Cypress discloses details of its MRAM devices

Mark Lapedus - April 08, 2004

SAN JOSE, Calif. — Looking to enter the next-generation, non-volatile memory race, Cypress Semiconductor Inc. has quietly provided the first specifications of its long-awaited magnetic RAM (MRAM) product line.

Cypress recently posted data sheets for a pair of MRAM products, with densities of 64 and 256 kilobits. The CY9C6264 is a 64-Kbit MRAM that is organized in an 8-Kbit x 8 fashion, while the CY9C62256 is a 256-Kbit chip based on a 32-Kbit x 8 configuration, according to the data sheets.

Cypress claims that MRAM technology is superior to other types of nonvolatile memories. "An MRAM is nonvolatile memory that operates as a fast read and write RAM," according to Cypress. "It provides data retention for more than ten years while eliminating the reliability concerns, functional disadvantages and system design complexities of battery-backed SRAM, EEPROM, Flash and FeRAM."

A Cypress spokeswoman did not say when the company would sample or ship its MRAM parts. The chip maker is one of several companies that is rushing to develop and ship MRAMs in the marketplace. Altis, Motorola and others are developing MRAM products.

It could be some time before Cypress actually ships its MRAM devices. Last September, the company said it was taking longer than expected to develop MRAM products. The delays prompted the company to sell a portion of its investment within its MRAM development partner, NVE Corp. Cypress will use the proceeds of the sale, which are valued at $23.4 million, to continue its work in MRAMs.

Last year, Cypress struck a technology alliance and invested in NVE, a developer of intellectual-property based on MRAM technology. Under the terms, Cypress invested $6.228 million in NVE in exchange for 3.433 million shares of NVE common stock, with an option to buy up to an additional two million shares for $3.00 per share. The companies will also gain rights to each other's MRAM technologies. Cypress also agreed to manufacture wafers for NVE of Eden Prairie, Minn.

At the time, Cypress said it would continue to honor its partnership with NVE, including sharing MRAM intellectual property and supplying NVE with MRAM foundry wafers.

Motorola and Honeywell also have MRAM licenses with NVE. One analyst, however, doubts the validity of NVE's MRAM technology, leaving some to wonder about the MRAM development efforts at Motorola and Cypress.

"There are a lot of question marks about NVE," said analyst Manuel Asensio, founder and chairman of Asensio & Co. Inc. The New York-based firm bills itself as a "for-profit investor advocate," commonly referred to as "short seller."
"NVE has zero technology," Asensio said. NVE officials have denied Asensio's assertions, claiming that the firm is simply attempting to short the company's stock.

In any case, Cypress claims to have two MRAM devices--at least on paper. Cypress' 64-Kbit MRAM is said to be 100 percent "function-compatible" with the company's 8-Kbit x 8 micropower SRAM. The MRAM features fast read and write access times of 70-ns. It also features a voltage range of 4.5--to-5.5-V, a low active power of 330 mW (max) and a low standby power of 495 ¼W (max).

It is said to have a write cycle endurance of over 1015 cycles. It comes in a JEDEC STD 28-pin DIP (600-mil), 28-pin (300-mil) SOIC and TSOP packages.

Cypress' 256-Kbit MRAM is said to be 100 percent "function-compatible" with the company's 32-Kbit x 8 micropower SRAM. The MRAM also features fast read and write access times of 70-ns. It features similar voltage ranges as the 64-Mbit device. It is also housed in the same package types.