Global Semiconductor

SIA July Data: Memory Cools, Broad IC Strength Holds as CQ3 Gets Underway

Equities

Global

Semiconductors

Timothy Arcuri
Analyst
timothy.arcuri@ubs.com
+1-415-352 5676

Nicolas Gaudois
Analyst
nicolas.gaudois@ubs.com
+65-6495 5148

Francois-Xavier Bouvignies
Analyst
francois.bouvignies@ubs.com
+44-20-7568 7105

Kenji Yasui
Analyst
kenji.yasui@ubs.com
+81-3-5208 6211

Randy Abrams
Analyst
randy.abrams@ubs.com
+886-2-8722 7338

Sunny Lin
Analyst
sunny.lin@ubs.com
+886-2-8722 7346

Jimmy Yu
Analyst
S1460517080002
jimmy.yu@ubs.com
+86-21-3866 8880

Natalia Winkler, CFA
Analyst
natalia.winkler@ubs.com
+1-415-352 4626

Aaryan Wadhwa
Associate Analyst
aaryan.wadhwa@ubs.com
+1-212-821 6481

Gianmarco Vella
Associate Analyst
gianmarco.vella@ubs.com
+1-415-352 4555

Seth Cho
Associate Analyst
seth.cho@ubs.com

Stacy Che
Associate Analyst
stacy.che@ubs.com
+1-212-713 1857

July Slightly Below Normal Seasonality

Global total semiconductor sales declined by 9.8% M/M from June's record high, underperforming the 10-year seasonal average by ~160 bps but broadly in line with the 5-year average. July ex-memory IC sales rose 0.9% M/M—a reversal of the typical 10-year and 5-year seasonal declines of 2.1% and 1.6%, respectively. Ex-memory unit shipments fell 5.1%, broadly in line with normal seasonality, while ASPs rose 6.3%—above the 10-year average but slightly below the 5-year average. Logic sales climbed 2.2% M/M to a fresh high of $37.0B, beating the 10-year seasonal average by ~290 bps, primarily due to a rising Logic ASP to $4.56. Analog rose 3.4% M/M, ~410 bps above 10-year seasonality, while MPU declined 8.2%, ~360 bps below its 10-year seasonal average. MCU slipped 1.5% and DSP rose 6.8%, coming in ~750 bps and ~1,350 bps above their respective 10-year seasonal averages; MCU was supported by ASP gains despite softer volumes, while DSP benefited from both volume and ASP growth. YoY total semiconductor sales growth decelerated by 13.8 ppts versus June but accelerated by 19.5 ppts versus April, reaching 138.7%. YTD total semiconductor sales grew by 117.3% Y/Y, with all major product segments expanding except DSP.

Our latest Cycle Update indicates that the semiconductor upcycle remains intact, although the industry is gradually transitioning from a hypergrowth phase toward a more sustainable expansion. We now forecast global semiconductor revenues of US $1.63tn in 2026 (+118% YoY), US$2.43tn in 2027 (+49% YoY), and US$2.72tn in 2028 (+12% YoY), with modest upward revisions driven by Memory and stronger AI-related server CPU demand. Memory remains the primary growth driver, with revenues expected to reach US$955bn in 2026 and US$1.65tn in 2027, while CPU revenues are forecast to grow 35% YoY in both 2026 and 2027. AI cloud semiconductors are expected to account for nearly half of total industry revenues by 2027, rising from 33% in 2026 to 49% in 2027 and 53% in 2028. While semiconductor revenue growth may have peaked in mid-2026, leading indicators including foundry utilization, assembly equipment demand and memory profitability continue to support a prolonged cycle through at least 2028. In the US, we continue to prefer MU and NVDA; internationally, our preferred stocks include ASE, Hon Hai Precision, NXP, Infineon, MediaTek, Quanta, Samsung Electronics, SK Hynix, TSMC.

Memory: DRAM and NAND ASP Strength Extend into 2026E

Memory sales declined 16.3% M/M from June's high, but performed ~510 bps better than the 10-year seasonal average. Aggregate memory ASPs, affected by product mix, fell 14.6% M/M, while total volume decreased just 2.0%, substantially better than normal seasonality. DRAM and NAND ASPs rose 8.3% and 9.8% M/M, respectively; DRAM was ~80 bps below its 10-year seasonal average, while NAND outperformed by ~940 bps. DRAM and NAND units fell 23.8% and 22.3%, respectively, broadly in line with—but modestly better than—normal seasonal declines, resulting in sales decreases of 17.5% and 14.7% M/M. Looking ahead, we forecast DDR ASPs to rise 22% Q/Q in 3Q26 and 9% in 4Q26, while NAND contract pricing is expected to increase 20% Q/Q in 3Q26 and 8% in 4Q26. We now expect both DRAM and NAND to continue to be undersupplied into 2027 (see here).

CQ3:26 Outlook: Street Estimates Imply 12% Q/Q Growth

For CQ3:26, street estimates imply total semis revenue (sell-through basis) to grow 25.3% Q/Q and ex-memory semis sales to increase 14.2% Q/Q.

This report has been prepared by UBS Securities LLC. **ANALYST CERTIFICATION AND REQUIRED DISCLOSURES, INCLUDING INFORMATION ON THE QUANTITATIVE RESEARCH REVIEW PUBLISHED BY UBS, BEGIN ON PAGE 24.**

Contents

Global Semiconductor 1

SIA July Data: Memory Cools, Broad IC Strength Holds as CQ3 Gets Underway 1

Timothy Arcuri
Analyst
timothy.arcuri@ubs.com
+1-415-352 5676

Nicolas Gaudois
Analyst
nicolas.gaudois@ubs.com
+65-6495 5148

Francois-Xavier Bouvignies
Analyst
francois.bouvignies@ubs.com
+44-20-7568 7105

Kenji Yasui
Analyst
kenji.yasui@ubs.com
+81-3-5208 6211

Randy Abrams
Analyst
randy.abrams@ubs.com
+886-2-8722 7338

Sunny Lin
Analyst
sunny.lin@ubs.com
+886-2-8722 7346

Jimmy Yu
Analyst
S1460517080002
jimmy.yu@ubs.com
+86-21-3866 8880

Natalia Winkler, CFA
Analyst
natalia.winkler@ubs.com
+1-415-352 4626

Aaryan Wadhwa
Associate Analyst
aaryan.wadhwa@ubs.com
+1-212-821 6481

Gianmarco Vella
Associate Analyst
gianmarco.vella@ubs.com
+1-415-352 4555

Seth Cho
Associate Analyst
seth.cho@ubs.com

Stacy Che
Associate Analyst
stacy.che@ubs.com
+1-212-713 1857

Figure 1: Revenue and Seasonality

		July Month over Month					July Year over Year		
	% of total	% M/M	10Y Avg seasonality	above/below 10Y Avg	5Y Avg seasonality	above/below 5Y Avg	% Y/Y	1 Mo. accel. / decel.	3 Mo. accel. / decel.
Revenue									
Logic	27%	2.2%	-0.7%	+2.9%	-0.6%	+2.8%	49.2%	-1.6%	+1.3%
MPU	5%	-8.2%	-4.6%	-3.6%	-5.0%	-3.2%	36.3%	-13.0%	+4.3%
Total digital	32%	0.4%	-1.7%	+2.1%	-1.5%	+1.9%	47.0%	-3.5%	+1.8%
Analog	6%	3.4%	-0.8%	+4.1%	0.7%	+2.7%	15.9%	-6.4%	+0.9%
MCU	2%	-1.5%	-9.0%	+7.5%	-9.5%	+7.9%	17.2%	-0.9%	+0.8%
DSP	0.2%	6.8%	-6.6%	+13.5%	-6.3%	+13.2%	3.2%	+7.9%	+13.8%
Total analog	8%	2.4%	-2.8%	+5.3%	-1.9%	+4.3%	15.8%	-4.8%	+1.3%
Total ex-Memory	37%	0.9%	-2.1%	+3.0%	-1.6%	+2.5%	44.0%	-4.8%	+1.4%
DRAM	36%	-17.5%	-20.6%	+3.1%	-26.7%	+9.2%	417.2%	+13.9%	+27.5%
NAND	20%	-14.7%	-24.0%	+9.3%	-30.3%	+15.6%	498.6%	+92.2%	+109.6%
Total Memory	57%	-16.3%	-21.4%	+5.1%	-27.3%	+11.1%	435.3%	+36.8%	+54.3%
Total ICs	94%	-10.3%	-9.0%	-1.3%	-10.8%	+0.5%	159.0%	-14.8%	+19.9%
Discretes	6%	-1.4%	-3.3%	+1.9%	-3.4%	+2.0%	11.1%	-1.2%	+4.1%
Total Semiconductors	100%	-9.8%	-8.2%	-1.6%	-9.8%	+0.1%	138.7%	-13.8%	+19.5%
Units									
Logic	8%	-1.5%	-2.4%	+0.9%	-5.4%	+4.0%	26.3%	+6.2%	+9.1%
MPU	0.04%	-8.7%	-5.7%	-3.0%	-4.7%	-4.0%	16.6%	-4.9%	+9.9%
Total digital	8%	-1.5%	-2.4%	+0.9%	-5.4%	+3.9%	26.3%	+6.2%	+9.1%
Analog	21%	-6.4%	-6.3%	-0.1%	-9.5%	+3.1%	22.3%	+2.4%	+0.2%
MCU	1.8%	-3.9%	-6.6%	+2.8%	-4.8%	+1.0%	-0.7%	-15.6%	-4.5%
DSP	0.05%	5.0%	-4.9%	+9.8%	-4.9%	+9.9%	15.7%	-1.2%	+8.2%
Total analog	23%	-6.2%	-6.5%	+0.3%	-9.1%	+2.9%	20.0%	+0.6%	-0.3%
Total ex-Memory	31%	-5.1%	-5.6%	+0.5%	-8.4%	+3.3%	21.5%	+2.0%	+2.0%
DRAM	1.6%	-23.8%	-26.3%	+2.5%	-36.6%	+12.8%	20.6%	+3.6%	-7.7%
NAND	0.8%	-22.3%	-23.9%	+1.7%	-33.8%	+11.5%	1.1%	+14.7%	-3.6%
Total Memory	6.4%	-2.0%	-18.7%	+16.7%	-24.0%	+22.0%	79.0%	+29.5%	+19.6%
Total ICs	37%	-4.6%	-7.4%	+2.8%	-10.4%	+5.9%	28.6%	+4.9%	+4.4%
Discretes	63%	2.4%	-2.6%	+5.1%	-3.2%	+5.6%	9.9%	+9.1%	+1.3%
Total Semiconductors	100%	-0.3%	-4.3%	+4.1%	-5.9%	+5.6%	16.2%	+7.6%	+2.2%
ASP									
Logic		3.7%	1.9%	+1.8%	5.2%	-1.5%	18.1%	-7.5%	-8.1%
MPU		0.5%	1.3%	-0.8%	-0.3%	+0.8%	16.9%	-6.0%	-6.8%
Total digital		1.9%	1.0%	+0.9%	4.4%	-2.4%	16.4%	-8.9%	-7.6%
Analog		10.5%	6.2%	+4.4%	11.3%	-0.8%	-5.1%	-7.2%	+0.7%
MCU		2.4%	-2.5%	+4.9%	-4.7%	+7.1%	18.0%	+15.2%	+5.9%
DSP		1.8%	-1.0%	+2.8%	-1.1%	+2.9%	-10.8%	+7.7%	+6.0%
Total analog		9.2%	4.0%	+5.2%	7.9%	+1.3%	-3.5%	-4.5%	+1.3%
Total ex-Memory		6.3%	3.8%	+2.4%	7.3%	-1.1%	18.5%	-5.9%	-0.8%
DRAM		8.3%	9.1%	-0.8%	16.5%	-8.3%	328.7%	-1.4%	+47.1%
NAND		9.8%	0.4%	+9.4%	5.1%	+4.7%	492.0%	+5.7%	+124.9%
Total Memory		-14.6%	-2.9%	-11.7%	-3.3%	-11.2%	199.0%	-34.4%	-2.6%
Total ICs		-6.0%	-1.5%	-4.5%	-0.2%	-5.8%	101.4%	-19.9%	+8.9%
Discretes		-3.7%	-0.7%	-3.1%	-0.2%	-3.6%	1.1%	-10.4%	+2.6%
Total Semiconductors		-9.5%	-3.9%	-5.7%	-4.0%	-5.5%	105.4%	-27.1%	+13.1%

Source: UBS, SIA.

Note: Total ICs and Semis adjusted by excluding both HBM and the value portion of system level elements (CPU, DDR, Baseboard) from GPU/ASIC revenues.

Figure 2: Annual Semiconductor Sales, Units, and ASP by Category (2017-2026E)

	2018	2019	2020	2021	2022	2023	2024	2025	2026E	2027E	2028E
MPU, Sales	46,899,058	47,974,176	51,811,870	57,753,026	50,837,190	45,480,138	54,165,443	60,231,613	81,312,678	109,772,115	137,215,144
MPU, Units	428,249	384,220	421,985	498,647	438,762	373,996	446,883	432,424	486,477	547,287	594,877
MPU, ASPs	109.5	124.9	122.8	115.8	115.9	121.6	121.2	139.3	167.1	200.6	230.7
MCU, Sales	17,068,878	15,807,854	15,483,891	19,622,513	25,018,496	27,861,219	22,463,994	21,573,299	25,025,027	28,278,280	30,540,543
MCU, Units	27,568,461	25,036,268	26,226,091	29,742,488	28,218,995	26,813,513	21,660,497	21,137,048	23,351,405	25,130,560	25,848,576
MCU, ASPs	0.6	0.6	0.6	0.7	0.9	1.0	1.0	1.0	1.1	1.1	1.2
Analog, Sales	58,785,389	53,903,091	55,657,641	74,105,380	88,983,400	81,145,889	79,532,894	86,519,089	102,957,716	122,519,682	134,771,650
Analog, Units	174,988,735	163,706,568	173,199,980	214,862,107	231,644,120	202,548,754	210,799,941	220,326,060	245,035,525	269,992,847	371,240,164
Analog, ASPs	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.4
CMOS Logic (Incl. DSP, ex-HBM)	112,568,128	109,040,182	120,789,913	157,682,386	178,095,747	176,308,431	189,889,077	252,782,328	365,196,974	414,945,344	472,875,877
CMOS Logic Units	65,970,930	59,429,428	65,634,619	88,575,164	91,398,983	64,073,853	72,954,070	78,429,162	100,389,327	131,278,351	134,307,852
CMOS Logic, ASPs	1.7	1.8	1.8	1.8	1.9	2.8	2.6	3.2	3.6	3.2	3.5
Total IC ex-Memory, Sales	**$ 235,321,453**	**$ 226,725,303**	**$ 243,743,315**	**$ 309,163,305**	**$ 342,934,833**	**$ 330,795,677**	**$ 346,051,408**	**$ 421,106,329**	**$ 574,492,394**	**$ 675,515,421**	**$ 775,403,214**
% Growth	***7.3%***	***-3.7%***	***7.5%***	***26.8%***	***10.9%***	***-3.5%***	***4.6%***	***21.7%***	***36.4%***	***17.6%***	***14.8%***
Total IC ex-Memory, Units	268,956,375	248,556,484	265,482,675	333,678,406	351,700,860	293,810,116	305,861,391	320,324,694	369,262,734	426,949,045	531,991,469
Total IC ex-Memory, ASP	$ 0.87	$ 0.91	$ 0.92	$ 0.93	$ 0.98	$ 1.13	$ 1.13	$ 1.31	$ 1.56	$ 1.58	$ 1.46
Memory, Sales	**$ 157,966,749**	**$ 106,431,501**	**$ 117,482,479**	**$ 153,838,238**	**$ 129,766,917**	**$ 92,309,195**	**$ 165,088,725**	**$ 230,042,298**	**$ 960,039,309**	**$ 1,651,888,724**	**$ 1,842,661,510**
% Growth	***27.4%***	***-32.6%***	***10.4%***	***30.9%***	***-15.6%***	***-28.9%***	***78.8%***	***39.3%***	***317.3%***	***72.1%***	***11.5%***
Memory Units	41,723,954	42,431,272	44,652,312	50,143,158	43,665,618	43,685,494	44,319,804	50,744,695	72,604,233	80,952,792	88,483,168
Memory, ASP	$ 3.79	$ 2.51	$ 2.63	$ 3.07	$ 2.97	$ 2.11	$ 3.72	$ 4.53	$ 13.22	$ 20.41	$ 20.82
Total IC, Sales	**$ 393,288,202**	**$ 333,156,804**	**$ 361,225,794**	**$ 463,001,543**	**$ 472,701,750**	**$ 423,104,872**	**$ 511,140,133**	**$ 651,148,627**	**$1,534,531,703**	**$ 2,327,404,145**	**$ 2,618,064,724**
% Growth	***14.7%***	***-15.3%***	***8.4%***	***28.2%***	***2.1%***	***-10.5%***	***20.8%***	***27.4%***	***135.7%***	***51.7%***	***12.5%***
Total IC Units	310,680,329	290,987,756	310,134,987	383,821,564	395,366,478	337,495,610	350,181,195	371,069,389	441,866,967	507,901,837	620,474,637
Total IC, ASP	$ 1.27	$ 1.14	$ 1.16	$ 1.21	$ 1.20	$ 1.25	$ 1.46	$ 1.75	$ 3.47	$ 4.58	$ 4.22
Discrete&Opto&Passives Sales	**$ 75,490,083**	**$ 78,944,564**	**$ 79,163,564**	**$ 92,890,971**	**$ 99,682,444**	**$ 98,368,431**	**$ 91,033,299**	**$ 94,664,962**	**$ 94,664,962**	**$ 97,504,911**	**$ 100,430,058**
% Growth	***9.3%***	***4.6%***	***0.3%***	***17.3%***	***7.3%***	***-1.3%***	***-7.5%***	***4.0%***	***0.0%***	***3.0%***	***3.0%***
Discrete&Opto&Passives, Units	693,807,604	640,950,125	643,612,663	763,036,425	701,119,280	577,187,990	602,341,989	682,606,647	696,537,395	717,433,516	738,956,522
Discrete&Opto&Passives, ASP	$ 0.11	$ 0.12	$ 0.12	$ 0.12	$ 0.14	$ 0.17	$ 0.15	$ 0.14	$ 0.14	$ 0.14	$ 0.14
Total Semiconductor Sales	**$ 468,778,285**	**$ 412,101,368**	**$ 440,389,358**	**$ 555,892,514**	**$ 572,384,194**	**$ 521,473,303**	**$ 602,173,432**	**$ 745,813,589**	**$1,629,196,665**	**$ 2,424,909,056**	**$ 2,718,494,782**
% Growth	***13.8%***	***-12.1%***	***6.9%***	***26.2%***	***3.0%***	***-8.9%***	***15.5%***	***23.9%***	***118.4%***	***48.8%***	***12.1%***
Total Semiconductor, Units	1,004,487,933	931,937,881	953,747,650	1,146,857,989	1,096,485,758	914,683,600	952,523,184	1,053,676,036	1,138,404,362	1,225,335,353	1,359,431,159
Total Semiconductror, ASP	$ 0.47	$ 0.44	$ 0.46	$ 0.48	$ 0.52	$ 0.57	$ 0.63	$ 0.71	$ 1.43	$ 1.98	$ 2.00

