

December 16, 2004

Toshiba and NEC develop 1-Mbit MRAM.

Yesterday Toshiba Corporation (NASDAQ: TOSBF, \$4.35) and NEC Corporation (NASDAQ: NIPNY, \$5.95) presented their new "cross point type" Magnetoresistive Random Access Memory ("MRAM") cell design at the 2004 IEEE International Electron Device Meeting in San Francisco, California. Reportedly NEC and Toshiba have fabricated a 1-Mbit chip that uses one transistor to control four MRAM cells. According to yesterday's joint press release by the two companies "this achieves a cell that is the same size as a standard DRAM cell . . . and much smaller than an MRAM cell with transistor."

Cypress Semiconductor Corporation (NYSE: CY, \$11.17) licensed NVE Corporation's (NASDAQ: NVEC, \$28.10) alleged intellectual property in April 2002. Cypress' proposed MRAM design uses three transistors per MRAM cell. This and several more shortcomings including the need for extraneous error correction circuitry make Cypress' MRAM large and uneconomical.

[Session 23: Integrated Circuits and Manufacturing – Non-Volatile Memory Technology; MRAM, RRAM and FeRAM](http://asensio.com/report-images/nvec/session.pdf)

December 14, 2004

[Toshiba and NEC Develop Key Technologies for High-Density MRAM](http://asensio.com/report-images/nvec/nec.pdf)

December 15, 2004

NVE's MRAM IP claims are based on a forty-year-old IBM patent that is now in wide and royalty-free use in memory chips worldwide. [Click here for a complete analysis of NVE's MRAM IP claims.](http://www.asensio.com/Reports/ReportView.aspx?ReportId=569&CompanyId=140&CompanyName=NVE+Corporation) Contrary to its claims, NVE is not and has never been involved with the development of MRAM or any invention needed to create an MRAM memory cell. [Click for a detailed description of MRAM's development and its developers.](http://www.asensio.com/Report-images/MRAM/MRAMTimeline.pdf) (Click for a detailed description of MRAM's development and its developers.)

Asensio & Company, Inc. reports are published and distributed solely and exclusively to registered asensio.com subscribers who have read and agreed to the Mandatory User Agreement located at <http://www.asensio.com/TermsOfUse.aspx>. This Mandatory User Agreement is included herein in its entirety by reference thereto and by notice of its availability.