



Course Schedule

Course Introduction:

Power electronics device is recognized as the fundamental knowledge for power electronics systems, whose reliability is taken as one of the most challengeable problem in the power electronics community.

This course would introduce the fundamentals of semiconductors, basic configuration of different power devices, such as MOSFET, IGBT, SiC and so on. And then, the dynamic switching performance at different operation conditions would be highlighted to understand the concept of steady and dynamic safety operation area (SOA).

Furthermore, the multiple physics field model of power devices would also introduced for the practical converter design. The course is given by the international recognized expert at power devices, which could provide not only theoretical knowledge, but also practical experience for the students.

Applicable people & Preliminary knowledge:

This course is primarily targeted towards students with background of power electronics, electrical engineering and electronic information.

This course is closely associated with TWO core subjects: circuit theory and semiconductor physics. In addition, some extensive knowledge about thermodynamic, digital logic can help the participants access to the status



quickly. Hence, it is recommended to review some relevant books in advance.

Course outline:

The course has a total of 48 English teaching hours, including 32 teaching hours of theoretical lectures and 16 teaching hours of experimental sessions. The foreign teacher is Professor Francesco Iannuzzo from Aalborg University in Denmark.

| 课程时间 | 课程主题 | 授课教授/专家 |
|-------------------------------------|---|--------------------|
| 2023/05/15 周一 20:00-23:00 (北京时间) | Introduction to Power Components | Francesco Iannuzzo |
| 2023/05/18 周四 20:00-23:00 (北京时间) | Thermal design | Francesco Iannuzzo |
| 2023/05/19 周五 20:00-23:00 (北京时间) | PSpice exercise session: Double pulse test and loss calculation – Silicon IGBTs | Francesco Iannuzzo |
| 2023/05/20 周六 20:00-23:00 (北京时间) | Fault Detection and Protection Methods | Francesco Iannuzzo |
| 2023/05/25 周四 20:00-23:00 (北京时间) | Power-cycling operating principles and standards | Francesco Iannuzzo |
| 2023/05/27 周六 20:00-23:00 (北京时间) | PSpice exercise session: Double pulse test and loss calculation – SiC MOSFETs | Francesco Iannuzzo |
| 2023/05/28 周日 20:00-23:00 (北京时间) | Lifetime prediction in power system components | Francesco Iannuzzo |
| 2023/05/30 周二 20:00-23:30 (北京时间) | Exercises - Course recap | Francesco Iannuzzo |
| 2023/05/31 周三 19:00-21:30 (北京时间) | 半导体行业简介和 IGBT 应用介绍 | 夏原野 |
| 2023/06/06 周二 19:00-21:30 (北京时间) | 高功率密度智能功率模块热损耗模型 & 热管理关键技术研究 | 吴美飞 |



Certificate of Completion

This is to certify that the following students (refer to the attached participant list) has participated in and completed the online course: Introduction to Power Electronics and Semiconductor Technology. Details information about the course:

Time: From 15 May 2023 to 30 May 2023

Credit Hours: 48 classes

Teacher: Francesco Iannuzzo

Professor Francesco Iannuzzo
The Aalborg University, Denmark

A handwritten signature in black ink that reads "francesco iannuzzo".

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