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Power Converters



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25 kW High Power Resonant Inverter Operating at 2.5 MHz based on SiC SMD Phase-Leg Modules

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Analog Based High Efficiency 2KW Totem Pole PFC Converter Using Surface Mount SiC MOSFET's

Jianwen Shao, Guy Moxey, Cree, USA; Binod Agrawal, Venkata Subash Bathula, Navneet Mangal, Cree, IN;

Switching Pattern and Performance Characterization for "SiC+Si" Hybrid Switch

Haihong Qin, Qiang Xiu, Dan Wang, Shishan Wang, Nanjing University of Aeronautics and Astronautics, C; Chaohui Zhao, Shanghai DianJi University,CN

Driver Integrated Fault-Tolerant Reconfiguration after Short-On Failures of a SiC MOSFET ANPC Inverter Phase

Michael Gleißner, Teresa Bertelshofer, Mark-M. Bakran, University of Bayreuth, D

SiC Effect on Surge Voltage Distribution in Large Electrical Machines

Robert Maier, Mark-M. Bakran, University of Bayreuth, D

Junction Temperature Measurement of SiC MOSFETs: Straightforward as it Seems?

Tobias Kestler, Mark-M. Bakran University of Bayreuth, D

In-Depth Study of Short-Circuit Robustness and Protection of 1200V SiC MOSFETs

Xuning Zhang, Levi Gant, Gin Sheh, Sujit Banerjee, Monolith Semiconductor, USA

Avalanche Rugged Low On-Resistance 1200V SiC MOSFETs With Long-Term Stability

Kwangwon Lee, ON Semiconductor, KR, Martin Domeij, Jimmy Franchi, Benedetto Buono, Fredrik Allerstam, ON Semiconductor, SE;
Thomas Neyer, ON Semiconductor, D

High Performance 4H-SiC MOSFETs with Optimum Design of Active Cell and Re-Oxidation Process

Toshikazu Tanioka, Yuji Ebiike, Yasunori Oritsuki, Masayuki Imaizumi, Masayoshi Tarutani, Mitsubishi Electric Corporation, J

Derating of Parallel SiC MOSFETs Considering Switching Imbalances

Teresa Bertelshofer, Andreas März, Mark-M. Bakran, University of Bayreuth, D

Commutation Characteristics During Switching of Hybrid SiC and Si Configurations

Michael Schütt, Hans-Günter Eckel, University of Rostock, D

Current Sharing During Unipolar and Bipolar Operation of SiC JBS Diodes

Thomas Barbieri, Adam Barkley, James Solovey, Edward van Brunt, Edgar Ayerbe, Wolfspeed, USA

GaN Devices and Applications

Application of GaN-GITs in a Single-Phase T-Type Inverter

Carsten Kuring, Jan Böcker, Sibylle Dieckerhoff, Jonas Lenth, Tino Kahl, Technical University of Berlin, D

S-Parameter Characterization of GaN HEMT Power Transistors for High Frequency Modeling

Loris Pace, Arnaud Videt, Nadir Idir, University of Lille - L2EP, F; Nicolas Defrance, Jean-Claude Dejaeger, IEMN

650V E-Mode GaN HEMT Switching at 1MHz for Travel Adapter Applications

Ann Starks, Zhiyang Chen, Mike Cargile, ON Semiconductor, USA

Power p-GaN HEMT Under Unclamped Inductive Switching Conditions

Juraj Marek, Alexander Šatka, Martin Jagelka, Aleš Chvála, Patrik Príbytný, Martin Donoval, Daniel Donoval, Slovak Technical University in Bratislava, SK

Designing High-Density Power Solutions with GaN

Paul Brohlin, Masoud Beheshti, Texas Instruments, USA

Inverse Thermal Model of Temperature-to-Power Mapping for eGaN Systems

Shuangfeng Zhang, Eric Laboure, University of Paris, F; Denis Labrousse, Stéphane Lefebvre, ENS Cachan – SATIE, F

High Performance Thermal Solution for High Power GaN FET Based Power Converters

Michael de Rooij, Yuanzhe Zhang, David Reusch, Efficient Power Conversion (EPC) Corporation, USA; Sriram Chandrasekaran, Raytheon, USA

Wafer Level Embedding Technology for Packaging of Planar GaN Half-Bridge Module in High Power Density Conversion Applications

Charles-Alix Manier, Kirill Klein, Hermann Oppermann, Klaus-Dieter Lang, Felix Wüst, Robert Gernhardt, Fraunhofer-Institute IZM, D; Sophie Andzouana, Radoslava Mitova, Schneider Electric, F; Philippe Cussac, CIRTEM, F

Monolithic GaN Power ICs Enable High Density High Frequency 3.2KW AC-DC Rectifier

Tom Ribarich, Dan Kinzer, Navitas Semiconductor, USA; Ruiyang Yu, Qingyun Huang, Alex Q. Huang, University of Texas at Austin, USA

