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KOREAN AMERICAN SEMICONDUCTOR ASSOCIATION IN SILICON VALLEY

Feb. 2026

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KLA sees advanced packaging revenue rising mid- to high teens in 2026 as AI demand boosts process control

Jan 29, 2026 AI-Generated Earnings Calls Insights

Earnings Call Insights: KLA Corporation (KLAC) Q2 2026

Management View

- CEO Richard Wallace highlighted that for 2025, KLA delivered 17% revenue growth to $12.745 billion, with process control systems revenue up 19% and service business up 15%. He stated, "Earnings per share grew 29% year-over-year, demonstrating the strong leverage in our model, and KLA maintained industry-leading gross margins and operating margins of 62.8% and 43.6%, respectively." Wallace also noted, "AI remains a core driver of KLA's performance and a key factor in our growing industry leadership."
- Wallace reported that advanced packaging revenue reached approximately $950 million in 2025, representing over 70% year-over-year growth, and projected that "as we look forward to calendar 2026, we expect this momentum to continue with year-over-year percentage growth expectations in the mid- to high teens."
- He emphasized, "Quarterly free cash flow was a record $1.26 billion. Total capital returned in the December quarter was $797 million, comprised of $548 million in share repurchase and $250 million in dividends."
- CFO Bren Higgins stated, "Revenue was $3.3 billion, above the guidance midpoint of $3.225 billion. Non-GAAP diluted EPS was $8.85 and GAAP diluted EPS was $8.68, each above the midpoint of the respective guidance ranges. Gross margin was 62.6%, 60 basis points above the midpoint of guidance due to stronger-than-modeled service performance and manufacturing efficiencies."
- Higgins noted, "The company had 132 million diluted weighted average shares outstanding for the quarter."

Outlook

- Higgins projected, "The industry outlook for 2026 has strengthened over the past few months. We expect the core WFE market to grow in the high single to low double digits, reaching the low $120 billion range, up from approximately $110 billion in 2025."
- He added, "We expect the advanced packaging component of the market to grow at a similar rate to approximately $12 billion for a total market forecast in the mid-$130 billion range."
- March quarter revenue was guided at $3.35 billion, plus or minus $150 million, with foundry/logic revenue forecasted to be approximately 60% and memory approximately 40% of semiconductor process control systems revenue. Within memory, DRAM is expected to be roughly 85% and NAND the remaining 15%.
- Gross margin for the March quarter is forecasted to be 61.75%, plus or minus 1 percentage point, with calendar 2026 gross margins expected to be approximately 62%, plus or minus 50 basis points.
- Non-GAAP diluted EPS for the March quarter is expected to be $9.08 plus or minus $0.78.

Financial Results

- KLA reported December quarter revenue of $3.3 billion and non-GAAP diluted EPS of $8.85. GAAP diluted EPS was $8.68.
- Gross margin for the quarter was 62.6%. Operating expenses were $653 million, including $384 million in R&D and $269 million in SG&A. Operating margin was 42.8%.

- Quarterly free cash flow was $1.26 billion, and cash flow from operations was $1.37 billion.
- KLA ended the quarter with $5.2 billion in total cash, cash equivalents and marketable securities, and $5.9 billion in debt.

Q&A

- Vivek Arya, BofA Securities: Asked about the disconnect between KLA's WFE growth view and peers, and about China and supply constraints. Higgins explained differences in WFE segmentation and said, "If you look at our forecast, our view on consistent traditional core WFE in 2025, was around approximately, and we'll see how people report, but approximately $110 billion and that the advanced packaging market, as we look at it, the total market is roughly in that $11 billion range."
- Arya asked about China WFE and supply constraints. Wallace replied, "Our expectation is that China is flattish, maybe slightly positive, modest growth in 2026. It was modestly negative in 2025."
- Harlan Sur, JPMorgan: Inquired about growth in inspection, patterning, and process control intensity. Wallace responded, "Everything about what we're seeing in the build-out for AI...the bigger story is the change in intensity around memory has been pretty dramatic."
- Joseph Quatrochi, Wells Fargo: Asked about supply constraints and gross margin trajectory. Higgins said, "The biggest long lead time aspect of our build of material is an optical component."
- Christopher Muse, Cantor Fitzgerald: Pressed on gross margin progression and DRAM share. Higgins said, "Over the course of the rest of this year, I think that margins...would expect gross margins to trend north," and Wallace added, "Technologically, there's a lot of reasons to explain why we're seeing higher adoption" in DRAM.

Sentiment Analysis

- Analysts raised concerns about WFE growth forecasts, China exposure, supply constraints, and gross margin pressures, with a neutral to slightly negative tone on growth pacing and conservatism in guidance.
- Management remained confident in prepared remarks and Q&A, frequently referencing strong customer demand and momentum, but acknowledged challenges such as supply constraints, pricing pressures, and facility readiness, sometimes using hedging language: "We think the memory situation is transitory" (Higgins).
- Compared to the previous quarter, management's tone is more optimistic regarding second-half acceleration, but cautious on supply and cost headwinds. Analysts maintained a probing tone, particularly around growth differentials and capacity limitations.

Quarter-over-Quarter Comparison

- Revenue and EPS improved sequentially, while gross margins and operating margins remained industry-leading, but guidance for advanced packaging growth in 2026 was revised from "more than 20%" to "mid- to high teens".
- Management highlighted persistent supply constraints, particularly in optics, and an increase in DRAM-related costs as new headwinds.
- Analysts shifted focus to supply chain bottlenecks, gross margin impacts from DRAM pricing, and market share in advanced packaging versus the prior quarter's broader interest in China and foundry/logic diversification.

- Management tone was incrementally more confident about second-half 2026 prospects and visibility into 2027, while analysts remained skeptical about the pacing of growth and share gains.

Risks and Concerns

- Supply constraints in optics and DRAM components are impacting lead times and limiting first-half growth potential.
- Rising costs for DRAM chips are expected to negatively affect gross margins by 75 to 100 basis points in 2026.
- Facility readiness among customers is slowing the growth of the advanced packaging market.
- Management believes these challenges are transitory but expects them to persist through 2026.

Final Takeaway

- KLA management emphasized that strong AI-driven demand, continued advanced packaging growth, and robust process control intensity are expected to support outperformance and market share gains in 2026. While guidance for advanced packaging growth was moderated, the company cited persistent supply constraints and DRAM cost pressures as near-term headwinds but maintained confidence in long-term growth drivers, capital return strategy, and its ability to benefit from secular semiconductor trends.

Micron: America's Fortress In The Global AI Memory War

Jan 9, 2026 Dmytro Lebid

Summary

- Micron Technology, Inc. is positioned to benefit from the AI supercycle and U.S. digital infrastructure expansion, with a Buy rating justified by robust demand and strategic investments.
- MU's $200 billion U.S. factory expansion aims for a 40% domestic memory share.
- Micron's financial profile is improving every quarter and demonstrates incredible potential for further growth.
- The article analyzes the competition in the global memory market, highlighting the established leaders from South Korea and emerging players from China.

knowlesgallery/iStock Editorial

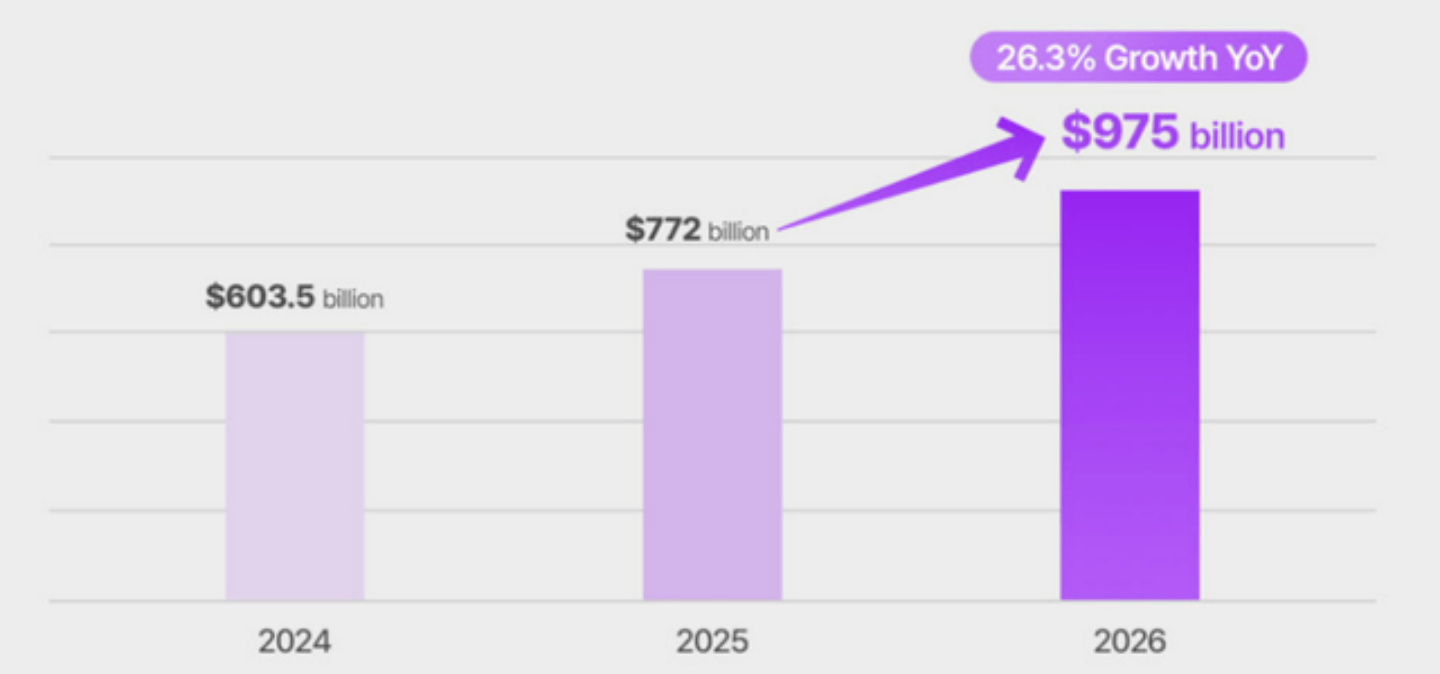
Investment Thesis

AI supercycle and digital infrastructure expansion are driving demand for memory from technology companies. Micron Technology, Inc. (MU) has a unique position as a U.S. manufacturer capable of offering U.S. data center operators the solutions needed without relying on imports. With demand increasing and Micron's capital expenditures including the construction of new factories, the strategic growth is still ahead.

This article will examine not only the catalysts for the company's growth and its financial profile, as well as the competition it faces with the emergence of new players from China. I believe that MU shares still have potential, so we can expect to see continued growth in their price in the short and long term.

Micron's Strategy And Growth Drivers

Micron Technology is a one-of-a-kind company and a leader in semiconductor manufacturing, focusing on solutions for the memory and data storage segment. MU products are the "brains" for processing and storing information in modern AI infrastructure architecture. The company operates in three segments: DRAM (temporary storage of data required for processing requests on digital devices), NAND (long-term data storage in various memory cards, drives, and flash drives), and NOR Flash (providing the fast memory needed to store firmware and software in systems and equipment). Every connected digital device, every request, and every piece of information processed requires data storage, and that is what Micron's technologies are all about. The company is therefore closely linked to the AI boom, with orders for its products directly linked to demand for AI services. Its products are currently used in various business units of its customers, from mobile devices and data storage to embedded IoT systems and data center computing. Given that memory growth is accelerating due to the expansion of AI infrastructure, these strategic developments will be supported by market conditions.



Growing Share of Memory Driven by AI Infrastructure Expansion

Micron's role will continue to grow in 2026 because it makes superfast HBM3E and HBM4 memory, just what's needed for AI accelerators (for example, those with universal chips from Nvidia (NVDA)). Also, it's an American company because its main factories are in the U.S. On January 16, 2026, it plans to officially start building a new mega-factory in New York State. In total, their production scaling program includes investments of up to $200 billion, allowing them to build two factories in Idaho and four in New York. In addition, the existing plant in Virginia will be modernized. These production plans are aimed at achieving a 40% share of total memory consumption in the U.S. economy.

