

# An Improved Low-Input Resistance Folded-Cascode Transimpedance Amplifier for Giga-bit per second Optical Communication Front-Ends

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## Abstract

The present study is devoted to articulating a modified Folded-Cascode circuit, to make Folded-Cascode structures an attractive configuration as a Transimpedance Amplifier (TIA) for being employed in Giga-bit per second optical communication receiver systems. Giga-bps communication receivers are highly necessitating circuits to isolate the input parasitic capacitance of the photodiode. The present modification makes Folded Cascodes comparable to the famous Regulated Cascode (RGC) structures by isolating this parasitic capacitor almost by the same quantity. The system is shown to be capable of operating at 2.5Gbps up to 8Gbps data rate with a fixed bandwidth. The paper analyzes and evaluates the designed circuit mathematically, and the obtained simulated results from Cadence using TSMC 65nm CMOS validate the suitability of the modified circuit as a transimpedance amplifier.

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