Experimental Study on Gate Drive Influence to the 650V GaN E-HEMT

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

SiC Power Modules

Switching Behavior of SiC-MOSFETs in High Power Modules

Florian Störmer, Hans-Günter Eckel, University of Rostock, D; Franz-Josef Niedernostheide, Frank Pfirsch, Infineon Technologies, D

The Challenges of Using SiC MOSFET-Based Power Modules for Solar Inverters

Matthias Tauer, Vincotech, D

Low Inductive SiC Power Module Design Using Ceramic Multilayer Substrates

Thomas Huber, Alexander Kleimaier, University of Applied Sciences Landshut, D; Sebastian Polster, Olivier Mathieu, Rogers, D

Very Low Stray Inductance, High Frequency 1200V_ 2 mOhms Full SiC MOSFET Phase Leg Module

Serge Bontemps, Pierre Laurent Doumergue, Microsemi Power Module Products, F

Comparative Study of Full SiC Power Module in 1MHz, 600V, 50A Switching Operation

Kei Hayashi, Tsuyoshi Funaki, Osaka University, J; Hisato Michikoshi, Kenji Fukuda, National Institute of Advanced Industrial Science and Technology, J

3.3kV SiC Hybrid Module with High Power Next Core (HPnC) Package

Lukas Kleingrothe, Fuji Electric, D; Yusuke Sekino, Susumu Iwamoto, Akira Iso, Hideaki Kakiki, Yuichi Harada, Osamu Ikawa, Tomohiro Moriya, Fuji Electric, J

High Reliable 1700V Full SiC Power Module

Kenji Hayashi, Yoshihisa Tsukamoto, Masaaki Matsuo, Masashi Hayashiguchi, Motohiro Ando, ROHM, J

Analysis of 1200 V Si-SiC-Hybrid Switches for Resonant Applications

Michael Meissner, Sebastian Fahlbusch, Daniel Lütke, Klaus F. Hoffmann, Helmut-Schmidt-University, D

Sintering Cu Paste Die-Attach for High TJ Power Devices

Shijo Nagao, Yue Gao, Akio Shimoyama, Katsuki Sukanuma, Osaka University, J
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Advanced Power Modules

Influence of Auxiliary Gate and Emitter Connections on Short Circuit Behaviour of Multichip IGBT Modules

Helong Li, Chunlin Zhu, Paul Mumby-Croft, Yafei Wang, Daohui Li, Yangang Wang, Dynex Semiconductor, GB; Xiaoping Dai, CRRC Times Electric, CN

Impact of I2t Capability of RC-IGBT and Leadframe Combined Structure in xEV Active Short Circuit Survival

Hayato Nakano, Akihiro Osawa, Keiichi Higuchi, Akio Kitamura, Daisuke Inoue, Souichi Yoshida, Hiromichi Gohara, Masahito Otsuki, Fuji Electric, J

New Developed 3.3kV/1500A IGBT Module

Daohui Li, Ariful Islam, Yangang Wang, Fang Qi, Matthew Packwood, Paul Mumby-Croft, Dynex Semiconductor, GB; Xiaoping Dai, Haihui Luo, Guoyou Liu, Wei Zhou, CRRC Times Electric, CN

Newly Developed 7th Generation 1,700V IGBT Module Product Family for Industrial Application

Takuya Yamamoto, Shinichi Yoshiwatari, Osamu Ikawa, Souichi Okita, D. Nagai, S. Miyashita, Y. Sakurai, Y. Onozawa, T. Ito, Fuji Electric, J; Thomas Heinzl, Fuji Electric, D

Analytical Modelling of Dynamic Power Losses Inside Power Modules for 2-Level Inverters

Arne Bieler, Ole Mühlfeld, Danfoss Silicon Power, D

Failure Protection in Power Modules with Auxiliary-Emitter Bond-Wires

Nick Baker, Francesco Iannuzzo, Aalborg University, DK

An Efficient Active Mains Rectifier Bridge Based on Bipolar Technology

Nick Koper, WeEn Semiconductors, NL; John Wood, Silicon Contact, UK

Development of New 600V Smart Power Module for Home Appliances Motor Drive Application

Samuell Shin, Bumseung Jin, Kinam Song, Sewoong Oh, Thomas Yim, ON Semiconductor, ROK

DC-DC Converters

Implementation of an Adaptive Dead Time in Resonant Converters

Christian Oeder, Nikolas Foerster, Thomas Dürbaum, Friedrich-Alexander-University of Erlangen, D

Modified Basic DC-DC Converters

Felix Himmelstoss, Karl Edlmoser, Technikum Vienna, AT

GaN Based Multilevel Intermediate Bus Converter for 48 V Server Applications

David Reusch, Suvankar Biswas, Michael de Rooij, Efficient Power Conversion (EPC), USA

