Abstracts

L-band Internally Matched Si-MMIC Front-End

N. Suematsu, M. Ono, S. Kubo, Y. Iyama and O. Ishida. "L-band Internally Matched Si-MMIC Front-End." 1996 Transactions on Microwave Theory and Techniques 44.12 (Dec. 1996, Part II [T-MTT] (1996 Symposium Issue)): 2375-2378.

A 1.9 GHz-band internally matched Si-MMIC front-end, fabricated in standard 0.8 pm BiCMOS process, was developed. This IC front-end contains a MOSFET T/R switch, a two-stage BJT low noise amplifier (LNA), and a down converter BJT mixer. Since the circuits are monolithically integrated on a low resistivity Si substrate, the coplanar waveguide (CPW) type spiral inductors are used to reduce the dielectric loss of on-chip matching circuits. The T/It switch has measured insertion loss of 2.5 dB and isolation of 25.5 dB at 0/3 V control voltage. The two-stage LNA has gain of 17.1 dB and noise figure (NF) of 2.9 dB at 2 V, 4 mA dc supply. The mixer has conversion gain of 5.9 dB and NF of 15 dB at 2 V, 1.7 mA dc supply. The measured performance of the fabricated Si-MMIC front-end indicates the possibility of application to mobile communication handset terminals.

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