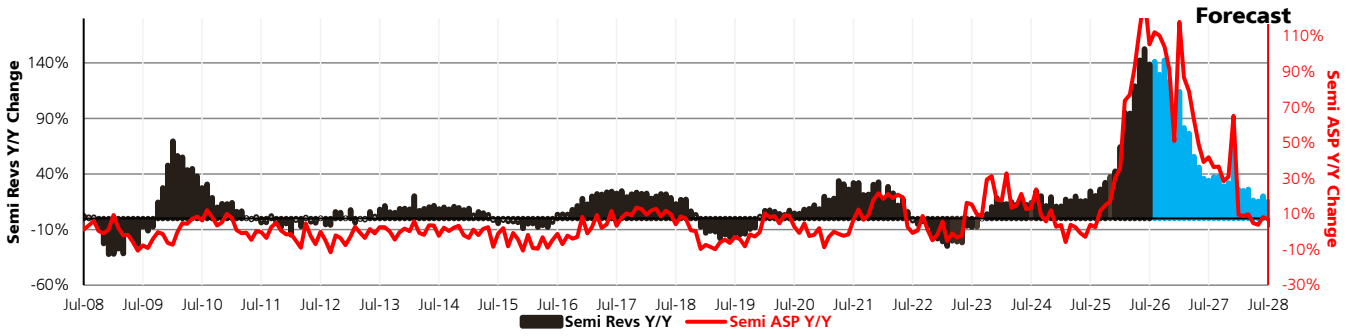
Source: UBS estimates, SIA

Figure 3: Semis Sell-Through vs. OEM revenues

	2019	2020	2021	2022	2023	2024	2025	1Q26	2Q26	3Q26E	4Q26E	2026E	1Q27E	2Q27E	3Q27E	4Q27E	2027E	1Q28E	2Q28E	3Q28E	4Q28E	2028E
Semis revenues (Sell Through)	**359.1**	**404.0**	**509.7**	**530.4**	**486.7**	**614.1**	**780.0**	**285.2**	**365.8**	**458.5**	**517.4**	**1627.0**	**572.3**	**641.1**	**703.9**	**769.9**	**2687.2**	**717.0**	**762.3**	**768.8**	**772.3**	**3020.4**
% of total semis industry revs	*87.1%*	*92.0%*	*91.7%*	*92.5%*	*92.4%*	*102.0%*	*104.6%*	*99.7%*	*93.6%*	*103.5%*	*101.3%*	*99.8%*	*108.8%*	*109.7%*	*112.3%*	*111.9%*	*110.8%*	*104.2%*	*110.8%*	*111.8%*	*112.3%*	*109.8%*
%QoQ								*23.4%*	*28.3%*	*25.3%*	*12.8%*		*10.6%*	*12.0%*	*9.8%*	*9.4%*		*-6.9%*	*6.3%*	*0.9%*	*0.4%*	
%YoY	*-13.8%*	*12.5%*	*26.2%*	*4.1%*	*-8.2%*	*26.2%*	*27.0%*	*71.7%*	*103.1%*	*126.3%*	*123.9%*	*108.6%*	*100.7%*	*75.2%*	*53.5%*	*48.8%*	*65.2%*	*25.3%*	*18.9%*	*9.2%*	*0.3%*	*12.4%*
Semis revs ex memory (Sell Through)	**247.7**	**279.6**	**348.5**	**386.4**	**389.4**	**465.1**	**584.7**	**178.9**	**201.4**	**230.0**	**265.9**	**876.2**	**291.1**	**325.4**	**360.9**	**402.7**	**1380.1**	**430.4**	**458.5**	**475.3**	**484.9**	**1849.0**
%QoQ								*7.0%*	*12.6%*	*14.2%*	*15.6%*		*9.5%*	*11.8%*	*10.9%*	*11.6%*		*6.9%*	*6.5%*	*3.7%*	*2.0%*	
%YoY	*-1.4%*	*12.9%*	*24.6%*	*10.9%*	*0.8%*	*19.4%*	*25.7%*	*38.1%*	*47.8%*	*51.6%*	*59.1%*	*49.8%*	*62.7%*	*61.6%*	*56.9%*	*51.5%*	*57.5%*	*47.9%*	*40.9%*	*31.7%*	*20.4%*	*34.0%*
OEM revenues	**1844.8**	**1832.8**	**2023.3**	**1997.0**	**2013.5**	**2059.0**	**2133.1**	**573.9**	**559.3**	**557.4**	**583.6**	**2273.8**	**624.2**	**606.6**	**610.0**	**638.3**	**2478.7**	**666.3**	**649.0**	**649.6**	**677.9**	**2643.3**
%QoQ								*-1.9%*	*-2.5%*	*-0.3%*	*4.7%*		*6.9%*	*-2.8%*	*0.6%*	*4.6%*		*4.4%*	*-2.6%*	*0.1%*	*4.4%*	
%YoY	*-0.5%*	*-0.6%*	*10.4%*	*-1.3%*	*0.8%*	*2.3%*	*3.6%*	*15.5%*	*8.0%*	*4.5%*	*-0.2%*	*6.6%*	*8.8%*	*8.5%*	*9.4%*	*9.4%*	*9.0%*	*6.8%*	*7.0%*	*6.5%*	*6.2%*	*6.6%*

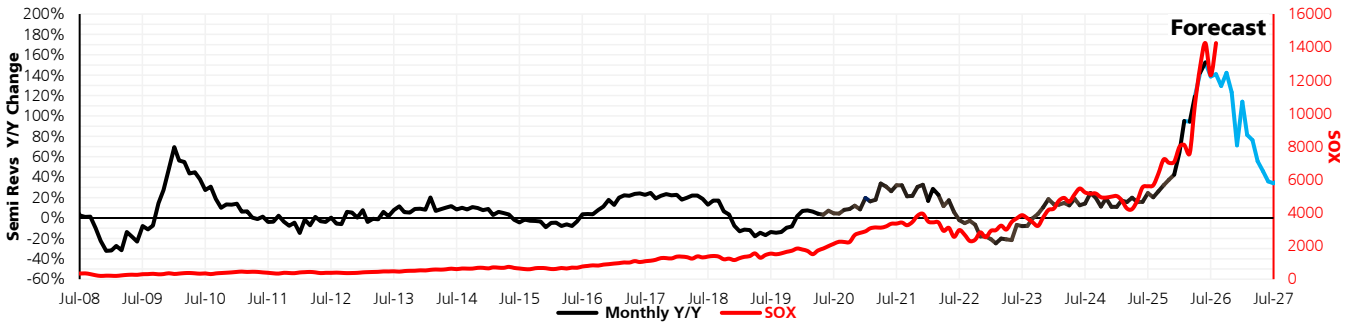
Source: Company data, Bloomberg, UBS estimates

Figure 4: Total Semiconductor Revenue and ASP Change



Source: UBS, SIA

Figure 5: Total Semiconductor Revenue vs. SOX



Source: UBS, SIA, FactSet.

Figure 6: Total Semis Revenue and Units Relative to Seasonality



5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-5.6%	27.1%	15.0%	-0.4%	22.1%	12.5%	-9.8%					
Over/Under Seasonal Avg	+8.0%	+18.1%	+0.8%	+10.0%	+9.1%	+5.0%	+0.1%					
5-yr AVG	-13.6%	9.0%	14.2%	-10.3%	13.0%	7.5%	-9.8%	10.0%	8.7%	-9.3%	7.5%	3.1%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-5.6%	27.1%	15.0%	-0.4%	22.1%	12.5%	-9.8%					
Over/Under Seasonal Avg	+5.1%	+22.9%	+1.4%	+9.5%	+13.2%	+4.6%	-1.6%					
10-yr AVG	-10.8%	4.2%	13.7%	-9.9%	8.9%	7.9%	-8.2%	9.2%	8.7%	-8.2%	4.2%	1.9%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	64.4%	95.1%	94.5%	119.2%	142.3%	152.6%	138.7%					
Over/Under Seasonal Avg	+47.4%	+69.3%	+69.0%	+90.7%	+107.8%	+116.6%	+126.6%					
5-yr AVG	17.0%	25.8%	25.5%	28.4%	34.5%	36.0%	12.1%	12.8%	12.9%	12.5%	15.9%	17.3%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	64.4%	95.1%	94.5%	119.2%	142.3%	152.6%	138.7%					
Over/Under Seasonal Avg	+51.0%	+77.2%	+76.3%	+98.6%	+118.6%	+128.6%	+129.6%					
10-yr AVG	13.4%	17.9%	18.2%	20.6%	23.8%	23.9%	9.1%	9.9%	9.9%	9.8%	12.2%	12.9%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-8.0%	-6.1%	19.5%	-3.2%	-1.1%	11.9%	-0.3%					
Over/Under Seasonal Avg	+3.0%	-0.9%	-1.5%	+4.6%	-1.0%	-1.4%	+5.6%					
5-yr AVG	-11.0%	-5.2%	21.0%	-7.8%	-0.1%	13.2%	-5.9%	-2.2%	12.7%	-13.0%	-1.5%	9.2%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-8.0%	-6.1%	19.5%	-3.2%	-1.1%	11.9%	-0.3%					
Over/Under Seasonal Avg	-0.5%	+0.5%	-0.1%	+4.5%	-0.7%	+1.0%	+4.1%					
10-yr AVG	-7.5%	-6.6%	19.6%	-7.7%	-0.4%	10.9%	-4.3%	0.0%	12.1%	-11.2%	-1.1%	6.9%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	21.0%	12.3%	9.8%	14.0%	13.3%	8.6%	16.2%					
Over/Under Seasonal Avg	+21.5%	+11.2%	+8.7%	+13.5%	+12.2%	+6.6%	+11.9%					
5-yr AVG	-0.5%	1.1%	1.1%	0.4%	1.1%	2.0%	4.3%	2.6%	3.3%	0.7%	0.8%	1.9%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	21.0%	12.3%	9.8%	14.0%	13.3%	8.6%	16.2%					
Over/Under Seasonal Avg	+16.5%	+8.0%	+6.2%	+8.4%	+8.2%	+4.2%	+11.8%					
10-yr AVG	4.5%	4.3%	3.7%	5.6%	5.1%	4.4%	4.4%	4.2%	3.6%	3.6%	3.8%	3.7%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	2.6%	35.4%	-3.8%	2.9%	23.5%	0.5%	-9.5%					
Over/Under Seasonal Avg	+5.1%	+20.2%	+1.7%	+5.6%	+10.5%	+5.7%	-5.5%					
5-yr AVG	-2.5%	15.2%	-5.5%	-2.7%	13.0%	-5.1%	-4.0%	12.3%	-3.4%	4.8%	8.9%	-5.2%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	2.6%	35.4%	-3.8%	2.9%	23.5%	0.5%	-9.5%					
Over/Under Seasonal Avg	+5.7%	+23.7%	+1.1%	+5.2%	+14.2%	+3.2%	-5.7%					
10-yr AVG	-3.2%	11.7%	-4.8%	-2.3%	9.2%	-2.6%	-3.9%	9.2%	-2.9%	3.7%	5.4%	-4.4%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	35.8%	73.8%	77.1%	92.3%	113.9%	132.6%	105.4%					
Over/Under Seasonal Avg	+19.5%	+50.4%	+54.6%	+66.9%	+83.6%	+100.3%	+97.7%					
5-yr AVG	16.3%	23.4%	22.5%	25.4%	30.3%	32.3%	7.8%	9.9%	9.2%	12.1%	14.8%	14.3%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	35.8%	73.8%	77.1%	92.3%	113.9%	132.6%	105.4%					
Over/Under Seasonal Avg	+27.4%	+60.9%	+63.7%	+78.8%	+96.9%	+114.1	+100.9					
10-yr AVG	8.4%	12.9%	13.4%	13.6%	17.0%	18.5%	4.5%	5.5%	5.8%	6.3%	8.1%	8.5%

Source: UBS, SIA

Figure 7: Total IC (excl. Discretes) Revenue and Units Change Relative to Seasonality



5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-4.5%	30.7%	14.7%	0.2%	24.2%	12.4%	-10.3%					
Over/Under Seasonal Avg	+9.5%	+19.9%	+0.8%	+10.5%	+9.0%	+5.6%	+0.5%					
5-yr AVG	-14.1%	10.8%	13.9%	-10.4%	15.1%	6.8%	-10.8%	11.2%	8.5%	-9.2%	8.7%	2.6%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-4.5%	30.7%	14.7%	0.2%	24.2%	12.4%	-10.3%					
Over/Under Seasonal Avg	+6.5%	+25.0%	+1.7%	+10.2%	+13.6%	+4.9%	-1.3%					
10-yr AVG	-11.0%	5.6%	13.1%	-10.0%	10.6%	7.6%	-9.0%	10.1%	8.3%	-7.9%	5.0%	1.3%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	73.2%	108.3%	107.8%	139.2%	160.2%	173.8%	159.0%					
Over/Under Seasonal Avg	+52.9%	+78.0%	+78.0%	+105.6	+120.8	+132.7	+145.3					
5-yr AVG	20.2%	30.3%	29.8%	33.6%	39.5%	41.2%	13.8%	14.7%	14.8%	14.4%	18.5%	20.1%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	73.2%	108.3%	107.8%	139.2%	160.2%	173.8%	159.0%					
Over/Under Seasonal Avg	+58.0%	+87.9%	+87.1%	+115.7%	+133.5%	+146.8%	+149.1%					
10-yr AVG	15.1%	20.5%	20.7%	23.5%	26.7%	27.1%	10.0%	11.0%	11.0%	10.9%	13.6%	14.3%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-4.9%	-6.8%	27.0%	-6.2%	1.2%	14.3%	-4.6%					
Over/Under Seasonal Avg	+10.1%	-3.3%	+4.0%	+4.9%	-1.3%	-0.8%	+5.9%					
5-yr AVG	-15.0%	-3.6%	23.0%	-11.1%	2.4%	15.1%	-10.4%	-0.2%	17.5%	-15.5%	0.2%	13.6%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-4.9%	-6.8%	27.0%	-6.2%	1.2%	14.3%	-4.6%					
Over/Under Seasonal Avg	+7.2%	-1.7%	+4.9%	+4.5%	-1.4%	+1.6%	+2.8%					
10-yr AVG	-12.1%	-5.2%	22.1%	-10.7%	2.6%	12.7%	-7.4%	1.8%	15.1%	-13.0%	-0.2%	10.1%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	19.1%	9.9%	20.3%	24.3%	24.5%	23.7%	28.6%					
Over/Under Seasonal Avg	+16.9%	+6.5%	+16.2%	+20.9%	+20.7%	+18.5%	+24.1%					
5-yr AVG	2.1%	3.4%	4.0%	3.4%	3.8%	5.2%	4.5%	4.2%	5.1%	2.6%	2.9%	2.9%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	19.1%	9.9%	20.3%	24.3%	24.5%	23.7%	28.6%					
Over/Under Seasonal Avg	+12.0%	+2.7%	+13.8%	+16.0%	+16.5%	+16.6%	+22.9%					
10-yr AVG	7.0%	7.2%	6.5%	8.2%	7.9%	7.2%	5.7%	5.7%	5.4%	5.8%	6.0%	5.8%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	0.4%	40.2%	-9.7%	6.8%	22.7%	-1.7%	-6.0%					
Over/Under Seasonal Avg	-2.6%	+25.1%	-2.6%	+5.7%	+10.5%	+5.6%	-5.8%					
5-yr AVG	2.9%	15.1%	-7.1%	1.1%	12.2%	-7.3%	-0.2%	11.1%	-7.3%	8.4%	8.3%	-9.4%

