

PROF. DOUGLAS CHARLES HOPKINS, PH.D.

Dept. of Electrical and Computer Engineering
Director, Laboratory for
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EDUCATION:

Ph.D. in Electrical Engineering, 1989

Virginia Polytechnic Institute and State University (Virginia Tech)

Dissertation "Dev. of a High-Density, Off-Line, Quasi-Resonant Converter Using Hybrid Tech."

BSEE, MSEE in Electrical Engineering

State University of New York at Buffalo

Undergraduate: Solid State Physics and Electric Power

MS Thesis "Construction and Energy Loss of a Vacuum-Arc Switched Series Inverter,"

CITIZENSHIP: United States

SOCIETIES:

Fellow, International Microelectronics and Packaging Society

Senior Member, Institute of Electrical and Electronics Engineers

Electronic Packaging Society (formerly Components, Packaging and Manufacturing Technology Society), Electron Devices Society, Industry Applications Society, Industrial Electronics Society, Power Electronics Society, Power Engineering Society

EXPERIENCE SUMMARY:

Research Full Professor, Department of Electrical and Computer Engineering Department, College of Engineering, North Carolina State University, August 2011 – present.

Director, Laboratory for Packaging Research in Electronic Energy Systems (PREES), North Carolina State University, September 2011 – present

Research Professor, Electrical Engineering Department, School of Engineering and Applied Sciences, State University of New York at Buffalo, New York, March 1997 – December 2011.

Director, Electronic Power and Energy Research Laboratory, State University of NY at Buffalo

Assistant Professor, Dept. of Electrical Engineering, Watson School of Engineering and Applied Sciences, State University of New York at Binghamton, September 1994-August 1998.

Assistant Professor, Department of Electrical Engineering, College of Engineering and Applied Sciences, Auburn University, Auburn, Alabama, September 1988 - August 1992

Instructor (full time), Department Electrical Engineering, College of Engineering and Applied Sciences, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, September 1983 - August 1988.

Doctoral Student (Co-advisors: Drs. F. William Stephenson and Fred C. Lee), Virginia Polytechnic Institute and State University, Blacksburg, Virginia, September 1983 - August 1988

Senior Engineer, Research and Development Center, Carrier Corporation, Syracuse, New York, September 1982 - August 1983

Electrical Engineer, Corporate Research and Development Center, General Electric Company, Schenectady, New York, May 1977-August 1982

Cofounder, DensePower, LLC, Vestal, New York, est. Jun 2008 – Feb 2014

President and founder, DCHopkins & Associates, LLC, Vestal, New York, est. DBA-'98, LLC-'08

Expert Witness, (see table below)

ATTORNEYS	CIRCA	SUIT	PARTY	DESCRIPTION	OPN	DEP	TRIAL	STATUS
Finnegan, Henderson, Farabow, Garrett & Dunner, LLP Arigna Technology Ltd. v. Robert Bosch	Jun'23 -	Patent (IPR)	Defendant	<i>Inter Partes</i> Review regarding circuits				Active
Troutman Pepper Hamilton Sanders LLP Southern Power Co. v. First Solar Electric, LLC	Mar'22-	Product Liability	Plaintiff	Solar Inverters (Arbitration Panel)	X	X	X	Active
Finnegan, Henderson, Farabow, Garrett & Dunner, LLP Arigna Technology Ltd. v. BMW of North America, LLC, Daimler AG, Mercedes-Benz USA, LLC, General Motors LLC, Volkswagen Group of America, Inc., Nissan North America, Inc., American Honda Motor Co., Inc.	Nov'21-Sep'22	Claims Construction, IPR, EPR	Defendants	Technical interpretation regarding High Voltage ICs	X	X		Completed
Crowell & Moring LLP	Jul'21-	Patent (ITC)		under NDA				Completed
Latham & Watkins LLP Volterra Semiconductor LLC v. Monolithic Power Systems, Inc.	Mar'20-Sep'22	Patent (IPR)	Defendant	<i>Inter Partes</i> Review regarding magnetic components	X			Completed
Finnegan, Henderson, Farabow, Garrett & Dunner, LLP Volterra Semiconductor LLC v. Monolithic Power Systems, Inc.	Mar'20-Sep'22	Patent (IPR, EPR, Invalidity)	Defendant	<i>Inter Partes</i> Review <i>Ex Parte</i> Reexamination Invalidity Report regarding magnetic components	X	X		Completed
Rajah & Tann Singapore LLP	Aug'18-Dec'18	Infringement	Defendant	under NDA				Suspended

