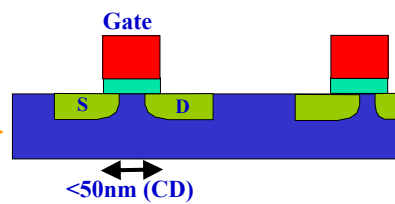
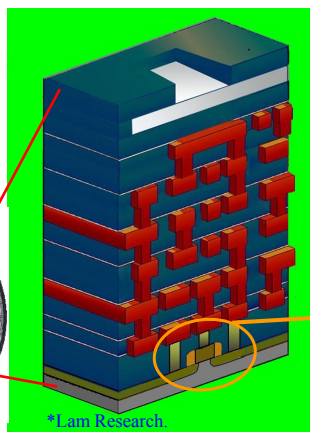
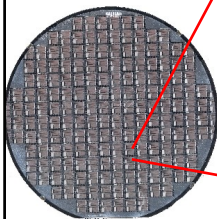


# Process Overview

## Introduction to Semiconductor Processing

1

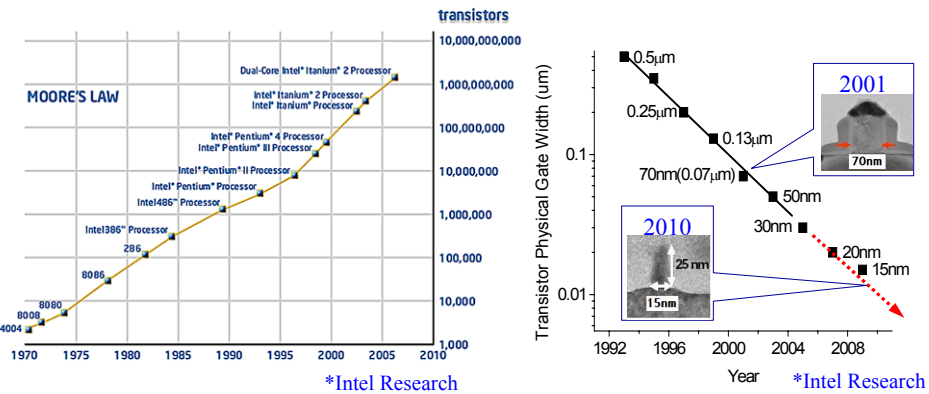
# Microchips and Transistors



2

## Challenges – Moore's Law

The number of transistors on a microchip will double every 18 months.



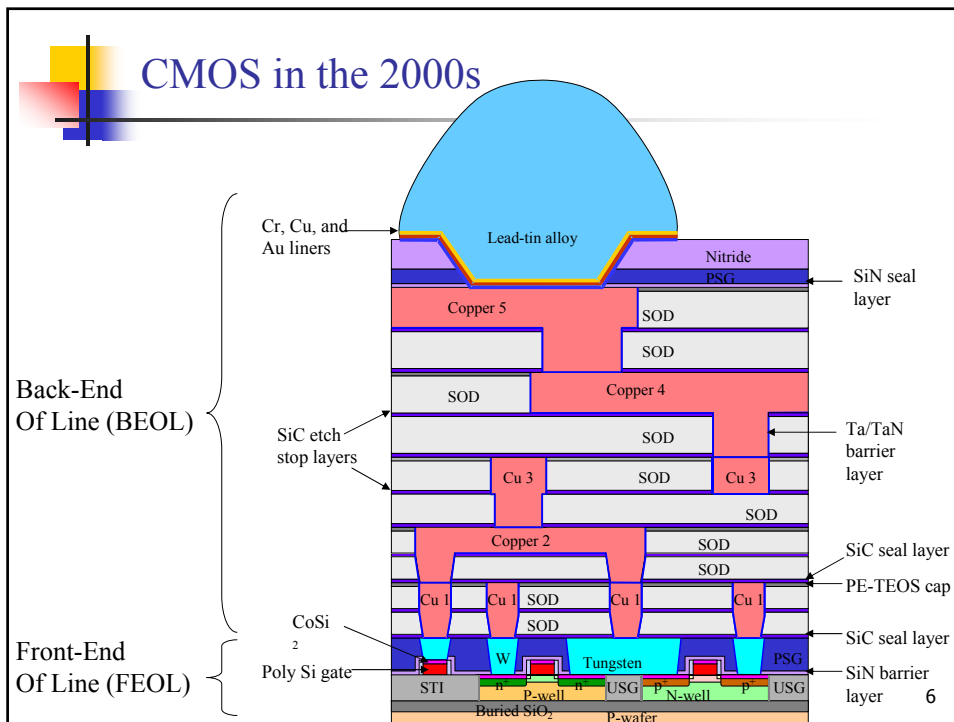
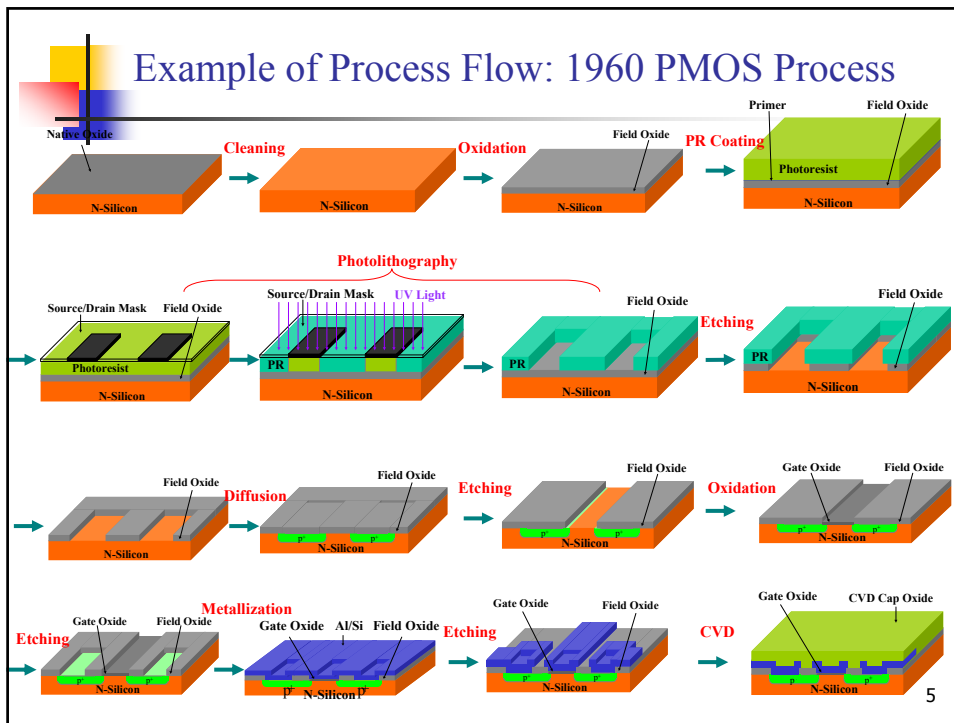
Currently more than 1 billion transistors per microchip

