

Toshiba NAND Fab Suffers Power Outage



OBJECTIVE ANALYSIS SEMICONDUCTOR MARKET RESEARCH

NAND Price Per Gigabyte 2010



What Does this Imply for NAND Availability and Pricing?

Toshiba's NAND flash manufacturing in Yokkaichi Japan suffered an extremely brief power failure Wednesday December 8, 2010. The company issued a statement in Japan indicating that shipments could be 20% lower through February, although news reports said that by Thursday morning production had returned to 70% of normal levels. According to these reports, production should be back to normal levels by Friday.

Objective Analysis has attempted to verify this with Toshiba but has not yet received any response. SanDisk is not yet commenting on the reports.

Assessment:

It is not clear from the press reports whether this power failure impacted only one of the company's fabs in Yokkaichi or all of them. Toshiba has four fabs in Yokkaichi: Y1 and Y2, each with a run rate of about 35,000 200mm wafers per month, and Y3 and Y4, each with a run rate of about 150,000 300mm wafers per month. Although most analyst estimates put Toshiba behind Samsung in production capacity, when SanDisk's share of the Yokkaichi production is considered, this complex is the largest NAND flash producer in the world.

Press reports indicate that Toshiba may scrap all material that was in process at this time. In a typical fab a very small percentage of wafers are actually in the process chamber of any equipment at any time, so Objective Analysis finds Toshiba's 20% estimates to be very conservative.

Some Context:

Over the course of time there have been other NAND fab outages of a somewhat similar nature, three of which occurred in 2007 each of which was covered by an Objective Analysis Alert. (These Alerts can be downloaded for free from the Objective Analysis website.) In March 2007 an earthquake rattled Japan causing NAND prices to jump 54% from 5.40/GB to \$8.30 before they settled back to \$6.25. Another Japan earthquake in July 2007, however, had no impact on prices whatsoever. When Samsung had a power outage in August of the same year prices briefly jumped 10% from \$7.85/GB to \$8.65, but an oversupply developed less than a month later resulting in a dramatic collapse that drove prices to \$0.80/GB over the next sixteen months.

Outlook:

Today NAND sells for \$1.20-\$1.40/GB and has been trending down over most of the year (see graph) indicating a fledgling overcapacity. Although the Toshiba outage will tighten capacity, this should simply convert a small oversupply into a small undersupply, resulting in moderate price moves in line with those that occurred after Samsung's August 2007 power outage. We are not advising for our OEM clients to make any hasty moves to shore up lines of supply.

Objective Analysis finds it likely that prices will trend upwards for the next month or two before recommencing their current gradual decline. Our forecast calls for an oversupply to begin in earnest in the second half of 2011. By the end of next year prices should have reached cost, or about \$0.50/GB.

Market Impact:

Some press reports explain that such a difficulty could impact Apple's shipments of iPhones, iPods, iPad tablets, and even computers. This is highly unlikely. Apple, estimated to consume between 25-30% of all NAND flash produced, is simply too large of a customer for any NAND producer to put off. If suppliers find that there is not enough NAND to satisfy their customers' needs, these suppliers will reduce shipments to their smallest customers first, waiting as long as possible to reduce shipments to their largest customers.

Competitive Impact:

We believe that the Toshiba statement is very conservative and that Toshiba's and SanDisk's NAND flash competitors are unlikely to gain a significant market share increase from this event. Since Toshiba and SanDisk combined account for roughly 50% of all NAND shipped, a 20% reduction could amount to 10% less NAND shipped. This 20% estimate is likely to be considerably reduced, perhaps to 5% or even lower. Consider, too, that the shortage will last for a very brief period. Over the next two months supply is likely to decrease by only 2-3% before resuming today's pace.

Although Samsung's stock price increased today on the news while Toshiba shares slipped, any price increase is likely to cause a stock price increase for all NAND makers a week or two from now, when NAND prices start to rise.

Overall, Objective Analysis anticipates a modest and temporary price increase as a result of this episode, but nothing more than that.

Jim Handy

OBJECTIVE ANALYSIS

Semiconductor Market Research

www.Objective-Analysis.com

PO Box 440

Los Gatos, CA 95031-0440

USA

+1 (408) 356-2549