Abstracts

A High-Performance Broadband MMIC PHEMT Resistive Drain Mixer for 28-40 GHz Band PCN Applications

F. Cardinal, H. An, I. Mag and R. Smith. "A High-Performance Broadband MMIC PHEMT Resistive Drain Mixer for 28-40 GHz Band PCN Applications." 1996 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 98. (1996 [MCS]): 47-50.

A high performance broadband millimeterwave MMIC upconvertor is reported in this paper. The MMIC mixer has a singly balanced configuration and uses two 0.18 µm PHEMT transistors working at resistive drain mixing mode, in which the LO signal is injected to drains, IF to gate via DC bias circuits, and RF signal output from gates. The mixer presents 1-6 dB conversion loss including all losses in the test board (made of 10 mil Duroid substrate) for 27.5-41 GHz LO band and 0.1-1.2 GHz IF band. The P/sub 1dB/ of IF input power is 0 dBm, and good LO-RF suppression with 50 dB at 37.5 GHz. The mixer has been successfully integrated into a 38 GHz PCN demonstrative system in which 64 QAM modulation-demodulation was realized.

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