

## 35-40 GHz Monolithic VCO's Utilizing High-Speed GaInP/GaAs HBT's

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*K. Riepe, H. Leier, A. Marten, U. Guttich, J.M. Dieudonne and K.H. Bachem. "35-40 GHz Monolithic VCO's Utilizing High-Speed GaInP/GaAs HBT's." 1994 Microwave and Guided Wave Letters 4.8 (Aug. 1994 [MGWL]): 274-276.*

Design, fabrication and performance of Ka-band voltage-controlled oscillators (VCO's) are described. High-speed self-aligned GaInP/GaAs heterojunction bipolar transistors (HBT's) as active devices and varactor diodes using the base-collector junction of the HBT structure are implemented in the VCO's. The HBT's have an emitter area of  $2 \times 1.5 \mu\text{m} \times 10 \mu\text{m}$  and incorporate a highly carbon doped base layer and a thin GaInP hole barrier. Oscillators with center frequencies of 35, 37, and 40 GHz exhibit tuning ranges of up to 1 GHz and typical output powers of 1-3.5 dBm. Best measured phase-noise at 1 MHz off carrier is -107 dBc/Hz.

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