

NAND Flash

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- ◆ A brief comment on the NAND Flash market in the fourth quarter: Despite the relatively stagnant growth in demand, the rise in contract prices of various products has reflected the impact of the Yokkaichi power outage. On the other hand, the module makers' inventory restocking has weakened and the prices from the channel market have already risen during the July to September period, the contract prices for the fourth quarter could start to fall.
- ◆ From the perspective of the supply side, the total wafer start production volume (12-inch wafer equivalent) of NAND Flash memory chips in the fourth quarter of 2019 and the first quarter of 2020 rose 14.5% and is expected to fall 0.1% respectively. The main reason for the significant growth in the fourth quarter was the recovery of the production following the power outage incident in Yokkaichi. As for the bit growth rate, it rose 13.6% in the fourth quarter and will fall 3.1% in the first quarter of 2020, respectively. With regards to the production process, the 64/72 layer production weight fell to below 60% in the fourth quarter, and the 96 layer ratio exceeded 30%. The fourth quarter marked the debut of the 128 layer products. In terms of product architecture, QLC use has yet to become mainstream and is found in very few end products. Thus, TLC architecture still has an 85% and above production weight in 2019, compared to that of QLC, which is under 5%.
- ◆ From the demand side, after the adjustment of OEM inventory levels in the first half of the year and Kioxia's power outage, product demand in the third quarter rose significantly. With regards to the fourth quarter, bit demand is expected to rise slightly given the needs of OEM manufacturers and the early restocking preparations for the Lunar New Year holiday in January 2020. In the fourth quarter, smartphone shipments fell 1-2% on a quarterly basis, while PC shipments fell 3-4% and tablet shipments rose 14-15%. The first quarter of 2020 will mark the beginning of the traditional slow season, when demand growth is expected to decline further.
- ◆ Observing the full-year market situation in 2019, TrendForce has adjusted the NAND Flash memory output and demand growth rates to 31.5% and 35.2% respectively. The output growth rate rose due to Western Digital's revised view of production loss, but the overall demand performance benefited from the spike in third quarter SSD shipments. The substantial growth in shipments has caused SSD supply to shrink and pushed up contract prices, inhibiting suppliers' willingness to reduce prices in the first quarter of 2020. Thus, in the slow season contract prices are likely to rise slightly or remain flat.

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Table of Contents

	Page
3Q19 NAND Flash Industry Review and Outlook	3
NAND Flash Supply Analysis	5
NAND Flash Manufacturer Status	9
Samsung	9
SK Hynix	9
Kioxia	10
Western Digital	10
Micron	11
Intel	11
NAND Flash Demand Analysis	13
Demand Outstrips Supply Due to the Power Outage in the Third Quarter of 2019; OEM Contract Prices to be Adjusted Upwards in the Fourth Quarter ...	13
Global Smartphone and Tablet Shipments	14
SSDs	16
The UFD and Memory Card Channel Market	19

List of Figures

	Page
Figure-1 Global NAND Flash Market Sufficiency Ratio by Quarter	3
Figure-2 Mainstream NAND Flash Contract Price Trend	4
Figure-3 Global NAND Flash Wafer Output Forecast	5
Figure-4 Global NAND Flash Output by Process Technology	7
Figure-5 Global NAND Flash Output by Architecture	8
Figure-6 3Q19 Sales Ranking of Branded NAND Flash Makers	12
Figure-7 Global NAND Flash Demand by Application, 1Q18-4Q20F	14
Figure-8 Smartphone Growth, 2018-2020F	15
Figure-9 Tablet Market, 2018-2020F	16
Figure-10 SSD Shipments, 2018-2020F	19
Figure-11 Adoption of different USB interfaces, 2018-2023F	21

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