Merlin Law Group Houston, TX Pictorial Offset Corp v. Zurich American Insurance Company	May '17 - Dec '17	Prehearing Brief- Liability	Plaintiff	Technical interpretation; cause of equipment failure and loss	X			Completed
McCarter & English, LLP Boston, MA (Pentair Water Pool & Spa, Inc. and Danfoss Drives A/S v. Hayward Industries, Inc.)	Oct '11 - Dec '12	Infringement	Defendant	Technical interpretation; evaluation of electronic design, variable speed drives and pumping systems	X	X		Completed
Greenburg Traurig, LLP Dallas, TX (Whirlpool Corp. v. Sensata Tech. and Texas Instruments Corp)	Jul '11 -Oct '11	Product Liability	Defendant	Technical interpretation, computer simulation and interpretation of cause, motor starter	X	X		Completed
Phillips Lytle LLP Buffalo, NY (Version New York Inc. v. National Grid USA Service Company)	Oct '06 - Apr '07	Contractual	Plaintiff	Technical interpretation, review of problem and standards, expert report. Resolved through the PSC; favorable resolution	X			Completed
Latham & Watkins, Chicago, IL (Microsemi v. Monolithic Power Systems)	Dec '04 -Mar '06	Infringement	Defendant	Expert report, deposition response for summary judgment, electronic lighting; favorable resolution	X	X		Completed
Gresens & Gillen Buffalo, NY	Dec '05	Product Liability	Plaintiff	Technical interpretation, expert opinion, electronic lighting; favorable resolution	X			Completed
Jenner & Block (IMS) Chicago, IL	Apr '05 -Apr '06	Infringement	Plaintiff	Technical interpretation/prior art, perform circuit analysis and tests for electronic lighting	X			Completed
Baker, Strechi, Cowden and Rice (KKAI) Kansas City, MO	Mar '05 -'06	Product Liability	Defendant	Evaluate marine electrical system for high voltage insulation failure, source of spark; favorable resolution	X			Completed
George W. Narby, Attorney at Law, Buffalo, NY	Jan '04	Liability	Plaintiff	Technical opinion/report on electrical insulation breakdown in factory fire	X			Completed Appealed
Varity Zecal, Inc., Churchville, NY	Jun '98	Infringement	Plaintiff	Technical interpretation; evaluation of electronic packaging design and processing. Unfavorable resolution	X			Completed

OPN: Expert Opinion, may have public report DEP: Deposition given TRIAL: Testified at trial

BOOKS (CHAPTERS):

1. Power Electronics Handbook, Academic Press, New York, chapter 35: "Packaging and Smart Power Systems," 2001; 2nd ed. 2006; 3rd ed. 2011.

HONORS AND AWARDS:

1. Outstanding Educator Award – Int'l Microelectronics Assembly and Packaging Society, 2013
2. Fellow, International Microelectronics and Packaging Society, November 2007
3. Nominated Best Paper of Conference, IMAPS Int'l Symp. on Microelectronics, 2006
4. Outstanding Contribution to Education, Research and Professionalism, IEEE – Region I, 2001
5. IEEE Third Millennium Medal recipient, 1999.
6. Senior Member – International Microelectronics and Packaging Society (IMAPS), ~1996.
7. NYS/UUP PDQWL Term Faculty Development Award, 1995.

8. Recognition of Accomplishment for Sustaining Base Information Services Limited Technical Tests: from C. L. Austin, Prog. Exec. Officer, Dept. of the Army and B. M. Horowitz, Pres. & CEO of MITRE Corp. 1995
9. Best Paper of Session, ISHM Int'l Symp. on Microelectronics, 1988, '89, '92, '94, '09, '11.
10. Who's Who in Science and Engineering, 1993.
11. Senior Member – Institute of Electrical and Electronics Engineers (IEEE), 1992.
12. Sigma Xi 1990.
13. First Place Technical Paper Competition – Alabama Section IEEE 1989.
14. Distinguished Service to ISHM Student Branch, VPI&SU 1988.
15. Eta Kappa Nu 1987.
16. Most Valuable Prof.–HKN/IEEE/ISHM Student Branches, VPI&SU 1986.

