

IT & Electronics

Field Intelligence Report

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Semiconductor Packaging / AI & Machine Learning / Quantum Computing / Photonics & Optical Comms

Market Mood

78

/ 100 Optimistic

AI-Driven Compute & Connectivity

Unprecedented demand for AI fuels innovation and bottlenecks across advanced packaging, quantum, and optical networks.

AI Chip Packaging Capacity Growth	US AI Data Center Power Consumption Increase	Global Quantum Hardware Market Forecast	Optical Transceiver Market Forecast
9x	26%	\$33.31B	\$34.4B
60%+	—	30.7% CAGR	—

Weekly Summary

The IT & Electronics domain is undergoing a profound transformation, driven by the insatiable demand for AI. This week saw critical advancements in AI models and hardware, alongside severe supply chain bottlenecks in advanced semiconductor packaging and high-bandwidth memory, leading to 40-week lead times. Quantum computing is accelerating towards fault tolerance with significant qubit breakthroughs and finalized Post-Quantum Cryptography standards. Photonics and optical communications are rapidly evolving with silicon photonics and Co-Packaged Optics becoming indispensable for AI data centers, while geopolitical tensions reshape global supply chain strategies.

4 Sub-Topic Summary

Sub-Topic	Headline	Momentum	Key Insight
Semiconductor Packaging	AI Demand Drives 90% Equipment Surge, 40-Week Lead Times Persist	Accelerating	Unprecedented AI chip demand has led to a 90% surge in equipment orders and 40-week lead times for critical components like HBM and ABF substrates, despite TSMC's 9x CoWoS capacity expansion.

AI & Machine Learning	New LLMs & Hardware Boost AI Capabilities, EU Act Enforced	Accelerating	Major AI labs released nine new LLMs, including GPT-6 Astra, while hardware innovations like NVIDIA's Blackwell Ultra and Cerebras WSE-3 deliver unprecedented compute power. The EU AI Act is now fully enforced, imposing strict compliance on high-risk AI systems.
Quantum Computing	Fault-Tolerant Quantum Progress Accelerates, PQC Standards Finalized	Accelerating	IBM's 120-qubit Nighthawk r2 and Microsoft's Majorana 1 advance fault-tolerant quantum computing, while German researchers demonstrate 1,000x error reduction in logical qubits. NIST finalized PQC standards (FIPS 203, 204, 205), initiating a \$7.1 billion migration.
Photonics & Optical Comms	Silicon Photonics to Dominate 50% of Optical Transceiver Market by 2027	Accelerating	AI infrastructure demand is driving silicon photonics to account for over 50% of the optical transceiver market by 2027, with TSMC beginning CPO production in H2 2026 and 1.6T transceivers entering mass production.

JSR Expands EUV Photoresist and MOR Production for Advanced Nodes

Source: Gemini Grounding (JSR/)

Summary: JSR Corporation is significantly expanding its advanced lithography material production. A new joint venture in Taiwan is projected to begin EUV photoresist operations as early as 2028, co-developing with TSMC. Concurrently, JSR's South Korean facility for tin...

WHY ENGINEERS SHOULD CARE

Teams targeting sub-3nm logic and next-generation DRAM should closely monitor JSR's ramp-up of EUV and MOR capacity. Upstream resist supply stability is critical for meeting future process node migrat...

Japan Accelerates Advanced Semiconductor Production with Trillion-Yen Investments

Source: Gemini Grounding

Summary: Japan's Ministry of Economy, Trade and Industry (METI) is channeling over 10 trillion JPY in public support by FY2030 to bolster its semiconductor industry. Key projects include Rapidus targeting 2nm logic mass production by H2 2027 with over 4 trillion JPY in...

WHY ENGINEERS SHOULD CARE

This provides concrete timelines and capacity targets for advanced logic (2nm), HBM, and specialized optical components from Japan. Design and procurement teams should evaluate these upcoming capaci...

Shin-Etsu Chemical Drives Silicon Wafer Price Hikes Amid Surging AI Demand

Source: Gemini Grounding (JSR/)

Summary: Shin-Etsu Chemical, a dominant global silicon wafer supplier, implemented a second round of price hikes in June 2026. Prices for high-end 12-inch wafers, critical for AI computing, increased by 18%-22%, while standard 12-inch wafers saw a 3%-8% rise. This tren...

WHY ENGINEERS SHOULD CARE

Procurement and cost engineering teams must account for sustained upward pressure on 12-inch silicon wafer costs, especially for products leveraging advanced nodes for AI/HBM. Re-evaluate long-term su...

This Week's Japan Technology Highlights

Japan's aggressive push for 2nm logic with Rapidus targeting H2 2027 mass production signals a critical new player in advanced node fabrication.

China Watch | IT & Electronics

Full English content available after pipeline regeneration.

CXMT's LPDDR6 Mass Production and HBM3E Risk Production: China's AI Memory Push

China's Move

ChangXin Memory Technologies (CXMT) announced mass production of LPDDR6 memory, set to debut in Xiaomi's 18 Fold smartphone in September 2026 (CXMT announcement, Xiaomi). CXMT also began risk production of HBM3E, with mass production planned for 2027 (CXMT ann...

Technical Verification

[CONFIRMED]	CXMT has achieved mass production of LPDDR6 memory, confirmed by its impending commercial deployment in a Xiaomi smartphone in September 2026. (CXMT announcement, Xiaomi) / CXMT's global DRAM and HB...
[BOTTLENECK]	Achieving commercially viable HBM3E yields and performance requires mastering advanced 3D stacking, through-silicon via (TSV) technology, and sophisticated packaging (e.g., CoWoS-equivalent). / Deve...

Implications for Western Engineers

- Memory Procurement Teams: Evaluate CXMT's LPDDR6 for mobile and edge AI applications. Request detailed specifications, sample av...
- AI Accelerator Design Teams: Benchmark CXMT HBM3E samples (when available) against leading solutions (SK Hynix, Micron) on:
 - Bandwidth-per-watt and total bandwidth.

Key Trends This Week (5 Total)

TR-01 HIGH

Cross-Domain

AI Compute Bottlenecks Drive Packaging & Optical Innovation

AI Demand Creates 40-Week Lead Times, Accelerating Advanced Packaging & Optical Solutions

The explosive growth of AI is causing severe bottlenecks in the supply chain, particularly for HBM and advanced packaging (CoWoS), leading to 40-week lead times. This scarcity is accelerating innovation in glass substrates, panel-level packaging, and Co-Packaged Optics (CPO) to meet the unprecedented demand for high-bandwidth, energy-efficient AI compute.

HBM/CoWoS lead times	TSMC CoWoS capacity growth (3 years)	Optical transceiver market share (Silicon Photonics by 2027)
40 weeks	9x	50%+

► NVIDIA ► TSMC ► Intel ► Marvell ► Coherent

Refs: S1-01 S1-10 S1-13 S1-19 S4-04 S4-08 S4-16 S4-20

TR-02 HIGH

Quantum Computing

Fault-Tolerant Quantum Computing Nears Practicality

Qubit Fidelity & Error Correction Breakthroughs Propel Quantum Computing Towards Fault Tolerance by 2029

Significant advancements in qubit stability (IBM Nighthawk r2, Microsoft Majorana 1) and error correction (German 1,000x error reduction, Google's Willow) are rapidly moving quantum computing from NISQ to fault-tolerant systems. IBM targets a 200-logical-qubit 'Starling' by 2029, while NIST finalizes Post-Quantum Cryptography standards, signaling a critical transition for cybersecurity.

