A 125 MHz –86 dB IM3 Programmable-Gain Amplifier

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A digitally programmable-gain amplifier (PGA) is realized using a 0.35 µm CMOS technology. Constant bandwidth and high linearity are achieved by using a current-mode amplifier with resistor-network feedback. The PGA has a voltage gain varying from 0 dB to 19 dB with a bandwidth of 125 MHz. With 1 Vpp output, the third-order intermodulation (IM3) of the PGA is −86 dB at 10 MHz and −59 dB at 80 MHz. The distortion is also insensitive to the gain change. The circuit dissipates 21 mW from a 3.3 V supply.