Abstracts

A series of InGaP/InGaAs HBT oscillators up to D-band

K. Uchida, H. Matsuura, T. Yakihara, S. Kobayashi, S. Oka, T. Fujita and A. Miura. "A series of InGaP/InGaAs HBT oscillators up to D-band." 2001 Transactions on Microwave Theory and Techniques 49.5 (May 2001 [T-MTT]): 858-865.

In this paper, the development of a series of fixed-frequency heterojunction bipolar transistor (HBT) oscillators from the W- to D-bands is reported. The oscillators are designed based on feedback theory with a small-signal equivalent circuit. This design method enables the achievement of high-output-power oscillators for the management of the power that is generated at the current source inside the HBT. We use a 1 /spl mu/m/spl times/10 /spl mu/m single-emitter InGaP/InGaAs HBT as an active device for each oscillator, and 50-/spl Omega/ coplanar waveguides as transmission lines and resonators. Emitter output topology is adopted to reduce the chip size. The series of oscillators achieve the oscillation frequency of 74.8-146.7 GHz. To our knowledge, the 146.7-GHz fundamental oscillation frequency is the highest oscillation frequency achieved thus far using InGaP/InGaAs HBT technology. The output power of the 146.7-GHz oscillator is -18.4 dBm. The chip size of the oscillator is 731 /spl mu/m/spl times/411 /spl mu/m.

❑ Return to main document.