

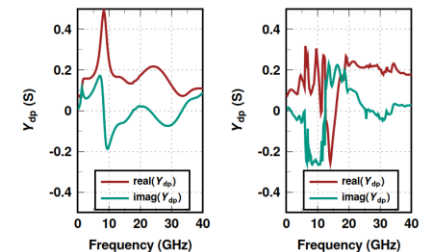
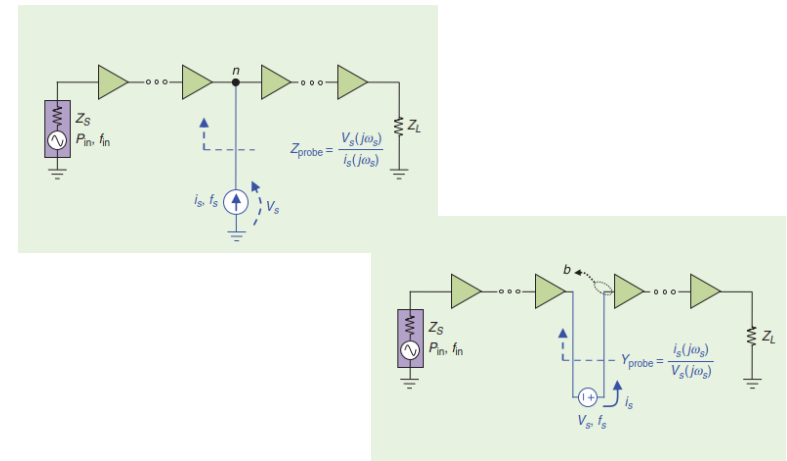
Stability Analysis Technique for SiGe Power Amplifier

Stability check methods are important in power amplifier design. Pole-zero analysis is a common method. In 2001, simplified probe-like method is proposed for microwave amplifier design. In 2020, such probe has been implemented in commercial RF circuit tool ADS where one can do node analysis. Nevertheless, branch analysis is lacking in the developed probe. Therefore, one of the goals for us is to develop such utility by ourselves.

SiGe power amplifiers are valued in space industry while stability issue is a nightmare. Detailed research has to be done for comparison of the results from node and branch analyses in common-emitter and cascode power amplifiers (PAs). In addition, pole-zero identification has to be made.

Tasks:

- Design of transformer-based/direct combined SiGe PAs (schematic level) in Keysight ADS
- Understanding of node/branch analysis and pole-zero identification
- Comparison of the results



(a) PA_v1 (@small-signal region) (b) PA_v1 (@6-dB gain compression)

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