

RESEARCH BULLETIN

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Number of IC Manufacturers Using 300mm Wafers Less than Half Using 200mm Wafers

Reliance on existing wafer sizes increases as outlook for 450mm wafers fades.

IC Insights has just released its new *Global Wafer Capacity 2017-2021—Detailed Analysis and Forecast of the IC Industry’s Wafer Fab Capacity* report. Shown below is a brief excerpt from that report.

Prior to 2008, the 200mm wafer was used in more cases for manufacturing ICs than any other wafer size. However, since 2008, the majority of IC fabrication has taken place on 300mm wafers. Rankings of IC manufacturers by installed capacity for each of the wafer sizes are shown in Figure 1. The chart also compares in a relative manner the amounts of capacity held by the top 10 leaders.

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Installed Capacity Leaders at Dec-2016 – by Wafer Size (Ranked by Share of Total WW Monthly Installed Capacity)

300mm Wafers			200mm Wafers			≤150mm Wafers		
WW Share	Top 10 Relative	Top 10 in Capacity	WW Share	Top 10 Relative	Top 10 in Capacity	WW Share	Top 10 Relative	Top 10 in Capacity
22%		Samsung	11%		TSMC*	12%		STMicro
14%		Micron*	7%		TI	11%		ON Semi
13%		SK Hynix	6%		STMicro	7%		Panasonic
13%		TSMC	6%		UMC	6%		CR Micro
11%		Toshiba/WD	5%		Infineon	5%		Silan
7%		Intel*	4%		NXP	4%		Renesas
6%		GlobalFoundries	4%		Toshiba	3%		TI
3%		UMC	4%		SMIC	3%		TSMC
2%		Powerchip	4%		Samsung	3%		Rohm/Lapis
2%		SMIC	3%		HHGrace	3%		Toshiba

WW Share is each company's share of total industry capacity for that wafer size.

Blue bars indicate the relative amount of capacity held by each company among the top 10 leaders.

*Includes shares of capacity from joint ventures.

Source: IC Insights

Figure 1

Looking at the ranking for 300mm wafers, it is not surprising that the list includes only DRAM and NAND flash memory suppliers like Samsung, Micron, SK Hynix, and Toshiba/Western Digital; the world's five largest pure-play foundries TSMC, GlobalFoundries, UMC, Powerchip, and SMIC; and Intel, the industry's biggest IC manufacturer (in terms of revenue). These companies offer the types of ICs that benefit most from using the largest wafer size available to best amortize the manufacturing cost per die, and have the means to continue investing large sums of money in new and improved 300mm fab capacity.

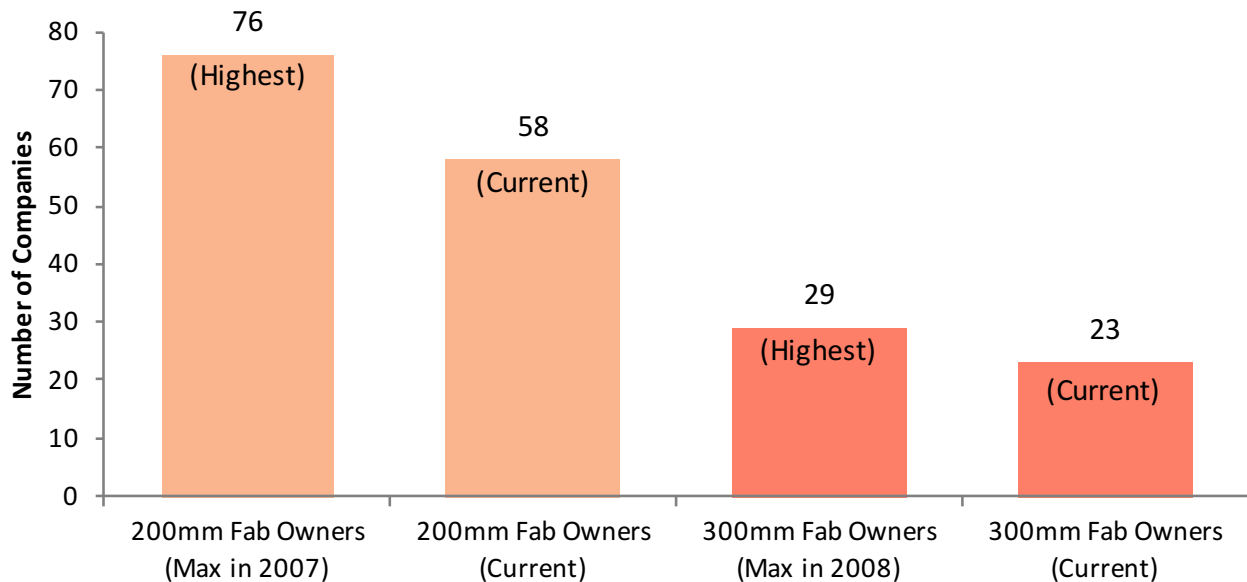
The leaders in the 200mm size category consist of pure-play foundries and manufacturers of analog/mixed-signal ICs and microcontrollers.

The ranking for the smaller wafer sizes (i.e., $\leq 150\text{mm}$) includes a more diversified group of companies. STMicroelectronics has a huge amount of 150mm wafer capacity at its fab site in Singapore, but the company has been busy converting this production to 200mm wafers. Another STMicroelectronics 150mm fab in Catania, Italy, is also undergoing a conversion to 200mm wafers, with plans for that project to be completed in 2017.

A significant trend regarding the industry's IC manufacturing base, and a challenging one from the perspective of companies that supply equipment and materials to chip makers, is that as the industry moves IC fabrication onto larger wafers in bigger fabs, the group of IC manufacturers continues to shrink in number (Figure 2).

Today, there are less than half the number of companies that own and operate 300mm wafer fabs than 200mm fabs. Moreover, the distribution of worldwide 300mm wafer capacity among those manufacturers is becoming increasingly top-heavy.

Number of IC Companies with 200mm vs. 300mm Fabs (as of December 2016)



Includes pilot- and volume-production-class, but not R&D, fab facilities (IC fabs only).
Each member of joint-venture companies counted separately

Source: IC Insights' *Strategic Reviews* database

Figure 2

Report Details: ***Global Wafer Capacity 2017-2021***

IC Insights' new *Global Wafer Capacity 2017-2021—Detailed Analysis and Forecast of the IC Industry's Wafer Fab Capacity* report assesses the IC industry's capacity by wafer size, minimum process geometry, technology type, geographic region, and device type through 2021. The report includes detailed profiles of the companies with the greatest fab capacity and gives comprehensive specifications on existing wafer fab facilities. *Global Wafer Capacity 2017-2021* is priced at \$4,290 for an individual user license. A multi-user worldwide corporate license is available for \$6,990.

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