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Oral Paper

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- K01** »How Life Cycle Analyses are Influencing Power Electronics Converter Design«
Franz Musil, Fronius International, A
- K02** »On the Way to the DC Factory – The Open Industrial DC Grid for Sustainable Production Sites is Entering the Dissemination Phase«
Holger Borchering, IFE – Institut for Energy Research, Ostwestfalen-Lippe University of Applied Sciences and Art, D
- K03** »HV Silicon and SiC Power Semiconductors; Key Components for Sustainable Energy Solutions«
Munaf Rahimo, MTAL, CH

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- OP001** *Integrated Multi-Gate Cascade Structure for Lateral High-Voltage GaN Power Transistors*
Richard Reiner, Michael Basler, Michael Mikulla, Stefan Moench, Stefan Müller, Rüdiger Quay, Patrick Waltereit, Fraunhofer IAF, D
- OP002** *Towards Vertical GaN Power Transistors on Foreign Substrates: The European YESvGaN Project*
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- OP003** *GaN Power ICs Drive Efficiency and Size Improvements in BLDC Motor Drive Applications*
Alfred Hesener, Navitas Semiconductor, D
- OP004** *Reliability Investigations on 650 V Schottky p-GaN Power Gallium Nitride HEMTs*
Maximilian Goller, Thomas Basler, Jörg Franke, Josef Lutz, Chemnitz University of Technology, D

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- OP006** *Impact of Current Density on Wire Bond Lifetime – Power Cycle Testing with Clamped VCE for Realistic Current Stress*
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 Marcel Sippel, Friedrich-Alexander-University Erlangen-Nuremberg, D
- OP007** *Physics-of-Failure Model to Explain the Heating-Time Effect on IGBT Power Modules Lifetime*
 Merouane Ouhab, Nicolas Degrenne, Mitsubishi Electric, F
 Yusaku Ito, Shinichi Izuo, Mitsubishi Electric, J
- OP008** *A Standard Low Voltage Power Module Platform with High Reliability and Low Cost*
 Harley Neal, Shreyas Malasani, Muhammad Morshed, Xiang Li, Matthew Packwood, Yangang Wang, Dynex Semiconductor, GB

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- OP009** *Towards a Modular Multilevel Flying Capacitor Module Using SiC MOSFET*
 Omar Sanjakdar, Luis Gabriel Alves Rodrigues, French Alternative Energies and Atomic Energy Commission, F
 Yvan Avenas, G2ELAB, F
- OP010** *Parallel Operation of Direct Current Transformers*
 Renan Barcelos, Drazen Dujic, EPFL, CH
- OP011** *Optimal Design of Multiwinding-Transformer-Based Power Architectures in Data Center Applications*
 Qian Xun, Fraunhofer Institute for Silicon Technology, D
 Marco Liserre, Thiago Pereira, Kiel University, D
- OP012** *An ANN Assisted Reverse Recovery of Diode Model for Switching-on Characteristics of IGBT Devices*
 Abby Shih, Keysight Technologies, D
 Felix Zeys, Zeeshan Umar, Stefan Haensel, Siemens, D
 Steven Lee, Huaiyuan Zhang, Keysight Technologies, USA

Power IC

- OP013** *Optimum Power Architecture for USB-PD EPR*
 Alfredo Medina Garcia, Martin Krüger, Markus Schmid, Josef Daimer, Infineon Technologies, D
 Manfred Schlenk, Dr. Schlenk-Consulting, D
- OP014** *CT-Drive – A Simple Two Dice Solution Coreless Transformer Driver for Integrated GaN GIT Devices*
 Kenneth Leong, Derek Bernardon, Diego Dias De Menezes, Thomas Ferianz, Bainan Sun, Infineon Technologies Austria, A
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 Tom Ribarich, Navitas Semiconductor, USA
 Akos Hodany, Navitas Semiconductor, EU
- OP016** *Safe and Secure SW Controlled Digital LDO*
 David Zipperstein, Markus Bichl, Holger Dienst, Mihail Jefremow, Ralph Mueller-Eschenbach, Juergen Schaefer, Arndt Voigtlaender, Infineon Technologies, D

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 Claus Kjeldsen, Christian Østergaard, University of Southern Denmark, DK
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 Udo Wahner, Borealis Polyolefine, A; Carlos Alba, TDK Electronics, E

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Danilo Santoro, Paolo Cova, Nicola Delmonte, University of Parma, I
Simone Daniele, Federal-Mogul Italy, I

