

EEE 411

INDUSTRIAL ELECTRONICS

(SUDIPTA SARKER)

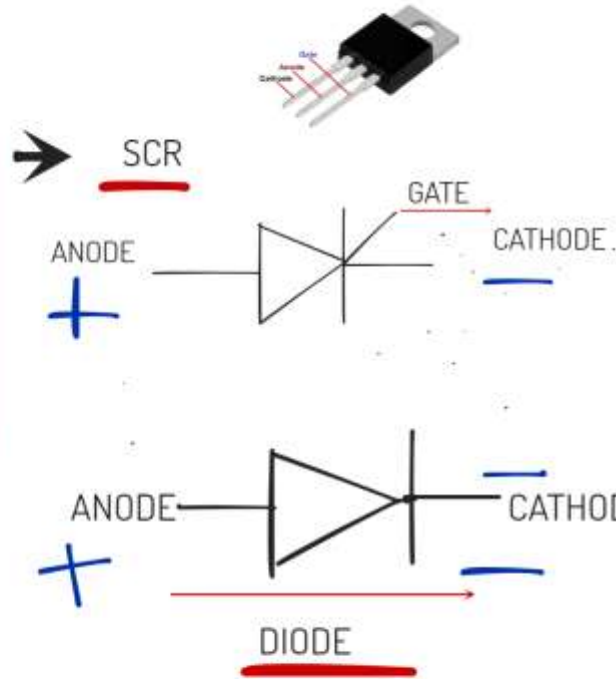
Introduction with SCR

silicon controlled rectifier

SCRs are mainly used in devices where the control of high power, possibly coupled with high voltage, is demanded. Their operation makes them suitable for use in medium- to high-voltage AC power control applications, such as lamp dimming, power regulators and motor control.

speed /brightness depends on voltage .

SCR=
silicon
controlled
rectifier



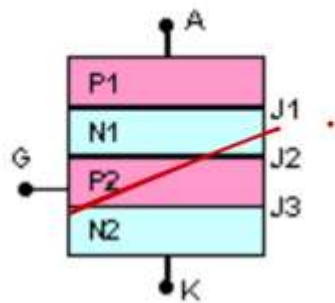
current will pass
condition;
1. anode > cathode
2. a voltage in the
gate
three modes of
operation:
Forward blocking mode
(off state)
Forward conduction mode
(on state)
Reverse blocking mode
(off state)

current will pass
condition:
anode > cathode

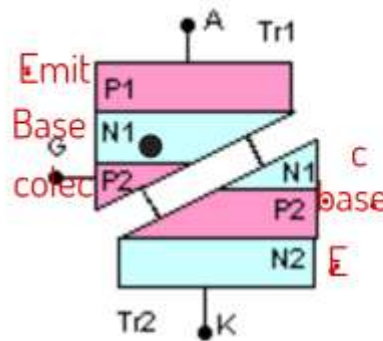
anode > cathode
without gate voltage

anode > cathode with
gate voltage

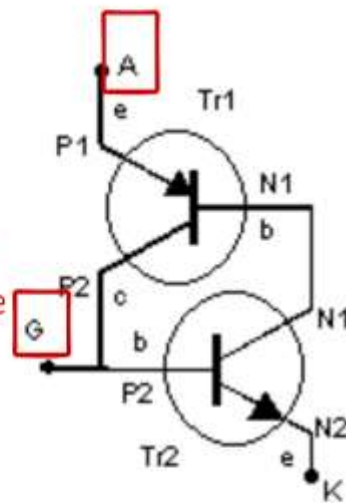
anode < cathode
gate voltage has no effect



