

Intel's 14 nm Technology: Delivering Ultrafast, Energy-Sipping Products

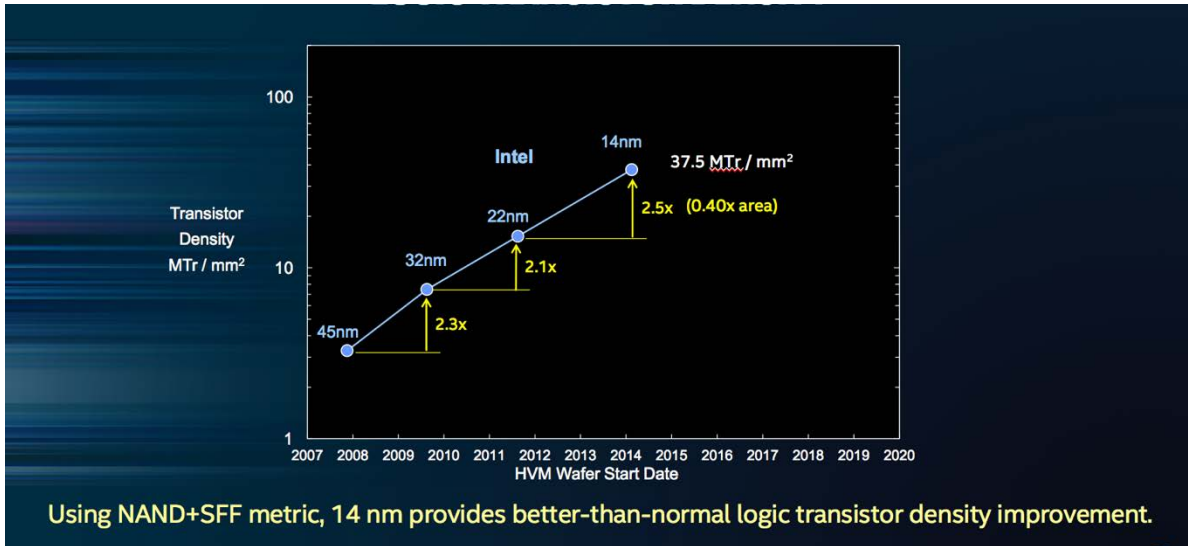
Intel's 14 nm process uses second-generation FinFET technology to provide improved performance and reduced leakage power that enables a broad range of products. Intel's 14 nm technology is in high-volume production today and is being used to manufacture products including high-performance servers and FPGAs as well as low-power personal computing devices, mobile devices, modems and products for the Internet of Things (IoT).

The 14 nm transistor fins are taller, thinner and more closely spaced for improved density and performance. These improved transistors also require fewer fins, which further improves the overall process density. The transistor gate pitch shrinks from 90 nm to 70 nm and the minimum interconnect pitch shrinks from 80 nm to 52 nm, enabling a logic transistor benchmark of 37.5 MTr/mm². Intel's 14 nm technology delivers an unprecedented .37x logic area scaling and better than .5x overall die level scaling from the previous 22 nm node due to hyper scaling of the technology.

