

## TOWER SEMICONDUCTOR LTD.

### Up to \$25,000,000 of Ordinary Shares

We have entered into a Standby Equity Purchase Agreement, or the SEPA, with YA Global Master SPV Ltd., or YA Global, for the offer and sale of up to \$25,000,000 of our ordinary shares, par value New Israeli Shekels 1.00 per share, offered by this prospectus supplement and the accompanying base prospectus. We may from time to time issue all or a portion of these shares to YA Global at 97% of the market price for the ordinary shares (as determined in accordance with the SEPA) at the time of such issuance.

We have been advised by YA Global that the resale of any ordinary shares by YA Global will be made by means of ordinary brokers' transactions on the NASDAQ Global Market, the Tel-Aviv Stock Exchange or otherwise at market prices prevailing at the time of sale or at prices related to the prevailing market prices. For additional information on the methods of sale that may be used by YA Global, see the section entitled "Plan of Distribution" on page S-8.

Our ordinary shares are quoted on the NASDAQ Global Market and the Tel-Aviv Stock Exchange under the symbol "TSEM." On August 11, 2009, the last reported sales prices of our ordinary shares on the NASDAQ Global Market and the Tel-Aviv Stock Exchange were \$0.98 per share and NIS 3.9 per share, respectively.

**Investing in our securities involves a high degree of risk. See "Risk Factors" referred to and included beginning on page S-3 of this prospectus supplement.**

In connection with the resale of our ordinary shares, YA Global may be deemed to be an "underwriter" within the meaning of the Securities Act of 1933, as amended, and the compensation of YA Global may be deemed to be underwriting commissions or discounts.

**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.**

YA Global Master SPV Ltd.

The date of this prospectus supplement is August 12, 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 up to \$25,000,000 of our ordinary shares pursuant to the SEPA. 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 manufacture semiconductors using production processes for our customers primarily based on third party designs and our own proprietary designs. 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 method of producing ICs. We are currently focused on the emerging opportunities in the 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.

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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. 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.

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. The timing of that decision and its implementation will depend upon several factors, including, funding, and cost availability of equipment and market conditions.

In September 2008, we acquired Jazz Technologies in a stock for stock transaction. Jazz is now 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, for the manufacture of analog and

mixed-signal semiconductors. 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 produces 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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## 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, or if such sources will not be available.**

Our working capital requirements and cash flows are subject to quarterly and yearly 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 business could be negatively impacted.

In order to finance our business, we expect to use available cash and existing credit facilities as well as exploring measures to obtain funds from other sources of financing, including advances under the SEPA, 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 fund raising. 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 and maintain our ongoing operations and/or repay our short-term and long-term debt and other liabilities.

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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 on-going operations.

**Investors may experience significant dilution as a result of the sale of shares under the SEPA or the issuance of ordinary shares under outstanding securities convertible into or exercisable for our ordinary shares.**

The sale of our ordinary shares pursuant to the SEPA will result in dilution of the percentage of our ordinary shares held by current and future shareholders. If we were to sell all \$25 million of the ordinary shares which we may offer for sale under the SEPA at a price equal to \$0.99, which was the last reported sale price for our ordinary shares on the NASDAQ Global Market on August 7, 2009, we would issue approximately 25,252,525 additional ordinary shares under the SEPA, in addition to the 160,063,636 shares currently outstanding. Because the sales pursuant to the SEPA will be made based on prevailing market prices at the time advances are made, the prices at which we sell these shares and the number of shares we will issue will vary, perhaps significantly, with the market price of our ordinary shares. In addition we may issue additional ordinary shares upon the conversion or exercise of our outstanding convertible notes, capital notes, warrants, options and other rights to acquire our ordinary shares. See "Capitalization" for a summary of the ordinary shares issuable under such securities.

**Our ability to raise funds under the SEPA will depend on several factors, including the trading volume for our ordinary shares.**

While under the SEPA, YA Global is committed to purchase our ordinary shares in accordance with the terms of the SEPA, YA Global may not make any advances which would result in YA Global owning more than 4.99% of our outstanding ordinary shares. Our ability to sell additional shares to YA Global and raise funds under the SEPA will depend on YA Global's ability to sell shares previously purchased under the SEPA in a timely manner. This will depend, among

other factors, on the trading volume for our shares on the NASDAQ and the Tel-Aviv Stock Exchange and prevailing conditions in the capital markets generally. There is no assurance as to the extent to which we will be able to utilize the SEPA to fund our operations.

**Sales of shares to YA Global pursuant to the SEPA and the resale of such shares by YA Global may result in declines in the price of our stock.**

The ordinary shares purchased by YA Global under the SEPA are freely tradable and YA Global may promptly sell the shares we issue to them under the SEPA in the public markets. Such sales, and the potential for such sales, could cause the market price of our ordinary shares to decline significantly. To the extent of any such decline, any subsequent advances requested by us under the SEPA would require the issuance of a greater number of ordinary shares to YA Global to raise a given dollar amount. This may result in significant dilution to our shareholders.

