CMOS Nth-Switchable-Root Circuit

林國珍,鄭智仁
Microelectronics Engineering
Engineering
kuojenlin@chu.edu.tw

Abstract

A CMOS current-mode nth-switchable-root circuit composed of a compact logarithm circuit, a divide-by-n circuit, and a compact exponential circuit is proposed. The n can be selected from 5 values by three switches. Simulation results indicate that the compact nth-switchable-root circuit has a wide input-current range for relative errors less than 3%, low power dissipations below 630 uW, and high bandwidth over 330 MHz.

Keyword：Taylor series approximation, nth-root circuit, exponential circuit, logarithm circuit