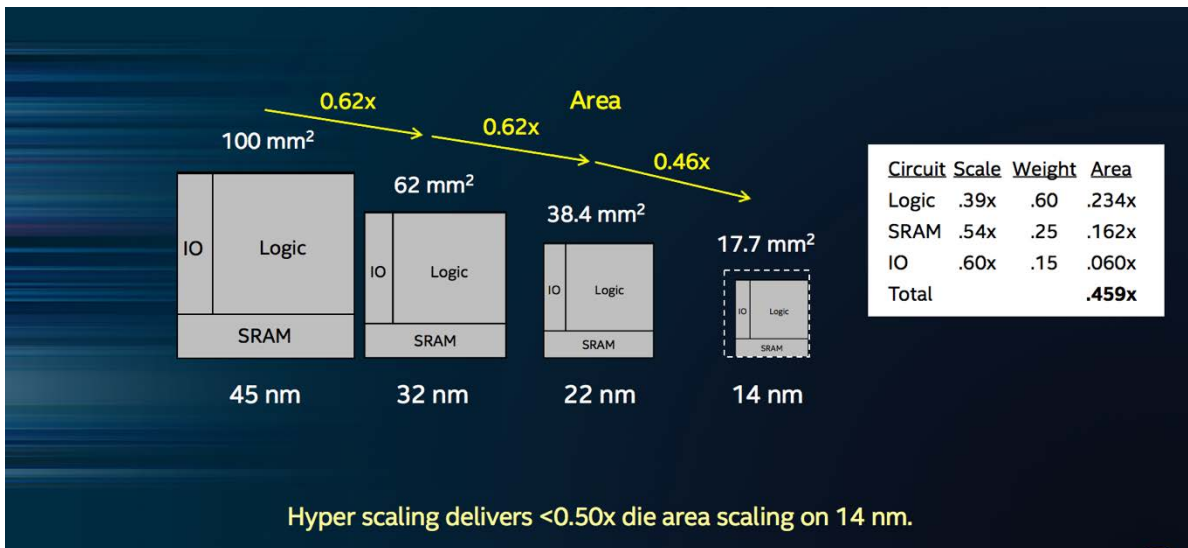
14 nm Hyper Scaling Features



Logic Transistor Density

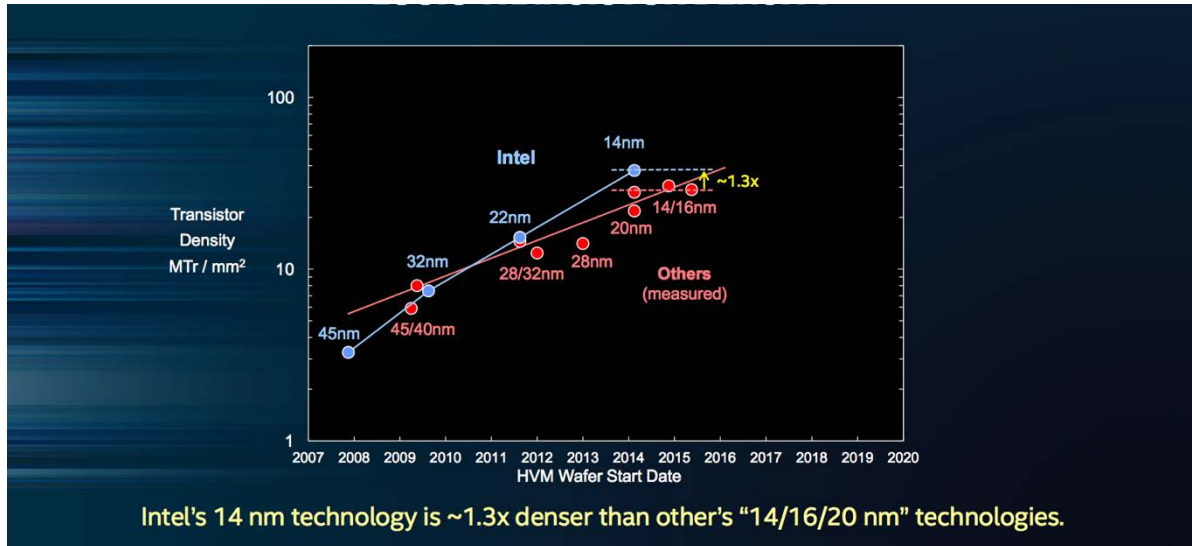


14 nm Technology Delivers Significant Die Scaling



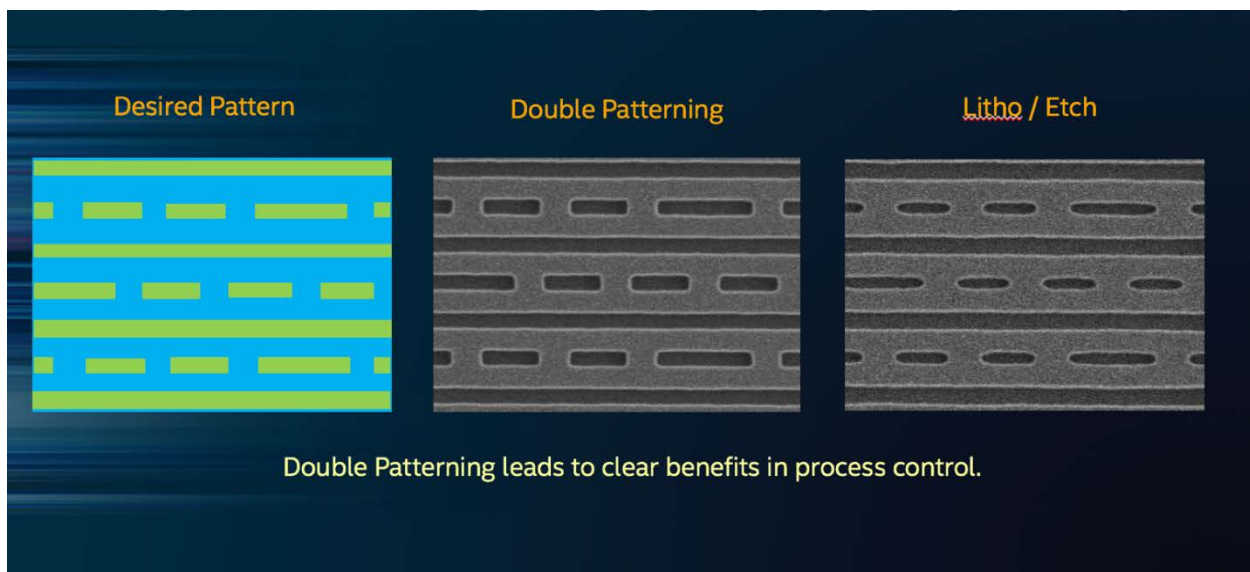
The Intel 14 nm process delivers approximately 1.3x better scaling than competing 14/16/20 nm industry technologies, enabling a very significant cost per transistor (CPT) benefit. Industry "10 nm" technologies are expected to ship sometime in 2017 and have similar density to Intel's 14 nm technology that has been shipping since 2014.

