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Top 10 Semiconductor R&D Leaders Ranked for 2013

Intel is tops again, Micron and Qualcomm show biggest R&D increases, Broadcom with highest R&D/sales ratio

Background data for this Research Bulletin comes from the 2014 edition of IC Insights' McClean Report. The 900-page report includes over 400 charts and figures! Details of the new report are provided at the end of this bulletin.

More than any other industry, the semiconductor business is defined by rapid technological change. As a result, a constant and high level of investment in R&D is essential to the competitive positions of semiconductor suppliers.

Figure 1 shows IC Insights' 2013 ranking of semiconductor companies by R&D spending. Intel continued to top all other chip companies in R&D spending in 2013 and accounted for 37% of the top-10 spending and 19% of total worldwide semiconductor R&D expenditures! Intel's R&D spending was more than 3x that of second-place Qualcomm, which displayed a very strong 28% increase in R&D spending in 2013 and solidified the company's position as the second-largest R&D spender, a position it first achieved in 2012. Samsung was ranked third. It's annual R&D budget has remained relatively flat at \$2.8 billion since 2011.

The industry's two largest IDMs—Intel and Samsung—continue to emphasize internal production capacity for advanced ICs in leading-edge wafer fabs. However, spending on R&D programs at the two IC giants has been growing at different rates in recent years, partly due to Samsung's ability to hold down some costs by participating in IBM's Common Platform joint development alliance, which also includes GlobalFoundries as an R&D partner. The IBM alliance has helped Samsung to keep its R&D-to-sales ratio below 10% in recent years. Another explanation for Samsung's low R&D-to-sales ratio is that its primary business is making and selling DRAM and flash memory devices, which are commodity-type products that are very capital-intensive, but not as R&D-intensive as the complex, high-performance logic-based products made by Intel and TSMC. Samsung's sales have, in general, been growing much faster than its R&D spending (15% annual growth in sales during 2001-2013 versus 5% yearly growth for R&D spending over the same timeperiod).

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Meanwhile, Intel—the industry’s trailblazer in many technologies—saw its R&D spending jump to 22% of its semiconductor sales in 2013 as compared to 21% in 2012 and 17% in 2011. The company’s R&D spending reached a record-high \$10.6 billion in 2013, but it was just 5% above 2012 spending.

2013 Worldwide Semiconductor R&D Spending Leaders (Companies with ≥\$1 Billion in Spending)

2013 Rank	2012 Rank	Company	Region/Country	Type	2012 Sales (\$M)	2012 R&D (\$M)	R&D/Sales	2013 Sales (\$M)	2013 R&D (\$M)	R&D/Sales	13/12 R&D
1	1	Intel	Americas	IDM	49,114	10,148	21%	48,321	10,611	22%	5%
2	3	Qualcomm	Americas	Fabless	13,177	2,655	20%	17,211	3,395	20%	28%
3	2	Samsung	South Korea	IDM	32,251	2,765	9%	34,378	2,820	8%	2%
4	5	Broadcom	Americas	Fabless	7,793	2,318	30%	8,219	2,486	30%	7%
5	4	ST	Europe	IDM	8,364	2,413	29%	8,044	1,816	23%	-25%
7	9	TSMC	Taiwan	Foundry	16,951	1,370	8%	19,850	1,623	8%	18%
6	8	Toshiba	Japan	IDM	11,217	1,710	15%	11,958	1,560	13%	-9%
8	7	TI	Americas	IDM	12,081	1,877	16%	11,475	1,522	13%	-19%
9	13	Micron	Americas	IDM	8,002	909	11%	14,433	1,487	10%	64%
10	6	Renesas	Japan	IDM	9,314	1,901	20%	7,975	1,343	17%	-29%
—	—	Top 10 Total	—		168,264	28,066	16.7%	181,864	28,663	15.8%	2%

Source: Company reports, IC Insights

Figure 1

Number four-ranked Broadcom’s R&D spending as a percent of semiconductor sales was 30% in 2013. Broadcom, the second-largest fabless IC supplier, has had the highest R&D spending as a percentage of revenue among the top-10 spenders *every single year* since breaking into the top-10 ranks in 2006. Broadcom’s R&D-to-sales ratios varied widely during its formative years, including a couple years (2001 and 2002) when it spent *all* of its sales on R&D, but since 2006 the company’s R&D budgets have grown at the same 12% annual rate as its sales, keeping its R&D-to-sales ratios at an average of 31%!

Another interesting fact about the R&D spending ranking is that the top 10 companies spent almost one percentage point *less* on R&D as percent of semiconductor sales than the average for all chip companies in 2013 (15.8% versus 16.7%). That’s the first time the top-10 R&D/sales ratio came in at a lower rate than the overall industry ratio since IC Insights started reporting detailed semiconductor R&D trends in 2005. Combined R&D spending by the top 10 exceeded total spending by the rest of the semiconductor companies (\$28.7 billion versus \$26.0 billion) in 2013, something that has continued to hold true since 2005 and probably well before that.

Five of the top 10-ranked companies are based in the U.S., while two are in Japan, two in the Asia-Pacific region, and one in Europe. Two of the top 10—Qualcomm and Broadcom—are fabless semiconductor companies.

One result of the growing fabless and fab-lite trend is that, in 2010, for the first time ever, a pure-play foundry joined the group of top-10 semiconductor R&D spenders. TSMC, the industry's largest foundry, increased its R&D spending a hefty 44% in 2010, moving it from 18th to 10th place in the R&D ranking in one year. The company's R&D spending has continued to climb since then with 2013 R&D growing 18% to reach a little over \$1.6 billion.

Report Details: *The 2014 McClean Report*

Further details on semiconductor R&D spending trends are 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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