Considering the current geopolitical agenda, with tensions between the U.S., China, and Russia on the rise again, there could be a bunch of new trade protectionist measures. Due to the fact that many manufacturers are located abroad, in order to ensure the competitiveness of the technology sector and AI infrastructure of the U.S. economy, there is a need for a local manufacturer capable of producing memory solutions on a large scale. Doing so would protect the U.S. from losing access to important technologies possessed by MU.

Competition In The Memory Market

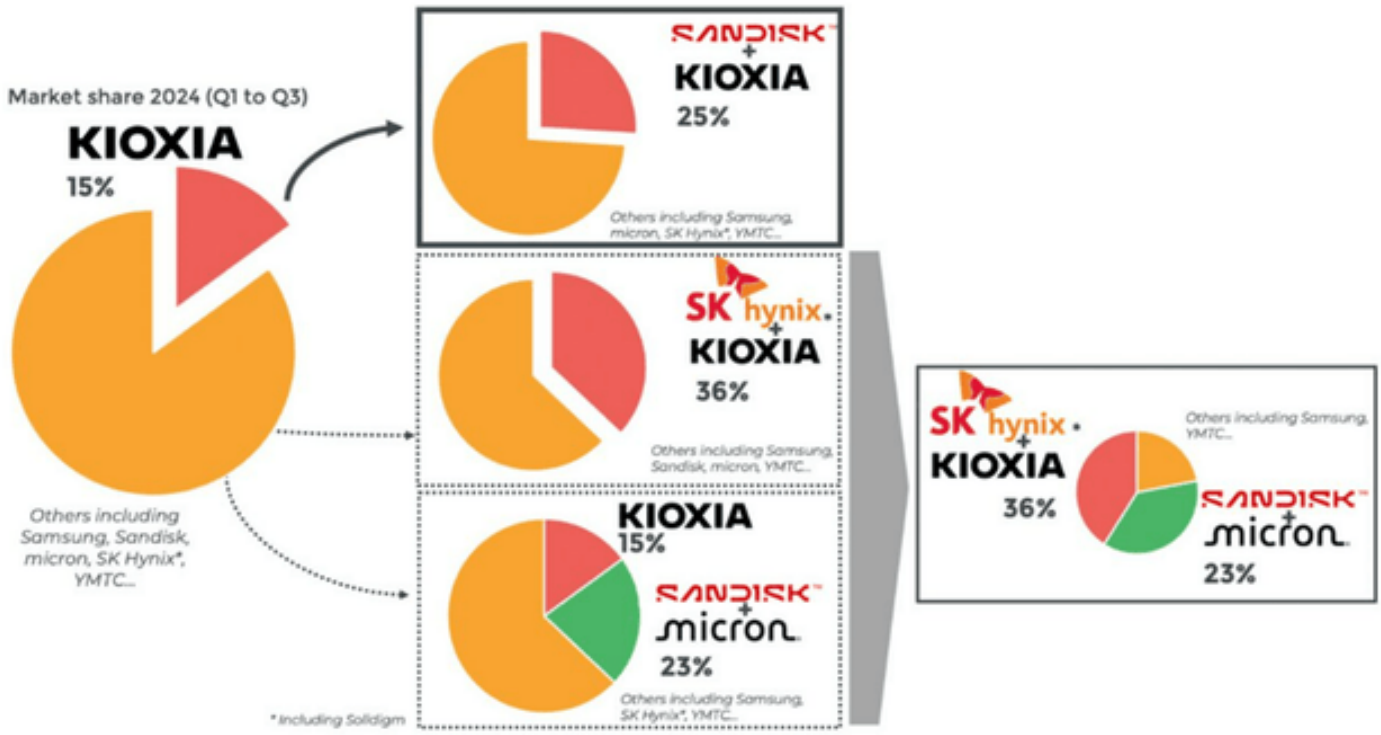
Like many AI-related industries, memory is a highly consolidated market. There are essentially 3 major players in the global market: two South Korean companies, Samsung Electronics (SSNLF) and SK hynix (HXSC.F), and Micron. The undisputed leader is Samsung Electronics because it has the largest production facilities, enabling it to operate in all areas ((DRAM, NAND, and SSD)). SK hynix is battling Micron for the position of second player, as it is the leader in the High Bandwidth Memory, or HBM, sector. Their technology is in high demand from AI accelerators.

3Q25 DRAM Supplier Revenue Ranking

Ranking	Company	Revenue (US$M)			Market Share	
		3Q25	2Q25	QoQ	3Q25	2Q25
1	SK hynix	13,750	12,229	12.4%	33.2%	38.7%
2	Samsung	13,500	10,350	30.4%	32.6%	32.7%
3	Micron	10,650	6,950	53.2%	25.7%	22.0%
4	Nanya	627	341	84.0%	1.5%	1.1%
5	Winbond	222	183	21.4%	0.5%	0.6%
6	PSMC	33	20	62.8%	0.1%	0.1%
	Others	2,617	1,561	67.6%	6.3%	4.9%
Total		41,399	31,634	30.9%	100.0%	100.0%

3Q25 DRAM Supplier Revenue Ranking

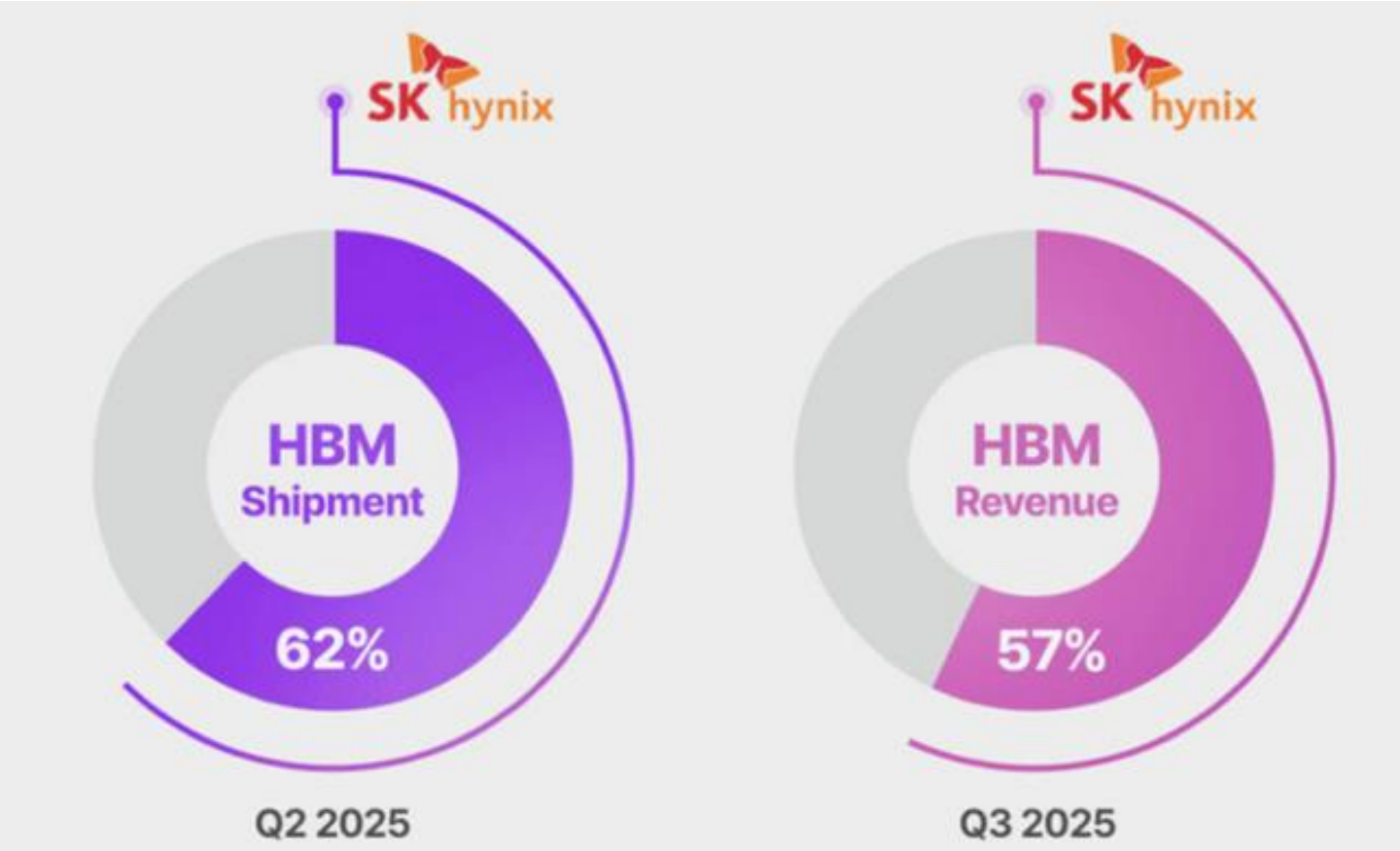
But there are other players in the NAND segment that make the competition less intense. This includes the Japanese company Kioxia (specializing exclusively in this segment), the American manufacturer Western Digital (cooperating with Kioxia in the form of joint factories and offering solutions for the SSD market), and SK Hynix's subsidiary Solidigm. The latter is a former Intel division that specializes in the production of enterprise SSDs used in data centers.



NAND Industry & KIOXIA Focus

As the main trend for Micron in 2026 is HBM3E and HBM4 memory, the company's competition is with Samsung and SK hynix. Here, though, Samsung isn't the leader, but SK hynix, since they've got a key

partnership with Nvidia (NVDA) that lets them supply most of the tech. The unique advantage Micron has over its South Korean competitors is its focus on energy efficiency. Its HBM3E consumes 30% less energy than products from other manufacturers. Given the eternal dilemma of power shortages for data centers, a competitive advantage like this could be decisive for customers looking to scale their AI infrastructure.



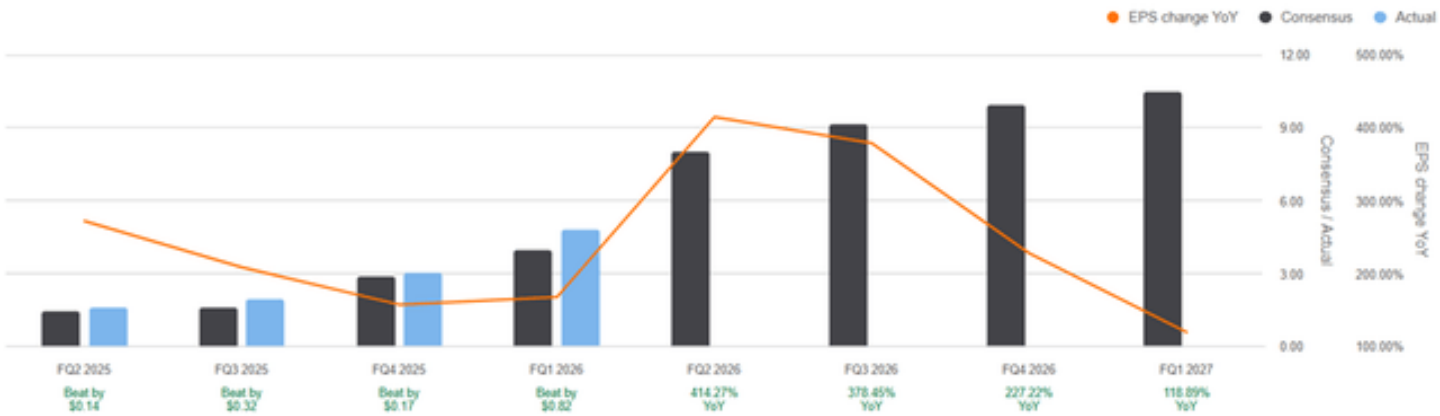
SK Hynix Market Share

My analysis of competition in the memory market would be incomplete if I did not mention the new players from China. They will most likely develop their own unique strategy and focus on implementing a program to replace critical technologies in the memory segment for Chinese industry with domestic alternatives. My view is that we'll keep seeing a trend where US and South Korean manufacturers lose market share in the Chinese domestic market. There are two successful projects in China: YMTC and CXMT. Both of these players specialize in their chosen segment. The YMTC is working on the creation of multi-layer NAND memory. According to Chinese customers, these solutions are already successful. And the potential for scaling up production will make it possible to meet growing demand. The CXMT specializes in DRAM memory. Its solutions are still technologically behind, however, due to fairly rapid development, they have the potential to offer competitive and modern solutions to the market within the next 1–2 years. Its main advantage so far is the rapid scaling of production volumes (an expected 68% by 2025), with plans to capture a global share of around 15% of the DRAM market.

