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TSMC has no customer demand for SOI technology

Friday, 28 July 2006



Dr. Jack Sun, Vice President, Research & Development of TSMC retorted sharply with a "no" to a question from a financial analyst during a conference call covering Q2 financial results when asked about growing demand for power management technology, had customers begun design developments on SOI wafers, considering TSMC has taken out a license for the technology from Soitec.

The "no" was quickly followed up with an explanation that SOI wafers are "still too expensive and there are alternatives and the design barrier is quite high, as you know, SOI so far has been pretty in the niche market," explained Sun. "Most of the market cannot take that risk or cannot afford that kind of investment."

However 'niche' SOI technology is it would seem to be a fast growing niche with the next generation gaming consoles microprocessors all aligned on the technology, pushing units into the double digit millions by the end of 2007. Then there is AMD, with over a 100 million MPUs shipped on the technology as well as decent numbers from IBM for many years. Some communications chips are also switching to the technology and the likes for Freescale, Infineon and NEC use SOI for specific device applications.

Chartered Semiconductor's Fab 7 is a 300mm fab currently dedicated to SOI device fabrication and is ramping past 10,000wspm this year. The pure-play foundry has four or more customers using Fab 7 for SOI devices.

Soitec the dominant supplier of bonded SOI wafers has seen significant growth in demand for the technology and announced in July 06 that it would expand wafer production near-term to 1 million wafers per year. Also to reiterate the growing demand it would build a new facility in Singapore that would double wafer production to 2 million wafers per annum.

Soitec is not alone in ramping SOI wafer production. SUMCO of Japan is using SIMOX SOI technology rather than the bonded technique pioneered by Soitec. Although volumes have been low due to the development cycles deemed necessary for high quality wafers with its tool partner Ibis, that period may be coming to a close and multiple tool orders placed to boost SOI production for customers primarily in Japan.

In a recently published (May 06) report by Semico Research SOI was not found to more expensive than bulk CMOS!

"On a straight manufacturing cost basis, the 10-15% SOI cost-of-ownership (COO) figure does not tell the whole story," said Joanne Itow, Managing Director of Manufacturing at Semico. "Moving further into the semiconductor manufacturing process, looking at the cost of SOI once the wafer is tested, diced and the good die packaged, the Semico analysis has found the SOI COO adds only 4-6% to the total manufacturing cost."

A key factor noted in the study by Itow was that SOI needed less on-die memory than bulk silicon devices, enabling real die shrinkage to occur. More importantly, according to Itow was the use of SOI in on die memory optimization could give a cost saving of up to 40 percent, dependent on what type of device it was.