Global Semiconductor

SIA August Data: Semiconductor Sales Surge to New High, Driven by Memory and Logic

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August Sales Growth Well Above Seasonality

Global total semiconductor sales rebounded 25.0% M/M in August to a new high of $167.3B, outperforming the 10-year and 5-year seasonal averages by ~1,390 bps and ~1,190 bps, respectively. Memory led the recovery, rising 36.4% M/M and accounting for 64% of August sales. Ex-memory IC sales grew 10.5% M/M, well above typical seasonal gains of 3.8% and 4.3%; unit shipments rose 1.5%, while ASPs increased 8.9%. Logic sales climbed 13.7% M/M to $43.5B, beating 10-year seasonality by ~850 bps, supported by a 4.5% increase in units and an 8.8% rise in ASPs to $5.13. Analog sales fell 3.1% M/M, ~250 bps below their 10-year average, while MPU rose 1.8% but lagged its average by ~240 bps as ASP declines offset stronger volumes. MCU and DSP sales dropped 8.7% and 14.5%, respectively, underperforming their 10-year averages by ~880 bps and ~1,110 bps; MCU saw declines in both units and ASPs, while DSP units fell 17.0% despite a 3.0% ASP increase. YoY total semiconductor sales growth accelerated by 26.4 ppts versus July and 22.9 ppts versus May, reaching 157.4%. YTD sales grew 116.6% Y/Y, with every tracked product category expanding except DSP.

Our October sector outlook forecasts global semiconductor revenues of US$1.63tn in 2026 (+118% YoY), US$2.43tn in 2027 (+49%) and US$2.72tn in 2028 (+12%). Memory revenues are projected to reach US$960bn in 2026 and US$1.65tn in 2027, while MPU revenues are expected to grow 35% in both years. AI cloud computing semiconductors are forecast to represent 33% of industry revenues in 2026, rising to 49% in 2027 and 53% in 2028. We expect the DRAM upcycle to extend towards 2Q28 and the NAND upcycle towards 4Q27, with possible upside, supported by strengthening server DDR and SSD demand. However, memory affordability and the funding gap between hyperscaler operating cash flow and capital expenditure remain key risks. 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 Continues

Memory sales rebounded 36.4% M/M in August from July's decline, outperforming the 10-year seasonal average by ~690 bps. Aggregate memory ASPs, affected by product mix, rose 19.2% M/M, ~1,040 bps above normal seasonality, while total volume increased 14.5%, ~460 bps below its 10-year average. DRAM and NAND ASPs rose 2.9% and 10.8% M/M, respectively, outperforming their seasonal averages by ~430 bps and ~930 bps. DRAM and NAND units increased 30.6% and 27.3%, respectively, modestly below normal seasonal gains; combined with higher ASPs, this drove sales growth of 34.4% and 41.0% M/M. Looking ahead, we forecast DDR ASPs to rise 26% Q/Q in 3Q26 and 9% in 4Q26, while NAND ASPs are expected to increase 20% Q/Q in 3Q26 and 8% in 4Q26. We expect both DRAM and NAND to remain undersupplied into 2027. (see here).

CQ3:26 Outlook: Street Estimates Imply 25.5% Q/Q Growth

For CQ3:26, street estimates imply total semis revenue (sell-through basis) to grow 25.5% 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 23.**

