
FORM 6-K

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

For the month of May 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 x

Form 40-F o

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 o

No x

On May 10, 2010, the registrant announces Next-Generation SiGe Technology for High Volume Consumer RF Applications.

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: May 10, 2010

By: /s/ Nati Somekh Gilboa

Name: Nati Somekh Gilboa

Title: Corporate Secretary

TowerJazz Announces Next-Generation SiGe Technology for High Volume Consumer RF Applications

Design kits now available for 130nm SiGe BiCMOS technology manufactured in both US and Israeli fabs targeting Wireless RF and TV Tuner Markets

MIGDAL HAEMEK, Israel and NEWPORT BEACH, Calif., May 10, 2010 — [TowerJazz](#), the global specialty foundry leader, today announced design kit availability for its next-generation 130nm SiGe BiCMOS technology (SBL13) for high volume consumer RF applications. The SBL13 process combines SiGe bipolar performance with a mature 130nm CMOS copper (Cu) backend to achieve high performance RF with more integrated digital logic. The technology is targeted at wireless RF and digital TV tuner applications which together are >\$1B markets and where higher performance, lower cost and higher digital integration are required. SBL13 is the first SiGe BiCMOS process to be built in its Israeli fab, and TowerJazz is the only foundry with SiGe BiCMOS in more than one fab, enabling unique manufacturing flexibility for high-performance RF designs.

The SBL13 process is well-suited for WLAN transceivers, cell phone transceivers, and TV tuners. By combining a mature 130nm Cu CMOS platform and a rich IP offering, it enables the design of complex baseband and demodulator functions at less than one-half the die size of a 0.18um process. A 100GHz SiGe bipolar device enables integration of low-noise and low-power RF and a high voltage SiGe device enables integration of power amplifiers and drivers.

The SBL13 process includes three NPN transistors with 40GHz, 74GHz and 100GHz Ft as well as high density passive elements such as an industry leading 5.6fF/um² MIM capacitor and 3um thick copper inductors. 130nm CMOS with copper metallization achieves digital logic densities of up to 200K gates/mm² to result in higher performance and more highly integrated RF products.

“SBL13 extends our SiGe technology roadmap and addresses our customers’ need for higher digital integration and multiple fab sources of supply,” said Dr. Marco Racanelli, Senior Vice President and General Manager, RF and High Performance Analog Business Group. “Design wins already secured on this platform have the potential for \$50M to \$100M of wafer sales from multiple consumer RF applications.”

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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