Micron's Financial Profile

Micron is one of the few AI infrastructure technology companies that has no issues with its financial profile. Like the positive momentum and the fact that its actual quarterly results are higher than analysts' consensus forecasts (last report showed a positive surprise of 20.71%). And for the next report, EPS growth of 414.27% is

forecast compared to the same period a year earlier. Over the past 90 days, 25 revisions to EPS and revenue forecasts have been made, with 100% of the revisions aimed at raising analysts' estimates.



EPS Surprise & Estimates by Quarter

In fiscal Q1 2026, revenue increased 21% to $13.6 billion compared to Q4 2025 and 57% compared to Q1 2025. DRAM sales revenue increased by 20% (versus Q4 2025) to $10.8 billion, whereas NAND sales revenue increased by 22% to $2.7 billion. At the same time, free cash flow once again reached record levels, surpassing forecasts by more than 20%. As a result, forecasts have been raised. In particular, growth in demand for DRAM and NAND has been increased from 10% to 20%. Capital expenditures for 2026 will be $20 billion instead of the previously forecast $18 billion. These changes are driven by the need to scale production more quickly to meet growing demand.

Amounts in millions, except per share	FQ1-26	% of revenue	FQ4-25	% of revenue	FQ1-25	% of revenue
Revenue	$13,643	100%	$11,315	100%	$8,709	100%
Gross margin	7,753	57%	5,169	46%	3,441	40%
Operating income	6,419	47%	3,955	35%	2,394	27%
Income tax (provision) benefit	(977)		(471)		(333)	
Net income	5,482	40%	3,469	31%	2,037	23%
Diluted earnings per share	4.78		3.03		1.79	
Cash provided by operating activities (GAAP)	8,411		5,730		3,244	
Cash, marketable investments, and restricted cash (GAAP)	12,016		11,940		8,748	

Financial Summary

Risks Of Micron

As my recommendation for Micron is "Buy," risks associated with this investment idea are directly related to threat factors that could affect its performance. During the company's conference call following the presentation of its quarterly report for Q1 2026, the management highlighted the risks associated with the inability to meet all demand from current customers, continued restrictions on DRAM and NAND supplies in the coming 2026, the uncertainty surrounding the impact of new tariffs on future results, and potential delays in the construction of clean rooms.

I think the main risk for investing in MU shares is how long the AI boom supercycle will last. Investors today have high expectations for Micron, reflected in its P/E ratio of 31.03x (although the median is 33.38x). Therefore, it appears that the price is based on an ideal scenario. Considering the current policies of the Trump administration and expectations of further interest rate cuts by the Federal Reserve, it is highly likely that the supercycle will continue. Nevertheless, even the slightest deviation from the aforementioned forecasts could lead to a significant technical correction in the share price. In Q4, 2025, the market was already showing signs of nervousness, as reflected in increased volatility in AI growth stocks. Without any significant threats, I would consider any drop in MU shares of more than 10% to be an ideal opportunity to add to the portfolio.

Conclusion

As a result, Micron's fundamental analysis shows that its shares are highly attractive for investment. AI supercycle will be the main driver of MU's continued share growth. The demand for memory is increasing, as is the company's ability to scale its operations. Large-scale infrastructure projects to build new factories in the U.S. worth up to $200 billion represent a new level of growth. In my opinion, the strategic potential of Micron remains unrealized, although the current share price already reflects the "ideal scenario." All these large-scale projects, combined with increased production volumes, could generate tens of times more revenue and profit in the future. Given geopolitical factors and the need for the U.S. AI sector to be technologically independent from imports, Micron's proposal is more relevant than ever.

Taiwan Semiconductor: The Ultimate AI Infrastructure Play With A $358 Target And +18% Upside

Jan 6,2026 Sandeep Guupta

Summary

- Taiwan Semiconductor Manufacturing Company Limited is the premier AI infrastructure play, offering unmatched diversification and technology leadership as the world's dominant semiconductor foundry.
- Record 2024 results—$90 billion revenue, 59% gross margins, and 36% ROE—validate TSM's irreplaceable position in advanced chip manufacturing for Nvidia, AMD, and Apple.
- TSM's 2nm node and CoWoS packaging expansions are key growth catalysts for 2026–2027, driving consensus price targets 20% above current levels.
- Risks include Taiwan concentration, geopolitical tensions, and margin dilution from overseas fabs, but TSM's balance sheet and foundry model provide robust downside protection.

Sundry Photography/iStock

Thesis: The Foundry Dominance Premium

Taiwan Semiconductor Manufacturing Company Limited (TSM) is currently priced at around $325, but fundamental analysis indicates a fair price of $358 since markets are consistently mispricing three key inflection points: First, the 2nm process technology ($30,000 per wafer), as well as strategic pricing increases across our entire node portfolio, provides a straightforward path for gross margins to rise by 200-300 basis points. Second, the CoWoS packaging capacity will likely grow from 75,000 to 120,000-130,000 wafers/month by 2026, resulting in a $15-18 billion (annual revenue) stream at 65-70% gross margins that are largely ignored by analysts. And third is customer concentration risk, which has turned upside down to customer lock-in economics with design costs of $590 million for 3nm nodes and re-qualification cycles taking up 18-24 months, dramatically improving Taiwan Semiconductor's pricing power.

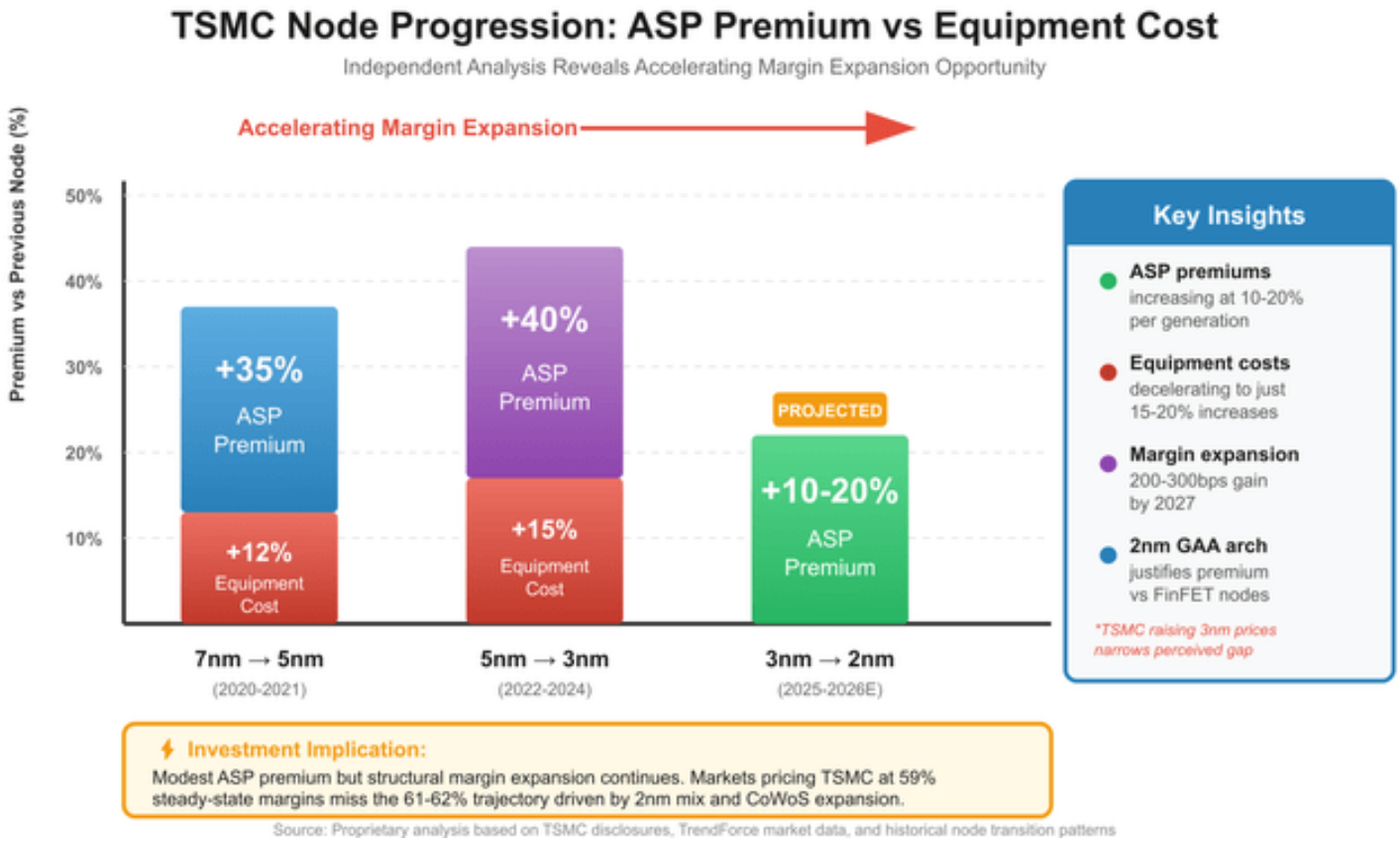
Why Markets Are Mispricing TSMC: Three Blind Spots

The change from current price to fair value is due to three key industry inefficiencies. The Wall Street models extrapolate Taiwan Semiconductor's 57-59% gross margins as a mature steady state, missing that each new process node now commands exponentially higher pricing power.

Margin Trajectory Versus Historical Patterns

According to industry reports, 2nm wafer costs have increased by around 10-20% compared to 3nm, and the resulting price is expected to be around $30,000 (N3P at ~$27,000). But Taiwan Semiconductor is raising its own 3nm rates, retaining high pricing power across the entire range, and closing the price gap with it to encourage gradual declines in favor of the new technology.

The analysis projects gross margins expanding from the current 59% to 61-62% by Q4 2026 as 2nm revenue mix reaches 30-35% of wafer revenue. This alone justifies a 12-15% valuation premium over current multiples, adding $35-45 to fair value.



