Abstracts

Monolithic V-Band Frequency Converter Chip Set Development Using 0.2 µm AlGaAs/InGaAs/GaAs Pseudomorphic HEMT Technology

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Monolithic approaches of the development to V-band frequency converters have the advantages of lighter weight and lower cost over conventional hybrid approaches for high volume insertions into satellite communication systems. This paper presents the design, fabrication, and performance of a monolithic V-band frequency converter chip set using 0.2 µm AIGaAs/InGaAs/GaAs pseudomorphic HEMT technology. This chip set consists of three monolithic macrocells and a microcell: an upconverter, a downconverter, and a frequency multiplier for LO signal. A monolithic balanced amplifier microcell is also used to form the LO chain. Individual components, including amplifiers, mixer, and frequency doublers are also described. The superb measured results obtained from this chip set show great promise of the MMIC insertions for the system applications, and represent state-of-the-art performance of MMIC at this frequency.

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