

**Title:** Laser scanned photodiodes (LSP) for Image sensing

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**Abstract:** An optimized ZnO:Al/a-pin SixC11-x:H/Al configuration for the laser scanned photodiode (LSP) imaging detector is proposed. The LSP utilizes light induced depletion layers as detector and a laser beam for readout. The effect of the sensing element structure, cell configuration and light source flux are investigated and correlated with the sensor output characteristics. Experimental data reveal that the large optical gap and the low conductivity of the doped a-SixC1-x:H layers are responsible by an induced inversion layer at the illuminated interfaces which blocks the carrier collection. These insulator-like layers act as MIS gates preventing image smearing. The physical background of the LSP is discussed.

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