



ANDHI SCHOOL OF ENGINEERING, BHABANDHA, BERHAMPUR

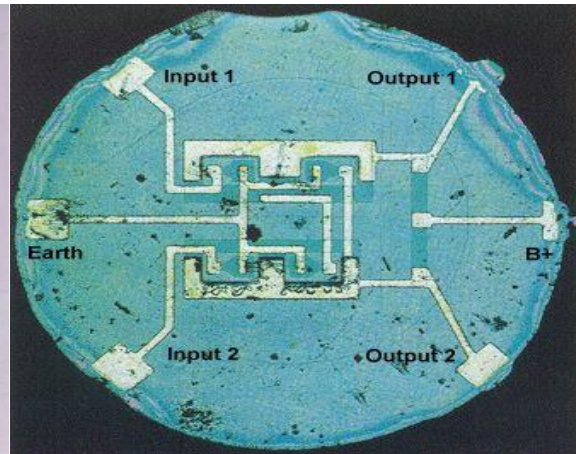
# TEACHING LEARNING MATERIAL OF VLSI & EMBEDDED SYSTEM

PREPARED BY: PRETESSHA MAHAPATRO

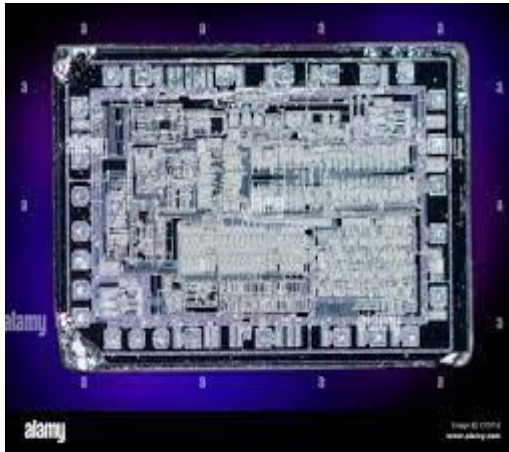
# CHAPTER-1



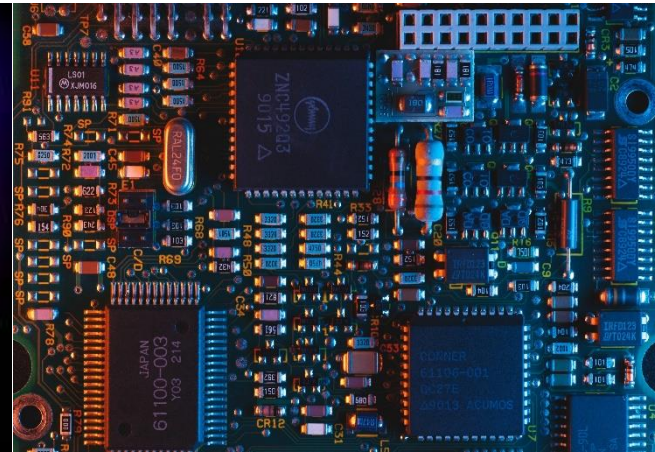
