Semiconductors

- **Semi/Semicap/EDA – Multi-Year Stock Outperformance to Continue**
- **Where Are We in the Current Semiconductor Cycle?**
- **Macro / Earnings Recap**
- **TMC Conference Takeaways**
- **AI Semiconductor Outlook (ASIC Update AVGO/MRVL)**

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J.P. Morgan Semiconductor Universe Comp Sheet

	JPM Rating	Market Cap	5/28/26 Price	Non-GAAP EPS C25	Non-GAAP EPS C26E	P/E C25	P/E C26E	Revenues C25	Revenues C26E	P/S C25	P/S C26E	Consensus Non-GAAP EPS C25	Consensus Non-GAAP EPS C26E	Consensus Non-GAAP EPS C27E	Consensus Revenues C25	Consensus Revenues C26E	Consensus Revenues C27E	Consensus P/E C25	Consensus P/E C26E	Consensus P/E C27E	Consensus P/S C25	Consensus P/S C26E	Consensus P/S C27E
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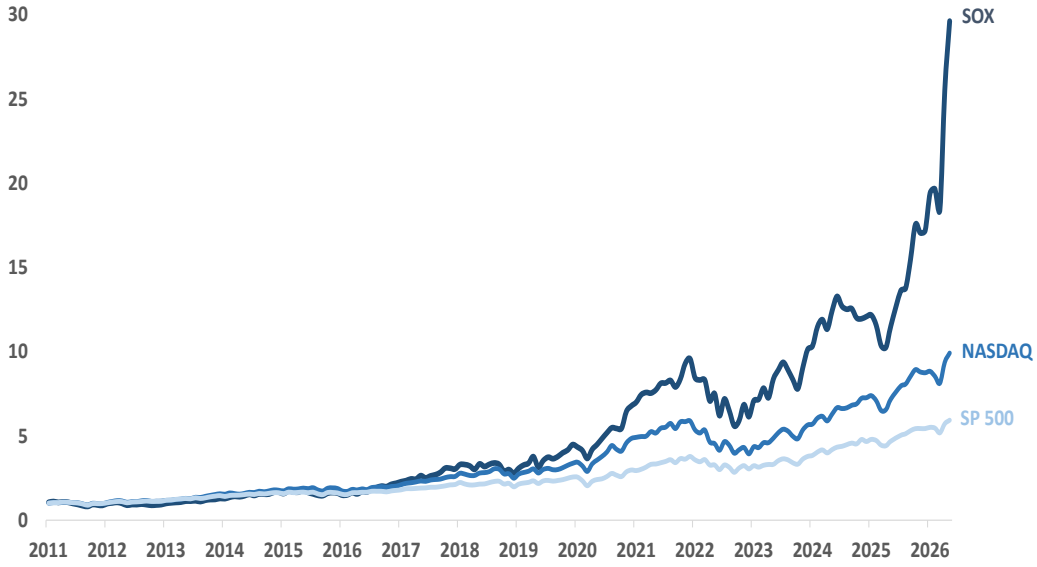
PC Semiconductors																							
INTC	UW	$618,957	$121.77	$0.43	$1.14	285.6x	106.8x	$52,853	$58,953	11.7x	10.5x	$0.43	$1.11	$1.56	$52,853	$58,410	$64,942	285.6x	110.0x	77.9x	11.7x	10.6x	9.5x
NVDA	OW	$5,185,527	$212.60	$4.77	$8.73	44.6x	24.3x	$215,938	$382,230	24.0x	13.6x	$4.77	$8.59	$12.48	$215,938	$378,262	$542,957	44.6x	24.7x	17.0x	24.0x	13.7x	9.6x
AMD	N	$817,641	$495.54	$4.18	$7.70	118.6x	64.4x	$34,639	$50,046	23.6x	16.3x	$4.18	$7.26	$12.90	$34,639	$49,506	$74,501	118.6x	68.2x	38.4x	23.6x	16.5x	11.0x
Memory																							
MU	OW	$1,060,244	$928.41	$11.21	$78.73	82.8x	11.8x	$42,244	$137,644	25.1x	7.7x	$11.21	$86.20	$110.78	$42,244	$151,001	$196,618	82.8x	10.8x	8.4x	25.1x	7.0x	5.4x
Enterprise/Networking/Datacenter Semiconductors																							
MRVL	OW	$177,499	$198.70	$2.85	$4.04	69.8x	49.1x	$8,195	$11,528	21.7x	15.4x	$2.85	$3.74	$5.41	$8,195	$10,657	$14,696	69.8x	53.2x	36.7x	21.7x	16.7x	12.1x
AVGO	OW	$2,062,052	$421.86	$7.28	$14.78	58.0x	28.5x	$68,282	$129,526	30.2x	15.9x	$7.28	$12.61	$19.14	$68,282	$113,846	$169,528	58.0x	33.4x	22.0x	30.2x	18.1x	12.2x
ALAB	OW	$50,621	$325.33	$1.84	$3.04	176.9x	107.1x	$853	$1,535	59.4x	33.0x	$1.84	$3.00	$4.14	$853	$1,546	$2,196	176.8x	108.4x	78.5x	59.4x	32.7x	23.1x
Mobile Devices																							
SWKS	N	$11,849	$78.68	$5.87	$5.15	13.4x	15.3x	$4,054	$4,049	2.9x	2.9x	$5.87	$4.87	$5.29	$4,054	$3,926	$4,109	13.4x	16.1x	14.9x	2.9x	3.0x	2.9x
QRVO	N	$9,625	$103.91	$6.73	$6.55	15.4x	15.9x	$3,740	$3,363	2.6x	2.9x	$6.73	$6.76	$7.90	$3,740	$3,375	$3,679	15.4x	15.4x	13.2x	2.6x	2.9x	2.6x
IoT																							
SLAB	N	$7,188	$218.06	$0.92	$2.72	236.3x	80.2x	$785	$931	9.2x	7.7x	$0.92	$2.76	$4.15	$785	$920	$1,079	236.3x	79.0x	52.6x	9.2x	7.8x	6.7x
SYNA	OW	$5,496	$141.64	$4.22	$5.11	33.6x	27.7x	$1,144	$1,251	4.8x	4.4x	$4.22	$4.91	$5.83	$1,144	$1,245	$1,375	33.6x	28.8x	24.3x	4.8x	4.4x	4.0x
Analog/Microcontrollers																							
TXN	OW	$290,149	$317.45	$5.45	$8.16	58.2x	38.9x	$17,682	$21,474	16.4x	13.5x	$5.45	$7.73	$9.20	$17,682	$20,996	$23,286	58.2x	41.1x	34.5x	16.4x	13.8x	12.5x
ADI	OW	$204,462	$416.88	$8.62	$13.41	48.4x	31.1x	$11,757	$15,698	17.4x	13.0x	$8.62	$13.05	$15.21	$11,757	$15,262	$17,174	48.4x	31.9x	27.4x	17.4x	13.4x	11.9x
NXPI	N	$83,471	$329.24	$11.81	$14.93	27.9x	22.1x	$12,269	$14,169	6.8x	5.9x	$11.81	$14.68	$17.57	$12,269	$14,035	$15,528	27.9x	22.4x	18.7x	6.8x	5.9x	5.4x
MCHP	OW	$53,064	$96.85	$1.18	$2.94	82.2x	33.0x	$4,372	$5,960	12.1x	8.9x	$1.18	$2.87	$3.83	$4,372	$5,889	$6,954	82.2x	33.8x	25.3x	12.1x	9.0x	7.6x
Diversified/Consumer/Standard Components/Other																							
ON	N	$49,219	$124.89	$2.35	$3.23	53.2x	38.7x	$5,995	$6,539	8.2x	7.5x	$2.35	$3.09	$4.25	$5,995	$6,467	$7,172	53.2x	40.4x	29.4x	8.2x	7.6x	6.9x
VSH	N	$6,722	$48.90	N/A	$0.69	N/A	70.7x	$3,069	$3,563	30.4x	22.3x	N/A	$0.74	$1.54	$3,069	$3,594	$3,993	N/A	66.1x	31.7x	2.2x	1.9x	1.7x
MTSI	N	$31,073	$400.66	$3.71	$5.81	108.1x	69.0x	$1,021	$1,394	30.4x	22.3x	$3.71	$5.53	$6.99	$1,021	$1,353	$1,651	108.1x	72.5x	57.3x	30.4x	23.0x	18.8x
Foundries																							
GFS	N	$45,503	$81.11	$1.73	$1.91	47.0x	42.5x	$6,791	$7,192	6.7x	6.3x	$1.73	$1.93	$2.54	$6,791	$7,265	$8,049	47.0x	42.1x	31.9x	6.7x	6.3x	5.7x
OSAT																							
AMKR	OW	$18,016	$72.19	$1.51	$1.66	47.9x	43.5x	$6,708	$7,427	69.2x	58.5x	$1.51	$2.10	$2.44	$6,708	$7,607	$8,450	47.9x	34.3x	29.6x	2.7x	2.4x	2.1x
Semiconductor Capital Equipment																							
AMAT	OW	$358,152	$448.25	$9.44	$13.76	47.5x	32.6x	$28,233	$36,263	12.7x	9.9x	$9.44	$13.18	$17.41	$28,233	$35,289	$43,699	47.5x	34.0x	25.7x	12.7x	10.1x	8.2x
LRCX	OW	$400,999	$318.93	$4.90	$7.01	65.1x	45.5x	$20,561	$27,686	19.5x	14.5x	$4.90	$6.87	$8.78	$20,561	$26,938	$32,875	65.1x	46.4x	36.3x	19.5x	14.9x	12.2x
KLAC	OW	$257,860	$1,957.19	$35.45	$43.93	55.2x	44.6x	$12,745	$15,307	20.2x	16.8x	$35.45	$43.37	$55.84	$12,745	$15,190	$18,472	55.2x	45.1x	35.1x	20.2x	17.0x	14.0x
MKSI	OW	$23,322	$328.01	$7.88	$12.36	41.6x	26.5x	$3,930	$4,936	5.9x	4.7x	$7.88	$11.70	$14.95	$3,930	$4,805	$5,530	41.6x	28.0x	21.9x	5.9x	4.9x	4.2x
Chip Design Automation Software																							
ARM	OW	$323,294	$302.71	$1.72	$1.92	176.3x	157.8x	$4,671	$5,524	69.2x	58.5x	$1.72	$2.00	$2.79	$4,671	$5,631	$7,292	176.3x	151.2x	108.4x	69.2x	57.4x	44.3x
CDNS	OW	$102,387	$374.05	$7.14	$8.00	52.4x	46.8x	$5,297	$6,213	19.3x	16.5x	$7.14	$7.95	$9.36	$5,297	$6,205	$7,017	52.4x	47.0x	40.0x	19.3x	16.5x	14.6x
SNPS	OW	$101,052	$525.92	$13.73	$15.13	38.3x	34.8x	$8,008	$9,899	12.6x	10.2x	$13.73	$14.98	$17.64	$8,008	$9,741	$10,756	38.3x	35.1x	29.8x	12.6x	10.4x	9.4x
Large Cap Semi Average						**87.6x**	**41.0x**			**18.9x**	**12.1x**							**87.6x**	**43.0x**	**30.6x**	**18.9x**	**12.5x**	**9.7x**
Small-Mid Cap Semi Average						**66.3x**	**43.0x**			**17.0x**	**14.0x**							**66.3x**	**42.3x**	**30.7x**	**7.6x**	**6.4x**	**5.6x**
Semi Group Average (ex-outliers)						**56.8x**	**36.8x**			**14.9x**	**12.1x**							**46.2x**	**36.5x**	**30.8x**	**15.9x**	**10.8x**	**8.6x**
SOX Index			**12,702**	**184**	**417**	**69.0x**	**30.5x**			**11.1x**	**8.9x**							**69.0x**	**30.5x**	**22.5x**	**15.1x**	**11.1x**	**8.9x**
S&P500			**7,520**	**257**	**337**	**29.3x**	**22.3x**			**3.4x**	**3.2x**							**29.3x**	**22.3x**	**19.3x**	**3.7x**	**3.4x**	**3.2x**

