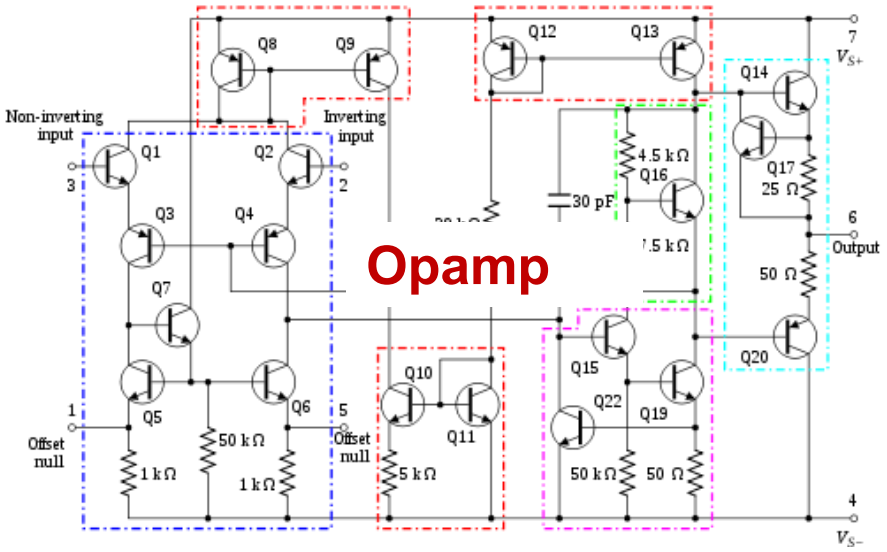
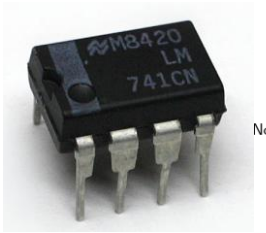
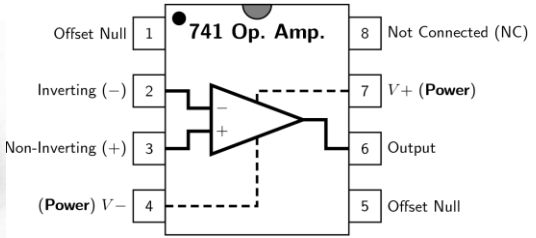
Packaging of Integrated Circuits

