Abstracts

Unified analytical expressions for transimpedance and equivalent input noise current of optical receivers

A. Leven, R. Reuter and Y. Baeyens. "Unified analytical expressions for transimpedance and equivalent input noise current of optical receivers." 2000 Transactions on Microwave Theory and Techniques 48.10 (Oct. 2000 [T-MTT]): 1701-1706.

Unified analytical expressions are derived for calculating the equivalent input noise current and transimpedance of optical receiver front ends with arbitrary input matching network topologies. To be independent of any transistor or amplifier type, noise parameters are used to describe the noise behavior of the active device. A new characteristic frequency-dependent value, called photodiode intrinsic conductance, is introduced. This figure-of-merit allows one to compare the achievable equivalent input noise current and transimpedance of different types of photodiodes independently of amplifier type and geometry.

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