Organisational Information

Sign up at: www.ecpe.org/events

Registration Deadline:

25 February 2026

Participation Fee:

Euro 345,– * for industry

Euro 305,– * for universities/institutes

Euro 135,– * for students/PhD student (limited spaces; copy of students ID required)

* plus VAT

- The online participation fee includes remote access via the meeting software Webex and digital proceedings.
- Digital proceedings will be provided by download link latest one day before start of the event.
- Upon receipt of registration confirmation via e-mail you are signed-up for the event. The invoice will be sent via email.
- 15% discount for participants from ECPE member companies.
- 10% discount on university/institute fee for participants from ECPE competence centres.
- Cancellation policy: Full amount will be refunded in case of cancellation upon to one week prior to the event. After this date 50 % of the fee is non-refundable (replacement is possible).
- We reserve the right to cancel the event if the minimum number of participants is not reached

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05/01/26

Organisational Information

Organiser	ECPE e.V. 90443 Nuremberg, Germany www.ecpe.org
Technical Chair	Dr. Martin Rittner, Robert Bosch, Chairman of the AQG 324 Working Group Thomas Harder; ECPE e.V.
Organisation	Svenja Roth, ECPE e.V. +49 911 81 02 88 – 12 svenja.roth@ecpe.org

Dr. Martin Rittner, Chair of Tutorial
Robert Bosch

Peter Dietrich,
Richardson RFPD

Dr. Gábor Farkas
Siemens Digital Industries

Mathias Gebhardt,
Emerson | NI

Frank Heidemann

Waldemar Jakobi,
Infineon Technologies

Stefan Schmitt,
Semikron Danfoss

Dr. Stefan Thieman
Valeo eAutomotive

Prof. Markus Thoben,
FH Dortmund

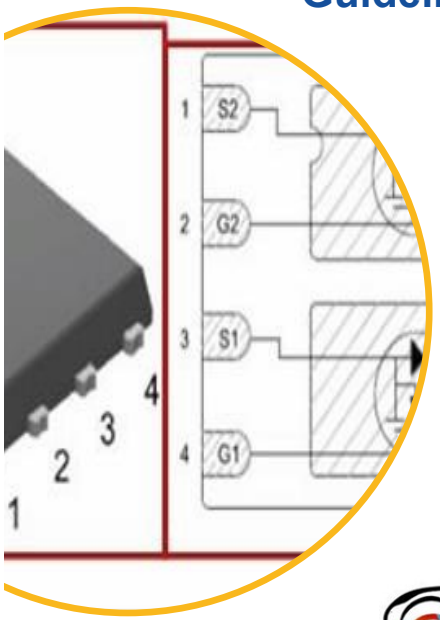
Marc Tüllmann,
Infineon Technologies

European Center for Power Electronics e.V.

Online Event

ECPE Tutorial

Testing Automotive Power Modules according to the ECPE Guideline AQG 324



4 - 5 March 2026

AQG324

ECPE Online Tutorial

Testing Automotive Power Modules according to the ECPE Guideline AQG 324

4 -5 March 2026

The ECPE Guideline AQG 324 is prepared and released by the ECPE Working Group ´Automotive Power Module Qualification´ comprising ECPE member companies from the automotive supply chain. The original version is based on the supply specification LV 324 which has been developed by German automotive OEMs together with representatives from the power electronics supplier industry. The Industry Guideline AQG 324 aims to support stakeholders along the automotive supply chain.
The described tests concern the module design as well as the qualification of devices on module level (i.e. the assembly) but not the qualification of semiconductor chips or manufacturing processes. The requirements, test conditions and tests presented in the tutorial essentially refer to Release 04.1/2025 of the AQG 324 Guideline dated 31.03.2025 which addresses power modules based on Si power semiconductors in the main document and SiC-based modules in a specific annex.
The Tutorial with speakers from the AQG 324 Core Team will give practical information and advice how to test power modules according to the AQG 324 Guideline under comparable conditions. It aims at direct users from beginners to senior experts coming from power module suppliers, automotive tier 1 suppliers or test service and equipment providers.

The workshop is chaired by:

Peter Dietrich, Richardson RFPD Germany
Dr. Gábor Farkas, Siemens Digital Industries
Frank Heidemann
Mathias Gebhardt, Emerson | NI
Waldemar Jakobi, Infineon Technologies
Dr. Martin Rittner, Robert Bosch
Stefan Schmitt, Semikron Danfoss
Dr. Stefan Thiemann, Valeo eAutomotive Germany
Prof. Dr. Markus Thoben, Fachhochschule Dortmund
Marc Tuellmann, Infineon Technologies

All presentations and discussions will be in English.

Programme

Wednesday, 4 March 2026

08:30 Webex started

09:00 Welcome, Opening
Thomas Harder, ECPE e.V

09:10 Introduction and Motivation
Martin Rittner, Peter Dietrich
- Background of LV 324 and motivation
- Definition of terms
- Scope of AQG 324 and module definition

09:50 SiC-Based Power Modules in AQG 324
Marc Tuellmann
- SiC MOSFET characteristics
- Impact of SiC on qualification of power modules

10:30 Break

10:45 Mapping of Relevant Standards
Frank Heidemann
- Overview on relevant standards
- Different understandings (Europe, Asia, US)

11:15 Characterizing Module Testing
Waldemar Jakobi (electrical testing) /
Gábor Farkas (thermal testing)
- Overview on chapters 6 and 7 of AQG 324

12:15 Lunch Break

13:00 Lifetime Testing: Power Cycling
Markus Thoben / Marc Tuellmann
- Chapter 9.2: QL-01 Power cycling (PCsec)
- Chapter 9.3: QL-02 Power cycling (PCmin)
- Power cycling of SiC-based power modules

14:45 Break

15:00 Lifetime Testing: Temperature Tests
Stefan Schmitt
- Chapter 9.4: QL-03 High-temp. storage (HTS)
- Chapter 9.5: QL-04 Low-temp. storage (LTS)
- Chapter 8.2: QE-01 Thermal shock test (TST)

16:00 Open Discussion on Lifetime Testing

16:30 End of 1st Day

Programme

Thursday, 5 March 2026

08:30 Webex started

09:00 Lifetime Testing: HTRB and HTGB
Mathias Gebhardt
- Chapter 9.6: QL-05 High-temperature Reverse Bias (HTRB) incl. HTRB for SiC modules
- Chapter 9.7: QL-06 High-temperature Gate Bias (HTGB) incl. HTGB for SiC modules
- QL-05a Dynamic Reverse Bias (DRB) and QL-06a Dynamic Gate Stress (DGS)

10:45 Break

11:00 Lifetime Testing: H3TRB
Stefan Schmitt
- Chapter 9.8: QL-07 High-Humidity, High-temp. Reverse Bias incl. H3TRB for SiC modules
- QL-07a Dynamic High-Humidity, High-temp. Reverse Bias (dyn. H3TRB)

12:00 Next Steps and Open Discussion
Stefan Schmitt
High-Temp. Forward Bias (HTFB) and outlook on dynamic testing

12:30 Lunch Break

13:10 Delta-Qualification of Power Modules
Martin Rittner

13:25 Mechanical Tests
Stefan Thiemann
- Chapter 8.4: QE-03 Vibration (V)
- Chapter 8.5: QE-04 Mechanical shock (MS)

13:55 Test Documentation
Stefan Schmitt
- Example of a documentation set
- Number of samples/modules for the tests

14:25 Outlook
Peter Dietrich
- Further WBG challenges in AQG 324
- Adv. Module packages e.g. PCB embedding

14:55 Wrap up, Final Discussion

15:15 End of Tutorial