Prof. Kurian Polachan, IIIT-B

Integrated Circuit

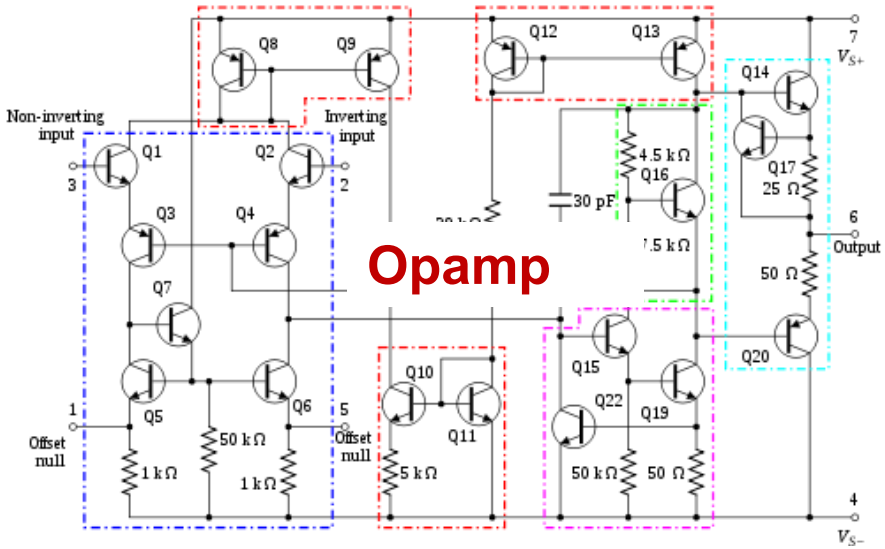


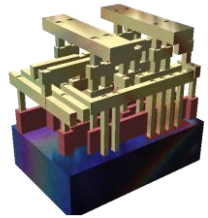




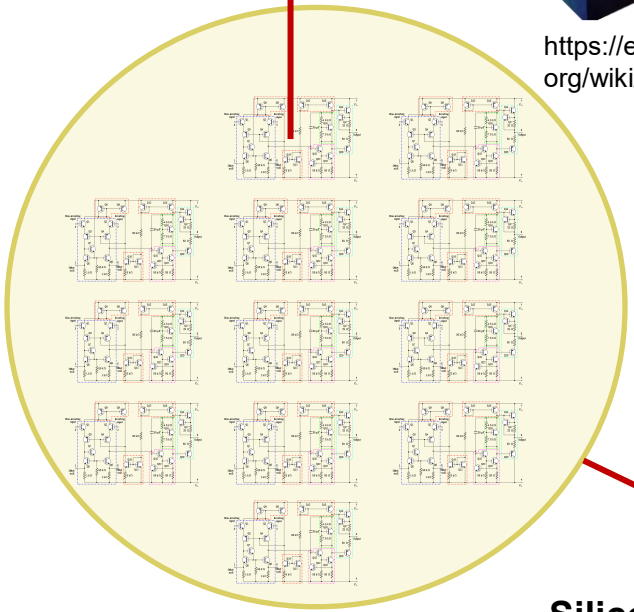
ref: https://en.wikipedia.org/wiki/Operational_amplifier

Circuit → Wafer



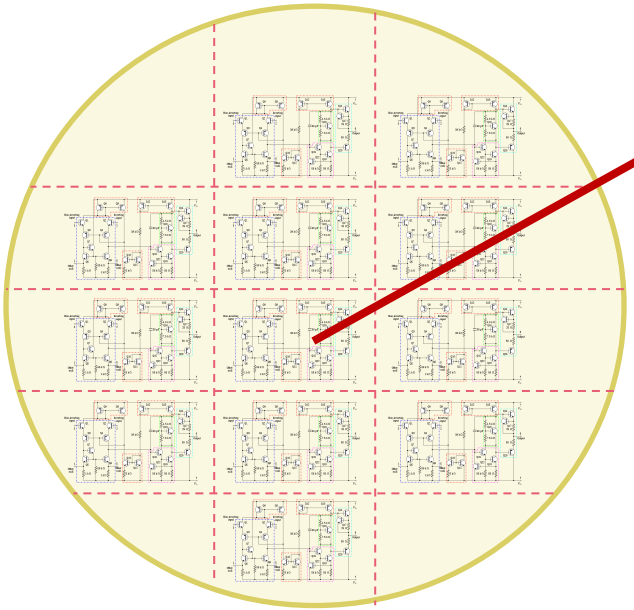


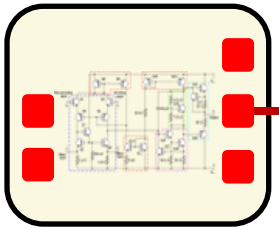
https://en.wikipedia.org/wiki/GDSII



Silicon Wafer (Disc)