Note: Pricing as of 5/27/26 market close.

Semiconductor/Semicap Stocks Have Outperformed the Market over the Past 1, 3, 5, 10, 15, 20 Years; Four Full Semiconductor Cycles over the Past 12 Years



Note: SOX 2010 year-end value indexed to 1

Annual Stock Returns (CAGR%)	1-year	3-year	5-year	10-year	15-year	20-year
SOX (Semi) Index	**171%**	**53%**	**32%**	**34%**	**25%**	**18%**
Semicap Equipment	**132%**	**57%**	**36%**	**36%**	**26%**	**19%**
Chip Design Software (EDA)	**3%**	**8%**	**15%**	**26%**	**22%**	**16%**
SP500 Index	29%	21%	12%	14%	12%	9%
NASDAQ Composite Index	42%	27%	14%	18%	16%	13%

*Pricing as of 5/27/2026 market close

Source: Bloomberg Finance L.P.

Drivers of the Strong Stock Performance

- Realization that semiconductors (~$790B industry in CY25, 7-8% growth CAGR) are the foundational building blocks for all innovation in the tech sector – applications/devices/appliances are getting more intelligent and requiring higher levels of semiconductor $ content
- Emergence of new semiconductor drivers: cloud datacenter, EV, IoT, AI/Deep learning
- Lower cyclicality in the industry driven by end-market diversification and disciplined supply growth
- Lower cyclicality drives more focus on profitability/free cash flow expansion – strong capital return to shareholders
- Industry consolidation (M&A) drives diversification, R&D scale, and enhanced profitability / capital returns
- We expect long-term positive fundamental trends to continue

