

Future Semisphere

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Technology



Investment



Supply Chain



Policy



Innovation





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TECHNOLOGY DIRECTION / INNOVATION

Memory & Storage Technology · Architecture Shifts & Compute Paradigm

Beyond HBM:

Qualcomm, CXMT and TSMC Signal New Directions in AI Memory and Data Movement

HBM has become central to AI chips because it enables processors to access large amounts of data quickly. New developments, however, are pointing to more options.

Qualcomm is developing High Bandwidth Cache (HBC), which stacks LPDDR memory directly on the logic die. The approach aims to deliver high bandwidth at lower cost and power than HBM for some AI inference workloads. Samsung and SK Hynix are also developing the technology.

China's CXMT has started small-batch production of HBM3E. Although its production scale and yields remain below leading suppliers, the move shows progress in China's ability to produce advanced stacked memory.

Beyond memory, TSMC expects silicon photonics to become mainstream around 2027, enabling faster data movement between chips. Together, these developments show that AI hardware is evolving beyond simply making processors faster, with greater focus on memory, power efficiency and data movement.

What This Means For You



For Startups

AI chip and edge-inference startups can assess HBC as a potential alternative to HBM, especially where memory cost and power consumption are important.



For Ecosystem Partners

CXMT's HBM3E progress could broaden the global memory supply base over time, while TSMC's silicon photonics development highlights the growing importance of faster data movement. Investors and procurement teams can consider these shifts when assessing future memory sourcing, costs and infrastructure requirements.

Read more [1](#) [2](#) [3](#)

TECHNOLOGY DIRECTION

AI & HPC Chip Architectures · Compound Semiconductors & Power Electronics

AI Efficiency:

OpenAI's Jalapeño ASIC and Nexperia's 12-Inch MOSFET Milestone

OpenAI has published benchmarks for its Jalapeño ASIC, a 700W chip developed with Broadcom. It claims up to 1.9× higher throughput per kilowatt and 3.6× lower latency than a leading Nvidia GPU operating at 1,400W. The comparison highlights a growing focus on performance per watt, which directly affects data-centre power consumption and operating costs.

Nexperia has started mass production of 19 automotive MOSFETs on 12-inch wafers using its T2X technology. The shift from 8-inch to 12-inch wafers can reduce per-chip manufacturing costs by up to 50% while improving production efficiency.

Although the applications are different, both developments point to the same trend, chip efficiency is increasingly being measured by how much performance can be delivered for each unit of power and manufacturing cost.

What This Means For You

For Startups



Power electronics startups should watch the shift to 12-inch MOSFET production, as larger wafers can improve manufacturing efficiency and reduce per-chip costs. This could support better product economics in EV and industrial applications.

For Ecosystem Partners



Investors should watch Jalapeño's power-efficiency results. If verified, they could show that custom AI chips can compete with GPUs not only on performance, but also on power consumption and cost.

Read more [1](#) [2](#)

INVESTMENT & MARKET

VC, Private Equity & IPOs · M&A, Joint Ventures & Consortia

Compound Semiconductor Investment, M&A and JV: C2i, Quintessent, SweGaN, HexSeed and Indichem

Five investment and partnership developments in compound semiconductors and related technologies highlight where capital and partnerships are developing across the sector.

Infineon has agreed to acquire Bengaluru-based C2i Semiconductors, a power-management startup focused on AI data centres. The deal highlights growing interest in Indian chip startups and the rising demand for power solutions in AI infrastructure.

Quintessent raised \$40 million for its InP-based laser technology for AI data-centre optical interconnects. SweGaN raised \$14 million to expand its GaN-on-SiC technology for 5G and satellite communications, while HexSeed raised over £600,000 for its diamond-on-GaN thermal-management technology.

In India, Indichem, an India-Korea joint venture, is building a local supply chain for semiconductor-grade chemicals. This can reduce dependence on imported materials and provide an alternative to Chinese sources.

What This Means For You



For Startups

Compound semiconductor startups can track areas attracting investment, including AI data-centre power, optical connectivity, GaN for high-frequency applications and thermal management. These developments indicate growing interest across different compound semiconductor applications.



For Ecosystem Partners

The developments cover different forms of investment, from early-stage funding to acquisition and an India-Korea JV. This highlights opportunities for partnerships and investment across different stages of the semiconductor ecosystem.

