

عنوان مقاله:

Current Mirror versus Two-Stage CMOS Amplifier: Noise-Power Trade-Off

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نویسندگان:

Shaghayegh aslanzadeh - Master student, Shahid Rajaei Teacher Training University, Shabanlou st. Lavizan.
Tehran, Iran

.Ava Hedayatipour - Master student, Shahid Rajaei Teacher Training University, Shabanlou st. Lavizan. Tehran, Iran

.Parviz Amiri - Assistant professor, Shahid Rajaei Teacher Training University, Shabanlou st. Lavizan. Tehran, Iran

خلاصه مقاله:

Considering the different components of the medical sensors, the low-noise amplifier is the most important part. Operational Transconductance Amplifier (OTA) can be highlighted as one of the main blocks of analog circuits that can reduce power consumption. In this paper, OTA circuit design of a two-stage and a current mirror, low-power, low-noise amplifier has been discussed. Also a comparison between current mirror and two-stage OTA is presented. These circuits are designed with 0.13 μm CMOS technology, and in order to verify design performance, HSPICE is used to simulate the results. Gain of the two-stage amplifier is about 30 dB and input-referred noise can be measured as 52nV/ $\sqrt{\text{Hz}}$. While current mirror amplifier gain is 67 dB and input-referred noise is about 186nV/ $\sqrt{\text{Hz}}$. Both amplifiers are suitable for medical signals because of having a high DC gain, low-power consumption and low-noise. By comparing parameters of two amplifiers, some parameters in current mirror are better than two-stage and vice versa.

So considering the amplifier application, current mirror or other two-stage amplifiers may be used

کلمات کلیدی:

Operational transconductance amplifier, Low-power consumption, Low-noise amplifiers, Current mirror amplifier, Two-stage amplifier

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