Not for redistribution without written consent of Morgan Stanley

Morgan Stanley | RESEARCH

IDEA

*October 11, 2026 09:42 PM GMT*

**Tech Bytes | Asia Pacific**

# Memory – Cycles vs. Super Cycles

Memory investing is less about pinpointing inflections or identifying data points – but it's about the market rewarding those who priced it first. AI is a compute problem, a memory problem, hence structurally different. In the later stages, however, still cyclical and reward is harder to come.

**Fundamentals look bulletproof but a more cautious tale for stocks.** The AI memory super cycle is here, yet the market is consciously refusing to pay a full multiple for unprecedented earnings. Just like past cycles, it suspects that may prove temporary – memory stocks have historically looked cheapest right at the top of the cycle, because analysts extrapolate boom prices into the future. The case for a Supercycle rests on the idea that this time is structurally different, which looks obvious by now with trillion dollar market cap. But separating the asset from the price of the asset (share price) is paramount following a 9x run in share prices.

**Structurally higher AI secular growth riding on top of a cycle... is still a cycle.** What's different is that this one is steeper, much steeper (nearly 7x higher $/Gb today vs. past peaks). Markets can certainly be wrong, but market prices themselves are part of the evidence set for how a memory cycle is perceived. The 'lazy' answer is: (1) nothing being different this time; or (2) the magnitude of the next downturn may be much smaller and the floor higher than in 2023. Both are conflicting views, but both can be right, as we have come a long way already – the memory super-cycle is real but it is also not the end of cyclicality. Hence, a structurally better memory cycle and attractive memory stocks prices do not have to go hand-in-hand. In other words, we think the easy money is past.

**Navigating memory cycles – they often repeat previous cycles...but they rarely run like a train schedule:** What ends this memory supercycle may not be AI demand softening but supply catching-up and/or a demand digestion. That may still be distant as memory prices stay firm through 2027, despite deceleration. Trying to figure out the exact start and end dates of cycle inflections is unrealistic. But our view is that one should build portfolios that are durable enough against the inevitability of cycle inflections with the understanding that they are a natural extension of markets, even if we don't know when they will occur.

In the current market, we are reminded that history does not always repeat itself (this time it's AI inference, last time it was cloud) – but it often rhymes. By studying what drives the previous cycle inflections, one can apply the remedies used to devise new ones from the similarity of the events.

From this, we believe that:

- It is better to be generous than conservative on valuations on the way up but

MORGAN STANLEY & CO. INTERNATIONAL PLC+

Shawn Kim
Equity Analyst
Shawn.Kim@morganstanley.com +44 20 7677-1018

Cindy Huang
Equity Analyst
Cindy.Huang@morganstanley.com +44 20 7425-2915

MORGAN STANLEY & CO. INTERNATIONAL PLC, SEOUL BRANCH+

Ryan Kim
Equity Analyst
Ryan.G.Kim@morganstanley.com +82 2 399-4939

MORGAN STANLEY ASIA LIMITED+

Kathy Zhu
Research Associate
Kathy.Zhu@morganstanley.com +852 3963-2618

**S. KOREA TECHNOLOGY**

**Asia Pacific**
Industry View **Attractive**

Morgan Stanley does and seeks to do business with companies covered in Morgan Stanley Research. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of Morgan Stanley Research. Investors should consider Morgan Stanley Research as only a single factor in making their investment decision.

**For analyst certification and other important disclosures, refer to the Disclosure Section, located at the end of this report.**

+= Analysts employed by non-U.S. affiliates are not registered with FINRA, may not be associated persons of the member and may not be subject to FINRA restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account.

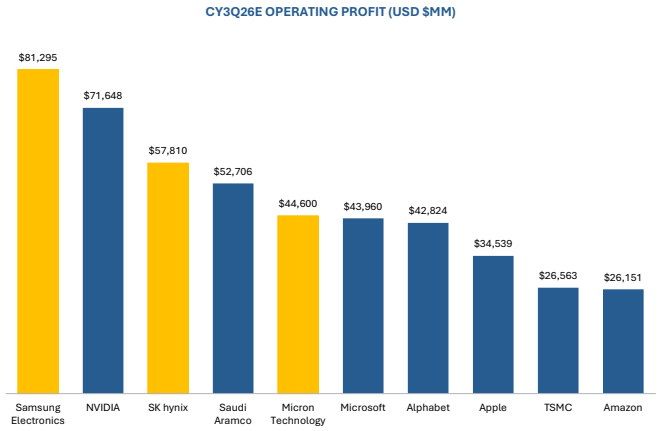
the opposite is true on the way down.

- It is better to be optimistic rather than cautious on earnings – price hikes tend to be greatly underestimated, especially in super cycles. The opposite is also true.
- It is better to be contrarian when looking for exit points well ahead of cycle inflections.

# Super Cycles – Not The End of Cyclicality

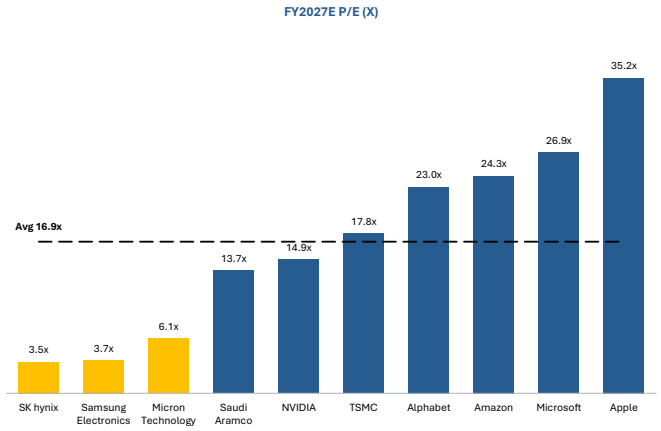
**Memory fundamentals look bulletproof but a more cautious tale for stocks.** Samsung reported the highest earnings among all companies worldwide with US$80bn in operating profits in CY3Q26 which is the largest ever by a technology company, displacing NVDA US $64bn (2QFY27). For a company that sells a commodity and the single priciest component inside an AI server (not the logic chip), it is remarkable. Yet, both Samsung and Hynix shares lag 35% below peak, trade below historical peak P/E of 4x on peak earnings (currently at 3-4x NTM P/E) implying that Mr. Market seems less convinced that this time is different. Despite significant LTA commitments and market expectations of more muted cyclicality, memory makers are being modeled as if the old boom-bust cycle still governs. In this demand-led super cycle, we think super profits will eventually bring on new supply, with inevitable consequences for returns and ultimately for share prices.

**Exhibit 1:** Samsung world No.1 profit...




Source: FactSet consensus (mean), Morgan Stanley Research.

**Exhibit 2:** ... but trading well below




Source: FactSet consensus (mean), Morgan Stanley Research.

## The good, the bad and the realistic

**This time is truly different...** The structural story remains compelling for memory – AI changes everything. The demand outlook is structural as AI data centres spending is the main driver of revenues, on-device AI is the next wave, physical AI, humanoid robots, self-driving cars, and even the AI data centres opportunity in space. Industry capacity is sold out years ahead, the majority under long-term contracts with price floors that never existed before and security cash deposits for some LTAs. The HBM market is forecast to triple to US$100 bn by 2028. This is what separates a Supercycle from an ordinary one.

- Demand from AI data center construction is outstripping what the industry can supply.
- Structurally higher margins.
- LTA changes the risk of capacity allocation – with locked-in customer commitments.
- HBM physically crowds out commodity DRAM.
- Every new model generation needs more memory per chip, and there are more chips being made.

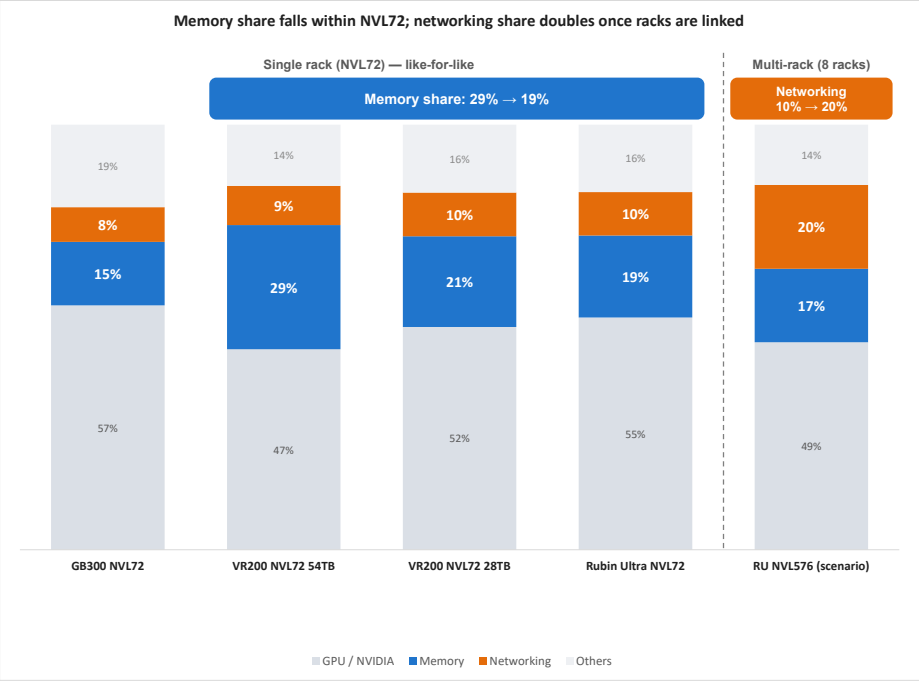
**… or is this the top…** But new capacity will come eventually, and quarterly memory WFE shipment showed how numbers keep climbing higher on equipment pull-ins and shipment all year. Compute gets cheaper, competition itself is the mechanism that drives the cost curve down and mean-reversion has never missed a beat on past memory cycles. Producers are all racing to deliver more intelligence per dollar per watt, and the philosophical disagreement about how to get there does not change where they are all going.