Figure 1: Revenue and Seasonality

		August Month over Month					August 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	26%	**13.7%**	5.2%	+8.5%	6.3%	+7.4%	**69.6%**	+15.4%	+15.5%
MPU	4%	**1.8%**	4.2%	-2.4%	3.8%	-2.0%	**35.3%**	-1.0%	+4.5%
Total digital	30%	**11.9%**	**5.0%**	**+6.9%**	**5.9%**	**+6.0%**	**63.9%**	**+12.7%**	**+13.7%**
Analog	5%	**-3.1%**	-0.6%	-2.5%	-2.1%	-1.0%	**15.2%**	-1.3%	+3.3%
MCU	1%	**-8.7%**	0.1%	-8.8%	-1.1%	-7.6%	**15.4%**	-1.8%	-4.2%
DSP	0.1%	**-14.5%**	-3.4%	-11.1%	-9.0%	-5.5%	**-4.8%**	-6.9%	+0.6%
Total analog	6%	**-4.4%**	**-0.5%**	**-4.0%**	**-2.0%**	**-2.5%**	**14.7%**	**-1.6%**	**+1.8%**
Total ex-Memory	**31%**	**10.5%**	**3.8%**	**+6.8%**	**4.3%**	**+6.2%**	**42.4%**	**+11.1%**	**+13.8%**
DRAM	40%	**34.4%**	30.6%	+3.8%	37.2%	-2.8%	**375.7%**	-41.5%	+14.8%
NAND	23%	**41.0%**	29.9%	+11.0%	33.6%	+7.3%	**507.7%**	+9.1%	+101.1%
Total Memory	**64%**	**36.4%**	**29.5%**	**+6.9%**	**34.7%**	**+1.8%**	**412.2%**	**-23.1%**	**+42.2%**
Total ICs	**95%**	**26.8%**	**12.2%**	**+14.6%**	**14.3%**	**+12.5%**	**178.6%**	**+28.5%**	**+27.3%**
Discretes	5%	**-0.3%**	4.1%	-4.4%	3.7%	-4.0%	**8.7%**	-2.4%	-6.1%
Total Semiconductors	**100%**	**25.0%**	**11.2%**	**+13.9%**	**13.2%**	**+11.9%**	**157.4%**	**+26.4%**	**+22.9%**
Units									
Logic	8%	**4.5%**	0.5%	+4.0%	0.4%	+4.1%	**33.7%**	+7.4%	+13.9%
MPU	0.04%	**8.1%**	4.3%	+3.8%	5.6%	+2.4%	**20.7%**	+4.1%	+14.0%
Total digital	8%	**4.6%**	**0.5%**	**+4.0%**	**0.4%**	**+4.1%**	**33.6%**	**+7.3%**	**+13.9%**
Analog	22%	**1.2%**	-0.8%	+2.0%	-3.5%	+4.7%	**28.5%**	+6.1%	+6.2%
MCU	1.7%	**-6.8%**	-2.2%	-4.6%	-2.2%	-4.6%	**4.0%**	+4.7%	-10.3%
DSP	0.04%	**-17.0%**	-2.3%	-14.7%	-6.8%	-10.2%	**-10.0%**	-24.4%	+5.2%
Total analog	23%	**0.5%**	**-1.0%**	**+1.5%**	**-3.3%**	**+3.8%**	**26.2%**	**+6.0%**	**+4.7%**
Total ex-Memory	**31%**	**1.5%**	**-0.6%**	**+2.1%**	**-2.4%**	**+3.9%**	**28.0%**	**+6.4%**	**+7.0%**
DRAM	2.1%	**30.6%**	32.7%	-2.1%	41.6%	-11.1%	**8.3%**	-13.4%	-4.9%
NAND	1.1%	**27.3%**	28.1%	-0.9%	32.4%	-5.1%	**-6.3%**	-8.5%	+1.4%
Total Memory	**7.4%**	**14.5%**	**19.0%**	**-4.6%**	**22.7%**	**-8.2%**	**65.3%**	**-14.3%**	**+21.2%**
Total ICs	**39%**	**3.7%**	**1.7%**	**+2.1%**	**0.4%**	**+3.4%**	**33.8%**	**+5.0%**	**+9.3%**
Discretes	61%	**-3.2%**	-1.5%	-1.7%	-3.4%	+0.2%	**10.7%**	+0.8%	+3.3%
Total Semiconductors	**100%**	**-0.6%**	**-0.5%**	**-0.2%**	**-2.1%**	**+1.4%**	**18.6%**	**+2.4%**	**+5.4%**
ASP									
Logic		**8.8%**	4.6%	+4.1%	5.9%	+2.9%	**26.9%**	+4.8%	-1.8%
MPU		**-5.8%**	0.0%	-5.8%	-1.6%	-4.2%	**12.1%**	-4.8%	-10.5%
Total digital		**7.0%**	**4.5%**	**+2.6%**	**5.4%**	**+1.6%**	**22.7%**	**+2.9%**	**-2.8%**
Analog		**-4.3%**	0.2%	-4.6%	1.5%	-5.8%	**-10.5%**	-5.9%	-1.9%
MCU		**-2.1%**	2.4%	-4.5%	1.1%	-3.2%	**10.9%**	-7.1%	+6.2%
DSP		**3.0%**	-0.9%	+3.9%	-1.9%	+4.9%	**5.7%**	+16.6%	-5.7%
Total analog		**-4.9%**	**0.5%**	**-5.5%**	**1.4%**	**-6.3%**	**-9.1%**	**-5.9%**	**-2.1%**
Total ex-Memory		**8.9%**	**4.5%**	**+4.4%**	**6.9%**	**+2.0%**	**11.2%**	**+3.3%**	**+5.0%**
DRAM		**2.9%**	-1.4%	+4.3%	-3.0%	+5.9%	**339.2%**	+14.4%	+31.9%
NAND		**10.8%**	1.5%	+9.3%	1.0%	+9.8%	**548.7%**	+62.6%	+99.4%
Total Memory		**19.2%**	**8.8%**	**+10.4%**	**9.8%**	**+9.4%**	**209.8%**	**+11.8%**	**-16.3%**
Total ICs		**22.2%**	**10.3%**	**+12.0%**	**13.6%**	**+8.7%**	**108.2%**	**+14.1%**	**+6.4%**
Discretes		**3.0%**	5.8%	-2.8%	7.4%	-4.4%	**-1.8%**	-2.9%	-8.7%
Total Semiconductors		**25.8%**	**11.6%**	**+14.2%**	**15.4%**	**+10.5%**	**116.9%**	**+18.3%**	**+10.0%**

