

**Title:** Laser scanned photodiodes (LSPs) for image sensing

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**Abstract:** An optimized ZnO:Al/a-pin SixC1-x:H/Al configuration for the laser scanned photodiode (LSP) imaging detector is proposed and the read-out parameters improved. The effect of the sensing element structure, cell configuration and light source flux are investigated and correlated with the sensor output characteristics. Data reveals that for sensors with wide band gap doped layers an increase on the image signal optimized to the blue is achieved with a dynamic range of two orders of magnitude, a responsivity of 6 mA W<sup>-1</sup> and a sensitivity of 17 μW cm<sup>(-2)</sup> at 530 nm. The main output characteristics such as image responsivity, resolution, linearity and dynamic range were analyzed under reverse, forward and short circuit modes. The results show that the sensor performance can be optimized in short circuit mode. A trade-off between the scan time and the required resolution is needed since the spot size limits the resolution due to the cross-talk between dark and illuminated regions leading to blurring effects. (C) 2002 Elsevier Science B.V. All rights reserved.

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