1. China is a major swing factor (*Tech Bytes: China Memory – Reshaping Global Competition (26 Aug 2026)*), where state-backed CXMT is expanding fast in DRAM and HBM3 while YMTC already a legitimate global competitor in NAND.

- **YMTC is already at scale and globally competitive.** It holds roughly 12–13% of the global NAND market – most of it sold domestically – on a 294-layer X-stacking process, running around 200k wafers per month with ~45% domestic-tool adoption.
- **CXMT is at scale and shipping DDR5 and HBM3.** It's main HBM3 customers are from China CSPs and AI chip design houses and we estimate about 20% HBM market share in China.

2. AI data center rack content could be another factor. GPUs currently account for roughly half of total Vera Rubin cluster cost, memory about 29% with the remaining 23% is networking, power, cooling, and facilities. As data centers shift to multi-racks (scale out) and next generation iterations, networking content value increases significantly at the expense of memory content while GPUs stay relatively unchanged.

**Exhibit 3:** AI data center rack content




Source: Morgan Stanley Research

**… But both can be right.** We have come a long way already. The easy money is past, stocks are up 9 fold since the start of the cycle (September 2025), all within USD$1tr

market cap, and not pricing a normal outlook. The memory super-cycle is real but it is also not the end of cyclicality. The cycle amplitude is steeper and duration may be much longer this time, but the path to a trillion market cap is already here and has priced-in a great deal of that run. Hence, a structurally better memory cycle and attractive memory stocks prices do not have to go hand-in-hand.

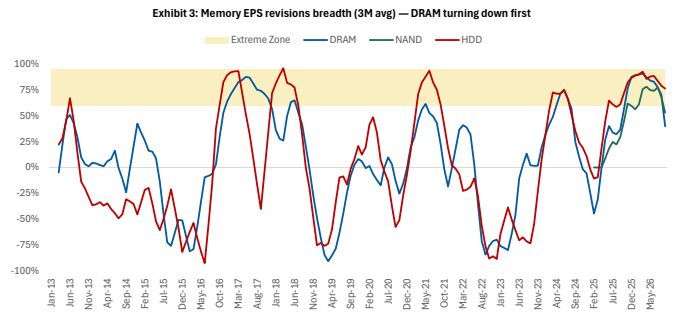
## What comes next?

**Historically, memory companies have been poor at predicting their own inflection points.** In this context, management guidance tends to confirm trends that the market already knows. What ends a memory cycle is never demand softening but supply catching up and/or demand digestion – reaching a point where there is enough HBM supply, ABF, CoWoS packaging capacity, enough fab output to flip deficit to surplus, resulting in hyperscaler buying pauses to absorb what it already bought. This happened in 2000, 2016, 2019, and 2022. This is unlikely to happen in 2026 and most of 2027 given lead times for new capacity additions. It is reasonable to say that every smart person in the AI industry is looking for ways to alleviate the 'memory wall' from every angle given that memory reached nearly half the cost of the most important chip in the world.

**Putting the current memory group stock consolidation in the context of previous memory super cycles**, the cycle upturn may be reaching a relatively mature stage relative to market expectations that may be more advanced due to the positives in AI capex spend to meet insatiable demand trends. While it appears reasonable to assume that a lot of good news is discounted, with the ~180% average performance for memory stocks YTD, a sustained cyclical upturn would require the memory group's contract pricing to rise another c. 70% QoQ from current levels in DRAM (vs. c. 700% YoY peak in 3Q26 and 160% YoY in 2017's past super cycle peak). This seems out of reach and the market is now left with incoming massive capital returns.

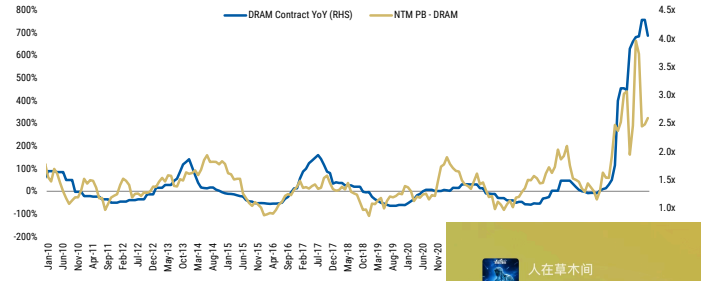
Based on the average earnings upgrade for Asian memory stocks of 432% this year, it should be clear that consensus is "erring on the side of an unprecedented cycle turn" consistent with our base case assumption and market expectations, which is a sharp upturn and durable/elongated cycle with visibility into 2027 (Samsung) and beyond (Micron, SK hynix).

**Exhibit 4:** Memory EPS revisions breadth (3M avg) — DRAM turning down first




Source: Trendforce, Morgan Stanley Research

**Exhibit 5:** DRAM YoY vs. PB




Source: Trendforce, Morgan Stanley Research.

**Can memory shares underperform before upgrades have peaked?** In Exhibit 2, we illustrate some of the historical data with an overlay

人在草木间

consensus earnings trajectory. Over the long term, there is a close correlation between share price and earnings, although there is an offset, with shares having historically fallen before earnings peaked – i.e., the shares no longer outperform even if the upgrade cycle has not ended.

- **Memory shares outperformed four months before earnings peaked** in the 2008 cycle, four months in 2012, and eight months in 2018.
- With decelerating revenue growth and margin improvement moderating, we think **earnings estimate revisions have limited upside** – sell-side estimates have become a lagging indicator at this point.
- Staying with stocks that have **a margin of safety on valuation seems prudent** before growth peaks.

## Anatomy of previous super cycles

- **Low valuations at cycle peak.** In 4Q17, the MSCI Asia Semi sector 12-month forward P/E was 13.3x at peak – this fell to c.10.0x by 4Q18.
- Stocks looking "cheap" does not stop forced selling.
- **The sector declined much sooner than earnings estimates** – at the time EPS peaked, it traded at c. 10x on average.
- Current P/E valuations are 34% (semis) and 39% (hardware) above the 2018/19 peak, but are 14% (semis) and 25% (hardware) below their most recent peak in the 2023/24 cycle.
- **The earnings upgrade cycle is uneven** and stays robust for the AI computing segment while decelerating for memory – this could take several months. In general terms, companies are showing robust financial health – and are structurally stronger than in 2018/19.

Although we can say that these are materially better companies now (in terms of balance sheet and return on invested capital), there are some reasons why returns are already higher and could remain so:

- Demand trends have been unusually strong in some important new emerging segments, especially AI-led (HBM, SOCAMM, CXL, SRAM).
- We don't know where AI architectures are heading. Transformers dominate today, but the field moves fast and the adoption of AI agents only began with 'Open Claw' in January 30, 2026.
- Managements generally appear focused on profitability (lessons learned from the 2022 crash) but have been more focused on bringing supply to keep up with insatiable compute demand.
- However, there is very little inventory build from over-ordering to meet a pull-forward of demand. The fact remains that sector ROE and margins are well above long-term averages, while our leading earnings model is pointing to significant increases.

**The inconsistency of prosperity.** Market behavior can be difficult to predict – i.e., regardless of the ultimate outcome, markets may move to price in a peak followed by a new downturn without waiting for any confirmation. This creates opportunities to benefit

from such divergence, and is the basis of our stock recommendations.

- Valuations are not a good predictor of future returns. Risk-reward is likely to improve marginally from here with industry and consensus upgrades likely only just moderating.
- Management of memory companies is generally bullish and rarely show less optimism. Relying on companies to call a downturn is ineffective.
- Semiconductors and memory is always cyclical.
- It is always good to take a step back and reassess when stocks stock repeatedly go down on good news.

## Stock implications

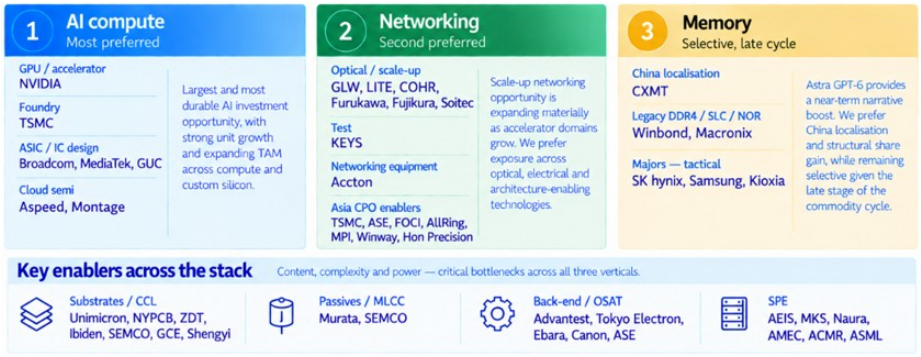
**Favored:** We continue to favor AI computing and networking supply chain over memory on a relative basis. Our preference is mainly earnings revisions, content growth (new specs) or product cycle/unit growth:

- High-quality, idiosyncratic factors
- Early-cycle commodity plays (i.e., accelerating YoY)
- Content growth – HV/DC ; and
- Areas offering higher pricing leverage on earnings – CCL, ABF, power semis.