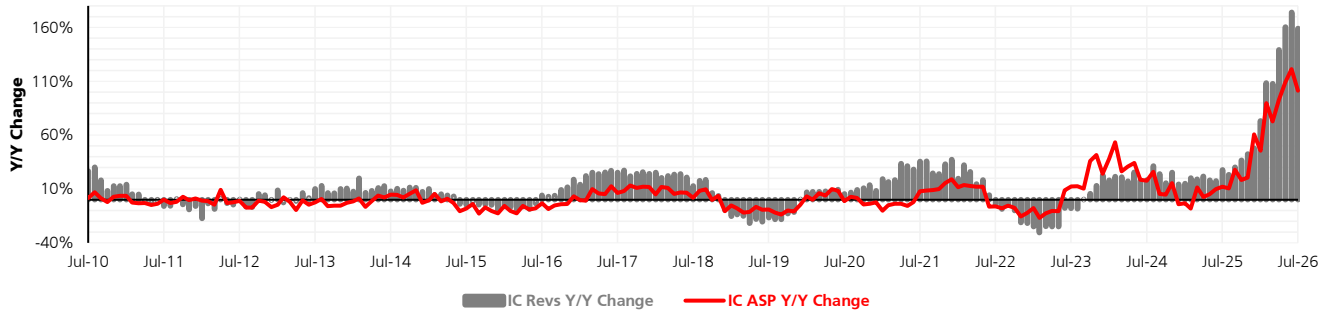
10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	0.4%	40.2%	-9.7%	6.8%	22.7%	-1.7%	-6.0%					
Over/Under Seasonal Avg	-1.9%	+28.7%	-2.5%	+5.9%	+14.9%	+2.9%	-4.5%					
10-yr AVG	2.3%	11.5%	-7.2%	0.9%	7.8%	-4.6%	-1.5%	8.1%	-5.7%	6.4%	5.2%	-7.8%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	45.4%	89.6%	72.8%	92.5%	109.1%	121.3%	101.4%					
Over/Under Seasonal Avg	+28.7%	+63.2%	+50.7%	+66.9%	+79.0%	+90.8%	+92.5%					
5-yr AVG	16.8%	26.3%	22.1%	25.6%	30.0%	30.4%	8.8%	9.9%	9.5%	12.3%	15.5%	17.5%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	45.4%	89.6%	72.8%	92.5%	109.1%	121.3%	101.4%					
Over/Under Seasonal Avg	+37.8%	+76.6%	+60.6%	+79.7%	+93.1%	+104.4	+97.5%					
10-yr AVG	7.6%	13.0%	12.2%	12.8%	16.0%	16.8%	3.9%	4.9%	5.3%	5.4%	7.5%	8.5%

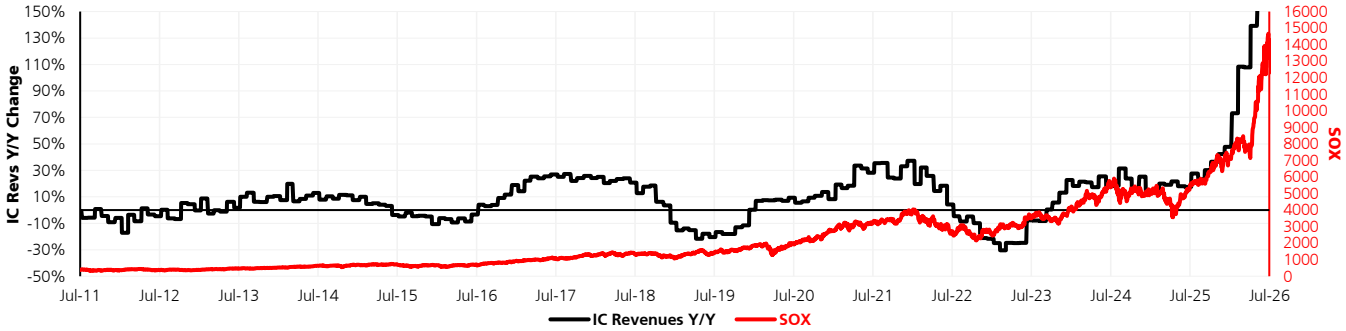
Source: UBS, SIA

Figure 8: Total IC (excl. Discretes) Revenue and ASP Change



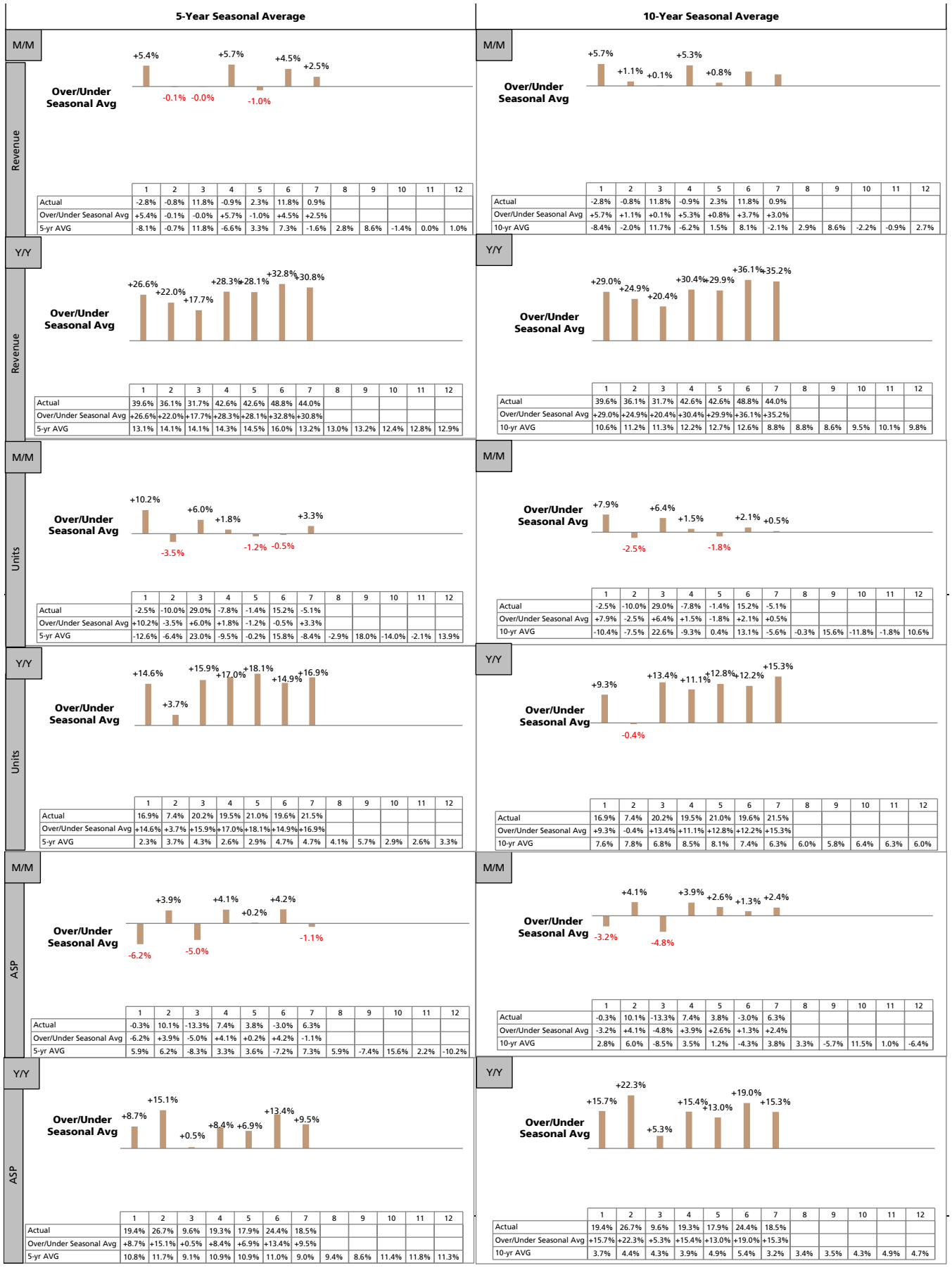
Source: UBS, SIA

Figure 9: Total IC (excl. Discretes) Revenue vs. SOX



Source: UBS, SIA, FactSet.

Figure 10: IC (ex-Memory) Revenue and Units Change Relative to Seasonality



5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-2.8%	-0.8%	11.8%	-0.9%	2.3%	11.8%	0.9%					
Over/Under Seasonal Avg	+5.4%	-0.1%	-0.0%	+5.7%	-1.0%	+4.5%	+2.5%					
5-yr AVG	-8.1%	-0.7%	11.8%	-6.6%	3.3%	7.3%	-1.6%	2.8%	8.6%	-1.4%	0.0%	1.0%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-2.8%	-0.8%	11.8%	-0.9%	2.3%	11.8%	0.9%					
Over/Under Seasonal Avg	+5.7%	+1.1%	+0.1%	+5.3%	+0.8%	+3.7%	+3.0%					
10-yr AVG	-8.4%	-2.0%	11.7%	-6.2%	1.5%	8.1%	-2.1%	2.9%	8.6%	-2.2%	-0.9%	2.7%

Revenue Y/Y	1	2	3	4	5	6	7	8	9	10	11	12
Actual	39.6%	36.1%	31.7%	42.6%	42.6%	48.8%	44.0%					
Over/Under Seasonal Avg	+26.6%	+22.0%	+17.7%	+28.3%	+28.1%	+32.8%	+30.8%					
5-yr AVG	13.1%	14.1%	14.1%	14.3%	14.5%	16.0%	13.2%	13.0%	13.2%	12.4%	12.8%	12.9%

Revenue Y/Y	1	2	3	4	5	6	7	8	9	10	11	12
Actual	39.6%	36.1%	31.7%	42.6%	42.6%	48.8%	44.0%					
Over/Under Seasonal Avg	+29.0%	+24.9%	+20.4%	+30.4%	+29.9%	+36.1%	+35.2%					
10-yr AVG	10.6%	11.2%	11.3%	12.2%	12.7%	12.6%	8.8%	8.8%	8.6%	9.5%	10.1%	9.8%

Units M/M	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-2.5%	-10.0%	29.0%	-7.8%	-1.4%	15.2%	-5.1%					
Over/Under Seasonal Avg	+10.2%	-3.5%	+6.0%	+1.8%	-1.2%	-0.5%	+3.3%					
5-yr AVG	-12.6%	-6.4%	23.0%	-9.5%	-0.2%	15.8%	-8.4%	-2.9%	18.0%	-14.0%	-2.1%	13.9%

Units M/M	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-2.5%	-10.0%	29.0%	-7.8%	-1.4%	15.2%	-5.1%					
Over/Under Seasonal Avg	+7.9%	-2.5%	+6.4%	+1.5%	-1.8%	+2.1%	+0.5%					
10-yr AVG	-10.4%	-7.5%	22.6%	-9.3%	0.4%	13.1%	-5.6%	-0.3%	15.6%	-11.8%	-1.8%	10.6%

Units Y/Y	1	2	3	4	5	6	7	8	9	10	11	12
Actual	16.9%	7.4%	20.2%	19.5%	21.0%	19.6%	21.5%					
Over/Under Seasonal Avg	+14.6%	+3.7%	+15.9%	+17.0%	+18.1%	+14.9%	+16.9%					
5-yr AVG	2.3%	3.7%	4.3%	2.6%	2.9%	4.7%	4.7%	4.1%	5.7%	2.9%	2.6%	3.3%

Units Y/Y	1	2	3	4	5	6	7	8	9	10	11	12
Actual	16.9%	7.4%	20.2%	19.5%	21.0%	19.6%	21.5%					
Over/Under Seasonal Avg	+9.3%	-0.4%	+13.4%	+11.1%	+12.8%	+12.2%	+15.3%					
10-yr AVG	7.6%	7.8%	6.8%	8.5%	8.1%	7.4%	6.3%	6.0%	5.8%	6.4%	6.3%	6.0%

ASP M/M	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-0.3%	10.1%	-13.3%	7.4%	3.8%	-3.0%	6.3%					
Over/Under Seasonal Avg	-6.2%	+3.9%	-5.0%	+4.1%	+0.2%	+4.2%	-1.1%					
5-yr AVG	5.9%	6.2%	-8.3%	3.3%	3.6%	-7.2%	7.3%	5.9%	-7.4%	15.6%	2.2%	-10.2%

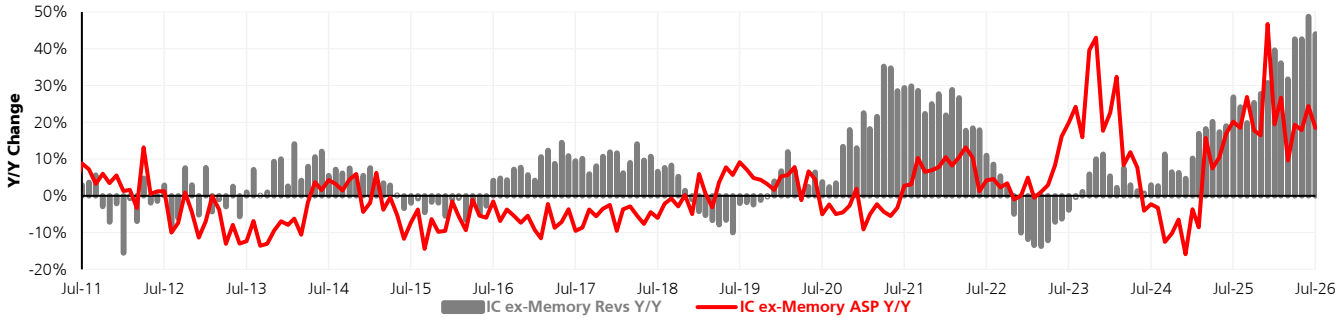
ASP M/M	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-0.3%	10.1%	-13.3%	7.4%	3.8%	-3.0%	6.3%					
Over/Under Seasonal Avg	-3.2%	+4.1%	-4.8%	+3.9%	+2.6%	+1.3%	+2.4%					
10-yr AVG	2.8%	6.0%	-8.5%	3.5%	1.2%	-4.3%	3.8%	3.3%	-5.7%	11.5%	1.0%	-6.4%

ASP Y/Y	1	2	3	4	5	6	7	8	9	10	11	12
Actual	19.4%	26.7%	9.6%	19.3%	17.9%	24.4%	18.5%					
Over/Under Seasonal Avg	+8.7%	+15.1%	+0.5%	+8.4%	+6.9%	+13.4%	+9.5%					
5-yr AVG	10.8%	11.7%	9.1%	10.9%	10.9%	11.0%	9.0%	9.4%	8.6%	11.4%	11.8%	11.3%

ASP Y/Y	1	2	3	4	5	6	7	8	9	10	11	12
Actual	19.4%	26.7%	9.6%	19.3%	17.9%	24.4%	18.5%					
Over/Under Seasonal Avg	+15.7%	+22.3%	+5.3%	+15.4%	+13.0%	+19.0%	+15.3%					
10-yr AVG	3.7%	4.4%	4.3%	3.9%	4.9%	5.4%	3.2%	3.4%	3.5%	4.3%	4.9%	4.7%

