

# Good morning. Please find your group



## Week 5 – Review Weeks 1-4

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- Class 1: Introduction & Microsystems Packaging
- Class 2: PCB Fabrication
- Class 3: PCB Assembly
- Class 4: Integrated Circuit Fabrication
- Class 5: Review (**today**)
- Class 6: **Midterm I** (Lectures, Quizzes & Videos) (**Next Week**)

# Microsystems Packaging

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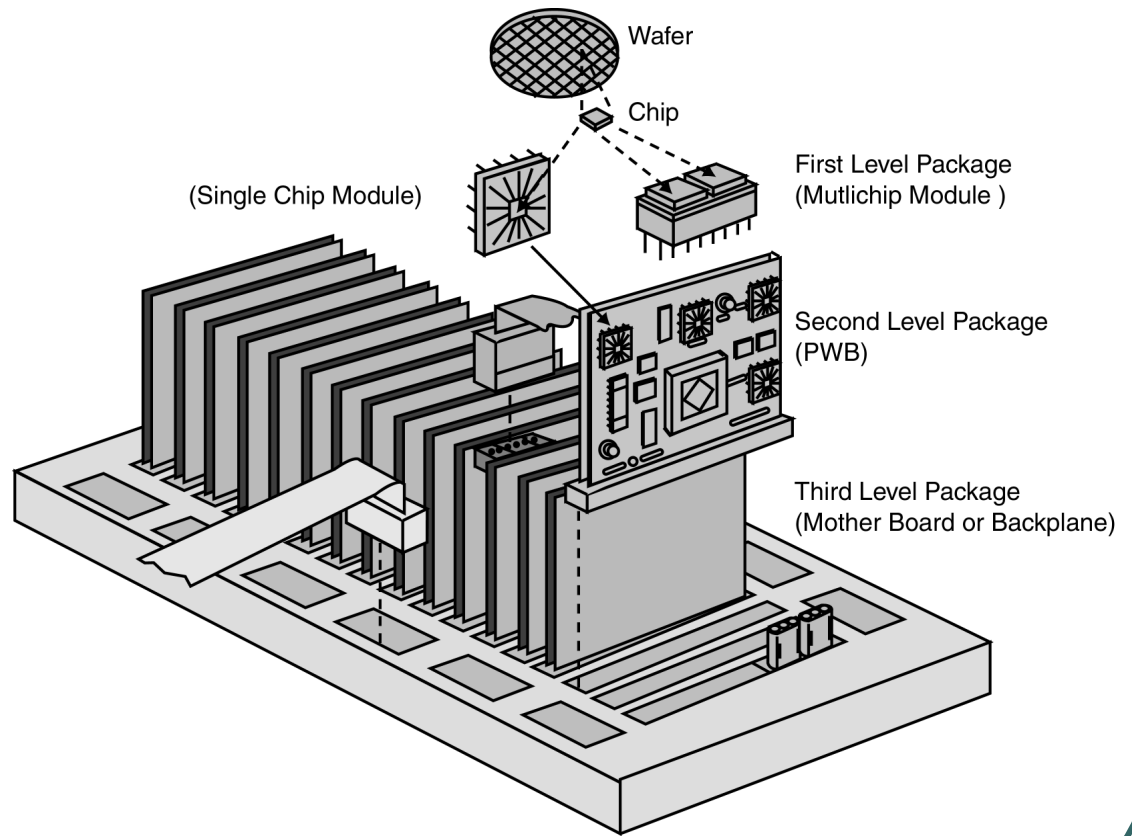


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# Packaging Hierarchy

- Level 0: Wafer level packaging (gate-to-gate interconnection)
- Level 1: Chip level packaging (chip-to-package interconnection)
- Level 2: Board level assembly (packaged chip to PCB board interconnection)
- Level 3: System level assembly (board-to-board interconnection)



# Microsystems Packaging

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- **Cost** – System level packaging tends to drive cost of products more than IC or PCB packaging does.
- Why?