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 (2018-2028E)

	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**	**$ 971,634,415**	**$ 1,702,349,305**	**$ 1,909,473,732**
% Growth	***27.4%***	***-32.6%***	***10.4%***	***30.9%***	***-15.6%***	***-28.9%***	***78.8%***	***39.3%***	***322.4%***	***75.2%***	***12.2%***
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	72,613,413	81,151,705	89,231,038
Memory, ASP	$ 3.79	$ 2.51	$ 2.63	$ 3.07	$ 2.97	$ 2.11	$ 3.72	$ 4.53	$ 13.38	$ 20.98	$ 21.40
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**	**$1,546,126,809**	**$ 2,377,864,726**	**$ 2,684,876,946**
% Growth	***14.7%***	***-15.3%***	***8.4%***	***28.2%***	***2.1%***	***-10.5%***	***20.8%***	***27.4%***	***137.4%***	***53.8%***	***12.9%***
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	441,876,148	508,100,749	621,222,506
Total IC, ASP	$ 1.27	$ 1.14	$ 1.16	$ 1.21	$ 1.20	$ 1.25	$ 1.46	$ 1.75	$ 3.50	$ 4.68	$ 4.32
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**	**$1,640,791,771**	**$ 2,475,369,637**	**$ 2,785,307,004**
% Growth	***13.8%***	***-12.1%***	***6.9%***	***26.2%***	***3.0%***	***-8.9%***	***15.5%***	***23.9%***	***120.0%***	***50.9%***	***12.5%***
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	1,138,413,542	1,225,534,266	1,360,179,028
Total Semiconductor, ASP	$ 0.47	$ 0.44	$ 0.46	$ 0.48	$ 0.52	$ 0.57	$ 0.63	$ 0.71	$ 1.44	$ 2.02	$ 2.05