Self=Made

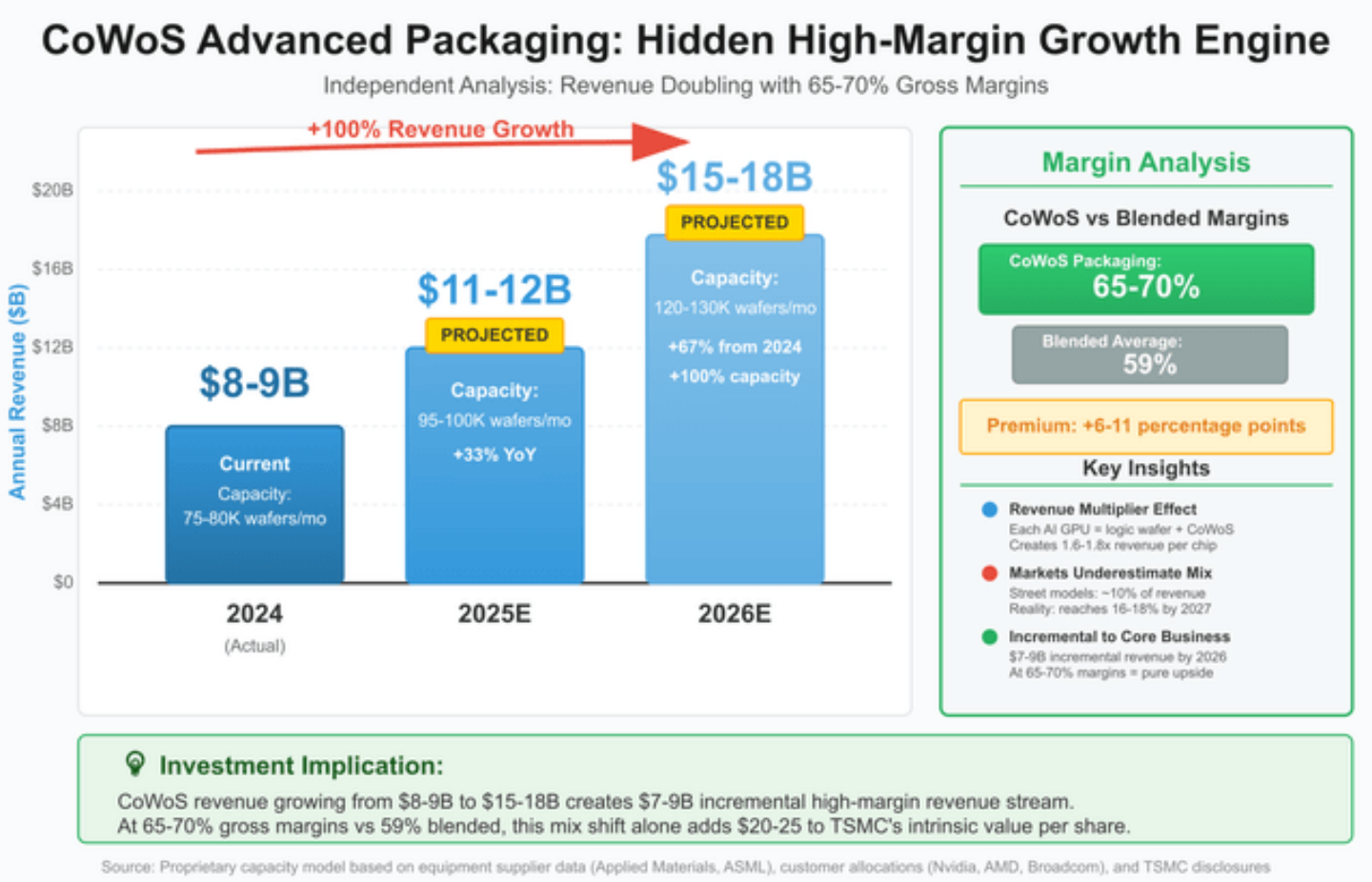
CoWoS as a Hidden High-Margin Business

Advanced packaging is underappreciated in equity research, but it is also responsible for the company's fastest-growing and highest-margin segment. Based on channel checks with equipment manufacturers such as Applied Materials, Inc. (AMAT) and ASML Holdings N.V. (ASLM), as well as capacity analysis, the current 75K/month CoWoS capacity represents an $8-9 billion annual revenue opportunity. The 2026 target capacity of 120,000-130,000 wafers per month is worth $15-18 billion in annual revenue. Advanced packaging has gross margins of 65-70% relative to the blended average of 57-59%, with a significant rise in premium paid for traditional assembly operations. A customer purchasing NVIDIA Corporation's (NVDA) Nvidia H200 GPU will need both the 5nm logic wafer and CoWoS packaging from Taiwan Semiconductor. This creates a 1.6-1.8x revenue multiplier effect on AI accelerator volumes that Street models treat as 1.0x.

Understanding CoWoS Revenue Translation

The CoWoS capacity conversion is as follows: 75,000 wafers per month have increased by 12% to 900,000 wafers/year With advanced packaging representing 7-9% of TSMC's $90 billion 2024 revenue ($6.3-8.1 billion), this implies revenue of approximately $7,000-9,000 per wafer.

The target capacity of 120-130k wafers per month as of 2026 would generate $10-12 billion. However, the $15-18 billion opportunity broadly assumes: 1) premium prices for AI accelerator packages with proportionately higher ASPs, (2) gross margins of 65-70% versus the corporate average of 57-59%, and (3) no competition, considering that TSMC has a greater market share in advanced packaging.



Self-Made

Customer Concentration: Risks and Mitigating Factors

Valuation discounts attributable to a common risk factor were appropriate considering Taiwan Semiconductor's revenue concentration (76% of revenue). Customers' prepayments have increased to NT$291.1 billion (approximately $9.1 billion). The design-to-fab cycle for high-touch nodes takes 18-24 months, so change is costly. Samsung Electronics Co., Ltd. (SSNLF) is struggling to get 3nm off the ground, Intel Foundry's scaling remains uneven at worst (and far behind Taiwan Semiconductor), and GlobalFoundries, Inc. (GFS) has given over its leading-edge manufacturing without strings attached, with no strings attached.

New semiconductor pricing patterns have arisen as a result. For large clients, it's impossible to switch vendors. According to industry reports, advanced node design cost estimates have totaled $217 million (7nm), $416 million (5nm), and $590 million (3nm). Re-qualifying an old design at a new foundry requires too much re-engineering, new tapeouts, and die yield testing—an activity that takes place over 18 to 24 months and contributes a great deal to the original design investment.

Because Taiwan Semiconductor is in such good shape with CoWoS, there is no way to distinguish (the AI product market), as logic wafer diversification was not an option for the longest time. Despite the fact that this concentration has resulted in downcycles in key end markets, we see several safeguards, including customer prepayments for $9.1 billion, long design cycles, and HPC diversification.

Independent Valuation Framework: $358 Price Target

Discounted Cash Flow Analysis

It assumes 2025 revenue of $100-102 billion based on Taiwan Semiconductor's Q4 2024 revenue of $26.88 billion (38.8% YoY growth) and management's 30% full-year growth guidance, versus Street consensus of $98-100 billion. The 2026-2028 compound annual growth rate is projected at 18% versus the consensus 15%, reflecting 2nm ramp acceleration. Terminal gross margin reaches 62% by 2027 versus the current consensus of 59-60%.

Using a weighted average cost of capital of 8.5% that reflects the Taiwan risk premium plus sector beta and terminal growth of 6% representing semiconductor TAM growth plus market share gains, the DCF output yields $365 per share intrinsic value. The key sensitivity shows that every 100 bps change in terminal margin creates a $40-45 per share value impact.

Comparable Multiple Analysis

Rather than comparing TSMC to cyclical semiconductor peers, the comparable multiple analysis benchmarks against infrastructure leaders with similar moat characteristics. The Visa Inc. (V) and Mastercard Incorporated (MA) payment infrastructure duopoly trades at 28-32x forward earnings. Regulated utilities with stable infrastructure trade at 18-22x forward earnings. Microsoft Corporation's (MSFT) Azure cloud infrastructure with network effects commands 30-35x forward earnings.

The target multiple for TSMC of 27-28x forward earnings is justified by 35% EPS growth combined with market leadership economics. Applying this multiple to the projected 2026 EPS of $13.20 (based on 18% revenue growth to $120 billion, 62% gross margins, and 45% net margins) yields a fair value of $352 per share.

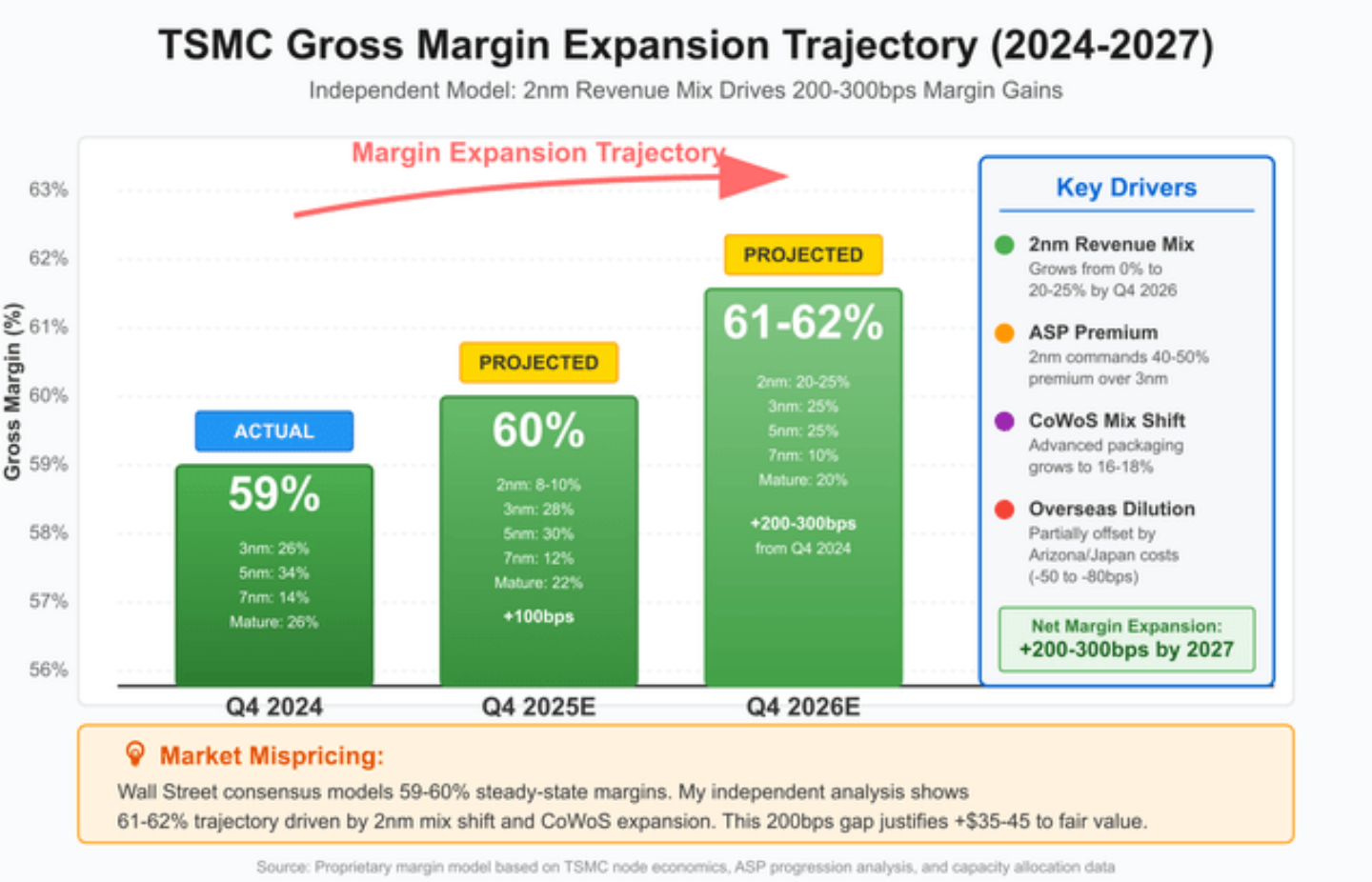
Sum-of-the-Parts Valuation

The sum-of-parts valuation breaks Taiwan Semiconductor into business segments by margin profile. The logic wafer fab, representing 85% of 2026 revenue, is valued at 25x earnings, contributing $280 per share. Advanced packaging CoWoS at 15% of revenue is valued at 35x earnings given SaaS-like margins, contributing $65 per share. Geographic diversification optionality from U.S. and Japan fab strategic value adds $10-15 per share. The sum-of-parts total reaches $355-360 per share.