3

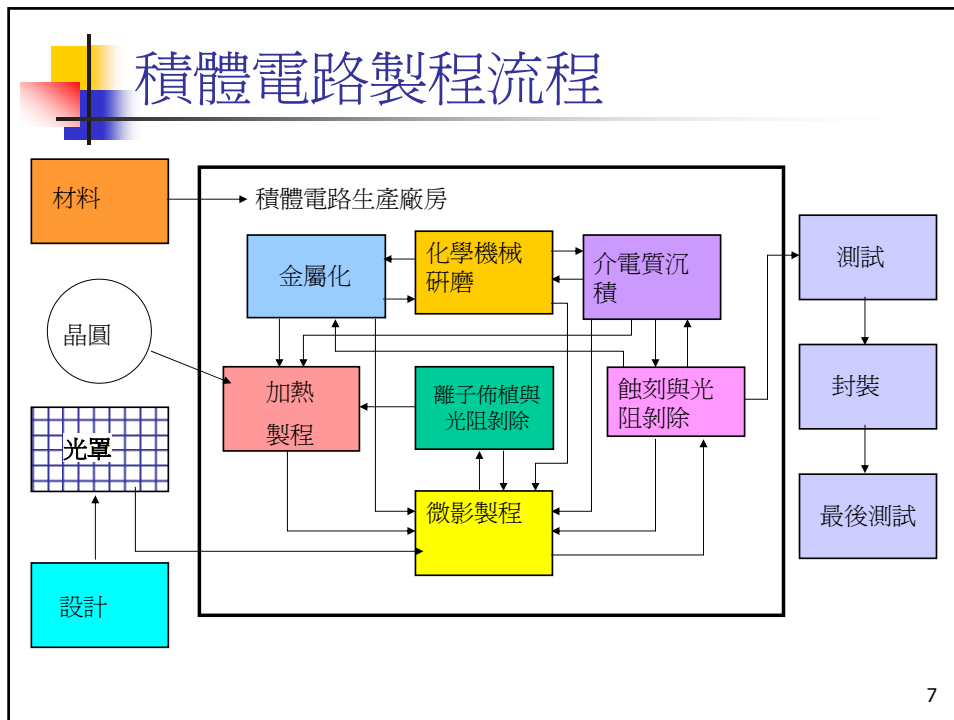
## Challenges

- Smaller size and larger number
- Fundamental limitations
  - Heat transfer
  - Diffusion
  - Structure strength
- Process Concerns
  - Stable process – yield
  - Large area – throughput and uniformity
  - Small feature
  - Process compatibility

4



## 積體電路製程流程



## Chapter Arrangement

- Ch 5: High temperature (oxidation and diffusion)
- Ch 6: Photolithography
- Ch 8: Ion implantation
- Ch 7: Plasma processes
- Ch 9: Etching
- Ch 10: Thin film (CVD and Dielectric)
- Ch 11: Metallization
- Ch 12: Chemical mechanical deposition (CMP)
- Ch 13: Process Integration