IBM Nighthawk r2 qubits	IBM Starling logical qubits (by 2029)	PQC migration cost (2025-2035)
120	200	\$7.1 billion

► IBM ► Microsoft ► Quantinuum ► NIST ► PsiQuantum

Refs: S3-01 S3-03 S3-07 S3-10 S3-20 S3-22 S3-23 S3-25 S3-35

TR-03 MED

AI & Machine Learning

AI Data Center Infrastructure Faces Power & Cooling Crisis

AI Data Centers Confront 26% Annual Power Surge, Driving 70% Liquid Cooling Adoption by 2030

The exponential growth of AI data centers is creating an urgent crisis in power and cooling infrastructure, with US power consumption projected to rise 26% annually. This necessitates rapid adoption of liquid cooling technologies, expected to reach 70% for new AI data centers by 2030, and significant investment in energy efficiency and smart power management.

US AI data center power increase (annual)	Liquid cooling adoption (new AI data centers by 2030)	NVIDIA GB200 NVL72 rack power
26%	70%	130kW+

TR-04 MED Cross-Domain

Geopolitical Tensions Reshape Tech Supply Chains

US/EU Regulatory Actions & China's Self-Sufficiency Drive Reshape Global Semiconductor & Optical Supply Chains

Geopolitical factors are increasingly influencing technology supply chains. The EU AI Act imposes strict compliance, while the FCC considers banning Chinese optical transceivers, impacting a market where Chinese suppliers hold 60% share. China's OSATs are investing billions in advanced packaging for self-sufficiency, and Taiwan-Lithuania collaborate on equipment, highlighting a global shift towards regional resilience and diversification.

Chinese optical transceiver market share	China OSAT investment	Taiwan-Lithuania tech pact
60%	\$2.2 billion	€5.6 million

► FCC ► European Commission ► Huawei ► TSMC ► GIGALIGHT

TR-05 LOW AI & Machine Learning

AI Accelerates Materials Discovery & Robotics

AI Models Accelerate New Materials Discovery & Enable Embodied Robotics with Minimal Intervention

AI is proving transformative beyond traditional computing. Reinforcement learning and generative models are dramatically accelerating new materials discovery, successfully predicting and synthesizing novel superconductors. Concurrently, new robotics foundation models enable embodied AI to learn complex manipulation tasks from raw sensory data, adapting to novel environments with minimal human intervention.

New materials discovery (experimental reduction)	Robotics foundation model (human intervention)	AI M&A; in Life Sciences
Significant	Minimal	Intensifying

► Google DeepMind ► MIT ► Stanford ► Anthropic ► Nature

Macro Market Indicators

Indicator	Direction	Value	Note	Source
Global AI Compute Demand vs. Supply	↑	2x	NVIDIA CFO forecasts AI compute demand to be roughly double supply, indicating severe scarcity.	Markets Insider (S1-10)
EU AI Act Enforcement Status	↑	Full Enforcement	The EU AI Act is now fully enforced, imposing stringent compliance mandates for high-risk AI systems.	European Commission (S2-05, S2-17)
US Post-Quantum Cryptography Migration Cost	↑	\$7.1B	White House projects \$7.1 billion cost for PQC migration between 2025-2035 to secure existing systems.	White House (S3-22)
Chinese Optical Transceiver Global Market Share	→	60%	Chinese suppliers account for approximately 60% of global datacom transceiver sales, facing potential US import ban.	Fusion Worldwide (S4-25)

Macro Environment Summary

The global IT & Electronics sector is experiencing unprecedented growth, primarily driven by the insatiable demand for AI. This surge is creating significant supply chain pressures, particularly in advanced semiconductor packaging and high-bandwidth memory, leading to extended lead times and strategic investments. Regulatory frameworks like the EU AI Act are now fully enforced, shaping the ethical and operational landscape for AI development. Simultaneously, the quantum computing race is accelerating, with major advancements in fault-tolerant systems and the finalization of post-quantum cryptography standards, necessitating substantial migration efforts. Optical communications are undergoing a rapid transformation to support AI data centers, with silicon photonics and co-packaged optics becoming critical for future infrastructure. Geopolitical factors, such as potential restrictions on Chinese optical transceivers, add complexity to global supply chain strategies.

Market Data: SOXX (Semiconductors) Weekly Trend

519.86 USD +2.21%

HBM Capacity Forecast Source: NVIDIA CFO, Markets Insider (S1-10)

NVIDIA CFO forecasts HBM demand to be roughly double supply, indicating severe shortage despite capacity growth.

Year	Prev (PetaBytes/year)	Curr (PetaBytes/year)	Δ
2025	1000.0	1000.0	+0
2026	1500.0	1800.0	+300
2027	2000.0	2500.0	+500

2028	2500.0	3500.0	+1000
2029	3000.0	4500.0	+1500

TSMC CoWoS Capacity Expansion 2023 → 2026: 9x

TSMC's CoWoS advanced packaging capacity has surged nine-fold over three years, yet a 10% AI chip shortage persists due to soaring demand, with NVIDIA securing ~60% of 2026 output.

Action Recommendations by Player

Action Recommendations for Western OEM

OEM Dell, Google, Microsoft, Waymo, GoPro

Dell reports a \$95 billion AI server backlog, indicating strong demand for AI-integrated products. Google, Microsoft, and Waymo are deeply integrating AI into their platforms and products, from Copilot OS to autonomous driving.

Risk

- NVIDIA's 60% CoWoS allocation creates 10% AI chip shortage, delaying product launches for other OEMs.
- HBM supply is the primary bottleneck, with demand double supply, impacting AI server delivery timelines.
- EU AI Act enforcement imposes strict compliance costs and oversight for high-risk AI systems.

Opportunity

- Integrate advanced AI models (Gemini Ultra 1.5, Claude 4) into enterprise solutions for productivity gains.
- Leverage on-device AI (Qualcomm Snapdragon X7 Gen 2) for enhanced privacy and personalized experiences.
- Invest in AI-driven M&A; (McGraw Hill, Plan A Tech) to acquire specialized AI capabilities and accelerate R&D.

Actions This Week

- Secure long-term HBM and advanced packaging supply contracts by Q4 2026 to mitigate 40-week lead times.
- Establish internal EU AI Act compliance teams by end of this week to navigate new regulatory requirements.
- Evaluate AI startups for M&A; by Q1 2027 to acquire specialized AI agents and infrastructure solutions.

□ Scenario: If HBM and CoWoS supply constraints persist through 2027, Western OEMs without diversified sourcing strategies will face significant delays in AI product launches and market share loss — initiate dual-sourcing qualification immediately.

□ Quick Win : Task procurement teams this week to identify and engage alternative HBM and advanced packaging suppliers beyond TSMC/NVIDIA.

Action Recommendations for Western Contract Manufacturer

Foundry GlobalFoundries, Amkor Technology

Amkor Technology secured a \$1.5 billion advanced packaging partnership with NVIDIA, expanding US capabilities. GlobalFoundries, while not explicitly mentioned for AI packaging, represents Western foundry capacity.

Risk

- Taiwanese OSATs invest \$14.4B in capex, intensifying competition in advanced packaging for AI chips.
- Dependence on Japanese SMEs for key ABF materials and T-Glass creates upstream supply chain fragility.
- Rapid technology shifts (CoPoS, glass substrates) require continuous, high-cost R&D; investment to remain competitive.

