Abstracts

A K-Band Monolithic Oscillator Integrated with a Buffer Amplifier Using a Device-Circuit Interaction Design Concept

K. Maruhashi, M. Madihian, L. Desclos, K. Onda and M. Kuzuhara. "A K-Band Monolithic Oscillator Integrated with a Buffer Amplifier Using a Device-Circuit Interaction Design Concept." 1996 Transactions on Microwave Theory and Techniques 44.8 (Aug. 1996 [T-MTT]): 1424-1428.

We report on a high power, high efficiency, and small-size monolithic coplanar waveguide oscillator incorporating a single-stage buffer amplifier on the same chip. For the oscillator design, by changing RF current level through the device, the optimum load line was chosen in order to have an oscillation frequency insensitive to the effect of the subsequently connected amplifier, based on a device-circuit interaction concept. The amplifier, on the other hand, which was driven directly by the oscillator, was designed to achieve an overall high power and high efficiency operation. At 21 GHz, the output power of the developed chip recorded 17 dBm with an overall dc-RF efficiency of 22%. By changing the length of a source feedback line, the oscillation frequency was varied from 21 GHz to 26 GHz. For all cases, the output power remained higher than 16 dBm.

❑ Return to main document.