

TOWER SEMICONDUCTOR LTD

Form 6-K

October 12, 2010

FORM 6-K

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

For the month of October 2010 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 October 11, 2010 the registrant announces TowerJazz and Crocus Complete First Stage Integration of TAS MRAM into 130nm CMOS Platform.

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: October 11, 2010

By: /s/ Nati Somekh Gilboa
Name: Nati Somekh Gilboa
Title: Corporate Secretary

TowerJazz and Crocus Complete First Stage Integration of TAS MRAM into 130nm CMOS Platform

MRAM technology targets \$10B+ Semiconductor market tied to standalone and embedded memory components

MIGDAL HA'EMEK, Israel and SUNNYVALE, Calif., October 11, 2010 — TowerJazz, the global specialty foundry leader, and Crocus Technology, a premier developer of Magnetic Random Access Memory (MRAM), today announced the successful completion of the first stage of integration of Crocus' Thermally Assisted Switching (TAS)-based MRAM technology into TowerJazz's 0.13-micron CMOS process. As a result of the collaboration, a special low temperature back-end process technology was developed that enables TAS MRAM memory arrays to be manufactured in TowerJazz's core 0.13um copper back-end process flow.

To achieve this milestone, a number of critical technological problems were solved, particularly in the areas of deep submicron lithography of magnetic tunnel junction (MTJ) stacks and the selection of materials for high device reliability. The newly developed technology adds only four masks to conventional CMOS manufacturing flows and is suitable for both standalone and embedded memory applications. The integration into TowerJazz's copper-based 130nm CMOS logic process sets the stage for the market introduction of leading edge single chip memory products and embedded MRAM IP blocks to be used in complex Systems-On-Chip (SOC) for microcontroller, automotive and communications applications.

“It has been our pleasure to work with the Crocus team, comprised of outstanding experts in magnetic materials and device engineering. Crocus' experience and robust TAS MRAM technology, combined with TowerJazz's expertise in technology development and transfer methodology, allowed us to finish the first stage of joint development in record time,” said Zmira Lavie, Vice President, Process Engineering R&D and General Manager, Technology Optimization Process Services Business Unit. “This program required process development and materials integration that were new to conventional CMOS manufacturing. TowerJazz's flexibility and experience, honed over years as a specialty foundry servicing a number of custom projects, brought rapid success to the MRAM/CMOS integration. We are highly confident that Crocus' TAS MRAM will reach mass production in a very short period of time.”

“By partnering with TowerJazz, a leader in non-volatile memory solutions, we will be able to quickly scale our industry-changing technology to commercial manufacturing,” said Dr. Bertrand Cambou, Executive Chairman, Crocus Technology. “The close cooperation between the engineering teams was fundamental to achieve working MRAM devices within a short period. The combined teams of Crocus and TowerJazz are moving rapidly to release a manufacturable and high-yielding MRAM technology that will serve both embedded and standalone MRAM applications. We look forward to continuing our successful partnership. TowerJazz's R&D engineering team has surpassed our expectations in the development of new process modules, contributing immeasurably to the rapid transfer from R&D to mass production.”

Availability

Crocus plans to sample engineering parts manufactured by TowerJazz in the very near future, and to start mass production in the second half of 2011. A wide range of applications can take advantage of both discrete and embedded TAS MRAM, including data storage, industrial control, mobile communications, networking, and automotive.

About Magnetic Random Access Memory

MRAM's unique characteristics make it particularly suitable for 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 high speed. MRAM 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

Crocus is a leading developer of MRAM technology for dense, non-volatile, high-speed, scalable memories. The company's MRAM innovation originated in the Grenoble-based Spintec laboratory, a world-leading R&D center in Spintronics, affiliated with French national laboratories CEA and CNRS. The company will offer discrete, high density MRAM chips that target a wide variety of telecommunication, networking, storage, computing and handheld applications. The company also licenses its technology for both standalone and embedded chip applications. Crocus' MRAM technology is covered by a comprehensive patent portfolio. Find Crocus at: www.crocutechology.com.

About TowerJazz

Tower Semiconductor Ltd. (NASDAQ: TSEM, TASE: TSEM), the global specialty foundry leader and its fully owned U.S. subsidiary Jazz Semiconductor, operate collectively under the brand name TowerJazz, manufacturing integrated circuits with geometries ranging from 1.0 to 0.13-micron. TowerJazz provides industry leading design enablement tools to allow complex designs to be achieved quickly and more accurately and offers a broad range of customizable process technologies including SiGe, BiCMOS, Mixed-Signal and RFCMOS, CMOS Image Sensor, Power Management (BCD), and Non-Volatile Memory (NVM) as well as MEMS capabilities. To provide world-class customer service, TowerJazz maintains two manufacturing facilities in Israel and one in the U.S. with additional capacity available in China through manufacturing partnerships. For more information, please visit www.towerjazz.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 and/or 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, respectively. 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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For TowerJazz

Company Contact:

Melinda Jarrell

949/435-8181

melinda.jarrell@towerjazz.com

For Crocus

Company Contact:

Kerry Elliott

408/893-8554

elliott_kerry@yahoo.com

Media Contact:

Lauri Julian

949/715-3049

lauri.julian@towerjazz.com

Investor Relations Contact:

Levi Noit

+972 4 604 7066

noit.levi@towerjazz.com

