

Title: Novel structure for large area image sensing

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Abstract: This work presents preliminary results in the study of a novel structure for a laser scanned photodiode (LSP) type of image sensor. In order to increase the signal output, a stacked p-i-n-p-i-n structure with an intermediate light-blocking layer is used. The image and the scanning beam are incident through opposite sides of the sensor and their absorption is kept in separate junctions by an intermediate light-blocking layer. As in the usual LSP structure the scanning beam-induced photocurrent is dependent on the local illumination conditions of the image. The main difference between the two structures arises from the fact that in this new structure the image and the scanner have different optical paths leading to an increase in the photocurrent when the scanning beam is incident on a region illuminated on the image side of the sensor, while a decreasing in the photocurrent was observed in the single junction LSP. The results show that the structure can be successfully used as an image sensor even though some optimization is needed to enhance the performance of the device. (C) 2004 Elsevier B.V. All rights reserved.

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