

## Global Branded NAND Flash Revenue Fell For Second Consecutive Quarter to US\$8.06 Billion

2016-05-20 [Sean Yang](#)

In the first quarter of this year, the average contract price of NAND Flash chip fell by about 10% compared with the previous quarter due to persistent market oversupply. During the same period, the prices of eMMCs and Client-SSDs also dropped 13~18% quarterly as a result of steep decline in shipments of smartphones, tablets and notebooks. The latest NAND Flash market analysis from [DRAMeXchange](#), a division of [TrendForce](#), reveals that the overall decrease in average selling prices (ASPs) is much greater than the total bit shipment growth for the first quarter. Consequently, branded NAND Flash manufacturers suffered an average quarterly revenue drop 2.9%, marking two consecutive quarters of decline.

“The consumer electronics market will remain weak this year, so demand growth for NAND Flash will come from content per box increases,” said Sean Yang, research director at DRAMeXchange. “While planar (2D) NAND migration is reaching the last generation, there are also delays in progress with manufacturers’ respective 3D-NAND schedules. Thus, the overall cost reduction will be limited this year, and manufacturers will face slow revenue growth this year.”

**Table: Revenue Ranking of Branded NAND Flash Manufacturers, 1Q16**

Brand	Revenue (Million USD)		Market Share(%)	
	1Q16	QoQ (%)	1Q16	4Q15
<b>Samsung</b>	2,826.7	1.2%	35.1%	33.6%
<b>Toshiba</b>	1,744.3	12.8%	21.6%	18.6%
<b>SanDisk</b>	1,221.6	-6.8%	15.1%	15.8%
<b>Micron</b>	1,074.0	-6.9%	13.3%	13.9%
<b>SK Hynix</b>	640.8	-23.8%	7.9%	10.1%
<b>Intel</b>	557	-15.9%	6.9%	8.0%
<b>Total</b>	8,064.4	-2.9%	--	--

Note 1 : 1Q16 USD/JPY=1:115.1; USD/KRW=1:1,199.4

Note 2 : 4Q15 USD/JPY=1:121.4; USD/KRW=1:1,155.8

Note 3 : Non-captive, royalty, and license are excluded in SanDisk's revenue calculation.

Source: DRAMeXchange, May, 2016

### Samsung

Samsung benefitted from the strong sales of high-end Enterprise-SSDs in the first quarter and this helped offset the weak shipments of consumer storage products. Bit shipment volume in the first quarter rose 9% compared with the prior quarter, while the ASP fell by just 6~8% quarterly. Consequently, Samsung's NAND Flash business saw its revenue grew slightly by 1.2% quarterly, along with an increase in the operating margin.

Samsung's strategy this year will continue focusing on SSD products on account of rising penetration rate in the notebook market and strong demand from data centers. DRAMeXchange expects Samsung's bit shipment growth this year to be above the industry's average as the manufacturer expands the share of its 3D-NAND in the product mix.

### Toshiba

Facing external pressures on its business operations, Toshiba concentrated on clearing its NAND Flash inventory before the end of its fourth fiscal quarter for 2015 (which is this January~March period). Consequently, bit shipment volume in the quarter grew 20~25% over the previous quarter. However, lackluster smartphone shipments during the same period also caused the blended ASP to drop 13~15% quarterly. Toshiba's NAND Flash revenue in the fourth fiscal quarter of 2015 rose 12% compared with the prior fiscal quarter, and the manufacturer's operating margin stayed roughly the same.

Over 70% of Toshiba's total NAND Flash output in the first calendar quarter was produced on the 15nm technology. Moreover, over 40% of the total output was TLC-based products. In the second half of this year, Toshiba will be sending its 48-layer 3D-NAND Flash samples to clients for testing. DRAMeXchange projects an annual increase of 20% in Toshiba's capital expenditure this year as Toshiba shifts more resources to bolster its NAND Flash business. Moreover, developing 3D-NAND will require more capital and equipment than engaging in planar NAND production.

#### SanDisk

SanDisk embedded product revenue in the first quarter fell by more than 30% compared with the previous quarter on account of inventory adjustments made by major clients. At the same time, however, shipments of Client-SSDs bounced back after hitting the bottom. Shipments of Enterprise-SSDs also started to pick up due to demand from several key clients in the data center market. On the whole, bit shipment volume in the first quarter fell by just 6% from the prior quarter, and average selling price and cost dropped by 8% and 6%, respectively. The overall NAND Flash product revenue slid by 6.8% quarterly and gross margin stayed at 40%.