**SINGLE MONOLITHIC CHIP (IC)**



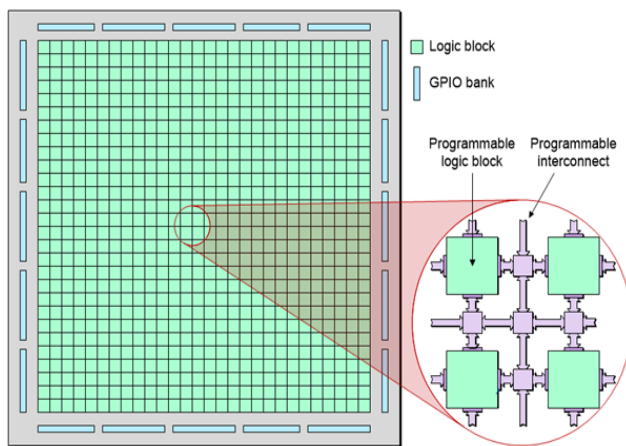
**FIRST MONOLITHIC CHIP**



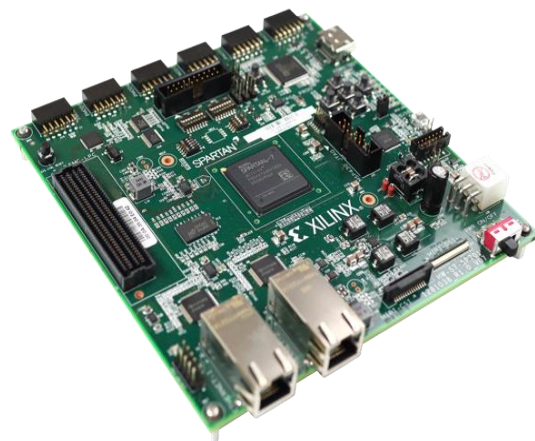
**IC**



**PHYSICAL DESIGN OF VLSI**



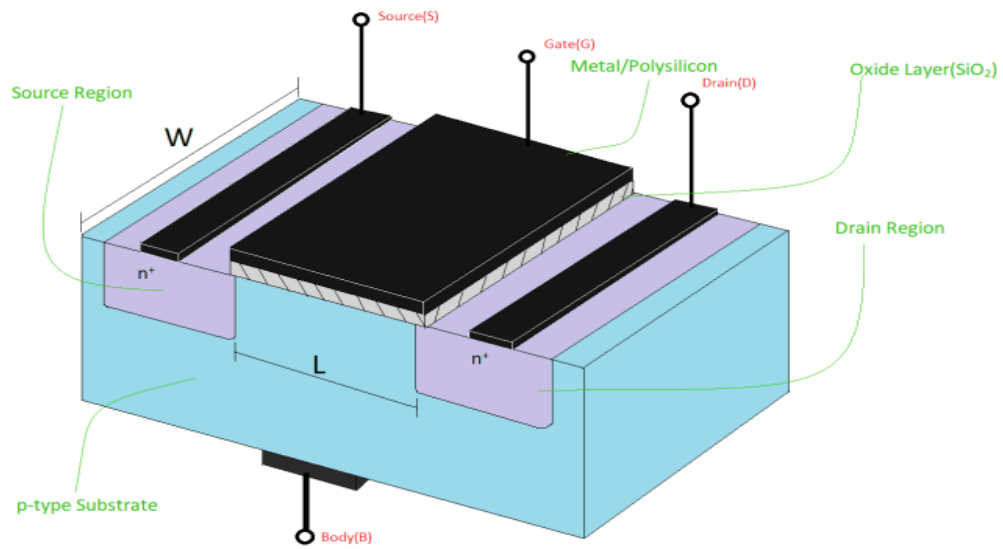
**Bird's-eye view of FPGA**



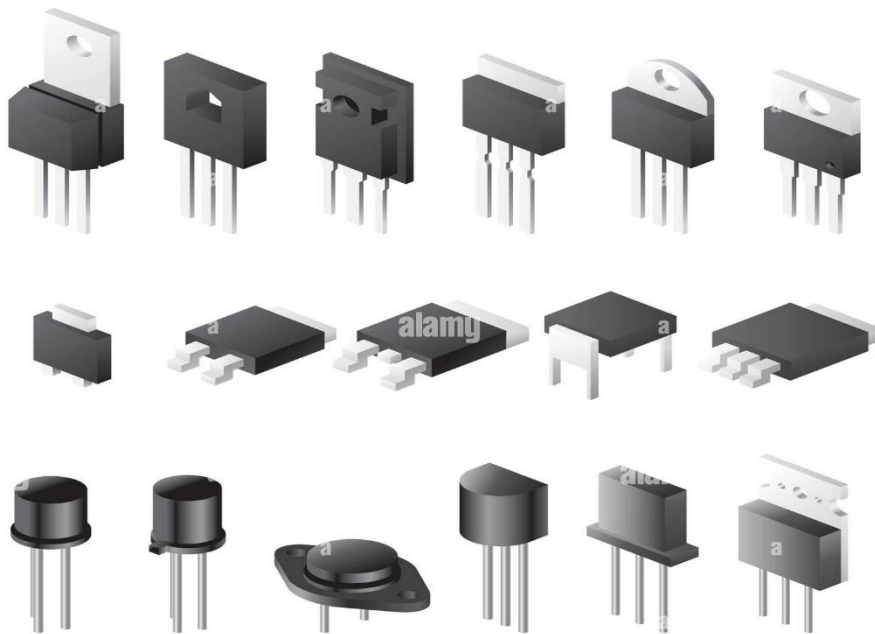
