

## Template PhD/MSc Topics

**Earliest possible start:** 01.03.2024

**Master-Thesis:**

**Latest possible start:** 24.12.2024

**PhD-Thesis:**

### **Name of Infineon Mentor:**

Robert Illing and Mirko Bernardoni (main mentors), Simone Fontanesi (backup)

### **Short description of Infineon Mentor (150 - 500 characters):**

- Robert Illing: Lead Principal Product Definition Engineer at ATV SP IPD Villach
- Mirko Bernardoni: Principal Concept Engineering at ATV SP IPD Villach
- Simone Fontanesi: Head of Product Definition Engineering of ATV SP IPD Villach
- ATV SP IPD = Automotive / Smart Power / Intelligent Power Distribution

### **Title of Master/PhD-Topic:**

Low voltage automotive eFuse benchmarking and analysis via simulations and measurements

### **Short description of topic (max. 1000 characters):**

This master thesis opportunity offers an exciting exploration of eFuse technology. The candidate will conduct comprehensive benchmarking through both simulations and experimental measurements.

This work aims to create a detailed understanding of eFuse performance in a variety of conditions, contributing to improvements in eFuse design and application.

Simulations will be performed using PLECS, leveraging existing models provided by our team for different scenarios - Direct Current (DC) input and both active and passive Pulse Width Modulation (PWM), with variable sampling frequency.

In addition, the candidate will perform hands-on measurements using PROFET™ Wire Guard and competitor devices. This will involve evaluating the performance of eFuse devices under DC input conditions and PWM signals. The process will enable the identification of eFuse performance metrics, helping in comparison and further enhancement.

This position is ideal for candidates with a passion for power electronics, simulation software, and experimental characterizations, offering the opportunity to transform theoretical knowledge into practical, industry-relevant experience.

**Profile of the potential Candidate (all three in combination max. 1000 characters):**

**Required Qualifications in bullet points:**

- Pursuing a master's degree in Electrical Engineering, Power Electronics, Physics, or a related field
- Strong foundation in electronic circuit analysis and design
- Keen interest and understanding of power systems
- Familiarity with simulation tools
- Hands-on experience with electronic devices and laboratory measurements

**Additional Qualifications in bullet points:**

- Excellent problem-solving abilities and a proactive approach to learning and experimentation
- English communication skills for effectively presenting findings
- Self-motivated with a passion for continuous learning
- Willingness to apply theoretical knowledge to industry-focused research

**Additional Information (optional):**