

Title: Photodetector with integrated optical thin film filters

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Abstract: This paper reports on optical filters based on a-SiC:H tandem pi'n/pin heterostructures. The spectral sensitivity is analyzed. Steady state optical bias with different wavelengths are applied from each front and back sides and the photocurrent is measured. Results show that it is possible to control the sensitivity of the device and to tune a specific wavelength range by combining radiations with complementary light penetration depths. The transfer characteristics effects due to changes in the front and back optical bias wavelength are discussed. Depending on the wavelength of the external background and irradiation side, the device acts either as a short- or a long-pass band filter or as a band-stop filter. The output waveform presents a nonlinear amplitude-dependent response to the wavelengths of the input channels.

KeywordPlus: Photodetector; Integrated optical; Thin film filters

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