

# TSMC's N3 Production

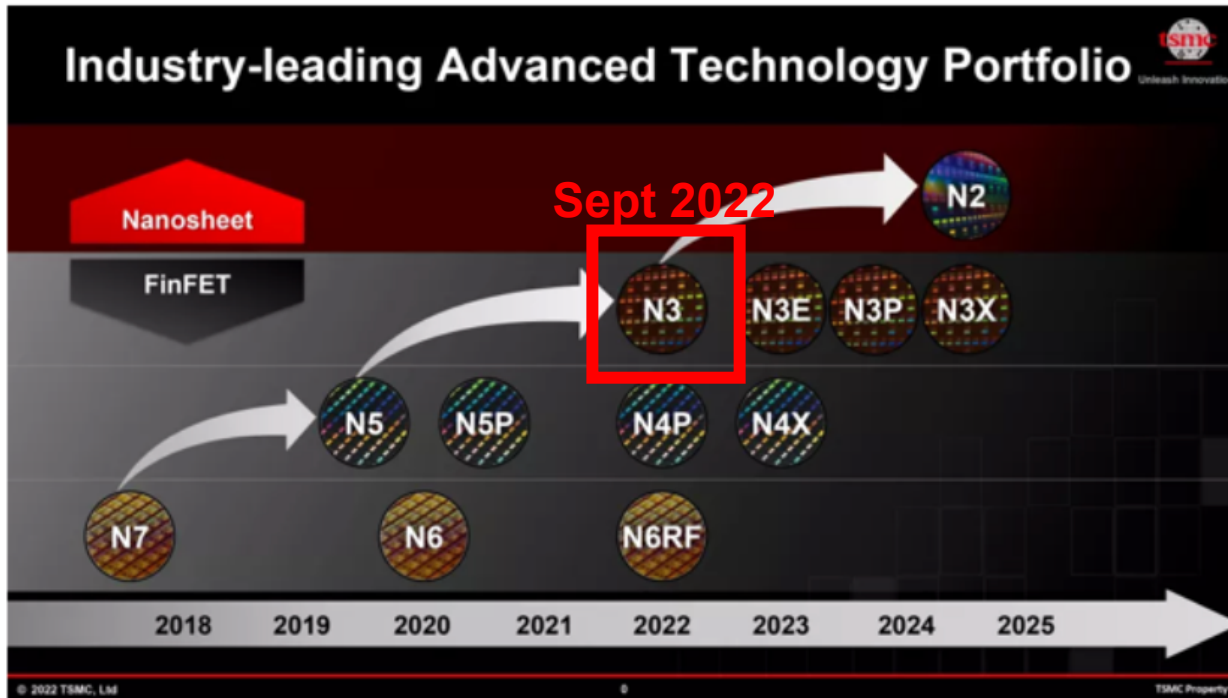
**Airticle by**



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Anton Shilov is a Freelance News Writer at Tom's Hardware US. Over the past couple of decades, he has covered everything from CPUs and GPUs to supercomputers and from modern process technologies and latest fab tools to high-tech industry trends.

# N5 vs N3



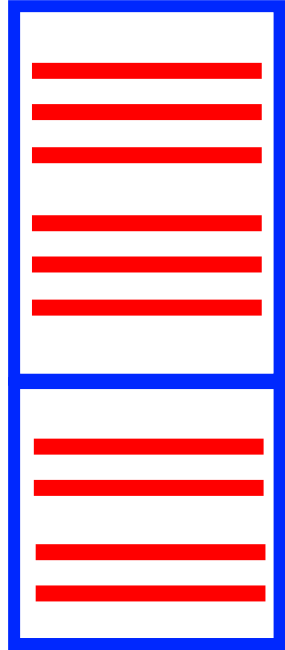
	N3E vs N5	N3 vs N5
Speed Improvement @ Same Power	+18%	+10% ~ 15%
Power Reduction @ Same Speed	-34%	-25% ~ -30%
Logic Density	1.7x	1.6x
HVM Start	Q2/Q3 2023	H2 2022

(Image credit: TSMC)

- HVP N3 planned to be start at march 2022 □ delayed to sept 2022 □ iPhone 14 is not having N3.
- N3 node has a narrow process window □ expected to have lower yield.
- N3E □ lower transistor density to have higher process window □ higher yield.

