Photodiode

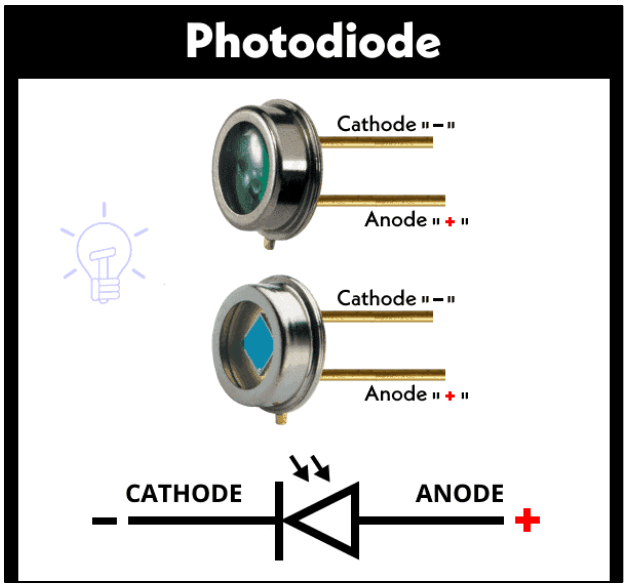
A photodiode is a semiconductor device that converts light into electrical current. It operates in reverse bias mode and is highly sensitive to light.

Working Principle:

When photons strike the photodiode, electron-hole pairs are generated. In reverse bias, this generates a photocurrent proportional to the light intensity.

Types:

- PN Photodiode
- PIN Photodiode
- Avalanche Photodiode
- Schottky Photodiode



Applications:

- Optical communication
- Light sensing
- Smoke detectors
- Barcode scanners
- Solar panels (light sensing role)

Advantages:

- High speed and response
- Compact and lightweight
- Linear output with light intensity

Disadvantages:

- Requires amplification in low-light conditions
- Affected by ambient light
- Needs reverse bias voltage