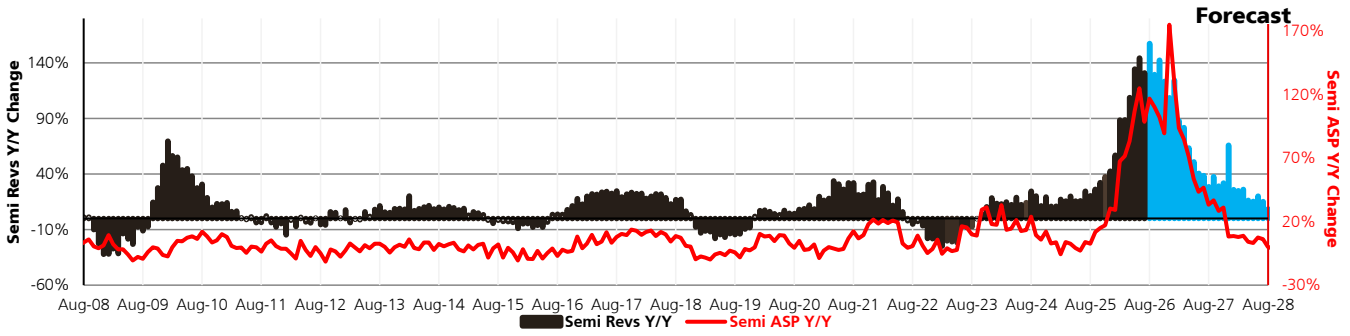
Source: UBS estimates, SIA

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)	**356.0**	**400.3**	**505.2**	**526.3**	**483.2**	**610.3**	**776.2**	**284.4**	**364.8**	**457.9**	**531.1**	**1638.3**	**586.3**	**656.1**	**720.2**	**788.0**	**2750.6**	**731.1**	**778.1**	**784.7**	**789.1**	**3083.0**
% of total semis industry revs	*86.4%*	*91.2%*	*90.9%*	*91.8%*	*91.7%*	*101.4%*	*104.1%*	*97.0%*	*90.3%*	*94.7%*	*116.7%*	*100.2%*	*108.9%*	*112.9%*	*113.4%*	*117.6%*	*113.4%*	*108.1%*	*114.2%*	*112.3%*	*119.2%*	*113.4%*
%QoQ								*23.6%*	*28.3%*	*25.5%*	*16.0%*		*10.4%*	*11.9%*	*9.8%*	*9.4%*		*-7.2%*	*6.4%*	*0.8%*	*0.6%*	
%YoY	*-13.9%*	*12.4%*	*26.2%*	*4.2%*	*-8.2%*	*26.3%*	*27.2%*	*72.1%*	*103.5%*	*127.2%*	*130.8%*	*111.1%*	*106.1%*	*79.8%*	*57.3%*	*48.4%*	*67.9%*	*24.7%*	*18.6%*	*9.0%*	*0.1%*	*12.1%*
Semis revs ex memory (Sell Through)	**244.6**	**275.9**	**343.9**	**382.3**	**385.9**	**461.3**	**581.0**	**178.1**	**200.4**	**228.7**	**265.1**	**872.3**	**290.4**	**324.6**	**360.2**	**402.5**	**1377.6**	**428.3**	**457.2**	**474.4**	**485.8**	**1845.7**
%QoQ								*7.2%*	*12.5%*	*14.2%*	*15.9%*		*9.5%*	*11.8%*	*11.0%*	*11.8%*		*6.4%*	*6.7%*	*3.8%*	*2.4%*	
%YoY	*-1.4%*	*12.8%*	*24.7%*	*11.2%*	*0.9%*	*19.5%*	*25.9%*	*38.4%*	*47.9%*	*51.8%*	*59.6%*	*50.2%*	*63.1%*	*62.0%*	*57.4%*	*51.8%*	*57.9%*	*47.5%*	*40.8%*	*31.7%*	*20.7%*	*34.0%*
OEM revenues	**1844.8**	**1832.8**	**2023.3**	**1997.0**	**2013.5**	**2059.0**	**2133.7**	**573.4**	**561.5**	**558.2**	**587.4**	**2280.3**	**625.3**	**612.9**	**619.6**	**646.7**	**2504.2**	**675.3**	**659.0**	**661.6**	**685.6**	**2681.2**
%QoQ								*-2.0%*	*-2.1%*	*-0.6%*	*5.2%*		*6.4%*	*-2.0%*	*1.1%*	*4.4%*		*4.4%*	*-2.4%*	*0.4%*	*3.6%*	
%YoY	*-0.5%*	*-0.6%*	*10.4%*	*-1.3%*	*0.8%*	*2.3%*	*3.6%*	*15.3%*	*8.4%*	*4.6%*	*0.4%*	*6.9%*	*9.1%*	*9.2%*	*11.0%*	*10.1%*	*9.8%*	*8.0%*	*7.5%*	*6.8%*	*6.0%*	*7.1%*

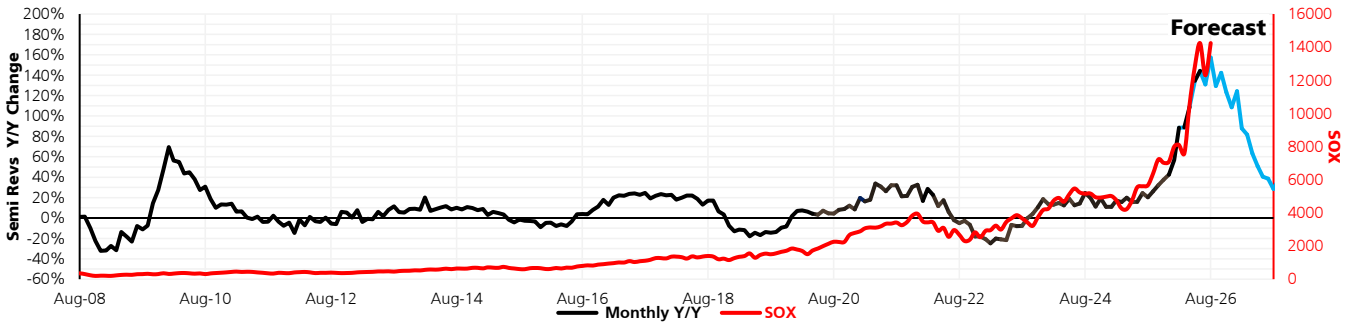
Source: Company data, Bloomberg, UBS estimates

