

2025 IEEE International Workshop on Integrated Power Packaging (IWIPP 2025)

**Tuscaloosa, Alabama, USA
8-10 April 2025**



**IEEE Catalog Number: CFP25IPP-POD
ISBN: 979-8-3315-3361-8**

**Copyright © 2025 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:	CFP25IPP-POD
ISBN (Print-On-Demand):	979-8-3315-3361-8
ISBN (Online):	979-8-3315-3360-1
ISSN:	2834-8362

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

Design, Fabrication, and Operation Challenges of Advanced Power Packaging Technology for EV Power Modules.....	1
<i>Sourish S. Sinha, Pouria Zaghari, Tzu Hsuan Cheng, Jong E. Ryu, Douglas C. Hopkins</i>	
Innovative Packaging Strategy for MLCCs for High Current AC Applications Aimed at Reducing Parasitic Inductance.....	7
<i>Sourish S. Sinha, Pouria Zaghari, Jong E. Ryu, Douglas C. Hopkins</i>	
Novel Integrated Ferromagnetic-Conductor (IFC) Multilayered Shield Layer for Parasitic Reduction in Power Modules	13
<i>Sourish S. Sinha, Douglas C. Hopkins</i>	
Vitrimers: New Opportunities for High Performance Sustainable Power Electronics Packaging.....	19
<i>Baptiste Arati, Marina Labalette, Fabio Coccetti</i>	
Electrical Characterization of Solderless Interconnections Dedicated to Pressure Assembly Power Modules.....	24
<i>Paul Bruyere, Eric Vagnon, Yvan Avenas</i>	
Evaluation of Space Charge Accumulation in Epoxy Resin Under High Temperature and High Electric Stress.....	30
<i>Mana Oki, Kenji Miyata, Hiroaki Miyake, Yasuhiro Tanaka</i>	
Miniaturized 3D Glass Package for High-Efficiency and High-Power Density 48V DC-DC Converters	36
<i>Jannik Koch, Joseph Winkler, Bernhard Wicht, Marc Christopher Wurz</i>	
Multi-Chip Temperature Imbalance of SiC MOSFETs in MOSFET vs. Body-Diode Conduction	42
<i>Nick Baker, Francesco Iannuzzo, Szymon Bęczkowski</i>	
A 6.5kV Full-Bridge SiC MOSFET Module Design.....	49
<i>Arthur Boutry, Andrew N. Lemmon, Max Rogers, Nicholas Turner, Nick Baker</i>	
Design of a Polyvalent Test Platform for Evaluation of Self-Sustained Oscillation in Multi-Chip Power Modules.....	55
<i>Arthur Boutry, Andrew N. Lemmon</i>	
Packaging a 650V/400A GaN Half-Bridge Power Module with Ultra-Low Parasitics for Electric Vehicle Drive Applications.....	62
<i>Xianchao Liu, Yicheng Zhang, Niu Jia, Anwesha Mukhopadhyay, Daniel Costinett, Leon M. Tolbert, Hua Bai</i>	
GaN Based High Power Density PCB Design for Aerial Vehicles Motor Drive Applications.....	67
<i>Shahid Aziz Khan, Feng Zhou, DucDung Le, Mengqi Wang, Shivam Chaturvedi</i>	
Impact of Voltage Class on SiC MOSFET Paralleled Chip Temperature Imbalance	71
<i>Rowan Aldridge, Nick Baker</i>	
SiC MOSFET Parameter Tolerance – A Comparison Between 5 Manufacturers.....	78
<i>Nick Baker, Ella Hart, Arthur Boutry, Andrew Lemmon</i>	
Partial Discharge in High Voltage PCBs	84
<i>Matthew J. Pompa, Andrew N. Lemmon</i>	

Solder Void Impact on Power Device Thermal Impedance Using Transient Thermal Analysis..... 90
Nathan Carlson, Nick Baker

High-Density Integrated GaN Hybrid Power Module Design with Double-Sided Cooling..... 96
Xingyue Tian, Niu Jia, Han Cui, Leon M. Tolbert, Hua Bai

Author Index