A FPGA-Based Algorithm for Soft Switched DC-DC Converters with a Variable Transmission Path

Lukas Göbel, Ansgar Ackva, Sebastian Raab, University of Applied Sciences Würzburg-Schweinfurt, D

Compact Bidirectional GaN Buck-Boost Converter for Negative Rail Supply in Bipolar DC-Grids

Sebastian Klötzer, Sebastian Fahlbusch, Ulf Mütter, Klaus F. Hoffmann, Helmut Schmidt University, D

Exact Analytical Solution of the Peak Gain for the LLC Resonant Converter

Markus Barwig, Christian Oeder, Manfred Albach, Friedrich-Alexander-University of Erlangen, D

GaN Buck Converter in CCM with Optimized High Frequency Inductors

Sven Bolte, Norbert Fröhleke, Joachim Böcker, University of Paderborn, D

Modelling of a Bi-Directional Converter from a Power Supplying System With Application in Radio Communication Systems

Ivan Nedyalkov, University of Telecommunications and Post, BG; Dimitar Arnaudov, Nikolay Hinov, Technical University of Sofia, BG

A Bidirectional Quasi-Z-Source Based DC-DC Converter

Yuba Raj Kafle, Graham E. Town, Macquarie University, AU

Traction, Ship, Aircraft

Humidity in Traction Converters

Fabian Quast, Andreas Nagel, Siemens, D

New Traction Converter with Low Inductive High-Voltage Half Bridge IGBT Module

Bernd Laska, Jan Weigel, Siemens, D; Sven Buchholz, Waleri Brekel, Matthias Wissen, Thomas Gutt, Infineon Technologies, D; Patrick Münster, Till-Mathis Plötz, Hans-Günter Eckel, Robin Schrader, Ingmar Kirchner, University of Rostock, D

Nanocrystalline Cores for Common Mode Current Suppression in Electrical Ship Propulsion System - a Case Study

Wulf Günther, Acal BFi Germany, D; Zoran Malbasic, Alewijnse Marine Nijmegen, NL

Discrete 1200V SiC MOSFETs - SMD Package Benefits and Impacts of Multiple Device and Circuit Parameters Mismatch in High Power Parallel Applications

Rajagopalan Jagannathan, Hans-Peter Hoenes, Tushar Duggal, Marco Atzeri, ON Semiconductor, D

High-Dynamic High-Power E-Motor Emulator for Power Electronic Testing

Sebastian Liebig, Alexander Schmitt, Horst Hammerer, SET Power Systems, D

New Approach of Smart Hybrid Power Module Dedicated to Aircraft Electro-Mechanical Actuators up to 20 kW

Alain Calmels, Julien Richer, Microsemi Power Module Products, F; Shane O'Donnell, Microsemi, IR



Diagnostic Technique for Traction Motor Insulation Condition Monitoring by Transient Signal Assessment

Markus Vogelsberger, Martin Bazant, Bombardier Transportation Austria, AT; Clemens Zöllner, Hans Ertl, Thomas M. Wolbank, Technical University of Vienna, AT

Control, Intelligent Motion

Modelling of Inverter Nonlinear Effects

Simon Wiedemann, Ralph M. Kennel, Technical University of Munich, D; Anton H. Tamas, MACCON, D;

Self-Commissioning of the Current Control Loop in AC Drives

Simon Wiedemann, Ralph M. Kennel, Technical University of Munich, D

Sensorless Position Estimation for an Externally Excited Synchronous Machine over the Whole Speed Range

Johannes Schuster, Vasken Ketchedjian, Jörg Roth-Stielow, University of Stuttgart, D

VSI with Sinusoidal Voltages for an Enhanced Sensorless Control of the Induction Machine

Harith Al-Badrani, Simon Feuersänger, Mario Pacas, University of Siegen, D

Simplified Wide Speed-Range Sensorless Control Scheme for a Permanent Magnet Synchronous Machine

Van Trang Phung, Mario Pacas, University of Siegen, D

A Stacked 7-Level Common Mode Voltage Eliminated Inverter Scheme with Single DC-link for Open-End Induction Motor Drive

Apurv Kumar Yadav, Kumarukuttan Nair Gopakumar, Krishna Raj Ramachandran Potti, Loganathan Umanand, Indian Institute of Science, IN; Kouki Matsuse, Hisao Kubota, Meiji University, J

Energy Optimal Motion and Rotor Flux Trajectories for an Induction Motor Drive
Gunar Steinborn, Wilfried Hofmann, Technical University of Dresden, D

Controller Synthesis and Testing in a 48V System Based on Physical Models
Sabin Carpiuc, The MathWorks, GB

Modeling and Analyzing the Stability of an Induction Motor Drive System using an Output LC Filter