Logic Transistor Density



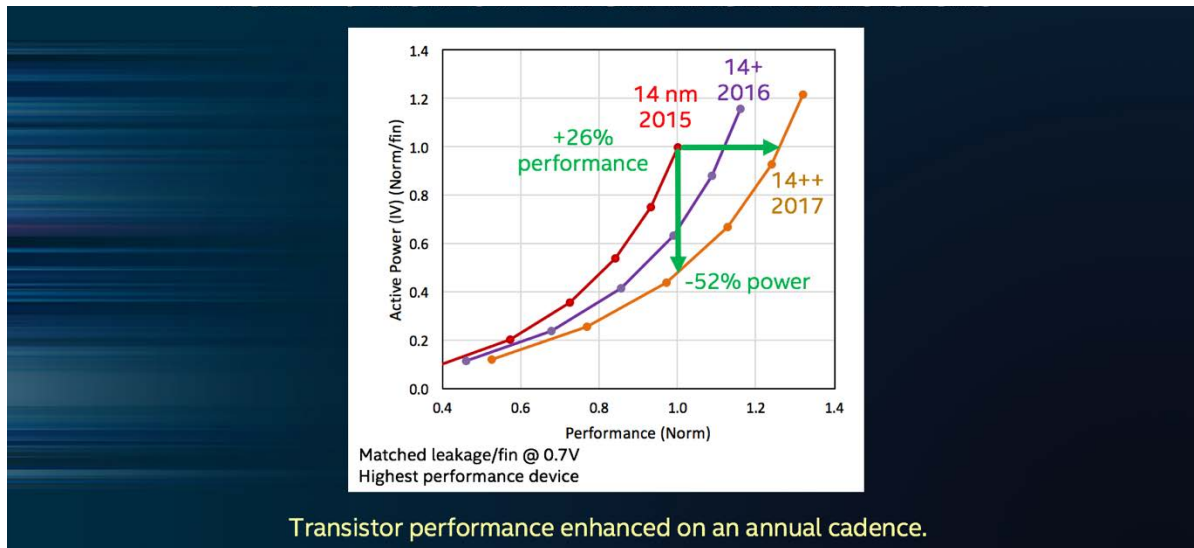
One of the key enablers for the 14 nm technology hyper scaling is the introduction of Self-Aligned Double Patterning (SADP), which delivers a significant density and yield advantage versus the industry litho-etch-litho-etch (LELE) approach.