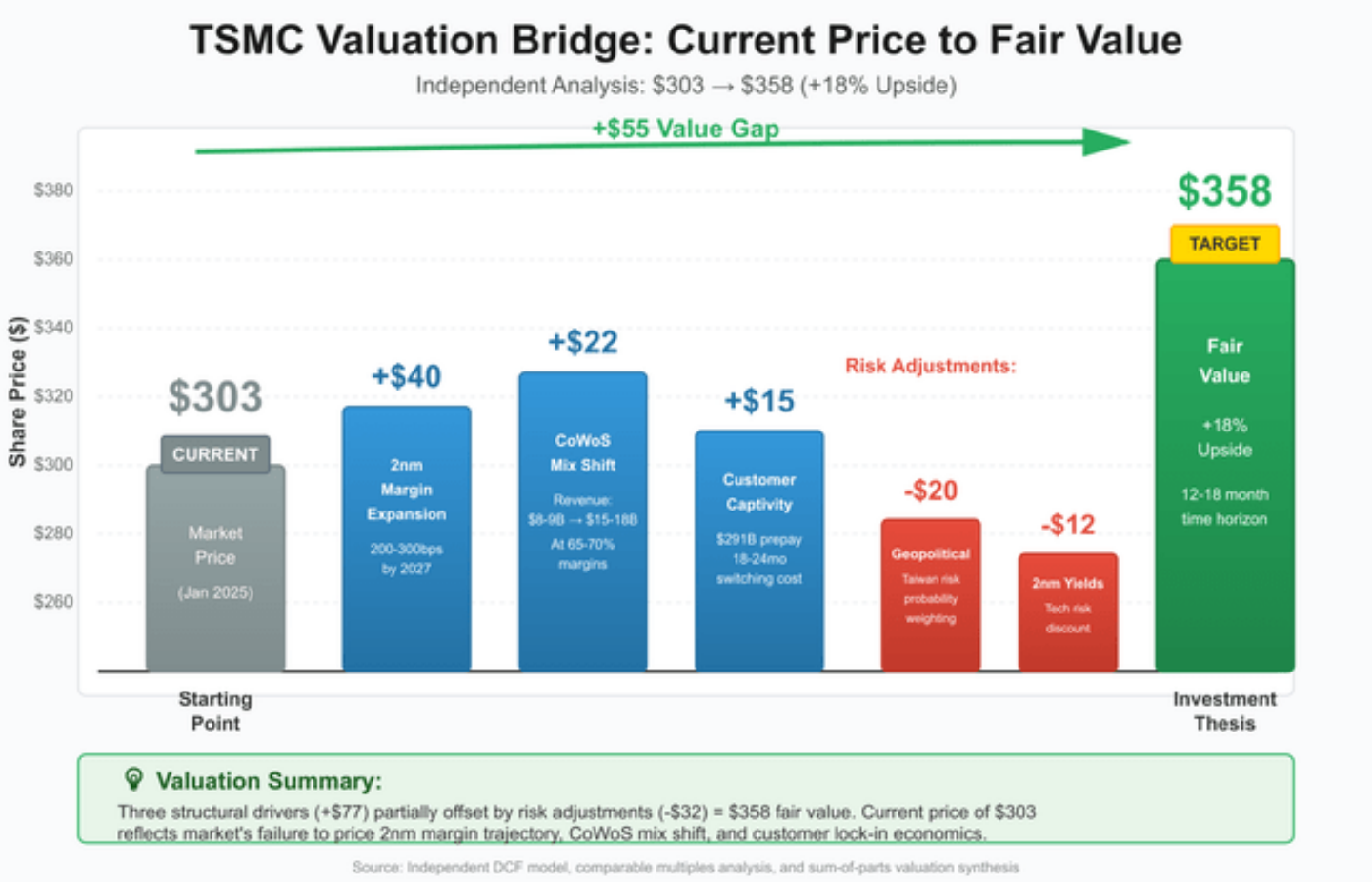
Synthesis: $358 Price Target

Averaging across three methodologies with 40% weight on DCF as most sensitive to margin assumptions, 40% on comparables for market-based reality check, and 20% on sum-of-parts yields a fair value of $358.

This target assumes no multiple expansion, simply reversion to fundamental value as markets recognize the margin trajectory and packaging revenue streams currently being ignored.


TSMC Gross Margin Expansion Trajectory (2024-2027)
Independent Model: 2nm Revenue Mix Drives 200-300bps Margin Gains
Margin Expansion Trajectory
Gross Margin (%)
63%
62%
61%
60%
59%
58%
57%
56%
ACTUAL
59%
3nm: 26%
5nm: 34%
7nm: 14%
Mature: 26%
PROJECTED
60%
2nm: 8-10%
3nm: 28%
5nm: 30%
7nm: 12%
Mature: 22%
+100bps
PROJECTED
61-62%
2nm: 20-25%
3nm: 25%
5nm: 25%
7nm: 10%
Mature: 20%
+200-300bps
from Q4 2024
Q4 2024
Q4 2025E
Q4 2026E
Key Drivers
2nm Revenue Mix
Grows from 0% to 20-25% by Q4 2026
ASP Premium
2nm commands 40-50% premium over 3nm
CoWoS Mix Shift
Advanced packaging grows to 16-18%
Overseas Dilution
Partially offset by Arizona/Japan costs (-50 to -80bps)
Net Margin Expansion:
+200-300bps by 2027
Market Mispricing:
Wall Street consensus models 59-60% steady-state margins. My independent analysis shows 61-62% trajectory driven by 2nm mix shift and CoWoS expansion. This 200bps gap justifies +$35-45 to fair value.
Source: Proprietary margin model based on TSMC node economics, ASP progression analysis, and capacity allocation data

Self-Made



Self-Made

Catalysts: Why Revaluation Happens in 2025-2026

Three near-term catalysts will force markets to reprice Taiwan Semiconductor toward intrinsic value.

2nm Volume Production Begins (Q3 2025)

The first meaningful 2nm revenue contribution, likely representing 8-10% of the wafer mix, will demonstrate the ASP premium modeled. When markets see 2nm generating $2.5-3.0 billion quarterly revenue at 70%+ gross margins versus 59% blended, the margin expansion thesis becomes undeniable. Timeline: July-September 2025.

CoWoS Capacity Milestone (Q4 2025)

When TSMC's CoWoS capacity hits 95,000 starts per month from 75,000 today, the revenue inflection will be evident. Despite being limited to some estimates (using the new schedules of expansion), this date could be in Q4 2025 and involve CoWoS revenues increasing from $2.2 billion per quarter to between $3.5-4.0 billion per quarter.

Intel Foundry Competitive Threat Diminishes (Mid-2025)

Intel's 18A process entered high-volume manufacturing in late 2025 for internal products, but external customer adoption remains limited. Intel Foundry Services reported only $8 million in third-party revenue out of $4.2 billion total Q3 2025 revenue. Major potential customers, including Nvidia and AMD, delayed

commitments, with the company pivoting emphasis toward its 14A node for external customers. Markets currently ascribe approximately 10-15% probability to Intel becoming a viable leading-edge competitor by 2027. As Intel's foundry challenges become clearer through 2025, removing this competitive overhang adds $20-30 to Taiwan Semiconductor's valuation.

Recent Performance Validates Growth Trajectory

Forward estimates are based on Q4 2024's empirical findings. Revenues hit $26.88 billion, up 38.8% year-on-year, and easily beat Street expectations. The margin of 59% was a record, bolstering the position of price control. Customer prepayments increased by $9.1 billion in 2024; the kind of demand visibility had never been seen before. The 3nm rise in 2024 from a standing start to 26% of sales over an 18-month period is as good a predictor of future adoption of 2nm as any. Based on historical node migration trends, 2nm would have a 20-25% revenue mix by Q4 2026, thereby accelerating the margin expansion forecast.

Technology Leadership Creates Unassailable Moat

TSMC's 2nm is on track for volume production in Q3 2025, with Apple Inc. (AAPL), AMD, and Nvidia as anchor customers. The gap widens further with Taiwan Semiconductor's A16 process at 1.6nm-class scheduled for 2026, using backside power delivery, a feature Samsung and Intel won't reach until 2027-2028. This creates a perpetual 18–24-month technology lead that sustains pricing power.

Advanced packaging has become as critical to TSMC's competitive moat as cutting-edge logic nodes. Using the company's CoWoS technology, GPU computation units, 3nm/5nm advanced process nodes, HBM memory chips, and I/O interface chips can be included in a single system-level package.

The package is essential for AI accelerators because advanced chips cannot function as AI processors without CoWoS integration. TSMC is quickly expanding CoWoS, which now stands at 75,000-80,000 wafers and will reach 120,000-130,000 by the end of 2026

Geopolitical Risk and Geographic Diversification Strategy

TSMC's Taiwan operations represent the company's most significant operational risk, with approximately 90% of the world's most advanced chips manufactured in Taiwan. This has resulted in what industry experts refer to as a "silicon shield," where Taiwan's irreplaceable position in producing semiconductors for the world acts as a deterrent to future military action but also highlights the country's vulnerability.

Natural disaster risk exposure transcending national boundaries was demonstrated by devastating earthquakes in April 2024 and January 2025.

Taiwan Semiconductor's response involves expanding geographically but keeping Taiwan as the center of technology and research. By Q2 2024, the first Arizona fab based on the 4nm node had reached its highest production volume with yields comparable to those of Taiwanese fabs. C.C. Wei, the company's chief executive, has long stated that the same quality of manufacturing and reliability could be obtained from factories in Arizona as well as Taiwan's plants.

Second and third factories in Arizona, with designs for even more advanced 3nm, 2nm, and A16 technologies based on customer demand, are also on target. The company's push beyond its domestic fabs does not come cheap, as CFO Wendell Huang estimates that overseas fab expansion will reduce margins by 2-3% annually over the next five years. Despite this headwind, management believes diversification is essential to maintain customer confidence and minimize geopolitical risks.

Risks to Investment Thesis

Several key risks can have a material effect on the investment case and lower potential returns.

Geopolitical Catastrophe (5-10% Probability, -80 to -100% Impact)

A Chinese military attack on Taiwan could bring an end to Taiwan Semiconductor's operations as well. Even though they had no economic gain in going to Arizona and Japan, we can safely say that it is an unhedged binary risk. Hence, Taiwan Semiconductor exposure must be less than 5% of the total risk.

2nm Technology Execution Failure (15-20% Probability, -30 to -40% Impact)

By Q4 2026, the $358 target is largely based on a 2nm revenue mix, with gross margins above 70%. If TMSC has yield issues like Samsung's 3nm, the margin expansion thesis would fail. Early warning signs to watch out for include 2nm yields in Q3 2025 earnings calls, customer design win announcements, and equipment supplier delivery dates.

AI Demand Slowdown (25-30% Probability, -20 to -25% Impact)

According to the model, spending on A.I.'s infrastructure will rise by 35-40% each year until at least 2027. This means that if hyperscalers—Microsoft, Alphabet, Meta Platforms (META), and Amazon—decide to pull CapEx, or Nvidia GPU throughput demand slows down, Taiwan Semiconductor's HPC, which is currently at 51% of total revenues, will come under immediate pressure. Nvidia and AMD's quarterly GPU shipment estimates, AMD's earnings, hyperscaler cloud CapEx recommendations, and Taiwan Semiconductor's N3/N5 utilization as a proxy for AI demand are among the monitoring metrics. Taiwan Semiconductor's exposure to smartphones and cars contributes to diversification, but it is not enough to offset AI's significant shortfalls.

Customer Diversification to Competitors (10-15% Probability, -15 to -20% Impact)

Intel's foundry or Samsung's yield increases could put Taiwan Semiconductor in jeopardy over the next two years. If major customers such as Apple, Nvidia, and AMD are reduced by 20% in volumes by 2027, TSMC's pricing power and margins will suffer. Early warning signs to watch out for include Samsung's 3nm yield curve, customer wins for Intel 18A, and any customer feedback regarding second-source technologies.

Overseas Fab Margin Dilution (40-50% Probability, -5 to -8% Impact)

Arizona and Japan fabs operate at 30-40% cost premiums versus Taiwan due to labor, utilities, and supply chain inefficiencies. Management guides to 2-3% annual margin dilution through 2028. If the overseas revenue mix exceeds 15-20% faster than anticipated due to customer requirements or Taiwan risk mitigation, margin expansion from 2nm and CoWoS gets partially offset.

This known headwind is already somewhat reflected in conservative terminal margin assumptions of 62% versus a theoretical 64-65% if fully Taiwan-based, making it an acceptable risk given the strategic necessity of geographic diversification.

Risk-Adjusted Return Analysis

Weighting probabilities and impacts yields a total expected downside from risks of approximately 24%. Against an 18% base-case upside to $358, risk-adjusted expected return appears challenged at first glance. However, this calculation treats all risks as independent when they are correlated and doesn't account for optionality from upside surprises, including faster 2nm adoption or Intel’s failure.

