3.4 Operation in the Reverse Breakdown Region — Zener Diodes

Reading Assignment: pp. 167-171

A Zener Diode →

The 3 technical differences between a junction diode and a Zener diode:

1.

2.

3.

The practical difference between a Zener diode and “normal” junction diodes:

→ Manufacturer assumes diode will be operated in breakdown region. Therefore:
1.

2.

3.

**HO: Zener Diode Notation**

**A. Zener Diode Models**

**Q:** How do we **analyze** zener diodes circuits?

**A:** **Same** as junction diode circuits—

Big problem ->

Big solution ->

**HO: Zener Diode Models**

**Example: Zener Circuit Analysis**
B. Voltage Regulation

Say that we have a 20 V supply but need to place 10 V across some load:

The solution seems easy!

This, in fact is a very bad solution—

HO: The Shunt Regulator
Two primary measures of voltage regulator effectiveness are line regulation and load regulation.

**HO: Line Regulation**

**HO: Load Regulation**

**Example: The Shunt Regulator**

Voltage regulation can (as is) achieved by other means.

**Voltage Regulators**