3.7 Physical Operation of Diodes

Reading Assignment: pp. 190-200, 203-205

A. Semiconductor Materials

Q: So, what exactly is a junction diode made of?

A:

**HO: Intrinsic Silicon**

Q: We call Silicon a *semi*-conductor. Can current flow in a semi-conductor?

A:

**HO: Drift Current**

**HO: Diffusion Current**

Q: So, is a junction diode just a *single* hunk of *intrinsic* Silicon?
A:

**HO: Doped Silicon**

B. **p-n Junction Diode Operation**

Q: So, exactly how is a junction diode formed?

A:

**HO: The p-n Junction Diode**

Q: How does this simple device result in the complex diode $i$-$v$ characteristic that we studied earlier?

\[
\begin{align*}
\text{HO: The p-n Junction Diode in Forward Bias} \\
\text{HO: The p-n Junction Diode in Reverse Bias} \\
\text{HO: The p-n Junction Diode in Breakdown}
\end{align*}
\]