Figure 4: Total Semiconductor Revenue and ASP Change



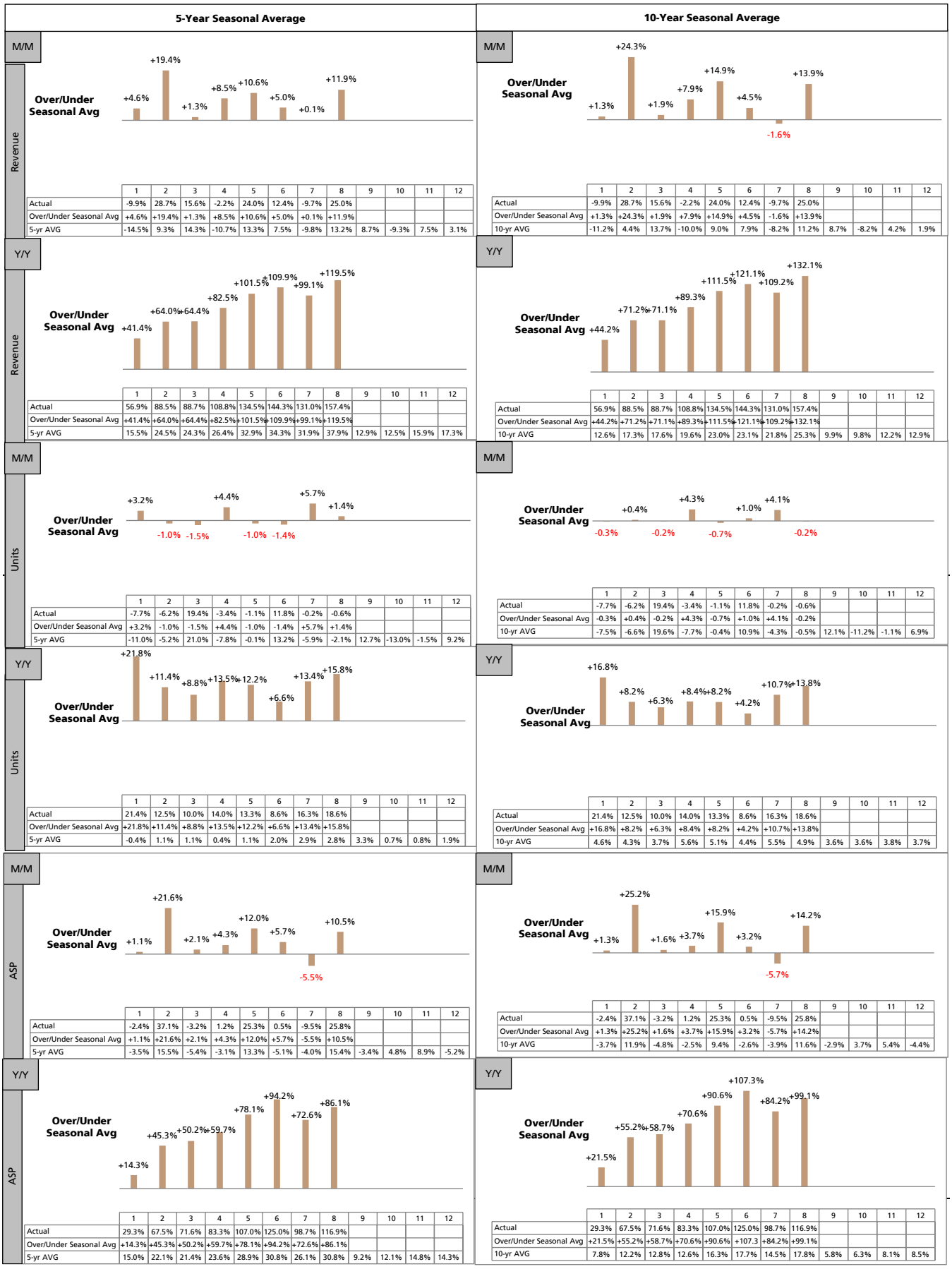
Source: UBS, SIA

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	-9.9%	28.7%	15.6%	-2.2%	24.0%	12.4%	-9.7%	25.0%				
Over/Under Seasonal Avg	+4.6%	+19.4%	+1.3%	+8.5%	+10.6%	+5.0%	+0.1%	+11.9%				
5-yr AVG	-14.5%	9.3%	14.3%	-10.7%	13.3%	7.5%	-9.8%	13.2%	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	-9.9%	28.7%	15.6%	-2.2%	24.0%	12.4%	-9.7%	25.0%				
Over/Under Seasonal Avg	+1.3%	+24.3%	+1.9%	+7.9%	+14.9%	+4.5%	-1.6%	+13.9%				
10-yr AVG	-11.2%	4.4%	13.7%	-10.0%	9.0%	7.9%	-8.2%	11.2%	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	56.9%	88.5%	88.7%	108.8%	134.5%	144.3%	131.0%	157.4%				
Over/Under Seasonal Avg	+41.4%	+64.0%	+64.4%	+82.5%	+101.5%	+109.9%	+99.1%	+119.5%				
5-yr AVG	15.5%	24.5%	24.3%	26.4%	32.9%	34.3%	31.9%	37.9%	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	56.9%	88.5%	88.7%	108.8%	134.5%	144.3%	131.0%	157.4%				
Over/Under Seasonal Avg	+44.2%	+71.2%	+71.1%	+89.3%	+111.5%	+121.1%	+109.2%	+132.1%				
10-yr AVG	12.6%	17.3%	17.6%	19.6%	23.0%	23.1%	21.8%	25.3%	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	-7.7%	-6.2%	19.4%	-3.4%	-1.1%	11.8%	-0.2%	-0.6%				
Over/Under Seasonal Avg	+3.2%	-1.0%	-1.5%	+4.4%	-1.0%	-1.4%	+5.7%	+1.4%				
5-yr AVG	-11.0%	-5.2%	21.0%	-7.8%	-0.1%	13.2%	-5.9%	-2.1%	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	-7.7%	-6.2%	19.4%	-3.4%	-1.1%	11.8%	-0.2%	-0.6%				
Over/Under Seasonal Avg	-0.3%	+0.4%	-0.2%	+4.3%	-0.7%	+1.0%	+4.1%	-0.2%				
