Abstracts

Small-Sized MMIC Amplifiers Using Thin Dielectric Layers

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Miniaturized MMIC amplifiers utilizing a multilayer structure composed of thin film transmission lines are presented. The fundamental characteristics of the thin film transmission lines for use in microwave active circuits are discussed through calculations by numerical analysis. A two-stage low-noise amplifier, a single-stage wideband amplifier, and a balanced amplifier are designed within very small areas, while good performance is maintained. The results include that a Ka-band single-stage amplifier is fabricated in a 0.8 mm x 0.6 mm areas with a gain of 8.0-9.5 dB in the frequency range of 16-26.5 GHz and input/output return losses of better than 8 dB at 26.5 GHz. The proposed amplifier configurations can be applied to high density integration of one-chip MMIC modules.

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