CONSULTING

- | | |
|-----------|---|
| 2017 – 18 | Catawba Nuclear Station, Duke Power Corp, Charlotte, NC |
| 2013 – 20 | Indiana Integrated Circuits, South Bend, IN |
| 2009 – 15 | Emerson Motor Company, St. Louis, MO |
| 2008 – 08 | Renewable Energy Development Inc., Oneonta, NY |
| 2006 – 07 | Emerson Climate Technologies, Sidney. OH |
| 2005 – 05 | Eaton Aerospace, Grand Rapids, Michigan |
| 2005 – 09 | Kevin Kennedy & Associates, Indianapolis, Indiana |
| 2004 – 04 | Yazaki North America, Canton, Michigan |
| 2003 – 03 | Ridge Tool Company, Elyria, OH |
| 2003 – 04 | Astec Power Andover, MA |
| 2002 – 03 | Celestica Power, Milwaukie, OR |
| 2002 – 03 | Precision Magnetic Bearings, Albany, New York |
| 2002 – 15 | Emerson Motor Company, Columbus, Ohio |
| 2002 – 02 | Emerson Energy Systems, Montreal, Canada |
| 2001 – 15 | Emerson Design Center, Columbus, Ohio |
| 2000 – 02 | Verizon Corp., Boston, MA |
| 2000 – 01 | SYSTEL, Inc., Israel |
| 1998 – 00 | Grundfos A/S, Bjerringbro, Denmark |
| 1998 – 00 | JRS Technology Incorporated, Endicott, New York |
| 1996 – 06 | Custom Electronics Incorporated, Oneonta, New York |
| 1995 – 00 | Varity Zecal Incorporated, Churchville, New York |
| 1995 – 99 | BrushWellman Incorporated, Tucson, Arizona |
| 1992 – 97 | Power Technology Services, Raleigh, North Carolina |
| 1992 – 92 | Marconi Circuits Technology, Farmingdale, New York |
| 1991 – 93 | BrushWellman Inc., Cleveland, Ohio |
| 1989 – 93 | Power Tech, Fair Lawn, New Jersey |
| 1991 – 91 | Micon Engineering, College Station, Texas |
| 1988 – 89 | Digital Equipment Corp., Burlington, Vermont |

PATENTS:

1. US10,325,875B2 “Edge Interconnect Packaging of Integrated Circuits for Power Systems,” Jason M Kulick, Douglas Hopkins, June 18, 2019
2. US Patent Application 17/576,921, “High Voltage Cascaded SuperCascode Power Switch,” filed January 15, 2022 [NCSU Attorney Docket No. 221404-1840]