**FPGA**

**CONFIGURABLE LOGIC BLOCKS OF FPGA SPARTAN-7**

## CHAPTER-2

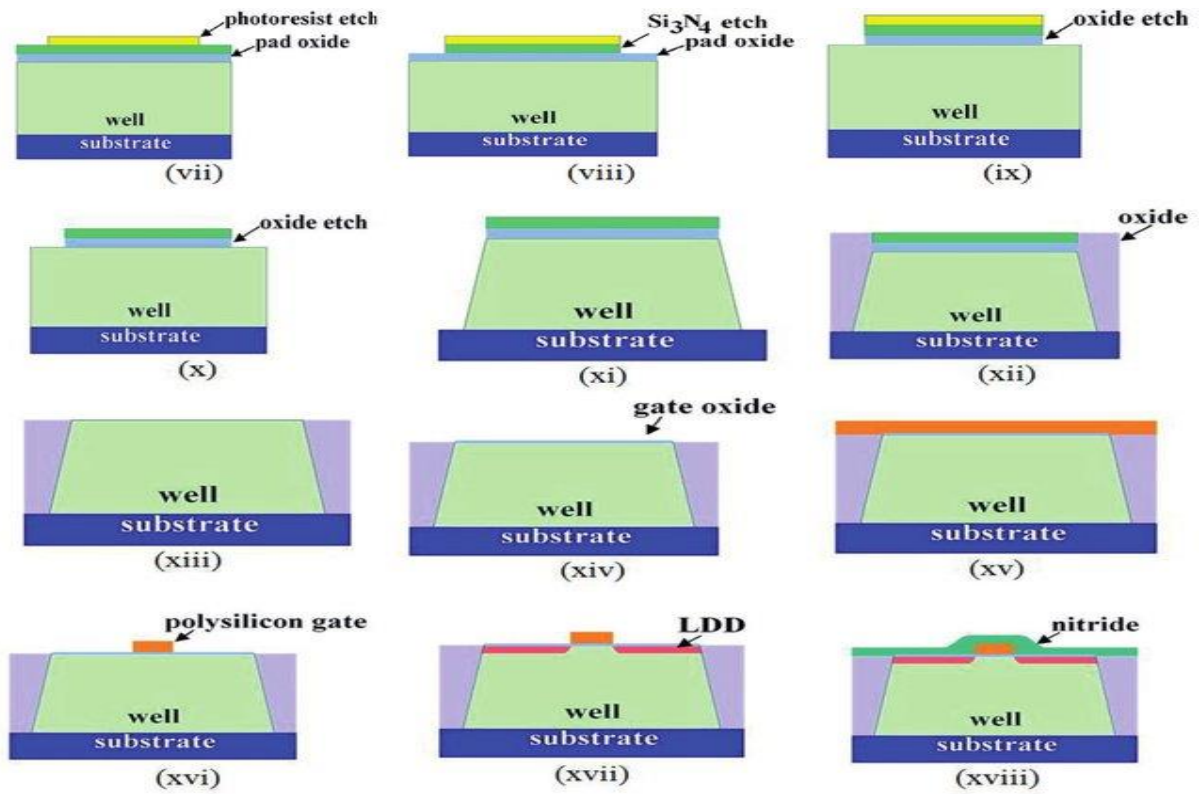


**MOS TRANSISTOR STRUCTURE**



**DIFFERENT TYPES OF MOSFET**

# CHAPTER-3



## FABRICATION PROCESS

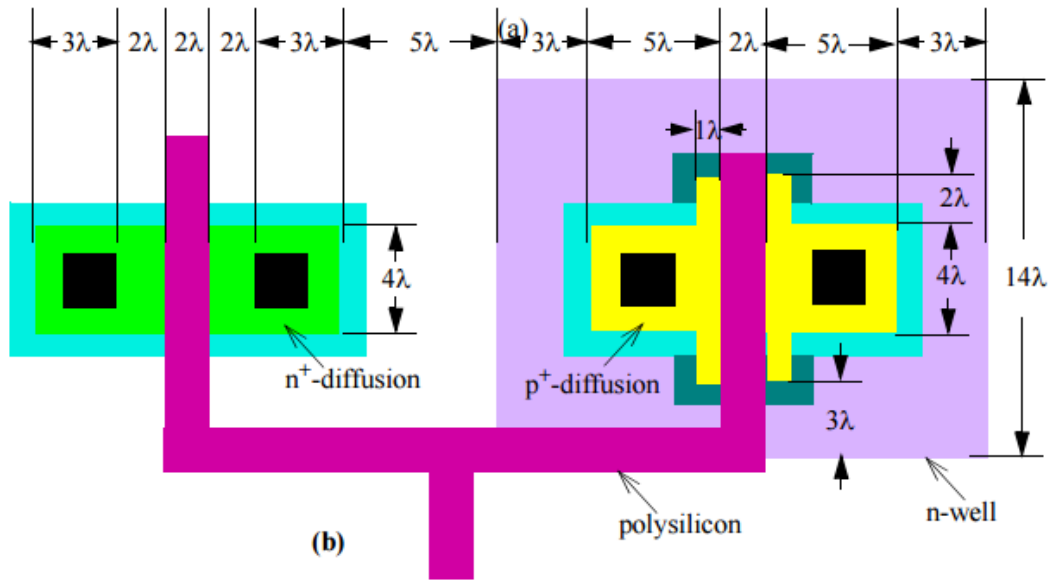
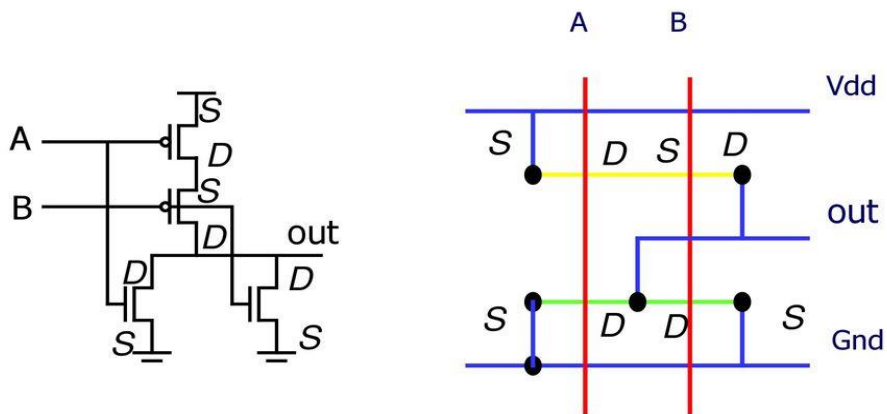


