Abstracts

Hot carrier and soft breakdown effects on VCO performance (2002 [RFIC])

Enjun Xiao and J.S. Yuan. "Hot carrier and soft breakdown effects on VCO performance (2002 [RFIC])." 2002 Radio Frequency Integrated Circuits (RFIC) Symposium 02. (2002 [RFIC]): 459-462.

This paper systematically investigates the hot carrier and soft-breakdown induced performance degradation in a CMOS voltage-controlled oscillator used in phase locked loop frequency synthesizers. After deriving the closed-form equations to predict phase noise and VCO gain, we relate VCO RF performance such as phase noise, tuning range and gain of VCO subject to electrical stress. The circuit degradations predicted by analytical model equations are verified by SpectraRF simulation using parameters extracted from the experimental data of 0.16 /spl mu/m CMOS technology.

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