Abstracts

Ka-Band Monolithic InGaAs/InP HBT VCO's in CPW Structure

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Two Ka-Band monolithic voltage controlled oscillators (VCO's) designed in coplanar waveguide (CPW) structure are described in this letter. Each VCO utilizes a InGaAs/InP heterojunction bipolar transistor (HBT) as the active device and a HBT base-collector junction as the tuning varactor. These two VCO's are biased at a very low voltage of VCE = 1.5 V and the emitter current is less than 10 mA. Under this low dc power dissipation, the VCO's with, center frequencies of 26.5 and 33.5 GHz show high dc-to-rf conversion efficiencies over 10% and 5% within the frequency tuning ranges of 1.6 and 1.2 GHz, respectively. The measured phase noise at 1 MHz offset frequency is -110 dBc/Hz.

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