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**We do not currently meet the \$1.00 closing bid requirement for continued listing on the NASDAQ. If we cannot come into compliance with this requirement, NASDAQ may delist our ordinary shares, which would have an adverse impact on the liquidity and market price of our ordinary shares and limit our ability to obtain financing to fund our on-going operations.**

Our ordinary shares are currently listed on the Tel-Aviv Stock Exchange and on the NASDAQ Global Market. Under NASDAQ rules, shares are subject to delisting and will not be allowed to trade on NASDAQ if the closing bid price of the stock over a 30 consecutive trading-day period is less than \$1.00. Following the financial markets downturn, which commenced during 2008, we have experienced a decrease in the trading price of our ordinary shares. NASDAQ implemented a temporary suspension of the minimum \$1.00 closing bid requirement price. The temporary suspension expired on July 31, 2009. We need to comply with the \$1.00 minimum bid closing price requirement for a period of ten consecutive trading days by October 29, 2009. If we do not comply by such date, we may choose between: (i) delisting from the NASDAQ Stock Market; (ii) transferring from the NASDAQ Global Market to the NASDAQ Capital Market, which would allow us an additional 180 day period to re-gain compliance with the \$1.00 minimum bid price by no later than April 2010; or (iii) taking other actions to avoid the de-listing of our shares, such as performing a reverse stock split of our shares. A delisting of our ordinary shares could negatively impact us by reducing our ordinary shares' liquidity and market price and the number of investors willing to hold or acquire our ordinary shares and our available sources to finance our on-going operations.

**USE OF PROCEEDS**

During the 24 months from the date of the SEPA, we may receive up to \$25 million in proceeds from the sale of shares of ordinary shares to YA Global pursuant to the SEPA. We anticipate, and have represented to YA Global in the SEPA, that the proceeds received under the SEPA will be utilized for general corporate purposes, which may include working capital, purchases of equipment or technologies, manufacturing improvements, capital expenditures and repayment of debt.

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**CAPITALIZATION**

The following table sets forth our long-term debt, debentures and capitalization as of March 31, 2009 on an actual basis. This table was prepared in accordance with the US GAAP. The financial data is derived from our consolidated financial statements as of March 31, 2009.

	March 31, 2009 (US dollars in thousands)
Short-term bank loan	\$ 7,000
Long-term loans from banks	226,465
Debentures	201,563
Long-term customers' advances	11,348
Other long-term liabilities	45,855
Shareholders' equity:	
Ordinary Shares, NIS 1.00 par value per share; 1,100,000,000 authorized shares, 161,326,919 issued shares* and 160,026,919 outstanding shares	\$ 39,929
Additional paid-in capital	659,599
Capital notes	311,472
Stock based compensation	19,509
Accumulated other comprehensive loss	(2,367)
Accumulated deficit	(917,919)
Treasury stock, 1,300,000 shares	(9,072)
Total shareholders' equity	101,151
Total capitalization	\$ 660,537

\*Includes 1,300,000 treasury shares.

The information set forth on an actual basis in the foregoing table excludes the following securities as of August 9, 2009:

- (i) up to 9.7 million ordinary shares issuable upon the conversion of the 2005 outstanding convertible debentures at a conversion rate of \$1.10;
- (ii) 8.3 million warrants issued to our banks with an exercise price of \$1.21;

- (iii) up to 46.8 million ordinary shares issuable upon the conversion of the 2006 outstanding convertible debentures at a conversion rate of approximately \$1.1;
- (iv) 14.8 million warrants with an exercise price of \$2.04;
- (v) 2.7 million warrants with an exercise price of \$1.06;
- (vi) 5.2 million warrants with an exercise price of approximately \$2.4;
- (vii) 50.7 million employee and director options with a weighted average exercise price of \$1.14;

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- (viii) 30.9 million ordinary shares issuable upon the conversion of the 2007 convertible debentures, at a conversion rate of approximately \$1.1;
  - (ix) 0.9 million warrants issued to our banks with an exercise price of \$6.17;
  - (x) 59.5 million warrants assumed from Jazz with an exercise price of \$2.78 and 30.3 million shares issuable upon the conversion of Jazz outstanding convertible notes at a conversion rate of \$4.07;
  - (xi) approximately 192.8 million and 206.1 million shares issuable to our banks and Israel Corp., respectively, upon the conversion for no additional consideration of equity equivalent capital notes. Additionally we are obligated to issue additional shares or convertible securities to our banks in January 2011 as compensation for reduced interest payments agreed to by such banks; and
  - (xii) 11.5 million options to the chairman of our board of directors with an exercise price of \$0.29, subject to our shareholders' approval.

