

Description

Photodiode Characteristics Apparatus

Experiment:-

To Study I-V characteristics in reverse bias and to measure the variation of photocurrent as a function of reverse voltage and intensity.

A photodiode is a type of photodetector capable of converting light into either current or voltage, depending upon the mode of operation.

Photodiodes are similar to regular semiconductor diodes except that they may be either exposed or packaged in a window.

Many diodes designed for use specifically as a photodiode will also use a PIN junction rather than the typical PN junction.

Principle:-

When a photon of sufficient energy strikes the diode, it excites an electron, thereby creating a free electron and a (positively charged electron) hole.

If the absorption occurs in the junction's depletion region, or one diffusion length away from it, these carriers are swept from the junction by the built-in field of the depletion region.

In the present study, photodiodes are operated in photoconductive mode.

In this mode, the diode is operated in reverse biased.

Thus holes move toward the anode, and electrons toward the cathode and a photocurrent are produced.

There are two modes of operation of photodiode viz. photovoltaic mode and photoconductive mode.

The reverse bias induces only a small amount of current (known as saturation or back current) along its direction while the photocurrent remains virtually the same.

The photocurrent is linearly proportional to the illuminance.