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Martin Nießen, Claudius Fournier, Christian P. Dick, Cologne University of Applied Sciences, D
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OP022 Improved Short Circuit Ruggedness by Optimization of Sidewall P-type Pillar Ratio for Trench SiC-MOSFET Fabricated by Multiple Tilted Ion Implantation into Trench Sidewalls

Yutaka Fukui, Kohei Adachi, Akihiko Furukawa, Shiro Hino, Shigeto Honda, Yasuhiro Kagawa, Kazuyasu Nishikawa, Katsutoshi Sugawara, Mitsubishi Electric, J

OP023 Research of Characterization for Activation Rate of Ion Implantation in SiC Power Device Manufacturing

Songlin Yang, Kongjing Li, Yangang Wang, Dynex Semiconductor, GB
Qin Liu, Chengzhan Li, Zhu Qiwei, Zhuzhou CRRC Times Semiconductor, CHN

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Alexander Otto, Rico Eichhorn, Sven Rzepka, Fraunhofer Institute ENAS, D
Thomas Basler, Xing Liu, Josef Lutz, Chemnitz University of Technology, D

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Freerik Forndran, Markus Leicht, Martin Metzler, Vitesco Technologies, D
Jens Heilmann, Bernhard Wunderle, TU Chemnitz, D

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Harley Neal, Xiang Li, Shreyas Malasani, Muhammad Morshed, Matthew Packwood, Dynex Semiconductor, GB

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Hao Xu, Peng Sun, Zhibin Zhao, Xuebao Li, NCEPU, CHN
Erping Deng, Hefei University of Technology, CHN

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Xiaomeng Geng, Sibylle Dieckerhoff, Carsten Kuring, Technical University Berlin, D

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Johannes Drechsel, Henry Barth, Lars Rebenklau, Fraunhofer IKTS, D
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Yoichiro Mori, Sachiko Fujisawa, Hiromasa Kato, Kazumitsu Morimoto, Masakazu Yonei, Seiichi Suenaga, Toshiba Materials, J
- OP032** *Improving High-Power Crowbar Design Using Rupture-Enhanced, Capsule-Style Thyristors in Medium-Voltage Driven Applications*
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- OP033** *Coupling Dynamics of Second-Order Harmonic Active Filters in Single-Phase Input-Series/ Output-Parallel AC-DC Converters*
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Jens Czichon, Vishal Jadhav, Ulrich Schwarzer Infineon Technologies, D
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Kazuto Mikami, Kenji Hatori Mitsubishi Electric, J
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Thiwanka Wijekoon, Miroljub Bakic, Huawei's Nuremberg Research Center, D
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Christoph Drexler, Michael Schmidhuber, SUMIDA Components & Modules, D
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Marcelo Lobo Heldwein, Technical University of Munich, D
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Maximilian Hepp, Wolfgang Wondrak, Mercedes-Benz, D
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Gaël Pongnot, Clément Mayet, Denis Labrousse, SATIE Laboratory, F
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Michael Schlüter, Marius Gentejohann, Sibylle Dieckerhoff, Technical University of Berlin, D
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Ahmed Ismail, Ahmad Al-Hmoud, Yue Zhao, University of Arkansas, USA
Ashish Kumar, Kraig Olejniczak, Wolfspeed, USA

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Katharina Fischer, Karoline Pelka, Julia Walgern, Fraunhofer IWES, D

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YongDae Kwon, Francisco Freijedo, Thiwanka Wijekoon, Huawei Technologies, D

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OP071 3.3 kV 800 A IGBT Module with High Power Cycle Durability Fulfilling Roll2Rail Target

Kanta Makabe, Taiga Arai, Akitoyo Konno, Katsuaki Saito, Hitachi Power Semiconductor Device, J

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Danielle Lester, Mark Cairnie, Christina DiMarino, Virginia Tech, USA

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 Michiko Natori, Hideaki Yamagishi, Showa Denko Materials, J
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Michael Rauh, Mark-M. Bakran, University of Bayreuth, D
 Stefan Schönewolf, Andreas März, Siemens Mobility, D

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Clemens Herrmann, Mohamed Alaluss, Mengi He, Thomas Basler, Josef Lutz, Chemnitz University of Technology, D

