

# A few concepts

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Recently I am working on some photodiodes and learned these concepts.

## Diode: PN junction, reverse bias, forward bias, junction capacitance

There are two types of diodes - p-type and n-type. P-type has a lot of holes while n-type has a lot of electrons. When we connect them, we make a diode because, simply put,

- ▶ if you apply higher voltage at the n side, you are pulling the holes and the electrons away from each other. This is called **reverse bias**.
- ▶ On the other hand, if you apply voltage higher at the p side, it is easier. This is called **forward bias**.

These p-n junctions have some capacitance, which is called **junction capacitance**. It is one of the parameters for a diode.

# Transimpedance

Transimpedance describes a process that outputs voltage with input as current. Like all sorts of "impedance", it has units of V/A. In the case of a transimpedance amplifier, it is how much voltage you get per unit of current.