Abstracts

20-GHz InP-HBT voltage-controlled oscillator with wide tuning range

H. Djahanshahi, N. Saniei, S.P. Voinigescu, M.C. Maliepaard and C.A.T. Salama. "20-GHz InP-HBT voltage-controlled oscillator with wide tuning range." 2001 Radio Frequency Integrated Circuits (RFIC) Symposium 01. (2001 [RFIC]): 161-164.

This paper presents the design and implementation of a 20-GHz-band differential VCO using InP HBT process technology. Aimed at 20- or 40-Gb/s fiber optic applications, the design is based on a single-stage feedback amplifier with no intentional L or C. The salient features of the proposed VCO are wide frequency tuning range compared to LC oscillators, and low power consumption and transistor count compared to ring-oscillator counterparts. The implemented VCO has an adjustable frequency range from 13.75 GHz to 21.5 GHz and provides two complementary outputs. Total power consumption at 18.6 GHz is 130 mW, while the phase noise is -87.6 dBc/Hz measured at 1 MHz offset.

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