

TOWER SEMICONDUCTOR LTD.

5,361,932 Ordinary Shares Warrants to Purchase 1,340,483 Ordinary Shares

This prospectus supplement and the accompanying prospectus relate to the sale to certain institutional investors located in Israel of 5,361,932 of our ordinary shares, par value New Israeli Shekels, or NIS 1.00 per share, at a price of NIS 3.73 (equivalent to approximately \$0.99) per ordinary share. Said investors will also receive Series 6 warrants to purchase up to 1,340,483 of our ordinary shares at an exercise price of \$1.06 per share, exercisable until August 7, 2011. This prospectus supplement and the accompanying prospectus cover the offer and sale of the shares and warrants and the issuance of the ordinary shares issuable upon exercise of the warrants in accordance with their terms.

Gross proceeds from the securities sold are approximately \$5.3 million. We intend to use the net proceeds we receive to purchase materials and supplies needed for production to satisfy our increased customer demand, as well as for working capital and general corporate purposes.

The number of ordinary shares issuable to the investors is subject to increase if the closing price of our ordinary shares on the Tel-Aviv Stock Exchange on the date the ordinary shares are delivered to the investors is less than NIS 3.77. In such event, we will issue additional ordinary shares to the investors in an aggregate amount equal to the difference between (A) the product of dividing (i) 20 million by (ii) 99% of the closing price of the Shares and (B) 5,361,932 (the number of Shares originally issuable to the purchasers).

You should carefully read this prospectus supplement and the accompanying prospectus, together with the documents we incorporate by reference, before you invest in our securities.

Our ordinary shares are quoted on the NASDAQ Global Market and the Tel-Aviv Stock Exchange under the symbol "TSEM." On September 13, 2009, the last reported sales prices of our ordinary shares on the NASDAQ Global Market and the Tel-Aviv Stock Exchange were \$0.99 per share and NIS 3.60 per share, respectively.

We retained Clal Finance Underwriters Ltd. as placement agent for the offering. The placement agent is not purchasing or selling any of the securities offered pursuant to this prospectus supplement. In consideration for its services, it is entitled to receive a placement agent fee of approximately \$264,400. See "Plan of Distribution" beginning on page S-9 of this prospectus supplement. We expect that delivery of the securities being offered pursuant to this prospectus supplement will be made to the investors on or about September 15, 2009.

Investing in our securities involves a high degree of risk. See "Risk Factors" referred to and included beginning on page S-4 of this prospectus supplement.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus supplement or the accompanying base prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus supplement is September 14, 2009.

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You should rely only on the information contained or incorporated by reference in this prospectus supplement and the accompanying base prospectus. We have not authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We are not making an offer to sell these securities in any jurisdiction where the offer and sale is not permitted.

You should not assume that the information appearing in this prospectus supplement or the base prospectus is accurate as of any date other than the date on the front cover of the respective documents. You should not assume that the information contained in the documents incorporated by reference in this prospectus supplement or the base prospectus is accurate as of any date other than the respective dates of those documents. Our business, financial condition, results of operations, and prospects may have changed since that date.

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PROSPECTUS SUMMARY

About This Prospectus Supplement

This prospectus supplement and the accompanying base prospectus are part of a registration statement on Form F-3 (Registration No. 333-148747) that we filed with the Securities and Exchange Commission using a “shelf” registration process. Under this shelf process, we may offer to sell any combination of the securities described in the base prospectus in one or more offerings up to a total dollar amount of \$40,000,000. The base prospectus provides you with a general description of the securities we may offer. Each time we sell securities under this shelf registration, we will provide a prospectus supplement that will contain specific information about the terms of that offering. The prospectus supplement may also add, update or change information contained in the base prospectus. You should read both this prospectus supplement and the accompanying base prospectus, including all documents incorporated by reference.

This prospectus supplement provides specific details regarding the issuance of 5,361,932 of our ordinary shares and warrants to acquire 1,340,483 ordinary shares. To the extent there is a conflict between the information contained in this prospectus supplement and the base prospectus, you should rely on the information in this prospectus supplement. This prospectus supplement, the base prospectus and the documents we incorporate by reference herein and therein include important information about us and our ordinary shares, and other information you should know before investing. You should read both this prospectus supplement and the base prospectus, together with the additional information described in the base prospectus under the heading “Where You Can Find More Information; Incorporation of Information by Reference.”

