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Semiconductor R&D Spending to Hit Record-High \$53.4 Billion in 2012

Intel's 27% increase topped companies with \$1.0 billion or more expenditures last year.

Spending on research and development by semiconductor companies worldwide is expected to grow 10% in 2012 to a record-high \$53.4 billion compared to the current peak of \$48.7 billion set in 2011, according to the *Mid-Year Update* of IC Insights' *2012 McClean Report*. The increase will lift R&D spending by chip companies to 16.2% of total semiconductor sales in 2012, which are now forecast to rise 3% to \$329.8 billion from revenues of \$321.4 billion in 2011.

A dozen semiconductor companies spent more than \$1.0 billion each on R&D in 2011 for the first time ever, based on the *Mid-Year Update's* analysis of data taken from IC Insights' online *Strategic Reviews* database of IC suppliers.

MORE INFORMATION CONTACT

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2011 Worldwide Semiconductor R&D Spending Leaders (Companies with ≥\$1 Billion in Spending)

2011 Rank	2010 Rank	Company	Region	2010 Sales (\$M)	2010 R&D (\$M)	R&D/Sales	2011 Sales (\$M)	2011 R&D (\$M)	R&D/Sales	11/10 R&D
1	1	Intel	Americas	40,154	6,576	16%	49,697	8,350	17%	27%
2	2	Samsung	Asia-Pacific	32,455	2,635	8%	33,483	2,810	8%	7%
3	3	STMicroelectronics	Europe	10,287	2,350	23%	9,631	2,352	24%	0%
4	4	Renesas*	Japan	11,650	2,310	20%	10,653	2,131	20%	-8%
5	7	Qualcomm**	Americas	7,204	1,620	22%	9,828	2,025	21%	25%
6	5	Toshiba	Japan	13,028	1,965	15%	12,745	1,986	16%	1%
7	6	Broadcom**	Americas	6,589	1,763	27%	7,160	1,983	28%	12%
8	8	TI	Americas	13,037	1,572	12%	12,900	1,716	13%	9%
9	9	AMD**	Americas	6,494	1,405	22%	6,568	1,453	22%	3%
10	10	TSMC***	Asia-Pacific	13,307	943	7%	14,600	1,156	8%	23%
—	—	Top 10 Total	—	154,205	23,139	15.0%	167,265	25,962	15.5%	12%
11	11	Marvell**	Americas	3,592	913	25%	3,445	1,030	30%	13%
12	12	Nvidia**	Americas	3,575	849	24%	3,939	1,003	25%	18%

*Renesas and NEC merged on April 1, 2010 (that year includes combined 1Q results). **Fabless ***Foundry

Source: Company reports, IC Insights

Figure 1

As shown in Figure 1, Intel's R&D expenditures accounted for 32% of the top-10 spending and about 17% of total R&D expenses at all semiconductor companies worldwide—counting integrated device manufacturers (IDMs), fabless suppliers, and foundries. Intel's 27% increase in R&D expenditures was the largest among companies spending \$1 billion or more on research and development last year. Fifth-ranked Qualcomm, the industry's largest fabless semiconductor supplier, increased its R&D spending by 25% in 2011, while silicon foundry giant Taiwan Semiconductor Manufacturing Co. (TSMC) raised its amount 23%.

For more than three decades, R&D spending as a percentage of total semiconductor sales has zigzagged higher due to increasing costs in developing more complex IC designs and the creation of next-generation process technologies for large-diameter wafers (currently 300mm but heading toward 450mm later this decade). R&D spending as a percent of semiconductor sales by chip companies was typically 7-8% in the late 1970s and early 1980s. R&D-to-sales ratios grew to 10-12% of revenues by the early 1990s and then jumped to over 15% during the last decade, reaching a record 17.5% in 2008.

IC Insights' *Mid-Year Update* shows that U.S. companies accounted for 57% of worldwide semiconductor R&D spending in 2011, followed by suppliers based in Japan, 17%; Europe, 10%; Taiwan, 8%; South Korea, 7%; and mainland China, 1%. The analysis of expenditures from IC Insights' *Strategic Reviews* online database shows IDMs accounting for about 66% of R&D spending by semiconductor companies in 2011, while fabless suppliers represented 29%, and pure-play foundries made up the remaining 5% of the total.

It is worth noting that the world's largest IC foundry—TSMC—entered the top-10 R&D ranking in 2010 for the first time ever. In 2011, TSMC increased R&D spending by 23%, nearly double the 12% average growth recorded by the top 10 last year. With the influx of IDMs turning to foundry capacity and major fabless customers needing lead-edge CMOS processes, TSMC is spending more money on both new 300mm fabs and R&D. In July 2012, TSMC chief executive Morris Chang noted that his company's 2012 R&D budget is now double the amount spent in 2009 (which was \$656 million), in addition to raising capital expenditures 13% to an all-time high of \$8.25 billion compared to \$7.33 billion in 2011. TSMC's R&D-to-sales ratio stood slightly above 8% in 1H12 versus 7.9% in 2011, 5.1% in 2005 and 3.1% in 2000.

Report and Seminar Details:

The 2012 McClean Report and Strategic Reviews

IC Insights' 200+ page *Mid-Year Update* to the 2012 edition of *The McClean Report* refreshes the outlook for IC markets through 2016 and examines important new trends impacting the semiconductor industry this year. In addition to the *Mid-Year Update*, a subscription to *The 2012 McClean Report* also comes with monthly updates for the year (March-November) as well as three subscriber-only webcasts. An individual-user subscription to the 2012 edition of *The McClean Report* is priced at \$3,290 and includes an Internet

access password. The subscription is also available under a multi-user worldwide corporate license for \$6,290.

IC Insights' *Strategic Reviews* online database includes extensive profiles of more than 200 IC companies, including those with fabrication facilities as well as fabless IC suppliers. The profiles include financial highlights, company strategy, key personnel, products and services offered, process technologies employed, and detailed fab data when applicable. An individual-user password to *Strategic Reviews* is available for \$2,995 and is good for access to the database for one full year after the start of the subscription. A multi-user corporate-wide password is available for only \$4,995.

September 13, 2012 *Fall Forecast Seminar* Presented by IC Insights' President, Bill McClean

WHAT: Discussion about the mid-year status of and future outlook for the IC market.

WHY: To bring existing and prospective clients up-to-date on IC market conditions.

WHEN: Thursday, September 13, 2012. 9:00 AM - 12:00 PM.

WHERE: Sheraton Sunnyvale Hotel, Sunnyvale, California.

Special pricing for current IC Insights clients: \$295, others only \$395.

Please click on this link (<http://www.icinsights.com/events/fall-forecast-seminar/>) for more information about the *Fall Forecast Seminar* and to download a registration form. To review additional information about IC Insights' new and existing market research products and services please visit our web site: www.icinsights.com

About IC Insights

IC Insights, Inc., based in Scottsdale, Arizona USA, is dedicated to providing high-quality, cost-effective market research for the semiconductor industry. Founded in 1997, IC Insights offers coverage of global economic trends, the semiconductor market forecast, capital spending and fab capacity trends, product market details, and technology trends, as well as complete IC company profiles and evaluations of end-use applications driving demand for ICs.

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