Photodiode l

Photodiode l

,? ?,?,?PIN,PN,?...

Credit account for qualified institutions and businesses

Payment in Advance by Wire Transfer

More Products From Fully Authorized Partners

For more information visit Help & Support

There is a class of design problems that can easily be solved by using human vision. Consider sensing the proper location of the paper in a printer. It is easy for a human to see the alignment, but difficult for a microprocessor to verify it. The camera in a cell phone needs to measure the ambient light to determine whether the flash needs to be activated. How can the oxygen level in blood be assessed in a non-invasive manner?

The solution to these design issues is the use of photodiodes or phototransistors. These optoelectronic devices convert light (photons) to electrical signals, and so enable a microprocessor (or microcontroller) to “see”. This allows it to control the positioning and alignment of objects, determine light intensity, and measure the physical properties of materials based on their interaction with light.

This article explains the theory of operation of both photodiodes and phototransistors and provides designers with the basic knowledge of their application. Devices from Advanced Photonix, Inc., Vishay Semiconductor Opto Division, Excelitas Technologies, Genicom Co., Ltd., Marktech Optoelectronics, and NTE Electronics are presented by way of example.

Photodiodes and phototransistors are sensitive to a range of optical wavelengths. In some cases, this is a design consideration, for instance, in making the operation invisible to the human eye. The designer should be aware of the optical spectrum in order to match the devices to the application.

The optical spectrum extends from longer wavelength infrared (IR) to shorter wavelength ultraviolet (UV) (Figure 1). The visible wavelengths are in between.

Most optoelectronic devices are specified using their operating wavelengths in nanometers (nm); frequency values are rarely used.

Silicon (Si) photodiodes tend to be sensitive to visible light. IR sensitive devices use indium antimonide

(InSb), indium gallium arsenide (InGaAs), germanium (Ge), or mercury cadmium telluride (HgCdTe). UV sensitive devices commonly use silicon carbide (SiC).

Contact us for free full report

Web: https://kary.com.pl/contact-us/
Email: energystorage2000@gmail.com
WhatsApp: 8613816583346