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## **More Than One Fourth of Industry Wafer Capacity Dedicated to <40nm Process Geometries**

*Samsung, Intel, Toshiba/SanDisk with greatest share of leading-edge capacity.*

More than one quarter of installed wafer capacity worldwide is dedicated to producing IC devices using process geometries (or feature sizes) smaller than 40nm, according to data in IC Insights' *Global Wafer Capacity 2013—A Detailed Analysis and Forecast of the IC Industry's Wafer Fab Capacity*. The report also shows that a surprising amount of capacity remains dedicated to mature processes with "large" features sizes.

### **MORE INFORMATION CONTACT**

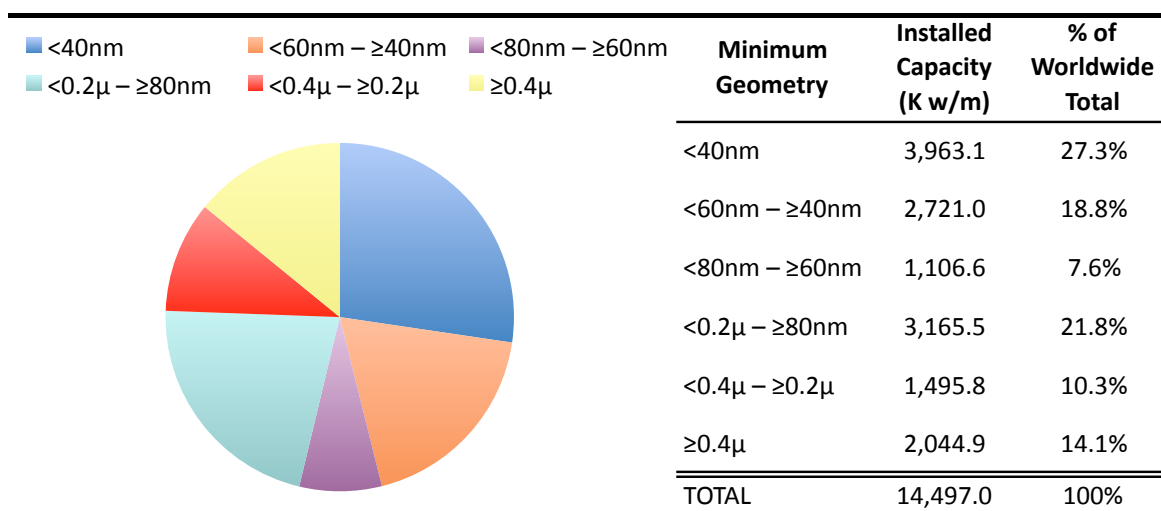
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Installed capacity is divided into six categories based on the minimum geometry of the processes used in wafer fabrication. The six categories range from <40nm;  $\geq 40 - < 60\text{nm}$ ;  $\geq 60\text{nm} - < 80\text{nm}$ ;  $\geq 80\text{nm} - < 0.2\mu$ ;  $\geq 0.2\mu - < 0.4\mu$ ;  $\geq 0.4\mu$ . At the end of 2012, about 27% of global wafer capacity was for devices having geometries smaller than 40nm (Figure 1). Such devices include high-density DRAM, which are typically built using 30nm- to 20nm-class process technologies; high-density flash memory devices that are based on 20nm- to 10nm-class processes; and high-performance microprocessors and advanced ASIC/ASSP/FPGA devices based on 32/28nm or 22nm technologies.

About 22% of global capacity is dedicated to the  $\geq 80\text{nm} - < 0.2\mu$  segment, which includes the 90nm, 0.13 $\mu$ , and 0.18 $\mu$  process generations—"mature" processes that are widely used by pure-play foundries including TSMC, UMC, GlobalFoundries, SMIC, and TowerJazz to manufacture a broad range of products for their diverse customer bases.

The least common technologies, at least in terms of the share of total installed capacity, are between the geometries of 80nm and 60nm (essentially the 65nm generation) and between 0.4 $\mu$  and 0.2 $\mu$  (essentially the 0.25 $\mu$  and 0.35 $\mu$  generations). However, it is worth noting that the  $> 0.4\mu$  category maintains a fairly large share of total capacity, even though it has been longer than a decade-and-a-half since 0.5 $\mu$  process technology was considered leading-edge. The main reason is that huge quantities of commodity type devices such as standard analog and general-purpose logic are manufactured with well-established process technologies having larger than 0.4 $\mu$  feature sizes. In addition, high-voltage IC products require large-geometry process technologies.

## Worldwide Capacity by Minimum Geometry as of Dec-2012 (Installed Monthly Capacity in 200mm-Equiv. Wafers x1000)



Source: IC Insights

**Figure 1**

Figure 2 shows the leading suppliers of installed wafer capacity based on minimum geometry. It is not surprising that Samsung, Intel, Toshiba/SanDisk, SK Hynix, and Micron top the list with the greatest amount of leading-edge capacity. The biggest capacity holders in the large-feature process category (>0.2μ) consist of several analog and mixed-signal chip suppliers.

## Installed Capacity Leaders per Min. Geometry as of Dec-2012 (Ranked by Shares of Total WW Installed Monthly 200mm-Equiv. Capacity)

>0.2μ "Large Features"	<0.2μ – ≥80nm "Mature"	<80nm – ≥40nm "Lagging Edge"	≤40nm "Leading Edge"
STMicro	TSMC*	SK Hynix	Samsung
TI	Samsung	Micron*	Intel*
TSMC*	UMC	TSMC	Toshiba/SanDisk
Infineon	Toshiba	Elpida	SK Hynix
Renesas	GlobalFoundries	Samsung	Micron*
UMC	STMicro	Nanya*	TSMC
ON Semi/Sanyo	Renesas	Powerchip	Elpida
CR Micro	SMIC	ProMOS	GlobalFoundries
MagnaChip	TowerJazz	Renesas	IBM
Vanguard	Powerchip	UMC	UMC

\*Includes estimated shares of capacity from joint ventures.

Source: IC Insights

**Figure 2**

## **Report Details: *Global Wafer Capacity 2013***

Additional details and a forecast of the IC industry's wafer fab capacity through 2017 are provided in the 2013 edition of IC Insights' report, *Global Wafer Capacity 2013—Detailed Analysis and Forecast of the IC Industry's Wafer Fab Capacity*. Released in January 2013, the *Global Wafer Capacity* report assesses the IC industry's capacity by wafer size, minimum process geometry, technology type, geographic region, and by device type through 2017. The report also includes detailed profiles of the companies most likely to build 450mm wafer fabs and gives detailed specifications on existing wafer fab facilities. Coupled with IC Insights' *Strategic Reviews Online Database* of more than 220 company profiles, the two reports provide a tremendous resource for researching, evaluating, and comparing wafer fab facilities and industry capacity. *Global Wafer Capacity 2013* is priced at \$4,290 for an individual user password. A multi-user worldwide corporate license is available for \$6,990.

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