Abstracts

A GaAs HBT Monolithic Logarithmic IF (0.5 to 1.5 GHz) Amplifier with 60 dB Dynamic Range and 400 mW Power Consumption

G.M. Gorman, A.K. Oki, E.M. Mrozek, J.B. Camou, D.K. Umemoto and M.E. Kim. "A GaAs HBT Monolithic Logarithmic IF (0.5 to 1.5 GHz) Amplifier with 60 dB Dynamic Range and 400 mW Power Consumption." 1989 MTT-S International Microwave Symposium Digest 89.2 (1989 Vol. II [MWSYM]): 537-540.

A GaAs/AIGaAs HBT monolithic successive-detection logarithmic IF amplifier (SDLA) is described which demonstrates significant reduction in size and power consumption over state-of-the art Si bipolar and GaAs MESFET log amps with comparable dynamic range and IF bandwidth. This work was motivated by electronic warfare channelized receiver applications in which size, power, and cost are key drivers. The GaAs HBT SDLA log amp achieves single-chip (1.2x2.4 mm^2) dynamic range >60 dB (-55 to +5 dBm) with <±1dB error over 1 GHz IF bandwidth at temperatures up to 125°C while consuming less than 400 mW of power.

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