Pascal Combes, Al Kassem Jebai, Schneider Electric, F

Synchronization of Multi-Axis Motion Control Over Real-Time Networks

Jens Sorensen, Analog Devices, USA; Christian Aaen, Dara O'Sullivan, Analog Devices, IR

Lean and Fast Fieldbus based Safety Functionality for Drives in Automation

Jens Onno Kraah, Adin Basic, Technical University of Cologne, D

Renewable Energy and Power Transmission

A Sliding-Mode-Observer for Encoderless Direct Model Predictive Control of PMSGs

Mohamed Abdelrahem, Philipp Catterfeld, Christoph Hackl, Ralph Kennel, Technical University of Munich, D

Wind Turbine Nacelle Test Bench Using an Optimized Torque Control and an Aerodynamic Real Time Model

Sören Behrens, Johannes Adler, Bernd Orlik, University of Bremen, D; Holger Raffel, Bremen Center of Mechatronics, D; Holger Schlöcker, SIT, D

Wind Turbine for Underground Subway Stations

Lilia Galai Dol, Jose Luis Cardassi, Efficacity, F; Alexandre De Bernardinis, IFSTTAR, F

Assisting passive anti-islanding proposal for Voltage-Controlled Voltage-Source-Inverters

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Marc Pagès-Giménez, Teknocea, ES

Evaluation of DC-to-DC-Converter Impedance Passivity Using Pseudo-Random Test Signals

Leopold Ott, Yunchao Han, Bernd Wunder, Fraunhofer Institute IISB, D
Martin März, University Erlangen-Nuremberg, D; Fabian Bodensteiner, Blacbird Technologies, D

Solving Isolation- and Power Supply Problems for Current Monitoring in High Voltage Power Line Application

Bernhard Strzalkowski, Analog Devices, D; Kelven Mo, Analog Devices, CN

Zero Vector Placement Strategies in Space Vector Modulation of Inverters for UPS Applications

Lorenzo Giuntini, GE Consumer & Industrial, CH

Advanced Solutions in Over-Current Protection of HvdC Circuit of Battery-Powered Electric Vehicle

Mitja Koprivsek, ETI Elektroelement, SI

Inductive Power Transfer Systems for Rotating Applications

Nikolay Madzharov, Raycho Ilarionov, Valeri Petkov, Lyudmil Petkov, Technical University - Gabrovo, BG

Coupled-Inductors Losses Modelling for Size and Weight Optimization Process Avoiding Time-Consuming Co-Simulations

Leyla Arioua, Menouar Ameziani, VEDECOM, F

Enlarging the Standard Permeability Set of Powder E-Cores by Combination of Different Perm Core-Halves

Paul Winkler, Wulf Günther, Acal BFi Germany, D

Guideline for Hysteresis Curve Measurements with Arbitrary Excitation: Pitfalls to Avoid and Practices to Follow

Erika Stenglein, Daniel Kübrich, Manfred Albach, Thomas Dürbaum, Friedrich-Alexander-University of Erlangen, D

Comparing Inductive Components for Different Boost Converter Topologies in a PV System

Michael Schmidhuber, Christian Reichhart, SUMIDA Components & Modules, D; Marco Jung, Fabian Schnabel, Fraunhofer IEE, D

Linear Machine with a Magnetic-Coupled Structure Based on the Transverse Flux Technology

Jannik Ulbrich, Alexander Norbach, Bernd Orlik, Holger Raffel, University of Bremen, D

Wide Bandwidth Current Sensor Combining a Coreless Current Transformer and TMR Sensors

Nathan Tröster, Johannes Ruthardt, Maximilian Nitzsche, Jörg Roth-Stielow, University of Stuttgart, D

Precise Voltage Measurement for Power Electronics with High Switching Frequencies

Maximilian Nitzsche, Matthias Zehelein, Nathan Tröster, Jörg Roth-Stielow, University of Stuttgart, D

Fault Diagnosis in Frequency Inverter with Space Vector Recognition of Output Voltage

Rudolf Mecke, Harz University of Applied Sciences, D

Characterization Platform for Modular Power Converters

André Andreta, Yves Lembeye, Jean-Christophe Crébier, Alexis Derbey, University Grenoble Alpes - G2Elab, F; Luiz Fernando Lavado Villa, Univ. Paul Sabatier, LAAS-CNRS, F

Rare-Earth Free EV and HEV Motor Drives: State of the Art

David Cabezuelo, Edorta Ibarra, Estefania Planas, Iñigo Kortabarria, Jose Ignacio Garate, University of the Basque Country (UPV/EHU), ES

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Application of Mmc Alsic Thermocompensators in Power Press Pack Diodes and Thyristors

Alexey Grishanin, Valentin Martynenko, Vyacheslav Eliseev, Mikhail Malygin, Anton Samoylov, Alexander Plotnikov, JSC Electrovipryamitel, RU; Konstantin Nishchev, Mikhail Novopoltsev, Mordovia State University, RU

