

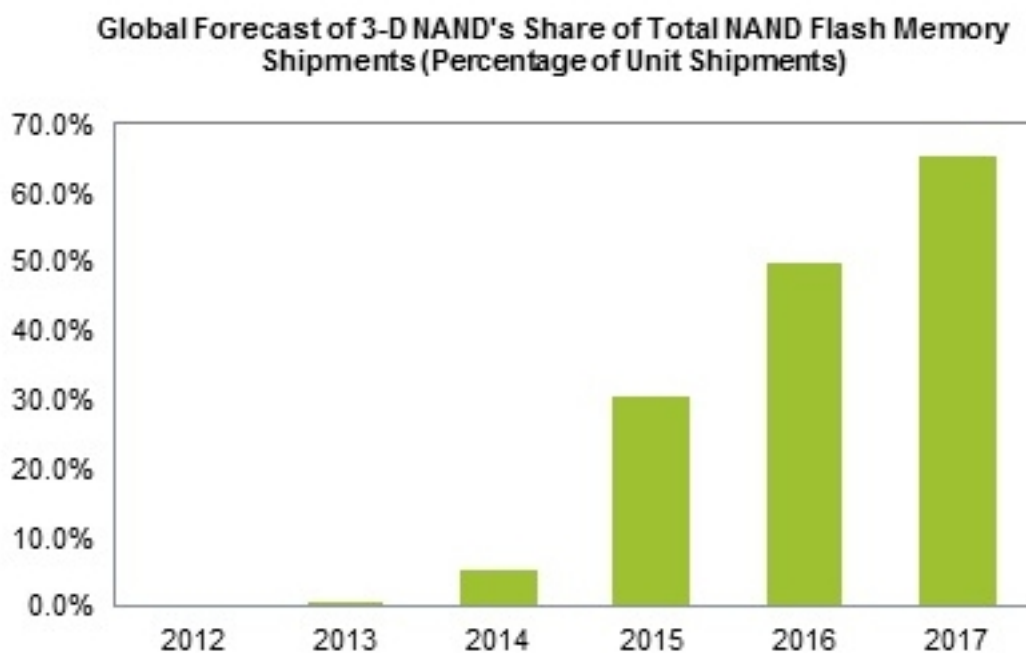
## NAND Flash Moves to the 3rd Dimension

Written by Marco Attard  
10 October 2013

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Conventional NAND flash manufacturing is soon to reach the limit IHS reports-- leading to 65.2% of NAND memory produced in 2017 being made using 3D manufacturing processes, up from the 1% of 2013.

According to the analyst 3D technology will account for 5.2% of the flash produced in 2014 before growing to 30.2% in 2015 and 49.8% by 2016.



Source: IHS, October 2013

“There’s widespread agreement that just one or two generations may be left before NAND flash made using conventional planar semiconductor technology reaches its theoretical limit,” IHS says. “As lithographies shrink further, performance and reliability may become too degraded for NAND to be used in anything but the very lowest-cost consumer products. Because NAND suppliers are compelled to continue building products with higher densities and lower prices, they will migrate to 3D manufacturing quickly in the coming years.”

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Boosting the improvement of NAND products is the growth of tablets and smartphone, with OEMs demanding higher capacity and less expensive storage.

3D technology shifts emphasis from miniaturisation to density, layering NAND flash cells on top of each other. The 3D process also allows the use of existing manufacturing equipment, minimising expenses while maximising return on investment.

Among the memory vendors making the move to 3D are Samsung ( [V-NAND](#) ) and SK Hynix. Other companies, including SanDisk, Micron and Toshiba, prefer sticking with planar NAND, at least for the time being.

According to IHS initial 3D NAND production runs will be limited, but sale of high-performance products to the enterprise segment should allow the processes to mature, even if it will be "some time" before 3D contributes meaningfully to overall industry bit growth.

Go [NAND Flash Moves into the Next Dimension \(IHS\)](#)