

2022 IEEE International Workshop on Integrated Power Packaging (IWIPP 2022)

**Grenoble, France
24 – 26 August 2022**



**IEEE Catalog Number: CFP22IPP-POD
ISBN: 978-1-7281-9295-6**

**Copyright © 2022 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP22IPP-POD
ISBN (Print-On-Demand):	978-1-7281-9295-6
ISBN (Online):	978-1-7281-9933-7

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

Designing a Hybrid Variable Frequency Drive (VFD) with Active Magnetic Bearing (AMB) for Space Applications <i>Bela Kagalwala, Pana Shenoy</i>	1
Digital Design Demonstration of 10kV SiC-MOSFET Power Module to Improve Wire-Bonding Layout for Power Cycle Capabilities..... <i>Masaki Takahashi, Thore Stig Aunsborg, Christian Uhrenfeldt, Stig Munk-Nielsen, Asger Bjørn Jørgensen</i>	7
Investigation of Space Charge Accumulated in Insulating Materials of Motor Windings by Applying Voltage Through an Air Gap <i>Shunya Tanaka, Kazuki Endo, Kaito Adachihara, Hiroaki Miyake, Yasuhiro Tanaka</i>	13
A Novel Packaging with Direct Dielectric Liquid Cooling for High Voltage Power Electronics..... <i>Amin Salim Obaid Al-Hinaai, Till Huesgen, Cyril Buttay, Eric Vagnon, Richard Zeitler, Daniela Meyer</i>	19
Thermomechanical Analysis of Si-Chip Fracture Caused by Double-Sided Ag Sintering for PCB Embedded Package..... <i>Ankit Bhushan Sharma, Till Huesgen</i>	25
SiC MOSFET-Based High Performance Double Side Cooled Module and Compact Cooler for High Power-Density Automotive Inverter Applications <i>Ajay Poonjal Pai, Alex Widhalm, Michael Ebli, Matthias Kurz, Marco La Foresta, Marina Fernández Osorio</i>	31
High Temperature Dielectric and Electric Conduction Properties of Aluminium Nitride Substrates with Different Titanium Additions <i>Daigo Okumura, Kyouhei Hamasuna, Masahiro Kozako, Masayuki Hikita, Tomohito Nagami, Kouichi Yamamoto</i>	37
A PCB-Based Power Converter for E-Mobility Applications <i>Julien Morand, Johan Le Leslé</i>	41
Improved Drain-Source Voltage Detection Method for Short-Circuit Protection of SiC MOSFET <i>Qiang Wang, Francesco Iannuzzo, Jingwei Zhang, Yizhan Jiang, Fengyou He</i>	47
An LTSpice - MATLAB Interface for Mitigating Convergence Problems in Circuit Optimization with SPICE <i>Pawel Piotr Kubulus, Asger Bjørn Jørgensen, Szymon Michal Beczkowski, Stig Munk-Nielsen</i>	51
Comparison of FEA Techniques for Estimation of Power Module Parasitics..... <i>Andrew N. Lemmon, Brian T. Deboi</i>	56
Design of a Test Package for High Voltage SiC Diodes <i>Arthur Boutry, Bruno Lefebvre, Cyril Buttay, Eric Vagnon, Dominique Planson, Luong Viet Phung</i>	63
Thermo-Mechanical Constraints for Packaging of Diamond Components <i>Naïm Fusté, Emma Solà, David Sanchez, Oriol Aviñó, Xavier Perpiñà, Miquel Vellvehí, Xavier Jordà</i>	69

Modeling Approach for Design Selection and Reliability Analysis of SiC Power Modules..... 76
Ivana Kovacevic-Badstuebner, Salvatore Race, Ulrike Grossner

Author Index