

FORM 6-K

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

For the month of September 2006, No. 3

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 September 13 2006, the Registrant announced that Ikanos Communications Selects Tower Semiconductor to Manufacture High Volume Network Processor, 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: September 13, 2006

By: /s/ Nati Somekh Gilboa

Nati Somekh Gilboa
Corporate Secretary

IKANOS COMMUNICATIONS SELECTS TOWER SEMICONDUCTOR TO MANUFACTURE
HIGH VOLUME NETWORK PROCESSOR

HIGH PERFORMANCE NETWORK PROCESSOR USED FOR TRIPLE PLAY SERVICES

MIGDAL HAEMEK, ISRAEL - September 13, 2006 - Tower Semiconductor Ltd. (NASDAQ: TSEM; TASE: TSEM), a pure-play independent specialty foundry, today announced that Ikanos Communications, Inc. (NASDAQ: IKAN), a leading developer and provider of Fiber Fast(TM) broadband solutions, has chosen to manufacture its Vx160 high-performance DSL network processor at Tower. The product will be produced in 0.16-micron at Tower's advanced Fab2. Ikanos is a recognized leader in the DSL semiconductor market.

The Vx160 product features architectural innovations that can easily operate at the 100/100 Mbps (downstream/upstream) wire speeds.

"In our continued drive to diversify our manufacturing capabilities, we selected Tower Semiconductor to manufacture our highest volume network processor," said Joshua Rom, vice president of operations at Ikanos Communications. "Tower's excellent engineering and manufacturing capabilities resulted in a fast product ramp for the Vx160, ensuring that we met our customers' requirements in a timely manner."

"We are happy that Ikanos chose Tower for manufacturing the Vx160. Tower's design support and manufacturing team worked closely with Ikanos engineers to bring this complex project to fruition," said Dani Ashkenazi, general manager of the Core-CMOS product line at Tower Semiconductor. "We look forward to the successful deployment of this product in the market place."

ABOUT TOWER SEMICONDUCTOR LTD.

Tower Semiconductor Ltd. is a pure-play independent specialty 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 & RF-CMOS, 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 and 0.13-micron, 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/>.

ABOUT IKANOS COMMUNICATIONS, INC.

Ikanos Communications, Inc. (NASDAQ: IKAN) develops chipsets that enable carriers to offer Fiber Fast(TM) bandwidth and high-speed network processing for enhanced triple play services. Supporting transmission rates of up to 100 Mbps, Ikanos' line of end-to-end silicon solutions power line terminals, CPE modems and residential gateways for many of the world's leading network equipment manufacturers. Ikanos' solutions enable fast and cost-effective carrier rollouts of interactive broadband services including IPTV.

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 FORM 20-F, FORMS F-1, F-3 AND 6-K, AS WERE FILED WITH THE SECURITIES AND EXCHANGE COMMISSION AND THE ISRAEL SECURITIES AUTHORITY.

CONTACTS:

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