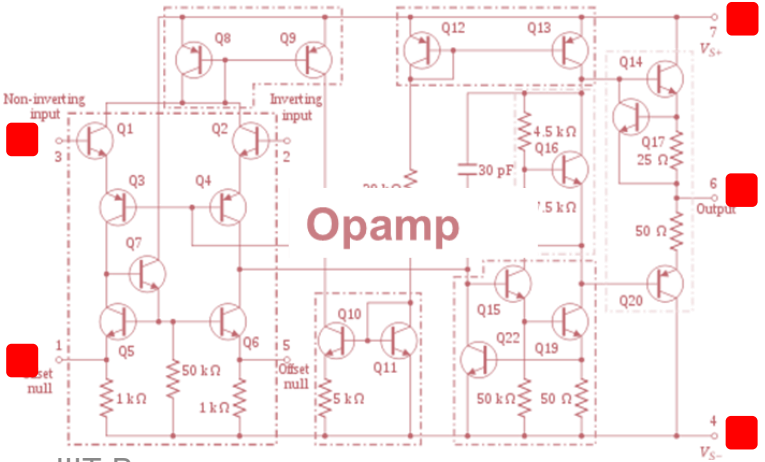
Wafer → Die



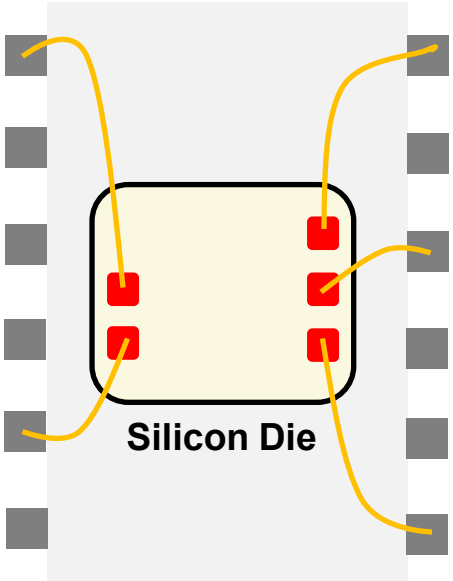


Die Pad
(Metal Contacts)

