

## 基于光照强度的PIN光电二极管响应时间分析

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摘要：

在PIN光电二极管应用中发现，光照强度对响应速度具有很大影响。论文研究了光强对响应速度的影响，提出了内部PIN结等效电场模型，并搭建了实验电路对PIN光电二极管在不同光照强度下的响应速度进行检测，验证提出的结模型，很好的解释了光电二极管从无光照到有光照这一过程中，光强越强，响应时间越短；而当光电二极管从有光照到无光照这一过程中，光强越强，响应时间越长这一现象。提出的模型和实验验证为光电二极管在响应速度要求较高的系统中的应用提供了理论分析依据，也为进一步提高PIN光电二极管的速度提出了有益的探索。

关键词：光电二极管，响应速度，结等效模型，光照强度；

## The Response Time Analysis of PIN Photodiode

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**Abstract:**

In the PIN photodiode applications, we found that the intensity of illumination has a major effect on the response speed. In this paper, the effect of light intensity and the response speed relation was discussed in detailed. It presents an internal PIN junction equivalent electric field model, and sets an experimental circuit of PIN photodiode under different light intensity to detect the response speed. Response time will be shorter when lighting and the response time will be longer when stopping lighting in highlight. The result gives a basis for high speed application in PIN photodiode, and it is helpful for further improving PIN photodiode response speed.

**Keywords:** photodiode, response speed, response time, PIN junction equivalent model, light intensity;

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