Read more [1](#) [2](#) [3](#) [4](#) [5](#)

INVESTMENT & MARKET / POLICY & GEOPOLITICS

Design Wins & Commercial Contracts · Industrial Policy & State Subsidies (ISM, DLI, PLI, C2S)

VIHAAN Finds a Route to Market: India's Chip Design Gap Between Silicon and Sales Sharpens

India is getting better at designing and developing working chips, but converting these designs into customer-ready products remains a challenge.

Aheesa has partnered with Zigma to take its VIHAAN-I networking chip to market. VIHAAN-I successfully worked on its first manufacturing attempt in August 2026, making it one of the first DLI-backed SoCs to reach working hardware. The partnership will help move the chip towards customer adoption and commercial sales. However, Indian chip startups still face gaps in customer qualification pathways and reliable volume-production capacity required by OEMs.

Customer validation, product integration and production readiness remain key hurdles after a chip is developed. Funding may also be needed beyond DLI and early-stage support to complete testing, start production and fulfil larger orders.

The key challenge is moving from a working chip to a product that customers are ready to buy.

What This Means For You



For Startups

Finding customers should start while the chip is being developed, not after the chip is ready. Startups can work on customer discussions and product requirements alongside chip development.



For Ecosystem Partners

Helping startups find customers can be as important as helping them develop chips. Investors and government partners can support programmes that connect Indian chip startups with potential customers and create early demand.

Read more [1](#) [2](#) [3](#)

SUPPLY CHAIN

Shortages & Inventory Dynamics · Raw Materials & Substrates Security · Manufacturing Equipment & Tooling

Supply Chain Shifts: Samsung Pricing, SK Hynix Capacity and ASML's EUV Push

Samsung has raised prices for its advanced foundry services by up to 15% as strong AI chip demand puts pressure on its 4nm capacity. At the same time, its expanded partnership with ASML on High NA EUV technology supports the development of advanced chips at nodes below 2nm. The price increase could raise manufacturing costs for fabless companies using Samsung Foundry, while the EUV partnership highlights continued investment in advanced chip manufacturing.

SK Hynix has started work on a \$4 billion AI chip packaging facility in Indiana, with production planned for 2029. The company expects memory shortages to continue through 2030, potentially keeping supply tight and costs high for memory-intensive chip companies.

What This Means For You



For Startups

Fabless companies should factor changing foundry costs into their plans. Startups developing memory-intensive chips should also consider how continued memory shortages could affect production and costs.



For Ecosystem Partners

SK Hynix's new packaging facility and Samsung-ASML's High NA EUV partnership highlight continued investment in advanced packaging and chip manufacturing. Ecosystem partners can track these developments when assessing opportunities in semiconductor manufacturing infrastructure and services.

Read more [1](#) [2](#) [3](#)

POLICY & GEOPOLITICS

Industrial Policy & State Subsidies (ISM, DLI, PLI, C2S) · Trade Restrictions & Export Controls

A Policy-Dense Fortnight: MeitY's Demand-Pooling Move, BIS Exemption and US Export Controls

As Semicon 2.0 moves into implementation, MeitY is exploring a way to pool chip design demand from multiple Indian companies to negotiate better terms with global foundries. This could help smaller Indian fabless companies that may not have enough volume to negotiate directly with large foundries.

The government is also working on a framework to exempt foreign high-tech companies from BIS certification for equipment and components needed to set up manufacturing facilities in India. The move is mainly aimed at reducing regulatory delays and ensuring timely availability of specialised equipment, with semiconductor manufacturing among the key areas being discussed. The final framework could provide exemptions at the company, industry, product or project level.

In the US, new export controls are being considered to restrict Chinese access to advanced AI computing through remote servers in other countries. The move could limit a route for accessing AI computing capacity outside China. The Critical and Emerging Technologies list has also been updated, adding areas such as integrated photonics and post-quantum cryptography while removing data centres and batteries.

Together, these developments show that government policy is becoming an important part of semiconductor investment, manufacturing and technology access.

What This Means For You

For Startups



Fabless companies can explore the demand-pooling initiative as a way to improve their negotiating position with global foundries. Startups planning to bring manufacturing equipment or components into India should also track the proposed BIS exemption.

For Ecosystem Partners



The addition of integrated photonics and post-quantum cryptography to the US critical technology list highlights areas receiving greater policy attention. Ecosystem partners working in these areas should track how related technology and trade policies develop.