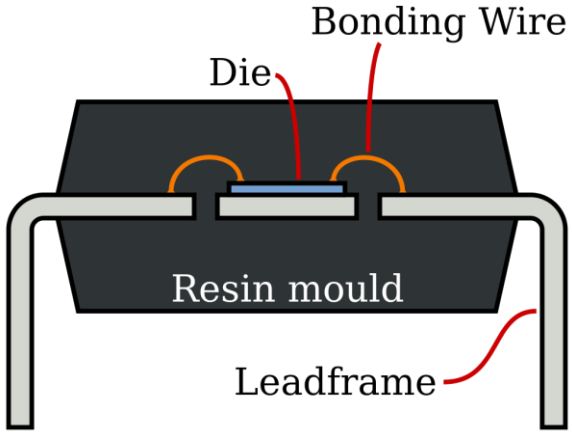
Silicon Die

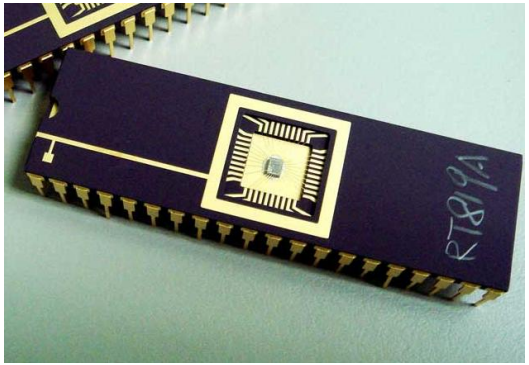


Die → Packaging



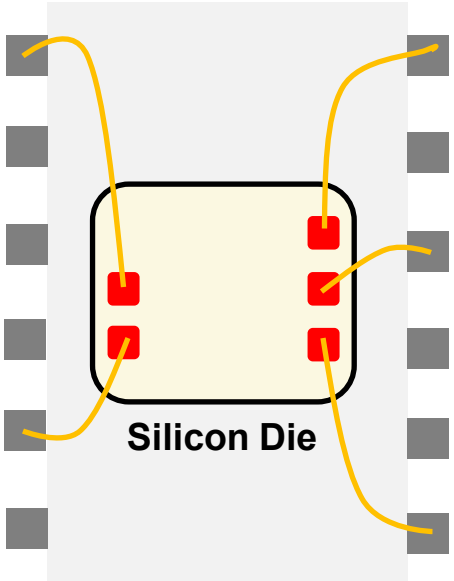
Package



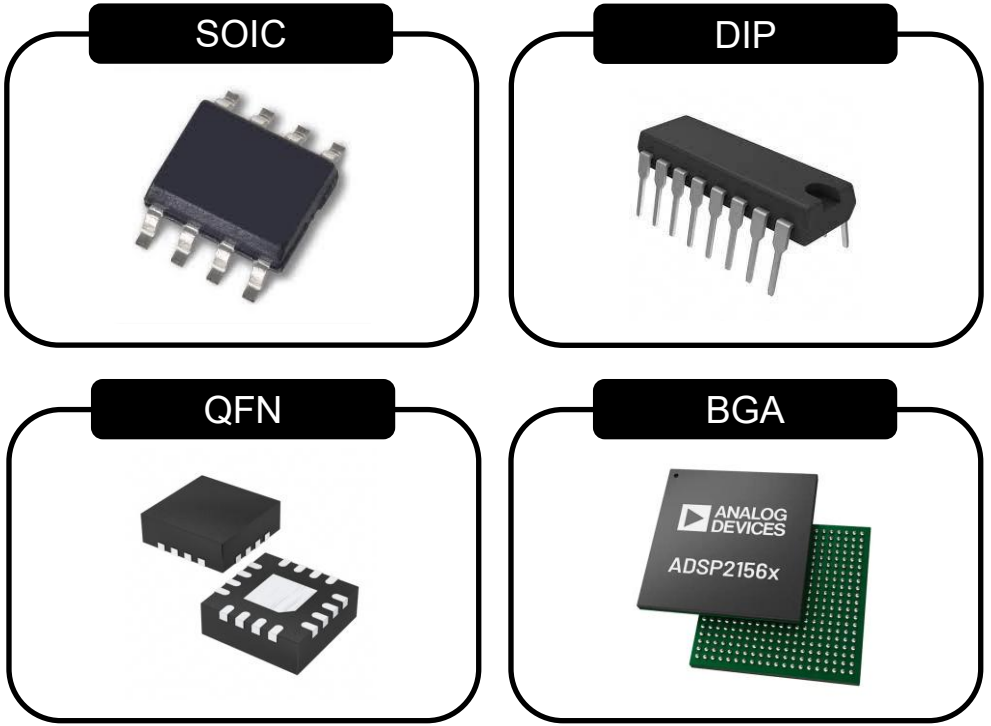


https://en.wikipedia.org/wiki/Integrated_circuit_packaging

Types of Packages

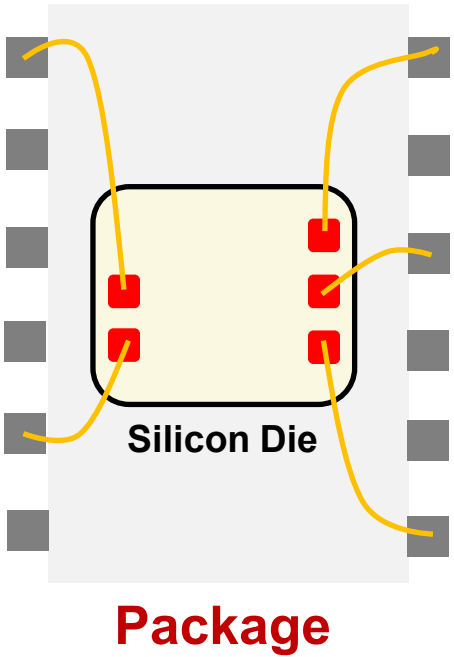


Package



https://www.digikey.in/

Need for Packaging



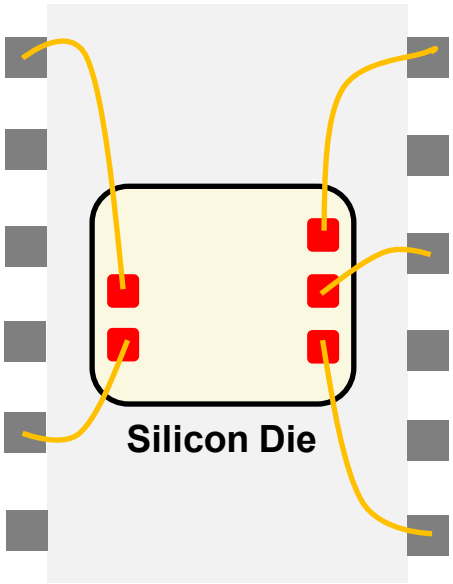
Protection

Solderability

Heat-Dissipation