Reliability of the Power Module Using the Insulated Substrate with AI/C Composite

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

A Development of Resin Insulating Material for High Reliable Enhanced Power Module

Shinji Amanuma, Mitsuo Togawa, Hitachi Chemical, J

Experimental Investigation of Gravity-Driven Two-Phase Cooling for Power Electronics Applications

Devin Pellicone, Advanced Cooling Technologies, USA

Integrated Cooling Channels in Direct Bonded Copper Substrate for Silicon Carbide MOSFETs

Alexander Stippich, Maximilian L. J. Battefeld, Rik W. De Doncker, RWTH Aachen, D

Thermoelectric Cooling for Bare Dies Power Devices Embedded in PCB Substrates

Shuangfeng Zhang, Eric Laboure, University of Paris, F; Denis Labrousse, Stéphane Lefebvre, ENS Cachan – SATIE, F

Generic Lumped Parameter Thermal Model with Optimized Use of Computational Resources

Joaquim Pinol Bel, Heinrich Steinhart, University of Applied Sciences Aalen, D

Methodology and More Accurate Electrothermal Model for Fast Simulation of Power HEMTs

Aleš Chvála, Juraj Marek, Luboš Černaj, Patrik Príbytný, Alexander Šatka, Daniel Donoval, Slovak Technical University in Bratislava, SK; Steve Stoffels, Niels Posthuma, Stefaan Decoutere, IMEC, BE

A New Transient Thermal Impedance Model for Estimating the Dynamic Junction Temperature of IGBT Modules

Xin Ma, Jia Zhao, Yong Yang, Infineon Integrated Circuit (Beijing), CN

Packaging Technologies

Effect of Lead Frame Structure and Electrical Characteristic Comparison of IPM Module

Samuell Shin, Bumseung Jin, Kangyoon Lee, Jinkyu Choi, Thomas Yim, ON Semiconductor, ROK

Development of 140X100 Footprint HV IGBT Module

Daohui Li, Fang Qi, Matthew Packwood, Xiang Li, Yangang Wang, Dynex Semiconductor, GB; Xiaoping Dai, Haihui Luo, Guoyou Liu, Wei Zhou, CRRC Times Electric, CN

Performance Comparison Between Surface-Mount and Embedded Power Modules

Gerald Weis, AT&S Austria Technologie & Systemtechnik, D

PCB-Embedding of Power Dies Using Pressed Metal Foam

Yoann Pascal, Denis Labrousse, Mickaël Petit, Stéphane Lefebvre, François Costa, SATIE, F

Direct Power Board Bonding Technology for 3D Power Module Package

Hidetoshi Ishibashi, Hiroshi Yoshida, Daisuke Murata, Shota Morisaki, Hodaka Rokubuichi, Nobuhiro Asaji, Mitsubishi Electric Corporation, J

A Surface-Mountable 1.2 cc Compact Molded Package Suitable for 13 kV SiC MOSFET

Hisato Michikoshi, Hidenori Kitai, Kenji Fukuda, National Institute of Advanced Industrial Science and Technology (AIST), J; Makoto Kanbe, Kazuhiko Omote, Rigaku Corporation, J; Akira Tokuchi, Pulsed Power Japan, J;

Particle Prevention During Ultrasonic Welding Process

David Guillon, Samuel Hartmann, Remi Guillemin, Pauline Morin, Fabian Fischer, Dominik Truessel, Harald Beyer, Munaf Rahimo, ABB Switzerland - Semiconductors, CH

Asymmetrical Flyback Converter in High Density SMPS

Alfredo Medina Garcia, Manfred Schlenk, Infineon Technologies, D; Gerald Deboy, Matthias Joachim Kasper, Infineon Technologies, AT

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Thomas Barbieri, Adam Barkley, Edgar Ayerbe, Jonathan Young, Donald Gajewski, Wolfspeed, A Cree Company, USA; Zoltán Major, Vincotech, HU; Matthias Tauer, Vincotech, D

Mechanical Properties and Reliability of Pressureless Sintered Silver Materials for Power Devices

Masafumi Takesue, Tomofumi Watanabe, Keisuke Tanaka, Naoya Nakajima, Bando Chemical Industries, J

Control of Partial Discharge with High Temperature Insulating Polymer for High Voltage IGBT Module Application

Muhammad Morshed, Ariful Islam, Thomas Roose, Daniel Longney, Yangang Wang, Andy Dai, Daohui Li, Dynex Semiconductor, GB

Thermal Characteristics Evaluation of Wide Band Gap Power Devices

Shijo Nagao, Katsuaki Suganuma, Tsuyoshi Funaki, Osaka University, J; Kiyoshi Hirao, AIST Chubu, J; Junichi Susaki, Denka, J; Hideki Sato, Japan Fine Ceramic, J

