

FORM 6-K

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

For the month of June 2009 No. 2

TOWER SEMICONDUCTOR LTD.

(Translation of registrant's name into English)

Ramat Gavriel Industrial Park
P.O. Box 619, Migdal Haemek, Israel 23105
(Address of principal executive offices)

Indicate by check mark whether the registrant files or will file annual reports under cover Form 20-F or Form 40-F.

Form 20-F Form 40-F

Indicate by check mark whether the registrant by furnishing the information contained in this Form is also thereby furnishing the information to the Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934.

Yes No

On June 10, 2009, the registrant announces Manufacture Next-Generation MRAM from Crocus Technology.

This Form 6-K is being incorporated by reference into all effective registration statements filed by us under the Securities Act of 1933.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

TOWER SEMICONDUCTOR LTD.

Date: June 18, 2009

By: /s/ Nati Somekh Gilboa

Nati Somekh Gilboa
Corporate Secretary

**Tower Semiconductor to Manufacture Next-Generation MRAM from Crocus
Technology**

*Poised to be First Foundry with MRAM Capability, Tower will hold an equity position
in Crocus*

SUNNYVALE, Calif., and MIGDAL HA'EMEK, Israel, June 18, 2009 – Crocus Technology, a premier developer of Magnetic Random Access Memory (MRAM) and Tower Semiconductor, Ltd. (Nasdaq: TSEM, TASE: TSEM), a leading global specialty foundry, today announced an agreement to port Crocus' MRAM process technology into Tower's manufacturing environment. As part of the exclusive agreement, Tower will perform all manufacturing steps required for Crocus' next-generation MRAM technology in its state-of-the-art 200mm Fab2 facility. In addition to collaborating on the process port, Tower further reaffirmed the value it sees in Crocus' unique MRAM technology by taking an equity position valued at \$1.25 million.

Today's announcement completes the establishment of Crocus' wafer manufacturing capability and sets up a volume supply chain for its customer base. As part of the deal, Tower and Crocus will each dedicate specific equipment in Tower's factory to the manufacture of Crocus' MRAMs.

"Transitioning from an incubation setting to a commercial production environment is a major leap forward for Crocus," said Jean-Pierre Braun, co-founder and CEO of Crocus Technology. "Tower is known as a leading foundry in Non-Volatile Memory (NVM) solutions and is an ideal partner to make this a very successful high margin business for both companies. Their strong focus on differentiated specialty process technologies will enable us to fully realize the remarkable promise of our proprietary technology and to very quickly bring leading-edge commercial chip products to an eager marketplace."

Crocus has developed a robust, reliable and scalable MRAM process based on its patented technology. It has seen improving yield and performance on its full-functionality 130nm MRAM test vehicle and is ready for the transition to commercial manufacturing.

"We are pleased to take part in Crocus' success through the productization of its breakthrough MRAM technology," said Dr. Avi Strum, vice president & general manager, Specialty Business Unit at Tower. "The combination of Crocus' magnetic know-how with our own proven CMOS expertise will produce a differentiated

and superior technology. At Tower, we are convinced of the industry-changing potential of MRAM, and we are partnering with the company best able to capitalize on this potential. We view this as a high volume market with a long life on Tower's platform."

MRAM has broad applicability both as standalone and embedded memory. The integration into Tower's copper 130nm logic process sets the stage for bringing to market leading edge single chip memory products as well as for embedding MRAM into complex SOCs for market segments such as microcontrollers, automotive and communications.

"Although the MRAM market was in its commercial infancy in 2008, Crocus' TAS MRAM can easily capture a sizable portion of the \$700 million NOR (<256Mbit) cellular and networking market by 2011, among others," claims Alan Niebel, CEO at Web-Foot Research, a leading market research firm specializing in memory and storage. "In addition, embedded MRAM effectively targets the integrated memory components of the SOC and ASIC markets, which together constitute over \$10 billion in semiconductor revenues."

Crocus' proprietary MRAM technology solves all the known problems encountered in earlier MRAM developments. The company's technology has demonstrated its stability, reliability, data retention, endurance, and scalability, while exhibiting high speed, low power dissipation, and excellent resistance to external perturbation.

About Magnetic Random Access Memory (MRAM)

MRAM's unique characteristics make it particularly suitable to a wide variety of telecommunication, networking, computing and handheld applications currently using SRAM and/or flash memory technology. It is the only proven new memory technology providing non-volatility, unlimited-write-endurance, high-density, and symmetrical high-speed read & write. It is particularly well-suited to applications requiring high data reliability and high performance, and has the unique potential of becoming the universal embedded memory technology for systems-on-chip devices.

About Crocus Technology

Crocus is an early-stage developer of MRAM technology for dense, non-volatile, high-speed, scalable memories. Its MRAM innovation was conceived in the Grenoble-based Spintec laboratory, a world leading R&D center in Spintronics affiliated with two noted French labs, CEA and CNRS. Crocus' MRAM technology is covered by a comprehensive patent portfolio. The Company licenses its technology for both stand alone and embedded chip applications in a wide variety of telecommunication, networking, storage, computing and handheld applications. Crocus is backed by VC firms AGF Private Equity, CDC Innovation, NanoDimension, Sofinnova Partners, Sofinnova Ventures, and Ventech and has operations in Grenoble, France, and Sunnyvale, California. For more information, please visit www.crocustechnology.com.

About Tower Semiconductor, Ltd. and Jazz Semiconductor, Inc.

Tower Semiconductor Ltd. (NASDAQ: TSEM, TASE: TSEM) is a global specialty foundry leader and its fully owned subsidiary Jazz Semiconductor, a Tower Group Company is a leader in Analog-Intensive Mixed-Signal (AIMS) foundry solutions. Tower and Jazz manufacture integrated circuits with geometries ranging from 1.0 to 0.13-micron and provide industry leading design enablement tools to allow complex designs to be achieved quickly and more accurately. Tower and Jazz offer a broad range of process technologies including Digital, Mixed-Signal and RFCMOS, HV CMOS, Power Management, Non-Volatile Memory (NVM), Embedded NVM, MEMS, and CMOS Image Sensors. To provide world-class customer service, Tower maintains two manufacturing facilities in Israel; Jazz maintains a fab in the U.S. and additional manufacturing capacity is available in China through partnerships with ASMC and HHNEC. For more information, please visit www.towersemi.com and www.jazzsemi.com.

Safe Harbor Regarding Forward-Looking Statements

This press release includes forward-looking statements, which are subject to risks and uncertainties. Actual results may vary from those projected or implied by such forward-looking statements. A complete discussion of risks and uncertainties that may affect the accuracy of forward-looking statements included in this press release or which may otherwise affect Tower's and Jazz's business is included under the heading "Risk Factors" in Tower's most recent filings on Forms 20-F, F-3, F-4 and 6-K, as were filed with the Securities and Exchange Commission (the "SEC") and the Israel Securities Authority and Jazz's most recent filings on Forms 10-K and 10-Q, as were filed with the SEC. Tower and Jazz do not intend to update, and expressly disclaim any obligation to update, the information contained in this release.

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