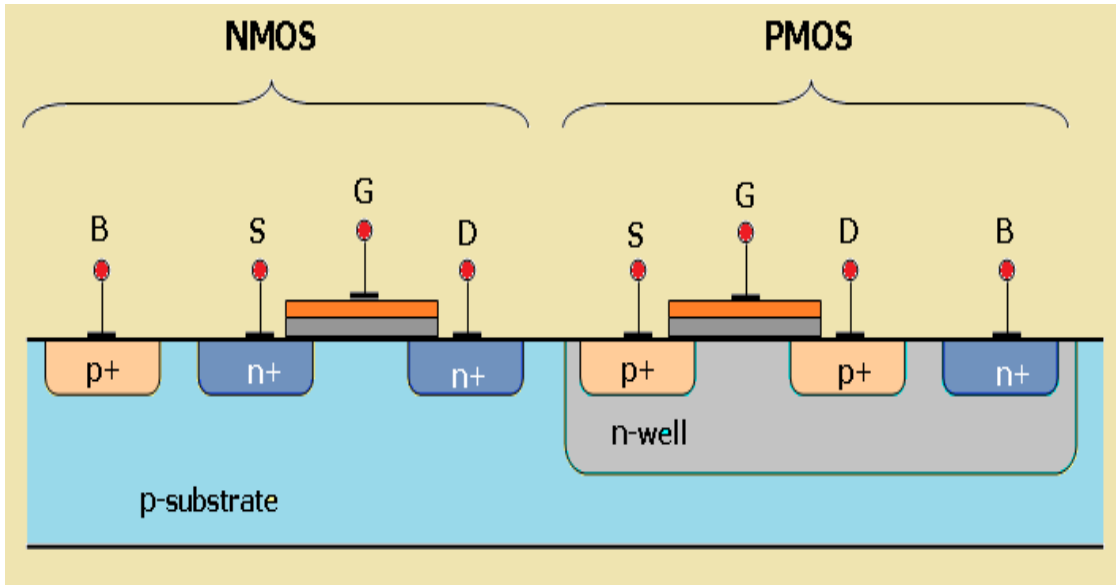
Figure 1 (a)Electrical model of a cascade connection of twoCMOS inverters. (b)A partial sketch of a CMOS inverter layout (metal layer not shown).