Standardization

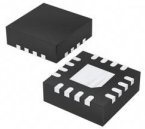
Package Selection



Package

DIP

SOIC



QFN

BGA

Pin Density

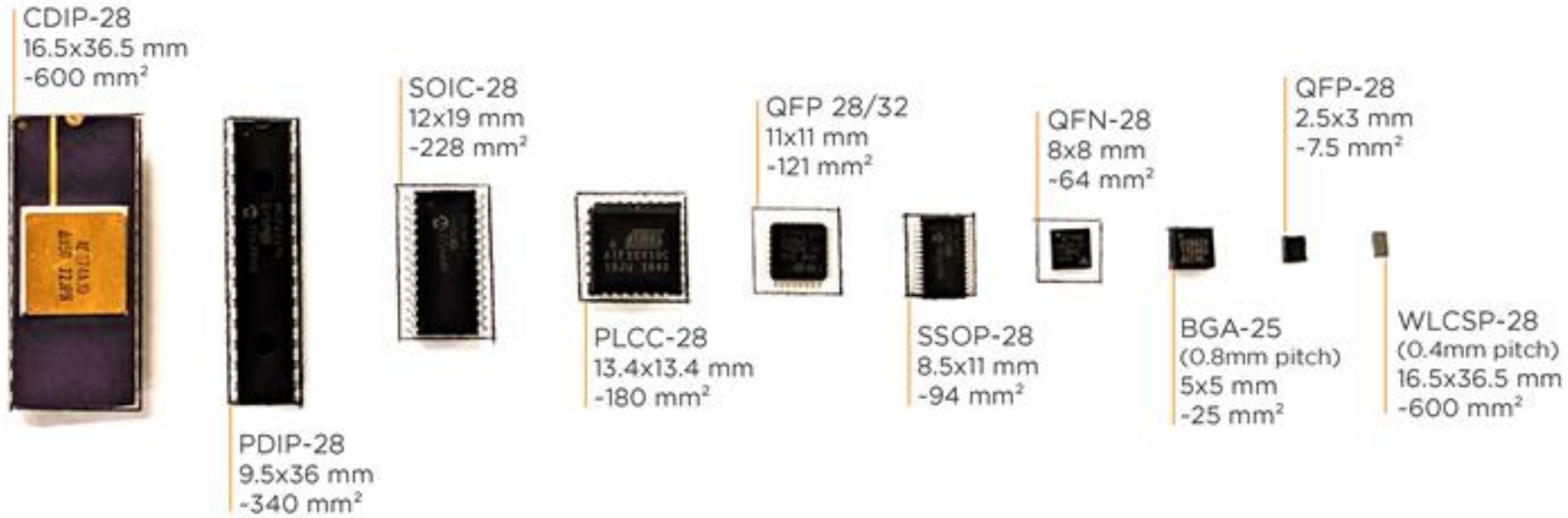
Ease of Soldering

Heat Dissipation

Cost

Area

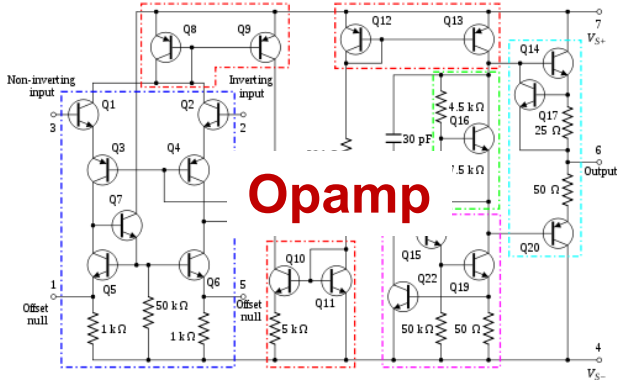
Size Comparison

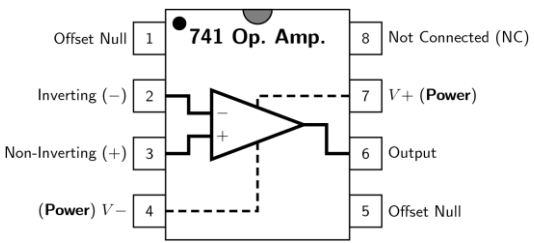


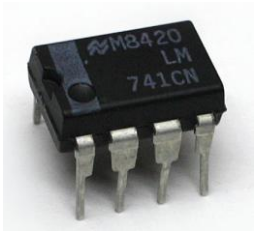
https://www.sunriselabs.com/News-Resources/Blog/misconception-2-smaller-packaging

IC vs. SoC

Integrated Circuit (IC)