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#### PLAN OF DISTRIBUTION

On August 11 2009, we entered into a Standby Equity Purchase Agreement, or SEPA, with YA Global. The SEPA provides that, upon the terms and subject to the conditions set forth therein, YA Global is committed to purchase up to \$25 million of our ordinary shares over a two-year commitment period. From time to time, and at our sole discretion, we may present YA Global with advance notices to purchase our ordinary shares. For each ordinary share purchased under the SEPA, YA Global will pay 97% of the lowest volume weighted average price, or VWAP, of the ordinary shares on the Tel-Aviv Stock Exchange during the five trading day pricing period following the advance notice. The aggregate amount of each advance requested cannot exceed \$900,000, unless otherwise mutually agreed to by us and YA Global. The amount issued pursuant to any advance also cannot cause the aggregate number of ordinary shares beneficially owned by YA Global and its affiliates to exceed 4.99% of the then outstanding ordinary shares. If an advance notice requests the purchase of shares exceeding any of these amounts, that portion of the advance notice will be deemed to be automatically withdrawn.

Promptly after the end of the five trading day period following delivery of the advance notice, we will deliver to YA Global the requisite number of shares against payment by YA Global of the advance amount requested, subject to our satisfaction of certain conditions under the SEPA. There is no arrangement for funds to be received in an escrow, trust, or similar arrangement. We may continue to deliver additional advance notices until the commitment amount is purchased or the expiration of the two-year period.

For each advance notice, we may indicate a minimum acceptable price, which cannot be more than 95% of the last closing price of our ordinary shares on the Tel-Aviv Stock Exchange at the time of delivery of the advance notice. If during the five trading day pricing period following any advance notice the VWAP for the ordinary shares is below the indicated minimum acceptable price, the amount of the advance will generally be reduced by 20% for each day the VWAP is below the minimum acceptable price and that trading day will be excluded from the pricing period for purposes of determining the purchase price.

The SEPA provides for the payment of a \$650,000 commitment fee to YA Global which may be paid either in cash, in our ordinary shares (using the VWAP on the Tel-Aviv Stock Exchange on the day immediately preceding the payment date) or some combination of cash and ordinary shares. We are required to pay \$200,000 of the commitment fee on the date of the delivery by us of the first advance notice under the SEPA, \$200,000 six months following the first advance notice date and \$250,000 twelve months following the first advance notice date.

We may terminate the SEPA upon 15 trading days' prior notice to YA Global, as long as there are no advances outstanding and we have paid to YA Global all amounts then due. A copy of the SEPA is attached as Exhibit 99.1 to our Report on Form 6-K as filed with the SEC on August 12, 2009.

In addition to our issuance of ordinary shares to YA Global pursuant to the SEPA, this prospectus supplement also covers the resale of those shares from time to time by YA Global to the public. In connection with YA Global's sale of our ordinary shares, YA Global may be deemed to be an "underwriter" within the meaning of the Securities Act and the compensation paid to YA Global may be deemed to be underwriting commissions or discounts. We have agreed in the SEPA to provide indemnification to YA Global against certain civil liabilities.

We will file a prospectus supplement indicating the price and number of ordinary shares issued in connection with each sale of ordinary shares under the SEPA.

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YA Global has informed us that it will use an unaffiliated broker-dealer to effectuate any sales of ordinary shares that it may purchase from us pursuant to the SEPA. Such sales will be made on the NASDAQ, the Tel-Aviv Stock Exchange or otherwise at prices and at terms then prevailing or at prices related to the then current market price. Each such unaffiliated broker-dealer may be an underwriter within the meaning of Section 2(a)(11) of the Securities Act. YA Global has informed us that each such broker-dealer will receive commissions from YA Global which will not exceed customary brokerage commissions.

Our ordinary shares may be sold by YA Global in one or more of the following manners:

- ordinary brokerage transactions and transactions in which the broker solicits purchasers;
- a block trade in which the broker or dealer so engaged will attempt to sell the shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- to a broker-dealer as principal and resale by the broker-dealer for its account; or
- a combination of any such methods of sale.

YA Global has agreed that, during the term of the SEPA, neither YA Global nor its affiliates will engage in any short sales or hedging transactions with respect to our ordinary shares, provided that upon receipt of an advance notice YA Global may sell shares that it is obligated to purchase under such advance notice prior to taking possession of such shares.

YA Global and any unaffiliated broker-dealer will be subject to liability under the federal securities laws and must comply with the requirements of the Securities Act and the Exchange Act, including without limitation, Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of ordinary shares by YA Global or any unaffiliated broker-dealer. Under these rules and regulations, YA Global and any unaffiliated broker-dealer:

- may not engage in any stabilization activity in connection with our securities;
- must furnish each broker which offers shares of our ordinary shares covered by the prospectus that is a part of our Registration Statement with the number of copies of such prospectus and any prospectus supplement which are required by each broker; and
- may not bid for or purchase any of our securities or attempt to induce any person to purchase any of our securities other than as permitted under the Exchange Act.

These restrictions may affect the marketability of the ordinary shares by YA Global and any unaffiliated broker-dealer.