Going forward, SanDisk will accelerate the 15nm chip adoption and add more NVMe product lines in its Enterprise-SSD portfolio. For client-SSD offerings, SanDisk will focus on 15nm TLC implementation to strengthen the cost competitiveness. In the embedded product lines, SanDisk will continue to promote the TLC-eMMC solutions in flagship smartphone models. On the production front, wafer output is expected to increase slightly by 5% before the end of June, and 3D-NAND Flash is expected to account for 15% of the manufacturer's total capacity by the end of the year.

#### SK Hynix

SK Hynix's NAND Flash ASP dropped 12% quarterly due to strategic smartphone clients scaling back their purchases. The memory maker also posted weak quarterly performances in other areas – bit shipments down 11% and revenue down 24% to US\$640 million. Looking ahead to the second quarter, bit shipment growth may exceed 30% due to short base period and demand generated from the new Chinese branded smartphones.

SK Hynix is pursuing 14nm technology for the production of planar NAND Flash as well as continuing to work on 3D-NAND technology. The manufacturer has already started to adopt MLC 3D-NAND Flash for high-density UFS and eMMC products. Samples of TLC 3D-NAND products are scheduled for delivery at the end of the third quarter. SK Hynix currently manufactures its 3D-NAND products at its M12 fab, but its M14 fab will also take part in the production next year.

#### Micron

Micron in its second fiscal quarter for 2016 (between last December and this February) saw its bit shipments for non-volatile memory grew by 11% over the previous fiscal quarter. However, much of Micron's revenue comes from component sales that are susceptible to market price fluctuations. Hence, total revenue in non-volatile memory component business in the second fiscal quarter dropped 6.9% from a fiscal quarter ago to US\$1.07 billion.

Micron's production plan involves accelerating the transition to 3D-NAND Flash. Its new plant in Singapore, Fab10X, is now receiving new equipment and is scheduled for volume production during the second half of this year. Micron has also sent out samples of 3D-NAND Client-SSDs to PC-OEMs. The share 3D-NAND Flash in the manufacturer's total output will reach 50% by the end of the year. As for product mix, wafers and chips has increased slightly to just over 50% of the total sales. Mobile NAND accounts for 10~15% and SSD represents 15%. The remainder share of the total sales consists of automotive, telecommunications and industrial products.

#### Intel

Intel's NAND Flash revenue in the first quarter were hit hard by market oversupply and increasing competition in the Enterprise-SSD market. The quarterly revenue decline was 16%, amounting to US\$557 million. Intel's operating margin also turned negative during the period as the decline in the ASP was larger than the cost reduction.

Currently, Intel's main products are based on 16nm MLC NAND Flash. However, manufacturer has also shipped 3D-NAND Enterprise-SSDs to data center clients for sampling since the beginning of the second quarter. These products are scheduled for mass production in this year's latter half. Intel's has also started to move 3D-NAND equipment into its fab in Dalian, China. The fab will commence trial production in the third quarter and mass production in the fourth. As for Intel's next-generation memory 3D XPoint, its development is ongoing and client sampling is set in the first half of 2017.

## About TrendForce

TrendForce is a global provider of the latest development, insight, and analysis of the technology industry. Having served businesses for over a decade, the company has built up a strong base membership base of 435,000 subscribers. TrendForce has established a reputation as an organization that offers insightful and accurate analysis of the technology industry through five major research divisions: DRAMXchange, WitsView, LEDinside, EnergyTrend and Topology. Founded in Taipei, Taiwan in 2000, TrendForce has extended its presence in China since 2004 with offices in Shenzhen and Beijing. For more details about TrendForce, please visit [www.trendforce.com](http://www.trendforce.com)

### Major research divisions:

**DRAMeXchange** focuses on memory, storage and the consumer electronics industry including PC DRAM, Mobile DRAM, Server DRAM, NAND Flash, SSD and smartphone.

**WitsView** offers comprehensive coverage of the display industry from upstream components, midstream panels/touch modules to downstream system integrators, brands and channels.

**LEDinside** covers all aspects of the LED supply chain from upstream equipment/materials, midstream chip/packaging to the downstream backlight and lighting market.

**EnergyTrend** specializes in green energy research, such as solar energy, lithium battery, energy storage systems and xEVs.

**Topology** studies structural trends of technology industries in the Greater China Region and beyond, focusing on semiconductors, photovoltaic technology, telecommunications, and IA.

### Media Contact

Pinchun Chou +886-2-8978-6488 ext.669 [PinchunChou@TrendForce.com](mailto:PinchunChou@TrendForce.com)

Lindsay Hou +886-2-8978-6488 ext.667 [Lindsayhou@TrendForce.com](mailto:Lindsayhou@TrendForce.com)

---

Source URL: Trendforce - Press Center [Global Branded NAND Flash Revenue Fell For Second Consecutive Quarter to US\\$8.06 Billion](#)