

Abstract

of attestation master's degree work

subject:

"Investigation of features of design of photodiode amplifiers"

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Relevance of the work

Relevance of the work is connected with a demand in an improvement of characteristics of the blocks of an optical system, including a photodiode amplifier, which defines sensitivity and bandwidth of a whole optical system.

Purpose of the work

Purpose of this work is analysis of features of design of photodiode amplifier for burst-mode operation, with such features as high noise rejection, possibility to operate with wide dynamic range of input signal with large value of photodiode capacitance.

Tasks that are solved in the work

Next tasks are solved in the work:

1. Analysis of existing circuits of photodiode amplifiers with high noise rejection;
2. Analysis of existing circuits of photodiode amplifiers which provide possibility to operate with wide dynamic range of input signal;
3. Analysis of solutions that provide possibility to operate with large capacity of the photodiode;
4. Investigation of possible circuits of photodiode amplifiers with enhanced performance.

Achieved results

In the issue next results were achieved:

- Circuit of the photodiode amplifier with enhanced noise rejection with lesser number of components comparing to the known circuits was investigated.
- Proposed recommendations for implementation of an regulated gate cascade circuits for the case of a large capacity of a photodiode.

Scientific novelty

Scientific novelty is in the proposed schematic solution, which provides possibility to operate in burst mode with high capacity of a photodiode.

Practical value

Practical value of the work is in the investigations of the proposed schematic solution.

Conclusions and recommendations

As a result of investigations circuit of a photodiode amplifier, which possesses advantages of both differential circuit (high noise rejection) and circuit with single output (lesser number of components) was proposed.

The work contains 53 pages, 44 images, 8 references.

Keywords: PHOTODIODE AMPLIFIER, BURST MODE, NOISE REJECTION.