

Organisational Information

Sign up at: www.ecpe.org/events

Registration Deadline:

16 October 2024

Participation Fee:

- € 670,- * for industry
- € 520,- * for universities/institutes
- € 180,- * for students/PhD student (limited spaces; copy of students ID required)

* plus VAT

- The participation includes dinner, lunches, coffee/soft drinks and digital proceedings. The reduced (PhD) students fee includes all except for dinner (can be booked for an extra fee of € 50,-*)
- Digital proceedings will be provided by download link latest one day before start of the event. A printed handout is available on request (€ 50,-*).
- Upon receipt of registration confirmation via email you are signed-up for the event. The invoice will be sent via email.
- 25 % discount for participants from ECPE member companies.
- 10% discount on university/institute fee for participants from ECPE competence centres.
- Further information (hotel list and maps) will be provided after registration and can be found on the ECPE web page.
- Cancellation policy: Full amount will be refunded in case of cancellation upon to 2 weeks prior to the event. After this date 50 % of the fee is non-refundable (replacement is possible).
- The number of participants is limited to 35 attendees.

18/04/24

Organisational Information

Organiser ECPE e.V.
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Venue STMicroelectronics
Stradale Primosole 50, Building L7
95121 Catania, Italy



Source photo: STMicroelectronics building in Catania, Italy
Source graph front page: Pierric Gueguen, YOLE Développement

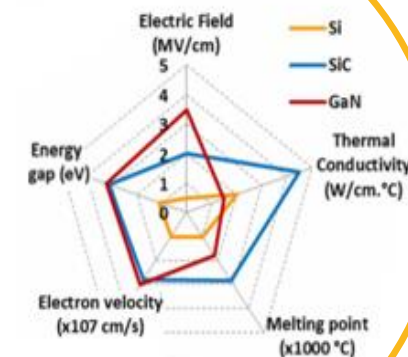


European Center for
Power Electronics e.V.

ECPE Tutorial

Wide Bandgap User Training SiC-based Power Electronics

23 - 24 October 2024
Catania, Italy



in cooperation with



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Wide Bandgap User Training SiC-based Power Electronics

23 - 24 October 2024
Catania, Italy

Wide bandgap (WBG) semiconductors are the next generation of power electronics. The WBG User Training is split in two separate courses for SiC and GaN – with this edition focusing on practical know-how for engineers working with SiC devices.

Efficient system integration is the key to exploiting the full potential of SiC semiconductors. Power electronics developers need to consider that high switching speeds, high frequencies and high-power densities place special demands on the system components.

This 2-day tutorial addresses all aspects of SiC system integration from the choice of semiconductor components and design options to how to cope with parasitics, EMC and inductance at high switching frequencies. Another topic is test methods – both for electric tests of new power semiconductor components as for the robustness and reliability of modules and systems.

Target Group

This tutorial is intended for engineers and technicians who work or plan to work with SiC devices. Efficient system integration and practical aspects are core components of this course.

Course Instructors:

Prof. Eckart Hoene, Fraunhofer IZM, Berlin (DE)
Prof. Nando Kaminski, University of Bremen (DE)
Andreas Schletz, SCHLETZ GmbH, Amberg (DE)
Yuri Ciardo, STMicroelectronics S.r.l. (IT)
Francesco Gennaro, STMicroelectronics S.r.l. (IT)
Manuel Gärtner, STMicroelectronics (DE)
Claudia Malannino, STMicroelectronics S.r.l. (IT)
Mario Saggio, STMicroelectronics S.r.l. (IT)

All presentations and discussions will be in English.

Draft Programme

Wednesday, 23 October 2024

08:45 **Registration & Welcome Coffee**

09:15 **Welcome, Opening**

Alessandro Cremonesi, STMicroelectronics
Peter Rechberger, ECPE

09:30 **Introduction & Motivation for WBG Electronics**

- Opportunities of WBG
- What has been achieved?
- Trends

Eckart Hoene

10:30 **Coffee break**

10:50 **Wide Bandgap Power Semiconductor Devices**

- General Considerations / Material Basics
- SiC-Switches
- SiC-Diodes

Nando Kaminski

12:20 **Lunch break**

13:20 **Design of WBG Electronics**

- Which Topologies are Suitable?
- Barriers to overcome
- Design Rules for Low Inductance Modules

Eckart Hoene

14:30 **Coffee break**

14:50 **Integration Fast Switching Semiconductors:
The Era of Designing Parasitics**

- Parasitics
- Ultra Low Inductance Modules
- Low Inductance/Zero EMI Modules

Eckart Hoene

15:40 **Drivers & Control Circuitry for SiC Switches**

Eckart Hoene

16:10 **Testing SiC Devices I
(Focus on Chip)**

- General Considerations: What's Different
- Individual Robustness and Reliability Tests:
Blocking, Gate, Operation

Nando Kaminski

16:40 **Industry Strategy to bring SiC from Niche
Application in High Volume Manufacturing**

Mario Saggio, Manuel Gärtner

17:30 **End of 1st Day**

20:00 **Dinner**

Draft Programme

Thursday, 24 October 2024

09:00 **Start of 2nd Day**

09:00 **State of the Art Packaging**

- Challenges for Highly Integrated Modules
- SiC Discretes
- SiC Power Modules
- Temperature Challenges for Integrated Systems Due to High Power Density
- Passive Components

Andreas Schletz

10:30 **Coffee break**

10:50 **Testing of WBG-Components II (Focus on
Construction and Connection Technic)**

- Failure Mechanisms
- Test Strategies
- Power Cycling, further Reliability Tests
- Interpretation of Test Results

Andreas Schletz

12:20 **Lunch break**

13:20 **SiC as Key Enabler for High Performance and
Efficient Power Electronics**

- Typical applications example
- Application setup (POC)
- Enabling of robust design by system approach
- Outlook on power electronic packaging

Francesco Gennaro, Yuri Ciardo,
Claudia Malannino

15:20 **Final Discussion & Feedback**

15:40 **Optional: Tour at SRA application lab**

16:30 **End of Tutorial**