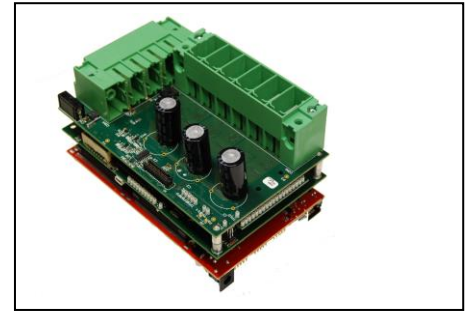


Master's thesis

In cooperation with
Infineon Technologies Graz



EMC optimized Floating Gate Driver with configurable current sources for Automotive Electric Motor Drive Applications

Current Status and Motivation:

In modern automotive applications a large variety of electric motors can be found. To run these motors, 3-phase and 6-phase power bridges are commonly used. The high- and low-side transistors of these power bridges are controlled by so called "Gate Drivers", which are responsible for providing the gate-source voltages for each transistor.

Research Topic(s):

For this new Gate Driver an existing basic concept idea using configurable constant current sources needs to be further developed and implemented in a BCD power technology at the 130nm node. The resulting circuit should be mature enough to be used in system simulations and to be handed over to layout for putting it on a test chip.

It is the clear target of Infineon to use this circuit in the next generation gate driver ICs.

In the development of the Gate Drivers for such applications, special care needs to be taken to comply with the EMC specifications, to keep the overall power dissipation within acceptable limits and last but not least not to spend too large amounts of silicon area for the circuit implementation to stay competitive.

Approach / Methodology:

- Literature- and internet research:
 - State of the art solutions, their pros and cons
 - Evaluate gate-driver topologies and their influence on the EMC performance
 - BCD power technologies, devices and their parasitics
 - General automotive requirements
- Requirements capturing
- Circuit Development in close cooperation with the R&D Infineon Site Graz and Munich
- Pre-Silicon Verification of the circuit
- Handover to physical layout team

Organisational Matters:

- Start: February 2019
- Workplace: Infineon Technologies Graz / TU Graz IFE
- Paid thesis: yes, Infineon Master Thesis Contract

Contact person / Supervisor:

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