See Exhibit 6 – stock preference table.

**Least favored:** Downstream hardware stocks where risk of overbuild and margin pressure is greatest owing to higher input costs (memory pricing) and valuations are perceived to be highest.

**Exhibit 6:** Three AI buckets – compute first, networking second, memory selective




Source: Morgan Stanley Research.

## Memory channel checks

### HBM

- **HBM pricing moves sharply higher in 2027 as expected.** Industry forecasts put blended HBM ASP to grow ~121% YoY. HBM4 is tracking at US$3.0–5.0/Gb and HBM4e at US$5.0/Gb or above.
- **Rubin HBM is ramping slower than planned.** VR200 NVL72 rack shipments in 2026 may come in below 10K, vs. an original target of about 15K, with meaningful

volume in 4Q26-1Q27. Blackwell is expected to account for ~78% of NVIDIA's high-end GPU shipments in 2026, with Rubin becoming mainstream after 1H27.

- **Yields remain the binding constraint**. HBM4 production continues to face technical and yield challenges across suppliers, which limits AI chip shipments. 8-high yields run about 5 percentage points above 12-high with a shorter cycle time, which is part of the appeal.
- **8-high to become the 2027 mainstream** configuration, driven by supply and cost rather than weaker demand. 8-high carries a 10-20% per-Gb premium over 12-high, as each stack still needs one base die. Lower HBM content per chip should support RDIMM and SOCAMM demand, as part of the inference KV cache moves to host memory.

**Exhibit 7:** HBM price forecast by generation (US$/Gb)

| | 2025 | 2026F | 2027F |
|---|---|---|---|
| HBM3e | 1.80 | 1.3–2.0 | 2.3–2.5 |
| HBM4 | 2.05 | 2.05+ | 3.0–5.0 |
| HBM4e | – | – | 5.0+ |
| **HBM blended ASP** | **1.77** | **1.74** | **3.84** |
| *Blended ASP YoY* | *18%* | *(1%)* | *121%* |

Source: TrendForce

**DRAM**

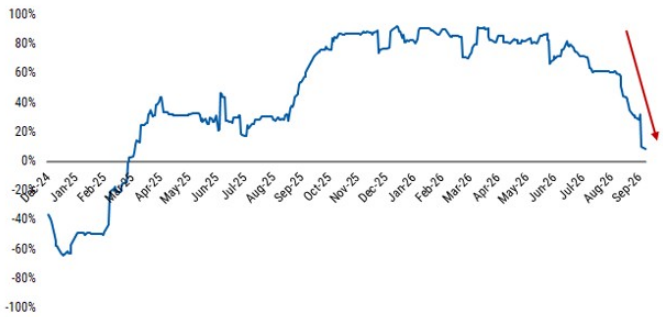
- **Pricing momentum improves into 4Q26.** Industry data points to conventional DRAM contract prices up 10-15% QoQ, revised up from 3-8% previously. PC DRAM is tracking up 13-18% and server DRAM up 10-15%, while mobile DRAM slows to 0-5%. Consumer DRAM (DDR3/DDR4) remains the most undersupplied segment.
- **Server demand remains the key driver.** US hyperscalers released additional RDIMM orders after reviewing their 2027 build-out plans. Suppliers continue to prioritize server allocation, constrained by both front-end and back-end capacity.
- **Consumer demand stays weak.** Smartphone brands remain cautious given high memory costs. PC OEMs continue to pull in orders, aiming to build inventory above 10 weeks on concern about 2027 shortages.

- **PC DRAM supply set to shrink in 2027.** Korean suppliers' PC DRAM supply could fall more than 20% YoY in 2027 as capacity moves to server and HBM. Suppliers expect to reallocate any capacity PC OEMs do not take to server DRAM.
- **Legacy DDR4 remains the tightest.** DDR5 modules now sell at a 10% discount to DDR4, versus 6% in 2Q26. DDR4 supply is expected to fall about 20% in 2027 as major suppliers exit legacy nodes, while secondary supply shrinks as data centres extend server life and buy used RDIMMs.
- **Capex accelerating, but new output arrives late.** Industry data puts DRAM capex at about US$98bn in 2026 (+82% YoY) and US$150–160bn in 2027 (+~60%), mainly for new fabs. Meaningful bit output only starts in 2H27, so supply should stay short through end-2027.

**NAND**

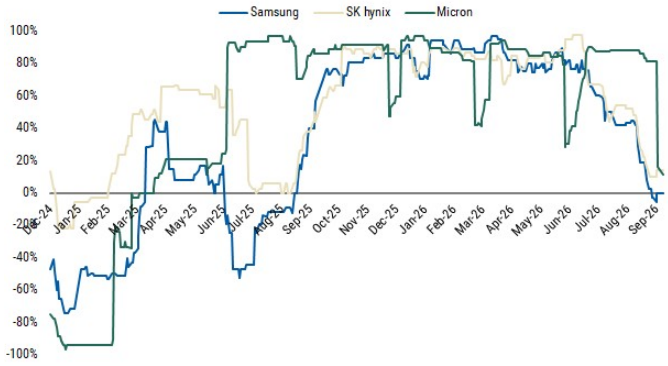
- **Pricing also revised up 15-20% QoQ in 4Q26**, from 0-5%. eSSD is the only category still accelerating, at 23-28% QoQ (from 20–25% in 3Q26). Client SSD and eMMC/UFS slow to 5-10%, and wafers to 3-8%.
- **QLC eSSD adoption is broadening.** Several large US cloud have shifted from TLC SSD plus HDD to QLC SSD to store AI inference KV cache. QLC costs about one third of TLC for the same capacity, and agentic workloads are write-once, read-many, which limits the impact of QLC's shorter lifespan.
- **Divergence set to widen in 2027.** eSSD demand keeps growing, while consumer NAND may face downward price pressure as OEMs downgrade specifications and Chinese supply increases.
- **Consumer inventory is building and moving downstream.** Consumer-grade wafer inventory is rising at suppliers, who are clearing it through bundled sales. Module houses are taking on consumer stock in exchange for allocations of scarce components.

**Exhibit 8:** DRAM earnings revisions breadth coming off recently...



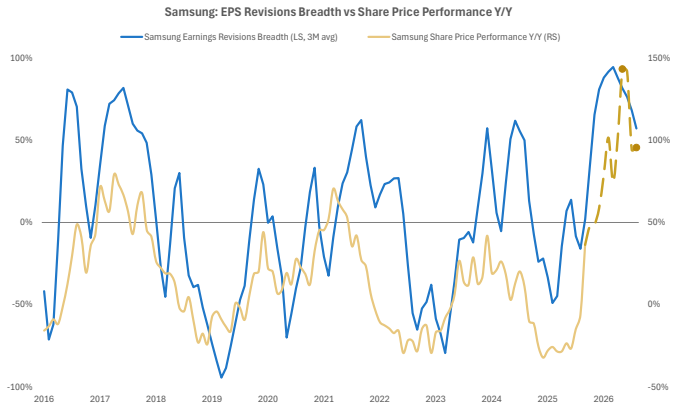

Source: Morgan Stanley Research.

**Exhibit 9:** ...driven by all three major players



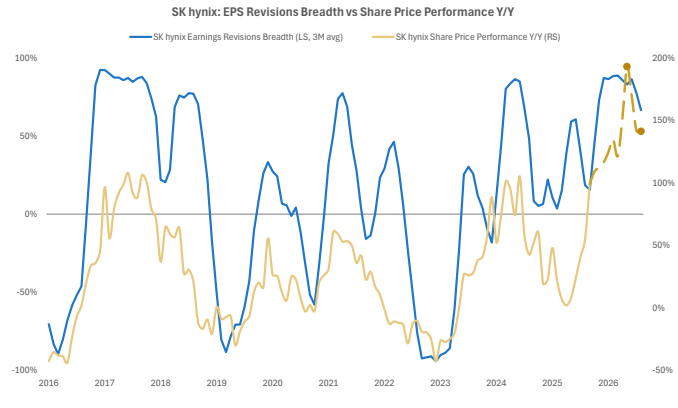

Source: Morgan Stanley Research.

**Exhibit 10:** Samsung: EPS Revisions Breadth vs Share Price Performance Y/Y



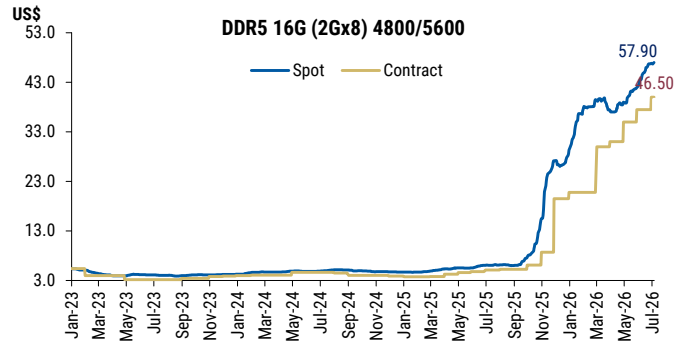

Source: Morgan Stanley Research.