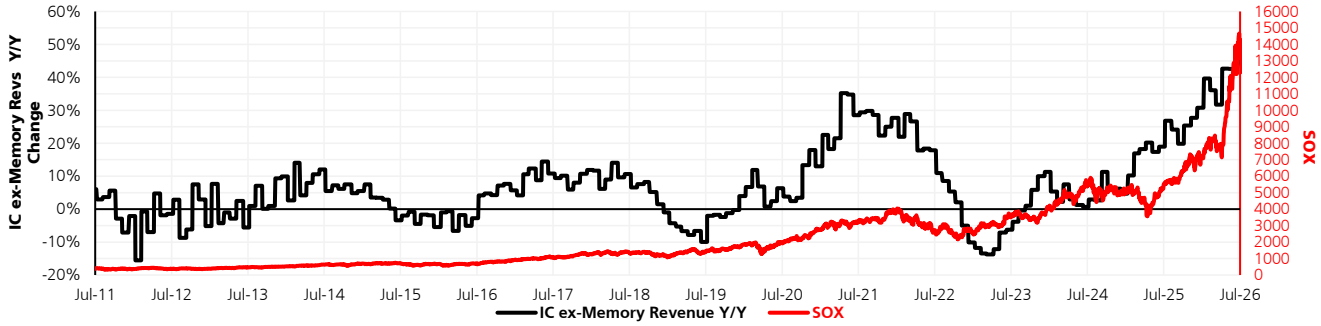
Source: UBS, SIA

Figure 11: IC (ex-Memory) Revenue and ASP Change



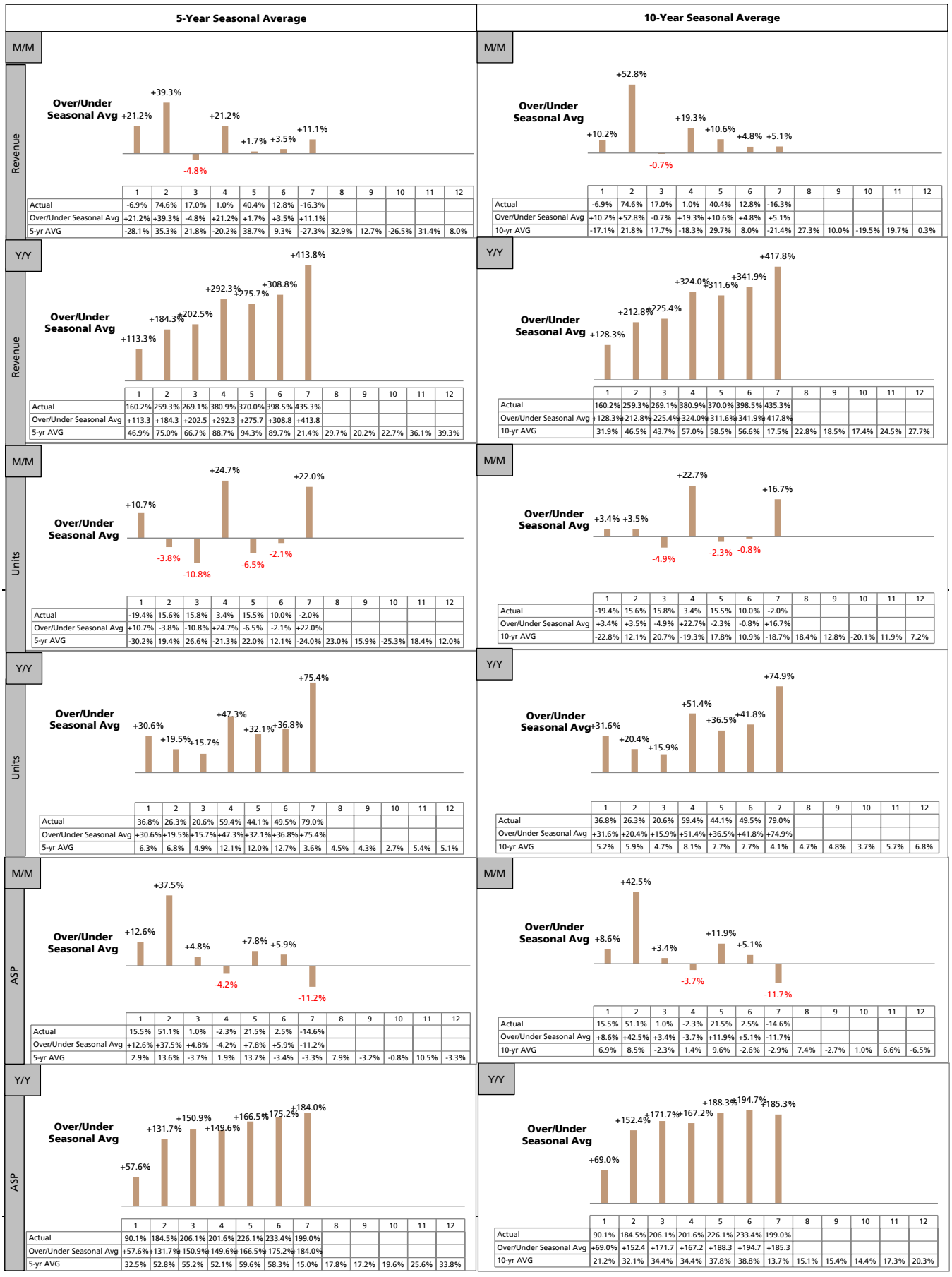
Source: UBS, SIA

Figure 12: IC (ex-Memory) Revenue vs. SOX



Source: UBS, SIA, FactSet.

Figure 13: Total Memory Revenue and Units Relative to Seasonality



5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-6.9%	74.6%	17.0%	1.0%	40.4%	12.8%	-16.3%					
Over/Under Seasonal Avg	+21.2%	+39.3%	-4.8%	+21.2%	+1.7%	+3.5%	+11.1%					
5-yr AVG	-28.1%	35.3%	21.8%	-20.2%	38.7%	9.3%	-27.3%	32.9%	12.7%	-26.5%	31.4%	8.0%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-6.9%	74.6%	17.0%	1.0%	40.4%	12.8%	-16.3%					
Over/Under Seasonal Avg	+10.2%	+52.8%	-0.7%	+19.3%	+10.6%	+4.8%	+5.1%					
10-yr AVG	-17.1%	21.8%	17.7%	-18.3%	29.7%	8.0%	-21.4%	27.3%	10.0%	-19.5%	19.7%	0.3%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	160.2%	259.3%	269.1%	380.9%	370.0%	398.5%	435.3%					
Over/Under Seasonal Avg	+113.3	+184.3	+202.5	+292.3	+275.7	+308.8	+413.8					
5-yr AVG	46.9%	75.0%	66.7%	88.7%	94.3%	89.7%	21.4%	29.7%	20.2%	22.7%	36.1%	39.3%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	160.2%	259.3%	269.1%	380.9%	370.0%	398.5%	435.3%					
Over/Under Seasonal Avg	+128.3%	+212.8%	+225.4%	+324.0%	+311.6%	+341.9%	+417.8%					
10-yr AVG	31.9%	46.5%	43.7%	57.0%	58.5%	56.6%	17.5%	22.8%	18.5%	17.4%	24.5%	27.7%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-19.4%	15.6%	15.8%	3.4%	15.5%	10.0%	-2.0%					
Over/Under Seasonal Avg	+10.7%	-3.8%	-10.8%	+24.7%	-6.5%	-2.1%	+22.0%					
5-yr AVG	-30.2%	19.4%	26.6%	-21.3%	22.0%	12.1%	-24.0%	23.0%	15.9%	-25.3%	18.4%	12.0%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-19.4%	15.6%	15.8%	3.4%	15.5%	10.0%	-2.0%					
Over/Under Seasonal Avg	+3.4%	+3.5%	-4.9%	+22.7%	-2.3%	-0.8%	+16.7%					
10-yr AVG	-22.8%	12.1%	20.7%	-19.3%	17.8%	10.9%	-18.7%	18.4%	12.8%	-20.1%	11.9%	7.2%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	36.8%	26.3%	20.6%	59.4%	44.1%	49.5%	79.0%					
Over/Under Seasonal Avg	+30.6%	+19.5%	+15.7%	+47.3%	+32.1%	+36.8%	+75.4%					
5-yr AVG	6.3%	6.8%	4.9%	12.1%	12.0%	12.7%	3.6%	4.5%	4.3%	2.7%	5.4%	5.1%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	36.8%	26.3%	20.6%	59.4%	44.1%	49.5%	79.0%					
Over/Under Seasonal Avg	+31.6%	+20.4%	+15.9%	+51.4%	+36.5%	+41.8%	+74.9%					
10-yr AVG	5.2%	5.9%	4.7%	8.1%	7.7%	7.7%	4.1%	4.7%	4.8%	3.7%	5.7%	6.8%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	15.5%	51.1%	1.0%	-2.3%	21.5%	2.5%	-14.6%					
Over/Under Seasonal Avg	+12.6%	+37.5%	+4.8%	-4.2%	+7.8%	+5.9%	-11.2%					
5-yr AVG	2.9%	13.6%	-3.7%	1.9%	13.7%	-3.4%	-3.3%	7.9%	-3.2%	-0.8%	10.5%	-3.3%

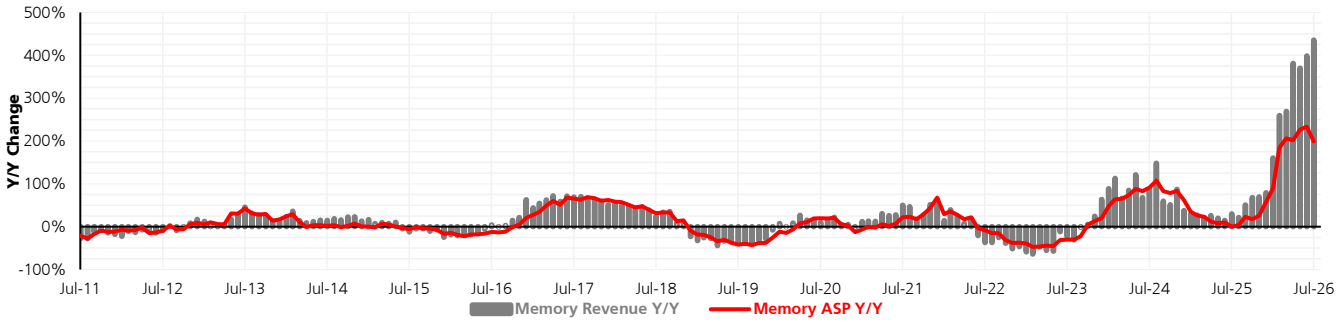
10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	15.5%	51.1%	1.0%	-2.3%	21.5%	2.5%	-14.6%					
Over/Under Seasonal Avg	+8.6%	+42.5%	+3.4%	-3.7%	+11.9%	+5.1%	-11.7%					
10-yr AVG	6.9%	8.5%	-2.3%	1.4%	9.6%	-2.6%	-2.9%	7.4%	-2.7%	1.0%	6.6%	-6.5%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	90.1%	184.5%	206.1%	201.6%	226.1%	233.4%	199.0%					
Over/Under Seasonal Avg	+57.6%	+131.7%	+150.9%	+149.6%	+166.5%	+175.2%	+184.0%					
5-yr AVG	32.5%	52.8%	55.2%	52.1%	59.6%	58.3%	15.0%	17.8%	17.2%	19.6%	25.6%	33.8%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	90.1%	184.5%	206.1%	201.6%	226.1%	233.4%	199.0%					
Over/Under Seasonal Avg	+69.0%	+152.4	+171.7	+167.2	+188.3	+194.7	+185.3					
10-yr AVG	21.2%	32.1%	34.4%	34.4%	37.8%	38.8%	13.7%	15.1%	15.4%	14.4%	17.3%	20.3%

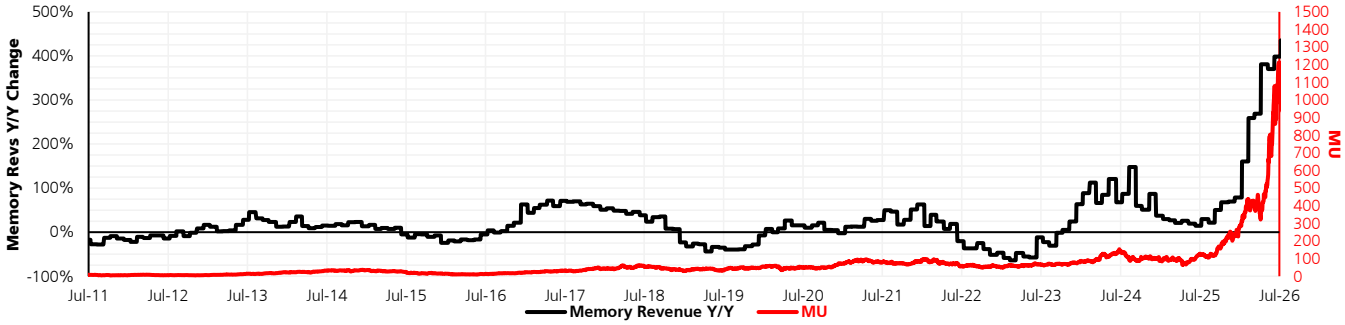
Source: UBS, SIA

Figure 14: Memory Revenue and ASP Change



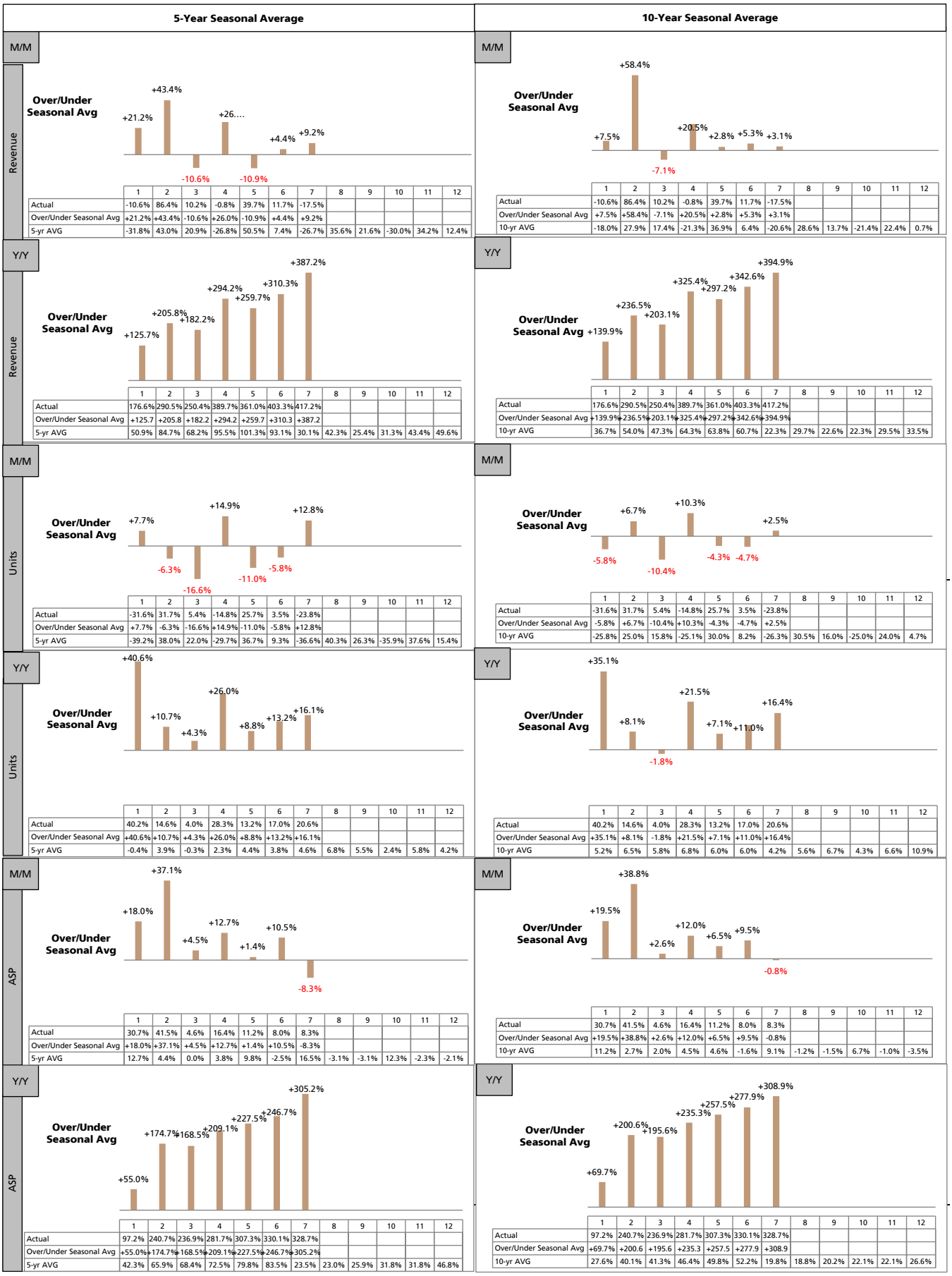
Source: UBS, SIA

Figure 15: Memory Revenue vs. MU Share price



Source: UBS, SIA, FactSet.