The margin of safety exists in the quality of TSMC's moat and the systematic underestimation of margin expansion by consensus models. The investment is appropriate for investors with three-plus-year time horizons, the ability to tolerate geopolitical headline volatility, and conviction in sustained AI infrastructure growth.

Conclusion

Taiwan Semiconductor is a unique combination of market leadership economics, wage increase illusions, and systematic market mispricing. The $358 price target incorporates value through the 2nm margin expansion to 200-300bps by 2027, CoWoS' advanced packaging as a small high-margin growth engine, and customer satisfaction.

TSMC has the highest risk-reward profile among long-term investors looking for AI infrastructure exposure without regard to single company or technology risk. Nvidia, AMD, Intel, or custom hyperscale chips don't matter for the company, since it shows that selling infrastructure in this way is really a picks-and-shovels game with market leadership economics on the side.

ASE Technology Holding – Strategic Update Call Summary

- Event: Strategic Update / UBS Conference Call
- Date: December 2, 2025
- Key Speakers:
- Yin Chang – Executive VP, Sales & Marketing
- Kenneth Hsiang – Head of IR & Senior VP

Executive Overview

- Yin Chang emphasized that AI is fundamentally reshaping semiconductor value creation, shifting industry economics from unit-driven growth to value-per-device expansion. Despite modest unit growth, AI accelerators command dramatically higher content, positioning ASE to capture outsized value through advanced packaging, power delivery, optics, and thermal solutions.
- ASE sees advanced packaging as the primary enabler of AI performance beyond Moore's Law, with strong multi-year demand from hyperscale cloud and AI infrastructure investments.

☑ AI Market & Spend Trends (Yin Chang)

- Global AI economy projected to grow 25× from $189B (2023) to $4.8T by 2033.
- Hyperscaler CapEx hit $87B in Q2 2025, with CapEx-to-revenue ratios exceeding 45%.
- AI spending concentrated in compute first, followed by networking, memory, and power.
- Since 2024, value growth far exceeds volume growth, benefiting high-value OSAT services.

🧠 Compute & Memory Challenges (Yin Chang)

- AI models driving 3–4× annual compute growth, far exceeding Moore's Law.
- GPUs moving from 4 → 8 → 16 HBM stacks, dramatically increasing package size (up to 100×100 mm+).

- Interposer sizes now exceed 120 mm, creating yield and cost challenges.
- Advanced packaging enables continued performance scaling when transistor scaling slows.

🧩 Advanced Packaging Strategy – VIPack Platform (Yin Chang)

- **FOCoS & FOCoS-Bridge**
  - FOCoS (Fan-Out Chip-on-Substrate): mainstream AI accelerator packaging today.
  - FOCoS-Bridge: silicon bridge solution enabling:
    - Higher I/O density
    - Reduced RDL layers
    - Fine pitch (~130 μm)
    - Enables flexible chiplet architectures (GPU + HBM + I/O).
- **Panel-Level Packaging**
  - Large packages reduce wafer utilization to ~57%.
  - ASE demonstrated:
    - 300 mm and 600 mm panels, improving utilization to ~87%.
  - Panel FOCoS-Bridge enables scalable production of very large AI modules.
  - Early qualification in 2026; limited revenue late 2026, broader adoption later.

⚡ Power Delivery Innovation (Yin Chang)

- AI racks evolving from 10 kW (2020) → 120 kW (2024) → 600 kW+ future.
- ASE developing vertical voltage regulation (PowerSiP):
  - First & second-stage regulators embedded beneath the package
  - Minimizes distance and power loss
- Exploring 800V HVDC architectures for data centers using GaN & SiC.
- Power modules assembled in-house; PMICs typically customer-specified.

🌐 Optical & CPO (Co-Packaged Optics) Strategy (Yin Chang)

- Electrical interconnects reaching power and bandwidth limits.
- ASE investing in photonics integration:
  - Passive & active fiber alignment
  - Chip-on-wafer optical engines
  - Large-format CPO modules (75×75 mm demonstrated)
- Optical + electrical hybrid systems expected to:
  - Increase bandwidth
  - Reduce power per bit
- Revenue contribution expected post-2026, aligned with ecosystem readiness.

❄️ Thermal Management (Yin Chang)

- GPUs approaching 1,500W, requiring lower operating temperatures.
- ASE working on:
  - Advanced TIM materials (thermal conductivity ↑ from <10 to ~86)
  - Direct liquid cooling at silicon level (microchannels)
- Thermal moving from system-level → chip-level, expanding ASE's value capture.

📊 LEAP, Testing & Financial Commentary (Kenneth Hsiang)

Leading-Edge Advanced Packaging (LEAP)

- $1B incremental revenue growth in 2026 vs 2025.
- Growth led by:
  - Substrate-based packaging
  - Wafer probe & test
- Full-process ramps (assembly + test) back-end loaded in 2H 2026.
- LEAP is margin accretive vs IC ATM structural margins.

Margins

- Structural margin framework:
  - ~24% at ~70% utilization
  - ~30% at ~85% utilization
- LEAP margins above structural ceiling, mix-accretive.
- 2026 margin outlook improving with:
  - Scale
  - Yield learning
  - Reduced FX headwinds

🩹 Test & Wafer Probe (Kenneth Hsiang)

- Wafer probe expansion expected to outpace final test in early 2026.
- Final test exposure for AI accelerators increases late 2026.
- Test currently ~18–19% of ATM revenue; long-term potential ~30%.
- ASE well positioned as the largest OSAT with automation advantages.

🪧 Strategic Positioning (Kenneth Hsiang)

- ASE prefers disciplined scaling, not over-investing ahead of standards.
- Panel-level migration depends on ecosystem readiness.
- Value shifting from monolithic ICs to heterogeneous integration, increasing OSAT content per device.
- ASE positioned as the system-level integrator between silicon, power, optics, and thermal.

🔑 Key Takeaways

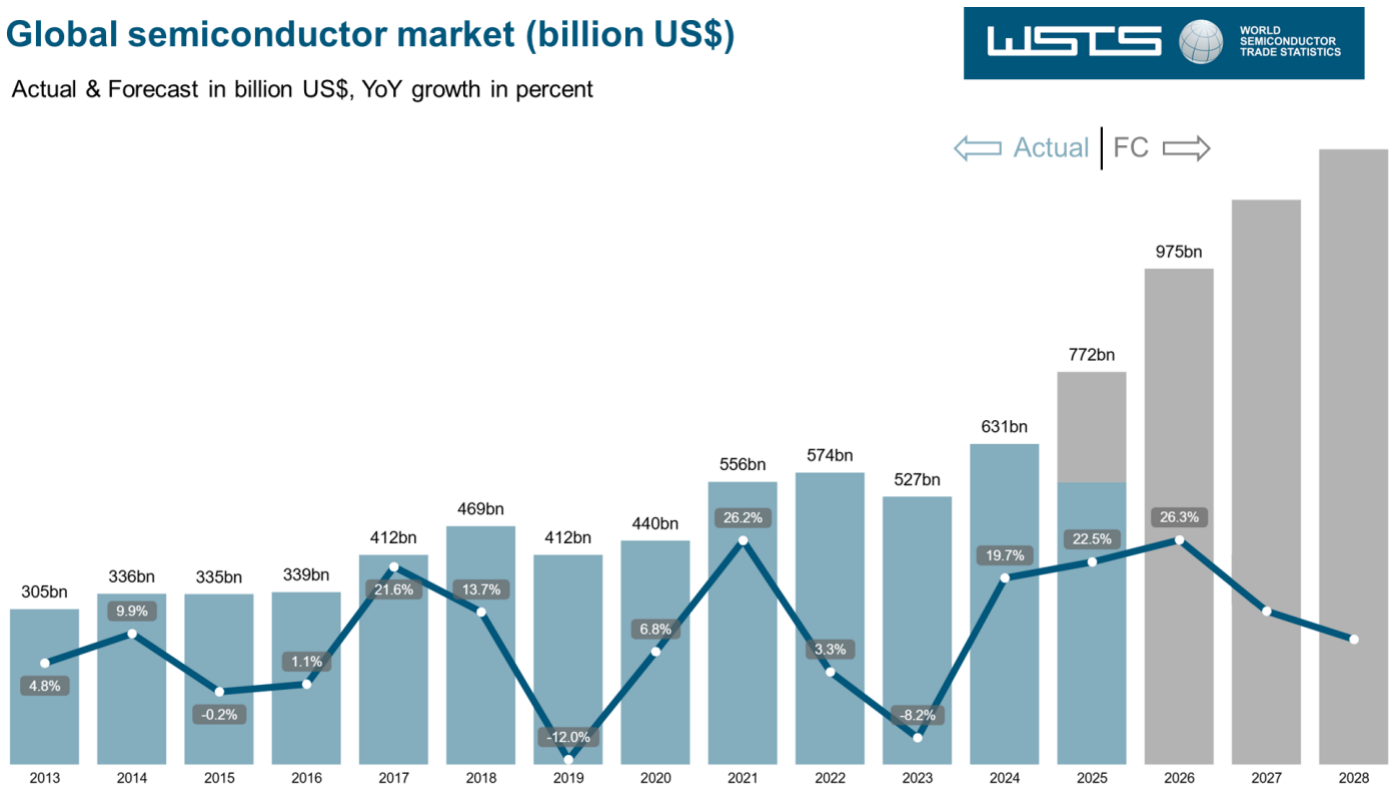
- AI drives value-per-package, not unit volume.
- Advanced packaging is the critical enabler beyond Moore's Law.
- FOCoS-Bridge, panel packaging, PowerSiP, and CPO expand ASE's role.
- LEAP + Test represent major earnings growth levers into 2026–27.
- ASE positioned to capture structural margin expansion as AI complexity rises.

Global Semiconductor Market Approaches USD 1 Trillion in 2026

Dec 2, 2025 WSTS (World Semiconductor Trade Statistics)

2025: Strong Growth Driven by Logic and Memory; Other Segments Show Gradual Recovery

Following a stronger-than-expected third quarter, the global semiconductor market is now projected to grow 22 percent in 2025, reaching USD 772 billion. This represents an upward revision of nearly USD 45 billion (about 7 percentage points) compared to the Summer 2025 update.



The upward revision is mainly driven by Logic and Memory, boosted by AI-related applications and continued demand in computing and data center infrastructure. Logic is now expected to grow 37 percent (up 8 percentage points) and Memory 28 percent (up 11 percent points). Other product categories are improving after the 2024 down-cycle, but the recovery remains moderate: Sensors +10 percent, Microprocessors +8 percent and Analog +7 percent and Optoelectronics with +4 percent. The Discretes product segment is expected to decline slightly, mainly due to ongoing weakness in automotive applications.

Regionally, the Americas and Asia Pacific are expected to expand by 25 to 30 percent, reflecting the strength in Logic and Memory. Europe is projected to grow 6 percent, while Japan is set to decline by 4 percent.

2026 Outlook: Continued Global Semiconductor Growth Towards Nearly 1 Trillion USD

For 2026, WSTS forecasts the global semiconductor market to grow by more than 25 percent, reaching USD 975 billion. Growth is expected across all regions and product categories. Memory and Logic are again projected to lead, both increasing by over 30 percent year over year. Most other product categories are expected to continue their gradual recovery, expanding at a more moderate pace.

Regionally, all major markets are expected to expand. The Americas and Asia Pacific remain the strongest contributors, while Europe and Japan are forecast to see low double-digit growth.

WSTS Forecast Summary

Autumn 2025	Amounts in US$M			Year on Year Growth in %		
	2024	2025	2026	2024	2025	2026
Americas	195,123	**251,926**	**338,574**	45.2	29.1	34.4
Europe	51,250	**54,127**	**60,429**	-8.1	5.6	11.6
Japan	46,739	**44,835**	**50,164**	0.0	-4.1	11.9
Asia Pacific	337,437	**421,354**	**526,293**	16.4	24.9	24.9
Total World - $M	630,549	**772,243**	**975,460**	19.7	22.5	26.3
Discrete Semiconductors	31,026	**30,900**	**33,436**	-12.7	-0.4	8.2
Optoelectronics	41,095	**42,597**	**45,020**	-4.8	3.7	5.7
Sensors	18,923	**20,894**	**22,713**	-4.1	10.4	8.7
Integrated Circuits	539,505	**677,852**	**874,291**	25.9	25.6	29.0
Analog	79,588	85,552	91,988	-2.0	7.5	7.5
Micro	78,633	84,839	96,620	3.0	7.9	13.9
Logic	215,768	295,892	390,863	20.8	37.1	32.1
Memory	165,516	211,568	294,821	79.3	27.8	39.4
Total Products - $M	630,549	**772,243**	**975,460**	19.7	22.5	26.3

Note: Numbers in the table are rounded to whole millions of dollars, which may cause totals by region and totals by product group to differ slightly.

