Abstracts

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

M. Zennoth, J. Fenk, A. Springer and R. Weigel. "A single-chip Si-bipolar 1.6-GHz VCO with integrated-bias network." 2000 Transactions on Microwave Theory and Techniques 48.2 (Feb. 2000 [T-MTT] (Mini-Special Issue on Research Reported at the 1999 Radio Frequency Integrated Circuits (RFIC) Symposium)): 203-205.

A single-chip 2.7-V voltage-controlled oscillator (VCO) with an integrated-bias network has been implemented in an Si-bipolar process with an f/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 bias network was necessary to achieve a phase noise performance of -139 dBc/Hz at 4.7 h 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 digital European cordless telephone or global system for mobile communication systems.

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