Abstracts

A Monolithic HEMT Regulated Self-Biased LNA

K.W. Kobayashi, R. Esfandiari, B. Nelson, K. Minot, W. Jones, M. Biendenbender, R. Lai, K.L. Tan and J.B. Berenz. "A Monolithic HEMT Regulated Self-Biased LNA." 1994 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 94.1 (1994 [MCS]): 121-124.

This work benchmarks the first demonstration of a monolithic HEMT LNA design which incorporates active regulated self-bias. The HEMT LNA bias current can be maintained to within ±3% variation over a process threshold variation (Vgs) of ±0.5 Volt. The bias circuitry regulates the bias current to within 1.5% over a 100°C temperature range. The amplifier has a nominal gain of 10 dB and a noise figure of 2.5 dB over a 1-10 GHz bandwidth. Across several wafers with a threshold voltage spread of 0.5 Volts, the active bias-regulated LNA maintains repeatable gain and noise figure which varies by less than 1 dB and 0.75 dB respectively. This monolithic regulated self-biased LNA demonstration sheds new light on the producibility and reliability of HEMT MMICs and their applications.

❑ Return to main document.