FORM 6-K

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

For the month July 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 July 8, 2025, the Registrant Announces Winning the Prestigious Industry Paper Competition Award with pSemi at IMS 2025

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: July 8, 2025

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

Tower Semiconductor and pSemi Win the Prestigious Industry Paper Competition Award at IMS 2025

Award-winning paper showcases breakthroughs in wideband RF switch performance, reinforcing Tower's leadership in advanced RF front-end innovation

MIGDAL HAEMEK, Israel — July 08, 2025 — Tower Semiconductor (NASDAQ/TASE: TSEM), a leading foundry of high-value analog semiconductor solutions, today announced receipt of the Industry Paper Competition Award at the 2025 IEEE International Microwave Symposium (IMS) for their co-authored paper with pSemi — "A Low-Loss, Wideband, 0–110 GHz SPDT Using PCM RF Switches with Integrated CMOS Drivers". The paper was presented on June 19, 2025, during IMS's session on *Innovative RF Switches, Varactor and Modulator Technologies*, and won the Best Paper Award in its category.

The award recognizes Tower's PCM RF switch as a significant innovation and advancement in RF switch technology, capable of delivering a record-breaking combination of bandwidth (DC–110 GHz), insertion loss (<2 dB), power handling (30 dBm), and linearity (+15–20 dB improvement over RFSOI CMOS solutions) — results that have not been achieved by any other RF switch technology. Enabled by Tower's proprietary BEOL integration and integrated digital control, this combination of ultra-low-loss wideband performance, power handling, and full CMOS integration simplifies implementation for end users and enables advanced circuits for 5G, future 6G, SatCom, beamforming, and millimeter-wave applications.

"We're honored to receive this recognition," said **Dr. Ed Preisler, Vice President and General Manager of the RF Business Unit.** "This achievement reinforces our commitment to advancing RF front-end integration for the next wave of wireless devices and highlights the power of strategic partnerships like ours with pSemi."

"We are honored to be recognized by IMS alongside Tower Semiconductor," said **Rodd Novak, Vice President, Sales and Marketing, pSemi**. "This award reflects our team's dedication to pushing the boundaries of wideband RF switch research and design."

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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