OP078 A Novel 2200 V Schottky Barrier Diode-Embedded SiC MOSFET Module

Takahiro Ogata, Hiroshi Kono, Saho Fujii, Tanaka Tsuguhiro, Toshiba Electronic Devices & Storage, J
 Georges Tchouangue, Toshiba Electronics Europe, D

OP079 CoolSiCTM Trench MOSFET Chip Design for the 3.3 kV Class

Caspar Leendertz, Michael Hell, Guang Zeng, Paul Sochor, Rudolf Elpelt, Konrad Schraml, Dethard Peters, Infineon Technologies, D
 Thomas Ganner, Thomas Söllradl, Infineon Technologies, A

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Jaume Roig, onsemi, B

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Juan Rivas-Davila, University of Stanford, GB

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Nicholas Dellas, Infineon Technologies, A

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Wolfgang Wondrak, Maximilian Hepp, Mercedes-Benz, D
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Marcus Wahle, Siemens Energy, D

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Alexandr Ikriannikov, Analog Devices, USA, Di Yao, Uber, USA
- OP089** *A High Gain Passive/Active Switched-LC DC-DC Converter*
Ahmed Allehyani, University of Jeddah, KSA
- OP090** *A Differential Relaxation Half-Bridge Oscillator for Inductive Power Transfer*
Norbert Seliger, University of Applied Sciences Rosenheim, D
- OP091** *High Efficiency and High-Power Density Totem-Pole PFC with SiC MOSFETs*
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Iris Liu, Kevin Xie, Wolfspeed, CN

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Sébastien Sanchez, Philippe Ladoux, University of Toulouse, FR
- OP093** *High-Frequency High-Efficiency LLC Module with Planar Matrix Transformer for CRPS Application Using GaN Power IC*
Bin Li, Xiucheng Huang, Tao Wei, Jason Zhang, Justin Zhu, Navitas Semiconductor, USA
- OP094** *DC-Ready Photovoltaic Solar Converter*
Oleksandr Matiushkin, Oleksandr Husev, Dmitri Vinnikov, Jarek Kurnitski, Tallinn University of Technology, EST
- OP095** *High Power-Density, Bi-Directional, 48 V to 12 V Converter using eGaN FETs for Next Generation BEV's*
Michael de Rooij, John Glaser, Alejandro Pozo Arribas, EPC, USA

SiC Device Application

- OP096 *Advanced SiC Trench-MOS Technology for Automotive Application***
Stephan Schwaiger, Alberto Martinez-Limia, Karl Oberdieck, Christian Förster, Klaus Heyers, Robert Bosch, D
- OP097 *Application of Newly-Developed 2.3 kV Si and SiC Devices to Renewable Energy System***
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Ben Bradel, Fuji Electric, D
- OP098 *Application-close Study of a SiC JFET Cascode Switching Characteristic under dV/dt-Limitations***
Josefine Dukar, Klaus Marahrens, SEW-EURODRIVE, D
Thomas Basler, Maximilian Goller, Chemnitz University of Technology, D

Power Electronics for Charging Station

- OP099 *Evaluation of Silicon-Based 3-Level T-Type Neutral Boost Rectifier Integrated into SMPD Package for EV Charger Applications***
Karsten Haehre, Muhammad Yassof, Martin Schulz, Littelfuse, D
Philippe di Fulvio, Littelfuse, F
- OP100 *Characterization of Si IGBTs in ZCS for EV Charger Applications***
Salvatore Race, Ivana Kovacevic-Badstuebner, Thomas Ziemann, Ulrike Grossner, ETH Zurich, CH
Maria Cotorogea, Arnab Biswas, Franz-Josef Niedernostheide, Infineon Technologies, D
Lukas Riegler, Riccardo Tinivella, BRUSA, CH
- OP101 *Resonant, Bidirectional 22 kW DC-Stage for Chargers Using Quantum Control Featuring Load Independent ZVS Achieving 99,2 % eff. At 5,7 kW/L***
Martin Nießen, Georg Jöntgen, Christian P. Dick, Cologne University of Applied Sciences, D
Benedikt Schuelling, University of Wuppertal, D
- OP102 *An Interoperable 50kW Inductive Power Transfer Design for Opportunity Wireless Vehicle Charging***
Irene Torres-Alfonso, Carlos Costas-Sos, Juan M. Perie-Buil, Antonio-Miguel Munoz-Gomez, Antonio Bernal-Martinez, Juan L. Villa, Oscar Garcia-Izquierdo, Fundación CIRCE, E