Company Overview

We are a pure-play independent specialty foundry dedicated to the manufacture of semiconductors. Typically, pure-play foundries do not offer products of their own, but focus on producing integrated circuits, or ICs, based on the design specifications of their customers. We currently offer the manufacture of ICs with geometries ranging from 1.0 to 0.13-micron. We also provide design services and complementary technical services. ICs manufactured by us are incorporated into a wide range of products in diverse markets, including consumer electronics, personal computers, communications, automotive, industrial and medical device products.

We are focused on establishing leading market share in high-growth specialized markets by providing our customers with high-value wafer foundry services. Our historical focus has been standard digital complementary metal oxide semiconductor (“CMOS”) process technology, which is the most widely used process in producing ICs. We are currently focused on the emerging opportunities in specialty fields of CMOS image sensors, mixed-signal, radio frequency CMOS (RFCMOS), radio frequency identification (RFID) technologies and power management. To better serve our customers, we have developed and are continuously expanding our technology offerings for use in these fields. Through our expertise and experience gained over fifteen years of operation, we differentiate ourselves by creating a high level of value for our clients through innovative technological processes, design and engineering support and services, competitive manufacturing indices, and dedicated customer service.

Tower was founded in 1993, with the acquisition of National Semiconductor’s 150-mm wafer fabrication facility, or Fab 1, and commenced operations as an independent foundry with a production capacity of approximately 5,000 wafers per month in process geometries ranging from 1.0-micron to 0.6-micron. Since then, we have significantly modernized our Fab 1 facility and equipment, which has improved our process geometries to range from 1.0-micron to 0.35-micron and enhanced our process technologies to include CMOS image sensors, embedded flash and mixed-signal technologies.

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In January 2001, we commenced construction of a new, state-of-the-art wafer fabrication facility, which we refer to as Fab 2, located in Migdal Haemek, Israel and adjacent to our first facility, Fab 1. In 2003, we completed the infrastructure of Fab 2 and commenced production wafer shipments from this Fab. Fab 2 is designed to operate in geometries of 0.18-micron and below, using advanced materials and advanced CMOS technology licensed from Freescale and Toshiba and other technologies that we developed and will develop independently or with development partners. Depending on the process technology and product mix, when fully ramped-up we estimate that Fab 2 will be able to achieve capacity levels of up to approximately 40,000 wafers per month. We have not completed the full ramp-up of Fab 2 and will increase capacity depending upon several factors, including, funding, cost and availability of equipment and market conditions.

In September 2008, we merged with Jazz Technologies in a stock for stock transaction. Jazz is an independent semiconductor foundry focused on specialty process technologies for the manufacture of analog and mixed-signal semiconductor devices. Jazz’s specialty process technologies include advanced analog, radio frequency, high voltage, bipolar and silicon germanium bipolar complementary metal oxide (“SiGe”) semiconductor processes. Jazz’s customers use the analog and mixed-signal semiconductor devices in products they design that are used in cellular phones, wireless local area networking devices, digital TVs, set-top

boxes, gaming devices, switches, routers and broadband modems. Jazz operates one semiconductor fabrication facility in Newport Beach, California, in which it currently manufactures the majority of its products and in which all of Jazz's process research and development is performed.

Tower's manufacturing facilities and executive offices are located in the Ramat Gavriel Industrial Park, Shaul Amor Street, Post Office Box 619, Migdal Haemek, 23105 Israel, and our telephone number is 972-4-650-6611.

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THE OFFERING

Ordinary shares offered by us	5,361,932 ordinary shares of Tower Semiconductor Ltd. (1)
Series 6 Warrants offered by us	Warrants to purchase 1,340,483 ordinary shares at an exercise price of \$1.06, expiring on August 7, 2011
Ordinary shares issuable upon exercise of the Series 6 warrants	1,340,483 ordinary shares
Purchasers	Institutional investors located in Israel
Purchase price	NIS 20,000,000
Settlement date	On or about September 15, 2009
Use of proceeds	We plan to utilize the net proceeds from this offering to purchase materials and supplies needed for production to satisfy our increased customer demand, as well as for working capital and general corporate purposes.
Symbol for Ordinary Shares on Nasdaq Global Market and Tel-Aviv Stock Exchange	TSEM

(1) The number of ordinary shares issuable to the investors is subject to increase if the closing price of our ordinary shares on the Tel-Aviv Stock Exchange on the date the ordinary shares are delivered to the investors is less than NIS 3.77. In such event, we will issue additional ordinary shares to the investors in an aggregate amount equal to the difference between (A) the product of dividing (i) 20 million by (ii) 99% of the closing price of the Shares and (B) 5,361,932 (the number of Shares originally issuable to the purchasers). If additional shares are issued pursuant to this provision we will file a prospectus supplement relating to such shares.

