Indian Institute of Information Technology Vadodara

CS/IT 429

Transistor

Dr. Yash Agrawal
Visiting Faculty, IIIT Vadodara
Associate Professor, DA-IICT Gandhinagar

Transistors

Used as Amplifier (Analog Domain)

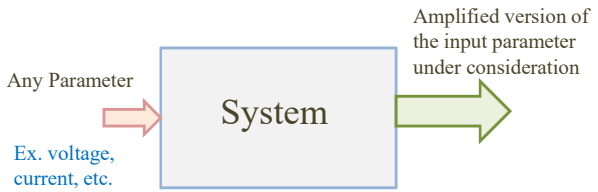
Used as Switch (Digital Domain)

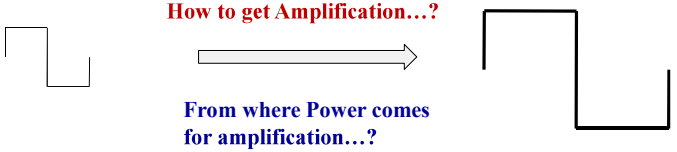
Amplifiers

What is Amplification…?

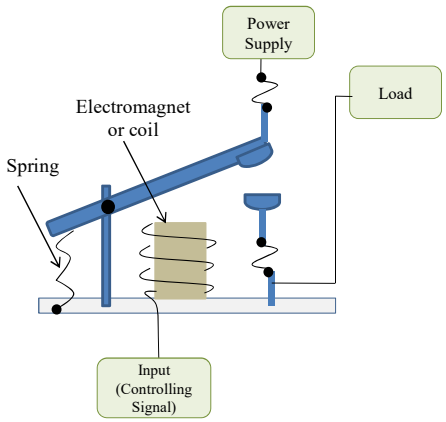
Amplifiers

What is Amplification…?

