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**FORM 6-K**

**SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

For the month of May 2010 No. 6

**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

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On May 25, 2010, the registrant announces TowerJazz to Provide ARM® Low Power Libraries for 0.13 SiGe BiCMOS and RF CMOS Platforms.

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**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 25, 2010

By: /s/ Nati Somekh Gilboa

Name: Nati Somekh Gilboa

Title: Corporate Secretary

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**NEWS ANNOUNCEMENT**

**FOR IMMEDIATE RELEASE**

**TowerJazz to Provide ARM® Low Power Libraries for 0.13 SiGe BiCMOS and RF CMOS Platforms**

***Customized for RF and mobile applications that need high frequency while maintaining long battery life***

**MIGDAL HAEMEK, Israel – May 25 2010 – TowerJazz**, the global specialty foundry leader, today announced they will be providing ARM physical IP low power std cells and memory libraries for TowerJazz's new 0.13u SiGe BiCMOS process (SBL13) and its 0.13u RF CMOS process (TSL13). TowerJazz is adding this to its existing suite of IP to provide leading low power and high performance physical libraries for its customers. The combination of TowerJazz's technology platforms with ARM standard cells, memory compilers and I/Os are ideal for customers designing RF and mobile applications that need high frequency and long battery life.

The SBL13 process combines SiGe bipolar performance with a mature 130nm CMOS copper (Cu) backend and is now also available from TowerJazz's Israel fab, achieving high performance RF with more integrated digital logic. Target markets for the solution are low power devices for wireless mobile (WLAN), general purpose communication, and digital TV tuners.

"ARM physical IP libraries have assisted thousands of system designers in accelerating their time to volume of SoC designs," said Simon Segars, Executive Vice President and General Manager, ARM, Physical IP Division. "We are pleased that TowerJazz, an industry leading specialty foundry, has chosen to offer ARM high density libraries to customers who require low power and high performance for their innovative applications. The ARM libraries enable TowerJazz customers to deliver high value designs while keeping their manufacturing costs low."

"We are excited about the combination of ARM low-power libraries with TowerJazz's state-of-the-art 0.13um RF CMOS and SiGe BiCMOS processes to provide unprecedented value in RF performance and long battery life to our customers," said Ori Galzur Vice President, VLSI Design Center at TowerJazz. "This latest announcement builds on a partnership with ARM that now extends across multiple technology nodes and serves both our Newport Beach and Israeli fabs and is consistent with our commitment to invest in the best design enablement and IP technology to continue providing excellence in design and manufacturing for our customers."

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**Availability**

Libraries are available for download thru the ARM DesignStart™ website, <http://designstart.arm.com> and are free to use for TowerJazz customers.

**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 cap abilities. 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](http://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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