From Feasibility to SoP in a 6 Steps Process Described on a SiP Dc-Dc Buck Converter Powermodule

Florian Blum, Dragan Dinulovic, Martin Haug, Michael Brooks, Würth Elektronik, D

H³TRB Test on 1.2kV SiC MOSFETs

Michael Hanf, Christian Zorn, Nando Kaminski, University of Bremen, D; Martin Domeij, Fredrik Allerstam, Benedetto Buono, Jimmy Franchi, ON Semiconductor, SE; Thomas Neyer, ON Semiconductor, D

Control and Drive Strategies

Synchronization and Control of Modular AC- and DC-Sided Parallel-Connected Three-Level NPC Inverters

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

Comparison of Two Model based Temperature Control Systems Implemented on a Three Level T-Type Inverter

Julian Wölfle, Matthias Pitters, Johannes Ruthardt, Johannes Schuster, Martin Stempfle, Jörg Roth-Stielow, University of Stuttgart, D

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Josef Reill, Cristina Serrano Gonzales, Volker Senft, Martin Pfau, DLR- German Aerospace Center, D

Optimized PWM Technique for Overmodulation Region in Vector Controlled High Speed Drives

Peter Stumpf, Sándor Halász, Budapest University of Technology and Economics, HU

Dynamic Space Vector Modulation Control for Asymmetric Neutral Point Clamped Multilevel Inverter

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Short Pulse Transmission for SiC Communicating Gate Driver Under High Dv/Dt

Julien Weckbrodt, Stéphane Azzopardi, Safran, F
Nicolas Ginot, Christophe Batard, University of Nantes -IETR, F

Advanced Functionality of HVIC Technology for Intelligent Power Module

Jinkyu Choi, Wonhi Oh, Kinam Song, Samuell Shin, ON Semiconductor, ROK

Three-Level-Gate-Driver to Run Power Transistors in the Saturation Region for Junction Temperature Control

Johannes Ruthardt, Manuel Fischer, Julian Felix Wölfle, Nathan Tröster, Jörg Roth-Stielow, University of Stuttgart, D

Improved Gate-Drive Unit for RC-IGBT to Overcome Load Current Disturbance in Static MOS-Control

Daniel Lexow, Holger Wiencke, Hans-Günter Eckel, University of Rostock, D

Assessment-Based Flux Trajectory Optimization and Pulse Width Modulation for Flux Oriented Control: A Comparison

Axel Rothstein, Volker Staudt, Ruhr-University of Bochum, D; Carsten Heising, Avastion, D

AC-DC, DC-DC Converters

Resonant Inverter Stage in Modular Converter for Electric Vehicle Charging

Dimitar Arnaudov, Stoyan Vuchev, Dimitar Penev, Nikolay Hinov, Technical University of Sofia, BG

Modeling and Investigation of Converter Modules Simultaneous Operation in Electric Vehicle Charging Systems

Stoyan Vuchev, Dimitar Arnaudov, Dimitar Penev, Nikolay Hinov, Technical University of Sofia, BG

SiC-Hybrid Three Level T-Type Rectifier

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

650 V Silicon Carbide MOSFETs in Totem-Pole Bridgeless PFC Design Achieves High Efficiency (80+ Titanium) Without Adding Complexity and Cost

Adil Salman, Edgar Ayerbe, James Solovey, Guy Moxey, Sei-Hyung Ryu, Adam Barkley, Wolfspeed, USA

GaN Power ICs and Off-the-Shelf Controllers Enable 150W, 500kHz AC-DC with 4x Power Density

Tom Ribarich, Stephen Oliver, Xiucheng Huang, Navitas Semiconductor, USA

Active Phase Shifting Technique for Inductive Power Transfer (IPT) Systems

Malvika Kamat, Michael Patt, Technology Network Allgäu, D

Analysis of a ZVS Synchronous Sepic/Zeta DC/DC Converter

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High Efficiency Shoot-Through Modulation Technique for Quasi-Z-Source DC/DC Converters

Yuba Raj Kafle, Graham E. Town, Macquarie University, AU

DC-AC Converters



Reducing the dv/dt of Motor Inverters by a Two Leg Resonant Switching Cell

Thomas Fuchslueger, Hans Ertl, Technical University of Vienna, AT; Markus Vogelsberger, Bombardier Transportation, AT

SiC 2.5 MHz Switching Mode Resonant Halfbridge Inverter

Christoph Simon, Fabian Denk, Santiago Eizaguirre, Michael Heidinger, Rainer Kling, Wolfgang Heering, Karlsruhe Institute of Technology (KIT), D

Analysis and Design of a Multilayer DC Bus With Low Stray Impedance and Homogenous Current Distribution

Asier Matallana, Jon Andreu, Jose Ignacio Garate, Iker Aretxabaleta, Iñigo Kortabarria, University of the Basque Country (UPV/EHU), ES