Figure 16: DRAM Revenue and Units Change Relative to Seasonality



5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-10.6%	86.4%	10.2%	-0.8%	39.7%	11.7%	-17.5%					
Over/Under Seasonal Avg	+21.2%	+43.4%	-10.6%	+26.0%	-10.9%	+4.4%	+9.2%					
5-yr AVG	-31.8%	43.0%	20.9%	-26.8%	50.5%	7.4%	-26.7%	35.6%	21.6%	-30.0%	34.2%	12.4%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-10.6%	86.4%	10.2%	-0.8%	39.7%	11.7%	-17.5%					
Over/Under Seasonal Avg	+7.5%	+58.4%	-7.1%	+20.5%	+2.8%	+5.3%	+3.1%					
10-yr AVG	-18.0%	27.9%	17.4%	-21.3%	36.9%	6.4%	-20.6%	28.6%	13.7%	-21.4%	22.4%	0.7%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	176.6%	290.5%	250.4%	389.7%	361.0%	403.3%	417.2%					
Over/Under Seasonal Avg	+125.7	+205.8	+182.2	+294.2	+259.7	+310.3	+387.2					
5-yr AVG	50.9%	84.7%	68.2%	95.5%	101.3%	93.1%	30.1%	42.3%	25.4%	31.3%	43.4%	49.6%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	176.6%	290.5%	250.4%	389.7%	361.0%	403.3%	417.2%					
Over/Under Seasonal Avg	+139.9%	+236.5%	+203.1%	+325.4%	+297.2%	+342.6%	+394.9%					
10-yr AVG	36.7%	54.0%	47.3%	64.3%	63.8%	60.7%	22.3%	29.7%	22.6%	22.3%	29.5%	33.5%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-31.6%	31.7%	5.4%	-14.8%	25.7%	3.5%	-23.8%					
Over/Under Seasonal Avg	+7.7%	-6.3%	-16.6%	+14.9%	-11.0%	-5.8%	+12.8%					
5-yr AVG	-39.2%	38.0%	22.0%	-29.7%	36.7%	9.3%	-36.6%	40.3%	26.3%	-35.9%	37.6%	15.4%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-31.6%	31.7%	5.4%	-14.8%	25.7%	3.5%	-23.8%					
Over/Under Seasonal Avg	-5.8%	+6.7%	-10.4%	+10.3%	-4.3%	-4.7%	+2.5%					
10-yr AVG	-25.8%	25.0%	15.8%	-25.1%	30.0%	8.2%	-26.3%	30.5%	16.0%	-25.0%	24.0%	4.7%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	40.2%	14.6%	4.0%	28.3%	13.2%	17.0%	20.6%					
Over/Under Seasonal Avg	+40.6%	+10.7%	+4.3%	+26.0%	+8.8%	+13.2%	+16.1%					
5-yr AVG	-0.4%	3.9%	-0.3%	2.3%	4.4%	3.8%	4.6%	6.8%	5.5%	2.4%	5.8%	4.2%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	40.2%	14.6%	4.0%	28.3%	13.2%	17.0%	20.6%					
Over/Under Seasonal Avg	+35.1%	+8.1%	-1.8%	+21.5%	+7.1%	+11.0%	+16.4%					
10-yr AVG	5.2%	6.5%	5.8%	6.8%	6.0%	6.0%	4.2%	5.6%	6.7%	4.3%	6.6%	10.9%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	30.7%	41.5%	4.6%	16.4%	11.2%	8.0%	8.3%					
Over/Under Seasonal Avg	+18.0%	+37.1%	+4.5%	+12.7%	+1.4%	+10.5%	-8.3%					
5-yr AVG	12.7%	4.4%	0.0%	3.8%	9.8%	-2.5%	16.5%	-3.1%	-3.1%	12.3%	-2.3%	-2.1%

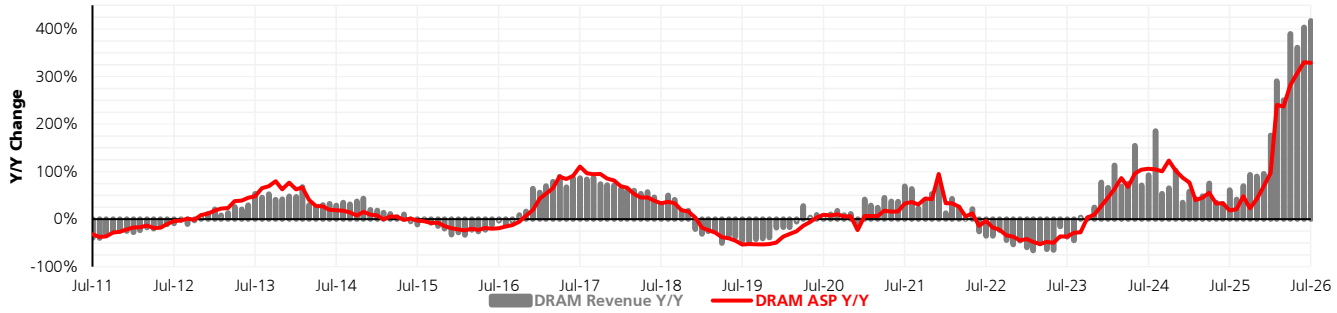
10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	30.7%	41.5%	4.6%	16.4%	11.2%	8.0%	8.3%					
Over/Under Seasonal Avg	+19.5%	+38.8%	+2.6%	+12.0%	+6.5%	+9.5%	-0.8%					
10-yr AVG	11.2%	2.7%	2.0%	4.5%	4.6%	-1.6%	9.1%	-1.2%	-1.5%	6.7%	-1.0%	-3.5%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	97.2%	240.7%	236.9%	281.7%	307.3%	330.1%	328.7%					
Over/Under Seasonal Avg	+55.0%	+174.7%	+168.5%	+209.1%	+227.5%	+246.7%	+305.2%					
5-yr AVG	42.3%	65.9%	68.4%	72.5%	79.8%	83.5%	23.5%	23.0%	25.9%	31.8%	31.8%	46.8%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	97.2%	240.7%	236.9%	281.7%	307.3%	330.1%	328.7%					
Over/Under Seasonal Avg	+69.7%	+200.6	+195.6	+235.3	+257.5	+277.9	+308.9					
10-yr AVG	27.6%	40.1%	41.3%	46.4%	49.8%	52.2%	19.8%	18.8%	20.2%	22.1%	22.1%	26.6%

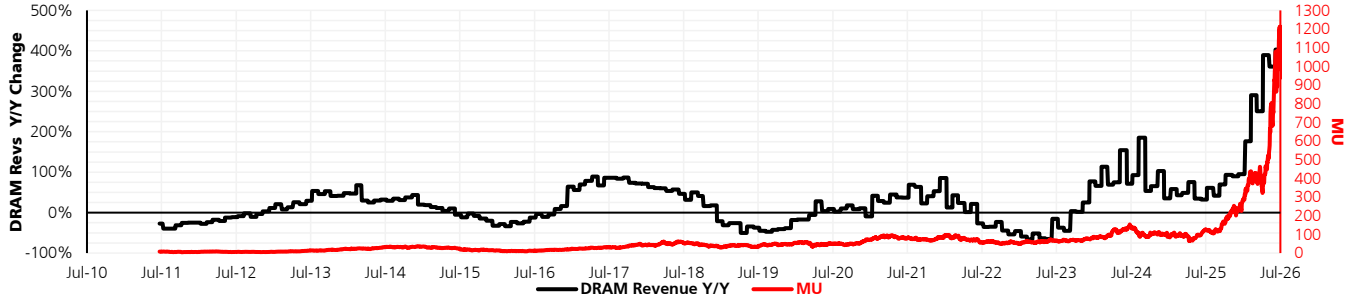
Source: UBS, SIA

Figure 17: DRAM Revenue and ASP Change



Source: UBS, SIA

Figure 18: DRAM Revenue vs. MU stock price



Source: UBS, SIA, FactSet.

Figure 19: NAND Revenue and Units Change Relative to Seasonality



5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	0.7%	53.9%	33.7%	3.9%	42.8%	14.7%	-14.7%					
Over/Under Seasonal Avg	+23.3%	+27.8%	+8.7%	+14.0%	+14.0%	+0.5%	+15.6%					
5-yr AVG	-22.5%	26.1%	25.0%	-10.1%	28.9%	14.2%	-30.3%	31.6%	3.5%	-21.2%	30.6%	2.5%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	0.7%	53.9%	33.7%	3.9%	42.8%	14.7%	-14.7%					
Over/Under Seasonal Avg	+15.8%	+39.0%	+14.8%	+17.6%	+18.9%	+3.2%	+9.3%					
10-yr AVG	-15.1%	14.9%	19.0%	-13.8%	24.0%	11.5%	-24.0%	27.4%	6.3%	-16.3%	18.0%	-0.2%

Y/Y Revenue	1	2	3	4	5	6	7	8	9	10	11	12
Actual	140.6%	212.8%	338.7%	389.0%	406.6%	406.4%	498.6%					
Over/Under Seasonal Avg	+92.3%	+148.3	+264.0	+298.8	+312.9	+316.7	+484.0					
5-yr AVG	48.3%	64.5%	74.7%	90.2%	93.7%	89.7%	14.6%	18.7%	13.6%	12.6%	27.3%	27.5%

Y/Y Revenue	1	2	3	4	5	6	7	8	9	10	11	12
Actual	140.6%	212.8%	338.7%	389.0%	406.6%	406.4%	498.6%					
Over/Under Seasonal Avg	+108.7%	+173.4%	+292.8%	+335.3%	+350.0%	+351.6%	+484.2%					
10-yr AVG	31.9%	39.4%	45.8%	53.7%	56.6%	54.8%	14.4%	17.8%	14.6%	12.2%	19.3%	22.4%

M/M Units	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-23.5%	15.9%	14.9%	-21.4%	21.3%	5.1%	-22.3%					
Over/Under Seasonal Avg	+5.8%	-1.4%	-17.7%	+5.3%	-3.3%	-7.0%	+11.5%					
5-yr AVG	-29.3%	17.3%	32.6%	-26.7%	24.6%	12.1%	-33.8%	31.7%	12.9%	-24.8%	22.1%	6.4%

M/M Units	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-23.5%	15.9%	14.9%	-21.4%	21.3%	5.1%	-22.3%					
Over/Under Seasonal Avg	-3.8%	+2.8%	-6.6%	+1.1%	-0.4%	-3.4%	+1.7%					
10-yr AVG	-19.8%	13.1%	21.5%	-22.4%	21.7%	8.5%	-23.9%	25.7%	7.9%	-18.4%	12.9%	1.9%

Y/Y Units	1	2	3	4	5	6	7	8	9	10	11	12
Actual	5.0%	6.7%	3.1%	4.7%	-7.8%	-13.6%	1.1%					
Over/Under Seasonal Avg	-1.8%	+2.6%	+3.7%	+6.4%	-6.1%	-17.5%	-6.7%					
5-yr AVG	6.8%	4.1%	-0.6%	-1.7%	-1.7%	3.8%	7.8%	6.5%	5.3%	-0.5%	4.8%	3.1%

Y/Y Units	1	2	3	4	5	6	7	8	9	10	11	12
Actual	5.0%	6.7%	3.1%	4.7%	-7.8%	-13.6%	1.1%					
Over/Under Seasonal Avg	-1.7%	+1.9%	-0.0%	+3.4%	-9.7%	-18.6%	-2.9%					
10-yr AVG	6.7%	4.8%	3.2%	1.3%	1.9%	5.0%	4.0%	5.4%	6.4%	1.7%	4.6%	6.5%

M/M ASP	1	2	3	4	5	6	7	8	9	10	11	12
Actual	31.7%	32.8%	16.4%	32.1%	17.7%	9.2%	9.8%					
Over/Under Seasonal Avg	+22.9%	+24.9%	+20.1%	+9.3%	+14.2%	+7.0%	+4.7%					
5-yr AVG	8.9%	7.9%	-3.7%	22.8%	3.5%	2.2%	5.1%	-0.0%	-8.5%	-0.9%	5.2%	-6.3%

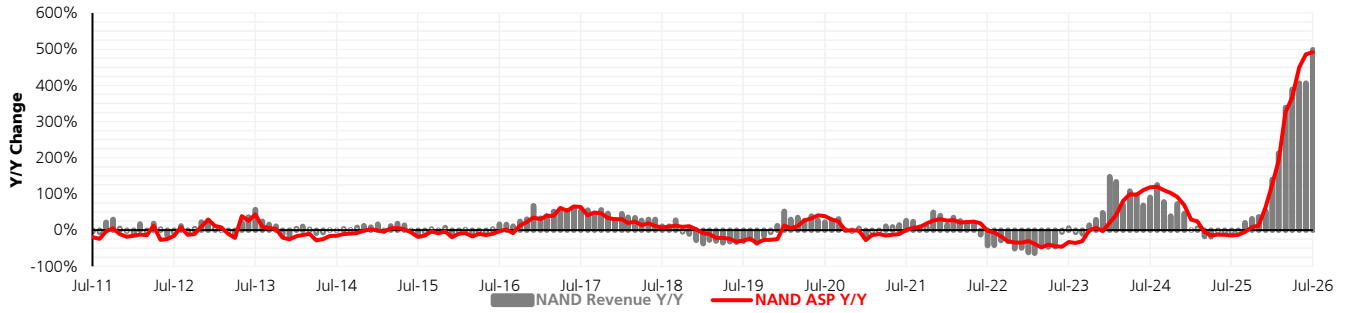
M/M ASP	1	2	3	4	5	6	7	8	9	10	11	12
Actual	31.7%	32.8%	16.4%	32.1%	17.7%	9.2%	9.8%					
Over/Under Seasonal Avg	+25.6%	+31.0%	+17.1%	+20.1%	+16.1%	+5.8%	+9.4%					
10-yr AVG	6.1%	1.8%	-0.7%	12.0%	1.6%	3.4%	0.4%	1.7%	-0.6%	3.5%	4.3%	-1.4%

Y/Y ASP	1	2	3	4	5	6	7	8	9	10	11	12
Actual	129.1%	193.2%	325.4%	367.1%	449.3%	486.2%	492.0%					
Over/Under Seasonal Avg	+94.3%	+143.5%	+250.6%	+280.4%	+346.5%	+374.8%	+478.2%					
5-yr AVG	34.9%	49.7%	74.7%	86.7%	102.8%	111.4%	13.8%	14.2%	13.3%	19.5%	20.8%	25.4%

Y/Y ASP	1	2	3	4	5	6	7	8	9	10	11	12
Actual	129.1%	193.2%	325.4%	367.1%	449.3%	486.2%	492.0%					
Over/Under Seasonal Avg	+107.9	+164.4	+283.9	+317.2	+391.1	+423.0	+477.2					
10-yr AVG	21.2%	28.8%	41.5%	49.9%	58.2%	63.2%	14.8%	12.9%	10.8%	13.8%	14.3%	16.9%

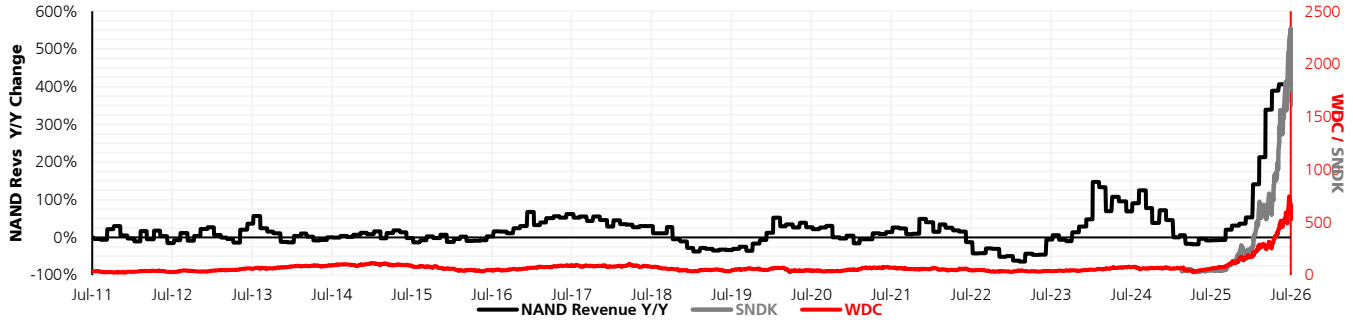
Source: UBS, SIA

Figure 20: NAND Revenue and ASP Change



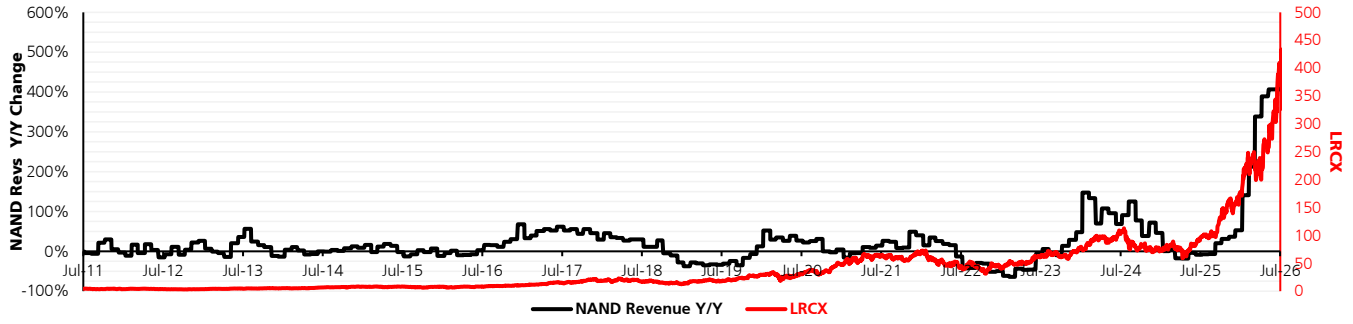
Source: UBS, SIA

Figure 21: NAND Revenue vs. WDC



Source: UBS, SIA, FactSet.