Opportunity

- Partner with Western OEMs and chip designers to develop custom advanced packaging solutions for AI/HPC.
- Invest in next-gen packaging technologies like panel-level packaging (PLP) and glass substrates for early market entry.
- Expand US/EU advanced packaging capacity, leveraging government incentives, to reduce reliance on Asian supply chains.

Actions This Week

- Initiate R&D; partnerships with Western material suppliers by Q1 2027 to co-develop glass substrate and ABF alternatives.

- Allocate Q4 2026 capital for PLP and CoPoS equipment upgrades to capture emerging AI packaging demand.
- Engage with US/EU government agencies by end of this month to secure funding for domestic advanced packaging expansion.

□ Scenario: If Asian OSATs continue aggressive capacity expansion and technological leadership, Western contract manufacturers will struggle to compete on cost and scale for AI packaging — focus on niche, high-value, secure domestic supply.

□ **Quick Win** : Conduct a competitive analysis of Taiwanese and Korean OSAT advanced packaging roadmaps by end of this week to identify Western capability gaps.

Action Recommendations for Western T&M; Provider

T&M; KLA, Teradyne, NI

KLA's advanced packaging business is projected to grow over 70% to \$1.1 billion in 2026, driven by demand for inspection and metrology tools for complex AI/HPC chips.

Risk

- Rapid evolution of packaging technologies (CoPoS, glass substrates) requires continuous, costly R&D; for new inspection tools.
- Yield bottlenecks in chiplet and stacked memory packages escalate defect-related costs, increasing pressure on T&M; providers.
- Competition from Asian T&M; providers expanding into advanced packaging solutions.

Opportunity

- Develop specialized inspection and metrology tools for glass substrates and panel-level packaging to address emerging needs.
- Offer AI-powered process control solutions to improve yield and reduce defect costs in complex 3D packages.
- Partner with leading foundries and OSATs (e.g., TSMC, Intel) to co-develop next-gen inspection methodologies.

Actions This Week

- Launch a dedicated R&D; initiative by Q1 2027 for glass substrate inspection tools, targeting Intel and TSMC's roadmaps.
- Host a workshop with major Western foundries by Q4 2026 to identify critical yield challenges in 3D packaging.
- Expand sales and technical support teams in Taiwan and South Korea by Q3 2027 to capture Asian market growth.

□ Scenario: If advanced packaging complexity outpaces current inspection capabilities, Western T&M; providers will lose market share to specialized solutions — invest heavily in AI-driven metrology and multi-physics simulation for next-gen packages.

□ **Quick Win** : Schedule a meeting with Intel's advanced packaging R&D; lead this month to discuss their glass substrate metrology requirements.

Action Recommendations for Western Material Supplier

Material TRUMPF, BASF, Dow, DuPont

TRUMPF resolved a key glass substrate TGV coating bottleneck with HiPIMS technology, accelerating next-gen AI chip packaging. Western material science is critical for advanced packaging.

Risk

- Heavy dependence on small and medium-sized Japanese suppliers for key upstream materials like T-Glass and ABF.

- Rapid shifts in packaging materials (e.g., from organic to glass substrates) require agile R&D; and manufacturing pivots.
- Chinese OSATs' aggressive investment in advanced packaging may lead to demand for localized material supply.

■ Opportunity

- Develop and scale production of advanced materials for glass substrates, including TGV coating solutions and high-performance adhesives.
- Innovate in ABF substrate materials to meet the 2.6-3x larger area and 12-18+ layer requirements of AI chips.
- Collaborate with Western equipment makers and foundries to co-develop new material solutions for CoPoS and PLP.

■ Actions This Week

- Initiate a joint development program with Intel and TSMC by Q1 2027 to qualify new glass substrate materials and processes.
- Invest in R&D; for next-generation ABF films by Q4 2026, targeting higher layer counts and larger areas for AI chips.
- Conduct a feasibility study by Q3 2027 for establishing domestic T-Glass and ABF material production in the US/EU.

□ Scenario: If Western material suppliers fail to localize critical upstream materials like T-Glass and ABF, they risk becoming dependent on Asian supply chains, impacting Western advanced packaging competitiveness — prioritize domestic material R&D; and production now.

□ Quick Win : Engage with the US Department of Commerce CHIPS Act office this month to explore funding for domestic advanced material production.

Action Recommendations for Western Distributor

Distributor Arrow, Avnet, Fusion Worldwide

The AI supply chain is at 'redline' with 40-week lead times for critical components, creating both challenges and opportunities for distributors to manage scarcity. Fusion Worldwide highlights risks of FCC ban on Chinese optical transceivers.

■ Risk

- Severe supply chain constraints and 40-week lead times for HBM and advanced packaging components disrupt delivery schedules.
- Potential FCC ban on Chinese optical transceivers could create immediate sourcing gaps and price volatility.
- Rapid technological shifts (CPO, NPO, glass substrates) require continuous inventory adaptation and technical expertise.

■ Opportunity

- Provide value-added services for supply chain resilience, including strategic sourcing, inventory management, and risk mitigation for AI components.
- Become a preferred partner for Western OEMs seeking diversified and secure supply of optical transceivers and advanced packaging materials.
- Leverage AI-powered analytics to predict supply chain disruptions and optimize inventory for high-demand components.

■ Actions This Week

- Develop a contingency plan by Q4 2026 for sourcing optical transceivers from non-Chinese suppliers in anticipation of potential FCC bans.

- Establish strategic buffer inventories for critical AI components (HBM, ABF substrates) by Q1 2027 to mitigate lead time risks.
- Offer specialized consulting services by Q3 2027 to OEMs on navigating complex AI supply chain bottlenecks and geopolitical risks.
- Scenario: If the FCC bans Chinese optical transceivers, Western distributors without pre-qualified alternative suppliers will face severe inventory shortages and lose market share — immediately identify and qualify non-Chinese 1.6T optical transceiver suppliers.
- Quick Win : Conduct a comprehensive audit of all optical transceiver suppliers this week to identify and rank non-Chinese alternatives for 800G/1.6T products.

Action Recommendations for Western Equipment Maker

Equipment Applied Materials, Kulicke & Soffa, TRUMPF, Coherent, Lumentum

Applied Materials launched new HBM & 3D packaging systems and acquired ASMPT NEXX, forecasting 50%+ growth in advanced packaging. K&S; enhances TCB for CPO, and TRUMPF resolves glass substrate TGV coating. Lumentum secured a multi-billion dollar 1.6T optical module deal with NVIDIA.

■ Risk

- TSMC's 90% surge in equipment orders over six months indicates intense competition and potential oversupply risks in the long term.
- Dependence on Asian foundries and OSATs for volume orders, creating geopolitical exposure.
- Rapid technological shifts (CoPoS, glass substrates, CPO) demand continuous, high-cost R&D; to maintain leadership.

■ Opportunity

- Supply advanced packaging equipment for next-gen technologies like glass substrates and panel-level packaging.
- Develop and scale manufacturing equipment for silicon photonics and Co-Packaged Optics (CPO) for AI data centers.
- Leverage government incentives (e.g., CHIPS Act) to expand domestic R&D; and manufacturing capabilities for critical equipment.

■ Actions This Week

- Accelerate R&D; for CoPoS and glass substrate manufacturing equipment by Q1 2027, targeting TSMC and Intel roadmaps.
- Expand production capacity for 1.6T optical module manufacturing equipment by Q4 2026 to meet NVIDIA's demand.
- Engage with US/EU government agencies by end of this month to secure funding for domestic advanced packaging and photonics equipment manufacturing.
- Scenario: If Western equipment makers fail to rapidly innovate and scale for next-gen packaging (glass, CoPoS) and optical (CPO) technologies, they risk losing market leadership to Asian competitors — prioritize R&D; and capacity expansion in these critical areas immediately.
- Quick Win : Schedule a meeting with Lumentum and Coherent's R&D; teams this month to align on 1.6T optical module manufacturing equipment roadmaps.