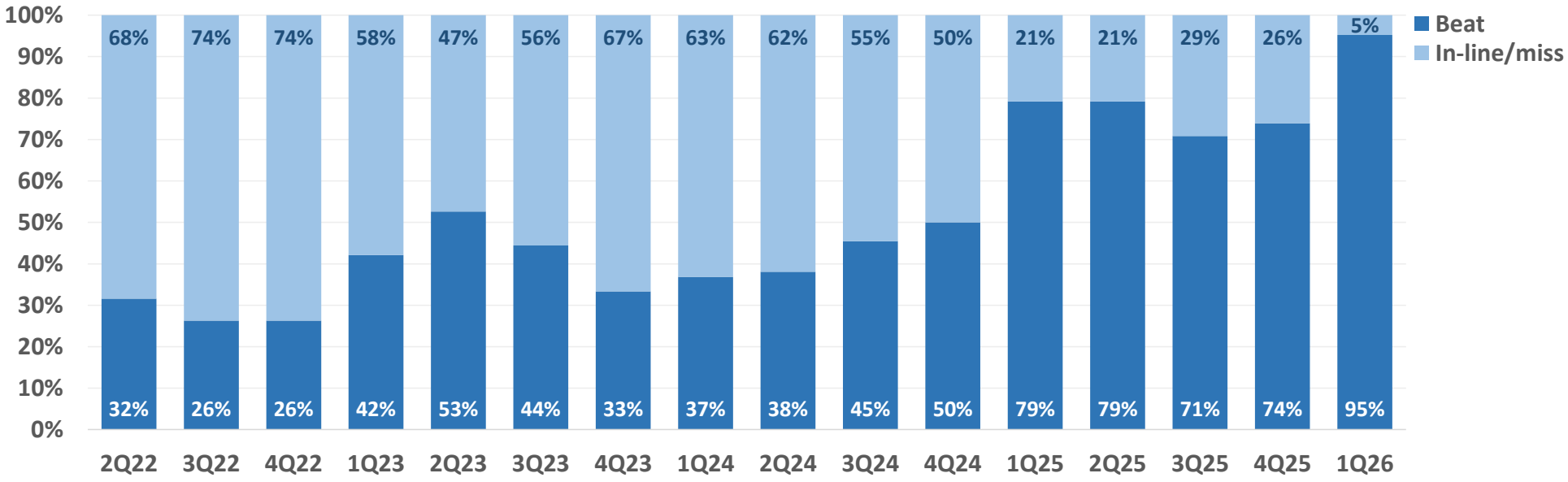
Expect Continued Semi/Semicap Stock Outperformance in 2026 – Focus on AI ASIC Semis, Cyclical Improvements, and Rising Chip Design / Manufacturing Complexity

Cyclical dynamics over the past 10 years have been DEMAND driven…NOT supply driven

- The last four down-cycles have been DEMAND driven, not supply driven, as the value chain (supply-side) has become more disciplined on supply expansion:
  - 2010/2011: Auto/consumer/PC slowdown
  - 2015/2016: China, PC, Communications infrastructure slowdown
  - 2018/2019: China/US trade war and tariffs, weak industrial and smartphone demand (ahead of 5G upgrade cycle), weak cloud spending, weak auto demand
  - 2022/2023/2024: Post-COVID demand slowdown/global macroeconomic deceleration
- Industry revenue growth accelerated to 20%+ in 2025 following a 6-8% increase in CY24 (ex-memory).
- **2026 outlook: Semi industry revs up 30%+, WFE up 20%+, S/W up 10-15%**
- Earnings revisions for 2025 were positive for ~75% of our covered semi/semicap companies versus only ~40% in 2024
- Geopolitical uncertainty, potential for global tariffs, and more export restrictions remain key risks to the recovery profile in 2026 and could drive further volatility in our stocks
- Risk of demand destruction in 2H26 (persisting into 2027) due to sharply higher memory/storage pricing
- Large-cap top picks: **OW AVGO, OW ADI, OW MRVL, OW MU, OW KLAC, OW SNPS**; we also favor **OW NVDA, OW AMAT, OW LRCX, OW CDNS**
- SMID-cap top picks : **OW ALAB, MTSI, OW MKSI**

Continued Positive Cyclical Recovery Trends and AI Spending Tailwinds Driving Sustained Period of Positive Earnings Revisions

- Positive earnings revisions have remained in recent quarters, with **~80%** of our covered semi/semicap companies delivering better-than-expected guidance over the **past 5 quarters**, compared to just **~40%** in 2024.



Post-quarter 90D returns:	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	1Q24	2Q24	3Q24	4Q24	1Q25	2Q25	3Q25	4Q25	1Q26
SOX	-6%	10%	28%	14%	-7%	22%	17%	10%	-6%	-1%	-14%	30%	16%	9%	7%	56%
SP 500	-6%	7%	7%	8%	-4%	11%	10%	4%	5%	3%	-5%	10%	8%	2%	-5%	14%
SOX vs SP 500	9bps	269bps	2,057bps	539bps	-285bps	1,035bps	732bps	615bps	-1,080bps	-392bps	-966bps	1,937bps	774bps	697bps	1,176bps	4,274bps

*Based on company's out-quarter guidance vs consensus
Source: Bloomberg Finance L.P., company reports

1Q26 Earnings – AI Demand Continues To Strengthen On Top Of Cyclical Recovery

Compute/Networking

- AI infrastructure demand remains the dominant growth driver, with hyperscalers/cloud providers revising capex plans higher for both CY26 and CY27; backlog and order books are at record levels with visibility now extending into CY27 and beyond.
- Custom silicon (XPUs/ASICs) continues to take share of the AI accelerator TAM, with strengthening design-win pipelines and program ramps (e.g., TPU, Trainium, Maia) driving above-consensus CY26/CY27 revenue and EPS outlooks.
- Server CPU TAM growing at ~35%+ CAGR, but competitive dynamics favor AMD and ARM-based silicon; Intel continues to face share loss and margin headwinds despite organizational transformation, with foundry breakeven likely pushed beyond CY27.
- Networking demand is robust, with strong orders for high-performance switch, routing, and optical products (AVGO, MRVL, ALAB) as attach rates for networking content within AI DC infrastructure continues to escalate.
- AI-driven datacenter capex is tracking >80% Y/Y growth in 2026, with 2027 seen increasing >50% Y/Y on an improving compute infrastructure demand profile (JPMe).

Memory

- Structural supply tightness and pricing power are driving record results and guidance
  - We forecast industry DRAM blended pricing increasing 160%+ in 2026 and 15-20% in 2027
  - NAND pricing is forecast to grow ~150%/~10% in 2026/2027
- Long-term/strategic customer agreements (LTAs/SCAs) have emerged as the key cycle-shaping catalyst, locking in pricing and supply across both DRAM and NAND and improving visibility.
- Capex remains disciplined (capital intensity below historical averages), limiting oversupply risk; principal demand-side risk is BOM-inflation-driven destruction in client/consumer markets.

1Q26 Earnings Recap (cont.)

Semicap

- WFE outlook is strengthening with >20% Y/Y growth expected in CY26 and strong upward bias for CY27; mix is shifting decisively toward AI-exposed nodes - advanced foundry logic, DRAM/HBM, and advanced packaging.
- Customer buying behavior has structurally changed - rolling 8-quarter forecasts and linear, early order placement provide the longest visibility in a decade and reduce cyclical trough risk.
- Tool/process intensity per wafer is compounding via leading-edge transitions (GAA, CFET, backside power, HBM, hybrid bonding), driving SAM expansion and share gains for large-cap semicap names that outperform underlying WFE growth.
- Service intensity is rising structurally.

