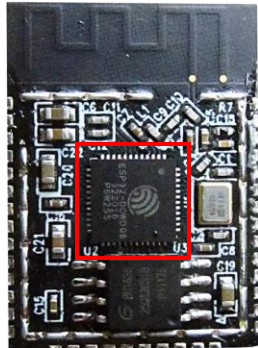


# SoC vs. SoM

## in Low-Power Devices



**SoM**  
(Module)



**SoC**  
(Chip)



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Swipe >

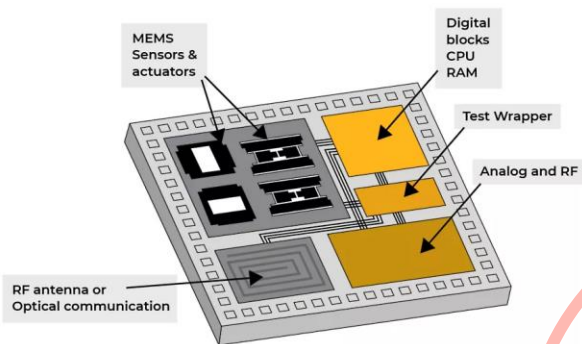
## What is a SoC?

System on Chip (SoC) = multiple core system components on a silicon die:

- CPU + memory controller
- Digital & analog peripherals
- Wireless radios etc.

Needs external components:

Antenna, RF passives, flash, crystal etc.

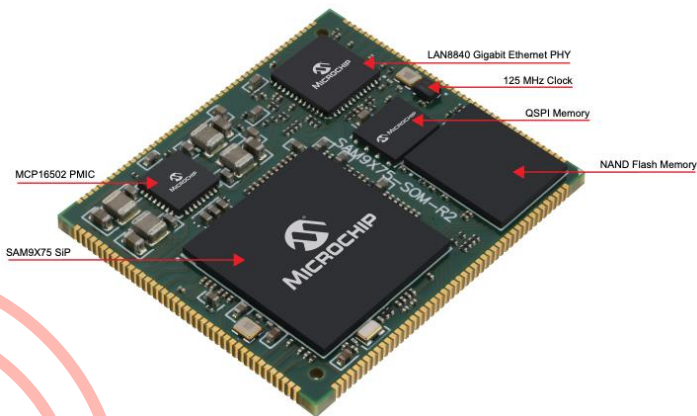


## What Is a SoM?

System on Module (SoM) = Pre-integrated board with:

- SoC + flash, crystal, power regulation
- Pre-matched RF & antenna circuitry (often)
- Shielding and wireless certification

Already soldered onto a carrier PCB



Source: microchip

## When to **Choose** a SoM

Choose an SoM if:

- You want to reduce design effort
- You want to skip RF layout and wireless certification hassle
- Unit cost optimization is not your top priority
- You want to reduce integration risk





## When to **Choose** a SoC

Use a SoC (instead of a SoM) if:

- You want full control over board layout and BOM
- You're producing at high volume and want to optimize cost
- You're willing to invest in wireless certification
- You have RF expertise in-house



## SoC vs. SoM - Core Differences

Feature	SoC 	SoM (Module) 
PCB Design	Custom, high-effort	Pre-integrated, low-effort
Certification	Full responsibility (RF, EMI)	Often pre-certified
Time to Market	Slower	Faster
Cost	Lower BOM (at high volumes)	Higher unit cost, lower NRE
Flexibility	Full hardware control	Limited design flexibility
Risk	High (RF, EMI)	Lower design & certification risk



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