Figure 22: NAND Revenue vs. LRCX



Source: UBS, SIA, FactSet.

Figure 23: Analog Revenue and Units Change Relative to Seasonality



5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-3.1%	-9.6%	17.3%	-4.5%	-6.1%	15.4%	3.4%					
Over/Under Seasonal Avg	+3.4%	-3.0%	+0.1%	+3.5%	-3.7%	+5.3%	+2.7%					
5-yr AVG	-6.6%	-6.6%	17.2%	-8.0%	-2.4%	10.1%	0.7%	-1.9%	10.1%	-3.5%	-4.2%	6.1%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-3.1%	-9.6%	17.3%	-4.5%	-6.1%	15.4%	3.4%					
Over/Under Seasonal Avg	+2.3%	-2.4%	-0.2%	+3.9%	-3.8%	+4.9%	+4.1%					
10-yr AVG	-5.5%	-7.2%	17.5%	-8.4%	-2.3%	10.5%	-0.8%	-0.0%	11.2%	-4.4%	-3.9%	5.7%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	18.5%	12.2%	13.8%	15.0%	11.4%	22.3%	15.9%					
Over/Under Seasonal Avg	+11.8%	+4.6%	+7.2%	+8.9%	+5.6%	+14.4%	+4.5%					
5-yr AVG	6.8%	7.6%	6.6%	6.1%	5.8%	7.9%	11.5%	11.1%	10.4%	8.7%	7.8%	8.5%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	18.5%	12.2%	13.8%	15.0%	11.4%	22.3%	15.9%					
Over/Under Seasonal Avg	+9.5%	+3.5%	+6.0%	+5.5%	+2.7%	+14.0%	+7.6%					
10-yr AVG	9.0%	8.7%	7.8%	9.5%	8.7%	8.3%	8.3%	8.1%	7.0%	8.5%	8.5%	8.1%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-3.4%	-10.1%	31.9%	-9.6%	-2.9%	18.2%	-6.4%					
Over/Under Seasonal Avg	+11.2%	-3.4%	+5.8%	+1.4%	-2.7%	-1.1%	+3.1%					
5-yr AVG	-14.6%	-6.7%	26.2%	-10.9%	-0.2%	19.3%	-9.5%	-4.0%	21.4%	-16.2%	-3.2%	19.4%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-3.4%	-10.1%	31.9%	-9.6%	-2.9%	18.2%	-6.4%					
Over/Under Seasonal Avg	+9.8%	-2.7%	+6.0%	+1.7%	-3.4%	+2.4%	-0.1%					
10-yr AVG	-13.3%	-7.5%	25.9%	-11.3%	0.5%	15.8%	-6.3%	-0.1%	18.0%	-13.7%	-2.0%	14.7%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	20.7%	9.1%	23.9%	22.1%	22.2%	19.8%	22.3%					
Over/Under Seasonal Avg	+16.6%	+3.5%	+18.0%	+18.1%	+18.1%	+13.7%	+16.8%					
5-yr AVG	4.1%	5.7%	5.9%	4.0%	4.0%	6.1%	5.5%	4.8%	7.0%	4.1%	3.4%	4.8%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	20.7%	9.1%	23.9%	22.1%	22.2%	19.8%	22.3%					
Over/Under Seasonal Avg	+12.4%	+0.2%	+16.4%	+12.5%	+13.4%	+11.9%	+15.1%					
10-yr AVG	8.4%	8.9%	7.5%	9.5%	8.8%	7.9%	7.2%	6.8%	6.6%	7.3%	7.1%	6.9%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	0.5%	0.5%	-11.1%	5.4%	-3.2%	-2.5%	10.5%					
Over/Under Seasonal Avg	-10.8%	+0.4%	-4.7%	+2.1%	-1.1%	+5.0%	-0.8%					
5-yr AVG	11.3%	0.1%	-6.3%	3.2%	-2.2%	-7.5%	11.3%	2.2%	-8.3%	16.4%	-1.0%	-9.3%

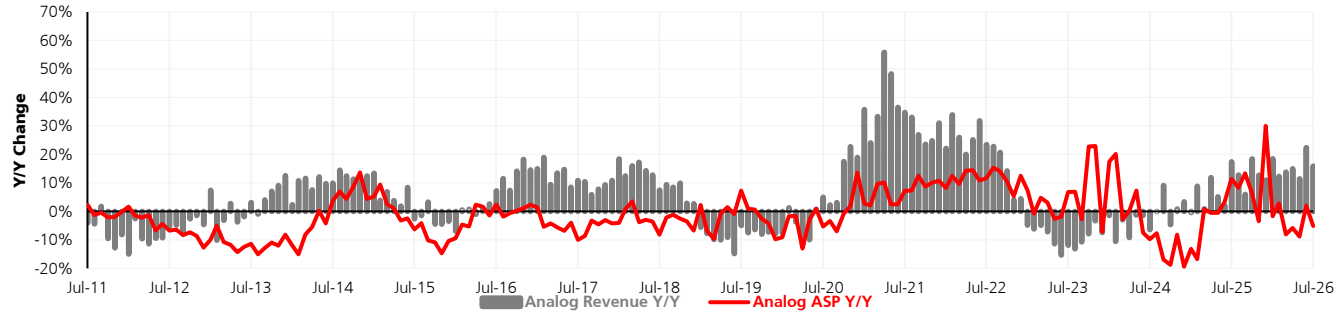
10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	0.5%	0.5%	-11.1%	5.4%	-3.2%	-2.5%	10.5%					
Over/Under Seasonal Avg	-9.6%	+0.1%	-4.8%	+2.0%	-0.7%	+2.0%	+4.4%					
10-yr AVG	10.1%	0.4%	-6.3%	3.4%	-2.6%	-4.5%	6.2%	0.2%	-5.2%	11.6%	-1.8%	-6.6%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-1.7%	2.8%	-8.1%	-5.8%	-8.8%	2.0%	-5.1%					
Over/Under Seasonal Avg	-5.4%	-0.7%	-8.9%	-8.1%	-10.8%	+0.7%	-10.6%					
5-yr AVG	3.6%	3.6%	0.9%	2.3%	1.9%	1.4%	5.5%	6.0%	4.0%	5.9%	5.3%	5.3%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-1.7%	2.8%	-8.1%	-5.8%	-8.8%	2.0%	-5.1%					
Over/Under Seasonal Avg	-2.9%	+2.2%	-8.3%	-5.6%	-8.9%	+1.9%	-6.5%					
10-yr AVG	1.1%	0.7%	0.2%	-0.2%	0.1%	0.2%	1.4%	1.5%	0.9%	1.9%	1.9%	2.2%

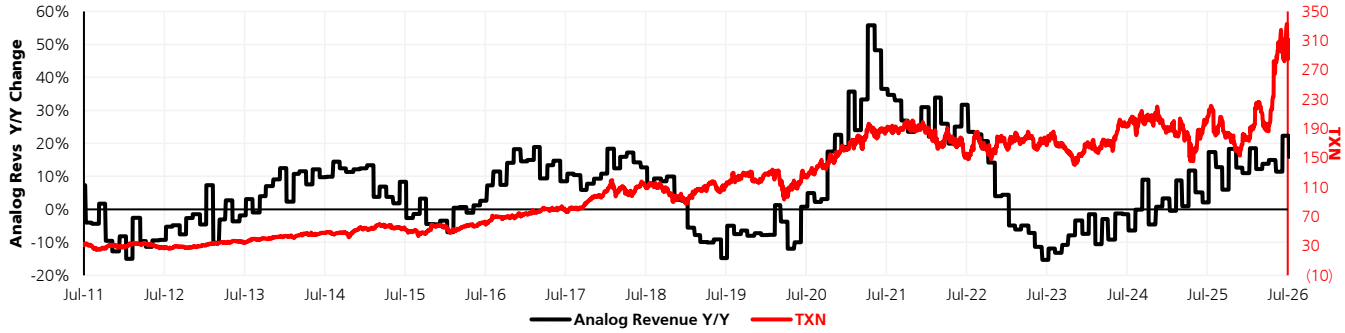
Source: UBS, SIA

Figure 24: Analog Revenue and ASP Change



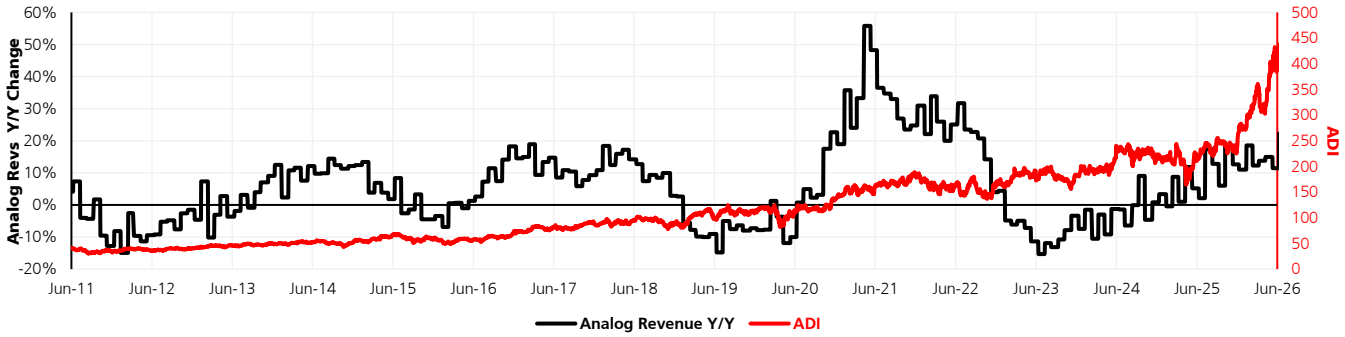
Source: UBS, SIA

Figure 25: Analog Revenue vs. TXN



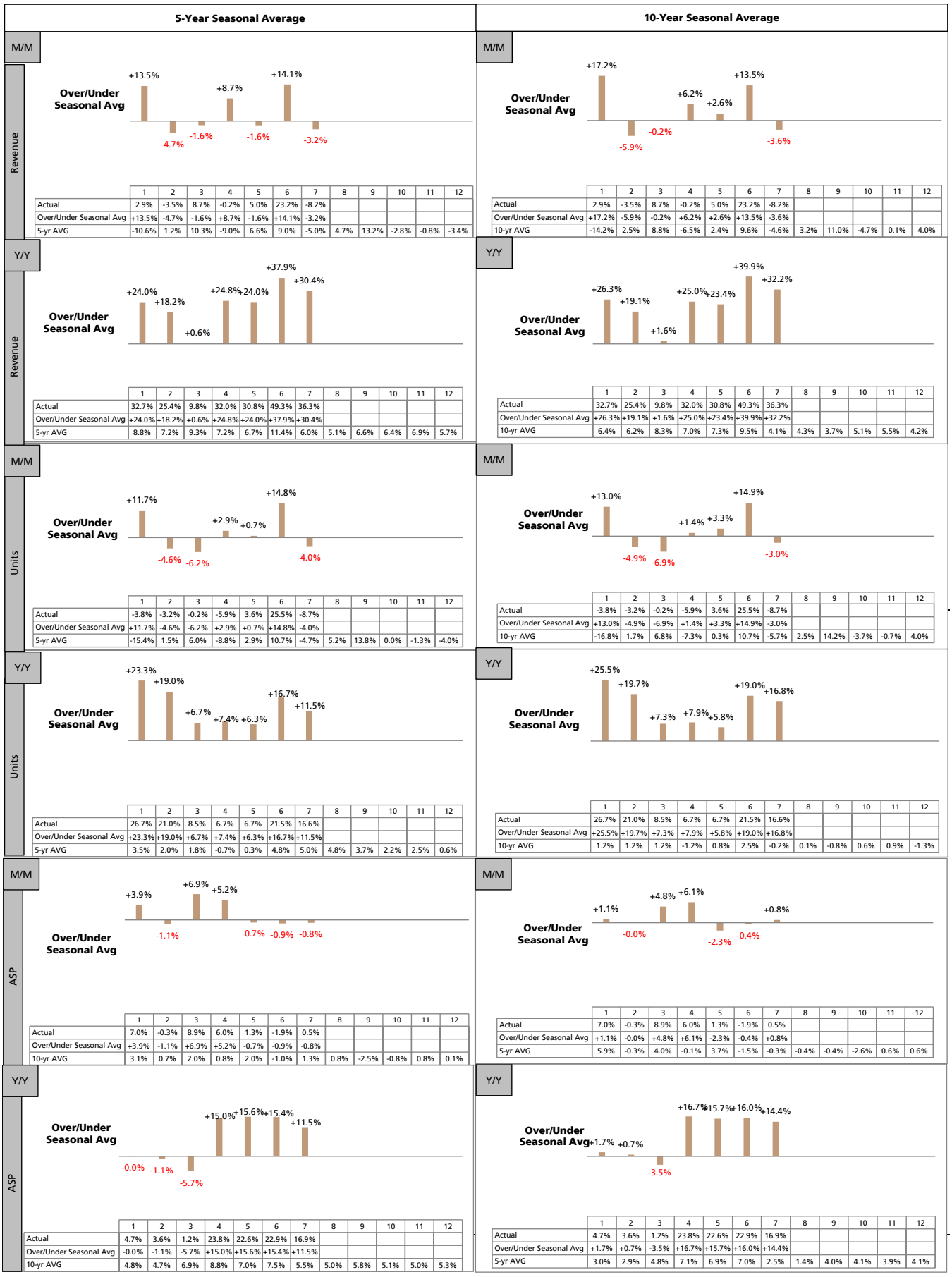
Source: UBS, SIA, FactSet.

Figure 26: Analog Revenue vs. ADI



Source: UBS, SIA, FactSet.