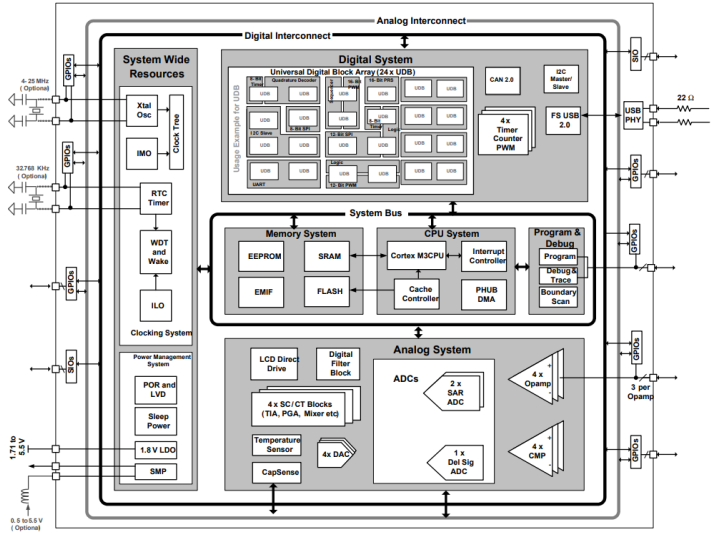




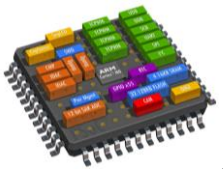


https://en.wikipedia.org/wiki/Operational_amplifier

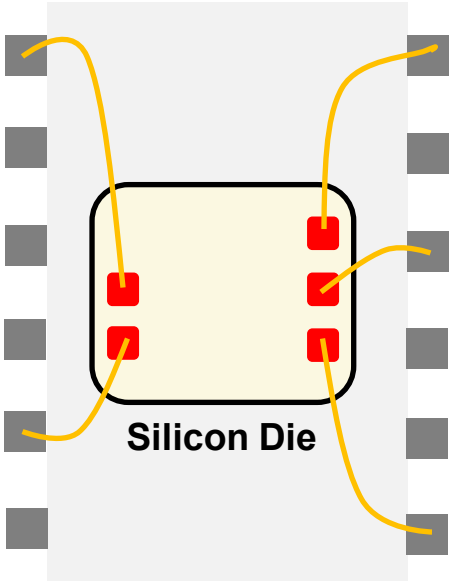
System on a Chip (SoC)



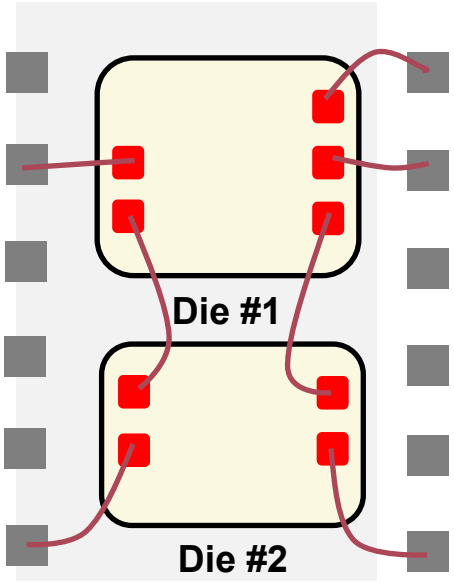
e.g., PSoC



System In a Package (SiP)



Package

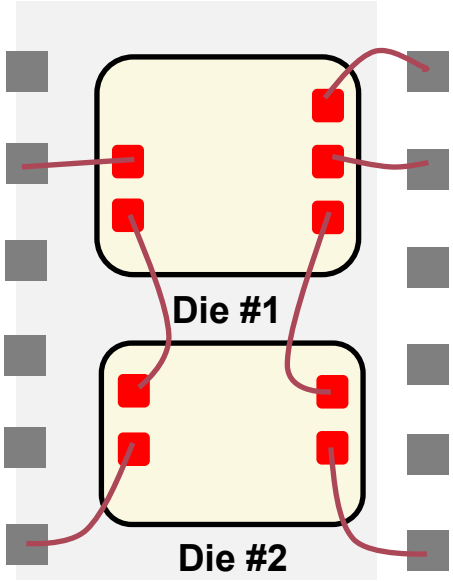


SiP

SoC vs. SiP ?

Why SIP (not SoC) ?

- **Proprietary Reasons**
- **Cost Concerns**
- **Technology Limitation**



SiP