[Read more 1 2 3 4 5](#)

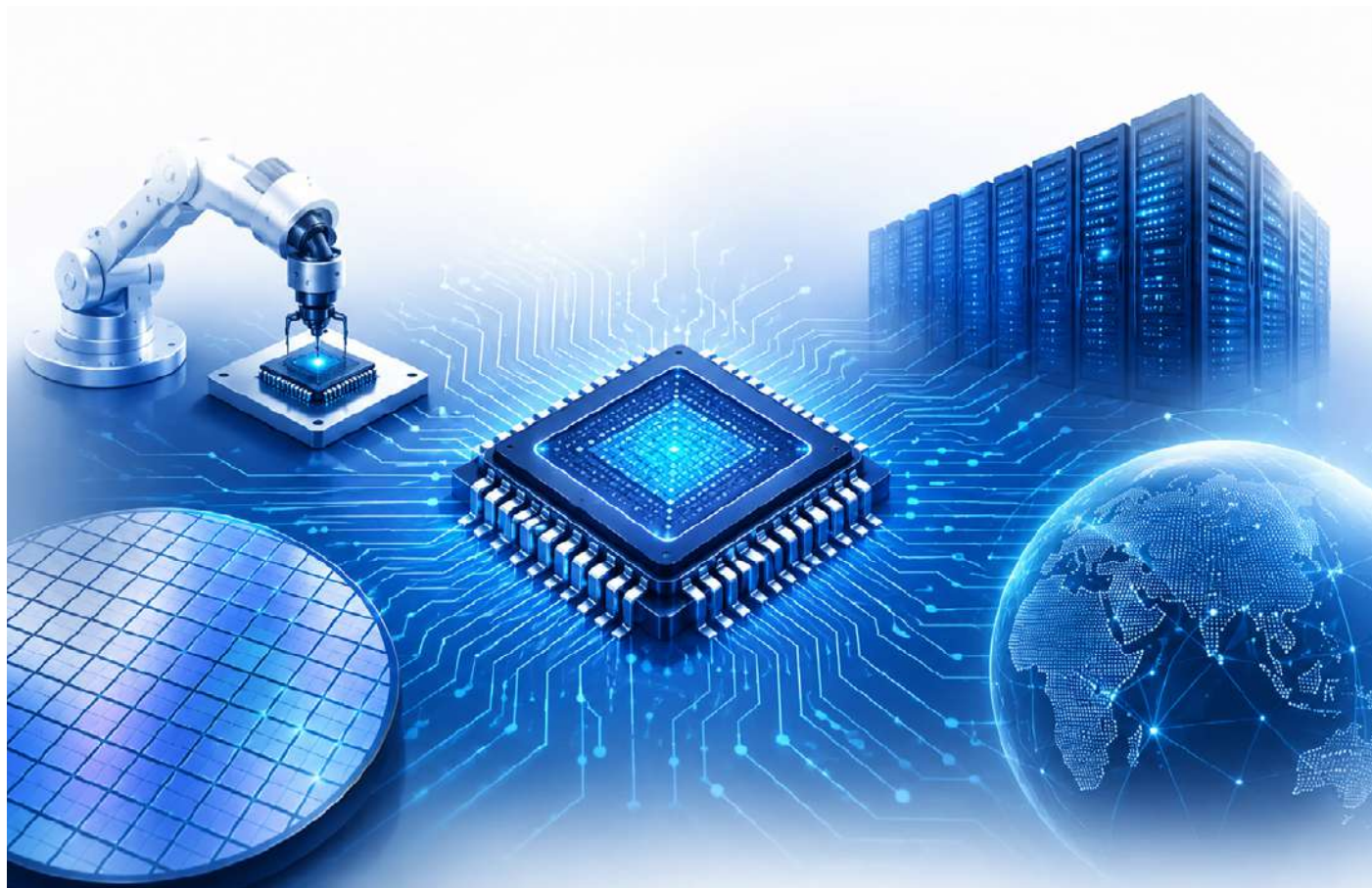
UPCOMING SEMICONDUCTOR EVENTS & CONFERENCES

September 2026

Global

<p>0ct 01-02</p> <p>International 3D Systems Integration Conference (3DIC)</p> <p>IEEE 🇺🇸 USA</p>	<p>0ct 04-09</p> <p>European Microwave Integrated Circuits Conference</p> <p>EuMA 🇺🇸 UK</p>
<p>0ct 05-06</p> <p>World Semiconductors & AI Summit (Semicon Week Conference)</p> <p>The People Events 🇩🇪 Germany</p>	<p>0ct 06</p> <p>Synopsys UK Technology Symposium</p> <p>Synopsys 🇺🇸 UK</p>
<p>0ct 07</p> <p>Siemens Bay Area Semiconductor Summit</p> <p>Siemens 🇺🇸 USA</p>	<p>0ct 08-10</p> <p>International Conference on Integrated Circuits, Design, and Verification (ICDV)</p> <p>IEEE 🇻🇳 Vietnam</p>
<p>0ct 11-14</p> <p>BiCMOS and Compound Semiconductor Integrated Circuits & Technology Symposium (BCICTS)</p> <p>IEEE 🇺🇸 USA</p>	<p>0ct 11-14</p> <p>34th IFIP/IEEE International Conference on Very Large Scale Integration (VLSI-SoC)</p> <p>IFIP/IEEE 🇨🇾 Cyprus</p>
<p>0ct 11-16</p> <p>The world's premier conference on Electronic Test (International Test Conference)</p> <p>IEEE 🇺🇸 USA</p>	<p>0ct 13-15</p> <p>Semicon West</p> <p>SEMI Global 🇺🇸 USA</p>
<p>0ct 13-15</p> <p>SemiTronics</p> <p>Informa Markets 🇻🇳 Vietnam</p>	<p>0ct 14-17</p> <p>International Semiconductor Conference (CAS)</p> <p>IEEE 🇷🇴 Romania</p>
<p>0ct 14-17</p> <p>Selangor AI & Semiconductor Convention (AISEM)</p> <p>Sidec 🇲🇾 Malaysia</p>	<p>0ct 14-16</p> <p>2026 SEDEX Semiconductor Exhibition</p> <p>Korea Semiconductor Industry Association 🇰🇷 South Korea</p>
<p>0ct 14-16</p> <p>WESEMiBAY Semiconductor Ecosystem Expo</p> <p>Shenzhen Xinxing Exhibition Co., Ltd. 🇨🇳 China</p>	<p>0ct 15-16</p> <p>PDF Solutions Connect 2026 Conference</p> <p>PDF Solutions, Inc 🇺🇸 USA</p>
<p>0ct 18-21</p> <p>Electrical Performance of Electronics Packaging and Systems (EPEPS) Conference</p> <p>IEEE 🇺🇸 USA</p>	<p>0ct 20-21</p> <p>ISIG Executive Summit China (CISES)</p> <p>ISIG 🇨🇳 China</p>

Oct 21-23	International Conference on Integrated Circuits, Technologies and Applications (ICTA)	Oct 22	Semiconductor Australia 2026
IEEE 🇸🇬 Singapore		Semiconductor Sector Service Bureau (S3B) 🇦🇺 Australia	