Figure 27: MPU Revenue and Units Change Relative to Seasonality



5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	2.9%	-3.5%	8.7%	-0.2%	5.0%	23.2%	-8.2%					
Over/Under Seasonal Avg	+13.5%	-4.7%	-1.6%	+8.7%	-1.6%	+14.1%	-3.2%					
5-yr AVG	-10.6%	1.2%	10.3%	-9.0%	6.6%	9.0%	-5.0%	4.7%	13.2%	-2.8%	-0.8%	-3.4%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	2.9%	-3.5%	8.7%	-0.2%	5.0%	23.2%	-8.2%					
Over/Under Seasonal Avg	+17.2%	-5.9%	-0.2%	+6.2%	+2.6%	+13.5%	-3.6%					
10-yr AVG	-14.2%	2.5%	8.8%	-6.5%	2.4%	9.6%	-4.6%	3.2%	11.0%	-4.7%	0.1%	4.0%

Revenue Y/Y	1	2	3	4	5	6	7	8	9	10	11	12
Actual	32.7%	25.4%	9.8%	32.0%	30.8%	49.3%	36.3%					
Over/Under Seasonal Avg	+24.0%	+18.2%	+0.6%	+24.8%	+24.0%	+37.9%	+30.4%					
5-yr AVG	8.8%	7.2%	9.3%	7.2%	6.7%	11.4%	6.0%	5.1%	6.6%	6.4%	6.9%	5.7%

Revenue Y/Y	1	2	3	4	5	6	7	8	9	10	11	12
Actual	32.7%	25.4%	9.8%	32.0%	30.8%	49.3%	36.3%					
Over/Under Seasonal Avg	+26.3%	+19.1%	+1.6%	+25.0%	+23.4%	+39.9%	+32.2%					
10-yr AVG	6.4%	6.2%	8.3%	7.0%	7.3%	9.5%	4.1%	4.3%	3.7%	5.1%	5.5%	4.2%

Units M/M	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-3.8%	-3.2%	-0.2%	-5.9%	3.6%	25.5%	-8.7%					
Over/Under Seasonal Avg	+11.7%	-4.6%	-6.2%	+2.9%	+0.7%	+14.8%	-4.0%					
5-yr AVG	-15.4%	1.5%	6.0%	-8.8%	2.9%	10.7%	-4.7%	5.2%	13.8%	0.0%	-1.3%	-4.0%

Units M/M	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-3.8%	-3.2%	-0.2%	-5.9%	3.6%	25.5%	-8.7%					
Over/Under Seasonal Avg	+13.0%	-4.9%	-6.9%	+1.4%	+3.3%	+14.9%	-3.0%					
10-yr AVG	-16.8%	1.7%	6.8%	-7.3%	0.3%	10.7%	-5.7%	2.5%	14.2%	-3.7%	-0.7%	4.0%

Units Y/Y	1	2	3	4	5	6	7	8	9	10	11	12
Actual	26.7%	21.0%	8.5%	6.7%	6.7%	21.5%	16.6%					
Over/Under Seasonal Avg	+23.3%	+19.0%	+6.7%	+7.4%	+6.3%	+16.7%	+11.5%					
5-yr AVG	3.5%	2.0%	1.8%	-0.7%	0.3%	4.8%	5.0%	4.8%	3.7%	2.2%	2.5%	0.6%

Units Y/Y	1	2	3	4	5	6	7	8	9	10	11	12
Actual	26.7%	21.0%	8.5%	6.7%	6.7%	21.5%	16.6%					
Over/Under Seasonal Avg	+25.5%	+19.7%	+7.3%	+7.9%	+5.8%	+19.0%	+16.8%					
10-yr AVG	1.2%	1.2%	1.2%	-1.2%	0.8%	2.5%	-0.2%	0.1%	-0.8%	0.6%	0.9%	-1.3%

ASP M/M	1	2	3	4	5	6	7	8	9	10	11	12
Actual	7.0%	-0.3%	8.9%	6.0%	1.3%	-1.9%	0.5%					
Over/Under Seasonal Avg	+3.9%	-1.1%	+6.9%	+5.2%	-0.7%	-0.9%	-0.8%					
10-yr AVG	3.1%	0.7%	2.0%	0.8%	2.0%	-1.0%	1.3%	0.8%	-2.5%	-0.8%	0.8%	0.1%

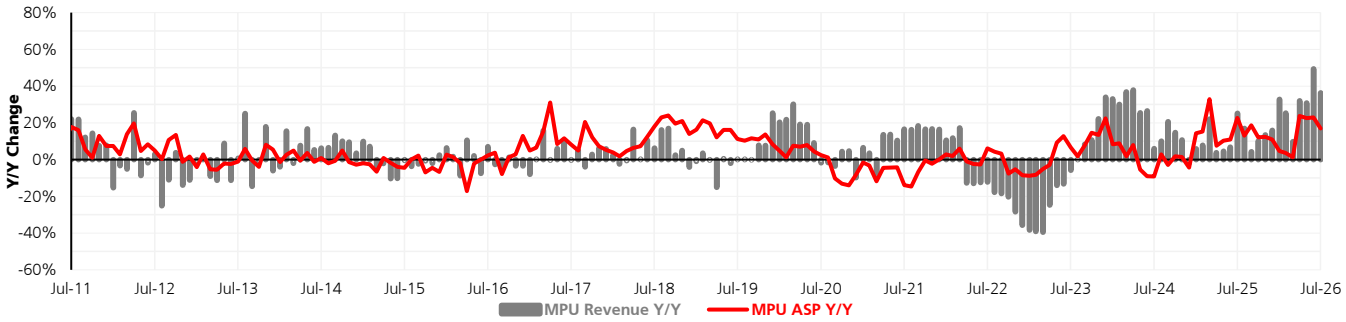
ASP M/M	1	2	3	4	5	6	7	8	9	10	11	12
Actual	7.0%	-0.3%	8.9%	6.0%	1.3%	-1.9%	0.5%					
Over/Under Seasonal Avg	+1.1%	-0.0%	+4.8%	+6.1%	-2.3%	-0.4%	+0.8%					
5-yr AVG	5.9%	-0.3%	4.0%	-0.1%	3.7%	-1.5%	-0.3%	-0.4%	-0.4%	-2.6%	0.6%	0.6%

ASP Y/Y	1	2	3	4	5	6	7	8	9	10	11	12
Actual	4.7%	3.6%	1.2%	23.8%	22.6%	22.9%	16.9%					
Over/Under Seasonal Avg	-0.0%	-1.1%	-5.7%	+15.0%	+15.6%	+15.4%	+11.5%					
10-yr AVG	4.8%	4.7%	6.9%	8.8%	7.0%	7.5%	5.5%	5.0%	5.8%	5.1%	5.0%	5.3%

ASP Y/Y	1	2	3	4	5	6	7	8	9	10	11	12
Actual	4.7%	3.6%	1.2%	23.8%	22.6%	22.9%	16.9%					
Over/Under Seasonal Avg	+1.7%	+0.7%	-3.5%	+16.7%	+15.7%	+16.0%	+14.4%					
5-yr AVG	3.0%	2.9%	4.8%	7.1%	6.9%	7.0%	2.5%	1.4%	4.0%	4.1%	3.9%	4.1%

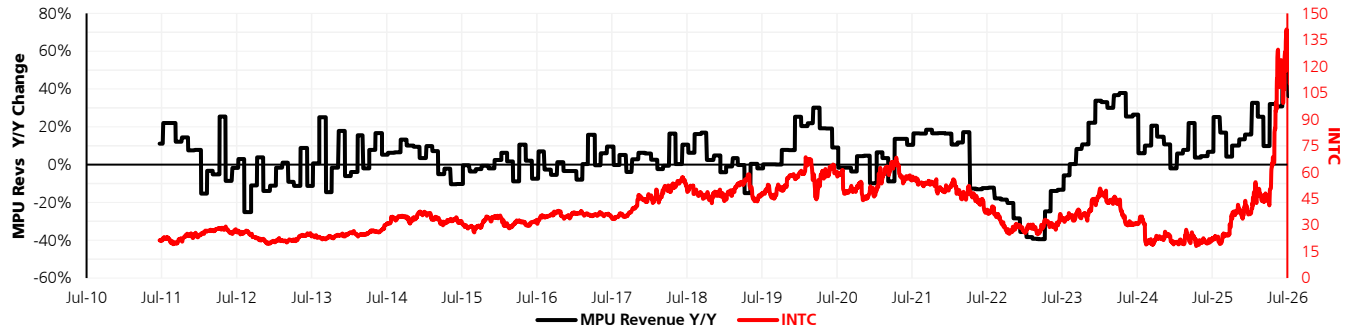
Source: UBS, SIA

Figure 28: MPU Revenue and ASP Change



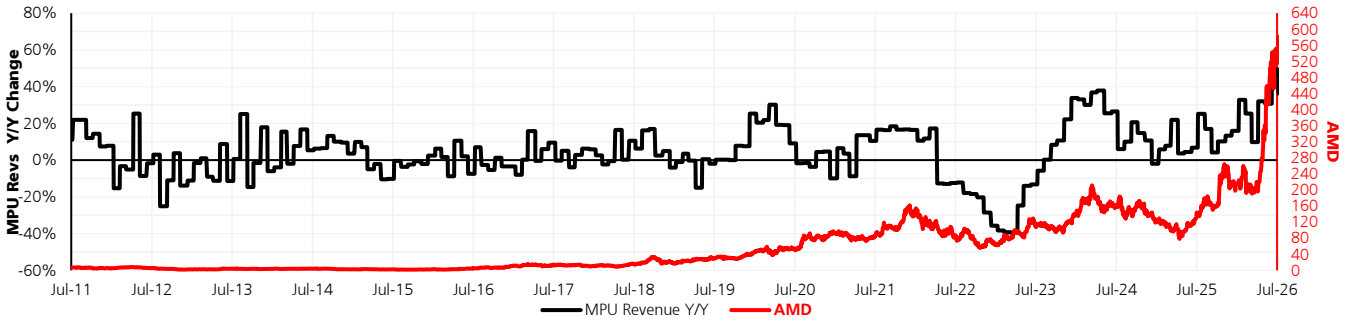
Source: UBS, SIA, FactSet.

Figure 29: MPU Revenue vs. INTC



Source: UBS research, SIA, FactSet.

Figure 30: MPU Revenue vs. AMD



Source: UBS, SIA, FactSet.

Figure 31: Q/Q Revenue Change

	Revenue Q/Q																											
	Total Semis				IC ex-Memory				Analog				MCU				Logic				MPU				Memory			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2003	-1.8%	+3.2%	+13.8%	+11.0%	-2.5%	+3.2%	+12.1%	+8.9%	-7.2%	+7.7%	+5.4%	+10.5%	+1.2%	+0.2%	+8.0%	+3.3%	-2.2%	+9.1%	+9.0%	+9.6%	-1.3%	-4.5%	+23.7%	+7.9%	-10.1%	+1.3%	+27.3%	+17.3%
2004	+1.6%	+9.5%	+3.8%	-0.8%	+0.2%	+7.3%	+4.7%	-0.0%	+2.9%	+1.0%	+4.0%	-5.6%	+6.1%	+10.8%	+3.2%	+1.9%	+1.4%	+18.2%	+5.8%	-3.9%	-6.0%	-4.8%	+6.5%	+11.1%	+2.5%	+16.2%	+0.9%	-0.3%
2005	-0.0%	-2.2%	+8.9%	+2.0%	+1.7%	-1.2%	+8.4%	+1.9%	-6.5%	+6.7%	+9.6%	+3.6%	+0.4%	-10.2%	+1.4%	-6.0%	+10.6%	-3.6%	+8.3%	+2.9%	-1.4%	-0.2%	+10.5%	+1.8%	-2.0%	-7.5%	+12.6%	+3.8%
2006	-1.3%	-0.3%	+8.7%	+1.9%	-1.7%	-3.7%	+7.3%	+2.1%	+2.3%	+4.2%	+2.6%	-2.8%	+5.4%	+7.1%	+0.7%	-3.6%	-4.1%	-3.1%	+10.4%	+1.6%	-4.9%	-18.0%	+11.7%	+10.0%	-1.2%	+4.5%	+15.3%	+6.0%
2007	-6.4%	-1.9%	+13.2%	-1.4%	-6.9%	+1.3%	+14.6%	+2.4%	-7.1%	+2.7%	+8.6%	-0.9%	+6.0%	+4.6%	+2.9%	+2.9%	-3.6%	-0.1%	+19.2%	+2.4%	-12.9%	+0.1%	+18.6%	+6.3%	-7.4%	-10.2%	+14.3%	-13.1%
2008	-6.0%	+3.0%	+6.5%	-24.2%	-6.7%	+2.4%	+9.3%	-24.2%	-8.0%	+8.5%	+6.1%	-26.2%	+1.0%	-2.3%	+0.7%	-19.7%	-4.5%	+3.3%	+14.1%	-21.5%	-10.2%	-3.3%	+6.8%	-28.6%	-8.2%	+3.5%	-2.3%	-32.1%
2009	-16.3%	+20.0%	+19.9%	+7.0%	-15.4%	+17.8%	+17.7%	+2.2%	-18.7%	+28.3%	+14.0%	+7.0%	-30.2%	+20.0%	+26.9%	+7.9%	-17.3%	+15.0%	+14.9%	+0.4%	+0.4%	+13.6%	+25.1%	-1.4%	-10.1%	+26.4%	+27.2%	+22.4%
2010	+3.7%	+6.6%	+5.6%	-4.0%	+1.9%	+4.6%	+6.9%	-0.9%	+5.3%	+6.0%	+4.8%	-2.3%	+1.3%	+5.6%	+10.4%	+1.5%	+0.6%	+3.5%	+9.1%	-2.3%	+3.4%	+4.1%	+3.6%	+2.6%	+8.8%	+12.4%	+0.5%	-13.1%
2011	+0.6%	-1.7%	+3.7%	-7.7%	+0.3%	-3.3%	+8.4%	-8.6%	-0.2%	+3.2%	-2.7%	-10.3%	-2.8%	-2.2%	+4.8%	-10.1%	-1.2%	-3.8%	+11.0%	-10.5%	+6.2%	-8.2%	+17.4%	-4.4%	+1.6%	-2.2%	-10.3%	-3.3%
2012	-2.3%	+4.7%	+1.8%	-0.3%	-4.0%	+5.6%	+3.4%	-3.2%	+0.7%	+2.4%	+1.7%	-7.5%	+2.4%	+0.5%	+5.8%	-10.8%	-1.7%	+9.8%	+5.4%	-1.1%	-10.9%	+3.3%	+0.5%	-0.2%	-0.0%	+4.0%	-5.9%	+10.4%
2013	-5.1%	+6.0%	+7.9%	-0.8%	-4.8%	+2.5%	+8.5%	+0.8%	+1.6%	+3.6%	+4.9%	-0.8%	-0.0%	+5.9%	+5.7%	-4.8%	-6.7%	+2.1%	+11.8%	+2.6%	-7.4%	+1.2%	+7.4%	+1.3%	-2.7%	+15.0%	+8.5%	-4.6%
2014	-1.9%	+4.9%	+6.5%	-0.4%	-4.9%	+6.0%	+4.5%	+0.5%	+0.4%	+5.1%	+7.2%	-1.0%	+2.4%	+3.5%	+1.7%	-7.5%	-7.4%	+5.7%	+2.8%	+3.1%	-7.1%	+8.3%	+6.7%	-0.1%	+4.1%	+4.2%	+12.3%	-1.9%
2015	-4.9%	+1.0%	+1.5%	-2.8%	-5.9%	+0.9%	+2.2%	-0.1%	-3.1%	+1.9%	+2.2%	-5.0%	+4.9%	+1.9%	+1.6%	-6.7%	-6.7%	+2.3%	-2.6%	+2.6%	-10.5%	-3.5%	+13.4%	+2.2%	-3.4%	-2.4%	+0.4%	-9.3%
2016	-5.5%	+1.2%	+11.6%	+5.3%	-5.7%	+0.6%	+10.1%	+2.2%	-0.9%	+5.0%	+9.9%	+1.1%	+6.1%	+4.6%	+8.8%	-17.7%	-7.8%	-1.1%	+10.1%	+7.6%	-10.9%	-1.9%	+11.2%	+0.9%	-8.5%	+4.0%	+17.9%	+16.8%
2017	-0.4%	+5.3%	+10.5%	+5.7%	-3.8%	+2.7%	+7.3%	+3.9%	-2.2%	+3.1%	+6.8%	+1.5%	+5.2%	+3.7%	+4.5%	+1.9%	-4.7%	+3.1%	+8.6%	+4.9%	-7.1%	+0.7%	+6.0%	+5.9%	+7.4%	+13.0%	+18.0%	+10.2%
2018	-2.3%	+6.0%	+5.9%	-8.2%	-4.9%	+5.1%	+3.5%	-1.6%	+3.4%	+2.2%	+1.1%	-1.6%	-0.1%	+4.6%	-5.5%	-4.8%	-7.1%	+4.9%	+3.9%	+0.9%	-11.7%	+10.1%	+9.9%	-5.6%	+2.3%	+6.7%	+9.3%	-18.8%
2019	-14.7%	+0.7%	+8.9%	+0.9%	-11.7%	+2.0%	+10.4%	+1.4%	-9.3%	-1.8%	+6.9%	-3.0%	-8.1%	+5.9%	+4.9%	-2.3%	-13.6%	+3.2%	+10.9%	+1.7%	-11.8%	+3.0%	+16.8%	+7.3%	-24.6%	-6.2%	+5.8%	+1.9%
2020	-3.5%	-1.1%	+9.8%	+4.7%	-5.1%	-2.8%	+10.4%	+12.7%	-5.2%	-5.3%	+18.8%	+12.2%	-9.0%	-5.9%	+15.7%	+9.3%	-5.3%	-0.1%	+11.2%	+14.8%	-3.7%	-4.3%	-1.2%	+8.9%	+3.9%	+5.7%	+3.9%	-10.2%
2021	+3.8%	+9.1%	+8.1%	+4.9%	-0.0%	+6.7%	+7.6%	+9.0%	+3.9%	+5.7%	+6.7%	+7.9%	+1.4%	+4.6%	+8.4%	+10.1%	-1.1%	+7.3%	+9.9%	+9.6%	-2.9%	+7.8%	+2.8%	+8.4%	+14.0%	+20.0%	+10.8%	-2.7%
2022	-0.8%	-0.8%	-6.3%	-7.3%	+0.5%	+0.1%	-1.4%	-3.8%	+4.4%	+4.6%	+3.8%	-5.1%	+8.4%	+4.9%	-0.7%	+4.0%	+0.9%	+3.0%	-4.0%	-3.3%	-5.7%	-16.9%	-1.4%	-7.2%	-2.4%	-3.9%	-26.3%	-21.7%
2023	-9.4%	+6.1%	+6.3%	+8.5%	-8.4%	+5.4%	+6.6%	+5.9%	-8.0%	-2.3%	+3.3%	+0.9%	+8.8%	+0.9%	+1.8%	-11.8%	-6.1%	+8.1%	+5.7%	+9.6%	-19.8%	+12.7%	+20.4%	+11.7%	-21.1%	+24.0%	+7.5%	+25.0%
2024	-7.0%	+6.8%	+11.2%	+3.1%	-11.7%	+1.9%	+11.0%	+6.0%	-6.6%	-1.4%	+8.6%	-0.2%	-7.6%	-6.4%	+3.7%	-8.3%	-3.9%	+2.0%	+13.1%	+8.9%	-12.1%	+9.5%	+4.8%	+6.8%	+11.3%	+25.7%	+10.3%	+1.5%
2025	-6.3%	+8.9%	+17.5%	+14.7%	-3.9%	+5.1%	+15.3%	+9.9%	-3.8%	+1.9%	+14.2%	+1.8%	-6.0%	+7.6%	+6.9%	-1.6%	+7.8%	+5.5%	+13.8%	+12.5%	-8.4%	+2.5%	+14.0%	+5.6%	-11.0%	+19.4%	+24.4%	+30.4%
2026	+26.4%	+40.3%			+1.9%	+12.2%			-3.0%	+3.2%			+3.3%	+8.6%			+3.7%	+12.2%			-1.4%	+16.1%			+73.6%	+71.7%		
10-yr Average	-1.4%	+8.1%	+8.3%	+3.2%	-4.7%	+3.8%	+8.1%	+4.6%	-2.7%	+1.0%	+8.0%	+1.5%	-0.4%	+2.9%	+4.9%	-2.1%	-2.9%	+3.6%	+8.3%	+6.7%	-8.5%	+4.1%	+8.3%	+4.3%	+5.4%	+17.6%	+8.2%	+3.3%
5-yr Average	+0.6%	+12.2%	+7.4%	+4.8%	-4.3%	+4.9%	+7.8%	+5.4%	-3.4%	+1.2%	+7.3%	+1.1%	+1.4%	+3.1%	+4.0%	-1.5%	+0.5%	+5.2%	+7.7%	+7.5%	-9.5%	+4.8%	+8.1%	+5.1%	+10.1%	+27.4%	+5.3%	+6.5%
LT Average	-2.5%	+5.6%	+8.1%	+0.5%	-4.2%	+3.4%	+8.2%	+1.2%	-2.7%	+4.0%	+6.5%	-1.1%	+0.0%	+3.3%	+5.3%	-3.2%	-3.3%	+4.1%	+8.8%	+2.3%	-6.6%	+1.1%	+10.2%	+2.2%	+0.7%	+10.2%	+7.9%	+0.6%
Median	-2.3%	+4.8%	+8.1%	+0.9%	-4.4%	+2.6%	+8.4%	+1.9%	-2.6%	+3.2%	+6.1%	-0.9%	+1.4%	+4.6%	+4.5%	-3.6%	-4.0%	+3.2%	+9.9%	+2.6%	-7.1%	+1.0%	+9.9%	+2.6%	-1.6%	+5.1%	+9.3%	-0.3%