JOURNAL PUBLICATIONS: *(Excerpt from 150+ articles since 1983)*

1. "Electric Field and Thermo-Mechanical Stress Management Using Stacked Substrate Power Module Structure for Medium Voltage Applications," Sourish S. Sinha, Pouria Zaghari, Jong Eun Ryu, Douglas C. Hopkins, IEEE Components, Packaging and Manufacturing Technologies Journal, Special Section on Power Electronics Packaging, *in preparation 15Oct'23*
2. "New Methodology for Analyzing Common-Mode Currents Utilizing Ultra-Thin Dielectrics In Power Modules," Tzu-Hsuan Cheng, Sourish S. Sinha and Douglas C. Hopkins, IEEE Components, Packaging and Manufacturing Technologies Journal, Special Section on Power Electronics Packaging, *in preparation 15Oct'23*
3. "Scalable 3D Heterogeneously Integrated Power Microsystem (3DHIP) with Embedded GaN HEMT in Glass Substrates," Sourish S. Sinha, Pouria Zaghari, Jong Eun Ryu, Bill Batchelor, Bob Conner, Douglas C. Hopkins, IEEE Components, Packaging and Manufacturing Technologies Journal, Special Section on Power Electronics Packaging, *in preparation 15Oct'23*
4. "Cost Comparison of the Cascaded SuperCascode Power Switch versus a Paralleled HV MOSFET Power Switch," Utkarsh Mehrotra and Douglas C. Hopkins, *IEEE Power Electronics Regular Paper/Letter/Correspondence, in revision*
5. "Methodologies of Cascading and Scaling to realize High Voltage Cascaded SuperCascode Power Switch," Utkarsh Mehrotra and Douglas C. Hopkins, IEEE Jou of Emerging and Selected Topics in Power Electronics, Print ISSN: 2168-6777, Online ISSN: 2168-6785, DOI: 10.1109/JESTPE.2023.3314025
6. "Thermal and Reliability Characterization of an Epoxy Resin-Based Double-Side Cooled Power Module," T. H. Cheng, K. Nishiguchi, Y. Fukawa, B. J. Baliga, S. Bhattacharya and D. C. Hopkins, *Jou. of Microelectronics and Electronic Packaging*, vol.18, pp.123-136, 2021
7. "Bidirectional Solid-State Circuit Breaker Super Cascode for MV SST and Energy Systems," Utkarsh Mehrotra, Bahji Ballard, and Douglas C. Hopkins, *IEEE Jou of Emerging and Selected Topics in Power Electronics*, DOI-10.1109/JESTPE.2021.3081684
8. "3-D Prismatic Packaging Methodologies for Wide Band Gap Power Electronics Modules," Haotao Ke, Utkarsh Mehrotra, Douglas C. Hopkins, *IEEE Tran. on Power Electronics*, v 36, i 11, pp 13057-66, Nov 2021DOI: 10.1109/ TPEL.2021.3081679
9. "1.2 kV, 10 A, 4H-SiC Bi-Directional Field Effect Transistor (BiDFET) with Low On-State Voltage Drop," A. Kanale, T-H. Cheng, K. Han, B. J. Baliga, S. Bhattacharya, and D. Hopkins, in *Mat. Sci. Forum.*, vol 1004, Jul 2020, pp. 872-881, doi: 10.4028/www.scientific.net/msf.1004.872