Impact Matrix (Players × Trends)

++ = Strong Tailwind + = Tailwind 0 = Neutral – = Headwind -- = Strong Headwind

Player	TR-01 HIGH AI Com	TR-02 HIGH Fault-	TR-03 MED AI Dat	TR-04 MED Geopol	TR-05 LOW AI Acc
OEM	++	--	–	0	++
Foundry	++	–	0	+	+
T&M;	++	+	0	+	+
Material	++	–	0	+	+
Distributor	+	--	0	0	+
Equipment	++	+	0	+	++

Timeline This Week (10 Events)

Date	Tag	Headline	Source
2026-08-27	policy	EU AI Act's core obligations take effect, imposing rigorous standards on high-risk AI systems.	Europe連合 S2-17
2026-08-27	deal	China's top OSATs invest over \$2.2 billion into expanding advanced packaging capabilities.	China S1-07
2026-08-29	milestone	IBM pledges over \$10 billion to build large-scale quantum computer by 2029, launches US quantum chip manufacturing facility Anderon.	USA S3-35
2026-08-31	policy	NIST finalizes Post-Quantum Cryptography Standards FIPS 203, 204, and 205, fortifying defenses against quantum threats.	USA S3-23
2026-09-01	policy	EU AI Act enters full enforcement, ushering in stringent compliance mandates for high-risk AI systems.	Europe連合 S2-05
2026-09-01	milestone	TSMC forecasts silicon photonics to account for over 50% of the optical transceiver market by 2027.	Taiwan S4-04
2026-09-02	product	Google DeepMind launches Gemini Ultra 1.5, featuring an industry-leading 2 million token context window.	USA S2-01
2026-09-02	deal	Amkor Technology and NVIDIA announce a \$1.5 billion advanced packaging partnership to accelerate AI multi-die integration.	USA S1-20
2026-09-03	milestone	KLA's advanced packaging business is projected to grow over 70% in 2026, reaching approximately \$1.1 billion in revenue.	USA S1-12

Date	Tag	Headline	Source
2026-09-04	product	Applied Materials launches new HBM & 3D packaging systems and acquires ASMPT NEXX to scale AI compute.	USA S1-09

Company Spotlight

NVIDIA [NVDA] ↑ Secures 60% of TSMC CoWoS, launches Blackwell Ultra GPU, invests in iPrionics, Lumentum.

NVIDIA's aggressive strategy in securing advanced packaging capacity and driving HBM/optical interconnect innovation positions it as the central force in the AI compute ecosystem, despite creating significant supply chain bottlenecks.

- Continue strategic investments in advanced packaging and optical interconnect partners to secure future supply.
- Collaborate with foundries and OSATs to accelerate next-gen packaging technologies like CoPoS and glass substrates.
- Engage with industry bodies to standardize new interconnects and packaging to broaden ecosystem support.

TSMC [TSM] ↑ CoWoS capacity up 9x, plans 60%+ expansion, targets CoPoS, establishes packaging cluster, starts CPO production.

TSMC remains the critical enabler for AI chips, rapidly expanding advanced packaging capacity and pioneering new technologies like CoPoS and CPO. Its strategic clusters aim for 25-50% efficiency gains, solidifying its indispensable role.

- Accelerate CoPoS and glass substrate packaging R&D; and mass production timelines to meet future AI demand.
- Deepen collaboration with equipment and material suppliers within its Kaohsiung cluster to optimize supply chain efficiency.
- Diversify advanced packaging offerings beyond CoWoS to provide more options for AI chip designers.

IBM [IBM] ↑ Unveils 120-qubit Nighthawk r2, targets 200-logical-qubit Starling by 2029, pledges \$10B, launches US quantum chip fab.

IBM is making aggressive strides in quantum computing, with significant qubit advancements and a clear roadmap to fault tolerance. Its substantial investment and establishment of a US manufacturing facility underscore its commitment to leading the quantum era.

- Accelerate the development and deployment of the 'Starling' fault-tolerant quantum computer by 2029.
- Expand the Andron quantum chip manufacturing facility to secure domestic supply and attract ecosystem partners.
- Continue strategic partnerships with academia and industry to develop practical quantum applications and talent.

Technology Roadmap

2026

- ◆ EU AI Act full enforcement; 1.6T optical transceivers mass production begins; TSMC starts CPO production; NVIDIA Blackwell Ultra GPU launch.

2027

- ◆ TSMC 60%+ CoWoS capacity expansion; Powertech AI server PLP mass production; Silicon photonics dominates 50%+ optical transceiver market; Intel EMIB-T revenue acceleration.

2028

- ◆ Simmtech next-gen AI server substrate capacity expansion; Pasqal industrial quantum applications in finance; TSMC/Intel/Samsung accelerate glass substrate development.

2029

- ◆ IBM 'Quantum Starling' (200 logical qubits); Intel advanced packaging major revenue driver; IBM targets large-scale quantum computer.

2030

- ◆ NIST targets quantum resistance for critical products; 70% new AI data centers adopt liquid cooling; Diraq targets 2M physical qubits by 2031.

References (131 Total)

ID	Title	Source	Date	Region	Sub-Topic
S1-01	TSMC CoWoS Capacity Expands 9X in 3 Years, Yet 10% AI Chip Shortage Persists with NVIDIA Securing 60%	XenoSpectrum	2026-08-31	Taiwan	Semiconductor Packaging
S1-02	Taiwan's OSATs Boost AI Capacity with \$14.4B Capex; ASE Deepens TSMC CoWoS Collaboration to Meet Soaring Demand	Domino Theory	2026-09-03	Taiwan	Semiconductor Packaging
S1-03	Taiwan and Lithuania Ink €5.6M Tech Pact to Develop Advanced Packaging Machinery for Next-Gen Chips	Taiwan News	2026-09-04	Taiwan	Semiconductor Packaging
S1-04	TSMC Establishes Kaohsiung Advanced Packaging Cluster, Aims for Up to 50% Efficiency Gains	digitimes	2026-09-02	Taiwan	Semiconductor Packaging
S1-05	Scientech Forecasts 50% Shipment Growth Driven by AI Demand, Targets Next-Gen CoPoS Market Entry	Taipei Times	2026-09-03	Taiwan	Semiconductor Packaging
S1-06	Powertech Aims for Early 2027 Launch of World's First AI Server Panel-Level Packaging Mass Production	トナリズム	2026-09-01	Taiwan	Semiconductor Packaging
S1-07	AI Boom Spurs China's Top OSATs to Pour Billions into Advanced Packaging	Digital Today	2026-08-27	China	Semiconductor Packaging
S1-08	AI Inference and China's Strategic Investments Ignite Semiconductor Manufacturing Boom, Propelling Silicon Wafer Recovery	電子デバイス産業新聞（産業タイムズ社）	2026-08-27	Japan	Semiconductor Packaging
S1-09	Applied Materials Launches New HBM & 3D Packaging Systems, Acquires ASMPT NEXX to Scale AI Compute	Exoswan Insights	2026-09-04	US	Semiconductor Packaging
S1-10	AI Supply Chain Maxed Out: 40-Week Lead Times Become New Normal as HBM Emerges as Primary Bottleneck Over TSMC CoWoS	Markets Insider	2026-09-03	US	Semiconductor Packaging
S1-11	Intel's EMIB-T Advanced Packaging Projected for Significant Contribution by 2029 as CoWoS Constraints Drive Google's Interest	TrendForce	2026-08-31	Taiwan	Semiconductor Packaging
S1-12	KLA's Advanced Packaging Business Set for \$1.1 Billion Revenue, 70%+ Growth Driven by AI Demand and Yield Bottleneck Resolution	Quartz	2026-09-03	US	Semiconductor Packaging
S1-13	Glass Substrates Emerge as Key Breakthrough for Next-Gen AI Chip Packaging: Intel, TSMC, Samsung Accelerate Development	Industry Analyst	2026-09-01	International	Semiconductor Packaging
S1-14	Korean Tech Giants Accelerate AI Substrate Production Amid Soaring Demand, Nearing 90% Utilization	TrendForce	2026-08-27	Taiwan	Semiconductor Packaging

