOSFET Compact Model for Virtual Prototyping of Power Electronic Circuits

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Increase Switching Performance by Integrated SiRC Snubber in Direct Cooled SiC Power Module

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Anup Bhalla, Ke Zhu, Jonathan Dodge, United Silicon Carbide, USA

Switching Characteristics of a 1.2 kV SiC MOSFET Module using a Controllable Current-Sourced Gate Driver

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GaN Devices

Properties of a GaAs Power Rectifier Diode Module for Ultra-Fast Electric Vehicle Battery Charging Systems

Thomas Blank, Bao Ngoc An, Helge Wurst, Matthias Luh, Benjamin Leyrer, Marc Weber, Karlsruhe Institute of Technology, D; Dai Ishikawa, Hitachi Chemical, J; Volker Dudek, 3-5 Power Electronics, D

GaN Based High Current Bidirectional DC-DC Converter for 48 V Automotive Applications

Michael de Rooij, Edward A. Jones, Suvankar Biswas, John Glaser, Efficient Power Conversion, USA

Optimal eGaN FET Scaling for Minimal Power Loss in High Step-Down Ratio Half Bridge Converters

Jianjing Wang, Michael de Rooij, Edward A. Jones, Efficient Power Conversion, USA

A GaN-on-Si-Based Logic, Driver and DC-DC Converter Circuit with Closed-Loop Peak Current-Mode Control

Michael Basler, Stefan Moench, Richard Reiner, Patrick Waltereit, Rüdiger Quay, Oliver Ambacher, Fraunhofer Institute IAF, D; Ingmar Kallfass, University of Stuttgart, D

New Fast Short Circuit Detection Method for SiC and GaN HEMT Power Semiconductors

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Power Semiconductor Characterization Using Pulse S-Parameter Measurements

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New GaN Technology for Superior Efficiency in Electric Vehicles

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Drivers, Control ICs and Drive Strategies

Gate Driving Circuit Design and Gate Driver Power Supply Structure for SiC MOSFETs

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A Soft-Switching Gate Driver for SiC MOSFET

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Short-Circuit Protection Circuit for SiC-MOSFETs

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Dynamic Current Boosting Technique of Flipped Voltage Follower for Low-Dropout Regulator

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Digitally Adjustable Gate Resistor Concept for Automated and Time-Saving Switching Characterisation of Power Semiconductors

Michael Meissner, Sebastian Fahlbusch, Tobias Lipke, Klaus Hoffmann, Helmut Schmidt University, D

Optimized IGBT Turn-On Switching Performance Using The Full Device Safe Operating Area

Christoph Lüdecke, Georges Engelmann, Rik W. De Doncker, RWTH Aachen University, D

Level-Shifter Current Influence to Power Loss of Gate Driver IC

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Optimal Algorithm Design Based on a Digitalized Active Voltage Gate Driver for IGBT Turn-on Transition

Chen Li, Zhiqiang Wang, Dalian University of Technology, CN; Kun Tan, Bing Ji, University of Leicester, GB

Practical Validation of a New Control Strategy for Wind Turbines by the Use of a Central PC for Model Calculation

David Matthies, Wilfried Holzke, René Reimann, Bernd Orlik, University of Bremen, D

UAC-106: Flexible Embedded Control System for Operation and Evaluation of Power Electronics

Blake Nelson, Andrew Lemmon, Samuel Griffin, Chris New, Sergio Bacca Moreno, University of Alabama, USA

FPGA-Based Rapid Control Prototyping of Permanent Magnet Synchronous Motor Servo Drives

Carlos Villegas, Speedgoat, CH; Sabin Carpiuc, The MathWorks, GB

Control Methods and Algorithms

Design of State-Feedback Controller for a Single-Phase Grid-Connected Siwakoti-H Inverter with LCL Filter

Mohamed Abdelrahem, Mirza Abdul Waris Begh, Eyke Liegmann, Ralph Kennel, Technical University of Munich, D; Akshay Mahajan, Aswin Palanisamy, Fraunhofer Institute ISE, D; Yam Siwakoti, University of Technology Sydney, AUS; Petros Karamanakos, Tampere University of Technology, FIN

