# Abstracts

## 12-GHz-Band GaAs Dual-Gate MESFET Monolithic Mixers

*T. Sugiura, K. Honjo and T. Tsuji. "12-GHz-Band GaAs Dual-Gate MESFET Monolithic Mixers." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 105-110.*

12-GHz-band GaAs dual-gate MESFET monolithic mixers have been developed for use in direct broadcasting satellite receivers. In order to reduce chip size, a buffer amplifier has been connected directly after a mixer IF port, instead of employing an IF matching circuit. The mixer and the buffer were fabricated on separate chips, so that individual measurements could be achieved. Chip size is 0.96X 1.26 mm for the mixer and 0.96X0.60 mm for the buffer. A dual-gate FET for the mixer, as well as a single-gate FET for the buffer, has a closely spaced electrode structure. Gate length and width are 1 µm and 320 µm, respectively. The mixer with the buffer provides 2.9±0.4-dB conversion gain with 12.3±0.3dB SSB noise figure in the 11.7-12.2-GHz RF band. Local oscillator (LO) frequency is 10.8 GHz. A low-noise converter was constructed by connecting a monolithic preamplifier, an image rejection filter, and a monolithic IF amplifier to the mixer. The converter provides 46.8±1.5-dB conversion gain with 2.8±0.2-dB SSB noise figure in the same frequency band.

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