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RISK FACTORS

An investment in our securities involves a high degree of risk. ***In addition to the risk factors set forth below, you should carefully consider the risk factors in the section entitled "Risk Factors" in our Annual Report on Form 20-F for the year ended December 31, 2008, which are incorporated by reference into this prospectus supplement in their entirety.*** These risk factors may be amended or supplemented or superseded from time to time by other reports we file with the SEC in the future. If any of the events or developments described therein actually occurs, our business, financial condition and results of operations may suffer. In that case, the value of our securities may decline, and you could lose all or part of your investment.

Our business requires a significant amount of financing and our business may be adversely affected if its sources of liquidity are unavailable or insufficient to fund our operations.

Our working capital requirements and cash flows are subject to fluctuations, depending on a number of factors. If we are unable to manage fluctuations in cash flow, our business, operating results and financial condition may be materially adversely affected. Factors which could lead us to suffer cash flow fluctuations include:

- the level of revenue derived from sales of wafers we manufacture, engineering services, design-related services and other sources of revenue;
- the collection of receivables;
- the timing and size of capital expenditures; and
- the servicing of financing obligations and other short-term and long-term liabilities.

In addition, current uncertainty arising from the global economic downturn, including the recent disruption in financial and credit markets, and prevailing market conditions in the semiconductor industry, including global decreased demand, downward price pressure, excess inventory and unutilized capacity, pose a risk to the overall economy that could severely impact consumer and customer demand for our and our customers' products, as well as commercial relationships with our customers, suppliers and creditors, including our lenders. If the current situation continues or worsens significantly, our sources of liquidity may be unavailable or insufficient to fund our operations and as a result our business could be negatively impacted.

In order to finance our business, we expect to use available cash, existing credit facilities, as well as cash received from measures implemented in order to obtain funds from other sources of financing, including advances under our existing Standby Equity Purchase Agreement with YA Global SPV Ltd., completing the sale and issuance to institutional investors located in Israel of our shares and Series 6 warrants covered by this offering, potential opportunities for sale and lease-back of a portion of Tower's real estate assets, sale of other fixed assets and/or intellectual property, licensing, receipt of all or part of the \$45 million pending and over-due grants from the Israeli Investment Center if it approves Tower's expansion plan, and other alternatives for fundraising. We are also working

to mitigate the potential effects of the global economic downturn through several measures, including the execution of the previously announced cost reduction plan for a total saving amount of approximately \$80 million on an annual run-rate.

However, there is no assurance that we will be able to obtain sufficient funding from the financing sources detailed above and/or from such cost reduction measures in a timely manner to allow us to fully mitigate the effect of the existing economic downturn and any potential further deterioration in market conditions, maintain our ongoing operations and repay our short-term and long-term debt and other liabilities.

In addition, if we were to incur higher levels of debt, this would require a larger proportion of our cash flow to be used to pay principal and interest on our indebtedness. The increased use of cash to pay indebtedness could leave us with insufficient funds to finance our operating activities and capital expenditures, which could adversely affect our business and ongoing operations.

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USE OF PROCEEDS

We estimate that the net proceeds we will receive from this offering will be approximately \$5 million after deducting the placement agent's fee and estimated offering expenses and excluding the proceeds, if any, from the exercise of the warrants issued in this offering. We plan to utilize the net proceeds from this offering to purchase materials and supplies needed for production to satisfy our increased customer demand, as well as for working capital and general corporate purposes.

CAPITALIZATION

For information concerning our capitalization, please see the section entitled "Capitalization" included on S-6 and S-7 of Supplement No. 1 dated August 12, 2009 to the accompanying prospectus, which section is incorporated herein by reference.

After completion of this offering, an aggregate of 186,085,496 ordinary shares will be issued and outstanding.

