Abstracts

A 60-GHz-band monolithic HJFET LNA incorporating a diode-regulated self-bias circuit

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This paper presents a 60-GHz-band GaAs heterojunction FET (HJFET) low-noise amplifier (LNA) operating with a single bias supply. A diode-regulated self-bias circuit was incorporated for suppressing the FET drain-current variations due to threshold voltage nonuniformities. The effect of the bias circuit on the drain-current distribution is carefully discussed based on the FET dc characteristics. A developed three-stage monolithic microwave integrated circuit (MMIC) LNA exhibited an average noise figure of 3.3 dB with 18-dB gain from 58 to 62 GHz. The LNA could operate over 2-5 V with a constant noise figure. The LNA chip size is 1.85 mm/spl times/1.07 mm.

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