Source: UBS, SIA

Figure 32: Q/Q Units Change

	Units Q/Q																											
	Total Semis				IC ex-Memory				Analog				MCU				Logic				MPU				Memory			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2003	-0.5%	+6.0%	+4.4%	+7.1%	-0.9%	+7.6%	+4.7%	+10.2%	-2.5%	+8.9%	+3.1%	+10.3%	+2.7%	-0.7%	+8.7%	-1.3%	+0.4%	+7.3%	+6.6%	+12.3%	-13.2%	+16.1%	+9.6%	+3.2%	-2.9%	+2.4%	+11.2%	+8.5%
2004	+2.1%	+11.7%	-0.6%	-7.8%	+1.5%	+5.5%	-2.1%	-6.2%	+2.4%	+2.5%	-3.3%	-8.2%	+10.9%	+20.8%	+2.6%	+4.1%	-1.7%	+7.9%	-1.0%	-5.5%	-20.6%	-6.9%	+14.4%	+1.7%	+4.2%	+12.4%	+1.9%	-0.9%
2005	-1.1%	+5.9%	+9.4%	+3.0%	+2.5%	+6.9%	+13.1%	+4.2%	+0.6%	+12.0%	+14.4%	+5.0%	-1.3%	-10.7%	+8.6%	-2.9%	+7.0%	+3.3%	+12.0%	+4.1%	+1.5%	-1.0%	+10.6%	+3.7%	-0.2%	+4.1%	+12.9%	-1.9%
2006	+0.6%	+5.2%	+3.7%	-4.6%	+2.1%	+3.3%	+5.5%	-3.6%	+2.0%	+3.6%	+5.0%	-3.3%	+11.5%	+8.4%	+5.1%	-2.8%	+0.6%	+1.5%	+6.4%	-4.7%	-3.6%	-5.9%	+17.4%	+8.4%	+2.2%	+5.5%	+6.1%	+4.2%
2007	+1.0%	+9.7%	+9.2%	-3.9%	-1.8%	+4.6%	+8.4%	-0.0%	-1.0%	+2.2%	+9.2%	+1.2%	+6.1%	+9.4%	+3.4%	-0.4%	-4.9%	+8.0%	+7.6%	-2.0%	-13.1%	+7.2%	+20.7%	+0.2%	+6.8%	+13.9%	+6.8%	+3.1%
2008	-4.7%	+2.7%	+4.3%	-23.3%	-5.9%	+7.4%	+7.2%	-22.4%	-8.8%	+10.5%	+8.2%	-24.1%	+2.8%	+3.2%	+8.7%	-18.3%	-2.0%	+3.3%	+4.7%	-20.1%	-9.4%	+0.5%	+13.9%	-15.7%	-0.8%	+1.2%	+5.2%	-13.8%
2009	-17.6%	+31.6%	+17.7%	+3.2%	-22.2%	+28.4%	+16.9%	+3.6%	-23.5%	+34.9%	+17.0%	+2.9%	-29.4%	+30.7%	+20.4%	+9.2%	-18.1%	+17.2%	+15.7%	+3.4%	-5.3%	+7.3%	+19.2%	+0.6%	-10.0%	+22.3%	+15.1%	+11.7%
2010	+0.8%	+8.5%	+1.9%	-5.4%	+4.1%	+9.4%	+3.4%	-4.8%	+4.2%	+10.7%	+3.2%	-4.4%	+7.1%	+6.4%	+8.2%	-3.6%	+3.6%	+7.7%	+2.2%	-5.9%	-3.3%	+6.1%	+7.6%	-5.2%	-2.4%	+6.4%	+0.0%	-3.0%
2011	+1.4%	+4.2%	-1.2%	-10.5%	+0.9%	+3.0%	-1.1%	-11.1%	-0.2%	+5.0%	-2.5%	-10.8%	+5.6%	+0.0%	+1.4%	-16.1%	+2.3%	+0.8%	+0.7%	-10.2%	+0.6%	-7.1%	+18.8%	-8.0%	+6.9%	-3.4%	-1.0%	-5.3%
2012	+5.6%	+6.8%	+1.2%	-4.8%	+2.0%	+6.9%	+4.7%	-6.2%	+0.2%	+7.8%	+5.2%	-5.5%	+28.1%	+4.8%	+6.6%	-15.1%	-1.5%	+5.9%	+2.7%	-3.9%	-16.8%	+2.8%	+5.7%	-2.0%	+1.7%	+5.6%	-2.8%	+0.2%
2013	-1.7%	+9.0%	+4.3%	-2.7%	-0.5%	+13.0%	+9.3%	-3.7%	+0.1%	+14.1%	+9.0%	-1.7%	-3.4%	+5.6%	+7.8%	-11.6%	-0.6%	+13.6%	+10.8%	-5.4%	-7.4%	+1.4%	+7.7%	-2.2%	-4.7%	+2.7%	+2.5%	-3.9%
2014	-1.2%	+7.9%	+4.9%	-3.3%	-2.2%	+5.8%	+3.6%	-2.9%	+0.1%	+5.8%	+2.8%	-5.3%	+9.6%	+13.1%	+4.9%	+4.6%	-10.8%	+3.0%	+5.3%	+0.0%	-6.4%	+10.5%	+8.4%	-4.3%	+1.3%	+10.0%	+7.1%	-3.1%
2015	-1.6%	+4.1%	+0.8%	-3.1%	-1.2%	+7.0%	+4.3%	-3.9%	-0.4%	+10.0%	+3.9%	-4.4%	+8.8%	-2.1%	+0.2%	-2.2%	-7.5%	+4.3%	+7.3%	-3.4%	-6.3%	-3.6%	+13.7%	+3.6%	-4.5%	+4.2%	+0.0%	-4.8%
2016	-0.6%	+3.0%	+8.2%	+0.8%	-4.2%	+5.4%	+12.2%	+0.4%	-4.1%	+5.3%	+12.4%	+0.5%	-6.4%	+2.9%	+8.7%	-2.4%	-3.6%	+6.7%	+13.2%	+1.4%	-13.1%	+6.2%	+5.2%	-4.4%	+1.1%	+9.0%	+10.6%	+0.4%
2017	+1.4%	+4.8%	+6.0%	-2.9%	-0.8%	+6.3%	+10.1%	-1.3%	-1.5%	+6.4%	+11.1%	-2.2%	+1.8%	+13.7%	+6.6%	+2.7%	+0.2%	+3.2%	+9.2%	-0.7%	-11.9%	+1.4%	+5.0%	+3.6%	-7.2%	+0.4%	+7.9%	-3.7%
2018	-0.1%	+6.6%	+4.7%	-7.0%	-0.3%	+9.1%	+3.2%	-6.8%	-0.1%	+9.3%	+5.6%	-4.6%	-1.2%	+10.7%	-3.2%	-16.5%	-0.4%	+8.0%	-0.1%	-8.7%	-12.5%	+5.4%	-2.7%	-4.7%	-7.3%	+4.0%	+6.8%	-11.4%
2019	-7.4%	-1.8%	+7.3%	-1.6%	-10.7%	+1.2%	+8.8%	-0.4%	-11.8%	-0.3%	+8.7%	+2.3%	-3.6%	+12.0%	+0.5%	-7.5%	-10.6%	+0.8%	+13.1%	-4.6%	-13.4%	+2.2%	+6.9%	+8.7%	-8.2%	+10.0%	+16.8%	-1.0%
2020	-5.6%	-2.4%	+14.0%	+5.2%	-7.1%	-0.7%	+17.2%	+7.9%	-9.3%	-2.7%	+21.0%	+6.9%	-2.7%	+4.2%	+10.8%	+6.7%	-2.6%	+2.9%	+10.2%	+11.0%	-0.1%	-6.5%	-1.1%	+21.3%	-7.6%	-2.0%	+8.1%	+6.8%
2021	+4.9%	+5.3%	+1.6%	-1.8%	+1.8%	+7.7%	+3.5%	+2.8%	-0.7%	+8.5%	+4.5%	+2.1%	-0.0%	+1.0%	+1.4%	+1.9%	+9.1%	+8.5%	+1.9%	+4.9%	-5.4%	+3.6%	+11.4%	+7.6%	+2.5%	+3.0%	-0.0%	-4.8%
2022	-2.0%	+0.7%	-2.7%	-8.9%	-0.2%	+2.9%	-1.2%	-6.6%	-0.3%	+4.5%	+1.0%	-6.6%	-6.6%	-4.8%	+1.4%	+8.8%	+2.1%	+1.5%	-7.1%	-11.5%	-12.0%	-15.5%	+0.2%	+3.8%	-1.9%	-3.4%	-13.8%	+3.5%
2023	-11.6%	+3.5%	+2.6%	-5.8%	-10.1%	+1.0%	-2.6%	-6.9%	-7.5%	+1.9%	-3.1%	-7.8%	-12.2%	+7.7%	+1.5%	-16.2%	-16.5%	-4.6%	-2.7%	-0.1%	-25.0%	-0.3%	+23.7%	+12.7%	-8.0%	+16.3%	+2.4%	+6.3%
2024	-2.3%	+7.9%	+7.7%	-3.4%	-4.0%	+11.7%	+13.7%	-2.2%	-4.9%	+13.8%	+15.5%	-4.5%	-7.0%	-1.7%	+1.8%	-10.8%	+0.0%	+10.6%	+12.2%	+7.4%	-9.6%	+5.7%	+7.9%	+4.9%	-8.4%	+3.7%	-1.3%	-3.9%
2025	-3.4%	+12.1%	+6.9%	-5.5%	-8.9%	+4.8%	+7.9%	-2.5%	-9.9%	+5.7%	+9.9%	-2.7%	+2.0%	+0.6%	+10.6%	-6.8%	-8.7%	+3.3%	+1.7%	-0.5%	-22.6%	+9.3%	+9.1%	+9.5%	+0.1%	+14.4%	+11.1%	+1.2%
2026	+0.7%	+9.8%			+4.3%	+9.3%			+4.5%	+8.5%			+3.8%	+3.7%			+4.2%	+12.9%			-9.4%	+3.5%			-1.4%	+35.7%		
10-yr Average	-2.5%	+4.6%	+5.6%	-3.1%	-3.6%	+5.3%	+7.3%	-1.5%	-4.1%	+5.5%	+8.7%	-1.6%	-2.6%	+4.7%	+4.0%	-4.0%	-2.3%	+4.7%	+5.2%	-0.1%	-12.2%	+0.9%	+6.6%	+6				
5-yr Average	-3.7%	+6.8%	+3.2%	-5.1%	-3.8%	+5.9%	+4.3%	-3.1%	-3.6%	+6.9%	+5.6%	-3.9%	-4.0%	+1.1%	+3.3%	-4.6%	-3.8%	+4.8%	+1.2%	+0.0%	-15.8%	+0.5%	+10.5%	+7				
LT Average	-1.8%	+6.8%	+5.1%	-3.8%	-2.6%	+7.0%	+6.6%	-2.7%	-3.0%	+7.9%	+7.0%	-2.8%	+1.1%	+5.8%	+5.5%	-4.2%	-2.5%	+5.7%	+5.8%	-1.8%	-9.9%	+1.8%	+10.2%	+2				
Median	-0.8%	+6.0%	+4.4%	-3.4%	-0.9%	+6.6%	+5.5%	-2.9%	-0.6%	+7.1%	+5.6%	-3.3%	+1.9%	+4.5%	+5.1%	-2.8%	-1.0%	+5.1%	+6.4%	-2.0%	-9.5%	+2.5%	+9.1%	+3				

Source: UBS, SIA

人在草木间
更多资料请加V

Valuation Method and Risk Statement

The semiconductor industry is cyclically sensitive to the economy and so upside and downside risks relate to macro drivers. Other, semiconductor capital equipment specific downside risks include the rapid loss of market share due to product timing/performance , design or distribution. The supply chain companies into the handset industry also operate in a highly cyclical market both from macro concerns and inventory cycles within the supply chain. These companies also operate in a highly competitive environment with product innovation and R&D investments critical to success.