Abstracts

GaAs Monolithic MIC's for Direct Broadcast Satellite Receivers (Dec. 1983 [T-MTT])

S. Hori, K. Kamei, K. Shibata, M. Tatematsu, K. Mishima and S. Okano. "GaAs Monolithic MIC's for Direct Broadcast Satellite Receivers (Dec. 1983 [T-MTT])." 1983 Transactions on Microwave Theory and Techniques 31.12 (Dec. 1983 [T-MTT] (1983 Symposium Issue)): 1089-1096.

A 12-GHz low-noise amplifier (LNA), a 1-GHz IF amplifier (IFA), and an 11-GHz dielectric resonator oscillator (DRO) have been developed for DBS home receiver applications by using GaAs monolithic microwave integrated circuit (MMIC) technology. Each MMIC chip contains FET's as active elements and self-biasing source resistors and bypass capacitors for a single power supply operation. It also containrs dc-block and RF-bypass capacitors. The three-stage LNA exhibits a 3.4-dB noise figure and a 19.5-dB gain over 11.7-12.2 GHz. The negative-feedback-type three-stage IFA shows a 3.9-dB noise figure and a 23-dB gain over 0.5-1.5 GHz. The DRO gives 10.mW output power at 10.67 GHz, with a frequency stability of 1.5 MHz over a temperature range from -40-80°C. A direct broadcast satellite (DBS) receiver incorporating these MMIC's exhibits an overafl noise figure of <= 4.0 dB for frequencies from 11.7-12.2 GHz.

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