



OBJECTIVE ANALYSIS

Semiconductor Market Research

OBJECTIVE ANALYSIS ALERT!

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INTEL & MICRON SKIP 40NM NAND PROCESS – JUMP TO 34NM

Intel and Micron today announced that the companies' IMFT joint venture will skip the "4x" generation of process technologies for their NAND flash and will jump from 52nm straight to 34nm. The two companies will use this technology to produce a 172mm² 32Gb (4GB) MLC NAND chip that can fit in a standard TSOP package.

This chip is currently sampling to select customers and controller makers.

The companies point out that they entered the market at 72nm technology in 2006, which they believe was about 2 years behind their competition, and have caught up and surpassed these competitors, with as much as a 6-month lead.

What Does This Mean to the NAND Market?

OK. The NAND market is oversupplied. There is no question about that.

SanDisk recently issued guidance that agreed with Objective Analysis' December 2007 projection that the entire year would be oversupplied. Other NAND companies are likely to follow suit.

At the onset of an oversupply prices collapse to cost, then follow the cost until the market returns to a shortage. We expect today's oversupply to continue through 2008.

This does not mean that prices will follow the cost of the IMFT device. At a die size of 172mm², and on 300mm wafers where Intel and Micron's project about 400 dice per wafer, the price of a 32Gb chip will be just shy of \$4.00, which works out to about \$0.99/GB. The companies will be the first to break the \$1.00/GB barrier with this product.

Keep in mind that today's MLC NAND prices are hovering near \$2.50/GB. This is roughly equivalent to the cost of a 54nm process MLC chip produced on a 300mm line, or a 45nm process MLC NAND on a 200mm line. Most NAND makers are aiming to ramp 45nm in volume on a 300mm line this year, and a 45nm MLC NAND on a 300mm line should cost about \$1.75/GB to produce. With a \$0.99/GB price, the new IMFT chip can be expected to reap impressive margins as long as NAND prices stay above their competitors' costs.

On the other hand a shift to 34nm could cause the NAND market to continue to be oversupplied for perhaps longer than Objective Analysis' December 2007 projection of the middle of 2009. Such a move might cause an oversupply to last an additional quarter.

As long as Micron's and Intel's competition manufactures more costly products these two companies will suffer smaller losses than will their competition, and that could even lead the highest-cost producers to leave the market, as Renesas did.

All in all, Objective Analysis sees this move as one that will perhaps lengthen today's oversupply while allowing the new NAND competitors – Micron and Intel – to either profit during these difficult times, or at least to suffer smaller losses than will other suppliers. This should help the companies in their goal to carve out a larger share of the market though aggressive investment and process shrinks.

Those who want to have a better understanding of the derivation of the numbers above and how the NAND market behaves should look into the Objective Analysis report: Understanding the NAND Market, which can be found at <http://www.Objective-Analysis.com/Reports.html#NAND>.

Jim Handy

+1 (408) 356-2549

Objective Analysis

PO Box 440

Los Gatos, CA 95031-0440

USA

www.Objective-Analysis.com