Analog/MCU

- Broad-based cyclical recovery is accelerating, with above-seasonal growth across industrial, automotive, and data center end markets; inventory restocking is in early stages underway with lead times stretching and backlog building.
- Gross margins are trending higher across the group on improved factory utilization, cost synergies, and premium mix shift toward data center.
- Pricing is holding up well, with an upward bias on some tightness emerging in analog/mixed-signal - opportunistic pricing increases are likely if demand strength persists.
- Consumer-levered end markets (e.g. smartphone, client PC) remain a watch point for 2H26 given risk of demand destruction related to sharply higher memory prices coupled with supply tightness (already seeing that impact low/mid-end Android smartphone shipments and consumer PC).

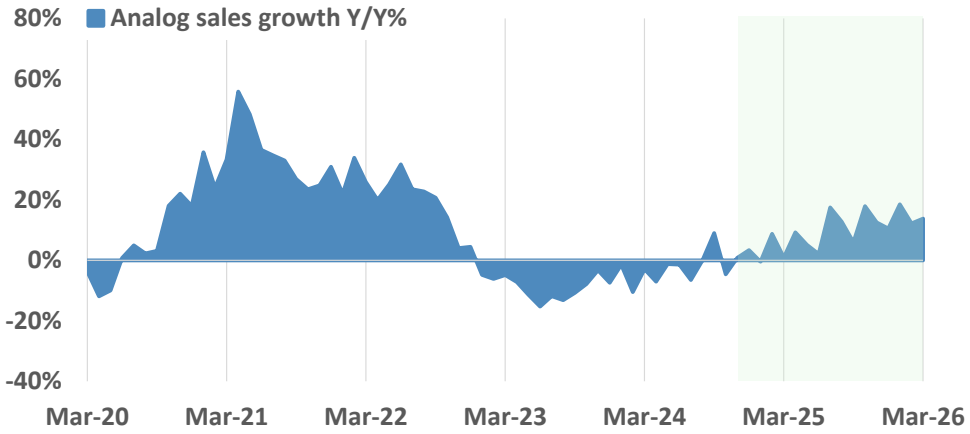
Expect Accelerated Rev/EPS Positive Revisions In Cyclical Segments Of The Industry (Auto/Industrial) - Analog vs MCU

Analog – Revenues declined Y/Y at the start of 2023. After six consecutive quarters of Y/Y declines, revenues inflected positively in late 2024 and continue to gradually improve

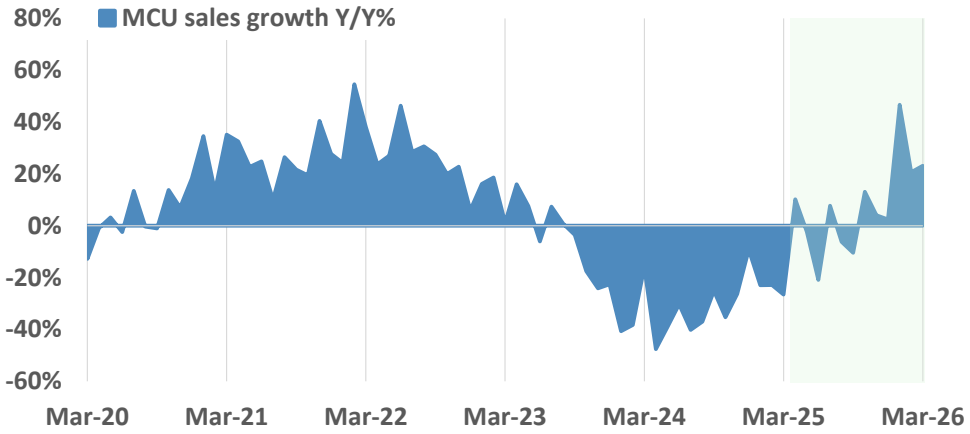
- Texas Instrument and Analog Devices' revenue growth inflected positively Y/Y in C1Q25 and continues to gradually improve

Microcontroller – Revenues inflected positively 6-9 months after analog

- Cyclical recovery in MCU is lagging analog, however, indicators improving and revenue trends stabilizing and trending in positive direction



Source: SIA Data



Source: SIA Data

TMC 2026 Conference Takeaways

- **Demand momentum continues to build**: Across the 13 semiconductor and semicap companies presenting, management teams delivered a unanimous message that bookings, backlogs, and customer escalations have continued to build in the weeks following Q1 earnings.

- **Memory tightness extending well beyond CY26**: HBM, DRAM, and NAND tightness is expected to persist beyond CY26, with memory increasingly framed as a strategic asset for AI workloads.

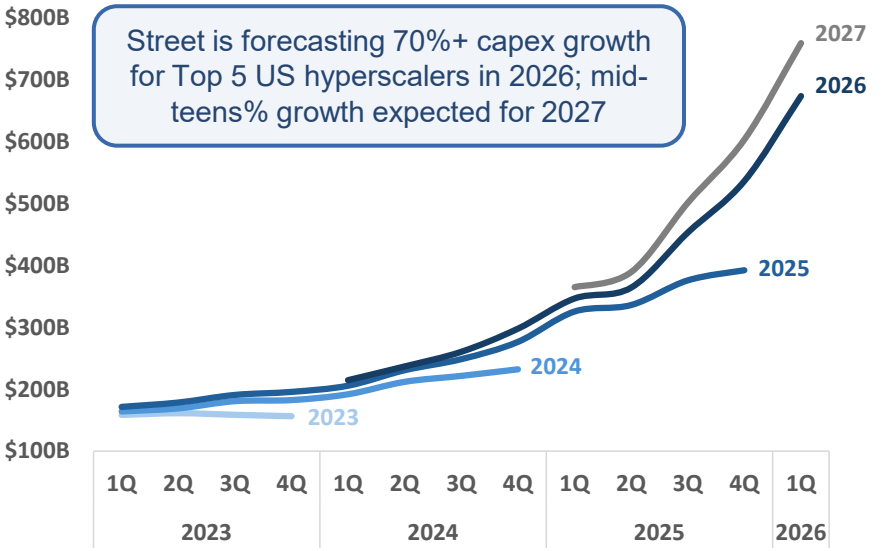
- **WFE cycle elongating into CY27+**: Near-term WFE is not being driven greenfield pull-ins but instead by “creative” reuse of existing capacity. KLA highlighted that visibility into the following year is the best seen in over a decade, with CY27 WFE spending expected to exceed CY26. The mix is structurally shifting toward advanced foundry logic, DRAM, and advanced packaging - Applied Materials noted ~80% of CY26 incremental WFE spend is concentrated in these segments, and KLA's share of advanced packaging is rising to ~6% in 2025 and likely 7%+ in 2026 on bump-shrink and hybrid bonding adoption.

- **Broad-based cyclical recovery in industrial / auto / A&D**: Microchip's recovery is firmly on track with FY26 revenue up 35% Y/Y, EPS recovering, and April bookings at a near four-year high, while pricing is being held to preserve design momentum and rebuild customer relationships. NXP echoed building demand momentum with conviction on double-digit% growth for both CY26 and CY27, alongside selective pricing actions in the distribution channel to offset input cost inflation. AI-at-the-edge and "AI enablement" are emerging as incremental growth vectors layered on top of the cyclical recovery.