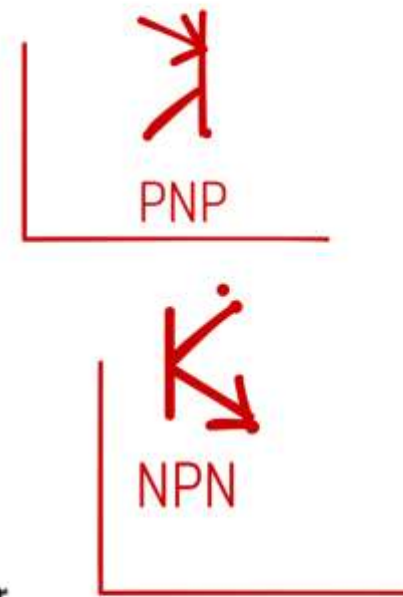
a. Simplified Construction

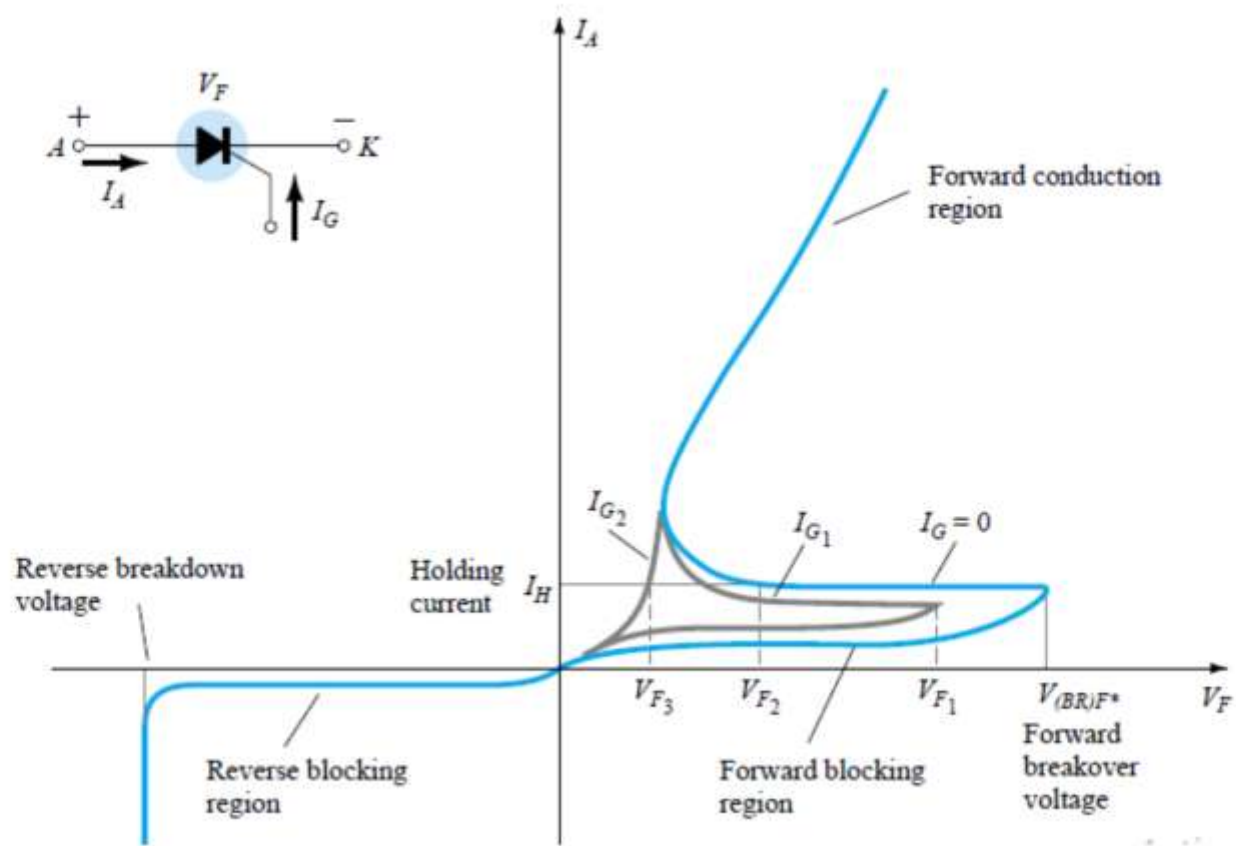


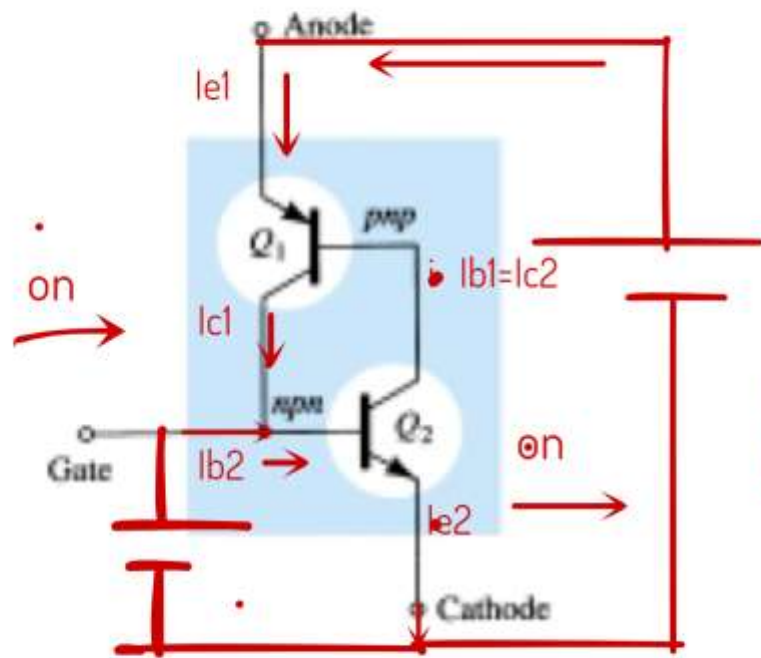
b. How we get the two transistor model



c. The Two Transistor Model







without gate voltage Q2 is off
transistor is a current controlled device

latching
current

Holding current