TechInsights Identifies Five Trends Reshaping the Semiconductor Market

Outlook examines how AI-driven demand is reshaping supply, technology investment, sustainability and the products that reach consumers

OTTAWA, Ontario–Oct. 29, 2026–TechInsights, the authoritative information platform for the semiconductor industry, released its 2027 Outlook Report highlighting five trends that will shape the semiconductor market in the year ahead. The report examines a changing memory market and growing advanced packaging constraints, the expanding impact of AI across the industry, rising pressure to address semiconductor manufacturing emissions and the effect of higher costs on consumer electronics.

Following semiconductor industry's explosive growth in 2026, the report identifies memory as the industry's most significant constraint heading into 2027. TechInsights forecasts more than $1.6 trillion in memory revenue, driving the total semiconductor market to more than $2.6 trillion. The company expects memory to account for 62% of semiconductor industry revenue in 2027, compared with approximately 25% historically.

"We've seen memory shortages before, but AI is changing the scale of what we're facing," said David MacQueen, director of executive insights at TechInsights. "Memory is becoming a constraint across the entire semiconductor industry. In 2027, companies won't just be asking what technology they want to build; they'll have to ask what memory they can actually get. That will influence everything from chip architectures and manufacturing investments to which consumer products ultimately make it to market."

AI infrastructure is consuming the available high-bandwidth memory (HBM) supply, with the majority of 2027 output already fully booked. This is pulling investment and production capacity away from other memory categories, creating shortages that will influence product design, chip architecture, manufacturing investment and end-market growth. TechInsights expects consumer, automotive and industrial companies to face some of the greatest disruptions as they compete for supply against hyperscalers with greater purchasing power.

Including memory, TechInsights identifies five key trends shaping the semiconductor market in 2027:

- Memory cycles move to higher ground: Sustained AI demand, disciplined supply and increasingly strategic customer relationships are changing the traditional memory cycle. HBM supply is already booked through 2027, while TechInsights expects NAND to become the next memory bottleneck as AI drives rapid growth in solid-state drive (SSD) storage demand.
- Bottlenecks spread to advanced packaging and mature nodes: Advanced packaging capacity will become increasingly critical as chiplet-based architectures expand, and HBM competes with logic for packaging capacity. TechInsights projects chip-on-wafer-substrate (CoWoS) and system on integrated chips (SoIC) capacity to grow 20-25% annually while continuing to face strong demand.
- AI's impact extends beyond memory: The AI and high-performance computing market will increasingly shift from training toward inference, accelerating demand for custom silicon. TechInsights expects silicon photonics to account for 42% of AI optical transceiver revenue and forecasts that the datacenter power IC market will surpass $4.5 billion.
- Carbon becomes a critical consideration for silicon: TechInsights projects semiconductor manufacturing emissions will reach a record 197 million metric tons of CO_2e in 2027 as industry growth and the increasing demands of advanced logic and memory manufacturing drive emissions higher. TechInsights recently expanded its sustainability offering with the acquisition of the Product Attributes to Impact Algorithm (PAIA) tools and industry consortium from MIT. PAIA helps technology companies measure the environmental footprint of information and communications technology (ICT) products, and its integration into TechInsights strengthens product lifecycle and supply chain sustainability insights.
- Cost-conscious consumers could constrain growth: Rising memory prices will increase the cost of consumer electronics and could create a two-tier market. Premium products may continue to add capabilities, while more price-sensitive devices could face specification cuts, delays or cancellations as manufacturers balance memory availability and cost.

Readers can access the full TechInsights Outlook 2027: Five Trends Reshaping the Market through the TechInsights Platform. Free registration provides access to the report and a range of semiconductor industry research and analysis. Trusted by the world's leading technology companies, the TechInsights Platform combines technical intelligence with in-depth market analysis to give decision makers an early, comprehensive view of the technologies and market

shifts shaping the semiconductor industry. The platform delivers timely, actionable intelligence, helping companies make informed business, product and technology decisions.

To sign up for the TechInsights Platform, visit www.techinsights.com and follow the company on LinkedIn and X.

# # #

About TechInsights

Regarded as the most trusted source of actionable, in-depth intelligence related to semiconductor innovation and surrounding markets, TechInsights' content informs decision makers and professionals whose success depends on accurate knowledge of the semiconductor industry—past, present, or future.

Over 650 companies and 100,000 users access the TechInsights Platform, the world's largest vertically integrated collection of unmatched reverse engineering, teardown, and market analysis in the semiconductor industry. This collection includes detailed circuit analysis, imagery, semiconductor process flows, device teardowns, illustrations, costing and pricing information, forecasts, market analysis, and expert commentary. TechInsights' customers include the most successful technology companies who rely on TechInsights' analysis to make informed business, design, and product decisions faster and with greater confidence. For more information, visit www.techinsights.com.