**Exhibit 11:** SK hynix: EPS Revisions Breadth vs Share Price Performance Y/Y



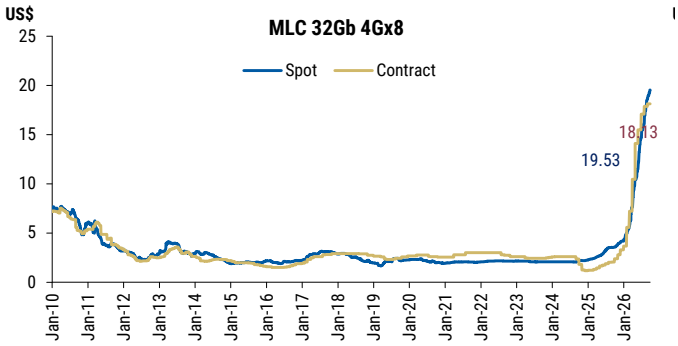

Source: Morgan Stanley Research.

**Exhibit 12:** DRAM spot & contract price




Source: Trendforce, Morgan Stanley Research estimates

**Exhibit 13:** NAND spot & contract price




Source: Trendforce, Morgan Stanley Research estimates

Prices: SK hynix (000660.KS) – ₩1,792,000, Samsung Electronics (005930.KS) – ₩262,000, NVIDIA Corp. (NVDA.O) – $229.28, TSMC (2330.TW) – NT$2,550.00, Broadcom Inc. (AVGO.O) – $361.54, MediaTek (2454.TW) – NT$4,760.00, Global Unichip Corp (3443.TW) – NT$6,400.00, Aspeed Technology (5274.TWO) – NT$19,835.00, Montage Technology Co Ltd (6809.HK) – HK$283.80, Corning Inc (GLW.N) – $156.35, Lite-On Technology Corporation (2301.TW) – NT$297.50, Coherent Corp (COHR.N) – $328.22, Furukawa Co., Ltd. (5715.T) – ¥5,730.00, Fujikura (5803.T) – ¥4,628.00, Soitec SA (SOIT.PA) – €167.55, Keysight Technologies Inc (KEYS.N) – $381.42, Accton Technology Corporation (2345.TW) – NT$1,885.00, ASE Technology Holding Co. Ltd. (3711.TW) – NT $442.00, FOCI Fiber Optic Communications Inc (3363.TWO) – NT$652.00, AllRing Tech Co. (6187.TWO) – NT$1,490.00, MPI Corporation (6223.TWO) – NT$6,390.00, WinWay Technology Co Ltd (6515.TW) – NT$6,890.00, Hon Precision (7769.TW) – NT$2,615.00, Winbond Electronics Corp (2344.TW) – NT$87.80, Macronix International Co Ltd (2337.TW) – NT$102.00, KIOXIA Holdings (285A.T) – ¥19,325.00, Unimicron (3037.TW) – NT$1,270.00, Nan Ya PCB (8046.TW) – NT$1,420.00, Zhen Ding (4958.TW) – NT$574.00, Ibiden (4062.T) – ¥12,270.00, Samsung Electro-Mechanics (009150.KS) – ₩1,522,000, Gold Circuit Electronics Ltd. (2368.TW) – NT$1,375.00, Shengyi Technology Co Ltd (600183.SS) – ¥129.96, Murata Manufacturing (6981.T) – ¥7,129.00, Advantest (6857.T) – ¥38,630.00, Tokyo Electron (8035.T) – ¥12,445.00, Ebara (6361.T) – ¥4,870.00, Canon (7751.T) – ¥4,619.00, Advanced Energy Industries Inc. (AEIS.O) – $302.77, MKS Inc. (MKSI.O) – $264.50, NAURA Technology Group Co Ltd (002371.SZ) – ¥615.97, Advanced Micro-Fabrication Equipment Inc (688012.SS) – ¥349.35, ACM Research Inc (ACMR.O) – $72.77, ASML Holding NV (ASML.AS) – €1,599.40

# Disclosure Section

The information and opinions in Morgan Stanley Research were prepared or are disseminated by Morgan Stanley Asia Limited (which accepts the responsibility for its contents) and/or Morgan Stanley Asia (Singapore) Pte. (Registration number 199206298Z) and/or Morgan Stanley Asia (Singapore) Securities Pte Ltd (Registration number 200008434H), regulated by the Monetary Authority of Singapore (which accepts legal responsibility for its contents and should be contacted with respect to any matters arising from, or in connection with, Morgan Stanley Research), and/or Morgan Stanley Taiwan Limited and/or Morgan Stanley & Co International plc, Seoul Branch, and/or Morgan Stanley Australia Limited (A.B.N. 67 003 734 576, holder of Australian financial services license No. 233742, which accepts responsibility for its contents), and/or Morgan Stanley Wealth Management Australia Pty Ltd (A.B.N. 19 009 145 555, holder of Australian financial services license No. 240813, which accepts responsibility for its contents), and/or Morgan Stanley India Company Private Limited having Corporate Identification No (CIN) U22990MH1998PTC115305, regulated by the Securities and Exchange Board of India ("SEBI") and holder of licenses as a Research Analyst (SEBI Registration No. INH000001105); Stock Broker (SEBI Stock Broker Registration No. INZ000244438), Merchant Banker (SEBI Registration No. INM000011203), and depository participant with National Securities Depository Limited (SEBI Registration No. IN-DP-NSDL-567-2021) having registered office at Altimus, Level 39 & 40, Pandurang Budhkar Marg, Worli, Mumbai 400018, India; Telephone no. +91-22-61181000; Compliance Officer Details: Mr. Tejarshi Hardas, Tel. No.: +91-22-61181000 or Email: tejarshi.hardas@morganstanley.com; Grievance officer details: Mr. Tejarshi Hardas, Tel. No.: +91-22-61181000 or Email: msic-compliance@morganstanley.com which accepts the responsibility for its contents and should be contacted with respect to any matters arising from, or in connection with, Morgan Stanley Research, and their affiliates (collectively, "Morgan Stanley"). Morgan Stanley India Company Private Limited (MSICPL) may use AI tools in providing research services. All recommendations contained herein are made by the duly qualified research analysts.

For important disclosures, stock price charts and equity rating histories regarding companies that are the subject of this report, please see the Morgan Stanley Research Disclosure Website at www.morganstanley.com/eqr/disclosures/webapp/generalresearch, or contact your investment representative or Morgan Stanley Research at 1585 Broadway, (Attention: Research Management), New York, NY, 10036 USA.

For valuation methodology and risks associated with any recommendation, rating or price target referenced in this research report, please contact the Client Support Team as follows: US/Canada +1 800 303-2495; Hong Kong +852 2848-5999; Latin America +1 718 754-5444 (U.S.); London +44 (0)20-7425-8169; Singapore +65 6834-6860; Sydney +61 (0)2-9770-1505; Tokyo +81 (0)3-6836-9000. Alternatively you may contact your investment representative or Morgan Stanley Research at 1585 Broadway, (Attention: Research Management), New York, NY 10036 USA.

## Analyst Certification

The following analysts hereby certify that their views about the companies and their securities discussed in this report are accurately expressed and that they have not received and will not receive direct or indirect compensation in exchange for expressing specific recommendations or views in this report: Cindy Huang; Ryan Kim; Shawn Kim.

.

## Global Research Conflict Management Policy

Morgan Stanley Research has been published in accordance with our conflict management policy, which is available at www.morganstanley.com/institutional/research/conflictpolicies. A Portuguese version of the policy can be found at www.morganstanley.com.br

## Important Regulatory Disclosures on Subject Companies

The analyst or strategist (or a household member) identified below owns the following securities (or related derivatives): Cindy Huang - ASML Holding NV(common or preferred stock); Kathy Zhu - Murata Manufacturing(common or preferred stock).

As of September 30, 2026, Morgan Stanley beneficially owned 1% or more of a class of common equity securities of the following companies covered in Morgan Stanley Research: Accton Technology Corporation, ACM Research Inc, Advanced Energy Industries Inc., Advanced Micro-Fabrication Equipment Inc, Advantest, AllRing Tech Co., ASE Technology Holding Co. Ltd., ASML Holding NV, Aspeed Technology, Broadcom Inc., Canon, Coherent Corp, Corning Inc, Ebara, Fadu Inc, Furukawa Co., Ltd., Keysight Technologies Inc, Leeno Industrial Inc., LG Display, LG Innotek, Lite-On Technology, Macronix International Co Ltd, MKS Inc., Montage Technology Co Ltd, Nan Ya PCB, NAURA Technology Group Co Ltd, NVIDIA Corp., SK hynix, SK Square Co Ltd., Soitec SA, TSMC, Unimicron, WinWay Technology Co Ltd, Zhen Ding.

Within the last 12 months, Morgan Stanley managed or co-managed a public offering (or 144A offering) of securities of Advanced Energy Industries Inc., Broadcom Inc., LG Electronics, MediaTek, MKS Inc., Montage Technology Co Ltd, NVIDIA Corp., Samsung Electronics, Unimicron, Zhen Ding.