10. "Design, Package and Hardware Verification of a High Voltage SiC Current Switch", Ankan De, Adam Morgan, Vishnu Mahadeva Iyer, Haotao Ke, Xin Zhao, Kasunaidu Vechalapu, Douglas Hopkins, S. Bhattacharya; *IEEE Jou of Emerging and Selected Topics in Power Electronics, Special Issue on Wide Bandgap Power Devices and Applications*, Vol.6, Issue 1, pp 441-50, July 14, 2017.
11. "Multi-physics FEA Based Thermal-Mechanical Design Optimization for DBC Based Power Modules", Yang Xu, Zelin Xu, Douglas C Hopkins, *IEEE Transactions on Power Electronics* (in preparation)

12. "A MEMS Sensor for Gas Detection in High Voltage Oil Filled Equipment," Krishna P. Bhat, Douglas C. Hopkins, Kwang Oh, *IEEE Trans. on Industry Applications*, Jan. 2013
13. "A Dynamic Model for a Gas-Liquid Corona Discharge Using Neural Networks," A. Hosny, D. C. Hopkins, et.al, *IEEE Trans. on Power Engineering*, July 2009
14. "Systems Design Considerations for Using a Direct-Attached-Ceramic MMC Power Package," D.C. Hopkins, J. M. Pitarressi and J. A. Karker, invited and under submission, *Int'l Jour. on Microelectronics Reliability*, 1998.
15. "Thermal Impedance and Induced Stress in a Power Package Due to Variation in Layer Thickness," D.C. Hopkins and J. M. Pitarressi, under review *Int'l Jour. of Microcircuits and Electronic Packaging*, 1998
16. "Extension of Battery Life via Charge Equalization Control," S. T. Hung, D.C. Hopkins and C. R. Mosling, *IEEE Trans. on Industrial Electronics*. Vol. 40, No. 1, pp. 96 - 104, February, 1993.
17. "Dynamic Equalization During Charging of Serial Energy Storage Elements," D.C. Hopkins, C. R. Mosling and S. T. Hung, *IEEE Trans. on Industry Applications*., Vol. 29, No. 2, pp. 363 – 368, March/April, 1993.
18. "Plated Copper on Ceramic Substrates for Power Hybrid Circuits," R.W. Johnson, R. Weeks, D.C. Hopkins, J. Muir, and J.R. Williams, *Trans. on Components, Hybrids, and Manufacturing Technology*, Vol. 12, No. 4, pp. 503-536, December 1989.
19. "Hybridized Off-Line 2-MHz Zero-Current-Switched Quasi-Resonant Converter," D.C. Hopkins, M.M. Jovanovic, F.W. Stephenson and F.C. Lee, *IEEE Transactions on Power Electronics*, Vol.4, No.1, pp. 147-154, Jan. 1989.
20. "Evaluation and Design of Megahertz-Frequency Off-Line Zero-Current- Switched Quasi-Resonant Converters," M.M. Jovanovic, D.C. Hopkins and F.C. Lee, *IEEE Transactions on Power Electronics*, Vol.4, No.1, pp. 136-146, January 1989; First Place - Alabama Section, IEEE.
21. "Development of a High-Density, Off-Line, Quasi-Resonant Converter Using Hybrid Techniques," Ph.D. Dissertation, Virginia Polytechnic Institute and State University, 1988.
22. "Characteristic Input Harmonics of DC-DC Converters and their Effects on Input Filter Design," R.L. Steigerwald and D.C. Hopkins, *IEEE Transactions on Industrial Electronics and Control Instrumentation*, Vol. IECI-28, pp 73-82.

