

# RESEARCH BULLETIN

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## Top 10 Semiconductor R&D Spenders Increase Outlays 6% in 2017

*Intel far surpasses others with R&D spending of \$13.1 billion in 2017 and accounts for 36% of expenditures among Top R&D spenders.*

The ten largest semiconductor R&D spenders increased their collective expenditures to \$35.9 billion in 2017, an increase of 6% compared to \$34.0 billion in 2016. Intel continued to far exceed all other semiconductor companies with R&D spending that reached \$13.1 billion. In addition to representing 21.2% of its semiconductor sales last year, Intel's R&D spending accounted for 36% of the top-10 R&D spending and about 22% of total worldwide semiconductor R&D expenditures of \$58.9 billion in 2017, according to the 2018 edition of *The McClean Report* that was released in January 2018. Figure 1 shows IC Insights' ranking of the top semiconductor R&D spenders, including both semiconductor manufacturers and fabless suppliers.

### MORE INFORMATION CONTACT

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## Top 10 Semiconductor R&D Spenders (Companies with ≥\$1B in Spending)

2017 Rank	Company	R&D Exp (\$M)	R&D/Sales (%)	17/16 % Chg in R&D
1	Intel	13,098	21.2%	3%
2	Qualcomm	3,450	20.2%	-4%
3	Broadcom*	3,423	19.2%	4%
4	Samsung	3,415	5.2%	19%
5	Toshiba	2,670	20.0%	-7%
6	TSMC	2,656	8.3%	20%
7	MediaTek*	1,881	24.0%	9%
8	Micron	1,802	7.5%	8%
9	Nvidia	1,797	19.1%	23%
10	SK Hynix	1,729	6.5%	14%
<b>Top 10 Total</b>		35,921	13.0%	6%

Source: Company reports, IC Insights' *Strategic Reviews* database

\*Sales and R&D spending of acquired semiconductor supplier are included.

**Figure 1**

Intel's R&D expenditures increased just 3% in 2017, below its 8% average annual growth rate since 2001, according to the new report. Still, Intel's R&D spending exceeded the combined R&D spending of the next four companies—Qualcomm, Broadcom, Samsung, and Toshiba—listed in the ranking.

Underscoring the growing cost of developing new IC technologies, Intel's R&D-to-sales ratio has climbed significantly over the past 20 years. In 2017, Intel's R&D spending as a percent of sales was 21.2%, down from an all-time high of 24.0% in 2015. In 2010, the ratio was 16.4%, 14.5% in 2005, 16.0% in 2000, and just 9.3% in 1995.

Qualcomm—the industry's largest fabless IC supplier—was again ranked as second-largest R&D spender, a position it first achieved in 2012. Qualcomm's semiconductor-related R&D spending was down 4% in 2017, after a 7% drop in 2016, and it was close to being passed up by third place Broadcom and fourth placed Samsung, whose R&D spending increased 4% and 19%, respectively.

Despite increasing its R&D expenditures by 19% in 2017, Samsung had the lowest investment-intensity level among the top-10 R&D spenders with research and development funding at 5.2% of sales last year. Samsung's 49% increase in semiconductor revenue in 2017 (driven by strong growth in DRAM and NAND flash memory) lowered its R&D as a percent of sales ratio from 6.5% in 2016. Micron Technology's revenues surged 77% in 2017, but its research and development expenditures grew 8%, resulting in an R&D/sales ratio of 7.5% compared to 12.5% in 2016. Similarly, SK Hynix's sales climbed 79% in 2017, while its research and development spending increased 14% in the year, which resulted in an R&D/sales ratio of 6.5% versus 10.2% in 2016.

Fifth-ranked Toshiba and sixth-ranked Taiwan Semiconductor Manufacturing Co. (TSMC) each allocated about the same amount for R&D spending in 2017. Toshiba's R&D spending was down 7% while TSMC had one of the largest increases in R&D spending among the top 10 companies shown in the figure. TSMC's R&D expenditures grew by 20% as the foundry raced rivals Samsung and GlobalFoundries in launching new process technologies, while its sales rose 9% to \$32.2 billion in the year.

Rounding out the top-10 list were MediaTek, Micron, Nvidia, which moved from 11th place in 2016 to 9th position to displace NXP in the 2017 ranking, and SK Hynix. Collectively, the top-10 R&D spenders increased their outlays by 6% in 2017, two points more than the 4% R&D increase for the entire semiconductor industry. Combined R&D spending by the top 10 exceeded total spending by the rest of the semiconductor companies (\$35.9 billion versus \$23.0 billion) in 2017.

A total of 18 semiconductor suppliers allocated more than more than \$1.0 billion for R&D spending 2017. The other eight manufacturers were NXP, TI ST, AMD, Renesas, Sony, Analog Devices, and GlobalFoundries.

## **Report Details: *The 2018 McClean Report***

Additional details on semiconductor R&D spending and other technology trends within the IC industry are provided in *The McClean Report—A Complete Analysis and Forecast of the Integrated Circuit Industry* (released in January 2018). 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 2018 edition of *The McClean Report* is priced at \$4,290 and includes an Internet access password. A multi-user worldwide corporate license is available for \$7,290.

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