Abstracts

Novel Design Topology for Ultra Low Power Down Converters with Broadband on Chip Matching Network (Dec. 1995, Part II [T-MTT])

M.L. Schmatz, U. Lott, W. Baumberger and W. Baechtold. "Novel Design Topology for Ultra Low Power Down Converters with Broadband on Chip Matching Network (Dec. 1995, Part II [T-MTT])." 1995 Transactions on Microwave Theory and Techniques 43.12 (Dec. 1995, Part II [T-MTT] (1995 Symposium Issue)): 2945-2950.

A novel design topology for ultra low power receivers and down converters has been developed. Using this topology, a monolithic L-band down converter consisting of an input amplifier and a double balanced mixer has been implemented with a standard 0.7 µm GaAs-MESFET process. The circuit has a single ended 50 Omega input and differential outputs offering totally more than 40 dB voltage conversion gain at 1 GHz and 30 dB at 2 GHz. It is supplied by a single lithium cell and has a dc power consumption of less than 2.0 mW at 2.7 V. Through a more exact modeling of the parasitic capacitance of n-implanted resistors an improved agreement between measurement and simulation was achieved. Finally, the determination of the noise figure at a high impedance output from a 50 Omega measurement is presented.

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