

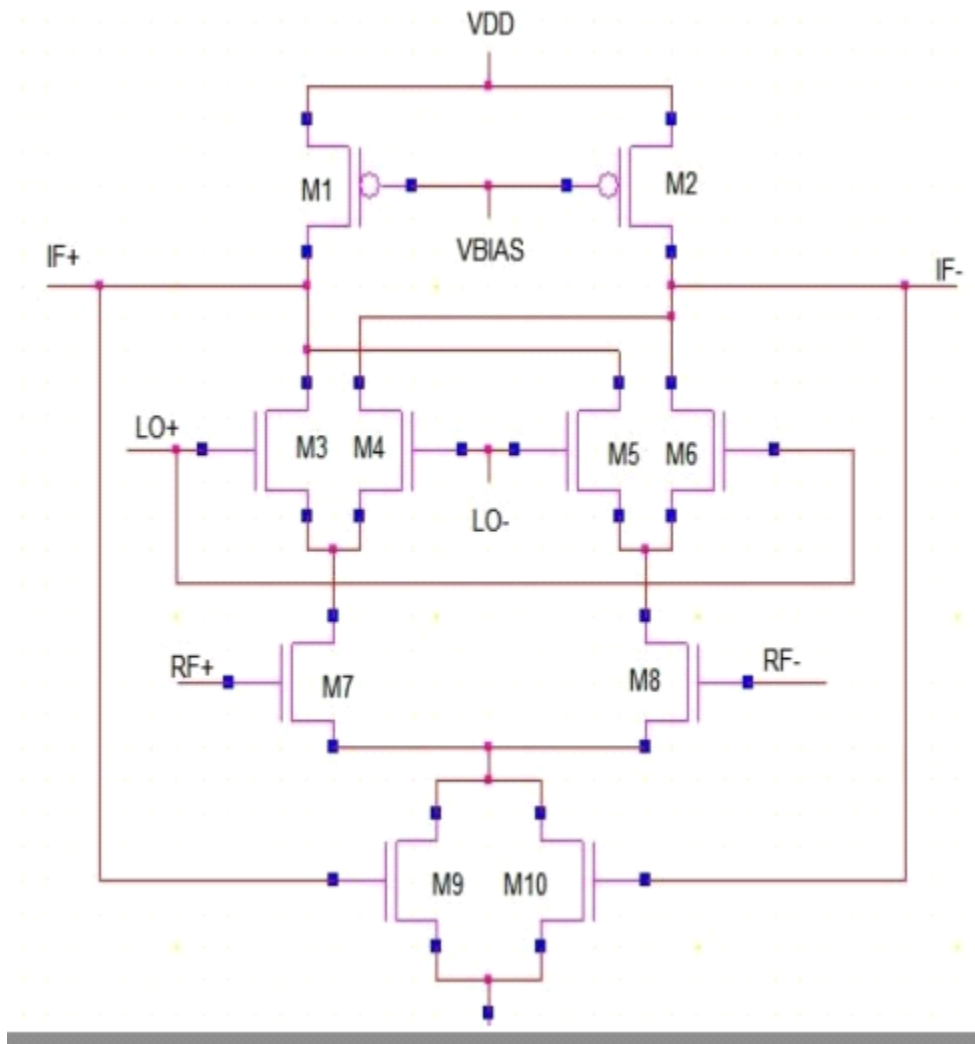
Research Migration Project

Name : Karri Pavan

Title of the Circuit : Design of High Gain and Low Noise CMOS Gilbert Cell Mixer for Receiver Front End Design

Theory : design of a low noise CMOS Gilbert cell mixer in 180 nm technology with the help of cadence tool. The switched biasing technique is used to improve the noise performance by splitting the tail current source into two small transistors. The design of high-performance RF front ends is critical for modern wireless communication systems, where low noise and high linearity are required to ensure reliable signal reception. This project presents the design and implementation of a high-gain, low-noise CMOS Gilbert cell mixer targeted for receiver front-end applications. The Gilbert cell topology is chosen for its excellent linearity, balanced operation, and ability to suppress unwanted LO feedthrough and even-order distortion. The mixer is implemented using standard CMOS technology to achieve low power consumption and cost-effectiveness, making it suitable for integration in System-on-Chip (SoC) solutions. This work demonstrates how CMOS technology can be effectively utilized to achieve a compact, power-efficient, and high-performance Gilbert cell mixer, providing a valuable solution for next-generation RF receiver front ends.

Circuit Diagram :



Source / Reference : <https://ieeexplore.ieee.org/abstract/document/7966800>