Within the last 12 months, Morgan Stanley has received compensation for investment banking services from Advanced Energy Industries Inc., Broadcom Inc., Canon, Coherent Corp, LG Electronics, MediaTek, MKS Inc., Montage Technology Co Ltd, NVIDIA Corp., Tokyo Electron, Unimicron, Zhen Ding.

In the next 3 months, Morgan Stanley expects to receive or intends to seek compensation for investment banking services from Accton Technology Corporation, Advanced Energy Industries Inc., Advanced Micro-Fabrication Equipment Inc, Advantest, ASE Technology Holding Co. Ltd., ASML Holding NV, Aspeed Technology, Broadcom Inc., Canon, Coherent Corp, Corning Inc, Ebara, Fujikura, Furukawa Co., Ltd., Gold Circuit Electronics Ltd., HD Hyundai Electric Co Ltd, Ibiden, Keysight Technologies Inc, KIOXIA Holdings, LG Display, LG Electronics, Lite-On Technology, Macronix International Co Ltd, MediaTek, MKS Inc., Montage Technology Co Ltd, Murata Manufacturing, NVIDIA Corp., Samsung Electronics, SK hynix, SK Square Co Ltd., Soitec SA, Tokyo Electron, TSMC, Unimicron, Winbond Electronics Corp, WinWay Technology Co Ltd, Zhen Ding.

Within the last 12 months, Morgan Stanley has received compensation for products and services other than investment banking services from Accton Technology Corporation, ASE Technology Holding Co. Ltd., Broadcom Inc., Coherent Corp, Corning Inc, MediaTek, MKS Inc., NVIDIA Corp., Samsung Electronics, Tokyo Electron, TSMC, Winbond Electronics Corp.

Within the last 12 months, Morgan Stanley has provided or is providing investment banking services to, or has an investment banking client relationship with, the following company: Accton Technology Corporation, Advanced Energy Industries Inc., Advanced Micro-Fabrication Equipment Inc, Advantest, ASE Technology Holding Co. Ltd., ASML Holding NV, Aspeed Technology, Broadcom Inc., Canon, Coherent Corp, Corning Inc, Ebara, Fujikura, Gold Circuit Electronics Ltd., HD Hyundai Electric Co Ltd, Ibiden, Keysight Technologies Inc, KIOXIA Holdings, LG Display, LG Electronics, Lite-On Technology, Macronix International Co Ltd, MediaTek, MKS Inc., Montage Technology Co Ltd, Murata Manufacturing, NVIDIA Corp., Samsung Electronics, SK hynix, SK Square Co Ltd., Soitec SA, Tokyo Electron, TSMC, Unimicron, Winbond Electronics Corp, WinWay Technology Co Ltd, Zhen Ding.

Within the last 12 months, Morgan Stanley has either provided or is providing non-investment banking, securities-related services to and/or in the past has entered into an agreement to provide services or has a client relationship with the following company: Accton Technology Corporation, Advanced Energy Industries Inc., ASE Technology Holding Co. Ltd., Broadcom Inc., Coherent Corp, Corning Inc, MediaTek, MKS Inc., Montage Technology Co Ltd, NVIDIA Corp., Samsung Electronics, SK hynix, Tokyo Electron, TSMC, Winbond Electronics Corp, Zhen Ding.

The equity research analysts or strategists principally responsible for the preparation of Morgan Stanley Research have received compensation based upon various factors, including quality of research, investor client feedback, stock picking, competitive factors, firm revenues and overall investment banking revenues. Equity Research analysts' or strategists' compensation is not linked to investment banking or capital markets transactions performed by Morgan Stanley or the profitability or revenues of particular trading desks.

Morgan Stanley and its affiliates do business that relates to companies/instruments covered in Morgan Stanley Research, including market making, providing liquidity, fund management, commercial banking, extension of credit, investment services and investment banking. Morgan Stanley sells to and buys from customers the securities/instruments of companies covered in

Morgan Stanley Research on a principal basis. Morgan Stanley may have a position in the debt of the Company or instruments discussed in this report. Morgan Stanley trades or may trade as principal in the debt securities (or in related derivatives) that are the subject of the debt research report.
Certain disclosures listed above are also for compliance with applicable regulations in non-US jurisdictions.

## STOCK RATINGS

Morgan Stanley uses a relative rating system using terms such as Overweight, Equal-weight, Not-Rated or Underweight (see definitions below). Morgan Stanley does not assign ratings of Buy, Hold or Sell to the stocks we cover. Overweight, Equal-weight, Not-Rated and Underweight are not the equivalent of buy, hold and sell. Investors should carefully read the definitions of all ratings used in Morgan Stanley Research. In addition, since Morgan Stanley Research contains more complete information concerning the analyst's views, investors should carefully read Morgan Stanley Research, in its entirety, and not infer the contents from the rating alone. In any case, ratings (or research) should not be used or relied upon as investment advice. An investor's decision to buy or sell a stock should depend on individual circumstances (such as the investor's existing holdings) and other considerations.

## Global Stock Ratings Distribution

(as of September 30, 2026)
The Stock Ratings described below apply to Morgan Stanley's Fundamental Equity Research and do not apply to Debt Research produced by the Firm.
For disclosure purposes only (in accordance with FINRA requirements), we include the category headings of Buy, Hold, and Sell alongside our ratings of Overweight, Equal-weight, Not-Rated and Underweight. Morgan Stanley does not assign ratings of Buy, Hold or Sell to the stocks we cover. Overweight, Equal-weight, Not-Rated and Underweight are not the equivalent of buy, hold, and sell but represent recommended relative weightings (see definitions below). To satisfy regulatory requirements, we correspond Overweight, our most positive stock rating, with a buy recommendation; we correspond Equal-weight and Not-Rated to hold and Underweight to sell recommendations, respectively.

| | Coverage Universe | | Investment Banking Clients (IBC) | | | Other Material Investment Services Clients (MISC) | |
|---|---|---|---|---|---|---|---|
| Stock Rating Category | Count | % of Total | Count | % of Total IBC | % of Rating Category | Count | % of Total Other MISC |
| Overweight/Buy | 1599 | 43% | 455 | 48% | 28% | 783 | 44% |
| Equal-weight/Hold | 1563 | 42% | 394 | 42% | 25% | 763 | 43% |
| Not-Rated/Hold | 2 | 0% | 1 | 0% | 50% | 1 | 0% |
| Underweight/Sell | 570 | 15% | 96 | 10% | 17% | 227 | 13% |
| Total | 3,734 | | 946 | | | 1774 | |

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months. Due to rounding off of decimals, the percentages provided in the "% of total" column may not add up to exactly 100 percent.

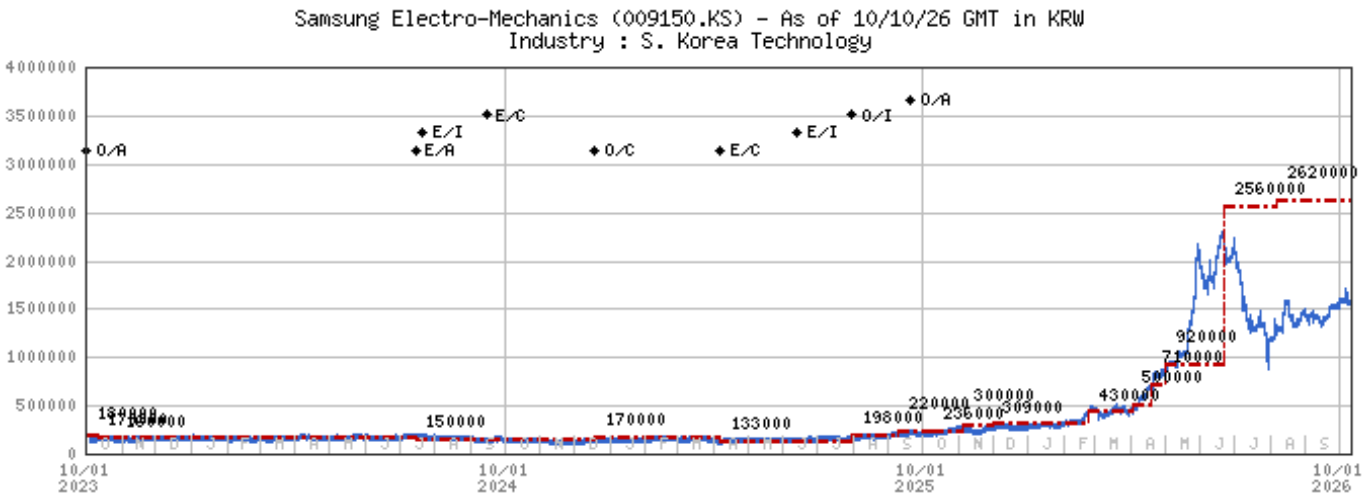
## Analyst Stock Ratings

Overweight (O). The stock's total return is expected to exceed the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.
Equal-weight (E). The stock's total return is expected to be in line with the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.
Not-Rated (NR). Currently the analyst does not have adequate conviction about the stock's total return relative to the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.
Underweight (U). The stock's total return is expected to be below the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.
Unless otherwise specified, the time frame for price targets included in Morgan Stanley Research is 12 to 18 months.

