University of Stuttgart
Institute of Robust Power Semiconductor Systems

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08.11.2021

(HiWi) Research Work

to be assigned

ILH RF-group

Custom, low noise DC Supply for a novel, self-mixing FMCW Radar Demonstrator

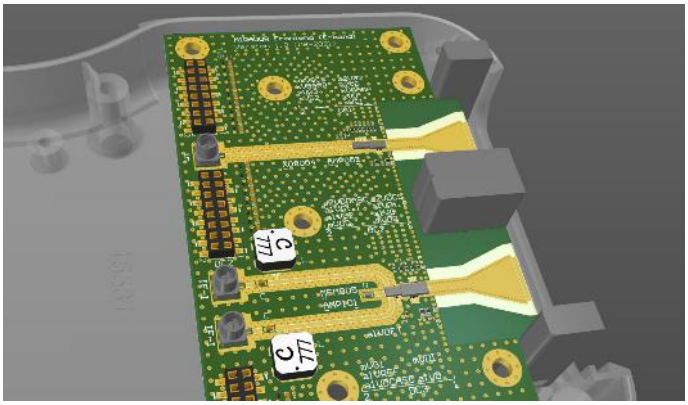
Motivation:

For a novel self-mixing FMCW radar Demonstrator (MIRADOR) a custom made power supply will enable to operate the demonstrator without the use of external low noise power supply.

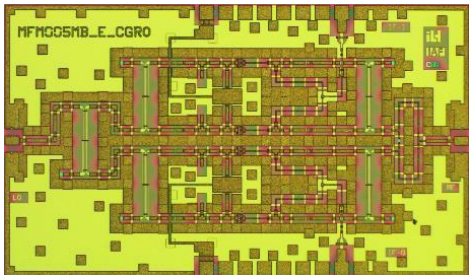
Goals:

Based on an existing platform using STM32 µController with ADC and DAC, Op-Amps and LDO´s a custom PCB for the supply of total of four MMIC on a E-Band Radar frontend must be designed. For this, up to 16 independent supply voltages must be delivered, following certain sequences for ramping up and down, as the MMIC are sensitive devices.

Additional supply power for other periphery might be necessary.



Radar Demonstrator Frontend, comprised of a transmitter and receiver. On-PCB Antennas on the right face, RF and DC connectors on the left face.



One of the used MMIC (50nm mHEMT technology)

Your Tasks:

- Design and layout a custom PCB based upon existing power supply platform
- Setup and perform extensive testing/debugging of the PCB to verify it´s robustness
- Programm a RampUp and RampDown sequence with appropriate controllability by the user and readouts of actual voltage levels and i.a. currents

Your Qualifications:

- Hands-on experience in PCB-design!
- Familiar with EMC/EMI/EMS and analog circuits (LDO´s, Op-Amp circuits)
- Familiar with EDA-tools like Altium Designer
- Familiar with software development and µController programming
- Passion for high quality work
- Knowledge of RF-circuit design is advantageous, but not necessary.

Language: German/English