Oct 26-28	Philippine Semiconductor & Electronics Convention and Exhibition (PSECE)	Oct 26-28	13th IEEE Workshop on Wide Bandgap Power Devices and Applications (WiPDA)
SEIPI 🇵🇭 Philippines		IEEE 🇺🇸 USA	
Oct 27-29	Electronic Semiconductor Industry Innovation and Development Conference & International Electronic Circuits (Greater Bay Area) Exhibition	Oct 27-29	Shenzhen International Semiconductor and Electronic Components Exhibition
CPCA 🇨🇳 China		Shenzhen 🇨🇳 China	
Oct 30	ICPF Shenzhen Semiconductor Packaging Technology Exhibition	Oct 27-28	ISIG Executive Summit SEA
Reed Exhibitions (Shenzhen) Co., Ltd. 🇨🇳 China		ISIG 🇲🇾 Malaysia	





OUR PERSPECTIVE

The developments in this edition show that semiconductor companies are dealing with more than just chip design. New memory technologies such as HBC and HBM3E are changing how AI chips can be designed, while Jalapeño and 12-inch MOSFET production show the growing focus on power and manufacturing efficiency.

The VIHAAN-I partnership shows the importance of customer validation, product integration and production readiness after a chip has been developed. Investment in compound semiconductor companies and Infineon's acquisition of C2i also show continued interest in technologies linked to AI infrastructure, power, optical connectivity and thermal management.

Supply-chain conditions are also becoming an important part of chip planning. Higher foundry prices, continued memory supply pressure, new semiconductor material capacity in India and advances in High NA EUV all affect how companies plan their designs, costs and manufacturing. The Indichem JV highlights investment in building semiconductor material capabilities in India.

For the SFAL ecosystem, the key takeaway is that support is needed across the full path from chip design to commercial adoption. Technology development, customer connections, funding, manufacturing access and supply-chain support all have a role in helping Indian semiconductor startups move from working chips to products that customers are ready to buy.



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India and Global Semiconductor Intelligence | BI-WEEKLY EDITION 7

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