10-yr AVG	-7.5%	-6.6%	19.6%	-7.7%	-0.4%	10.9%	-4.3%	-0.5%	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	21.4%	12.5%	10.0%	14.0%	13.3%	8.6%	16.3%	18.6%				
Over/Under Seasonal Avg	+21.8%	+11.4%	+8.8%	+13.5%	+12.2%	+6.6%	+13.4%	+15.8%				
5-yr AVG	-0.4%	1.1%	1.1%	0.4%	1.1%	2.0%	2.9%	2.8%	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	21.4%	12.5%	10.0%	14.0%	13.3%	8.6%	16.3%	18.6%				
Over/Under Seasonal Avg	+16.8%	+8.2%	+6.3%	+8.4%	+8.2%	+4.2%	+10.7%	+13.8%				
10-yr AVG	4.6%	4.3%	3.7%	5.6%	5.1%	4.4%	5.5%	4.9%	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	-2.4%	37.1%	-3.2%	1.2%	25.3%	0.5%	-9.5%	25.8%				
Over/Under Seasonal Avg	+1.1%	+21.6%	+2.1%	+4.3%	+12.0%	+5.7%	-5.5%	+10.5%				
5-yr AVG	-3.5%	15.5%	-5.4%	-3.1%	13.3%	-5.1%	-4.0%	15.4%	-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	-2.4%	37.1%	-3.2%	1.2%	25.3%	0.5%	-9.5%	25.8%				
Over/Under Seasonal Avg	+1.3%	+25.2%	+1.6%	+3.7%	+15.9%	+3.2%	-5.7%	+14.2%				
10-yr AVG	-3.7%	11.9%	-4.8%	-2.5%	9.4%	-2.6%	-3.9%	11.6%	-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	29.3%	67.5%	71.6%	83.3%	107.0%	125.0%	98.7%	116.9%				
Over/Under Seasonal Avg	+14.3%	+45.3%	+50.2%	+59.7%	+78.1%	+94.2%	+72.6%	+86.1%				
5-yr AVG	15.0%	22.1%	21.4%	23.6%	28.9%	30.8%	26.1%	30.8%	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	29.3%	67.5%	71.6%	83.3%	107.0%	125.0%	98.7%	116.9%				
Over/Under Seasonal Avg	+21.5%	+55.2%	+58.7%	+70.6%	+90.6%	+107.3	+84.2%	+99.1%				
10-yr AVG	7.8%	12.2%	12.8%	12.6%	16.3%	17.7%	14.5%	17.8%	5.8%	6.3%	8.1%	8.5%

