

# A Comparison between Common-source and Cascode Topologies for 60GHz Amplifier Design in 65nm CMOS

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# Issues of mmW amplifiers design

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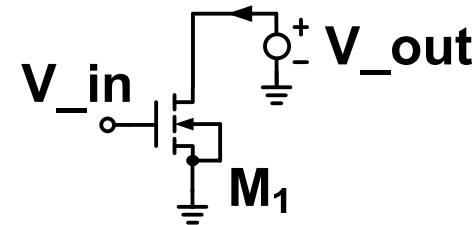
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- Issue

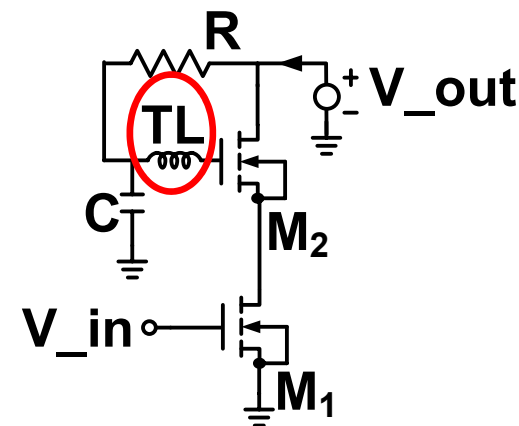
- Gain
- Power consumption
- Impedance matching
- Output power
- Stability factor
- Linearity
- Noise figure
- Hot-carrier injection

- Topology

- Common source
- Cascode
- Gain-boost Cascode



CS



Gain-boost Cas.

# Comparison of CS and Cas. topologies

2

Issues	CS	Cas.	Gain-boost Cas.
Maximum gain	△	△	○
Power consumption	△	○	○
Isolation	×	○	○
Stability factor	×	○	○
Output power	○	×	×
Linearity	○	△	×
Noise figure	○	△	△
Life time	×	○	○

**Trade-offs of the topologies are considered for different mmW amplifiers design**