Abstracts

Soft breakdown and hot carrier reliability of CMOS RF mixer and redesign (2002 [RFIC])

Qiang Li, Wei Li, Jinlong Zhang and J.S. Yuan. "Soft breakdown and hot carrier reliability of CMOS RF mixer and redesign (2002 [RFIC])." 2002 Radio Frequency Integrated Circuits (RFIC) Symposium 02. (2002 [RFIC]): 399-402.

In this paper, CMOS RF down-conversion mixer circuit hot-carrier (HC) and soft breakdown (SBD) reliability estimation and redesign is presented. First of all, MOS transistor reliability under analog operation was evaluated by experiment. The mixer circuit operation conditions for the occurrence of HC and SBD are analyzed, and circuit performance model are presented to relate the device degradation to circuit performance degradation. Finally, we propose mixer circuit redesign strategies, which reduce the HC and SBD problem. Simulation shows improved noise performance with the similar gain, IIP3 and power consumption.

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