FORM 6-K

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

For the month June 2025 No. 1

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 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 June 3, 2025, the Registrant Announces Presenting at IMS 2025 Highlighting Recent Innovations in RF Foundry Technology

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: June 3, 2025

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

Tower Semiconductor to Present at IMS 2025 Highlighting Recent Innovations in RF Foundry Technology

Presenting a joint white paper with pSemi nominated for Best Industry Paper Award highlighting next-generation RF switch technology

MIGDAL HAEMEK, Israel, June 3, 2025 – Tower Semiconductor (NASDAQ/TASE: TSEM), a leading foundry of high-value analog semiconductor solutions, today announced its participation in the upcoming International Microwave Symposium (IMS) 2025, taking place June 16–21 in San Francisco, California, highlighting its advanced RF & HPA technology platform and latest advancements in RF switch technology. As part of the event's technical program, Tower will present a jointly developed white paper with pSemi, titled "A Low-Loss, Wideband, 0–110 GHz SPDT Using PCM RF Switches with Integrated CMOS Drivers" nominated for the Best Industry Paper Award at IMS2025.

This paper highlights a record-breaking wideband single-pole, double-throw (SPDT) switch utilizing Tower Semiconductor's monolithically integrated PCM RF switches in an RFSOI CMOS process. The key features include ultra-wideband performance (true DC to 110 GHz with less than 2 dB of insertion loss), digital control using integrated CMOS drivers with MIPI RFFE interface (available in the PDK), 30 dBm measured power handling, and 15-20 dB better linearity performance than RFSOI CMOS SPDTs currently available. This combination of ultra low-loss wideband performance, power handling, and full CMOS/digital integration simplifies implementation for end users and enables advanced circuits for 5G, future 6G, SatCom, beamforming, and millimeter-wave applications.

Presentation schedule:
A Low-Loss, Wideband, 0-110 GHz SPDT Using PCM RF Switches with Integrated CMOS Drivers
By Dr. Nabil El-Hinnawy, Principal R&D Engineer, Tower Semiconductor
As part of the *Th1B session: Innovative RF Switches, Varactor and Modulator Technologies* (full program details available here).
Date & Time: June 19, 2025 **at** 8:20AM
Location: 205
To meet with Tower's engineering team during the conference, visit the **Company's booth #655.**
For additional details on IMS 2025, please visit the event webpage here.
For additional information about the Company's RF platform offering, 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 SiGe, BiCMOS, mixed-signal/CMOS, RF CMOS, CMOS image sensor, non-imaging sensors, displays, integrated power management (BCD and 700V), photonics, 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 owns one operating facility in Israel (200mm), two in the U.S. (200mm), two in Japan (200mm and 300mm) which it owns through its 51% holdings in TPSCo, shares a 300mm facility in Agrate, Italy with STMicroelectronics as well as has access to a 300mm capacity corridor in Intel's New Mexico factory. 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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