# Microsystems Packaging Review

## Question

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- Which is/are example(s) of system level packaging?
  - 1. Intel A7 Processor BGA
  - 2. J-lead QFP
  - 3. Samsung Galaxy 6S
  - 4. packaged IC to PCB



# Microsystems Packaging Review

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# Microsystems Packaging Review

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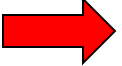
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- Protects underlying material when exposed to ultraviolet light and developer.
  - 1 chemical stripper
  - 2 photo tool
  - 3 positive photoresist
  - 4 negative photoresist

# Microsystems Packaging Review

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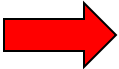
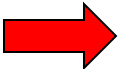
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# Microsystems Packaging Review

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# Microsystems Packaging Review

## Question

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- Most common method of melting solder in surface-mount assembly.
  - 1 IR
  - 2 vapor phase
  - 3 wave solder
  - 4 forced air convection

# Microsystems Packaging Review

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# Microsystems Packaging Review

## Question

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- A fiducial is a X-Y reference used in component placement machines.
- 1 TRUE
- 2 FALSE



# Microsystems Packaging Review

## Question

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- Solder and heat are applied simultaneously during:
  - 1 soak
  - 2 reflow
  - 3 preheat
  - 4 cool down
  - 5 wave soldering

# Microsystems Packaging Review

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# Microsystems Packaging Review

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  - 1 flux
  - 2 acid
  - 3 solvent
  - 4 solder powder
  - 5 All of the above

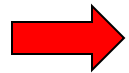
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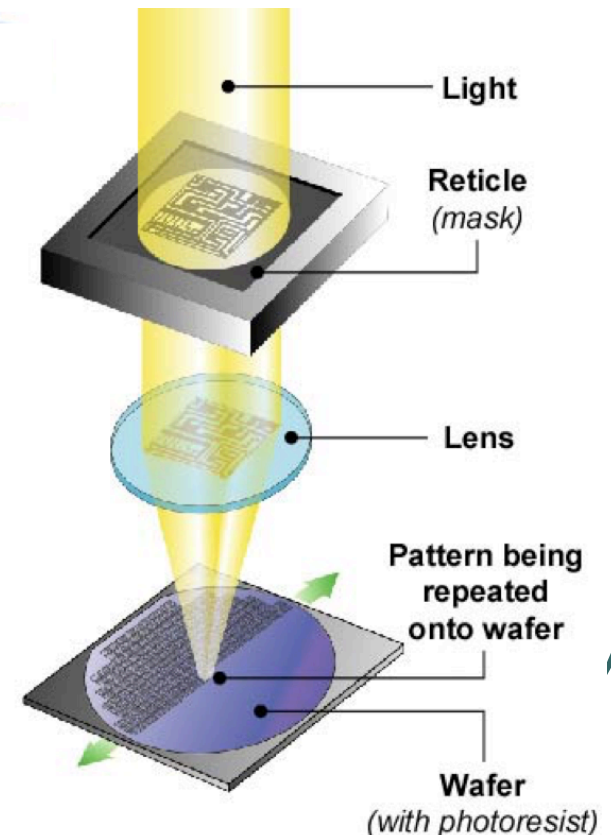
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# Microsystems Packaging Review

## Question

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- According to lecture, how many masks are typically used for an IC?
  - 1. 1 or 2
  - 2. 3 to 6
  - 3. 12 to 25
  - 4. 50 to 60
  - 5. over 100



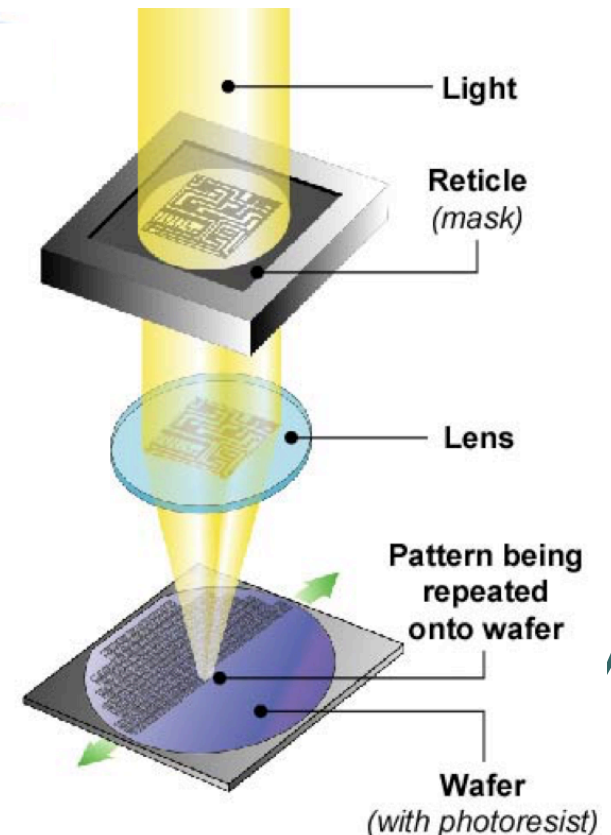
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