## Analyst Industry Views

Attractive (A): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be attractive vs. the relevant broad market benchmark, as indicated below.
In-Line (I): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be in line with the relevant broad market benchmark, as indicated below.
Cautious (C): The analyst views the performance of his or her industry coverage universe over the next 12-18 months with caution vs. the relevant broad market benchmark, as indicated below.
Benchmarks for each region are as follows: North America - S&P 500; Latin America - relevant MSCI country index or MSCI Latin America Index; Europe - MSCI Europe; Japan - TOPIX; Asia - relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

## Stock Price, Price Target and Rating History (See Rating Definitions)



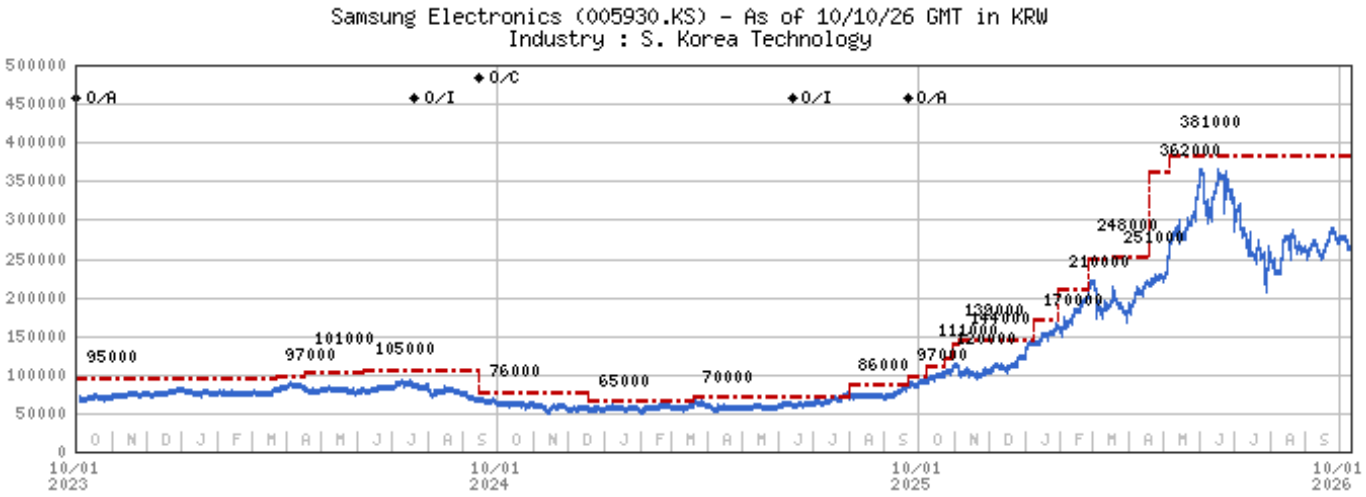

Stock Rating History: 10/1/21 : E/C; 6/1/22 : U/C; 10/4/22 : U/A; 11/9/22 : O/A; 7/15/24 : E/A; 7/21/24 : E/I; 9/15/24 : E/C; 12/18/24 : O/C; 4/7/25 : E/C; 6/13/25 : E/I; 7/31/25 : O/I; 9/21/25 : O/A

Price Target History: 5/12/21 : 180000; 10/19/21 : 170000; 10/27/21 : 160000; 1/24/22 : 180000; 3/18/22 : 170000; 6/1/22 : 140000; 11/9/22 : 180000; 10/11/23 : 170000; 10/27/23 : 160000; 7/15/24 : 150000; 12/18/24 : 170000; 4/7/25 : 133000; 7/31/25 : 198000; 9/10/25 : 220000; 10/10/25 : 236000; 11/5/25 : 300000; 12/1/25 : 309000; 2/23/26 : 430000; 4/2/26 : 500000; 4/19/26 : 710000; 5/1/26 : 920000; 6/22/26 : 2560000; 8/7/26 : 2620000

Source: Morgan Stanley Research  Date Format : MM/DD/YY  Price Target  No Price Target Assigned (NA)
Stock Price (Not Covered by Current Analyst)  Stock Price (Covered by Current Analyst)
Stock and Industry Ratings (abbreviations below) appear as ◆ Stock Rating/Industry View
Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)
Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

Effective January 13, 2014, the stocks covered by Morgan Stanley Asia Pacific will be rated relative to the analyst's industry (or industry team's) coverage.

Effective January 13, 2014, the industry view benchmarks for Morgan Stanley Asia Pacific are as follows: relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.



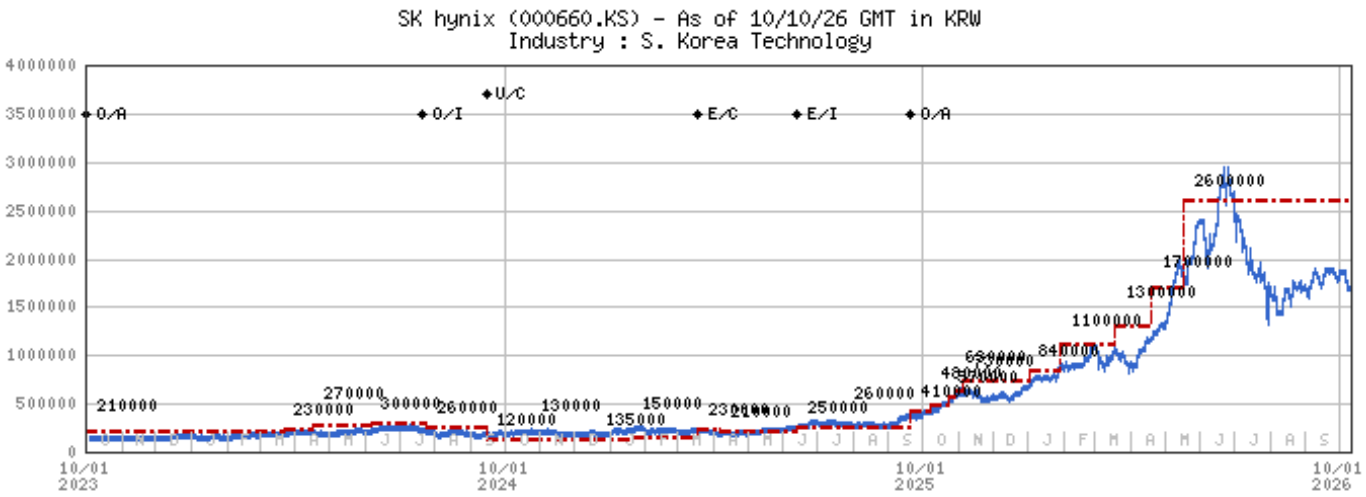

Stock Rating History: 10/1/21 : O/C; 10/4/22 : O/A; 7/21/24 : O/I; 9/15/24 : O/C; 6/13/25 : O/I; 9/21/25 : O/A

Price Target History: 9/15/21 : 95000; 12/3/21 : 97000; 3/18/22 : 95000; 4/28/22 : 85000; 6/10/22 : 80000; 7/5/22 : 75000; 7/22/22 : 70000; 9/17/22 : 68000; 3/21/23 : 70000; 5/30/23 : 90000; 7/7/23 : 95000; 3/22/24 : 97000; 4/16/24 : 101000; 6/6/24 : 105000; 9/15/24 : 76000; 12/18/24 : 65000; 3/19/25 : 70000; 8/1/25 : 86000; 9/21/25 : 97000; 10/8/25 : 111000; 10/23/25 : 120000; 10/30/25 : 139000; 11/5/25 : 144000; 1/8/26 : 170000; 1/30/26 : 210000; 2/24/26 : 248000; 3/18/26 : 251000; 4/19/26 : 362000; 5/6/26 : 381000

Source: Morgan Stanley Research  Date Format : MM/DD/YY  Price Target --  No Price Target Assigned (NA)
Stock Price (Not Covered by Current Analyst)  Stock Price (Covered by Current Analyst)
Stock and Industry Ratings (abbreviations below) appear as ◆ Stock Rating/Industry View
Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)
Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

Effective January 13, 2014, the stocks covered by Morgan Stanley Asia Pacific will be rated relative to the analyst's industry (or industry team's) coverage.

Effective January 13, 2014, the industry view benchmarks for Morgan Stanley Asia Pacific are as follows: relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.




Stock Rating History: 10/1/21 : U/C; 12/3/21 : E/C; 2/11/22 : O/C; 7/22/22 : E/C; 10/4/22 : O/A; 7/21/24 : O/I; 9/15/24 : U/C; 3/19/25 : E/C; 6/13/25 : E/I; 9/21/25 : O/A

Price Target History: 9/15/21 : 88000; 12/3/21 : 110000; 12/23/21 : 125000; 1/24/22 : 130000; 1/28/22 : 136000; 2/11/22 : 155000; 3/18/22 : 150000; 4/27/22 : 130000; 6/10/22 : 120000; 7/5/22 : 110000; 7/22/22 : 105000; 10/4/22 : 130000; 12/7/22 : 120000; 3/21/23 : 110000; 5/30/23 : 140000; 7/7/23 : 170000; 9/21/23 : 210000; 3/22/24 : 230000; 4/16/24 : 270000; 6/6/24 : 300000; 7/25/24 : 260000; 9/15/24 : 120000; 10/24/24 : 130000; 12/18/24 : 135000; 1/20/25 : 150000; 3/19/25 : 230000; 4/7/25 : 210000; 6/13/25 : 250000; 7/24/25 : 260000; 9/21/25 : 410000; 10/8/25 : 480000; 10/23/25 : 570000; 10/29/25 : 630000; 11/5/25 : 730000; 1/2/26 : 840000; 1/30/26 : 1100000; 3/18/26 : 1300000; 4/19/26 : 1700000; 5/18/26 : 2600000

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target -·- No Price Target Assigned (NA)
Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) ▬
Stock and Industry Ratings (abbreviations below) appear as ◆ Stock Rating/Industry View
Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)
Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

Effective January 13, 2014, the stocks covered by Morgan Stanley Asia Pacific will be rated relative to the analyst's industry (or industry team's) coverage.

