



# Photodiode Amplifiers: OP AMP Solutions

*By Jerald Graeme*

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## **Photodiode Amplifiers: OP AMP Solutions** By Jerald Graeme

Light photons impinging upon a semiconductor material in the vicinity of a P-N junction release conduction carriers to produce current flow through the photodiode effect. Photodiode amplifiers convert this current to a voltage in a relationship that remains linear as long as the amplifier eliminates signal voltage swing from the photodiode. For this purpose, the simple current-to-voltage converter or transimpedance amplifier presents a virtual ground to the diode. However, when connected to a photodiode, this simple op amp circuit displays surprising multidimensional constraints that defy conventional op amp intuition.

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## **Editorial Review**

### **From the Back Cover**

No matter where you are on the learning curve, this one-stop sourcebook delivers the kind of previously hard-to-find practical information you'll appreciate - and the wide range of application circuit alternatives you need - to optimize the noise, offset, bandwidth, and stability performance of photodiode amplifiers. Featuring the insights and accumulated knowledge that could only come from the world's number one authority on the subject, this is no scholarly tome but a hands-on reference - one that provides you with generalized circuit solutions that quickly adapt to specific design and application requirements. Inside, you'll find clear, complete, and largely stand-alone discussions of such topics as how the op amp current-to-voltage converter serves as the basic photodiode amplifier; the role of photodiode capacitance in an amplifier's AC response, along with design equations for optimum phase compensation; noise analysis, identification, and reduction; and wideband, high-gain, and position-sensing photodiode amplifiers. In all, this information-packed guide is without question the photodiode "bible" for anyone dealing with electronic design issues.

### **About the Author**

McGraw-Hill authors represent the leading experts in their fields and are dedicated to improving the lives, careers, and interests of readers worldwide

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#### **Treva Ritter:**

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