REFEREED CONFERENCE PROCEEDINGS & PRESENTATIONS: (Excerpt ending in 2009)

1. "A 400W, 250kHz (2kW Peak) Integrated GaN Half Bridge Power Module in a Non-Isolated Buck Converter," Sourish S Sinha, Tzu-Hsuan Cheng, Douglas C Hopkins, IEEE Applied Power Electronics Conf. (APEC), Long Beach, CA, February 25-29, 2024
2. "Single Sided Integrated GaN Power Module using Thin Substrate for 1kW Non-Isolated Converter Application," Sourish S. Sinha, Pouria Zaghari, Jong Eun Ryu, Douglas C. Hopkins, IEEE Wksp on Wide Bandgap Power Devices and Applications (WiPDA), Charlotte, NC, 4-6 Dec. 2023.

3. "Isolated Single-stage Three-phase AC/DC Converter using Bidirectional Switches," Ramandeep Narwal, Isaac Wong, Subhashish Bhattacharya, B. Jayant Baliga and Douglas C. Hopkins, IEEE Energy Conversion Congress and Exposition (ECCE'23), Nashville, TN Oct 29 – Nov 02, 2023
4. "Hybrid Thyristor and SiC FET Power Module for High-Efficiency AC Motor Control," Chunmeng Xu, Adam J. Morgan, Douglas C. Hopkins and Pietro Cairoli, IEEE Energy Conversion Congress and Exposition (ECCE'23), Nashville, TN Oct 29 – Nov 02, 2023
5. "Design and Optimization of High-Frequency Transformer for Dual Active Bridge Converter with SiC BiDFET for Solar PV Applications," Isaac Wong, Ramandeep Narwal, Subhashish Bhattacharya, B. Jayant Baliga and Douglas C. Hopkins, IEEE Energy Conversion Congress and Exposition (ECCE'23), Nashville, TN Oct 29 – Nov 02, 2023
6. "Finite Element Analysis and Fatigue Life Prediction of A Laterally Conducting Gan-Based Power Package Under Thermal Cycling," Pouria Zaghari, Sourish S. Sinha, Jong Eun Ryu, Paul D. Franzon, Douglas C. Hopkins, Proc ASME 2023 Int'l Mechanical Eng. Congress and Exposition (IMECE2023), Oct 29-Nov 2, 2022, New Orleans, LA, IMECE2023-111682
7. "Investigation of High Current Fine Grain Power Delivery for 3D Heterogeneous Integration," Sourish S Sinha, Pouria Zaghari, Jong E Ryu, Bob Conner, Bill Batchelor, Raymond A Fillion, Douglas C Hopkins, 34th Electronics Packaging Symposium, Albany NY, 6-7 September 2023
8. "Thermal cycling and fatigue life analysis of a GaN Wide-Bandgap Laterally Conducting Power Packaging," Pouria Zaghari, Sourish Sinha, Jong Ryu, Douglas Hopkins, Paul Franzon, IEEE International 3D System Integration Conference (3DIC), 10-12 May, 2023, Cork, Ireland
9. "The BiDFET Device and Its Impact on Converters," B. Jayant Baliga, Douglas Hopkins, Subhashish Bhattacharya, Aditi Agarwal, Tzu-Hsuan Cheng, Ramandeep Narwal, Ajit Kanale, Suyash Sushilkumar Shah, and Kijeong Han, IEEE Power Electronics Magazine, Vol.10, No.1, pp 22-29, March 2023
10. "Power Conversion Systems Enabled by SiC BiDFET Device," Subhashish Bhattacharya, Ramandeep Narwal, Suyash Sushilkumar Shah, B. Jayant Baliga, Aditi Agarwal, Ajit Kanale, Kijeong Han, Douglas C. Hopkins, and Tzu-Hsuan Cheng, IEEE Power Electronics Magazine, Vol.10, No.1, pp 39-43, March 2023
11. "Design & Integration of Solid-State Circuit Protection," Douglas C Hopkins, Sourish S Sinha, Professional Education Seminar (competitively selected, 3-hrs), IEEE Applied Power Electronics Conference, Orlando, FL, 19-23 March, 2023
12. "Analysis and Characterization of Four-quadrant Switches Based Commutation Cell," Ramandeep Narwal, Shubham Rawat, Ajit Kanale, Tzu-Hsuan Cheng, Aditi Agarwal, Subhashish Bhattacharya, B. Jayant Baliga, Douglas C. Hopkins, IEEE Applied Power Electronics Conference, Orlando, FL, 19-23 March, 2023
13. "Advanced GaN IPM for High-Frequency Converter Applications Enabled with Thin-Substrates," Sourish Sinha, Tzu-Hsuan Cheng, Keval Parmar, Douglas C Hopkins, IEEE Applied Power Electronics Conference, Orlando, FL, 19-23 March, 2023
14. "Heterogeneous Integration of Power Electronics (IPE) and the Road Ahead," Douglas C Hopkins, 33rd Electronic Packaging Symposium, Binghamton, NY, 7-8 Sept 2022

