DESIGN OF HIGH FREQUENCY LOW POWER SWITCHED CAPACITOR FILTER FOR COMMUNICATION APPLICATION; A 10.7-MHz SIXTH-ORDER SC LADDER FILTER

N. BEHESHTI ROUY[1], R. NADERI ZARNAGHI[2] & J. SOBHI[3]

[1]Department of Electronics Engineering, Bostanabad Branch, Islamic Azad University, Bostanabad, Iran

[2]Department of Electronics Engineering, Heris Branch, Islamic Azad University, Heris, Iran

[3]Department of Electronic Engineering, University of Tabriz, Iran

ABSTRACT

In narrow-band high-speed switched-capacitor filters, the main limitation comes from the capacitance spread at the level and from amplifier settling time at the circuit level. In this paper most of the building blocks were used the regular clocks and the slower clocks are used in the filter termination only. The proposed telescopic amplifier with improved settling time performance has been prototyped in a 0.35 μm CMOS technology and characterized, experimental results have been presented. At last a sixth order band pass ladder switched-capacitor filter with a 400KHz bandwidth, center frequency of 10.7 MHz and main clock frequency of 47 MHz has been prototyped in a 0.35 μm CMOS technology. The filter is powered by the proposed telescopic amplifiers and uses a slower clock to reduce the capacitance spread as well. The power consumption of the whole chip is 37mWatts (including bias circuitry) and the power is 3.3v.

KEYWORDS: Capacitor Filter, Filter Design, Ladder Switched sc Filter, OTA Design