LECTURE 23

Schokly Diode

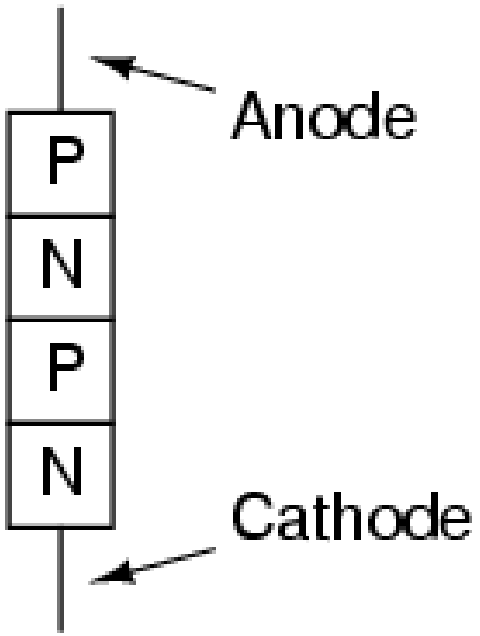
.

Topics to be covered

- Schokly Diodes

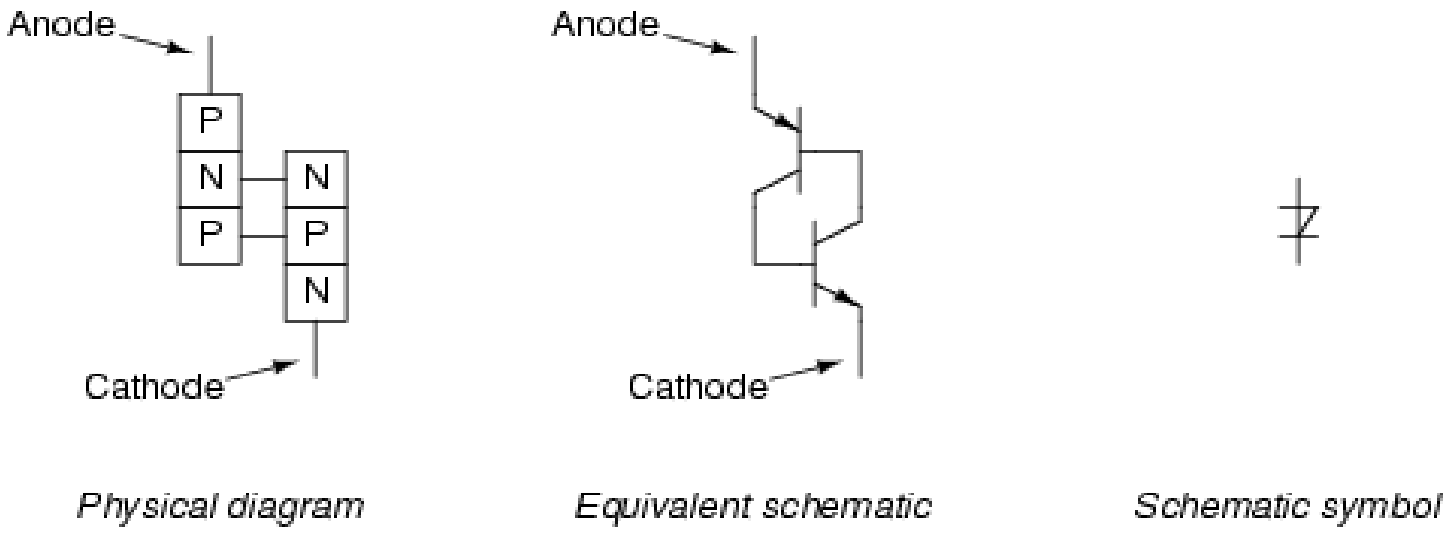
SHOCKLEY DIODES

Shockley, or *4-layer*, diode



- A device with four-layer diode
- It is also called the PNPN diode

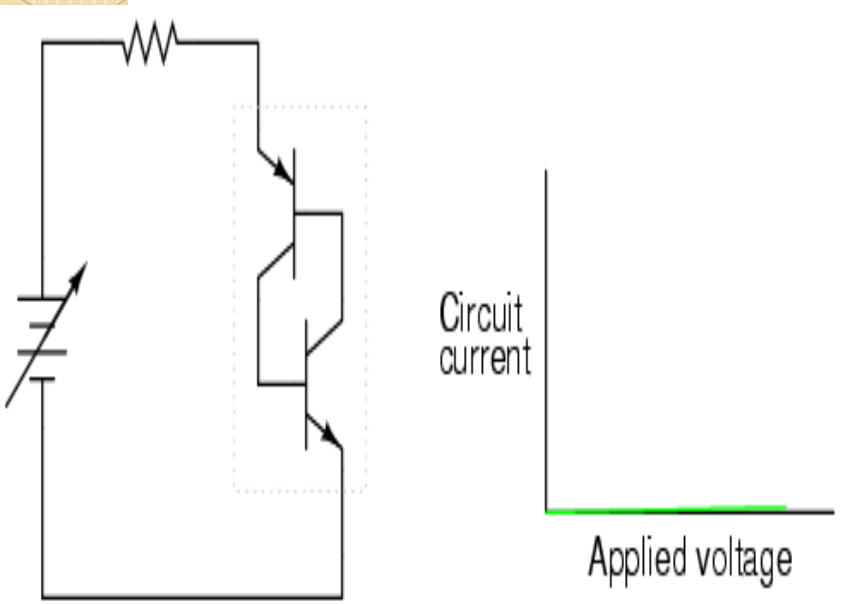
SHOCKLEY DIODES



Physical diagram *Equivalent schematic* *Schematic symbol*

- four layer sandwich diode of P-N-P-N semiconductor diodes
- set of interconnected bipolar transistors one PNP and the other NPN

Some voltage applied



Some voltage applied, still no appreciable current

- Both are in cut-off mode
- Neither transistor can turn on until the other transistor turns on

Review :

- Shockley diodes are four-layer PNPN semiconductor devices. They behave as a pair of interconnected PNP and NPN transistors
- Like all Thyristors, Shockley diodes tend to stay on once they’ve been turned on and stay off once they’ve been turned off.

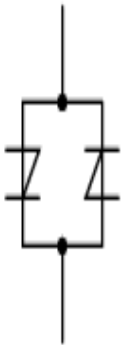
Review: (cont.)

- There are two ways to latch a Shockley diode: exceed the anode-to-cathode breakover voltage or exceed the anode-to-cathode critical rate of voltage rise.
- There is only one way to cause a Shockley diode to stop conducting and that is to reduced the current going through it to a level below its low current drop out threshold.

DIAC

- Two Shockley diodes joined in parallel but facing different directions.
- DIACs are never used alone it is conjuctioned with other Thyristors

DIACs



DIAC equivalent circuit

DIAC schematic symbol

- DC operated DIACs
- AC operated DIACs