Abstracts

A new simultaneous noise and input power matching technique for monolithic LNA's using cascode feedback

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In this paper, a new simultaneous impedance-matching technique of /spl Gamma//sub opt/ (optimum noise-match source reflection coefficient) and G/sub max/ (maximum available power gain-match (MAPG) source reflection coefficient) using cascode feedback (CF) is proposed. A 1.57-GHz single-stage monolithic-microwave Integrated-circuit (MMIC) low-noise amplifier (LNA) designed with this technique has been fabricated using GaAs MESFET technology in order to verify the feasibility of this scheme. The measured response agrees well with the simulated performance. Extensive computer simulation shows that when silicon npn bipolar junction transistor (BJT) is used, this scheme enables us to make both /spl Gamma//sub opt/ and G/sub max/ points near to 50 /spl Omega/, in addition to the simultaneous noise and input power matching. In addition, it has all the advantages of negative feedback such as stability, wider bandwidth, and insensitivity against parameter variation.

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