ID	Title	Source	Date	Region	Sub-Topic
S1-15	High-End ABF Substrate Shortage Intensifies Due to Massive AI Chips: Taiwanese Makers & Equipment Suppliers Face Fierce Competition	Medium (by Julien Nauy)	2026-09-02	International	Semiconductor Packaging
S1-16	TRUMPF Resolves Glass Substrate TGV Coating Bottleneck with High-Power HiPIMS, Accelerating Next-Gen AI Chip Packaging	TRUMPF	2026-09-03	Germany	Semiconductor Packaging
S1-17	Simmtech to Invest 400 Billion Won in Next-Gen AI Server Substrate Production: Capacity Expansion Starts 2028	The Elec Inc.	2026-09-02	South Korea	Semiconductor Packaging
S1-18	TSMC SVP Reports 90% Surge in Equipment Orders in Six Months Driven by AI Demand: Equivalent to Building 20 Fabs Globally Simultaneously	TechSoda	2026-09-03	Taiwan	Semiconductor Packaging
S1-19	Dell Reports Record Q2 Revenue of \$47 Billion with \$95 Billion AI Server Backlog; Entire Supply Chain, Including DRAM, HBM, ABF Substrates, at 'Redline'	KuCoin	2026-09-02	International	Semiconductor Packaging
S1-20	Amkor Technology and NVIDIA Announce \$1.5 Billion Advanced Packaging Partnership to Accelerate AI Multi-Die Integration	IMAPS 3D InCites Content Platform	2026-09-02	US	Semiconductor Packaging
S1-21	Unimicron Reports 90% Surge in Equipment Demand from AI, Japanese SME Dependence on ABF Substrates Creates Bottleneck	BigGo Finance	2026-09-03	Taiwan	Semiconductor Packaging
S2-01	Google DeepMind Unveils Gemini Ultra 1.5: 2 Million Token Context Window and Reduced Inference Costs Drive Multimodal Reasoning Breakthrough	Google DeepMind Official Blog	2026-09-02	US	AI & Machine Learning
S2-02	NVIDIA Launches Blackwell Ultra GPU: Doubles FP8 Performance, Achieves 16 TB/s HBM4 Bandwidth, Supports 100,000+ GPU Clusters for Trillion-Parameter AI Training	NVIDIA Corporate Newsroom	2026-08-30	US	AI & Machine Learning
S2-03	Anthropic's Claude 4 Achieves Human-Level Accuracy in Advanced Legal Reasoning, Set to Accelerate AI Adoption in Legal Tech	Anthropic Research Blog	2026-09-03	US	AI & Machine Learning
S2-04	Cerebras Systems Achieves AI Inference Breakthrough with Wafer-Scale Engine 3: Delivering Ultra-Low Latency and High Throughput for Generative AI	Cerebras Systems Press Release	2026-08-29	US	AI & Machine Learning
S2-05	The EU AI Act Enters Full Enforcement: High-Risk AI Developers Confront New Era of Strict Compliance and Oversight	European Commission Official Statement	2026-09-01	Europe	AI & Machine Learning
S2-06	Microsoft Unveils "Copilot OS": Integrates AI Agents Across Windows and Azure for Natural Language Task Management, Workflow Automation, and Enhanced Productivity	Microsoft Build News Center	2026-08-28	US	AI & Machine Learning

ID	Title	Source	Date	Region	Sub-Topic
S2-07	MIT & Stanford Unveil Robotics Foundation Model: Enables Embodied AI to Learn Complex Manipulation from Raw Sensory Data, Adapting to Novel Environments with Minimal Human Intervention	arXiv Preprint (Robotics Section)	2026-09-01	US	AI & Machine Learning
S2-08	CoreWeave Secures \$5 Billion Funding to Expand Global GPU-Accelerated Cloud Infrastructure, Addressing Persistent AI Compute Resource Scarcity	TechCrunch	2026-08-29	US	AI & Machine Learning
S2-09	Qualcomm Unveils Snapdragon X7 Gen 2: Doubles NPU AI Processing Power for Enhanced On-Device AI in Next-Gen AI PCs and Premium Smartphones	Qualcomm Press Release	2026-09-04	US	AI & Machine Learning
S2-10	Groundbreaking Nature Study: AI Dramatically Accelerates New Materials Discovery, Reinforcement Learning and Generative Models Predict and Synthesize Superconductors with Significant Experimental Reduction	Nature (Materials Science Section)	2026-08-27	UK	AI & Machine Learning
S2-11	Mistral AI Releases "Mistral-Medium-Next" Open-Weight Model Under Apache 2.0 License: 70 Billion Parameters, Optimized for Efficient Inference on Commodity Hardware with Competitive Performance	Mistral AI Blog	2026-08-31	France	AI & Machine Learning
S2-12	Major AI Labs Unleash Nine New Large Language Models in Early September, Including OpenAI's GPT-6 Astra	LLM Gateway, LLM Stats	2026-09-02	International	AI & Machine Learning
S2-13	AI Startups Secure Record Funding Rounds in Late August, with Instinct AI Raising \$250M and Socure \$156M, Driving Massive Capital Inflow to AI Infrastructure	Crunchbase News	2026-08-30	US	AI & Machine Learning
S2-14	DeepX Partners with AWS to Scale Edge AI, Deploying Federated AI for Robotics and Smart Factories with DX-M1 NPU	CHOSUNBIZ	2026-09-01	South Korea	AI & Machine Learning
S2-15	September 2026 LLM Benchmark Update: Anthropic's Claude Fable 5.1 Achieves 82.589%, Google's Gemini 3.5 Flash Scores 83.6% on MMMU	LLM Gateway, LLM Stats	2026-09-01	International	AI & Machine Learning
S2-16	Google DeepMind Unveils WeatherNext 3, Achieving Breakthrough Accuracy in Cyclone Prediction with Advanced Global Weather AI Model	Google DeepMind	2026-09-01	US	AI & Machine Learning
S2-17	EU AI Act's Landmark Obligations Take Effect: Strictures for High-Risk AI, GPAI, and Mandated Regulatory Sandboxes	European Union, Responsible AI Labs	2026-08-31	Europe	AI & Machine Learning

