

A 50-MHz 98-dB Dynamic-Range dB-Linear Programmable-Gain Amplifier with 2-dB Gain Steps for 3-V Power Supply

Kyung-suc Nah and Byeong-ha Park

RF Products, Semiconductor System LSI Business, Samsung Electronics Co., Ltd.
Suwon P.O. Box 105, Kyungki-Do, 440-600, Korea
e-mail: nahks@alum.rpi.edu

A programmable-gain amplifier (PGA) circuit introduced in this paper has a dynamic gain range of 98-dB with 2-dB gain steps and is controlled by 6-bit gain control bits for a 3-V power supply. It has been fabricated in a 0.5- μm 15-GHz f_T Si BiCMOS process and draws a constant current of 13-mA, independent of the gain settings. The active die area taken up by the circuit is 400- $\mu\text{m} \times 1170\text{-}\mu\text{m}$. A noise figure (NF) of 5-dB was measured at the maximum gain setting.