## LAYOUT DESIGN

### Stick Diagram for CMOS NOR



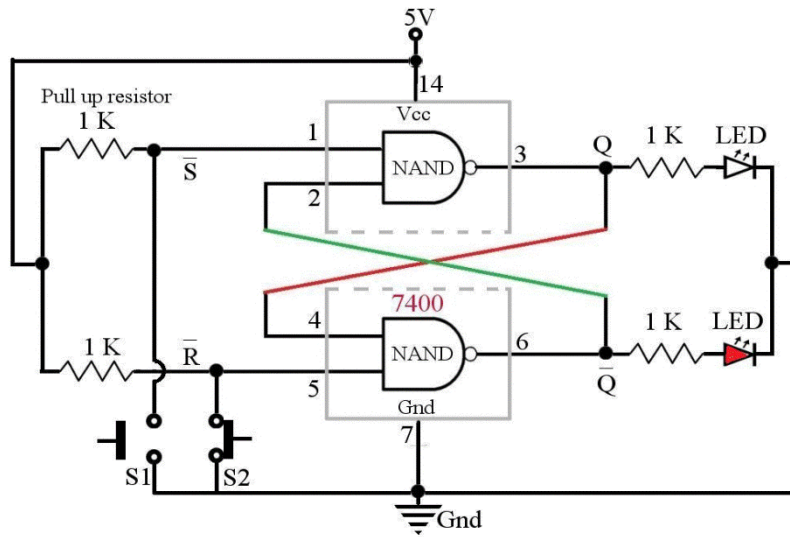
## STICK DIAGRAM



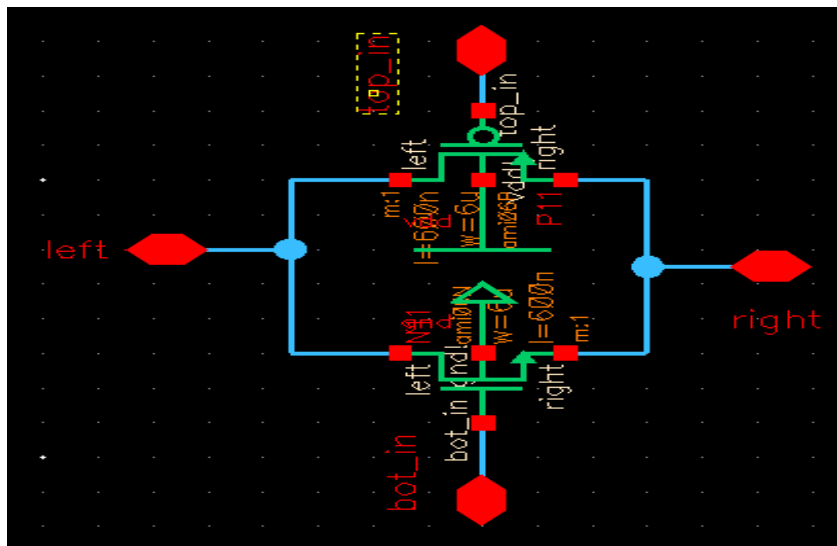
**CMOS**



# CHAPTER-4



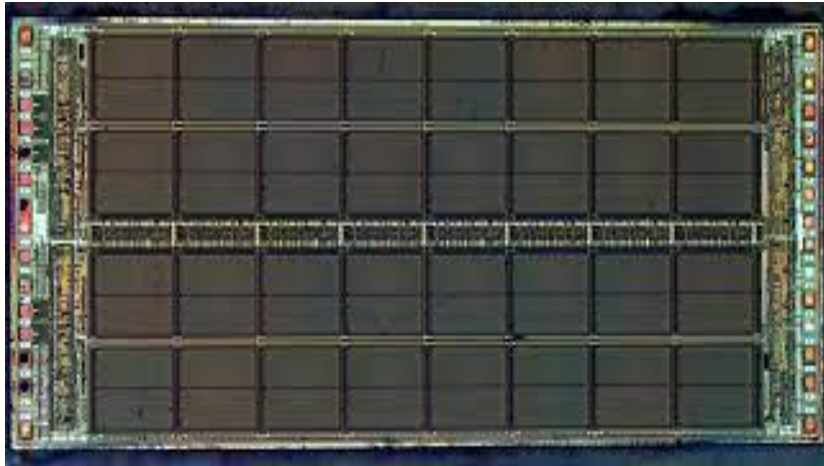
SR LATCH USING NAND GATE



TRANSMISSION GATE



DRAM



