Abstracts

Monolithic 77- and 94-GHz InP-based HBT MMIC VCOs

H. Wang, L. Tran, J. Cowles, E. Lin, P. Huang, T. Block, D. Streit and A. Oki. "Monolithic 77- and 94-GHz InP-based HBT MMIC VCOs." 1997 Radio Frequency Integrated Circuits (RFIC) Symposium 97. (1997 [RFIC]): 91-94.

This paper presents the development of 77- and 94-GHz monolithic fundamental mode VCOs using InP-based HBT MMIC technology. The InP-based HBT performance was improved by base mesa undercutting the base ohmic along two sides to reduce the base-collector junction capacitor by 40% which results in f/sub T/ and f/sub max/ of 70 and 170 GHz, respectively. By using this improved HBT device, the 77-GHz VCO exhibits a measured oscillation frequency of 77.6 GHz with a peak output power of -3 dBm, while the 94-GHz VCO demonstrates a measured oscillation frequency of 94.7 GHz with a peak output power of -3.5 dBm. The 94-GHz VCO is the highest frequency fundamental mode oscillator ever reported using bipolar device technology.

❑ Return to main document.