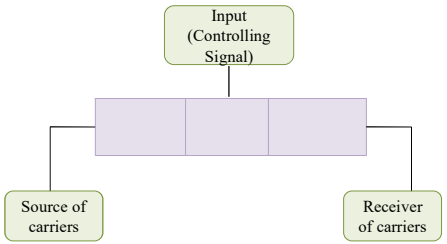




Amplifiers

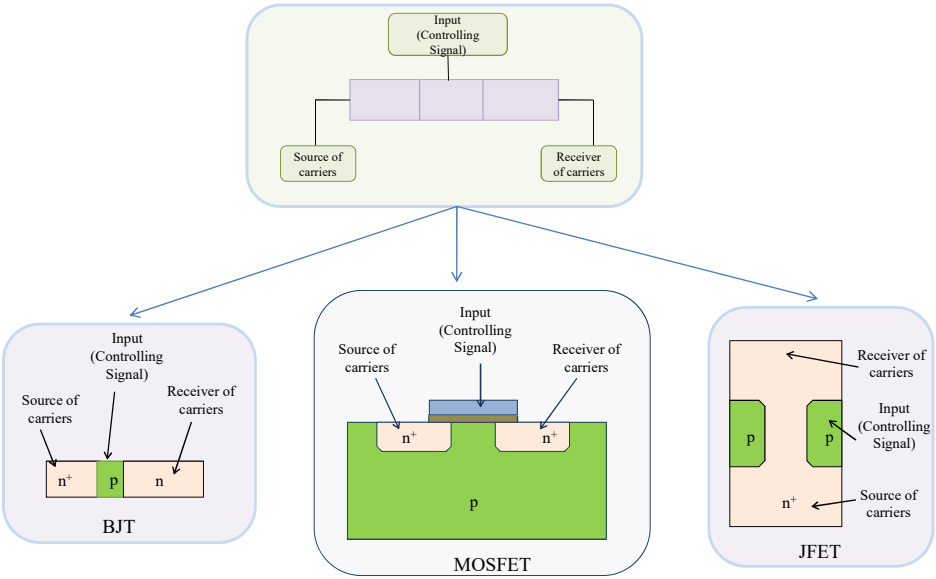


Amplification using Electromechanical Relays

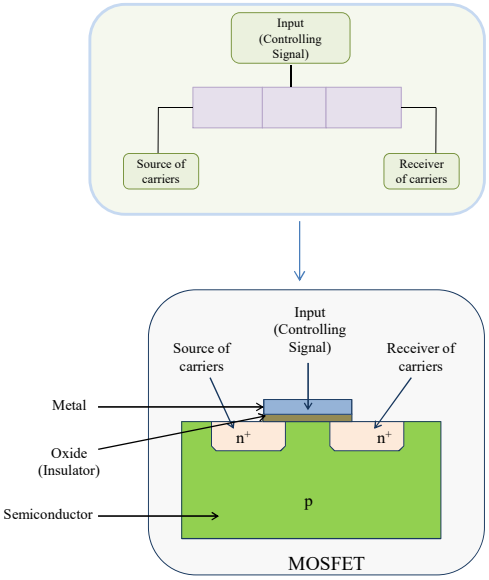


Amplification using Solid State Devices

Basic Principle of Transistors and a few Examples

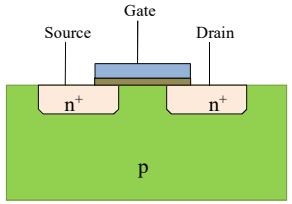


MOSFET

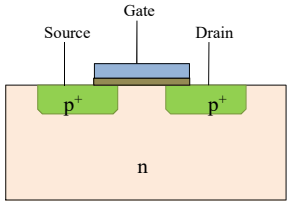


Shape, Symbol and Types….

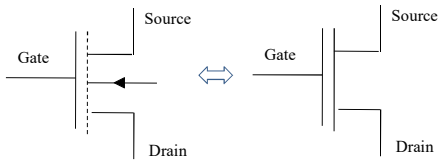
Enhancement Type

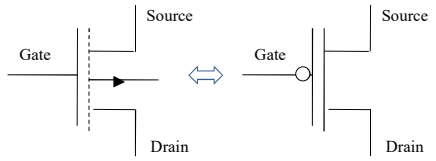


n-channel Enhancement Type MOSFET



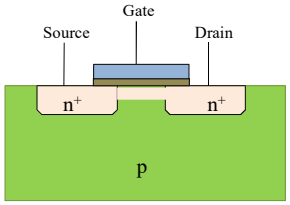
p-channel Enhancement Type MOSFET



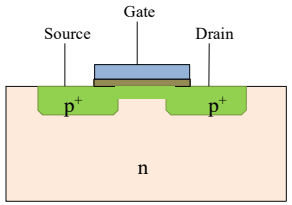


Contd…

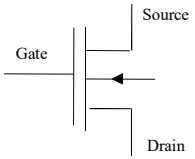
Depletion Type

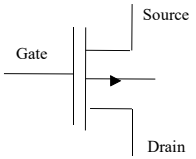


n-channel Depletion Type MOSFET



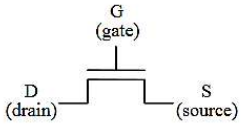
p-channel Depletion Type MOSFET





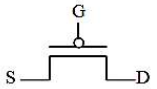
Contd…

MOS Transistors as Switch



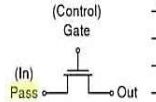
*n*MOS transistor:
Closed (conducting) when Gate = 1 (V_{DD})

Open (non-conducting) when Gate = 0 (ground, 0V)



*p*MOS transistor:
Closed (conducting) when Gate = 0 (ground, 0V)

Open (non-conducting) when Gate = 1 (V_{DD})



Gate	Pass	Out
0	0	hi-Z
0	1	hi-Z
1	0	0
1	1	1

I am available/approachable at

email: yash_agrawal@iiitvadodara.ac.in
yash_agrawal@daiict.ac.in