**TYPICAL COFIGURATION OF DRAM CHIP**



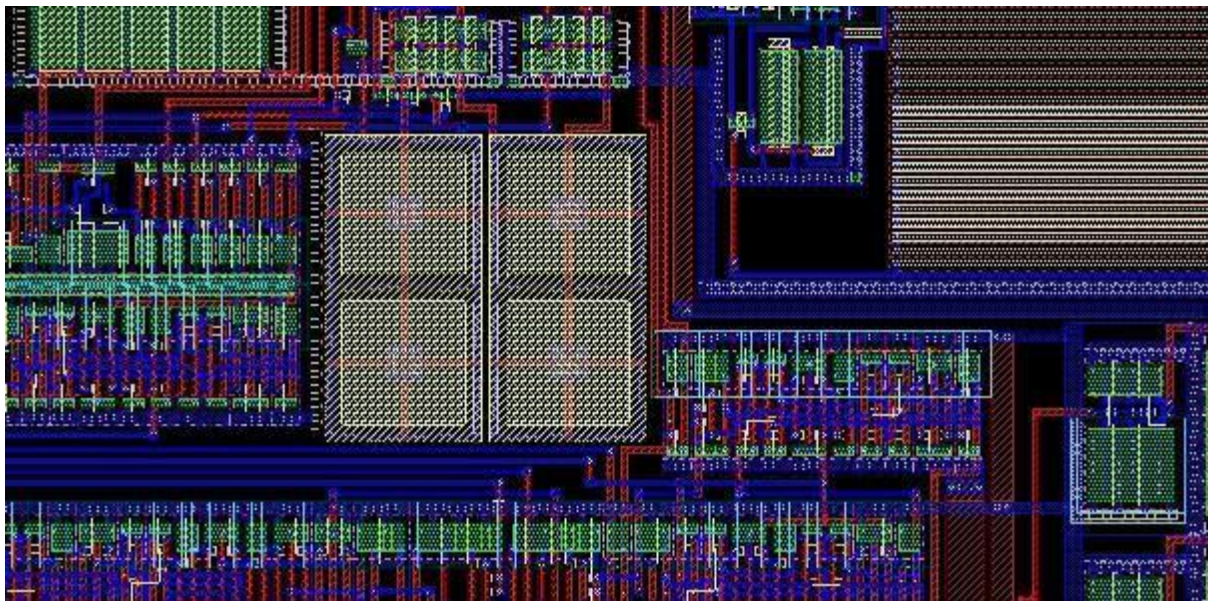
**SRAM**



**FLASH MEMORY**



## CHAPTER-5



### EDA TOOL SIMULATION

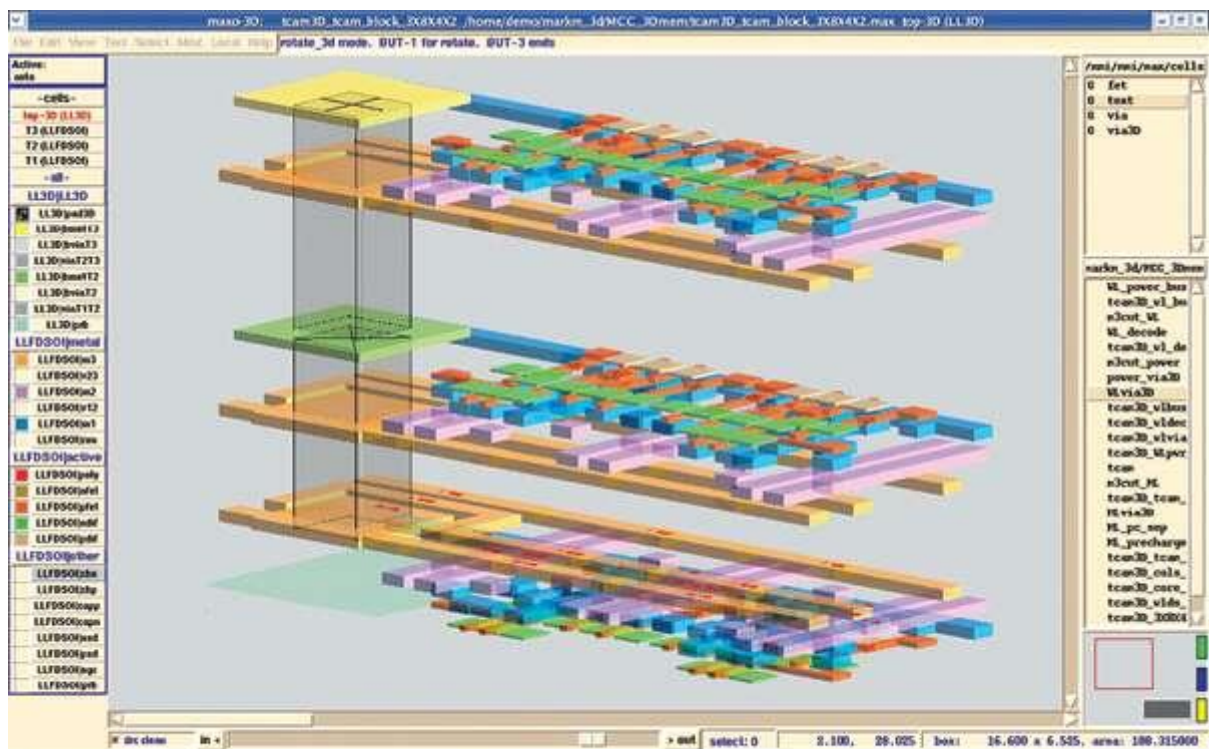
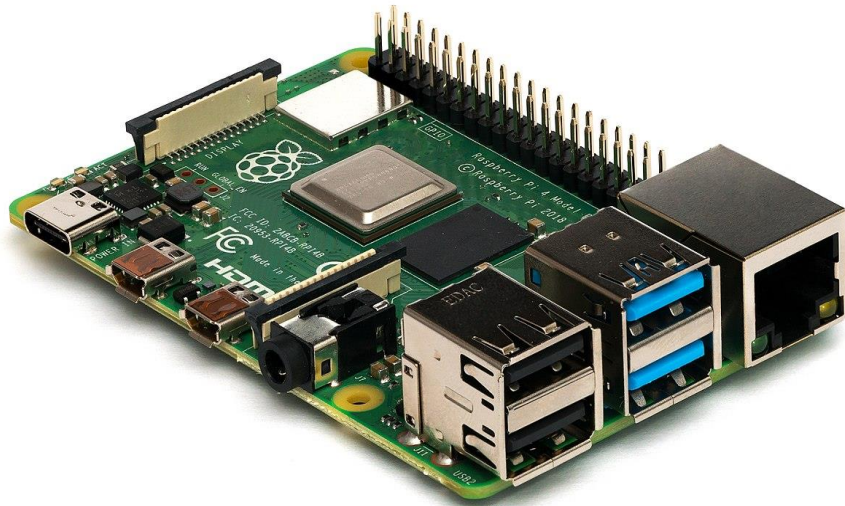
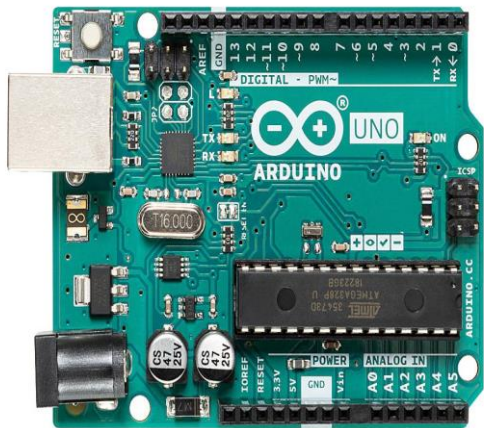


