Abstracts

Compact InP-based HBT VCOs with a wide tuning range at W- and D-band

Y. Baeyens, C. Dorschky, N. Weimann, Qinghung Lee, R. Kopf, G. Georgiou, J.P. Mattia, R. Hamm and Young-Kai Chen. "Compact InP-based HBT VCOs with a wide tuning range at W- and D-band." 2000 Transactions on Microwave Theory and Techniques 48.12 (Dec. 2000 [T-MTT] (Special Issue on 2000 International Microwave Symposium)): 2403-2408.

Compact monolithic integrated differential voltage-controlled oscillators (VCOs) operating in W-band were realized using InP-based heterojunction bipolar transistors (HBTs). The oscillators, with a total chip size of 0.6 by 0.35 mm/sup 2/, are based on a balanced Colpitts-type topology with a coplanar transmission-line resonator. By varying the voltage across the base-collector junction of the HBT in the current mirror and by changing the current in the VCO, the oscillation frequency can be tuned between 84 and 106 GHz. At 100 GHz, a differential voltage swing of 400 mV is obtained, which should be sufficient to drive 100 Gb/s digital logic. By combining the balanced outputs of a similar differential VCO in a push-push configuration, a compact source with close to -10 dBm output power and a tuning range between 138 and 150 GHz is obtained.

❑ Return to main document.