CHAPTER

1

INTRODUCTION

KHOA CÔNG NGHỆ THÔNG TIN
TRƯỜNG ĐẠI HỌC KHOA HỌC TỰ NHIÊN

fit@hcmus

PART 1

- Computer Generations
- Classes of Computers
- Terminology: wafer, chip, chipset
- 8 great ideas in Computer architecture

GENERATION OF DIGITAL COMPUTER

Generation	Time	Technology
1	1940 – 1956	Vacuum tubes
2	1956 – 1963	Transistors
3	1964 – 1971	Integrated Circuits
4	1971 – nay	Microprocessors
5	Under Development	Parallel Processing/ Artificial intelligence

CLASS OF COMPUTERS

- Personal Computers
- Server Computers
- Super Computers
- Embedded Computers

Personal Computers

- General-purpose variety of software
- Subject to cost/performance tradeoff

Server Computers

- Network-based
- High-capacity performance, reliability
- Range from small server to building size

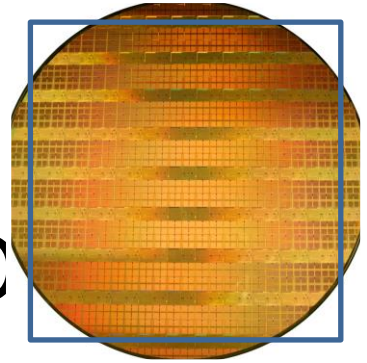
Supper Computers

- High-end scientific and engineering calculations
- Highest capacity but represent a small fraction of the overall computer market

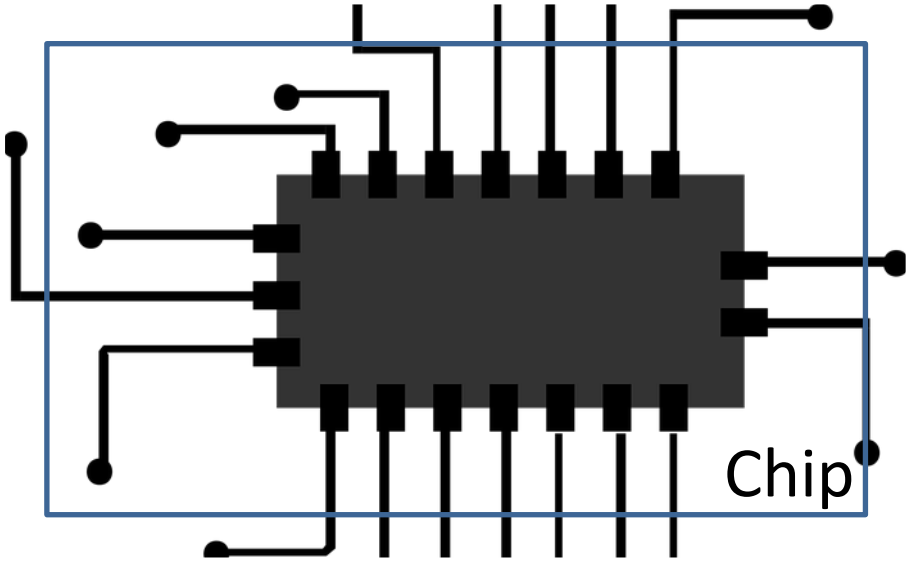
Embedded Computers

- Hidden components from the system
- Stringent power/performance/cost constraints
- Only work on a specific task