Western Digital Vs. Pure Storage: Battle Of Compute Storage

Jan 5, 2026 Khaveen Investments

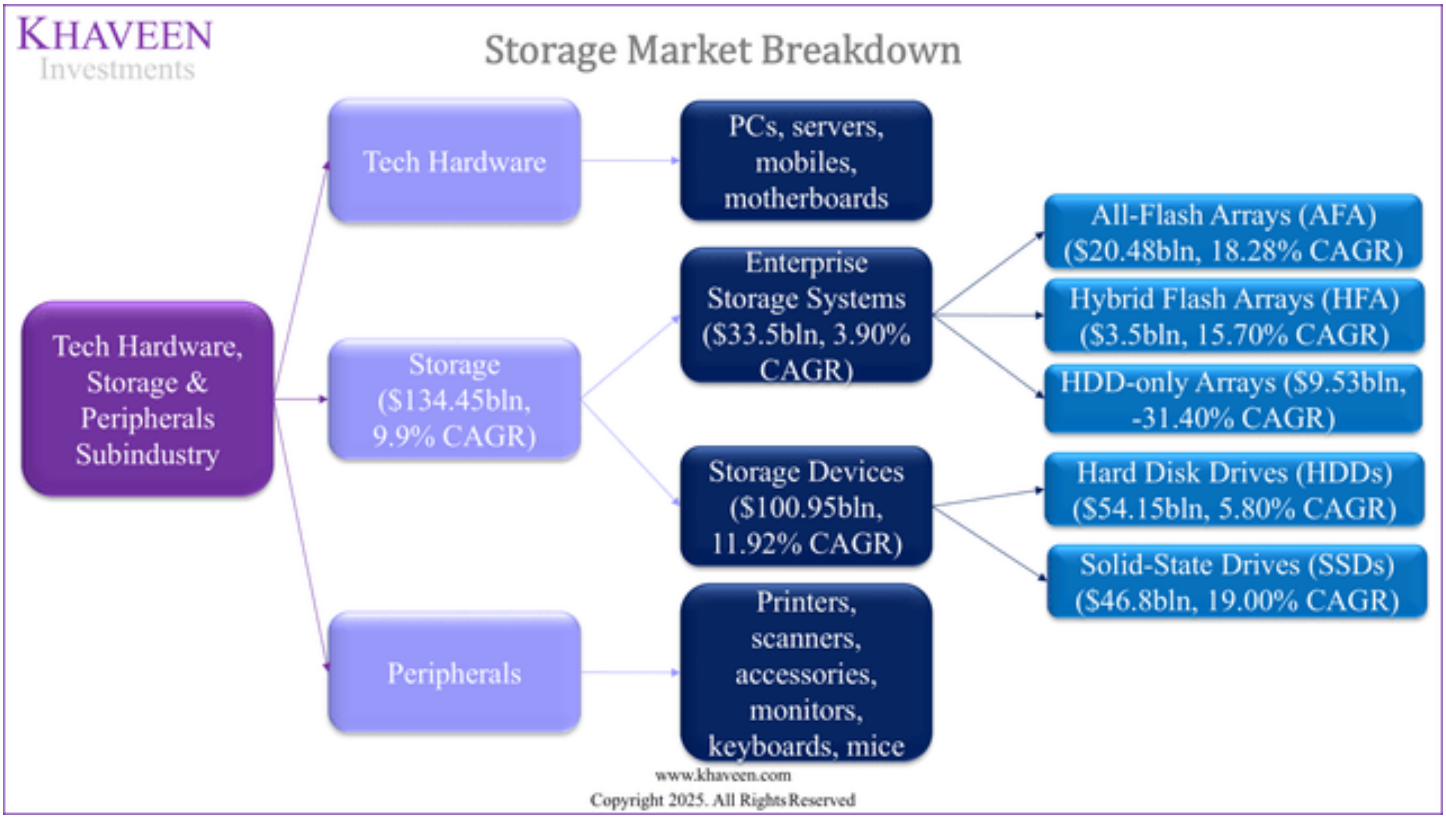
Summary

- Western Digital leads the highly concentrated HDD market, benefiting from scale, advanced UltraSMR technology, and a dominant data center presence post-SanDisk spin-off.
- Pure Storage excels in all-flash arrays with a dual revenue model and stable subscription growth but faces slowing growth and increased competition in a more fragmented market.
- Both companies have their own unique strengths, but only one trades at attractive price levels to provide a decent upside.

In this analysis, we compare PSTG (PSTG) and WDC (WDC), both of which are strong and reputable players in the Storage market, which we break down further to examine their growth drivers and outlook. They also have strong market positioning in their respective submarkets and are well-positioned to capitalize on significant growth opportunities as data volumes continue to rise, enterprises adopt hybrid cloud solutions, and data center expansions continue. That said, we determine which company edges out the other, especially from a valuation standpoint, below.

Market Growth Comparison

To understand the difference in the markets that WDC and PSTG cater to, we illustrate the breakdown of the Tech Hardware, Storage and Peripherals subindustry below, focusing on the Storage market and its breakdown.



IDC, Market Research Reports, Khaveen Investments

The Technology Hardware, Storage & Peripherals sub-industry includes computers, servers, storage, and peripherals. Tech hardware covers core computing products such as PCs, laptops, servers, motherboards, GPUs, monitors, keyboards, and mice, while peripherals consist of printers, scanners, and accessories like headsets and webcams. Storage devices like HDDs and SSDs are the individual drives that store data to be used inside servers or storage systems. Enterprise storage systems are complete solutions built from these drives together with controllers, networking, and management software, designed to run workloads such as databases while offering higher performance and easier management than raw drives. The difference between storage devices and enterprise storage systems is that devices like HDDs and SSDs are single drives used as components, while enterprise systems are full arrays built from many drives with controllers and management software. Storage devices are mainly bought by OEMs and cloud providers to build infrastructure, and their software is limited to firmware that controls the drive. Enterprise systems use software to manage data across all drives with features such as protection, compression, and tiering, making them complete solutions that enterprises use for workloads like databases.

Products such as USB thumb drives, pen drives, memory cards, and portable storage devices fall under Peripherals since they are removable accessories rather than core storage devices or enterprise systems. Storage market products mainly serve enterprise and data centers, and we believe their growth is driven by rising data volumes in cloud and enterprise workloads together with growing enterprise IT spending. For Peripherals, we believe growth is supported by the PC market's gaming demand for high-performance accessories such as 4K curved monitors and mechanical keyboards.

The Storage market as a whole is $134.45 billion in 2024 and has a forecast CAGR of 9.9%. Within it, at the sub-market level, it is split into Enterprise Storage Systems (ESS) and Storage Devices. ESS is smaller than Storage Devices ($33.5 billion vs $100.95 billion) and has a lower CAGR as well (3.9% vs 11.92%), but ESS is further broken down into all-flash arrays, hybrid arrays, and HDD-only arrays. The focus for PSTG is all-flash arrays, which are the largest ESS segment at $20.48 billion and also have the highest CAGR at 18.28%, compared with hybrid arrays at $3.5 billion (15.7% CAGR) and HDD-only arrays at $9.53 billion with a -31.4% CAGR. The Storage Devices market consists of HDDs and SSDs, where the market sizes are relatively close at $54.15 billion and $46.8 billion, respectively, but the SSD market CAGR is higher at 19.0% vs 5.8% for HDDs. Following the restructuring by WDC to spin off SanDisk this year, it is now fully focused on the HDD market.

Market	Company	Average Market Forecast CAGR	Average Market Size (2025) ($ bln)	% Breakdown of Submarket	% Breakdown of Storage Market
All-Flash Array (AFA)	Pure Storage	18.28%	20.48	61.10%	15.20%
Hard Disk Drive (HDD)	Western Digital	5.80%	54.15	53.60%	40.30%

Market Research Reports, Khaveen Investments

The table shows the two related sub-market segments that PSTG and WDC mainly focus on for comparison. As mentioned, AFAs have a higher forecast CAGR based on compiled reports from Future Market Insights and Persistence Market Research but remain a smaller market than HDDs. AFAs, however, represent a larger portion of their respective sub-market compared to HDDs within Storage Devices.

The main driver for the higher growth in the AFA market is the shift from traditional HDD arrays to all-flash arrays in enterprise settings, as flash memory prices have declined over the past years (until this year), making them increasingly attractive compared to HDD arrays while providing high-speed memory with very low latency. This enables enterprises to adopt hybrid cloud approaches and run workloads such as AI and analytics more reliably. That said, NAND prices have surged this year amid supply constraints, with Kingston claiming up to a 246% increase in 2025. This makes HDDs more attractive, as despite HDDs also experiencing higher prices this year, the increase has been more modest than the NAND price hikes.

The main long-term driver for the HDD market, and especially for WDC, is its focus on the data center end market. Unlike the consumer market, where the transition to SSDs is strong, HDDs remain the go-to option for data centers, which can make up 60–80% of total storage capacity, due to cost considerations. HDDs remain the lowest-cost option for storing massive volumes of data and are preferred for backup and archive storage solutions in data centers. As the cloud market grows, driven by data volume growth forecast to increase by 21% in 2025, this bodes well for demand for WDC's HDDs in data centers. PSTG has also announced wins to sell AFAs into data centers, but we expect HDDs to remain the predominant storage solution for data centers to manage cost.

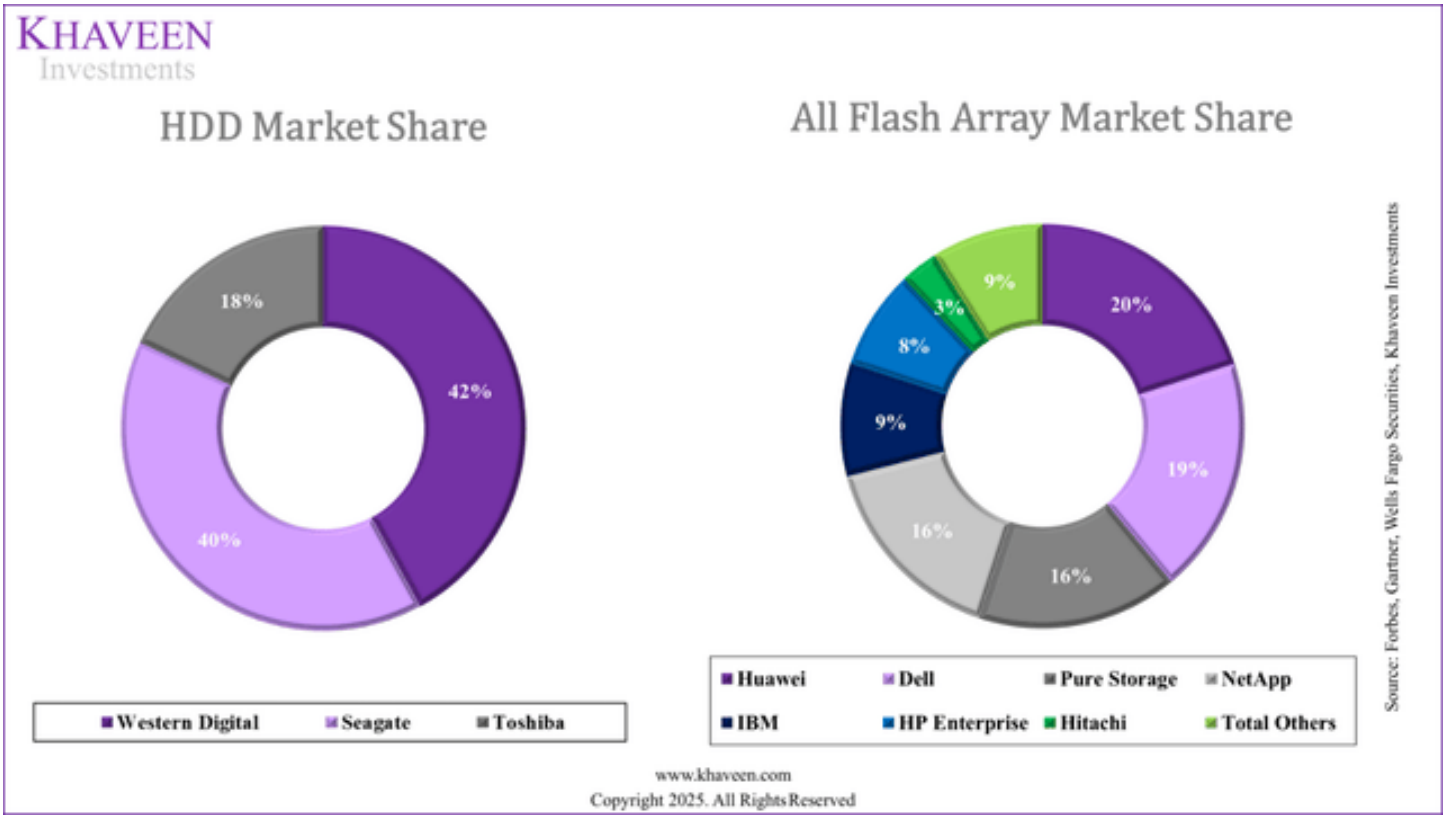
Market Growth Comparison Factor	Winner
Sub-Market Growth	Pure Storage
Sub-Market Segment Growth	Pure Storage
Market Size	Western Digital
Overall	**Pure Storage**