Effective January 13, 2014, the industry view benchmarks for Morgan Stanley Asia Pacific are as follows: relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

## Important Disclosures for Morgan Stanley Smith Barney LLC Customers

Important disclosures regarding any material conflict of interest that can reasonably be expected to have influenced Morgan Stanley Smith Barney LLC's choice of a third-party research provider or the subject company of a third-party research report, are available on the Morgan Stanley Wealth Management disclosure website at www.morganstanley.com/online/researchdisclosures. For Morgan Stanley specific disclosures, you may refer to https://www.morganstanley.com/eqr/disclosures/webapp/generalresearch.

Each Morgan Stanley research report is reviewed and approved on behalf of Morgan Stanley Smith Barney LLC. This review and approval is conducted by the same person who reviews the research report on behalf of Morgan Stanley. This could create a conflict of interest.

## Other Important Disclosures

A member of Research who had or could have had access to the research prior to completion owns securities (or related derivatives) in the Broadcom Inc., NVIDIA Corp.. This person is not a research analyst or a member of research analyst's household.

Morgan Stanley Research policy is to update research reports as and when the Research Analyst and Research Management deem appropriate, based on developments with the issuer, the sector, or the market that may have a material impact on the research views or opinions stated therein. In addition, certain Research publications are intended to be updated on a regular periodic basis (weekly/monthly/quarterly/annual) and will ordinarily be updated with that frequency, unless the Research Analyst and Research Management determine that a different publication schedule is appropriate based on current conditions.

Morgan Stanley is not acting as a municipal advisor and the opinions or views contained herein are not intended to be, and do not constitute, advice within the meaning of Section 975 of the Dodd-Frank Wall Street Reform and Consumer Protection Act.

Morgan Stanley produces an equity research product called a "Tactical Idea." Views contained in a "Tactical Idea" on a particular stock may be contrary to the recommendations or views expressed in research on the same stock. This may be the result of differing time horizons, methodologies, market events, or other factors. For all research available on a particular stock, please contact your sales representative or go to Matrix at http://www.morganstanley.com/matrix.

Morgan Stanley Research is provided to our clients through our proprietary research portal on Matrix and also distributed electronically by Morgan Stanley to clients. Certain, but not all, Morgan Stanley Research products are also made available to clients through third-party vendors or redistributed to clients through alternate electronic means as a convenience. For access to all available Morgan Stanley Research, please contact your sales representative or go to Matrix at http://www.morganstanley.com/matrix.

Any access and/or use of Morgan Stanley Research is subject to Morgan Stanley's Terms of Use (http://www.morganstanley.com/terms.html). By accessing and/or using Morgan Stanley Research, you are indicating that you have read and agree to be bound by our Terms of Use (http://www.morganstanley.com/terms.html). In addition you consent to Morgan Stanley processing your personal data and using cookies in accordance with our Privacy Policy and our Global Cookies Policy (http://www.morganstanley.com/privacy_pledge.html), including for the purposes of setting your preferences and to collect readership data so that we can deliver better and more personalized service and products to you. To find out more information about how Morgan Stanley processes personal data, how we use cookies and how to reject cookies see our Privacy Policy and our Global Cookies Policy (http://www.morganstanley.com/privacy_pledge.html). Please use

the provided link to review the Terms and Conditions and Most Important Terms and Conditions for Morgan Stanley India Company Private Limited (https://www.morganstanley.com/assets/pdfs/about-us-global-offices/india/Terms_and_conditions.pdf) and the following link to review the audit report (https://ny.matrix.ms.com/eqr/research/webapp/researchdocs/MSICPL_Morgan_Stanley_Research_Audit_Report.pdf).

If you do not agree to our Terms of Use and/or if you do not wish to provide your consent to Morgan Stanley processing your personal data or using cookies please do not access our research.

Morgan Stanley Research does not provide individually tailored investment advice. Morgan Stanley Research has been prepared without regard to the circumstances and objectives of those who receive it. Morgan Stanley recommends that investors independently evaluate particular investments and strategies, and encourages investors to seek the advice of a financial adviser. The appropriateness of an investment or strategy will depend on an investor's circumstances and objectives. The securities, instruments, or strategies discussed in Morgan Stanley Research may not be suitable for all investors, and certain investors may not be eligible to purchase or participate in some or all of them. Morgan Stanley Research is not an offer to buy or sell or the solicitation of an offer to buy or sell any security/instrument or to participate in any particular trading strategy. The value of and income from your investments may vary because of changes in interest rates, foreign exchange rates, default rates, prepayment rates, securities/instruments prices, market indexes, operational or financial conditions of companies or other factors. There may be time limitations on the exercise of options or other rights in securities/instruments transactions. Past performance is not necessarily a guide to future performance. Estimates of future performance are based on assumptions that may not be realized. If provided, and unless otherwise stated, the closing price on the cover page is that of the primary exchange for the subject company's securities/instruments.

The fixed income research analysts, strategists or economists principally responsible for the preparation of Morgan Stanley Research have received compensation based upon various factors, including quality, accuracy and value of research, firm profitability or revenues (which include fixed income trading and capital markets profitability or revenues), client feedback and competitive factors. Fixed Income Research analysts', strategists' or economists' compensation is not linked to investment banking or capital markets transactions performed by Morgan Stanley or the profitability or revenues of particular trading desks.

The "Important Regulatory Disclosures on Subject Companies" section in Morgan Stanley Research lists all companies mentioned where Morgan Stanley owns 1% or more of a class of common equity securities of the companies. For all other companies mentioned in Morgan Stanley Research, Morgan Stanley may have an investment of less than 1% in securities/instruments or derivatives of securities/instruments of companies and may trade them in ways different from those discussed in Morgan Stanley Research. Employees of Morgan Stanley not involved in the preparation of Morgan Stanley Research may have investments in securities/instruments or derivatives of securities/instruments of companies mentioned and may trade them in ways different from those discussed in Morgan Stanley Research. Derivatives may be issued by Morgan Stanley or associated persons.

With the exception of information regarding Morgan Stanley, Morgan Stanley Research is based on public information. Morgan Stanley makes every effort to use reliable, comprehensive information, but we make no representation that it is accurate or complete. We have no obligation to tell you when opinions or information in Morgan Stanley Research change apart from when we intend to discontinue equity research coverage of a subject company. Facts and views presented in Morgan Stanley Research have not been reviewed by, and may not reflect information known to, professionals in other Morgan Stanley business areas, including investment banking personnel.

Morgan Stanley Research personnel may participate in company events such as site visits and are generally prohibited from accepting payment by the company of associated expenses unless pre-approved by authorized members of Research management.

Morgan Stanley may make investment decisions that are inconsistent with the recommendations or views in this report.

To our readers based in Taiwan or trading in Taiwan securities/instruments: Information on securities/instruments that trade in Taiwan is distributed by Morgan Stanley Taiwan Limited ("MSTL"). Such information is for your reference only. The reader should independently evaluate the investment risks and is solely responsible for their investment decisions. Morgan Stanley Research may not be distributed to the public media or quoted or used by the public media without the express written consent of Morgan Stanley. Any non-customer reader within the scope of Article 7-1 of the Taiwan Stock Exchange Recommendation Regulations accessing and/or receiving Morgan Stanley Research is not permitted to provide Morgan Stanley Research to any third party (including but not limited to related parties, affiliated companies and any other third parties) or engage in any activities regarding Morgan Stanley Research which may create or give the appearance of creating a conflict of interest. Information on securities/instruments that do not trade in Taiwan is for informational purposes only and is not to be construed as a recommendation or a solicitation to trade in such securities/instruments. MSTL may not execute transactions for clients in these securities/instruments.

Certain information in Morgan Stanley Research was sourced by employees of the Shanghai Representative Office of Morgan Stanley Asia Limited for the use of Morgan Stanley Asia Limited. Morgan Stanley is not incorporated under PRC law and the research in relation to this report is conducted outside the PRC. Morgan Stanley Research does not constitute an offer to sell or the solicitation of an offer to buy any securities in the PRC. PRC investors shall have the relevant qualifications to invest in such securities and shall be responsible for obtaining all relevant approvals, licenses, verifications and/or registrations from the relevant governmental authorities themselves. Neither this report nor any part of it is intended as, or shall constitute, provision of any consultancy or advisory service of securities investment as defined under PRC law. Such information is provided for your reference only.