15. "Double Sided Integrated GaN Power Module with Double Pulse Test (DPT) Verification," Sourish S. Sinha, Tzu-Hsuan Cheng, Wensong Yu, Douglas C. Hopkins, Int'l Microelectronic Sym., Boston, MA, 4-7 October 2022
16. "Design Considerations for Developing 1.2 kV 4H-SiC BiDFET-enabled Power Conversion Systems," Ajit Kanale, Tzu-Hsuan Cheng, Ramandeep Narwal, Aditi Agarwal, B. Jayant Baliga, Subhashish Bhattacharya, Douglas C. Hopkins, IEEE Energy Conversion Congress and Expo. (ECCE'22), Detroit, MI, 2022, pp. 1-7, doi: 10.1109/ECCE50734.2022.9947715
17. "Comparison of the Capacitances and Switching Losses of 1.2 kV Common-Source and Common-Drain Bidirectional Switch Topologies," Ajit Kanale, Tzu-Hsuan Cheng, Aditi Agarwal, Suyash Sushilkumar Shah, B. Jayant Baliga, Subhashish Bhattacharya and Douglas C. Hopkins, 2021 IEEE 8th Workshop on Wide Bandgap Power Devices and Applications (WiPDA'21), 2021, pp. 112-117, doi: 10.1109/WiPDA49284.2021.9645130.
18. "Optimized AC/DC Dual Active Bridge Converter using Monolithic SiC Bidirectional FET (BiDFET) for PV Applications," Suyash Sushilkumar Shah, Subhashish Bhattacharya, Ajit Kanale, Tzu-Hsuan Cheng, Utkarsh Mehrotra, Aditi Agarwal, B. Jayant Baliga and Douglas C. Hopkins, IEEE Energy Conversion Congress and Exposition (ECCE'21), Vancouver, Canada, October 10-14, 2021
19. "Design and Characterization of 3.3kV-15kV Rated DBC Power Modules for Developmental Testing of WBG Devices" U. Mehrotra, A.J. Morgan and D. C. Hopkins, IEEE Applied Power Electronics Conference (APEC'21), Virtual (Phoenix) June 14-17, 2021
20. "A New Cascaded SuperCascode High Voltage Power Switch," U. Mehrotra, D. C. Hopkins, IEEE Applied Power Electronics Conference (APEC'21), Virtual (Phoenix, AZ) June 14-17, 2021
21. "Advanced Dual-Sided Half-bridge Packaging with Epoxy Insulated Metal Substrates (eIMS)," Douglas C Hopkins, Tzu-Hsuan Cheng, Utkarsh Mehrotra, Wensong Yu, IEEE Applied Power Electronics Conference (APEC'21), Virtual (Phoenix) June 14-17, 2021 (*Invited Paper*)
22. "Switching Characteristics of a 1.2 kV, 50 mΩ SiC Monolithic Bidirectional Field Effect Transistor (BiDFET) with Integrated JBS Diodes," Ajit Kanale, Tzu-Hsuan Cheng, Suyash Sushilkumar Shah, Kijeong Han, Aditi Agarwal, B. Jayant Baliga, Douglas Hopkins and Subhashish Bhattacharya, IEEE Applied Power Electronics Conference (APEC'21), Virtual (Phoenix) June 14-17, 2021
23. "Study of Al wire bonds to understand cross-talk and current carrying capacity in WBG Power Module Design," Utkarsh Mehrotra, Adam J Morgan, Michael, McKeown, Douglas C Hopkins, IMAPS International Advanced Power Electronics Packaging Symposium (APEPS'21), Virtual (Albuquerque), April 26-29, 2021
24. "Lithium Battery Cell Level Fusing with Aluminum Heavy Wire Bonds," Utkarsh Mehrotra, Arthur Brazzle, Michael McKeown, Douglas C. Hopkins, 53rd Int'l Sym on Microelectronics, Virtual Global Event, October 5-8, 2020 *Best of Session*
25. "High Current Medium Voltage Bidirectional Solid-State Circuit Breaker Using Cascaded JFETs," Utkarsh Mehrotra, Bahji Ballard and Douglas C. Hopkins, 2020 IEEE Energy Conversion Congress and Exposition, Detroit, Michigan, Virtual, October 11-15, 2020
26. "Packaging Development for a 1200V SiC BiDFET Switch Using Highly Thermally Conductive Organic Epoxy Laminate," Utkarsh Mehrotra, Tzu-Hsuan Cheng, Ajit Kanale, Aditi Agarwal, Kijeong

