

Master-Thesis

Multi-drive Amplifier for Communication

Amplifiers are an essential part in integrated circuits. In each and every transmitter and receiver at least one amplifier can always be found. In recent years, amplifier design has become considerably more sophisticated especially in baseband communication chips. However, at high frequencies above 100 GHz, circuits are usually kept simple. Here, the design oftentimes focusses on the single transistor performance.

Contrary to the classical approach, transistors can be treated as three-terminal devices instead of reducing them to an input and output node. By utilizing a multi-drive topology, different design parameters can be optimized. Multi-drive amplifiers allow a usage as LNAs, Power Amplifiers or High-Gain amplifiers.

In this master's thesis, a transformer based multi-drive amplifier should be implemented to show the capabilities of this approach at high frequencies using both the source and gate of a transistor as the amplifier input. For this, both the circuit as well as the passive components will be designed.

Anforderungen:

- Erfahrungen mit CAD-Programmen von Vorteil
- Kenntnisse in Transistoren von Vorteil

Nach Abschluss der Arbeit bestehen gute Berufsaussichten in den folgenden Bereichen:

- Automotive-Radar
- Kommunikationstechnik
- Materialforschung

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