Efficiency and Motor-Performance Improvement Using WBG-Inverters with Observer-based Actively Damped LC-Sine Wave Filters

Franz Maislinger, Hans Ertl, Technical University of Vienna, A; Goran Stojcic, Florian Holzner, B&R Industrial Automation, A

Voltage-Mode-Current-Control Concept for Current-Source Inverters in Grid Integration

Borala Liyanage Lahiru Sandaruwan, Sunil Gamini Abeyratne, University of Peradeniya, CL; Ranmuni Thilesh Thanura De Silva, CodeGen International, CL

Comparison of Current Control Structures for Three-Phase Four-Wire Systems in Natural Frame

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Improving the Voltage Profile of a Medium Voltage Grid Using Distributed Generation Units

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Improvement of PV Grid Connected System Associated with Active Power Filter Based on Fuzzy-Predictive Direct Power Control

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Control Design of Modular Self-Synchronizing AC- and DC-sided Parallel-Connected Three-Level NPC Inverters

Jochen Staiger, Swen Bosch, Heinrich Steinhart, University of Aalen, D

Analysis of a Mixed Transfer Function and State Space Implementation of Cascade Control

Simon Jung, Stefan Matlok, Bernd Eckardt, Fraunhofer Institute IISB, D; Martin März, Friedrich-Alexander-University Erlangen-Nuremberg, D

Investigation on Carrier Signals to Minimize the Overall Current Ripple of an Interleaved-Switched Inverter

Manuel Fischer, Johannes Ruthardt, Maximilian Nitzsche, Jörg Roth-Stielow, Philipp Ziegler, University of Stuttgart, D

Performance Advantages of Quasi-Resonant Direct Conversion Techniques

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How to Drive 1.7kV SiC MOSFET in Industrial Power Supplies Using Standard PWM Controller

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Power Supplies, DC-DC Converters

Energy Saving Techniques for Industrial Linear Power Amplifiers

Vladan Lazarevic, Miroslav Vasic, Inigo Zubitur, Jose A. Cobos, Technical University of Madrid, E; Eric Boere, Jens Eltze, Gregory Patchin, Apex Microtechnology, USA

Hybrid Switch Capacitor and Synchronous Buck Topology Offers High Step-Down and High Efficiency Conversion

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Weight Reduction of DC-DC Converters Using Controllable Inductors

Dennis Eichhorst, Jonas Pfeiffer, Peter Zacharias, University of Kassel, D

GaN Improves Efficiency of an Asymmetrical Half-Bridge PWM Converter with Synchronous Rectifier

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Zero-Current-Switching Boost Converter

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Resistance Control Network for a Wide-Range Input Voltage Resonant Series Converter

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High-Frequency GaN-Based QSW Buck Converter with Coupled Inductor and Integrated Current-Balancing Transformer for Battery Fast Charging Application

Yi Dou, Ziwei Ouyang, Michael A.E Andersen, Technical University of Denmark, DK

Analytical Modeling and Design of an Active Clamp Forward Converter Applied as a Single-Stage On-Board DC-DC Converter for EVs

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Analysis and Optimization of an Inverse Coupled Inductor in a High Frequency LLC Converter with Current Doubler Rectifier

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AC-DC and DC-AC Converters

GaN-Based High-Frequency Inverter for Highly-Dynamic Ultra-Low Ripple Applications

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GaN High Density 300W AC-DC Converter

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Electromagnetic Emissions by Three Different Concepts of Bidirectional Multi-Phase SiC DC-DC Boost Converters

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EMI Filter for an Application with High Common Mode Currents - a Case Study

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A Detailed Study of the Switching Transients in Power Modules to Reduce EMI in Industrial Drive Applications

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High Voltage and Low Current High Power LED LLC Driver by Stacking Single Ended Rectifiers using a Balancing Capacitor

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Control of a SiC 2.5 MHz Resonant Full-Bridge Inverter for Inductively Driven Plasma

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Ultrasound Piezo-Harvester Energy Transfer Systems for Machine Tool Sensor-Charger Applications

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Low Cost 50W Class EF2 PA for Magnetic Resonance Wire-less Power Transfer Applications

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Comparison of Converters with Constant Output Power for Wireless Power Transmission