Figure 5 The Max-3D tool incorporates features for 3-D-design methods, so you can organize and manage design data for every wafer level in a stacked design.

### 3-D STRUCTURE IC DESIGN



**RASBERRY PI**



**ARDUINO UNO**



**ARDUINO ROBOT**

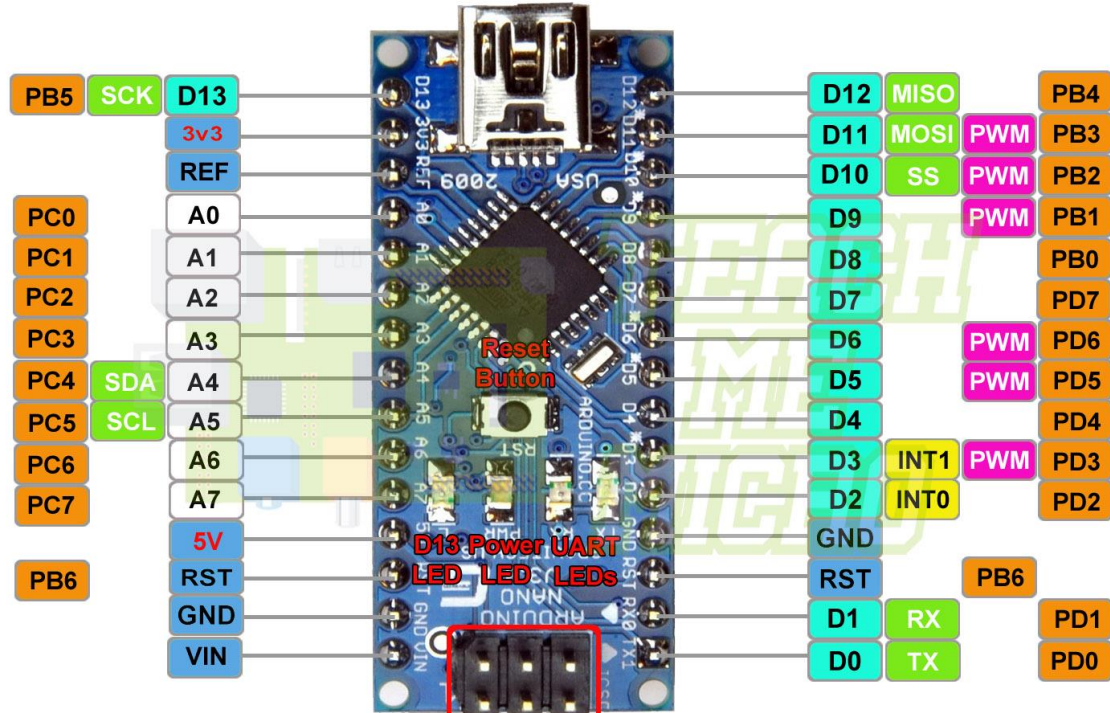


**ARDUINO MICRO**

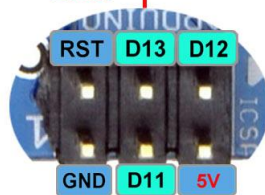


# ARDUINO NANO PINOUT

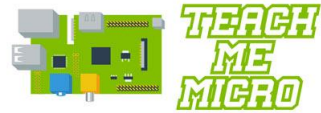