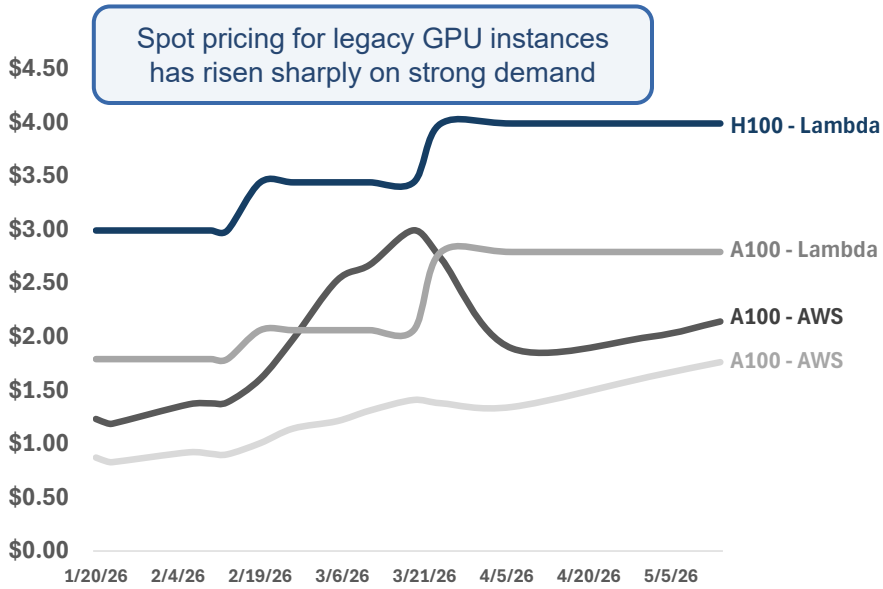
AI/Datacenter Spending Sustainability

Cloud/hyperscaler data center capex up sharply in CY26 (JPMe expects 80%+ Y/Y); CY27 spend already tracking higher based on bookings/backlog for AI compute/networking vendors (JPMe 50%+ Y/Y)

- **Surging demand for AI inference is fueling massive demand for compute**
  - Gen AI shifting rapidly from experimentation to production → Agentic AI is a major demand accelerant
  - Agentic AI requires 10x to >100x more compute *per user*, on average
- **Declining costs and improving efficiency expand addressable market**
  - Inference costs (tokens/$) and power efficiency (tokens/watt) continue to improve → expands demand frontier (makes new use cases economically viable) and improves ROI on infra investment
- **Corporate adoption tracking (or exceeding) prior tech cycles**
  - Enterprise AI adoption curves matching or exceeding prior transformative technologies → surveys indicate growing share of CIOs deploying AI apps and reporting positive ROI



Source: Bloomberg Finance L.P.



Source: J.P. Morgan Research, AWS.com, Lambda.com

J.P.Morgan

Custom Chip (ASIC) Market Experiencing a Resurgence in Activity as Large OEMs, Cloud, and Hyperscalers Look to Differentiate at the Silicon Level – $70B Opportunity in CY26

- Demand is rising for custom ASICs because many of the large OEMs/CSPs/Hyperscalers are looking for more differentiation, better performance, lower power consumption, and overall lower cost of ownership versus off-the-shelf chip solutions (or ASSPs) – Broadcom (#1 80-85% share high-end ASIC mkt) and Marvell (#2 10-12% share high-end ASIC mkt) should continue to dominate this opportunity.
- These same customers do not have the capabilities to do large, complex system-on-a-chip (SOC) designs, nor do they have the broad IP portfolio of on-chip design blocks, like high-speed SERDES capabilities or high-speed memory interface technology. They need to engage with semiconductor companies that have the IP and chip design expertise.
- The digital custom ASIC market is a ~$70B market opportunity in CY26 growing at a 40-50%+ CAGR:
  - Cloud/Hyperscale ASICS (AI processors, SmartNICs, Security/Video processors, Networking/Storage acceleration)
  - Telco/service provider equipment OEMs (5G basestation modem, 5G digital front end, 5G MIMO/Beamforming)
- **We estimate Broadcom will drive $65B+ in total AI revenue in FY26 (up significantly from ~$20B in FY25) as new products/programs ramp (Meta MTIA 3nm ASIC programs, Google TPUv7/V8 3nm, Anthropic (TPU), OpenAI, and Softbank/ARM)….tracking $150B+ AI revs in FY27**
- **We expect Marvell to drive ~$9.3B of data center revenue in CY26 (up from ~$6.1B in CY25), and ~$14.6B in CY27 – strong optical DSP shipments (800G/1.6T, coherent lite, initial CPO ramp) and continued Amazon Trainium 3 and 4 ASIC engagement and start of Microsoft 3nm Maia ASIC ramp….overall 25+ XPU/XPU attach ASIC wins.**

Snapshot of High-Profile Custom ASIC Programs: AVGO and MRVL

ASIC Customers	Programs	Technology	Status
Cloud Titan A	AI Chip	28nm Technology	Deployed
Cloud Titan A	AI Chip	16nm Technology	Deployed
Cloud Titan A	AI Chip	16nm Technology	Deployed
Cloud Titan A	AI Chip	7nm Technology	Deployed
Cloud Titan A	AI Chip	5nm Technology	Deployed
Cloud Titan A	AI Chip	3nm Technology v6	Ramping Now
Cloud Titan A	AI Chip	3nm/2nm Next Gen v7	Tape Out 1H25, Ramp 2H26
Cloud Titan A	AI Chip	2nm/sub-2nm Next Gen v8	CY27/CY28
Cloud Titan A	VCU Chip	12nm/5nm Technology	Deployed/In Design
Cloud Titan A	Switching	7nm technology	Deployed
Cloud Titan A	ARM CPU	5nm Technology	2024
Cloud Titan B	DPU	7nm/5nm/3nm	2021/2022/2023
Cloud Titan B	Video Trans	7nm technology	2021/2022
Cloud Titan B	Storage	5nm	2023
Cloud Titan B	Security	7nm technology	2021
Cloud Titan B	AI Chip	7nm and 5nm	Deploying
Cloud Titan B	AI Chip	3nm Technology	End CY25 ramp
Cloud Titan B	AI Chip	3nm Technology	Mid CY26 ramp
Cloud Titan B	AI Chip	2nm Technology	CY27 ramp
Cloud Titan C	Security	7nm technology	2020/2021
Cloud Titan C	DPU	7nm/5nm technology	2022/2024
Cloud Titan C	Storage	5nm technology	2023
Cloud Titan C	AI Chip	3nm Technology	CY26 ramp
Cloud Titan C	AI Chip	2nm Technology	CY27 ramp
Cloud Titan D	AI Chip	5nm technology	2024/2025
Cloud Titan D	AI Chip	3nm Technology	CY26 ramp
Cloud Titan D	AI Chip	2nm Technology	CY27 ramp
Cloud Titan D	Storage	5nm technology	2023/2024
AI Compute OEM (OpenAI)	AI Chip	3nm/2nm 3DSOIC	2026
SoftBank/Arm	AI Chip	3nm/2nm 3DSOIC	2026
Asia Hyperscaler#2	AI Chip	3nm	CY26 ramp
Asia Hyperscaler#3	AI Chip	3nm	CY27 ramp

Source: JP Morgan Research

Broadcom ASIC Pipeline:

100+ Cumulative 7nm/5nm/3nm/2nm Designs

Powerful 2nm/3nm ASIC platform (faster time to market):

* 50-120B+ transistors per chip
* 2nm/3nm/5nm chiplet architecture
* 50/100/200G Proven SERDES I/O
* Broadest IP Portfolio
* Adv Pkg (HBM 3/4, 2.5/3D SOIC)
* Co-pkg Electro/Optical (CPO)

Marvell ASIC Pipeline:

70+ Cumulative 12nm/5nm/3nm/2m Designs

Starting to Engage on <2nm

* 50-120B+ transistors per chip
* 50/100G Proven SERDES I/O
* SRAM memory IP (LPU)
* Broad IP Portfolio
* Adv Pkg

AI Custom Chip (ASIC) Beneficiaries: Broadcom and Marvell

Broadcom AI ASIC Pipeline

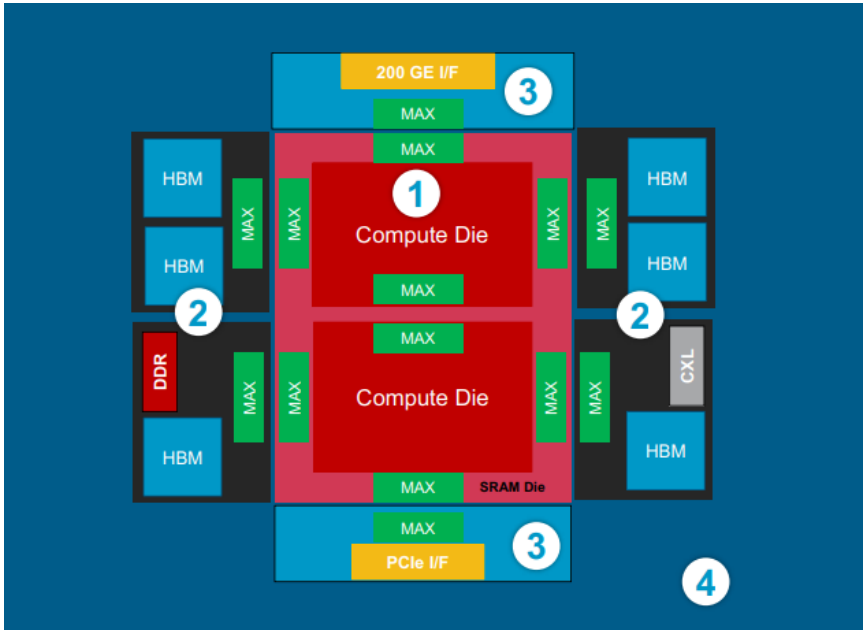
	ASIC Supplier	Generations Won	Ramp Timing/Duration
Google TPU AI ASIC processor family	Broadcom 7nm, 5nm, 3nm, 2nm	V1, V2, V3, V4, V5, V6, V7, V8	Ramping now through CY28
Meta MTIA AI ASIC processor family	Broadcom 7nm, 5nm, 3nm, 2nm	Gen 1, Gen2, Gen 3 and follow-ons	Ramping now through CY28
Bytedance AI Video/AI Networking	Broadcom 5nm, 3nm	Gen 1, Gen2 and follow-ons	Ramping now through CY28
OpenAI XPU AI ASIC processor family	Broadcom 2nm and 3nm	Gen1 and Gen 2 on 3DSOIC pkging	Ramping CY26-CY29
SoftBank/Arm XPU AI ASIC processor family	Broadcom 2nm and 3nm	Gen 1 and Gen 2 on 3DSOIC pkging	Ramping CY26-CY29
Anthropic/TPU Rackscale	Broadcom 3nm	TPUv6p - Ironwood	Ramp 2H CY26
Customer #7 AI ASIC XPU (Asia Hyperscale Customer	Broadcom 3nm, 2nm	Gen 1, Gen 2	Ramping End 26
Customer #8 AI ASIC XPU (Asia Hyperscale Customer	Broadcom 3nm, 2nm	Gen 1, Gen2	Ramping CY27

Marvell AI ASIC Pipeline

Amazon AI ASIC processor family	Marvell 5nm/3nm/2nm	Gen 2, Gen 3, Gen 4 and follow-ons	Ramping Now
Microsoft Maia AI ASIC processor family	Marvell 3nm/2nm	Gen 2 and follow-ons	Ramping End CY26
Google AI ARM CPU processor family	Marvell 5nm/3nm	Gen 1 and follow-ons	Ramping Now
Cloud/Hyperscale FBNIC (SmartNic)	Marvell 5nm/3nm	Gen 1 and follow-ons	Ramp 2H25
Other XPU Attach (SmartNIC, Fabric, Memory)	Marvell 3nm/2nm	Gen 1 and follow-ons	Ramping CY26

Source: JP Morgan Research

Broadcom's Powerful 3D SOIC ASIC Reference Platform / Marvell Custom HBM Designs

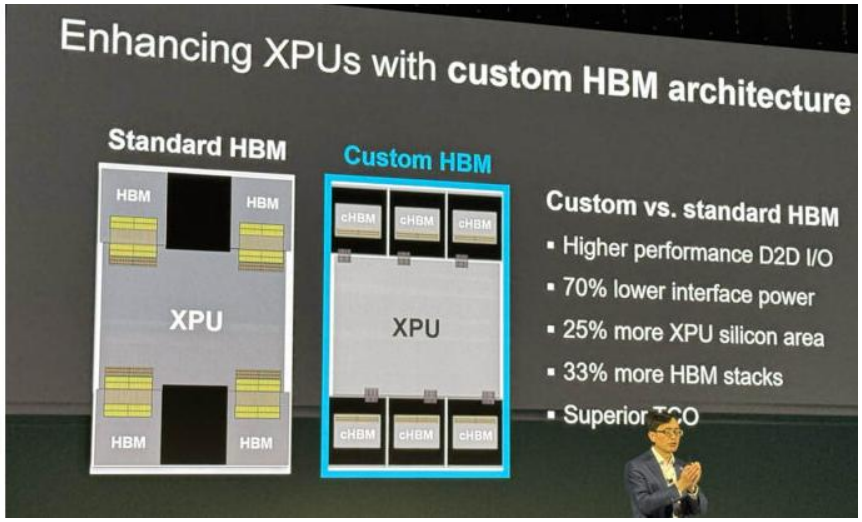


Source: Broadcom and J.P. Morgan Research

Broadcom Has Developed a 2nm/3nm AI ASIC Reference Platform to Enable Customers Fast Time to Market:

- 2nm/3nm/5nm compute die
- 100/200Gbps I/O die
- 2.5D/3D SOIC (chip stacking)
  - 2nm/3nm chip stacking
  - **Advanced substrate manuf capability in CY26**
- Chip-to-Chip I/O connectivity
- AI/Compute/IO/Memory/Interface IP
- **Rackscale system expertise ramping CY26**

Broadcom is working with 3 of its 5 AI ASIC customers on next-gen 3D SOIC chip stacking ASIC programs



Source: Marvell and J.P. Morgan Research

Marvell has a strong IP portfolio of 5nm, 3nm, and 2nm

Recently unveiled HBM memory IP differentiation that drives:

- 33% more HBM stacks per package
- 70% lower interface power
- 25% more XPU silicon area
- **Marvell has won numerous HBM4 ASIC logic base die programs with DRAM suppliers**

Threat to AVGO and MRVL on COT? We Don't Think So…

Much speculation on Cloud/Hyperscalers wanting to bring 90%+ of custom AI XPU chip design in-house (COT – customer owned tooling model)……

Recent efforts (smaller scale programs) to try a COT model have had issues/delays – larger scale ASIC programs have had no delays…..

