

RESEARCH BULLETIN

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Foundries Use Small Feature Sizes to Boost Revenue per Wafer 60% of foundry sales at TSMC from devices built using $\leq 45\text{nm}$ process technology.

Revenue per wafer start (expressed in 200mm equivalents) varies considerably among the leading pure-play foundry companies (Figure 1). Among the Big 4 pure-play foundries, TSMC is forecast to have the highest revenue per wafer in 2014 at \$1,328, 27% higher than GlobalFoundries. UMC's revenue per wafer in 2014 is expected to be only \$770, 42% less than TSMC's revenue per wafer. Although the *average* revenue per wafer of the Big 4 foundries is forecast to be \$1,145 in 2014, the *actual* revenue per wafer is highly dependent upon feature size.

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Major Pure-Play Foundry Revenue per Wafer (200mm, \$M)

Company	2013			2014F		
	Sales (\$M)	Wafer Starts (K)	Revenue per Wafer	Sales (\$M)	Wafer Starts (K)	Revenue per Wafer
TSMC	\$19,935	15,666	\$1,273	\$24,930	18,775	\$1,328
GlobalFoundries	\$4,122	4,010	\$1,028	\$4,470	4,270	\$1,047
UMC	\$3,959	4,997	\$792	\$4,290	5,570	\$770
SMIC	\$1,962	2,446	\$802	\$1,995	2,550	\$782
Total/Avg.	\$29,978	27,119	\$1,105	\$35,685	31,165	\$1,145

Source: Company reports, IC Insights

Figure 1

Figure 2 shows IC Insights' 2014 forecast of pure-play foundry revenue by feature size. As shown, 60% of TSMC's 2014 revenue is expected to be from devices manufactured using $\leq 45\text{nm}$ geometries. As expected, a large portion of GlobalFoundries' wafer fab capacity is dedicated to producing AMD's MPUs, so its process technology is also skewed toward leading-edge feature sizes. In 2014, 57% of GlobalFoundries' sales are forecast to be from $\leq 45\text{nm}$ production.

Pure-Play Foundry Sales by Feature Size (\$M)

Company	2014F														
	≤28nm	% of Total Sales	40/45nm	% of Total Sales	65nm	% of Total Sales	90nm	% of Total Sales	0.13μ	% of Total Sales	>0.13-≤0.18μ	% of Total Sales	>0.18μ	% of Total Sales	Total Sales
TSMC	\$10,347	42%	\$4,410	18%	\$3,367	14%	\$1,674	7%	\$677	3%	\$3,350	13%	\$1,105	4%	\$24,930
GlobalFoundries	\$1,884	42%	\$659	15%	\$601	13%	\$290	6%	\$245	5%	\$502	11%	\$289	6%	\$4,470
UMC	\$98	2%	\$912	21%	\$1,341	31%	\$267	6%	\$535	12%	\$515	12%	\$622	14%	\$4,290
SMIC	\$0	0%	\$292	15%	\$499	25%	\$63	3%	\$239	12%	\$814	41%	\$88	4%	\$1,995
Others	\$0	0%	\$420	7%	\$430	7%	\$575	9%	\$1,250	19%	\$1,860	29%	\$1,900	30%	\$6,435
Total	\$12,329	29%	\$6,693	16%	\$6,238	15%	\$2,869	7%	\$2,946	7%	\$7,041	17%	\$4,004	10%	\$42,120

Source: Company reports, IC Insights

Figure 2

Although TSMC and GlobalFoundries are expected to have a similar percentage of sales dedicated to ≤45nm technology in 2014, TSMC is forecast to have almost 6x the dollar volume sales at ≤45nm as compared to GlobalFoundries this year (\$14.8 billion for TSMC and \$2.5 billion for GlobalFoundries).

SMIC started manufacturing devices using 45nm technology in early 2012, more than three years after TSMC first put its 45nm process into production. Only 15% of SMIC's 2014 sales are expected to come from devices having ≤45nm feature sizes, which is the primary reason why its revenue per wafer is so low as compared to TSMC and GlobalFoundries.

The vast majority of the increase in pure-play foundry sales in 2014 is forecast to originate from sales of devices built using ≤28nm feature sizes. The ≤28nm pure-play foundry market is expected to increase to \$12.3 billion in 2014, a jump of \$5.1 billion or 72% as compared to 2013, and account for 29% of total pure-play foundry marketshare this year. Meanwhile, the market for devices built using >28nm technology, while forecast to represent 71% of total pure-play foundry sales in 2014, is forecast to increase only 4% this year.

Report Details: *The 2014 McClean Report*

Additional information about sales and other activities of pure-play IC foundry leaders is provided in the 2014 edition of IC Insights' flagship report, *The McClean Report—A Complete Analysis and Forecast of the Integrated Circuit Industry*. This highly regarded service features more than 900 pages and more than 400 tables and graphs that provide the user with a thorough analysis of IC industry trends throughout the year. A subscription to *The McClean Report* includes **free** monthly updates from March through November (including a 250+ page *Mid-Year Update*), and **free** access to subscriber-only webinars throughout the year. An individual-user license to the 2014 edition of *The McClean Report* is priced at \$3,490 and includes an Internet access password. A multi-user worldwide corporate license is available for \$6,490.

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