Double Patterning Leads to Manufacturing Benefits

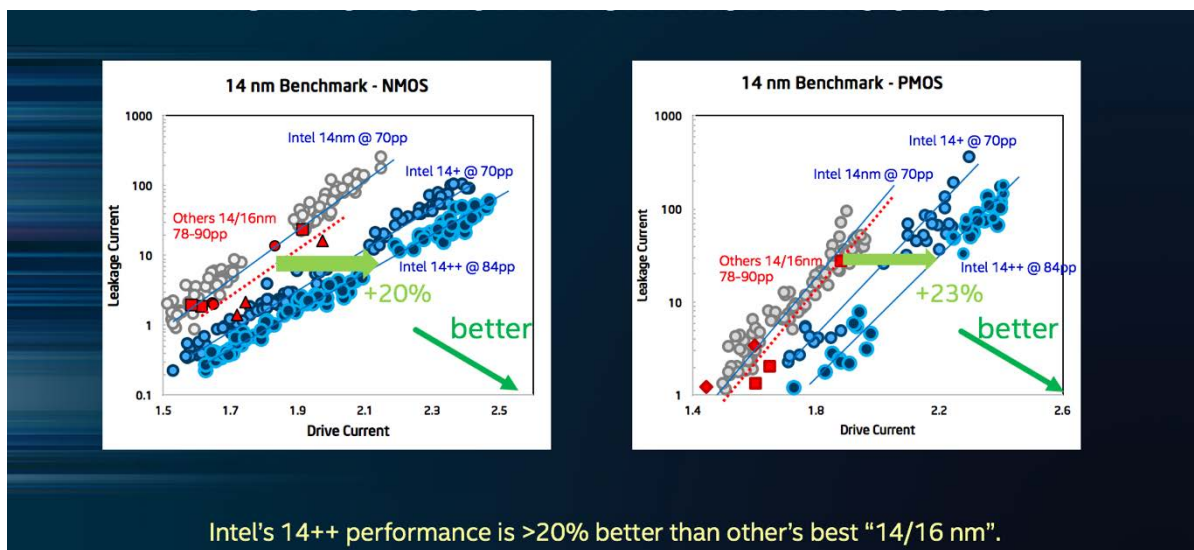


Intel continues to improve the performance and power of its 14 nm process technology. Ongoing optimization of the 14 nm process can improve performance by as much as 26 percent over the initial 14 nm process or allow greater than 50 percent active power reduction at the same performance. The Intel 14+ technology improves performance by 12 percent from the original 14 nm technology while the Intel 14++ technology boosts performance another 24 percent, delivering more than 20 percent more performance than the best industry 14/16 nm processes.

World's Highest Performance Transistors

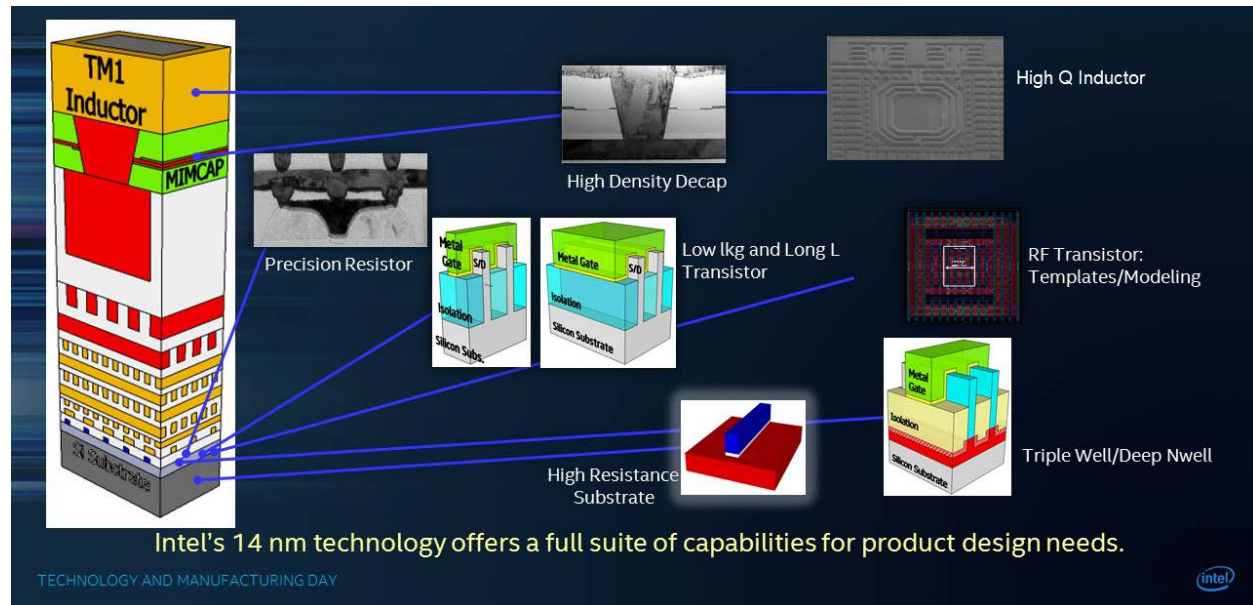


World's Highest Performance Transistors



Intel's 14 nm technology also includes a full suite of capabilities to enable and enhance a wide range of product designs. These capabilities include High Resistance Substrate, High Q inductors, High Density DeCaps, Deep Nwell, Precision Resistors, Low Leakage / Long L transistors, and RF Transistor Templates and Modeling.

Intel 14 nm Offers Full Range of Capabilities



14 nm Manufacturing

Intel's 14 nm process is now in high-volume production at fabs in Oregon, Arizona and Ireland with 473.4 million 14 nm products shipped to date. Intel Custom Foundry offers the Intel 14 nm process to customers through two design platforms: 14GP (general purpose) and 14LP (low power). These platforms include broad silicon-validated IP portfolios and fully integrated turnkey foundry services and support.

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