

Abstracts

A single-chip Si-bipolar 1.6 GHz VCO with integrated bias network

M. Zannoth, J. Fenk, A. Springer and R. Weigel. "A single-chip Si-bipolar 1.6 GHz VCO with integrated bias network." 1999 Radio Frequency Integrated Circuits (RFIC) Symposium 99. (1999 [RFIC]): 117-120.

A single-chip 2.7 V voltage-controlled oscillator (VCO) with integrated bias network has been implemented in a Si-bipolar process with a $f_{\text{sub T}}$ of 25 GHz. With an on-chip resonator consisting of vertically coupled inductors and varactor diodes an oscillation frequency of 1.56 GHz was measured. A careful design of the oscillator and the bias network was necessary to achieve a phase noise performance of -139 dBc/Hz at 4.7 MHz off carrier. The tuning sensitivity was 100 MHz/V, which is sufficient to compensate for production tolerances. The VCO can be used as a building block for single-chip transceivers in DECT- or GSM-systems.

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