Abstracts

A Coplanar Waveguide InAlAs/InGaAs HBT Monolithic Ku-Band VCO

K.W. Kobayashi, L.T. Tran, A.K. Oki, T. Block and D.C. Streit. "A Coplanar Waveguide InAlAs/InGaAs HBT Monolithic Ku-Band VCO." 1995 Microwave and Guided Wave Letters 5.9 (Sep. 1995 [MGWL]): 311-312.

An 18 GHz coplanar waveguide (CPW) monolithic voltage controlled oscillator (VCO) has been demonstrated using InAlAs/InGaAs HBT technology. The VCO achieves 6% frequency tuning range using a varactor diode constructed from the HBT base-emitter junction. A CPW design was employed to increase the Q-factor of the monolithic resonator as well as reduce the chip size. The VCO obtains an output power of +10±0.5 dBm over the tuning range and a collector efficiency of 11.5%. A SSB phase noise of -72 and -96 dBc/Hz at 100 kHz and 1 MHz offset frequency from the carrier were achieved, respectively. This represents the first reported phase noise results of an InAIAs/InGaAs-based HBT VCO with a monolithic integrated varactor and are comparable to other MMIC HBT varactor-tuned VCO's reported in this frequency band.

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