Han, B. Jayant Baliga, Subhashish Bhattacharya, Douglas C. Hopkins, The 32nd International Symposium of Power Semiconductor Devices and ICs (ISPSD), Hofburg Vienna, Austria, (virtual), September 13-18, 2020.

27. "Monolithic 4-Terminal 1.2 kV/20 A 4H-SiC Bi-Directional Field Effect Transistor (BiDFET) with Integrated JBS Diodes," K. Han, A. Agarwal, A. Kanale, B. J. Baliga, S. Bhattacharya, T-H. Cheng, D. Hopkins, V. Amarasinghe, and J. Ransom, 2020 32nd International Symposium on Power Semiconductor Devices and ICs (ISPSD), Hofburg Vienna, Austria, pp. 242-245, September 13-18, 2020, doi: 10.1109/ISPSD46842.2020.9170064.
28. "Optimized Highly Efficient SSCB Using Organic Substrate Packaging for Electric Vehicle Applications", Utkarsh Mehrotra, Bahji Ballard, Tzu-Hsuan Cheng, B. Jayant Baliga, Subhashish Bhattacharya, Douglas C Hopkins, IEEE Transportation Electrification Conference & Expo (iTEC), Chicago, IL, Virtual, July 17, 2020
29. "Design and Integration of WBG Solid State Circuit Protection," Douglas C. Hopkins, Bahji Ballard, Utkarsh Mehrotra, *Tutorial (3 hrs)* IEEE Applied Power Electronics Conference, Anaheim, CA, March 17-21, 2019
30. "Designing for Switching Stresses in a Circuit Breaker Application using SiC Semiconductors," Bahji Ballard, Utkarsh Mehrotra, Douglas C Hopkins, *Tutorial (1.5hrs)* 7th IEEE Workshop on Wide Bandgap Power Devices and Applications (WiPDA), Raleigh, NC, October 29-31, 2019
31. "A High-Bandwidth Resistive Current Sensing Technology for Breakers and Desaturation Protection," Bo Gao, Utkarsh Mehrotra, Douglas C. Hopkins, 7th IEEE Workshop on Wide Bandgap Power Devices and Applications (WiPDA), Raleigh, NC, October 29-31, 2019
32. "1.2 kV, 10 A, 4H-SiC Bi-Directional Field Effect Transistor (BiDFET) with Low On-State Voltage Drop," Ajit Kanale, Tzu-Hsuan Cheng, Kijeong Han, B. Jayant Baliga, Subhashish Bhattacharya, Douglas Hopkins, Int'l. Conf. on Silicon Carbide and Related Materials, Kyoto Japan, 29 Sept – 04 Oct. 2019
33. "Power Packaging Assembly Challenges," Douglas C Hopkins, A.R.E.A. Consortium Meeting Universal Instruments, Binghamton, NY, March 27-28, 2019 (*Invited Keynote*)
34. "Design and Integration of WBG Solid State Circuit Protection," *Tutorial (3 hrs)*, Douglas C. Hopkins, Bahji Ballard, Utkarsh Mehrotra, IEEE Applied Power Electronics Conference, Anaheim, CA, March 17-21, 2019
35. "New Dynamic Power MOSFET Model to Determine Maximum Device Operating Frequency," Adam Morgan, Ajit Kanale, Kijeong Han, Jayant Baliga, Douglas Hopkins, IEEE Applied Power Electronics Conference, Anaheim, CA, March 17-21, 2019
36. "New Short Circuit Failure Mechanism for 1.2kV 4H-SiC MOSFETs and JBSFETs," Kijeong Han, Ajit Kanale, B. J. Baliga, Bahji Ballard, Adam Morgan, and Douglas C. Hopkins IEEE Workshop on Wide Bandgap Power Devices and Appl (WiPDA), Atlanta, GA, Oct 31-Nov 2, 2018
37. "6.5kV SiC JFET-based Super Cascode Power Module with High Avalanche Energy Handling Capability," Bo Gao, Adam Morgan, Yang Xu, Xin Zhao, Bahji Ballard, Douglas C. Hopkins, IEEE Workshop on Wide Bandgap Power Devices and Appl (WiPDA), Atlanta, GA, Oct 31-Nov 2, 2018

38. "Increasing Electrical and Thermal Performances of VRMs by Using Folded Flexible Substrate," Bo Gao, Xin Zhao, Douglas C. Hopkins, Int'l Symp. on 3D Power Electronics Integration and Manufacturing, College Park, MD, June 25-27, 2018
39. "6.0kV, 100A, 175kHz Super Cascode Power Module for Medium Voltage, High Power Applications," Bo Gao, Adam J. Morgan, Yang Xu, Xin Zhao, Douglas C. Hopkins, IEEE Applied Power Electronics Conference, San Antonio, TX, March 4-8, 2018
40. "Performance optimization of A 1.2 kV SiC High Density Half Bridge Power Module In 3D Package," Xin Zhao, Bo Gao, Liqi Zhang, Douglas C Hopkins, Alex Q Huang, Applied Power Electronics Conference, San Antonio, TX, March 4-8, 2018
41. "Flexible Epoxy-Resin Substrate Based 1.2 kV SiC Half Bridge Module with Ultra-low Parasitics and High Functionality," Xin Zhao, Bo Gao, Yifan Jiang, Liqi Zhang, Sizhen Wang, Yang Xu, Kenji Nishiguchi, Yoshi Fukawa, Douglas C. Hopkins, IEEE Energy Conversion Congress & Exposition (ECCE), Cincinnati, Ohio, October 1 – 5, 2017
42. "Numerical and Experimental Determination of Temperature Distribution in 3D Stacked Power Devices," Adam Morgan, Leila Choobineh, David Fresne and Douglas C. Hopkins, ASME 2017 Int'l Technical Conf. and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems, San Francisco, California, August 29–September 1, 2017 (doi:10.1115/IPACK2017-74222)
43. "Ultra Low Leakage Module for 12kV-225°C SiC Semiconductor Testing," Xin Zhao, Haotao Ke, Yifan Jiang, Adam Morgan, Yang Xu, Douglas C. Hopkins, 49th Int'l Symp. on Microelectronics, Pasadena CA, 10-13 Oct 2016
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