

Samsung kicks off 3-nanometer chip production, beating TSMC and Intel

Article

The race to 3 nm: Samsung ushered in the era of 3-nanometer chip technology with its mass production announcement on Thursday, beating rivals **TSMC** and **Intel** to the punch, [per](#)

- The first-generation 3 nm chips have a **16% smaller surface area, a 45% reduction in power usage, and a 23% performance improvement** over 5-nanometer chips like Apple's [M1 and M2 chips](#).
- Samsung, the world's largest chipmaker by revenue, is already working on the second-generation 3 nm chips for production in 2023. They'll have 50% lower power consumption.
- The chips will be produced at Samsung's 289,000-square-meter facility in **Pyeongtaek**, the world's largest semiconductor operation.
- **TSMC** said in June that it would begin mass-producing a [3 nm chip](#) in volume by the second half of 2022.
- **Intel**, which manufactures 7 nm chips, has had a hard time getting to 5 nm and revealed it may instead adopt [TSMC's 5 nm process](#) for upcoming PC and tablet chips.

Why it's worth watching: Samsung managed to juggle being the leading chipmaker, feeding chip demand during a global shortage, and [innovating its chip design process](#).

- Samsung's announcement gives us a snapshot of the current state of semiconductor innovation, with the South Korean giant leapfrogging the competition. TSMC is a step behind, and Intel is two generations behind.
- Samsung's jump to higher-performance 3 nm processors—which can be used in smartphones, tablets, PCs, smart home appliances, and even EVs—coincides with its plan to invest in chip production. The company is building a [\\$17 billion chip fab](#) in **Texas**, which will create 1,800 jobs when it opens in 2024.

US chip innovation threatened by stagnant chip bill: While chip technology seems to be advancing quickly, the same cannot be said about the **\$52 billion chip subsidies bill** [trapped in legislative limbo](#).

- "We've already wasted several quarters since the Senate acted last year, and now it's time for us to move forward rapidly," Intel's CEO **Pat Gelsinger** [told](#) Congress in March.
- TSMC was planning a \$12 billion **Arizona** chip plant for a 2023 open date but could decide to invest elsewhere if chip subsidies and incentives aren't made available.
- Intel has delayed groundbreaking at its **Ohio** fab because of congressional [inaction](#).

- Samsung could similarly shift direction away from the US, leading to a loss of jobs for the local economy and making it more expensive to import foreign-made Samsung semiconductors.