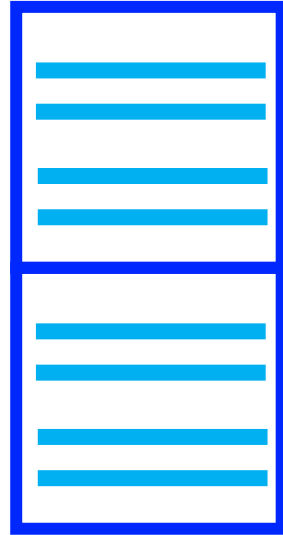
# FinFlex: N3 Node(2)

3-2 Fin Block



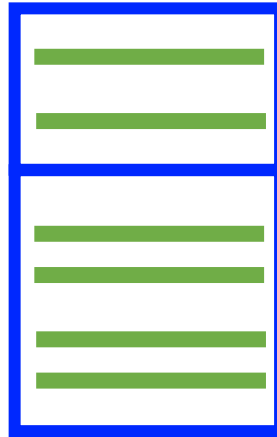
Ultra high-performance  
CPU cores

2-2 Fin Block



Efficient Core

2-1 Fin Block



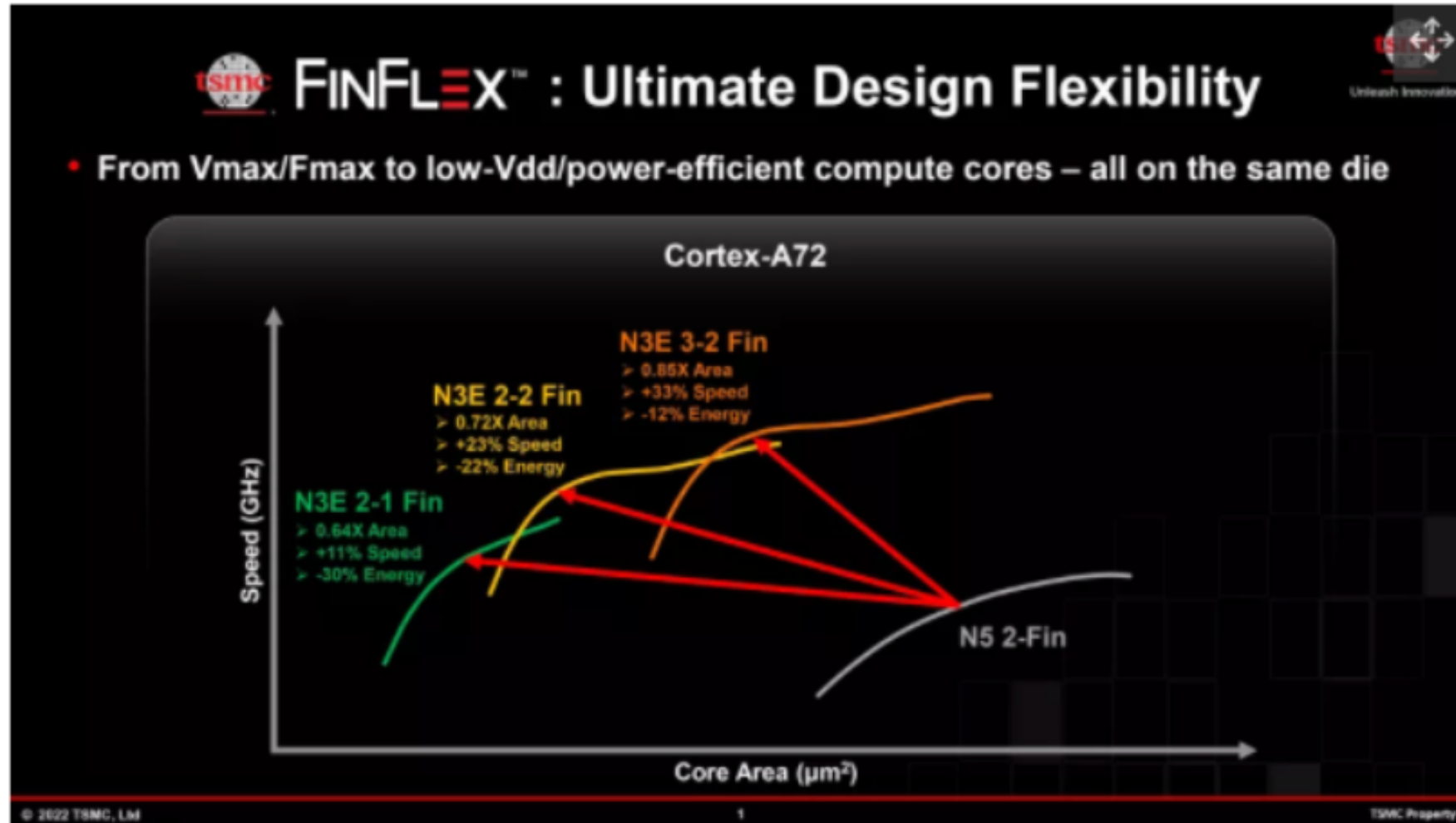
Ultra power-efficient  
+ ultra dense



Diagram 2: N3 with FINFLEX enables a designer to choose the ideal FIN configuration for each functional block on a chip.

- **3-2 FIN** – Fastest clock frequencies and highest performance for the most demanding compute needs
- **2-2 FIN** – Efficient Performance, a good balance between performance, power efficiency and density
- **2-1 FIN** – Ultra Power Efficiency, lowest power consumption, lowest leakage and highest density
- **Finflex offers high-performance and power-efficient cores on the same die.**
- **All N3 nodes (N3, N3E, N3P and, N3X) will have the FinFlex capability.**

# FinFlex: N3 Node(1)



(Image credit: TSMC)