Replacing Si-IGBTs with SiC-MOSFETs in Low Voltage Grid Converters

Marius Kaufmann-Bühler, Hendrik Just, Michael Paluch, Sibylle Dieckerhoff, Technical University of Berlin, D

A Polymer Optical Fiber Bus for Power Electronic Applications

Marek Galek, Siemens, D; Jacob Ranftl, Munich University of Applied Sciences, D

High-Inductive Zero-Voltage Commutations within Active-Neutral Point-Clamped Inverters

Felix Kayser, Jan Fuhrmann, David Hammes, Hans-Günter Eckel, University of Rostock, D

A SiC-based 15-Level Power Inverter for the Generation of Variable High Frequency Output Voltages

Sebastian Fahlbusch, Michael Meissner, Sebastian Klötzer, Felix Bröcker, Klaus F. Hoffmann, Helmut Schmidt University of the Federal Armed Forces Hamburg, D

Loss Optimization for 48 Volt High Current Inverter

Matthias Ippisch, Dieter Gerling, University of the Federal Defense Munich, D



Common- and Differential-Mode Separators Including the FM Broadcasting Band

Karl Oberdieck, Jérôme Gossmann, Andreas Bubert, Rik W. De Doncker, RWTH Aachen, D

Accurate Self-Identification of Inverter Nonlinear Effects in AC Drives

Simon Wiedemann, Ralph M. Kennel, Technical University of Munich, D

Special Converters

Strategy for Reducing Oscillations in Power Electronic Circuits Using Gate Control

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

The newest ST's Super-Junction Power MOSFET Technology for the Best Efficiency in Air Conditioning System

Carmelo Parisi, Carmelo Mistretta, STMicroelectronics, I



High Efficiency Three-Level Simplified Neutral Point Clamped (3L-SNPC) Inverter with GaN-Si Hybrid Structure

Alexander Lange, Jennifer Lautner, Bernhard Piepenbreier, Friedrich-Alexander-University Erlangen, D

Reducing Astable Relay Power Consumption by the Use of a Constant-Current Buck Converter

Michael Heidinger, Christoph Simon, Fabian Denk, Rainer Kling, Wolfgang Heering, Karlsruhe Institute of Technology (KIT), D

Effect of Spurious Resonant Modes on the Operation of Radial Mode Piezoelectric Transformers

Jack Forrester, Jonathan Davidson, Martin Foster, University of Sheffield, GB

Fuzzy Logic Based Adaptive Controller for AC/DC Boost Converters

Andrea Morici, Infineon Technologies, D; Zain Bin Tariq, Technical University of Munich, D

Power Supply System with Integrated Energy Storage for Superconducting Magnets

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Novel Thyristor-Based Pulsed Current Converter for a Medical Application - a Conceptual Introduction

Stefan Wettengel, Lars Lindenmüller, Steffen Bernet, Technical University of Dresden, D; Ulrich Schramm, Florian Kroll, Florian-Emanuel Brack, Helmholtz-Zentrum Dresden - Rossendorf, D; Jörg Pawelke, OncoRay - National Center for Radiation Research in Oncology, D

Power Electronics in Automotive

Robust Automotive 40V Power Mosfets for Safer Vehicles

Filippo Scrimizzi, Giuseppe Longo, Giusy Gambino, STMicroelectronics, I

Large Capacity Power Module Packaging Technology For Automotive Inverter Applications

Yuki Hata, Shoji Saito, Seiichiro Inokuchi, Shinji Hatae, Mitsubishi Electric, J

Analysis of a Multiphase Multi-Star PMSM Drive System with SiC-Based Inverter for an Automotive Application

Stefan Piepenbreier, Fabian Streit, Maximilian Hofmann, Fraunhofer Institute IISB, D; Julian Berlinecke, Robert Plikat, Volkswagen, D; Nicola Burani, Roland Bittner, Semikron Elektronik, D; Serhij Matichyn, EPCOS, D

Supercapacitors-Based Engine Start Battery Support Device with Active Control

Kaspars Kroics, Riga Technical University, LV

A Modular DC/DC Converter to Couple a Double Layer Capacitor to the Automotive High Voltage Grid for Short Time Energy Storage

Bastian Strauß, Andreas Lindemann, Otto-von-Guericke-University, D

Design Optimization of a Three-Phase Bidirectional Dual Active Bridge DC/DC Converter for E-Vehicles Applications

Felipe Bandeira da Silva, Tobias Rafael Fernandes Neto, Federal University of Ceará, BR; Eduardo Façanha de Oliveira, Peter Zacharias, University of Kassel, D;

On-Chip Current Sense: A New Approach for Over Current and Short Circuit Detection for Automotive Main Inverter

