Abstracts

A 7.5-GHz super regenerative detector

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In this paper, simulated and measured results are presented for a microwave-integrated-circuit super regenerative detector operating at 7.5 GHz and brief comparisons made to a monolithic-microwave integrated-circuit super regenerative detector operating at 34 GHz. The sensitivity of the 7.5-GHz detector was measured at -83-dBm (AM, 1 kHz, 100 % mod) RF signal for 12 dB (signal + noise + distortion)/(noise + distortion). Simulation results show that, to produce a sensitive super regenerative detector, a high rate of change in loop gain of the oscillator circuit with respect to the gate bias (quenching) voltage and a high maximum loop gain at the point of detection is required. It has also been shown, by simulation and measurement, that the detection frequency of the super regenerative detector is lower than the normal free-running oscillation frequency.

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