## Mini USB Port



## ICSP



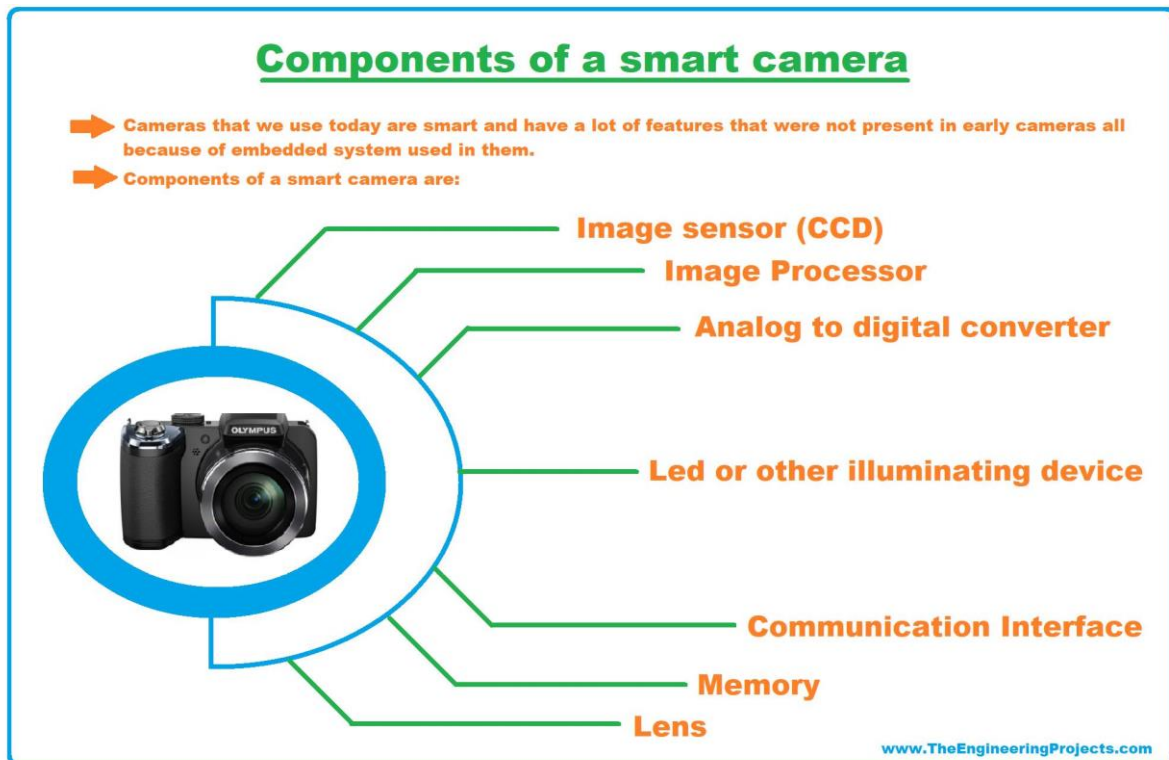
- Power Pins
- Arduino Pins
- ATmega Pins
- PWM Pins
- ADC Pins
- Communication Pins
- Interrupt Pins



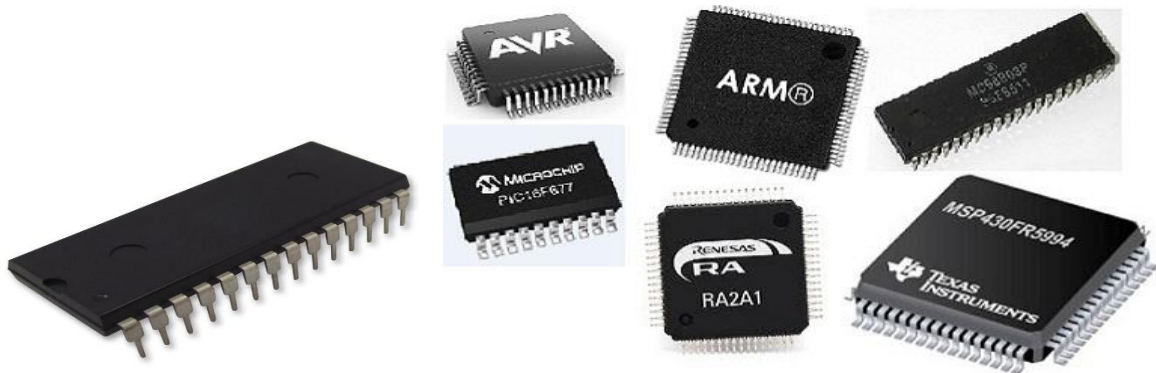
[www.teachmemicro.com](http://www.teachmemicro.com)

ARDUINO NANO

## CHAPTER-6



### DIGITAL CAMERA



8-BIT MICROCONTROLLER

DIFFERENT TYPE OF MICROCONTROLLERS