

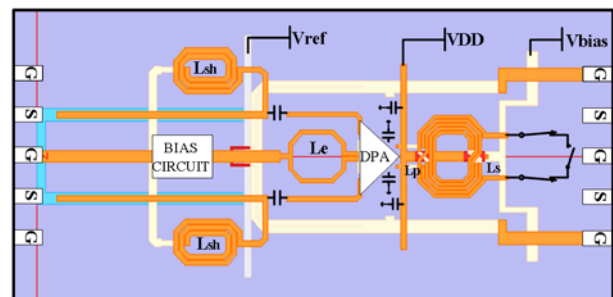
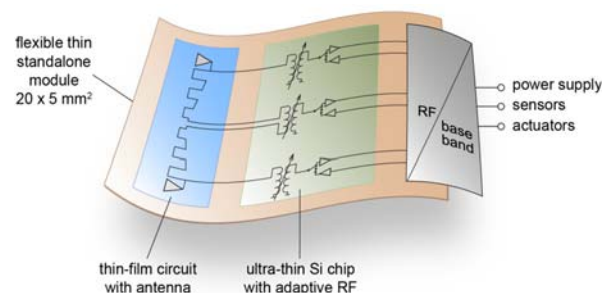
5-6 GHz 0.25 μm SiGe BiCMOS TX/RX Switch Design

IC - Development	
Objectives: <ul style="list-style-type: none">- CMOS RF Switch - Design- Time-Division Duplexing Solutions- Development and dimensioning of a input & output matching circuit- Simulation and optimization- EM simulation of the passive devices	Requirements: <ul style="list-style-type: none">- Basic knowledge in high frequency circuit design or related courses- Lectures "IMS" and "PDIC" are recommended

Description

In the framework of the ongoing DFG project "FFlexcom", fully integrated wireless communication systems on an ultra-thin, bendable and flexible packages are developed. In order to be embedded into flexible foil systems, the device must be small, mechanically flexible and therefore thin. Due to the thin chip in a flexible polyimide substrate, the maximum surface temperature is generally higher, as the polyimide substrate is a poor thermal conductor.

In this project, we are working on the design of a complete analog transceiver in the 5 – 6 GHz frequency band on thin substrate for IoT (Internet of Things) applications. A fully integrated power amplifier (PA) in 5-6 GHz frequency band has already been fabricated and successfully verified. The complete design of the low noise amplifier (LNA) is currently fabricated.



Task:

The thesis covers the following tasks:

- Comparison of TX/RX Switch Topologies in 5-6 GHz frequency band,
- Design of CMOS RF switch,
- Characterization, modelling and simulation of the passive devices,
- Develop input & output matching to realize a wideband LNA and PA,

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