# Transformer Based Matching Networks for Transmit and Receive Amplifiers

Transformers can be adopted in the matching networks of transmit and receive amplifiers operating at various frequency bands. The on-chip implementation of transformers allows an easier DC feed, a reduction in the chip area and often a lower loss in the matching network. Transformers are especially attractive as they are capable of providing large impedance transformation ratios.

This thesis work includes the investigation of transformers starting from the EM theory lying behind them, and evolves into the actual implementation. Comparisons will be made between the transformer based and lumped element matching networks in terms of loss and bandwidth performances. A complete design of transformer based matching network along with the amplifier is expected. A 0.13 μm SiGe BiCMOS technology will be used.

Requirements:

– Understanding of RF theory and passive components in RFIC design
– Basic knowledge of EM simulation tools, e.g. ADS Momentum, CST
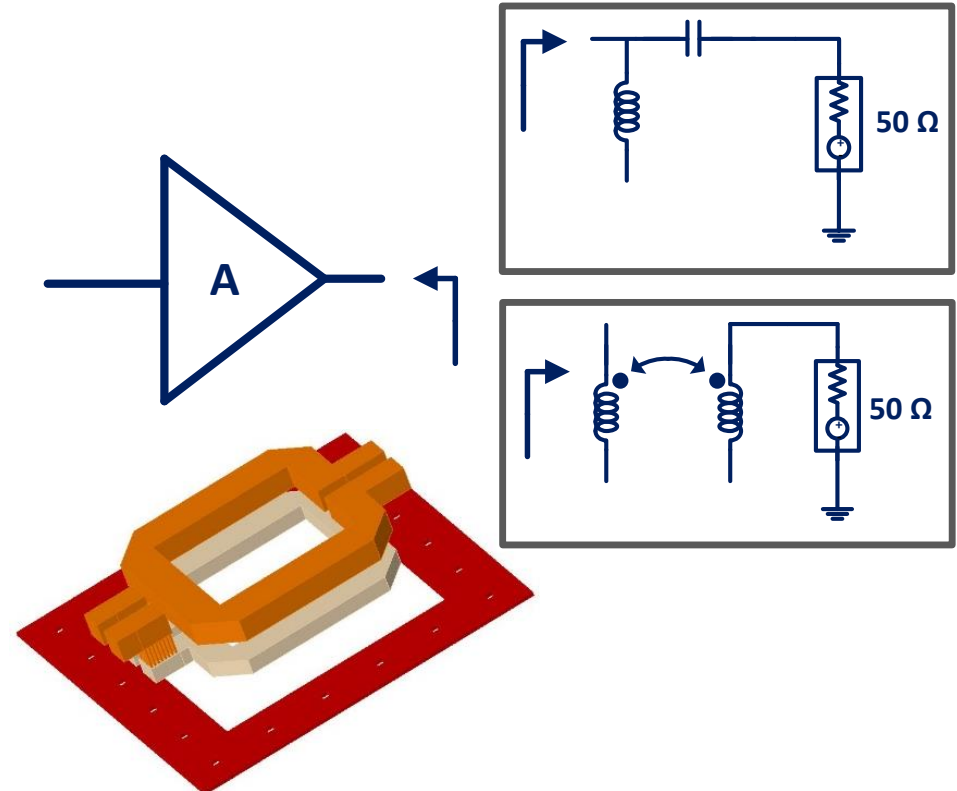
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