Abstracts

A 500-mW high-efficiency Si MOS MMIC amplifier for 900-MHz-band use

N. Matsuno, H. Yano, Y. Suzuki, T. Watanabe, S. Tsubaki, T. Toda and K. Honjo. "A 500-mW high-efficiency Si MOS MMIC amplifier for 900-MHz-band use." 2000 Transactions on Microwave Theory and Techniques 48.8 (Aug. 2000 [T-MTT]): 1407-1410.

A 500-mW monolithic-microwave integrated-circuit (MMIC) amplifier using a 0.6-/spl mu/m Si MOSFET for 900-MHz-band use has been developed. The input matching network, which consists of a spiral inductor and an MOS capacitor, was integrated onto the chip using a low-cost mass-production large-scale-integration process. A new spiral-inductor model, taking into account the dielectric loss and skin effect of the Si substrate, was introduced. We analyzed the stability and gain dependence on the gate structure of the MOSFET and optimized the gate finger length and the loss of the matching network to achieve high gain and stability. The fabricated MMIC amplifier achieved a linear gain of 15.2 dB and an output power of 27.1 dBm with a PAE of 60% under a supply voltage of 4.8 V.

❑ Return to main document.