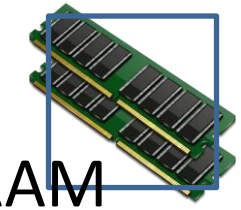
TERMINC



Wafer

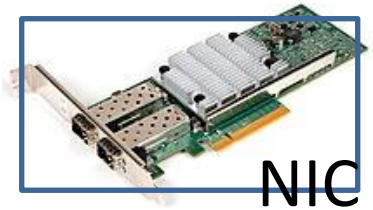


Chip

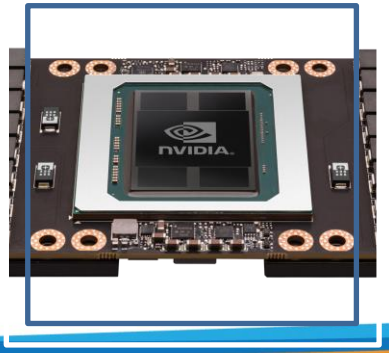


RAM

CPU

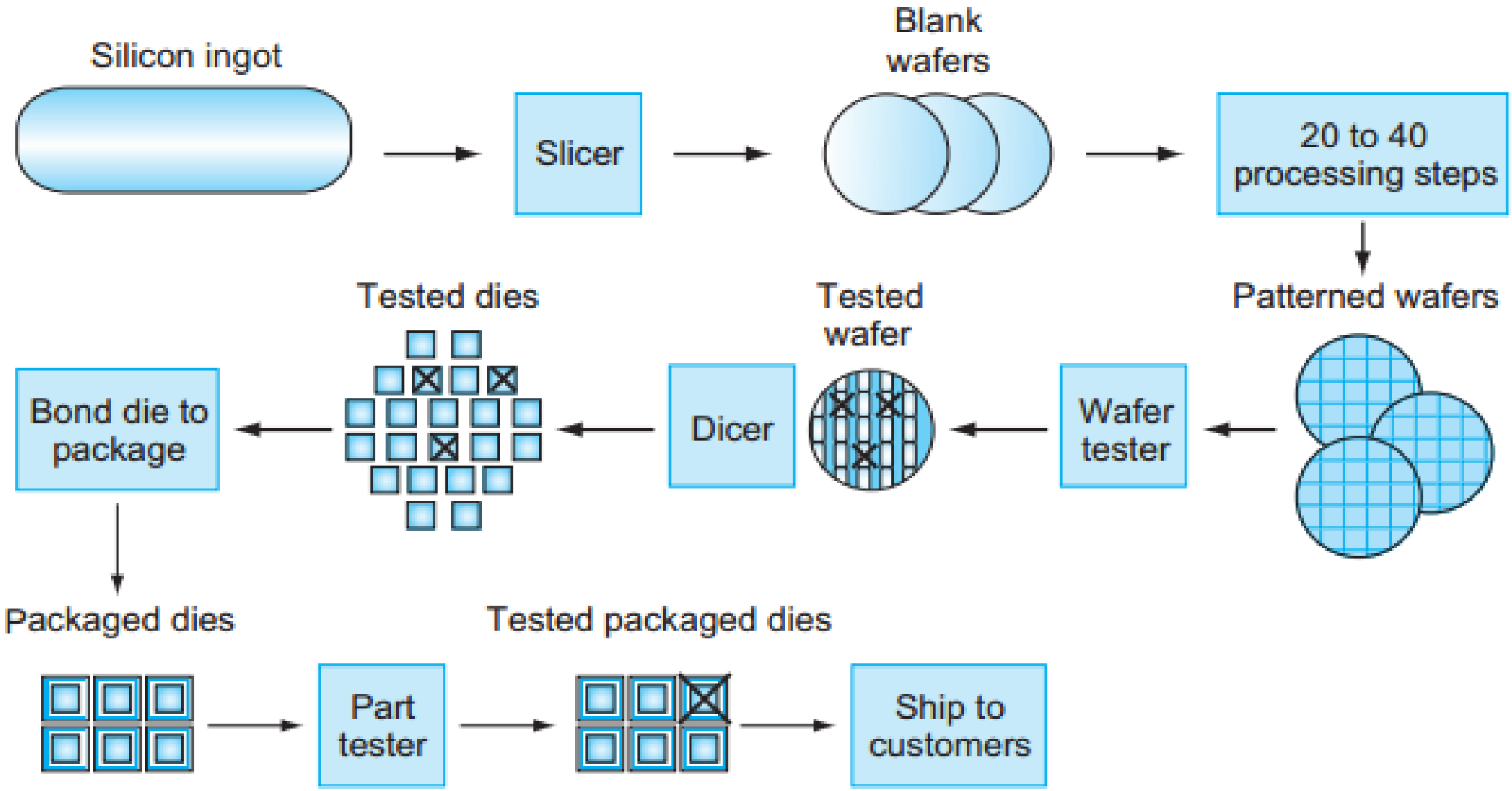


NIC



GPU

The chip manufacturing process

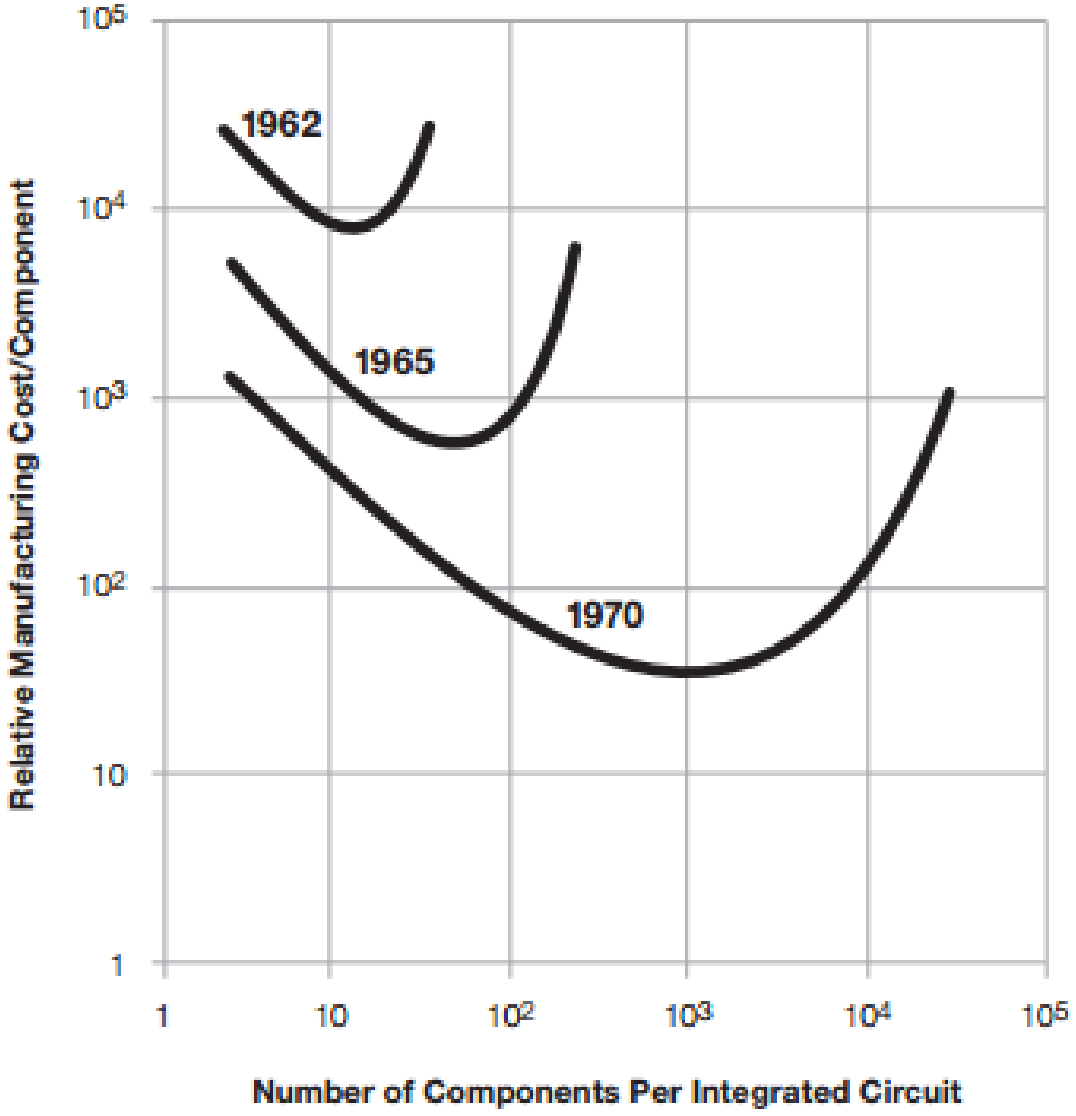


8 great ideas in Computer Architecture

- **Design of Moore's law**
- **Use abstraction to simplify design**
- Make a common case fast
- Performance via: Parallelism
- Performance via: Pipelining
- Performance via: Prediction
- **Hierarchy of Memory**
- Dependability via Redundancy

Moore's Law

"The number of transistors incorporated in a chip will approximately double every 24 months."—Gordon Moore, Intel co-founder



- 01_Timeline.pdf
- 02_Hardware.pdf
- Patterson and Hennessy, ***Computer Organization and Design: The Hardware / Software Interface (5th edition)***, Chapter 1

REVIEW

1. List several types of computers
2. How many generations of digital computers are there so far?