Rony Karim, Infineon Technologies, D

Evaluation of Infineon HybridPACK™ Drive with Optimized Integrated Capacitor/Bus DC Link for High Performance Inverter Applications

Michael Brubaker, Terry Hosking, SBE, USA; Michael Mazzola, Somasundaram Essakiappan, Ehab Shoubaki, Madhav Manjrekar, Energy Production and Infrastructure Center, USA; Tomas Reiter, Infineon Technologies, D

Multiple Comb Pattern Based Living Object Detection with Enhanced Resolution Design for Wireless Electric Vehicle Chargers

Van X.Thai, Jun H. Park, Seog Y. Jeong, Chun T. Rim, Gwangju Institute of Science and Technology, ROK

Power Modules for Electric Vehicles SRM Converter

David Cabezuelo, Jon Andreu, Iñigo Kortabarria, Edorta Ibarra, Iñigo Martinez de Alegria, University of the Basque Country (UPV/EHU), ES

Power Quality, Power Transmission

Active Damping for Power Quality Improvement in Grid-Connected Current-Controlled Voltage Source Converters

Lorenzo Giuntini, Andrea Mannuccini, GE Consumer & Industrial, CH

Harmonic Current Control in DG-Connected Network Using Proposed Pulse Adaptive VSI

Navid Daniali, Euro Engineering, D

Dynamic Performance Evaluation of a dual UPQC Operating Under Power Quality Disturbances

Sérgio Augusto Oliveira da Silva, Leonardo Bruno Garcia Campanhol, Vinicius de Souza, Federal University of Technology Parana, BR

Active Filtering of DC Ripple Currents Between Converter and Low-Resistive DC Load

Sebastian Raab, Ansgar Ackva, University of Applied Sciences Würzburg-Schweinfurt, D

Dynamic Control and Design of a Modular Power Flow Controller for HVDC Networks with Fault Clearing Capabilities

Daniel Dinkel, Claus Hillermeier, Rainer Marquardt, University of the Federal Armed Forces Munich, D

Multi-Terminal HVDC Grid Control Using a Fictitious, Model Based Machine Set

Steffen Menzel, Alexander Ernst, Johannes Adler, Bernd Orlik, University of Bremen, D

Research on Solid State Circuit Breaker Based on SiC MOSFET with Soft Switch off Method

Haihong Qin, Ying Zhang, Yaowen Dong, Kefeng Xu, Shishan Wang, Nanjing University of Aeronautics and Astronautics, CN; Chaohui Zhao, Shanghai DianJi University

Software Tools and Applications

Predicting ZVS Behavior of Resonant Converters Using a Fast and Effective Calculation Method

Christian Oeder, Markus Barwig, Thomas Dürbaum, Friedrich-Alexander-University of Erlangen, D

A Novel Combination of Algorithms for Accelerated Convergence to Steady-State

Benedikt Kohlhepp, Jens Göttle, Eva Schmidt, Thomas Dürbaum, Friedrich-Alexander-University of Erlangen-Nuremberg, D

A Novel Detailed Analysis of the Boost Converter Utilizing Nonlinear Inductance and Capacitance

Panagiotis Mantzanas, Erdi Bayrakdar, Daniel Kübrich, Thomas Dürbaum, Friedrich-Alexander-University of Erlangen, D

Performance Analysis of IGCT Clamp Circuit and Thermal Loss Modeling of IGCT Based Converters for High Power Applications

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SMPS Protection Against Lightning Effects

Claudio Mazzurco, STMicroelectronics, I

Power Loss Breakdown in BLDC Drives Applications Using MATLAB

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Steve Oknaian, Infineon Technologies Americas, USA

Statistical Modelling Method for Active Power Components Based on Datasheet Information

André Andreta, Yves Lembeye, Jean-Christophe Crébier, University Grenoble Alpes - G2Elab, F; Luiz Lavado Villa, LAAS - CNRS, F

Fast Solver to Get Steady-State Waveforms for Power Converter Design

Guillaume Fontes, Regis Ruelland, Alvaro Morentin, Guillaume Delamare, Nicolas Videau, Adel Ziani, Power Design Technologies, F; Thierry Meynard, University de Toulouse, F

System Complexity Reduction Approach in the Modelling of a Discrete Power Device

Daniela Cavallaro, Alessandra Cascio, Giuseppe Greco, STMicroelectronics, I

Automated Medium Voltage Virtual Test Bench Using Hardware-in-the-Loop

Emmanuel Frappé, Alain Dutrey, François Malrait, Schneider Electric, F

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Electric Vehicles Charging - An Ultrafast Overview

Drazen Dujic, Power Electronics Laboratory, EPFL, CH

New Passive Devices in Power Conversion -Nice to Have or a Must?

Petar J. Grbovic, Huawei Technologies, D

Modular Multilevel Submodules for Converters, from the State of the Art to Future Trends

Markus Billmann, Fraunhofer Institute IISB, D