



Welcome To My Presentation

My Presentation Topic is

Integrated Circuit Logic Families(TTL,CMOS)

Presented by

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Number of Gates Fabricated in Single IC

- ▶ SSI: Small scale integration 12 gates/chip
- ▶ MSI: Medium scale integration 100 gates/chip
- ▶ LSI: Large scale integration 1K gates/chip
- ▶ VLSI: Very large scale integration 10K gates/chip
- ▶ ULSI: Ultra large scale integration 100K gates/chip
- ▶ GSI – 1,000,000 or more

Basic Classification of Logic Families are as Follows

- ▶ Bipolar Devices
- ▶ Metal Oxide Semiconductor Devices
- ▶ Hybrid Device

Bipolar families

- ▶ Bipolar transistors are fabricated on a chip in digital integrated circuits.
- ▶ Bipolar technology is preferred for SSI [Small scale integration] and MSI [Medium scale integration] because it is faster.
- ▶ Types of Bipolar Families:
 - Diode Logic (DL)
 - Resistor Transistor Logic (RTL)
 - Diode Transistor Logic (DTL)
 - Transistor- Transistor Logic (TTL)
 - Emitter Coupled Logic (ECL) or Current Mode Logic (CML)
 - Integrated Injection Logic (IIL)

Transistor Transistor Logic

- ▶ The most widely used logic family is Transistor – Transistor Logic (TTL)
- ▶ It has Bipolar Transistor
- ▶ High Speed($t_p = 10$ ns)
- ▶ Low power dissipation
- ▶ Fan – In from 12 -14
- ▶ Fan out equals to 10 or more

MOS Families

- ▶ MOS stands for Metal Oxide Semiconductor.
- ▶ In these MOSFETs (Metal oxide semiconductor field-effect transistor) are fabricated on chip.
- ▶ It is used in LSI [Large scale integration] field because more MOSFETs can be packed into the same chip area.
- ▶ Types of MOS Families:
 - P-MOS Family
 - N-MOS Family
 - C-MOS Family

C-MOS Family

- CMOS stands for complementary MOSFETs.
- CMOS devices are chips in which both P-channel and N-channel enhancement MOSFETs are connected in a push-pull arrangement.
- CMOS are simple , small in size ,cheaper in fabrication and consume very little power.



Thank You!