Abstract

This paper presents a design of the transimpedance amplifier using 0.35 µm CMOS technology. In the proposed transimpedance amplifier, feedback resistor RF of conventional transimpedance amplifier has been replaced by NMOS transistor as an active feedback resistor. This circuit operates at 3.3 V power supply voltage and for a photocurrent of 0.5 µA. The proposed transimpedance amplifier having low noise, high gain and large dynamic range. The simulated results of transimpedance gain in single stage and three stage transimpedance amplifiers is 4.43 MΩ and 4.39 MΩ at gate voltage of 0.4 V. Power dissipation of single stage and three stage transimpedance amplifier is 602.04 µW and 1.781 mW at gate voltage of 2.0 V.

References

- M. Nakamura, N. Ishihara, Y. Akazawa, and H. Kimura, "An instantaneous response CMOS optical receiver ic with wide dynamic range and extremely high sensitivity"

Index Terms

Computer Science
Integrated Circuit
Keywords

Transimpedance amplifier  CMOS technology  low noise amplifier  optical receive  negative feedback