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High Power Converters

LCC Resonant Converter for Piezoelectric Transducers With Phase Shift Control

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Characteristics and Design of a Resonant DC-DC Converter Based Modular Topology for Electric Vehicle Fast Charging

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Design and Verification of a Cascaded Advanced AC-Simulator with Virtual Output Impedance

Peter Jonke, Markus Makoschitz, Johannes Stöckl, Sumanta Biswas, AIT Austrian Institute of Technology, A; Hans Ertl, Technical University of Vienna, A

8-Stage Pulse Generator for Bipolar Ground-Symmetric Operation

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High-Performance 300 kW 3-Phase SiC Inverter Based on Next Generation Modular SiC Power Modules

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Comprehensive Comparison of a SiC MOSFET and Si IGBT Based Inverter

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MMC-Topology for High Current and Low Voltage Applications with Minimal Number of Submodules, Reduced Switching and Capacitor Losses

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Multi-Tap Bus Communication for Modular Power Converters with Distributed Isolation

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Motors and Motor Control

An Advanced Filtering Method for Partial Discharge Measurement in the Presence of High dV/dt

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Impact of Inverter Harmonics on the Winding Losses of a PMSM

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New Concept for a Flexible Transport System Based on Transverse Flux Linear Machines

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Dynamic and Robust Control of a 5-DoF Active Magnetic Lorentz-Force Bearing for Space Applications

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A Detailed Investigation of the DC-Link Voltage Ripple in Battery-Fed PWM Inverter Systems

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Comparison of Online Inertia Identification Methods for Permanent Magnet Synchronous Motor

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Asymmetric Three-Phase Operation of Fault-Tolerant Inverters for Increased Output Torque of Electric Machines

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Sensorless Control of a Planetary Motor

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Combination of SVPWM Switching States as Transient Excitation for Saliency-Based Induction Machine Control

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Improving the Dynamic Behavior of Sensorless Control for Induction Machines Using Magnetic Anisotropies

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Modeling and Control of a Chain Scraper for Mining Applications

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Power Interface Communication - Digital Nameplate for Sensorless Motors

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Power Quality and EMC

Multi-Terminal DC Fault Current Estimation Including the Influence of Superconducting Fault Current Limiters

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High-Order Harmonics of the AC-DC Converter, Generated During the Intermittent and Continuous Operation of GaN-HEMT Power Switches

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Conducted EMC Emission of a PWM Full Bridge Inverter Using Silicon Carbide MOSFETs in High Temperature Environments

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A Comparative Study of SPICE models for an SiC-MOSFET

Yasushige Mukunoki, Masayoshi Tarutani, Hiroshi Nakatake, Tomohide Terashima, Takeshi Horiguchi, Mitsubishi Electric, J

Design of High Power Planar Magnetics for a 1.8KW Phase-Shifted Full Bridge Converter Using Advance FEA Electromagnetics Tools

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Average Modelling and Small Signal Characterization of a ZVS Clamp-Switch Boost Converter

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Measuring Parasitic Resistance of Resonant Converters Output Capacitor through Transfer Functions

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Pantographs Bounce Modelling for the Simulation of Railway Systems

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Distributed Simulation of Wind Farm Grids

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Benchmark Study on Impedance Identification Methods for Grid Connected Converters

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Studying the Generated Communication Traffic from Power Electronic Devices

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Sensors, Measurement

Control Hardware and Suitable Current Sensors for Fast Switching SiC DC-DC Converters

Alexander Sewergin, Arne Hendrik Wienhausen, Sebastian Blasius, Rik W. De Doncker, RWTH Aachen University, D

Transient Current Sensors for Wide Band Gap Semiconductor Switching Loss Measurements

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A "Plug and Measure" Device for Junction Temperature Monitoring in Real Converter Environments

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Synchronization of a Distributed Measurement System

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Calorimeter for Loss Determination of Power Electronic Circuits - a Novel Approach with Reduced Measurement Time

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Current Measurement of GaN Power Devices using a Frequency Compensated SMD Shunt

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New Experimental Verification of Transformer Core Saturation Occuring in Forward Converters Due to Remanence Flux Density

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Calorimeter for Exact Determination of Power Loss

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Keynote:

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GaN and Industry 4.0 – A Small Change that is Revolutionizing the Industry

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