Abstracts

GaAs HEMT monolithic voltage-controlled oscillators at 20 and 30 GHz incorporating Schottky-varactor frequency tuning

O. Sevimli, J.W. Archer and G.J. Griffiths. "GaAs HEMT monolithic voltage-controlled oscillators at 20 and 30 GHz incorporating Schottky-varactor frequency tuning." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part II [T-MTT] (Special Issue on New Developments in the Design of Microwave and Millimeter-Wave Oscillators)): 1572-1576.

This paper describes the design and fabrication of fully monolithic voltage-controlled oscillator (VCO) circuits using a combined GaAs high electron-mobility transistor (HEMT) and Schottky-varactor diode process. To the authors' knowledge, this is the first time a process of this type has been used for VCO fabrication. Three VCO designs with similar circuit topology, but two different operating frequencies and resonator types, were investigated to compare their relative performance. Two approaches to the integrated resonator were tried: coupled and single microstrip lines. The single resonator approach resulted in better power efficiency, while the coupled resonator was found to provide a wider frequency tuning range and lower phase noise.

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