
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

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 September 2026 No.2

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 September 17, 2026, the Registrant and NewPhotonics® Announce
Beginning of High-Volume Shipments of Laser Integrated, Serviceable
Optical Engine PICs for Scale-Out and Scale Up AI Interconnect**

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: September 17, 2026

By: /s/ Nati Somekh

Name: Nati Somekh

Title: Corporate Secretary

NewPhotonics® and Tower Semiconductor Begin High-Volume Shipments of Laser-Integrated, Serviceable Optical Engine PICs for Scale-Out and Scale Up AI Interconnect

Companies commercialize scale manufacturability of 800G to 1.6T PICs in external pluggable and CPX MSA compliant NPO socket pluggable solutions built on PH18DA platform designed for high-density monolithic laser integration, SOAs, modulators and detectors

MIGDAL HAEMEK, Israel, and TEL AVIV, Israel, September 17, 2026 – Tower Semiconductor (NASDAQ/TASE: TSEM), the leading foundry for high-value analog semiconductor solutions, and NewPhotonics®, a fabless semiconductor delivering innovative photonic IC chip solutions, today announced high-volume shipment of laser-integrated serviceable optical engines designed to meet the urgent and growing demand for high-bandwidth, energy-efficient optical interconnects in artificial intelligence infrastructure.

The PIC optical engine chips support OEM solutions ranging from FRO/LRO/LPO and Extra-Dense Packaged Optics (XPO) pluggable transceiver modules and Near-Packaged Optics (NPO) socket pluggable applications. Shipping volume production PICs today support data rates from 800G to 1.6T, with future volume manufacturing planned at 6.4T NPO solutions suitable for scale-out and scale-up architectures.

The collaboration leverages the high-volume PH18DA silicon photonics (SiPho) technology platform featuring heterogeneously integrated InP components enabling monolithic integration of lasers, semiconductor optical amplifiers (SOAs), modulators, and photodetectors on a single photonic integrated circuit. This highly integrated, optical-domain focused approach reduces complexity and manufacturing variability to supply better yield, reliability, and time-to-market with a leading-edge photonic device.

Volume shipment of NewPhotonics NPG102 PIC products for 800G and 1.6T feature 200G-per-lane designs and heterogeneously integrated lasers on a monolithic PIC enable customers to leverage optical signal processing in a unified architecture that delivers power efficiency, bandwidth density, and manufacturing consistency. The CPX-MSA compliant NPC505 chipsets for 6.4T will begin volume shipment in 1H27.

“The next phase of AI infrastructure demands optical connectivity that scales in both production and performance,” **said Doron Tal, SVP and GM of NewPhotonics**. “With Tower, we are translating laser-integrated photonics into a practical choice and volume availability. By combining our optical chip design with their manufacturing platform, we are first to bring higher-bandwidth, energy-efficient highly integrated systems to the OEM customer and data center market.”

“We are excited to see our vision of integrating lasers with high-performance photonic integrated circuits come to fruition through scale-ready solutions optimized for FRO/LRO and NPO architectures,” **said Dr. Ed Preisler, Vice President and General Manager, RF Business Unit, Tower Semiconductor**. “NewPhotonics is a valued partner and the first to bring heterogenous laser-integrated optical engines on the PH18DA platform into high-volume production, marking an important milestone in scaling optical connectivity for next-generation AI infrastructure.”

Both companies will participate in the upcoming ECOC 2026, September 21–23 at FYCMA in Malaga, Spain, with representatives available for meetings during the event.

To learn more about Tower Semiconductor’s advanced silicon photonics (SiPho) platform and RF & HPA technology offerings, visit **booth #C1014**. Additional information is also available on the Company’s website: [here](#).

NewPhotonics will showcase the NPG102 and NPC505 PIC products in **Pavilion 2 stand #2009**. Additional information about the company as well as scheduling for ECOC meetings and demo sessions can be accessed at the company’s [ECOC event page](#)

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, and integrated power management (BCD and 700V). 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.

About NewPhotonics

NewPhotonics is a fabless semiconductor delivering innovative optical-first silicon photonic product and technology innovation for AI-era hyperscaler, neo-cloud and data center interconnect that enables market disrupting energy efficiency and production simplicity and volume of FRO/LRO/LPO and NPO pluggables as well as advanced co-packaged optics solutions. In a highly integrated and system approach to design, the company offers laser integrated

PICs for scale-out and scale-up photonic interconnect, the OSPic[®] all-optical signal processor engine, and the industry-first Syncra[™] powered by Niox[™] heaterless MRM CPO platform with zero-loss monitoring and real-time calibration. Visit www.newphotonics to learn more.

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