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S2-18	Intel Unveils Next-Gen Processors for Agentic AI at Hot Chips 2026: Featuring 256-Core Diamond Rapids CPU and Inference-Optimized Crescent Island GPU	TechRadar	2026-08-29	US	AI & Machine Learning
S2-19	Liquid Cooling Becomes Essential for AI Data Centers Amid Surging Demand, Addressing Over 130kW Power Consumption of NVIDIA GB200 NVL72 Racks	BIS Research	2026-09-03	International	AI & Machine Learning
S2-20	Synaptics Launches Torq Edge AI Platform Featuring Google's RISC-V Coral Open NPU, Boosting Multimodal Inference for Embedded IoT	Edge AI and Vision Insights	2026-09-02	US	AI & Machine Learning
S2-21	BIOSTAR Unveils NVIDIA Jetson Thor T5000/T4000-Powered Edge AI Systems at LEAP 2026, Delivering Up to 2,070 FP4 TFLOPS for Industrial AI Performance	GLOBE NEWSWIRE (via BIOSTAR)	2026-09-02	Taiwan	AI & Machine Learning
S2-22	Intel to Unveil AI Infrastructure Innovations at AI Infra Summit 2026, Detailing Edge-to-Cloud Scaling Strategy and CEO Keynote	Intel	2026-09-01	US	AI & Machine Learning
S2-23	AI Red Teaming Becomes Critical for System Safety, MITRE ATLAS and OWASP Top 10 for LLMs Emerge as Standards for Attack Surface Classification	DEV Community	2026-08-30	International	AI & Machine Learning
S2-24	AI Startups Resect AI Secures \$25M for Accountability Layer, empirik.ai Raises \$21M for Infrastructure AI Agents, Both Emerge from Stealth	PR Newswire	2026-09-03	US	AI & Machine Learning
S2-25	Plan A Technologies Acquires AI Assessment Technology to Enhance Technical M&A; Due Diligence	Pulse 2.0	2026-09-04	US	AI & Machine Learning
S2-26	Wonderful Secures \$550M Series C at \$5B Valuation to Scale Enterprise AI Operating System	Vestbee	2026-09-03	Netherlands	AI & Machine Learning
S2-27	Surge in AI M&A;: Life Sciences Sector Accelerates R&D; Through AI Company Acquisitions	Fasken	2026-08-27	Canada	AI & Machine Learning
S2-28	Dragonfly Acquires Modern Data Stack to Boost AI Intelligence Platform Capabilities	SaaS M&A; and VC Deals	2026-09-03	US	AI & Machine Learning
S2-29	AI Data Center Boom Hits Power and Cooling Supply Bottlenecks, Accelerating Liquid Cooling Adoption to 70% by 2030	Reuters	2026-09-02	Global	AI & Machine Learning
S2-30	McGraw Hill Acquires AI Startup Teachally to Accelerate K-12 Curriculum Development and Teacher AI Tools	GeekWire	2026-09-02	US	AI & Machine Learning

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S2-31	AI Data Center Power Demand Soars: Predicted 26% Annual Increase in US, Urgent Investment in Efficiency Needed	ACEEE American Council for an Energy-Efficient Economy	2026-08-27	US	AI & Machine Learning
S3-01	IBM Unveils 120-Qubit 'Nighthawk r2' Processor, Accelerating Path to Fault-Tolerant 'Starling' by 2029	IBM Quantum Blog	Date unknown	US	Quantum Computing
S3-02	Diraq Unveils Roadmap Targeting Over 2 Million Physical Qubits on a Single Silicon Chip by 2031	Quantum Zeitgeist	Date unknown	Australia	Quantum Computing
S3-03	Microsoft Unveils 'Majorana 1' Topological Qubit Chip for Enhanced Stability and Scalability	Microsoft	Date unknown	US	Quantum Computing
S3-04	MIT Researchers Design New Qubit Architecture Enabling Faster, Higher-Fidelity Operations	MIT News	2026-09-03	US	Quantum Computing
S3-05	Xanadu Unveils Photonic Quantum Roadmap Targeting Over 1,000 Logical Qubits and 10^{-16} Error Rate by 2031	Xanadu Investor Relations	2026-08-30	Canada	Quantum Computing
S3-06	Lawrence Livermore National Laboratory Dramatically Extends Coherence Time of Trapped-Ion Qubits	Lawrence Livermore National Laboratory	Date unknown	US	Quantum Computing
S3-07	German Physicists Demonstrate Sub-Threshold Quantum Error Correction, Exponentially Reducing Errors with Scaling	ScienceDaily	2026-08-29	Germany	Quantum Computing
S3-08	NSF Establishes New 'PRACTIQAL' Center for Self-Correcting Quantum Computer Design, Advancing Quantum Error Correction	Forbes	2026-08-28	US	Quantum Computing
S3-09	Oxford Researchers Develop New Method to Convert Existing Quantum Error Correction Codes to Floquet Codes, Simplifying Implementation	Quantum Zeitgeist	Date unknown	UK	Quantum Computing
S3-10	Google's 105-Qubit Willow Processor Experimentally Demonstrates Sub-Threshold Quantum Error Correction for Surface Codes	Cyber Raiden (WordPress Blog)	2026-09-02	US	Quantum Computing
S3-11	Quantinuum Accelerates Industrial Quantum Computing Collaboration with Aramco MOU	Quantinuum Press Releases	Date unknown	US	Quantum Computing
S3-12	IonQ Hires Lobbying Firm to Seek Federal Quantum Computing Research Funding and Support	Legis1.com	Date unknown	US	Quantum Computing
S3-13	National Science Foundation (NSF) Invests Over \$290 Million in 8 University-Led Quantum Research Institutions to Strengthen Quantum Technologies	National Science Foundation (NSF)	Date unknown	US	Quantum Computing

ID	Title	Source	Date	Region	Sub-Topic
S3-14	MIT Quantum Initiative Launches Postdoctoral Fellowship Program to Accelerate Interdisciplinary Quantum Research	MIT Quantum Initiative	Date unknown	US	Quantum Computing
S3-15	University of Waterloo and Columbia University Announce New Proof Demonstrating Quantum Advantage with Shallow Circuits	arXiv	2026-08-28	Canada	Quantum Computing
S3-16	IBM and University of Chicago Demonstrate Quantum Advantage, Solving Classically Intractable Problem with 70 Logical Qubits in 15 Minutes	SciTechDaily	Date unknown	US	Quantum Computing
S3-17	QC Ware and IonQ Achieve Chemical Accuracy in Hybrid Quantum-Classical Chemistry Workflow for Drug Discovery	Quantum AI Insiders	Date unknown	US	Quantum Computing
S3-18	Brookhaven and Stony Brook Researchers Successfully Demonstrate 'Wireless' Quantum Network Communication via Multi-Mile Free-Space Optical Link, Transmitting Entangled Photons	BNL Newsroom	2026-09-03	US	Quantum Computing
S3-19	IBM Ventures Invests in Quantum-Inspired Computing Firm BQP to Accelerate Engineering Simulation and Optimization Workloads	TechRepublic	2026-09-03	US	Quantum Computing
S3-20	Sandia National Labs and Quantinuum Advance Fault-Tolerant Quantum Computing: Helios 98-Qubit System Achieves 99.9975% 1-Qubit Fidelity	Sandia National Laboratories	2026-08-27	US	Quantum Computing
S3-21	NIST Partners with PQShield to Map Global Rules for Quantum-Safe Algorithms, Targeting Critical Product Quantum Resistance by 2030	PQShield	2026-09-03	US	Quantum Computing
S3-22	White House Report Projects \$7.1 Billion Post-Quantum Migration Cost Between 2025-2035, Urging Caution Amidst Evolving NIST PQC Standards	White House (via Google search insights)	2026-09-02	US	Quantum Computing
S3-23	NIST Finalizes Post-Quantum Cryptography Standards FIPS 203, 204, and 205, Fortifying Defenses Against Quantum Threats to Existing Cryptography, Including Bitcoin	shattered.io	2026-08-31	US	Quantum Computing
S3-24	Diraq and imec Achieve Over 99% Gate Fidelity for Silicon Spin Qubits Fabricated on 300mm Silicon Platform	Quantum Zeitgeist	2026-09-04	Australia	Quantum Computing
S3-25	German Researchers Demonstrate 1,000x Error Rate Reduction in Logical Qubits; IBM Targets Fault-Tolerant 'Starling' System with 200 Logical Qubits by 2029	Facebook (Lifeboat News)	2026-09-02	Germany	Quantum Computing

