Abstracts

Performance of Ku-band on-chip matched Si monolithic amplifiers using 0.18-/spl mu/m-gatelength MOSFETs

H. Yano, Y. Nakahara, T. Hirayama, Y. Suzuki and A. Furukawa. "Performance of Ku-band on-chip matched Si monolithic amplifiers using 0.18-/spl mu/m-gatelength MOSFETs." 2001 Transactions on Microwave Theory and Techniques 49.6 (Jun. 2001, Part I [T-MTT]): 1086-1093.

We demonstrated Ku-band (12-20 GHz) Si MOSFET monolithic amplifiers with on-chip matching networks. In these amplifiers, we used 3-/spl mu/m-thick Al-metal transmission lines on 8-/spl mu/m-thick polyimide-SiON-SiO/sub 2/ isolation layers for the matching networks. The amplifier showed a gain of 6-10 dB and a noise figure (NF) of 3.5-4 dB up to about 20 GHz, the highest gain and lowest NF yet reported for MOSFET amplifiers at this frequency. We also clarified the lossy on-chip inductor effect on the gain and noise performance of the amplifiers.

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