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- OP103 *Development of Method for Thermal Diffusivity Measurement of Thin and High Conductive Ceramics***
Martina Schmirler, Stefan Britting, Karsten Schmidt, ROGERS, D
Arno Kaiser, Andreas Böhme, Tim Gestrich, Fraunhofer IKTS, D
- OP104 *Acquisition of the DC-Link Voltage only by Measuring the Gate-Source-Voltage of a SiC MOSFET***
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- OP105 *An Innovative Current Measurement Method for High Current Space DC/DC Converters***
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Patrick Dubus, Powelogy, F
Denis Labrousse, SATIE, F
- OP106 *Design of a Low Cost Over Temperature Detector using the Internal Gate Resistance as TSEP***
Vincent Quemener, Nicolas Degrenne, Mitsubishi Electric, F
Shinichi Izuo, Chihiro Kawahara, Mitsubishi Electric, J

Poster Paper:**SiC Devices I**

- PP001 Active Clamping for SiC MOSFET's Body Diode During Reverse-Recovery**
To Pham Ha Trieu, Hans-Günter Eckel, University of Rostock, D
- PP002 Reverse Recovery Behavior in SiC-MOSFETs: Characterization and Modelling**
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- PP003 Threshold Voltage Hysteresis in Compact Models of SiC-MOSFETs**
Qing Sun, Paul Sochor, Andreas Hürner, Rudolf Elpelt, Infineon Technologies, D
- PP004 Towards a Common Mode Free Packaging Solution for High Voltage Series Connected SiC MOSFET Switches**
Cédric Mathieu de Vienne, Martin Guillet, Bruno Lefebvre, Hygo Reynes, Besar Asllani, SuperGrid Institute, F
Pierre-Olivier Jeannin, Pierre Lefranc, G2ELab, F
Cyril Buttay, Laboratory Ampère, F
Till Huesgen, Amin Salim Obaid Al-Hinaai, University of Applied Sciences and Arts Kempten, D
- PP005 Degradation Pattern of Parallel Symmetrical and Asymmetrical Double-Trench SiC MOSFETs under Repetitive Short Circuits**
Renze Yu, Saeed Jahdi, Juefei Yang, Phil Mellor, University of Bristol, GB
Jose Ortiz-Gonzalez, Olayiwola Alatise, University of Warwick, GB
- PP006 SiC Power Device Competitive Landscape: A Patent Perspective**
Remi Comyn, KNOWMADE, D
- PP007 Characterization of the Static and Dynamic Behavior of a 1.2kV SiC JFET in Reverse Conduction**
Tim Ringelmann, Mark-M. Bakran, University of Bayreuth, D
- PP008 Aging of SiC MOSFETs Through Multistep Voltage Gate Switching Stress**
Jorge Mari, Andreas List, Michael Kirner, Semikron Danfoss, D
Adam Barkley, Philip Butler, Amy Romero, Enes Ugur, Jeff Casady, Wolfspeed, USA

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- PP009 New XHP 2 Module using 3.3kV CoolSiC MOSFET and .XT Technology**
Matthias Buerger, Karl-Heinz Hoppe, Konrad Schraml, André Wedi Infineon Technologies, D
- PP010 Evaluation of Next Generation MV SiC Power Modules**
Calvin Flack, Brian Deboi, Christopher New, Andy Lemmon, Sergio Jimenez, Jared Helton, University of Alabama, USA
- PP011 ISOPLUS – SMPD: An Advanced Isolated Packaging to Fully Exploit the Advantages of SiC MOSFETs**
Aalok Bhatt, Francois Perraud, Martin Schulz, Littelfuse Europe, D
Umme Kulsoom, Levi Gant, Littelfuse, USA
- PP012 Characterization of 6.5 kV SiC MOSFETs with and without an Integrated On-Chip Schottky Diode**
Nicholas Baker, University of Alabama, USA
- PP013 Efficient and Optimized Traction Converter System Enabled by the New 3.3kV CoolSiC .XT Mosfet in XHP 2 Package**
Vishal Jadhav, Jens Czichon, Matthias Bürger, Infineon Technologies, D
- PP014 Advanced PKG Technology for SiC in the NX Package**
Ryo Goto, Yuji Miyazaki, Mitsubishi Electric, J; Eric Motto, Mitsubishi Electric, USA
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Christophe Basso, Future Electronics, F
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- PP261** ***Fast Switching of High-Power GaN Transistors***
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