- Google/Mediatek (v8t lower complexity chip) COT – major delays, no supply
  - **Google/AVGO (v8i high complexity chip) – NO DELAYS, ramping NOW**
- Microsoft/GUC (Maia 3nm program) COT– previously delayed
  - **Microsoft/MRVL (Maia 3nm program) – NO DELAYS, Ramp 2H CY26**

Market underestimates: chip design know-how, advance packaging know-how, IP portfolio, compute/networking/memory/storage expertise of AVGO and MRVL…..

* Broadcom now also offers full rack-scale capabilities
* Broadcom now offers advanced substrate design/manufacturing capabilities (ramp 2H26)
* Marvell offers novel/advanced interposer capabilities
* Marvell offers advanced HBM logic die design – reducing HBM footprint

Finally - GPU competitors (NVDA/AMD) driving aggressive new product intro cadence…cloud/hyperscalers do not have R&D scale to keep up……..

Near-Term Update on AVGO/MRVL ASIC Pipelines

Broadcom Update On ASIC Pipeline

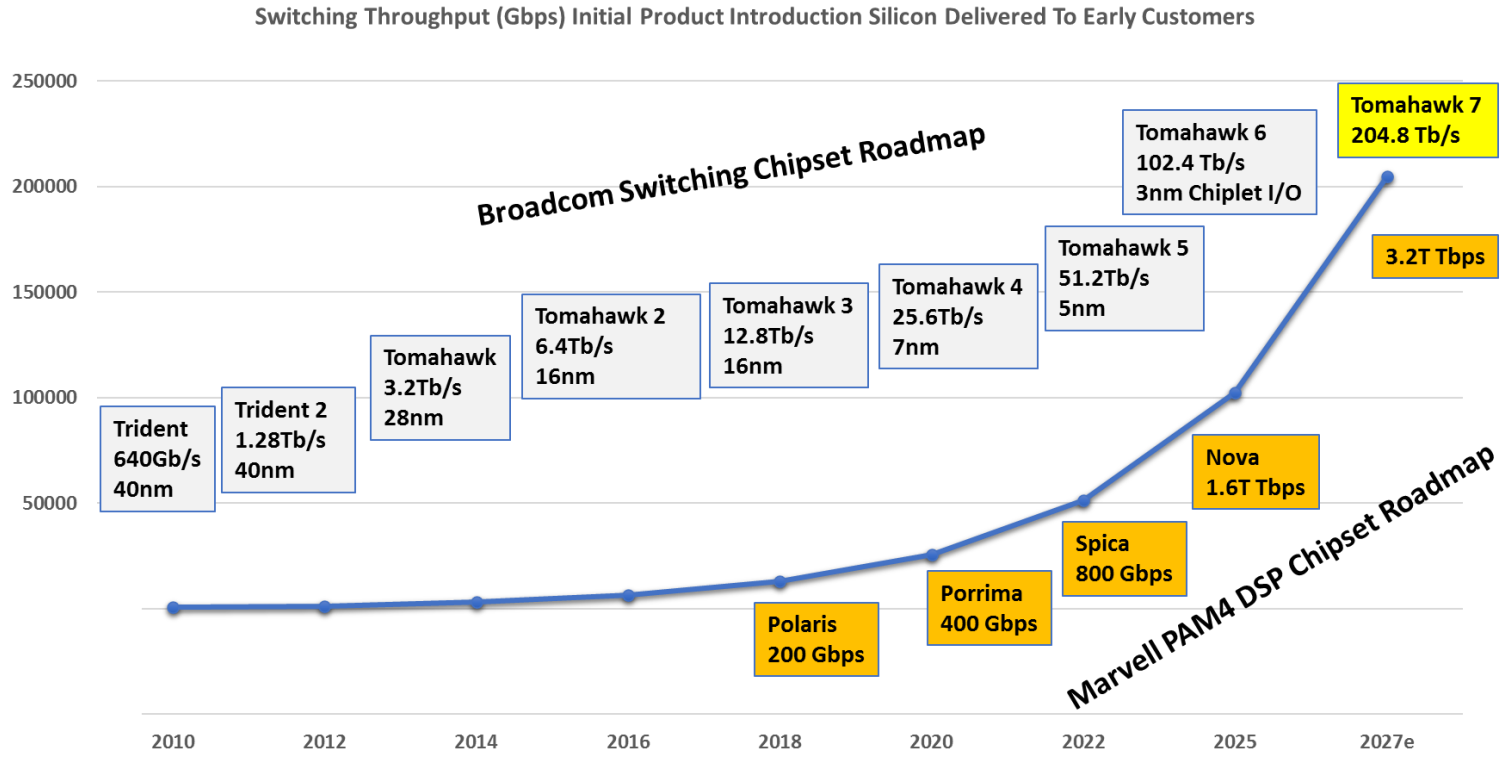
- Google TPU orders continue to add to the CY27 backlog - currently around 6.5M+ V7/V8 shipments….~$100B in revenues
- Google Near-term – 3K wafer starts per week TPUv7 (Ironwood) – sets up for strong 2H26 (along with initial V8 ramp)…support Google Internal and Anthropic.
- Meta ramping first 3nm program (Athena) NOW, “Iris” 3nm Mid-CY26, “Arke” End CY26, “Astrid” 1H27 - added new 2nm program for 2H27 ramp…..total five programs – 1GW CY27
- OpenAI (2nm/3nm) and Softbank/ARM XPU first silicon both out of fab – functionality looks good….on track for end of year/CY27 ramp – OpenAI 1GW in CY27
- Google/AVGO assessing v8i “next-gen” – 4 compute die, 12 HBM stacks- extend life of TPUv8i for 6 more months….then ramp next gen v9/v10 2nm TPU (4 compute, 16 HBM)…either strategy will NOT result in revenue “air-pocket” in CY28 (70%+ growth CY28)

Marvell Update on ASIC Pipeline

- XPU ASIC Trainium 3 (3nm) production commenced last quarter – on track to ramp mid-CY26…..Trainium 4 (2nm) on track to ramp 2H CY27
- Celestial CPO solution (Tied to Trainium 4) have seen upside to 2H27 orders
- XPU ASIC Microsoft Maia 3nm – taping out soon – program set to ramp beginning CY27 (full ASIC engagement - FE/BE design)
- XPU attach: multi-billion dollar /multi-year win for Google SmartNIC/DPU ASIC – ramp CY27 - CXL controller ASIC – ramp 2H26
- XPU attach: **early engagement** on “LPU” offload inference engine (recall MRVL did 1st gen Groq LPU ASIC due to strong SRAM memory IP) – No wins yet, but expected

Broadcom (AVGO) and Marvell (MRVL): AI/Cloud Networking Silicon Continues to Drive Moore's Law Performance in Datacenter Networking

