FORM 6-K

**REPORT OF FOREIGN PRIVATE ISSUER PURSUANT TO RULE 13a-16 OR 15d-16
OF THE SECURITIES EXCHANGE ACT OF 1934**

For the month of March 2026 No.4

Commission File Number 0-24790

TOWER SEMICONDUCTOR LTD.
(Translation of registrant's name into English)

Ramat Gavriel Industrial Park
P.O. Box 619, Migdal Haemek, Israel 2310502
(Address of principal executive offices)

Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F.

Form 20-F ☒ Form 40-F ☐

**On March 17, 2026, the Registrant Extends its Leadership in BCD
Performance with New Gen3 LDMOS Technology Addressing the 'AI Power Wall'**

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: March 17, 2026

By: /s/ Nati Somekh
Name: Nati Somekh
Title: Corporate Secretary

Tower Semiconductor Extends its Leadership in BCD Performance with New Gen3 LDMOS Technology Addressing the 'AI Power Wall'

Company will participate and present at APEC 2026, highlighting recent advancements in its power management platform for AI processor power delivery and emerging high-current applications

MIGDAL HAEMEK, Israel, March 17, 2026 - Tower Semiconductor (NASDAQ/TASE: TSEM), the leading foundry for high-value analog semiconductor solutions, today announced the release of its latest generation BCD technology, part of its Gen3 power management platform, delivering industry-leading LDMOS performance for high-current applications. The new platform is designed to address the rapidly increasing power demands of AI data centers as well as advanced mobile PMIC and charger applications. Tower will participate and present at APEC 2026, taking place March 23–25, 2026, at the Henry B. Gonzalez Convention Center in San Antonio, TX, booth #1455.

AI infrastructure is experiencing an unprecedented increase in power consumption. As processor performance scales, power delivery efficiency has become a critical bottleneck, widely referred to as the "AI power wall." Tower's Gen3 LDMOS technology directly addresses this challenge by enabling higher efficiency power delivery, reducing heat generation, and improving overall system performance. The platform also leads to substantial die size reduction for power management chips with large power transistor content.

The technology specifically targets Monolithic Smart Power Stage and DrMOS applications, a market currently estimated at approximately $2.5 billion and projected to grow to more than $4.7 billion by 2031 according to Mordor Intelligence. The newly released technology includes a family of power devices specifically developed to support the demands of both lateral and vertical power delivery for AI processors, such as ultra-low switching and conduction losses. By combining its established silicon photonics leadership in AI data centers with advanced power management capabilities, Tower is expanding its role in AI infrastructure from optical interconnect to efficient AI processor power delivery.

APEC 2026 Event Details
Tower Semiconductor representatives will be available to meet with existing and prospective customers throughout the event dates.
Dates: March 23–25, 2026
Venue: Henry B. Gonzalez Convention Center, San Antonio, TX
Booth: #1455

Presentation Details
Title: *Tower's Power Management Technologies: Achieving Highest System Efficiency & Integration*
By Dr. Mete Erturk, Co-General Manager, Power Management BU
Date: March 24, 2026
Time: 3:45 PM – 4:15 PM
Location: Expo Theater 3

To learn more about Tower's advanced power management platform offerings, visit here.

About Tower Semiconductor
Tower Semiconductor Ltd. (NASDAQ/TASE: TSEM), the leading foundry of high-value analog semiconductor solutions, provides technology, development, and process platforms for its customers in growing markets such as consumer, industrial, automotive, mobile, infrastructure, medical and aerospace and defense. Tower Semiconductor focuses on creating a positive and sustainable impact on the world through long-term partnerships and its advanced and innovative analog technology offering, comprised of a broad range of customizable process platforms such as SiPho, SiGe, BiCMOS, mixed-signal/CMOS, RF CMOS, CMOS image sensor, non-imaging sensors, displays, integrated power management (BCD and 700V), and MEMS. Tower Semiconductor also provides world-class design enablement for a quick and accurate design cycle as well as process transfer services including development, transfer, and optimization, to IDMs and fabless companies. To provide multi-fab sourcing and extended capacity for its customers, Tower Semiconductor currently owns one operating facility in Israel (200mm), two in the U.S. (200mm), and two in Japan (200mm and 300mm) which it owns through its 51% holdings in TPSCo and shares a 300mm facility in Agrate, Italy with STMicroelectronics. For more information, please visit: www.towersemi.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'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. Tower does not intend to update, and expressly disclaim any obligation to update, the information contained in this release.

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