Khaveen Investments

Both companies have very different market exposures, and the market dynamics are different. AFAs benefit from a clear transition that has been ongoing, with enterprises shifting to AFAs rather than HDDs. PSTG has a 10-year CAGR of 25.62%, which reflects this clear and ongoing trend that it is capitalizing on. That said, price hikes in NAND could pose headwinds to growth. The HDD market, which has traditionally been diversified across consumer and enterprise end markets, is now evolving toward data centers as the main end market for growth. WDC clearly stands to benefit, as a significant portion (88%) of its revenue comes from the cloud end market. The HDD market is also larger than AFAs, which is another positive. To conclude this first section on market growth, both PSTG and WDC are uniquely positioned in the strongest areas of their respective sub-markets, and both companies have a very strong outlook. However, based on the numbers, we place PSTG slightly ahead of WDC due to the higher market CAGRs.

Market Share and Competitive Position

In the next section, we compare the market share of both companies in their respective segments to understand which company has better competitiveness and the ability to sustain it.



Forbes, Gartner, Wells Fargo Securities, Khaveen Investments

As seen in the market share charts above, starting with the HDD market, it is dominated by only three companies: WDC, which holds a slight lead with a 42% market share, followed by Seagate (STX) and Toshiba (TOSBF). The market positions of these companies can be explained by industry dynamics that have involved significant M&A activity. This includes WDC's acquisition of Hitachi GST in 2012, which at the time was one of the largest HDD makers with about an 18% market share at that time and ranked third globally, as well as its acquisition of SanDisk in 2016, prior to the spin-off. Seagate similarly consolidated its position through acquisitions, including Samsung's HDD business in 2011 and Maxtor in 2006. WDC itself has been a longstanding player in the industry since the 1970s and has built massive scale in HDD production over the decades. Another key strength of WDC is its UltraSMR technology, which increases storage density by over

25%, enabling higher-capacity models such as 26TB+ drives, which have become the current industry standard for cloud capacity, while lowering cost per gigabyte. WDC also benefits from its 11-platter drive design, which, compared to Seagate's 10-platter design, provides about 15% more capacity per drive by fitting more platters into the same form factor.

In comparison, the all-flash array (AFA) market is also fairly concentrated but has more competitors than the HDD market, with key players such as Dell EMC, NetApp, Huawei, and IBM competing alongside PSTG. We believe this is because the AFA market is relatively newer and has been growing rapidly amid the shift away from HDD-only arrays, attracting more players seeking to capture market share. The largest player is Huawei, with approximately 20% market share, having gained share and overtaken Dell in 2023, which now holds around 19%. This is followed by PSTG and NetApp, both at about 16%, with PSTG's market share remaining stable. PSTG's strength is not derived from unique hardware or performance capabilities, as most vendors offer similarly high-performing flash arrays. Instead, its advantage comes from the Evergreen subscription model, which enables non-disruptive in-place upgrades across both hardware and software generations without costly refresh cycles. Competitors such as NetApp and Dell also offer transition programs, but these often involve more complex migrations or require new purchases.

Market Positioning Factor	Winner
Market Share	Western Digital
Market Share Trend	Western Digital
Competitive Advantages	Western Digital
Overall	**Western Digital**

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We believe WDC edges out PSTG in terms of market positioning. WDC's advantage reflects its long-standing presence in the HDD market and the acquisitions that allowed it to consolidate into a larger player, as well as expand its production scale and become the leading player in a highly concentrated market that only has major rivals. The AFA market is relatively more competitive, with Huawei leading, followed by Dell (DELL), NetApp (NTAP), and PSTG closely behind. PSTG's main differentiator is its Evergreen subscription model, which offers continuous in-place upgrades, but its position is less strong compared to WDC's large-scale advantage in HDDs. WDC's advantages, including UltraSMR technology enabling high-capacity drives as well as its 11-platter design that provides more capacity per drive compared to Seagate, position it well to continue maintaining its lead in the HDD market, or at least, among the top 2 players. The company also plans to introduce the first Heat-Assisted Magnetic Recording (HAMR) drives, which could lead to even greater capacities of 36 TB or 44 TB, which will likely be attractive to data center customers.

Revenue Quality and Stability Comparison

In this section, we compare the two companies in terms of their revenue growth performance track record based on their revenue breakdown in the table below. For WDC, we only included HDD revenue following the SanDisk spin-off, using revenue data up to its latest quarter, which is Q1 FY2026 (FY ending June), whereas for PSTG, its revenues are broken down into Product and Subscription revenues, and we included its revenues up to its latest quarter (Q3 FY2026).

Revenue by Business Segment ($ mln)	2018	2019	2020	2021	2022	2023	2024	YTD 2025	Average
WDC (HDD Revenue Only)	**7,823**	**7,769**	**8,216**	**9,040**	**6,255**	**6,317**	**9,520**	**2,818**	
Growth % YoY	**-21.4%**	**-0.7%**	**5.8%**	**10.0%**	**-30.8%**	**1.0%**	**50.7%**	**27.4%**	**2.1%**
Product	1,076	1,239	1,144	1,442	1,792	1,623	1,699	1,353	
Growth %	28.90%	15.16%	-7.63%	26.07%	24.25%	-9.45%	4.72%	12.3%	11.7%
Subscription Revenues	284	405	540	739	961	1,208	1,469	1,251	
Growth %	49.36%	42.41%	33.42%	36.74%	30.16%	25.64%	21.60%	15.4%	34.2%
Total PSTG Revenue	**1,360**	**1,643**	**1,684**	**2,181**	**2,753**	**2,831**	**3,168**	**2,604**	
Growth %	**32.70%**	**20.86%**	**2.48%**	**29.49%**	**26.26%**	**2.80%**	**11.92%**	**13.79%**	**18.1%**

Company Data, Khaveen Investments

Comparing the two companies first in terms of total revenue, WDC generates much higher revenues than PSTG, which is unsurprising given the larger HDD market relative to AFAs and WDC's stronger market positioning. WDC does, however, fully rely on product sales of HDD devices, which shows that its revenue trends have historically been volatile, as the HDD market itself is highly cyclical. While it has averaged 2.1% growth over the past seven years of revenue data, it has seen large swings, such as a nearly 50% increase in 2024, but also contractions of 21% in 2018 and 30.8% in 2022, highlighting the high volatility of its revenues.

In comparison, PSTG's business model is different, as it not only sells storage solution hardware but also offers subscription services, resulting in a dual revenue stream. Its revenue growth in the Product segment has an impressive average of 11.7%, but it has experienced some years of decline, such as in 2020 (likely due to reduced enterprise spending amid the pandemic) and in 2023. On the other hand, its Subscription revenue segment has delivered an average growth rate more than three times higher than the Product segment, averaging 34.3%, and its contribution to total revenue is now roughly similar to that of the Product segment.

PSTG's subscription services, offered under the Evergreen brand, are subscription-based offerings where customers pay periodic fees for access to the company's hardware and software, including ongoing upgrades, support, and cloud-enabled features. This allows customers to continually receive new technology without replacing their entire system and enables them to scale capacity up or down as required, paying for what they use. These offerings are available exclusively to PSTG AFA customers as part of their hardware and software purchase or separately as an as-a-service model (Evergreen/One) that includes on-prem and cloud deployments. As this subscription model allows customers to avoid committing large upfront capex and instead pay recurring fees, we believe it supports more stable revenues compared with reliance on one-off product sales. One observation, however, is that Subscription revenue growth has slowed over time, from a high of 49% YoY in 2018 to 15.4% YTD, which remains solid but suggests the segment may be maturing or facing increased competition from other vendors offering subscription-based models.

Revenue Quality and Stability Factor	Winner
Revenue Stability	Pure Storage
Revenue Size	Western Digital
Business Model (Diversification)	Pure Storage
Overall	**Pure Storage**

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In this factor, the two companies show distinct differences in terms of their business models and historical revenue performance, particularly in terms of stability. PSTG edges out WDC despite WDC being the larger

company by revenue, as we point to PSTG's well-diversified business model with dual revenue streams that allow it to capitalize on the AFA market. That said, an important driver for PSTG has been its Subscription revenue growth, which has slowed over the years but continues to record double-digit growth in YTD 2025 and, more importantly, helps counteract the cyclicality of product sales. Another point is that WDC's historical HDD revenue growth performance has been much more volatile. However, as WDC has shifted toward fully targeting the data center segment, where cloud data volumes have been growing by over 20% consistently per year, as discussed in our past analyses of the cloud market, WDC's long-term shipment growth should remain strong if it can maintain its market positioning and continue to scale production.

WDC and PSTG Revenue Projections ($ mln)	2025F	2026F	2027F
Total WDC (HDD)	**11,780**	**10,072**	**10,656**
Growth %	**23.7%**	**13.9%**	**8.9%**
Product	1,909	2,168	2,462
Growth %	12.3%	13.6%	13.6%
Subscription Revenues	1,695	1,956	2,258
Growth %	15.4%	15.4%	15.4%
Total PSTG	**3,604**	**4,124**	**4,720**
Growth %	**13.8%**	**14.4%**	**14.4%**

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The table above shows the revenue projections for WDC and PSTG through 2027. For WDC, the 2025 revenue growth is based on prorated actual Q1 and Q2 FY2026 revenue guidance for the full year, with 2026 onwards based on analyst consensus growth rates. For PSTG, we applied its Q3 YTD growth to derive prorated 2025 revenues, followed by its 8-year historical CAGR for the Product segment of 13.6%, with Subscription revenue growing steadily based on the 2026 growth rate.

Risk: Market Cyclicity Could Impact Both Companies in Medium Term

Despite the positive long-term market growth outlooks and strong market positioning of both WDC and PSTG, we believe a major risk for these companies is the cyclical nature of the storage market. This is highlighted above, as we observe WDC's HDD revenues being highly cyclical, with years of strong growth but also years when it has seen significant declines. PSTG's product revenue also shows the AFA market being affected by cyclicality, but it has subscription revenue growth, which has consistently been positive and helps support overall revenue stability. Therefore, while the long-term and near-term outlook remains positive for both companies due to rising data volumes, enterprise adoption growth, and cloud data center expansions, if competitors ramp up production, such as Seagate in HDDs, it could lead to supply-demand imbalances that may impact pricing and hurt revenue growth in the medium term.