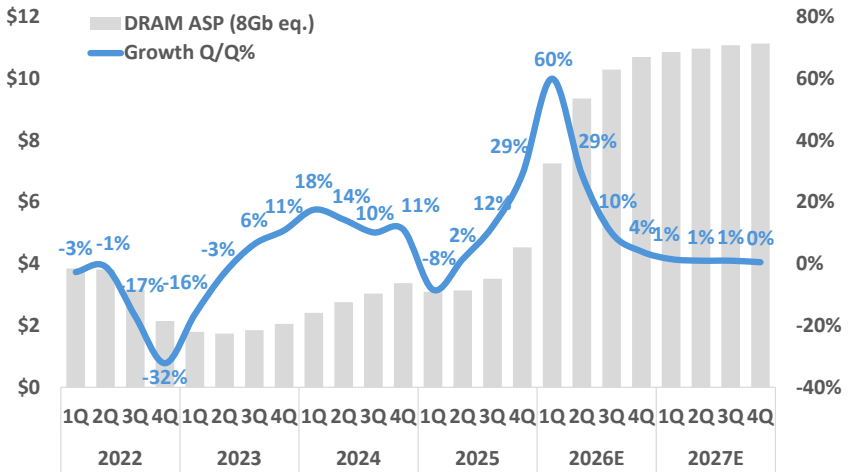
- **Broadcom strong 2-year cadence on new switching products – doubling switching throughput**
- **Broadcom Tomahawk 5 (51.2Tb/sec) – 5nm, taped out in Dec-21 – ramp 2H23 primarily for AI compute clusters – drives the 800G optical PAM4 DSP cycle**
- **Broadcom Tomahawk 6 (102.4Tb/sec) – 3nm, taped out Jan-24 – ramping NOW – drives the 1.6T optical PAM4 DSP cycle……AVGO currently sold out of T6 for CY27 on significant demand - assessing qualifying Samsung 3nm**
- **Broadcom Tomahawk 7 (204.8Tb/sec) – We expect the team to continue its 2-year product cycle and ramp in 2028 – drives the next-gen 3.2T optical PAM4 DSP cycle…CY28/29 initial CPO adoption**

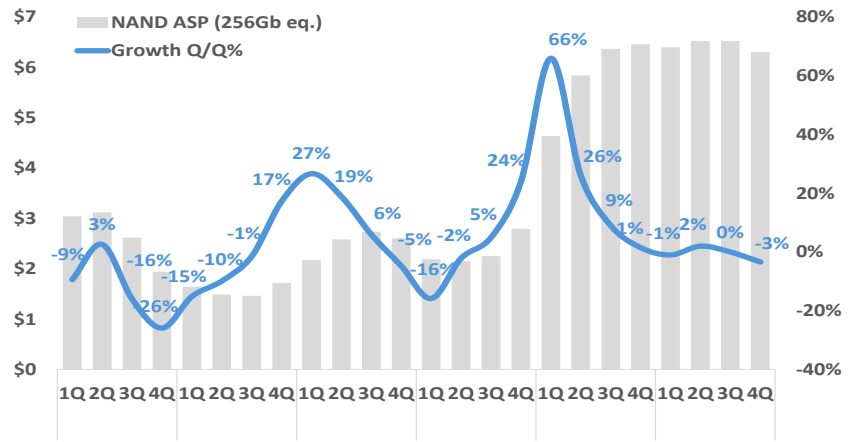


Source: Company reports and J.P. Morgan estimates.

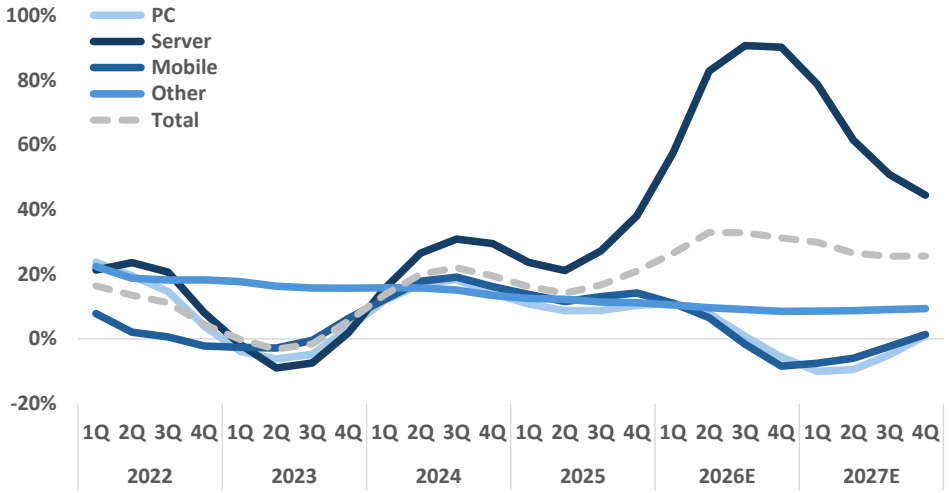
AI-Driven Memory Up-Cycle Continues in 2026, Driving Positive EPS Revisions

- **Outlook for bit demand in DRAM/NAND remains solid for 2026**
  - DRAM bit demand should increase >25% Y/Y led by strong AI server demand and normalization of excess inventories
  - NAND bit demand should also increase >20% Y/Y, led by eSSD
  - **Improving memory fundamentals, especially in DRAM, positive for OW-rated MU in 2026**



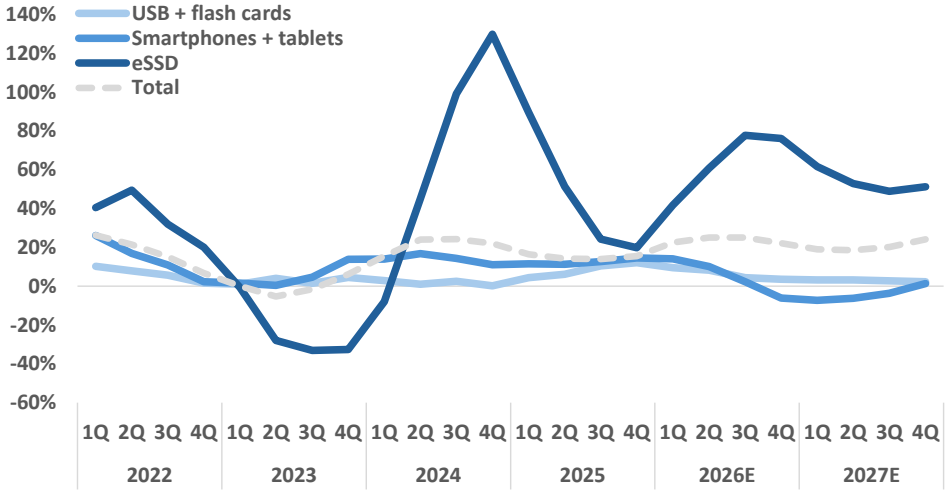


DRAM Bit Demand by Market (TTM Revenue Y/Y%)



Source: Gartner and J.P. Morgan estimates.

NAND Bit Demand by Market (TTM Revenue Y/Y%)



Source: Gartner and J.P. Morgan estimates.

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