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TSMC First Pure-Play Foundry to Join Top-10 R&D Spenders

Growing number of IC companies—big and small—are staking their future on the foundry

The now well known trend of IC manufacturers abandoning the IDM fab business model to become fabless or fab-lite has resulted in, or is the result of, depending on the point of view, the growing prominence of pure-play foundries in IC design, process technology development, and manufacturing. The cost of building and maintaining one's own fabrication facility has been out of reach for small- to mid-size- companies for several years. However, even large companies that have, in past years, been able to justify the cost of internal manufacturing have recently been switching to the fabless or fab-lite business models. This is especially the case in the complex logic/microcomponent IC markets.

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Companies once considered among the leaders in manufacturing for devices such as MPUs, DSPs, and high-end ASICs/SoCs have pulled the plug on their fab operations and handed off the responsibility to third-party foundry service providers such as TSMC, UMC, and GlobalFoundries. Examples include LSI, Texas Instruments, AMD, and Toshiba. As a result, the industry is increasingly dependent on the success (and hopefully not, failure) of the foundries to continue advancing their IC manufacturing capabilities.

More proof of this growing trend came in 2010 with a pure-play foundry landing among the semiconductor industry's top-10 biggest spenders on research and development for the first time ever (Figure 1). TSMC, the industry's largest foundry, increased its R&D budget a hefty 44% in 2010, resulting in its rank among the industry's top R&D spenders jumping from 19th to 10th in just one year. That fact is even more significant given that, relative to IDMs and fabless IC suppliers, foundries spend a small amount of their revenues on R&D (roughly 5-10% for foundries versus 15-20% for IDMs and fabless companies). IC Insights expects that TSMC's R&D spending in 2011 will grow another 20%, putting its budget over \$1.1 billion for the year.

2010 Worldwide Semiconductor R&D Spending Leaders (Companies with ≥\$800M in Spending)

| 2010 Rank | 2009 Rank | Company | Region | 2009 Sales (\$M) | 2009 R&D (\$M) | R&D/Sales | 2010 Sales (\$M) | 2010 R&D (\$M) | R&D/Sales | 10/09 R&D |
|-----------|-----------|---------------------|--------------|------------------|----------------|-----------|------------------|----------------|-----------|-----------|
| 1 | 1 | Intel | Americas | 32,325 | 5,653 | 17% | 40,095 | 6,655 | 17% | 18% |
| 2 | 3 | Samsung | Asia-Pacific | 21,273 | 2,205 | 10% | 32,287 | 2,620 | 8% | 19% |
| 3 | 2 | STMicroelectronics | Europe | 8,466 | 2,365 | 28% | 10,212 | 2,325 | 23% | -2% |
| 4 | 9 | Renesas* | Japan | 9,649 | 1,750 | 18% | 11,791 | 2,065 | 18% | 18% |
| 5 | 6 | Broadcom** | Americas | 4,271 | 1,534 | 36% | 6,540 | 1,799 | 28% | 17% |
| 6 | 5 | Toshiba | Japan | 9,537 | 1,540 | 16% | 12,994 | 1,785 | 14% | 16% |
| 7 | 7 | Qualcomm** | Americas | 6,409 | 1,480 | 23% | 7,098 | 1,620 | 23% | 9% |
| 8 | 8 | TI | Americas | 9,697 | 1,478 | 15% | 13,022 | 1,570 | 12% | 6% |
| 9 | 4 | AMD** | Americas | 5,403 | 1,721 | 32% | 6,460 | 1,418 | 22% | -18% |
| 10 | 19 | TSMC*** | Asia-Pacific | 8,989 | 656 | 7% | 13,307 | 945 | 7% | 44% |
| — | — | Top 10 Total | — | 116,019 | 20,382 | 17.6% | 153,806 | 22,802 | 14.8% | 12% |
| 11 | 14 | Marvell** | Americas | 2,690 | 785 | 29% | 3,602 | 864 | 24% | 10% |
| 12 | 11 | Nvidia** | Americas | 3,151 | 860 | 27% | 3,571 | 858 | 24% | 0% |

*Renesas and NEC merged on April 1, 2010. **Fabless ***Foundry

Source: Company reports, IC Insights

Figure 1

Report Details

IC Insights is now taking orders for the new 2011 edition of *The McClean Report* that will be released in January. Packed with 400 tables and graphs, the 2011 *McClean Report* subscription also comes with free monthly updates by e-mail from March through November (including a 200+ page *Mid-Year Report*). A single-user subscription to the 2011 edition of *The McClean Report* is priced at \$3,190 and includes an Internet access password. The subscription is also available under a multi-user worldwide corporate license for \$6,290.

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