Morgan Stanley Research is disseminated in Brazil by Morgan Stanley C.T.V.M. S.A. located at Av. Brigadeiro Faria Lima, 3600, 6th floor, São Paulo - SP, Brazil; and is regulated by the Comissão de Valores Mobiliários; in Mexico by Morgan Stanley México, Casa de Bolsa, S.A. de C.V which is regulated by Comision Nacional Bancaria y de Valores. Paseo de los Tamarindos 90, Torre 1, Col. Bosques de las Lomas Floor 29, 05120 Mexico City; in Japan by Morgan Stanley MUFG Securities Co., Ltd. and, for Commodities related research reports only, Morgan Stanley Capital Group Japan Co., Ltd; in Hong Kong by Morgan Stanley Asia Limited (which accepts responsibility for its contents) and by Morgan Stanley Bank Asia Limited; in Singapore by Morgan Stanley Asia (Singapore) Pte. (Registration number 199206298Z) and/or Morgan Stanley Asia (Singapore) Securities Pte Ltd (Registration number 200008434H), regulated by the Monetary Authority of Singapore (which accepts legal responsibility for its contents and should be contacted with respect to any matters arising from, or in connection with, Morgan Stanley Research) and by Morgan Stanley Bank Asia Limited, Singapore Branch (Registration number T14FC0118J); in Australia to "wholesale clients" within the meaning of the Australian Corporations Act by Morgan Stanley Australia Limited A.B.N. 67 003 734 576, holder of Australian financial services license No. 233742, which accepts responsibility for its contents; in Australia to "wholesale clients" and "retail clients" within the meaning of the Australian Corporations Act by Morgan Stanley Wealth Management Australia Pty Ltd (A.B.N. 19 009 145 555, holder of Australian financial services license No. 240813, which accepts responsibility for its contents; in Korea by Morgan Stanley & Co International plc, Seoul Branch; in India by Morgan Stanley India Company Private Limited having Corporate Identification No (CIN) U22990MH1998PTC115305, regulated by the Securities and Exchange Board of India ("SEBI") and holder of licenses as a Research Analyst (SEBI Registration No. INH000001105); Stock Broker (SEBI Stock Broker Registration No. INZ000244438), Merchant Banker (SEBI Registration No. INM000011203), and depository participant with National Securities Depository Limited (SEBI Registration No. IN-DP-NSDL-567-2021) having registered office at Altimus, Level 39 & 40, Pandurang Budhkar Marg, Worli, Mumbai 400018, India; Telephone no. +91-22-61181000; Compliance Officer Details: Mr. Tejarshi Hardas, Tel. No.: +91-22-61181000 or Email: tejarshi.hardas@morganstanley.com; Grievance officer details: Mr. Tejarshi Hardas, Tel. No.: +91-22-61181000 or Email: msic-compliance@morganstanley.com. Morgan Stanley India Company Private Limited (MSICPL) may use AI tools in providing research services. All recommendations contained herein are made by the duly qualified research analysts; in Germany and the European Economic Area where required by Morgan Stanley Europe S.E., authorised and regulated by Bundesanstalt fuer Finanzdienstleistungsaufsicht (BaFin) under the reference number 149169; in the US by Morgan Stanley & Co. LLC, which accepts responsibility for its contents. Morgan Stanley & Co. International plc, authorized by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority, disseminates in the UK research that it has prepared, and research which has been prepared by any of its affiliates, only to persons who (i) are investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (as amended, the "Order"); (ii) are persons who are high net worth entities falling within Article 49(2)(a)

to (d) of the Order; or (iii) are persons to whom an invitation or inducement to engage in investment activity (within the meaning of section 21 of the Financial Services and Markets Act 2000, as amended) may otherwise lawfully be communicated or caused to be communicated. RMB Morgan Stanley Proprietary Limited is a member of the JSE Limited and A2X (Pty) Ltd. RMB Morgan Stanley Proprietary Limited is a joint venture owned equally by Morgan Stanley International Holdings Inc. and RMB Investment Advisory (Proprietary) Limited, which is wholly owned by FirstRand Limited. Morgan Stanley Research is disseminated in Canada by Morgan Stanley Canada Limited and Morgan Stanley Wealth Management Canada Inc., members of the Canadian Investment Regulatory Organization (CIRO). The information in Morgan Stanley Research is being disseminated by Morgan Stanley Saudi Arabia, regulated by the Capital Market Authority in the Kingdom of Saudi Arabia, and is directed at Sophisticated investors only.

Morgan Stanley Hong Kong Securities Limited is the liquidity provider/market maker for securities of Montage Technology Co Ltd listed on the Stock Exchange of Hong Kong Limited. An updated list can be found on HKEx website: http://www.hkex.com.hk.

The information in Morgan Stanley Research is being communicated by Morgan Stanley & Co. International plc (DIFC Branch), regulated by the Dubai Financial Services Authority (the DFSA) or by Morgan Stanley & Co. International plc (ADGM Branch), regulated by the Financial Services Regulatory Authority Abu Dhabi (the FSRA), and is directed at Professional Clients only, as defined by the DFSA or the FSRA, respectively. The financial products or financial services to which this research relates will only be made available to a customer who we are satisfied meets the regulatory criteria of a Professional Client. A distribution of the different MS Research ratings or recommendations, in percentage terms for Investments in each sector covered, is available upon request from your sales representative.

The information in Morgan Stanley Research is being communicated by Morgan Stanley & Co. International plc (QFC Branch), regulated by the Qatar Financial Centre Regulatory Authority (the QFCRA), and is directed at business customers and market counterparties only and is not intended for Retail Customers as defined by the QFCRA.

As required by the Capital Markets Board of Turkey, investment information, comments and recommendations stated here, are not within the scope of investment advisory activity. Investment advisory service is provided exclusively to persons based on their risk and income preferences by the authorized firms. Comments and recommendations stated here are general in nature. These opinions may not fit to your financial status, risk and return preferences. For this reason, to make an investment decision by relying solely to this information stated here may not bring about outcomes that fit your expectations.

The following companies do business in countries which are generally subject to comprehensive sanctions programs administered or enforced by the U.S. Department of the Treasury's Office of Foreign Assets Control ("OFAC") and by other countries and multi-national bodies: Samsung Electronics.

The trademarks and service marks contained in Morgan Stanley Research are the property of their respective owners. Third-party data providers make no warranties or representations relating to the accuracy, completeness, or timeliness of the data they provide and shall not have liability for any damages relating to such data. The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and S&P.

Morgan Stanley Research, or any portion thereof may not be reprinted, sold or redistributed without the written consent of Morgan Stanley.

Indicators and trackers referenced in Morgan Stanley Research may not be used as, or treated as, a benchmark under Regulation EU 2016/1011, or any other similar framework.

The issuers and/or fixed income products recommended or discussed in certain fixed income research reports may not be continuously followed. Accordingly, investors should regard those fixed income research reports as providing stand-alone analysis and should not expect continuing analysis or additional reports relating to such issuers and/or individual fixed income products.

Morgan Stanley may hold, from time to time, material financial and commercial interests regarding the company subject to the Research report.

Registration granted by SEBI and certification from the National Institute of Securities Markets (NISM) in no way guarantee performance of the intermediary or provide any assurance of returns to investors. Investment in securities market are subject to market risks. Read all the related documents carefully before investing.

References to any prediction market or event contract do not constitute an offer, solicitation, recommendation, or endorsement to participate in any such market or contract. Morgan Stanley Research may not be distributed or made available in any jurisdiction where such distribution would be unlawful or otherwise prohibited by applicable law.

## INDUSTRY COVERAGE: S. Korea Technology

| COMPANY (TICKER) | RATING (AS OF) | PRICE* (10/08/2026) |
|---|---|---|
| **Ryan Kim** | | |
| Fadu Inc (440110.KQ) | O (09/21/2025) | W82,800 |
| Hanmi Semiconductor Co. Ltd. (042700.KS) | E (07/22/2026) | W267,000 |
| HD Hyundai Electric Co Ltd (267260.KS) | O (03/25/2025) | W606,000 |
| Isu Petasys Co. Ltd. (007660.KS) | O (02/03/2025) | W125,500 |
| Leeno Industrial Inc. (058470.KQ) | O (04/03/2025) | W87,900 |
| LG Display (034220.KS) | E (06/11/2025) | W8,160 |
| LG Electronics (066570.KS) | O (08/11/2026) | W200,500 |
| LG Innotek (011070.KS) | O (08/11/2026) | W572,000 |
| Lotte Energy Materials Corp (020150.KS) | U (04/03/2025) | W55,200 |
| LS Electric (010120.KS) | O (01/22/2026) | W195,500 |
| SK Square Co Ltd. (402340.KS) | O (05/06/2026) | W1,050,000 |
| Wonik IPS Co Ltd (240810.KQ) | O (08/08/2025) | W133,700 |
| **Shawn Kim** | | |
| Samsung Electro-Mechanics (009150.KS) | O (07/31/2025) | W1,546,000 |
| Samsung Electronics (005935.KS) | O (11/18/2019) | W194,000 |
| Samsung Electronics (005930.KS) | O (11/18/2019) | W262,000 |
| SK hynix (000660.KS) | O (09/21/2025) | W1,681,000 |

Stock Ratings are subject to change. Please see latest research for each company.

* Historical prices are not split adjusted.

© 2026 Morgan Stanley