Analysis of Active Feedback and its Influence on UWB Low Noise Amplifier

Abstract

In this paper, various active feedback techniques for Ultra-Wide Band (UWB) CMOS Low Noise Amplifier (LNA) are proposed. First, an LNA consisting of Common Gate (CG) stage for input matching, cascode with interstage current reuse as core stage and Common Drain (CD) stage for output matching is presented. Three feedback techniques such as global feedback, local full feedback and local partial feedback techniques are employed in this LNA. The analysis is made for the different feedback networks consisting of resistive, common source, common gate and common drain. The proposed LNA is designed with 90 nm technology and its performance is analyzed with Agilent's ADS simulator. Among the analyzed LNAs, CG partial active feedback and CD partial active feedback achieves power gain of 23.8 dB and 23.75 dB and noise figure of 6.1-6.3 dB and 4.6-5.8 dB respectively.
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References


Index Terms

Computer Science                   Signal Processing

Keywords

Global feedback   Local full feedback   Local partial feedback