

FORM 6-K

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

For the month of August 2006 No. 1

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 August 9, 2006, the Registrant announced that Tower Semiconductor Chosen By Biomorphic to Power Its Next-Generation 3.0-Megapixel Image Sensor for Mobile Applications, attached hereto is a copy of the press release.

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: August 9, 2006

By: /s/ Nati Somekh Gilboa

Nati Somekh Gilboa
Corporate Secretary

TOWER SEMICONDUCTOR CHOSEN BY BIOMORPHIC TO POWER ITS NEXT-GENERATION
3.0-MEGAPIXEL IMAGE SENSOR FOR MOBILE APPLICATIONS

TOWER'S ADVANCED PHOTO DIODE PROCESS USED IN A NEW SERIES OF CMOS IMAGE SENSORS

MIGDAL HAEMEK, Israel - August 9, 2006 - Tower Semiconductor, Ltd., a pure-play independent specialty wafer foundry (NASDAQ: TSEM; TASE: TSEM), today announced that Tower's Advanced Photo Diode (APD) process powers a new series of CMOS Image Sensors for Biomorphmic Microsystems Corporation, a supplier of innovative imaging solutions for the cell phone and PDA markets.

Tower's APD process enables improved optical and electrical performance of ultra-small pixels utilizing deep sub-micron process technologies, thus enabling the manufacture of small, cost-effective camera module solutions. Manufactured at Tower's Fab2 in 0.18-micron technology, the products utilize Tower's pixel IP and the company's optically optimized multilayer metallization (OptiMuM(TM)), which achieves dramatically better optical sensitivity by reducing stack height from silicon to micro-lens.

Designed to fit the stringent requirements from one of the six leading global cell phone manufacturers, these new products provide an excellent solution to the increasing demand for higher image quality on small mobile handsets. The APD process enables reduction of dark current and temporal noise and thus allows perfect images at low light conditions.

Japanese market research firm Techno Systems Research (TSR) estimates the 2008 total market for 3.0-megapixel and 2.0-megapixel CMOS modules to be 50% of the total units, around 300M units.

Biomorphmic's new series of CMOS image sensors include:

- - 3.0-megapixel sensor using 2.8-micron pixels
- - 2.0-megapixel sensor using 3.2-micron pixels
- - VGA sensor using 3.6-micron pixels

"The race to shrink pixel and camera module sizes without degrading performance requires intensive R&D work with a foundry partner," said Dr. Bimal Mathur, Senior Vice President and Chief Technical Officer of Biomorphmic Microsystems. "Tower's expertise in image sensors and its APD technology gave us a complete solution for optimized pixel performance."

"We are proud that our APD technology was implemented by Biomorphmic in cutting-edge CMOS image sensor products used for mobile applications in mass production," said Dr. Avi Strum, General Manager of CIS and NVM product line at Tower. "Biomorphmic's presence in this fast growing market and their continued design wins with a tier one cell phone maker strengthens our confidence in the partnership and technology development paths we took."

ABOUT BIOMORPHIC MICROSYSTEMS CORPORATION.

Biomorphic Microsystems Corporation-a subsidiary of Macronix International Co., Ltd - Nasdaq: MXICY-is a fabless CMOS image sensor design house. The company is a leader in innovative imaging solutions for the demanding cell phone and PDA market. Biomorphic is committed to being the leader in cellphone imaging, providing exceptional technical performance, small package size, and world-class support for our partners. Biomorphic's Web site is located at <http://www.biomorphic.com/>.

ABOUT TOWER SEMICONDUCTOR LTD.

Tower Semiconductor Ltd. is a pure-play independent wafer foundry established in 1993. The company manufactures integrated circuits with geometries ranging from 1.0 to 0.13 micron; it also provides complementary technical services and design support. In addition to digital CMOS process technology, Tower offers advanced non-volatile memory solutions, mixed-signal and CMOS image-sensor technologies. To provide world-class customer service, the company maintains two manufacturing facilities: Fab 1 has process technologies from 1.0 to 0.35 micron and can produce up to 16,000 150mm wafers per month. Fab 2 features 0.18-micron and below standard and specialized process technologies, and has the current capacity of up to 15,000 200mm wafers per month. Tower's Web site is located at <http://www.towersemi.com/>.

SAFE HARBOR

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 our business is included under the heading "Risk Factors" in our most recent Annual Report on Forms 20-F, F-1, F-3 and 6-K, as were filed with the Securities and Exchange Commission and the Israel Securities Authority. We do not intend to update, and expressly disclaim any obligation to update, the information contained in this release.

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