ID	Title	Source	Date	Region	Sub-Topic
S3-26	Quantum Camera Developer Diffraction Secures Over \$10M in Strategic Pre-Seed Investment from Lockheed Martin and Sumitomo Corporation's VC Arm	Photonics Spectra	2026-09-01	US	Quantum Computing
S3-27	French Quantum Software Startup ColibriTD Raises €4 Million Seed Round to Scale Multiphysics Quantum Simulation Software	Quantum Computing Report	2026-08-27	France	Quantum Computing
S3-28	S-Transistors Secures €2.6M to Scale Quantum Computing with Cryogenic Control Electronics	Silicon Canals	2026-08-31	Finland	Quantum Computing
S3-29	Quantum Computing Venture Investment Soars to \$3.9 Billion in 2025, Quantonation Emerges as Key Player	New Market Pitch	2026-08-31	US	Quantum Computing
S3-30	Quantum Advantage Race Accelerates: Quantinuum & Oracle Partner, Pasqal Lists on Nasdaq, PsiQuantum Secures \$125M DARPA Contract	JDP Global	2026-08-30	US	Quantum Computing
S3-31	Pasqal and Crédit Agricole CIB Strengthen Strategic Partnership for Industrial Quantum Computing Deployment in Finance	Pasqal Press Release	2026-08-27	France	Quantum Computing
S3-32	New York State to Invest \$60 Million in Quantum Technology Commercialization Hubs to Support Startups	StateScoop	2026-09-01	US	Quantum Computing
S3-33	UCLA Quantum Innovation Hub Partners with Aerospace Industry for Enhanced Quantum Networking Research	UCLA Newsroom	2026-08-31	US	Quantum Computing
S3-34	George Mason University Partners with TreQ to Install First \$7.7M Open-Architecture Quantum QPU in Virginia	Quantum Computing Report	2026-09-03	US	Quantum Computing
S3-35	IBM Pledges Over \$10 Billion to Build Large-Scale Quantum Computer by 2029, Launches US Quantum Chip Manufacturing Facility Anderton	Moomoo	2026-08-29	US	Quantum Computing
S3-36	Global Quantum Hardware Market Projected to Reach \$33.31 Billion by 2035, Driven by Government and Enterprise Investments, Led by IonQ and IBM	openPR.com	2026-09-02	India	Quantum Computing
S3-37	PsiQuantum and Brookhaven National Laboratory Partner to Accelerate Tools for Future Fault-Tolerant Quantum Computers	Quantum Zeitgeist	2026-09-03	US	Quantum Computing
S3-38	Monarch Quantum Emphasizes Public-Private Partnerships for Quantum Maturity, Invests in Domestic Photonics Supply Chain and Workforce Development	Monarch Quantum Blog	2026-08-27	Unknown	Quantum Computing

ID	Title	Source	Date	Region	Sub-Topic
S3-39	Leading Public Quantum Computing Companies: Rigetti, D-Wave, and Atos Drive Hardware and Software Innovation	Quantum Computing Report	2026-08-28	US	Quantum Computing
S3-40	Quantinuum Secures \$1.5 Million in Public Funding from New Mexico and Albuquerque to Expand Photonics R&D; Site	Facebook (Albuquerque Journal)	2026-08-28	US	Quantum Computing
S4-01	PsiQuantum Partners with Brookhaven Lab to Accelerate Quantum Application Development via Construct Software, Advancing Silicon Photonics and "Omega" Chip Production	PsiQuantum	2026-09-02	US	Photonics & Optical Comms
S4-02	Xanadu Secures CAD \$195M, Unveils 158,000 sq ft "Inception" Advanced Photonics R&D; and Manufacturing Facility in Toronto	Converge Digest	2026-08-28	Canada	Photonics & Optical Comms
S4-03	Xanadu and Mitsubishi Chemical Forge Quantum Semiconductor Partnership, Bolstered by Canada-Japan Support	Xanadu	2026-08-27	Canada , Japan	Photonics & Optical Comms
S4-04	TSMC Predicts Silicon Photonics to Dominate Over Half of Optical Transceiver Market by 2027, Driven by Exploding AI Infrastructure Demand	IN Electronics & Design	2026-09-01	Taiwan	Photonics & Optical Comms
S4-05	Innoviz Bolsters Leadership with Yoav Har-Even as Board Chair, Eyes Accelerated Automotive LiDAR Dominance	Innoviz	2026-08-31	Israel	Photonics & Optical Comms
S4-06	PsiQuantum Forges Research Alliance with National Cancer Center Japan, Advancing Oncology and Healthcare Applications with Fault-Tolerant Quantum Computing	PsiQuantum News	2026-09-02	Japan, USA	Photonics & Optical Comms
S4-07	Tower Semiconductor's Silicon Photonics Surge: AI Drives Nearly Half of Revenue, Fueling \$3.6 Billion 2028 Forecast Amidst 300mm Wafer Shift	Seeking Alpha	2026-08-31	, USA	Photonics & Optical Comms
S4-08	TSMC to Begin Chip-Level Co-Packaged Optics (CPO) Production in H2 2026, Foreseeing Silicon Photonics Dominance in AI	Taipei Times	2026-08-31	Taiwan	Photonics & Optical Comms
S4-09	Ciena Predicts AI to Drive Multi-Year Optical Infrastructure Investment Cycle, Accelerating 800G and 1.6T Optical Connectivity Demand	RCR Wireless News	2026-09-03	US	Photonics & Optical Comms
S4-10	Cisco Declares Co-Packaged Optics (CPO) Ready for Mass Deployment Amid Surging AI Data Center Demand	digitimes	2026-09-01	US	Photonics & Optical Comms
S4-11	iPrionics Raises \$125 Million Series B Funding, Including Nvidia's Participation, to Scale Programmable Optical Networking for AI Data Centers	PR Newswire	2026-09-02	US	Photonics & Optical Comms

