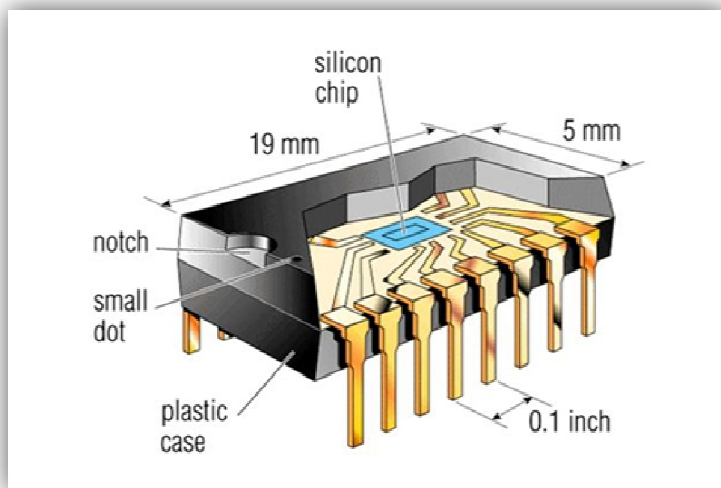


IC (Integrated Circuit): An integrated circuit (IC) is a small electronic device made out of a semiconductor material. The first integrated circuit was developed in the 1950s by Jack Kilby of Texas Instruments and Robert Noyce of Fairchild Semiconductor.

Integrated circuits are used for a variety of devices, including microprocessors, audio and video equipment, and automobiles. Integrated circuits are often classified by the number of transistors and other electronic components.



No need to draw this image.

It is just for reference and understanding.

Depending upon number of components integrated together, ICs are of following kinds:

- SSI (small-scale integration): Up to 100 electronic components per chip.
- MSI (medium-scale integration): From 100 to 3,000 electronic components per chip.
- LSI (large-scale integration): From 3,000 to 100,000 electronic components per chip.
- VLSI (very large-scale integration): From 100,000 to 1,000,000 electronic components per chip.
- ULSI (ultra large-scale integration): More than 1 million electronic components per chip.

Logic Families: Logic families denote the property and characteristic of an IC. Despite of the task that the ICs perform, logic families just define the way that task will be accomplished. Following are the main logic families:

1. TTL (Transistor Transistor Logic)
 2. ECL (Emitter Coupled Logic)
 3. MOS (Metal Oxide Semiconductor)
 4. CMOS (Complementary Metal Oxide Semiconductor)
- **TTL:** Transistor-Transistor Logic is the standard that defines that every IC should be designed by interconnected transistors.
 - **ECL:** Emitter Coupled Logic defines that the IC will perform on the highest speed. High speed ICs are designed using this logic.
 - **MOS:** Metal Oxide Semiconductor Logic defines that the IC will have highest packing density. Small size ICs belong to this logic family.
 - **CMOS:** Complementary Metal Oxide Semiconductor logic defines that the IC will consume least power. Low power ICs belong to this logic family.

Exercise:

1. Discuss about different types of ICs.
2. Briefly discuss about ECL, MOS AND CMOS.