DESCRIPTION OF SECURITIES WE ARE OFFERING

In this offering, we are offering 5,361,932 of our ordinary shares and Series 6 warrants to purchase 1,340,483 of our ordinary shares. This prospectus supplement and the accompanying prospectus also cover the issuance of the ordinary shares issuable upon exercise of the Series 6 warrants in accordance with their terms.

Ordinary Shares

The material terms and provisions of our ordinary shares are described under the caption "Description of Share Capital" starting on page 10 of the accompanying prospectus.

Warrants

The warrants to be issued in this offering are Series 6 warrants and represent the rights to purchase up to 1,340,483 of our ordinary shares at an exercise price of \$1.06 per share.

Each warrant may be traded on the Tel Aviv Stock Exchange only and may be exercised at any time and from time to time from its original date of issuance (such original date of issuance anticipated to be on or about September 15, 2009) and through and until August 7, 2011. In the event that August 7, 2011 is not a trading day, the termination date of the warrants will be extended until the following trading day.

Exercise

Holders of the warrants may exercise their warrants to purchase our ordinary shares on any trading day on or before the termination date, except for the period starting on the 12th and ending on the 16th of every calendar month by delivering (i) a notice of exercise, appropriately completed and duly signed, directly to the Company at its registered offices, or through a bank or Tel Aviv Stock Exchange member, together with (ii) payment of the exercise price for the number of shares with respect to which the warrant is being exercised.

An exercise notice, which does not meet the requirements hereunder for the exercise of the warrants shall become null and void and any cash payment delivered in connection with such exercise shall be returned to the exercising warrant holder.

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The date on which the Tel Aviv Stock Exchange member or the Company receive the exercise notice from a registered warrant holder, which meets the requirements hereunder, will be deemed to be the exercise date. The exercising warrant holder will be required to execute, at any time required to do so by the Company, any document which is required in accordance with law or the Company's articles of association in connection with the issuance of the shares pursuant to the exercise of the warrant. The Company's board of directors shall have the authority to appoint any person it sees fit as the attorney in fact of the exercising warrant holder with respect to the execution of documents as stated above. An exercise notice may not be rescinded or amended.

Warrants may be exercised in whole or in part, but only for a full number of ordinary shares.

Any portion of a warrant not exercised prior to the termination date shall automatically be terminated following the termination date and the holder of such portion shall no longer have any rights thereunder.

The ordinary shares issuable on exercise of the warrants will be, when issued and paid for in accordance with the warrants, duly and validly authorized, issued and fully paid and non-assessable, equal in rights to the other ordinary shares of the Company and shall entitle their holders to the full rights and privileges of shares held as of the date of their issuance.

Fundamental Transaction

If, at any time while the warrants are outstanding, we enter into voluntary dissolution, the Company shall publish a notice in two daily Israeli newspapers, which notice shall include a statement that every warrant holder will be deemed to have exercised his/her warrants prior to receipt of such notice without the need to pay the exercise price prior to such time, unless a warrant holder delivers notice to the Company within 30 days of such notice waiving such exercise. Any warrant holder that has not delivered such waiver notice will be eligible to participate in the dissolution of the Company and receive an amount equal to the amount he/she would have received from such dissolution had he/she been a shareholder on the day of the voluntary dissolution, subject to the deduction of the applicable exercise price from any such funds received from the dissolution, if any.

Company Ledger of Warrant Holders

The Company shall manage a ledger of all of the holders of Series 6 warrants, including warrants sold hereunder, at its registered offices, which shall record the names of such warrant holders, their addresses and the amounts of warrants registered under their names. In addition, any transfer of Series 6 warrants shall be recorded in the ledger. The Company shall be entitled to close the ledger for a period or periods which shall not exceed 30 days per year.

Certain Adjustments

The exercise price and the number of ordinary shares purchasable upon the exercise of the warrants are subject to adjustment upon the occurrence of specific events, as follows:

- Upon any event of issuance of stock dividends for which the record date is prior to the exercise date, the number of shares into which each warrant is exercisable shall be increased by the amount of ordinary shares which the warrant holder would have received had he exercised the warrant on the record date and the exercise price will not change.
- If the Company shall offer securities to its shareholders in a rights offering, the exercise price of the warrants will not change, however the amount of shares to be issued upon exercise of the warrants on the record date shall be adjusted in accordance with the benefit given pursuant to the rights offering.

