

TSMC Manufactures First Functional 65nm Embedded DRAM Device

Taiwan Semiconductor Manufacturing Company, Ltd. today announced the foundry industry's first functional 65nm embedded DRAM customer product. The product contains millions of DRAM bits and was silicon verified first time right.

TSMC's 65nm embedded DRAM process and IP provide a higher bandwidth, lower power consumption, and a close to 50% smaller cell and macro size than previous high density memory generations.

The 65nm embedded DRAM's higher bandwidth is ideal for game console, high-end networking, digital consumer, and multimedia processors. It consumes less active and stand-by power than alternative high density memory technology while eliminating the need to power up I/Os.

TSMC 65nm embedded DRAM's flexibility supports product designs that feature a smaller form factor by enabling both logic and memory functions to be built on a single device thus saving board space and enhancing systems reliability.

TSMC 65nm embedded DRAM uses a low thermal budget module that can be added to the company's standard CMOS process. It is compatible with all 65nm logic libraries making it an efficient process for IP reuse. The embedded DRAM design features improved retention time and special power saving options for low power applications including sleep mode, partial power cut-off and on-chip temperature compensation.

The 65nm embedded DRAM process is built on up to 10 metal layers using copper low-k interconnect and nickel silicide transistor interconnect. It features a cell size less than a quarter of its SRAM counterpart, and macro densities ranging from 4Mbits to 256Mbits.

Both the 65nm embedded DRAM and IP are supported by TSMC's Design Support Ecosystem featuring DFM-compliant 65nm products and services; by TSMC's Reference Flow 7.0 design methodology; and by a variety of process-proven TSMC and third party IP and libraries including SRAM compilers, I/Os and standard cell libraries.

"NVIDIA is pleased to have collaborated with TSMC on their new 65nm embedded DRAM process, which has proven to be an excellent platform for our latest handheld GPU product," said Michael Rayfield, general manager of the handheld division of NVIDIA Corporation. "The efficiencies of the embedded DRAM process allowed us to raise the bar for features found in mainstream cell phones."

Source: TSMC

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