ID	Title	Source	Date	Region	Sub-Topic
S4-12	Marvell Predicts Co-Packaged Optics (CPO) Scale-Up from Late 2027, Emphasizing Taiwan and TSMC's Central Role	digitimes	2026-09-02	Taiwan	Photonics & Optical Comms
S4-13	Kulicke & Soffa Enhances Thermal Compression Bonding (TCB) Technology for Co-Packaged Optics (CPO) to Boost AI Infrastructure	PR Newswire	2026-09-01	US	Photonics & Optical Comms
S4-14	Credo Technology Group Joins Open CPX MSA to Drive Interoperable Optical Interconnect Development for Next-Gen AI Infrastructure	Business Wire	2026-08-31	US	Photonics & Optical Comms
S4-15	POET Technologies to Showcase AI and Data Center Photonics at CIOE 2026, Focusing on High-Power Multi-Wavelength Laser Sources	Stock Titan (POET SEC Filing)	2026-09-04	Canada	Photonics & Optical Comms
S4-16	BigGo Finance Report: AI Compute Interconnect at Inflection Point, NPO and CPO Reshaping Industry Value Chain	BigGo Finance	2026-08-31	US	Photonics & Optical Comms
S4-17	SEMICON Taiwan Focuses on Silicon Photonics and Co-Packaged Optics (CPO) for AI Infrastructure; Foxconn to Ship CPO Switches in Q3	CNA	2026-08-30	Taiwan	Photonics & Optical Comms
S4-18	Marvell Expands Photonic Fabric with Google TPU Ecosystem Partnership, 8 Tbps Optical I/O Chiplet Demo, and Celestial AI Acquisition	FUNDA Substack	2026-09-01	US	Photonics & Optical Comms
S4-19	Semiconductor Engineering Analyzes: Photonics Forces Chiplet Rethink, Multi-Physics Co-Design to Solve Thermal, Stress, Alignment Challenges	Semiconductor Engineering	2026-08-31	US	Photonics & Optical Comms
S4-20	AI-Driven Hyperscale Demand Triggers Surge in Optical Transceiver Investment and Strategic M&A; , Led by NVIDIA and Marvell	GlobeNewswire	2026-08-31	US	Photonics & Optical Comms
S4-21	MIT Breakthrough: Scalable Manufacturing Platform Enables Flexible, Transparent Silicon Photonics for Wearables and AR Displays	MIT News	2026-09-03	US	Photonics & Optical Comms
S4-22	Photonic Integrated Circuits Poised as Next Frontier in Optoelectronics, Driven by Miniaturization and Enhanced Functionality	Optics.org	2026-08-31	UK	Photonics & Optical Comms
S4-23	Harvard Breakthrough Miniaturizes Photonics and Quantum Technologies with Stacked Semiconductors and Metasurface Optics	Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS)	2026-09-03	US	Photonics & Optical Comms
S4-24	1.6T Optical Transceivers Transition to Mass Production for AI Data Centers in 2026; Coherent Demonstrates Multi-Source Compatibility	Vitex LLC	2026-09-02	US	Photonics & Optical Comms

ID	Title	Source	Date	Region	Sub-Topic
S4-25	FCC Considers Ban on New Chinese Optical Transceiver Imports, Threatening Global Supply Chains	Fusion Worldwide	2026-09-03	US	Photonics & Optical Comms
S4-26	GIGALIGHT Unveils DSP-Free 1.6T NPO Silicon Photonics Engine and 400G QSFP-DD DWDM Solution at China Computing Expo	GIGALIGHT	2026-08-28	China	Photonics & Optical Comms
S4-27	Coherent Unveils PhotonLink Integrated Optics Platform for AI Data Centers, Supporting CPO and NPO Architectures	Simply Wall St News	2026-09-05	Australia	Photonics & Optical Comms
S4-28	400ZR Enables Coherent DCI, Transforming Standard 400G Switch Ports into Long-Haul Optical Interfaces	Asterfusion	2026-09-02	China	Photonics & Optical Comms
S4-29	Monolithic Integration of III-V Quantum Dot Photodetector and Laser on Silicon Photonics Enhances On-Chip Sensing	ACS Photonics	2026-09-01	US	Photonics & Optical Comms
S4-30	AI Data Center Demand to Propel Optical Transceiver Market to \$34.4 Billion by 2031, Silicon Photonics Leading Technological Evolution	Simply Wall St	2026-08-31	Australia	Photonics & Optical Comms
S4-31	High-Efficiency Lithium Niobate Electro-Optic Modulator with Barium Titanate Cladding Achieves Low Voltage and Wide Bandwidth	Optica Open	2026-09-01	US	Photonics & Optical Comms
S4-32	ZR+ Expands Long-Haul, High-Bandwidth Transmission in Optical Networks; C-LIGHT Offers 400G/800G DWDM ZR+ Solutions	C-LIGHT	2026-08-31	China	Photonics & Optical Comms
S4-33	GoPro Enters AI Data Center Market with 800G/1.6T Optical Transceivers via Starman Optical Merger, Shares Soar	Lightwave Online	2026-09-01	US	Photonics & Optical Comms
S4-34	Precision Prowess: Japanese Manufacturers Drive Optical Quantum Computing's Commercial Dawn	GlobeNewswireからの引用	2026-08-30	Japan	Photonics & Optical Comms
S4-35	dToF LiDAR Global Market Analysis Report Released: Autonomous Driving and ADAS to Drive Growth	NEWSCAST	2026-08-28	Japan	Photonics & Optical Comms
S4-36	Automotive Information Platform MarkLines Updates Latest News on LiDAR Technology	MarkLines	2026-08-28	Japan	Photonics & Optical Comms
S4-37	Waymo Dispels 'Camera-Only' Autonomy, Reaffirms LiDAR's Essential Role in Multi-Sensor Fusion	自動運転ラボ	2026-08-31	US	Photonics & Optical Comms
S4-38	Japan's Quantum Optics Blueprint: AIST, RIKEN, Fujitsu Release Second Supply Chain Roadmap	産総研	2026-09-03	Japan	Photonics & Optical Comms

ID	Title	Source	Date	Region	Sub-Topic
S4-39	Lumentum Secures Multi-Billion Dollar 1.6T Optical Module Deal with NVIDIA, Coherent Achieves Record Revenue; AI Data Center Optics Investment Accelerates, TSMC to Mass Produce 1.6nm Process	Troy Technical (note.com)	2026-09-01	Global	Photonics & Optical Comms

Editor's Note

Navigating the AI-Driven Tech Frontier: Strategic Imperatives for Western Leadership

The current landscape of IT & Electronics is defined by the relentless acceleration of AI, which acts as both a catalyst for innovation and a stressor on global supply chains. Western manufacturers, investors, and executives face a dual challenge: capitalizing on unprecedented demand for AI compute while simultaneously mitigating severe bottlenecks in advanced packaging, high-bandwidth memory, and optical interconnects. The strategic imperative is to move beyond incremental improvements, focusing on foundational shifts like glass substrates and Co-Packaged Optics, which promise to redefine performance and efficiency.

Geopolitical dynamics further complicate this environment, with regulatory shifts like the EU AI Act and potential trade restrictions on critical components demanding agile and resilient supply chain strategies. For Western players, this means not only investing in domestic R&D; and manufacturing capabilities but also fostering strategic international partnerships that diversify risk and accelerate technological maturity. The quantum computing sector, while still nascent, is rapidly advancing towards fault tolerance, necessitating proactive engagement in post-quantum cryptography migration and the development of quantum-safe infrastructure.

Ultimately, success in this era hinges on integrated strategic planning that recognizes the deep interdependencies across these sub-topics. Investments in advanced packaging directly enable next-gen AI, which in turn drives demand for high-speed photonics and necessitates robust quantum security. Western leadership requires a holistic approach to R&D;, manufacturing, and policy, ensuring that innovation is matched by supply chain resilience and ethical governance.

- ◆ How can Western OEMs and foundries collaboratively invest in next-generation advanced packaging (e.g., glass substrates, CoPoS) to secure a competitive edge against Asian dominance by 2028?
- ◆ What specific actions should Western governments take to incentivize domestic production of critical AI supply chain components (HBM, ABF, optical transceivers) to mitigate geopolitical risks and 40-week lead times within 18 months?
- ◆ Given the finalization of NIST's PQC standards, what is the immediate, actionable roadmap for Western enterprises to begin their \$7.1 billion post-quantum migration by Q1 2027?

Troy Technical Weekly Editorial Team Editorial Assistant

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