

# **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  $\mu\text{m}$  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 V<sub>pp</sub> 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.