The aforementioned adjustments may not be amended.

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In addition, from the date of this prospectus supplement and until the termination date, and as long as the warrants are not exercised or cancelled pursuant to this prospectus supplement, but in any event not later than the termination date, the following terms will apply:

- Subject to the aforementioned adjustment regarding stock dividends, the Company shall not distribute a stock dividend which may cause the exercise price to drop below the ordinary shares' nominal value of NIS 1.00.
- The Company shall not distribute a cash dividend or stock dividend or offer rights to its security holders to purchase its securities for which the record date is less than 10 business days following the resolution to effect such action by the Company's board of directors.
- The Company shall reserve a sufficient amount of authorized shares to ensure the issuance of the shares to be issued pursuant to the exercise of the warrants, and in the event needed the Company shall amend its articles of association to increase the number of authorized shares.
- The Company shall not amend the rights attached to its ordinary shares other than by a special resolution of the holders of the Series 6 warrants.
- If the Company shall effect a stock split or combination which would cause the value of its ordinary shares to increase or decrease, as applicable, the amount of shares to be issued pursuant to an exercise of the warrants following such action shall be increased or decreased, as applicable, provided, however that a warrant holder will not be entitled to receive a fraction of a share as a result of such increase or decrease.
- If the Company shall distribute a cash dividend, then the following shall apply: (1) immediately after the record date, the ratio between the price of the share at the end of the record date and the price of the share, as determined by the Tel Aviv Stock Exchange, as adjusted pursuant to the distribution of dividend; (2) the exercise price of the warrants will be adjusted in accordance with the quotient of (A) the exercise price in effect at the time, divided by (B) the ratio calculated in subsection (1) above. The Company will publish a report to the Tel Aviv Stock Exchange, the securities and exchange commission, and the Israeli securities authority, describing the adjusted exercise price, no later than the date on which the ordinary shares whose price has been adjusted by the Tel Aviv Stock Exchange are traded.
- Any notice to the Series 6 warrant holders shall be delivered to the Series 6 warrant holders which are registered on the Company's ledger of warrant holders and will be deemed to have been delivered within two business days from date of mailing, and will also be published in two daily Israeli newspapers.

Delivery of Certificates

Promptly after receipt of an exercise notice, we shall issue and deliver, or cause to be issued and delivered, a certificate for the number of ordinary shares issuable upon exercise of the warrant. Exercised warrants shall be deemed to be canceled upon the date of the issuance and delivery of such ordinary shares.

Additional Provisions

We are not required to issue fractional shares upon the exercise of the warrants. No holders of the warrants will possess any rights as a shareholder under those warrants until the holder exercises those warrants.

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PLAN OF DISTRIBUTION

This prospectus supplement and the accompanying prospectus relate to the sale to certain institutional investors located in Israel of 5,361,932 of our ordinary shares, par value New Israeli Shekels, or NIS 1.00 per share, at a price of NIS 3.73 (equivalent to approximately \$0.99) per ordinary share. Investors will also receive Series 6 warrants to purchase up to 1,340,483 of our ordinary shares at an exercise price of \$1.06 per share, exercisable until August 7, 2011. This prospectus supplement and the accompanying prospectus cover the offer and sale of the shares and warrants and the issuance of the ordinary shares issuable upon exercise of the warrants in accordance with their terms.

Subject to the terms and conditions contained in a letter agreement dated as of September 13, 2009, we retained Clal Finance Underwriters Ltd. as placement agent for the offering. In consideration for its services, it is entitled to receive a placement agent fee of approximately \$264,400 in cash. The placement agent is not purchasing or selling any shares or warrants offered by this prospectus supplement and the accompanying prospectus.

The number of shares issuable to the investors is subject to increase if the closing price of our ordinary shares on the date the shares are delivered to the investors is less than NIS 3.77. In such event, we will issue additional ordinary shares to the investors in an aggregate amount equal to the difference between (A) the product of dividing (i) 20 million by (ii) 99% of the closing price of the Shares and (B) 5,361,932 (the number of Shares originally issuable to the purchasers). If additional shares are issued pursuant to this provision we will file a prospectus supplement relating to such shares.

We currently anticipate that the delivery of the 5,361,932 of our ordinary shares to the investors will be completed on or about September 15, 2009.

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