A Temperature Stable CMOS Variable Gain Amplifier with 80-dB Linearly Controlled Gain Range

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Abstract

An IF variable gain amplifier with a quadrature demodulator is fabricated using a 0.25-μm CMOS technology. An 80-dB linearly controlled gain range is achieved with exponential voltage-to-current converters using MOS transistors biased in a subthreshold exponential region. To avoid the temperature dependence of the gain control characteristic, a master-slave control technique is adopted to the exponential voltage-to-current converters. The experimental results indicate that the proposed technique is effective for a CMOS VGA.