



دانشگاه صنعتی امیرکبیر
(پلی تکنیک تهران)



Modeling of Pseudo Resistor and Based on Designing a Low-Noise and Low-Power Biomedical Amplifier for ECG Signal Recording

Amin Naghash^a, Parviz Amiri^a

^a Shahid Rajae Teacher Training university, Iran

In this paper, a biomedical amplifier is designed to record ECG signals in the manufacturing technology of 0.13 μm CMOS in which a lower cutoff frequency below 1 Hz is achieved in the circuit by Pseudo Resistor. In previously presented structures, pseudo resistor in manufacturing technology 0.13 μm shows ohmic value of about 10^9 which is not sufficient to accomplish cut-off frequencies below 1 Hz. In this paper, an appropriate structure of a pseudo resistor is provided which shows a resistance of about 10^{13} ohms which this resistant is very favorable in achieving the system low cut-off frequencies; the lower cutoff frequency of the provided circuit ranges from 0.005Hz to 0.5Hz and the high cutoff frequency is 100Hz. The amplifier input transistors in the region subthreshold are biased. In addition, the most important point considered in the circuit design is designing an appropriate pseudo resistor with regard to reconciliation between noise and power, which eventually, the input referred noise in the system equals 2.4 μV and the total power consumption is 380nW.