

Title: Optical confinement and colour separation in a double colour laser scanned photodiode (D/CLSP)

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Abstract: Large area n-i-p-n-i-p a-SiC:H heterostructures are used as sensing element in a double colour laser scanned photodiode image sensor (D/CLSP). This work aims to clarify possible improvements, physical limits and performance of CLSP image sensor when used as non-pixel image reader. Here, the image capture device and the scanning reader are optimized and the effects of the sensor structure on the output characteristics discussed. The role of the design of the sensing element, the doped layer composition and thickness, the read-out parameters (applied voltage and scanner frequency) on the image acquisition and the colour detection process are analysed. A physical model is presented and supported by a numerical simulation of the output characteristics of the sensor. (C) 2004 Elsevier B.V. All rights reserved.

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