

## Study of Polysilicon Position-Sensitive Detector (PSD)

Hideo Muro\*

Department of Electrical, Electronics and Computer Engineering, Chiba Institute of Technology,  
2-17-1 Tsudanuma, Narashino, Chiba 275-0016, Japan

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A position-sensitive detector (PSD) fabricated using polysilicon films by a standard LSI fabrication process has been designed and its basic characteristics for sensor applications have been evaluated, together with the electrical characteristics of polysilicon photodiodes. A polysilicon PSD can be used as an optical position sensor on LSI chips without additional areas or process steps. Although the optoelectric conversion efficiency of a polysilicon PSD with a thickness of 335 nm irradiated with a near-IR light source was very low owing to small absorption coefficients and a short diffusion length of minority carriers in polysilicon films, a linear relationship between light position and output current was obtained. Using polysilicon films with a thickness of 1  $\mu\text{m}$ , we improved the optoelectric conversion by about one order and obtained a hyperbolic-sine position dependence.

\*Corresponding author: e-mail: hideo.muro@it-chiba.ac.jp