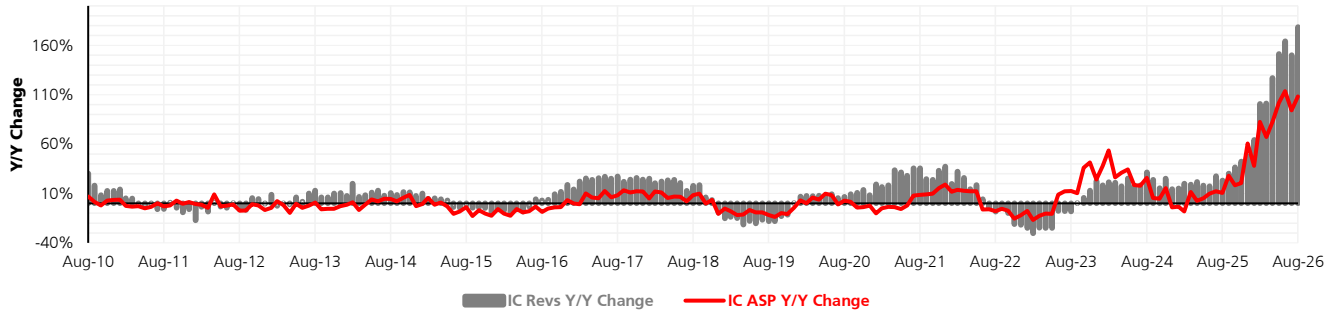
Source: UBS, SIA

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



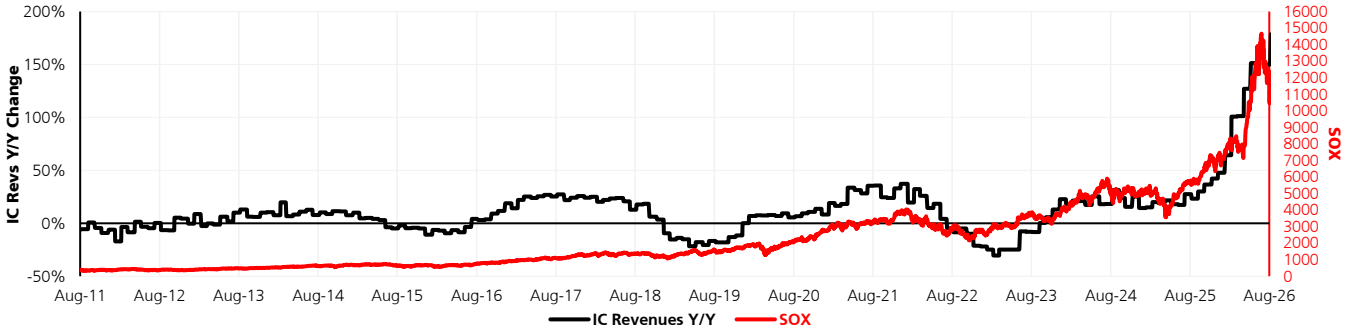
Source: UBS, SIA

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



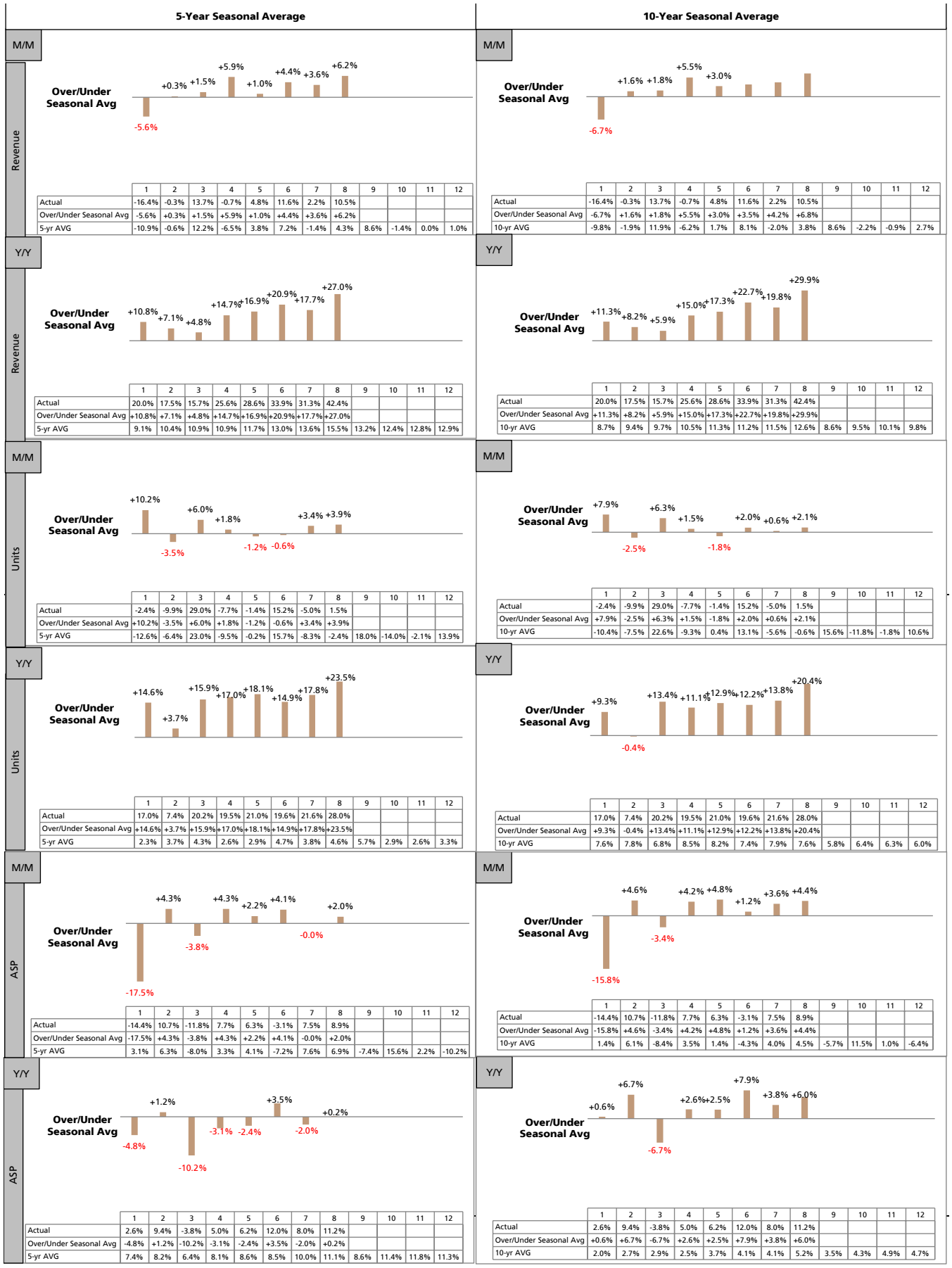
Source: UBS, SIA

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	-16.4%	-0.3%	13.7%	-0.7%	4.8%	11.6%	2.2%	10.5%				
Over/Under Seasonal Avg	-5.6%	+0.3%	+1.5%	+5.9%	+1.0%	+4.4%	+3.6%	+6.2%				
5-yr AVG	-10.9%	-0.6%	12.2%	-6.5%	3.8%	7.2%	-1.4%	4.3%	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	-16.4%	-0.3%	13.7%	-0.7%	4.8%	11.6%	2.2%	10.5%				
Over/Under Seasonal Avg	-6.7%	+1.6%	+1.8%	+5.5%	+3.0%	+3.5%	+4.2%	+6.8%				
10-yr AVG	-9.8%	-1.9%	11.9%	-6.2%	1.7%	8.1%	-2.0%	3.8%	8.6%	-2.2%	-0.9%	2.7%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	20.0%	17.5%	15.7%	25.6%	28.6%	33.9%	31.3%	42.4%				
Over/Under Seasonal Avg	+10.8%	+7.1%	+4.8%	+14.7%	+16.9%	+20.9%	+17.7%	+27.0%				
5-yr AVG	9.1%	10.4%	10.9%	10.9%	11.7%	13.0%	13.6%	15.5%	13.2%	12.4%	12.8%	12.9%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	20.0%	17.5%	15.7%	25.6%	28.6%	33.9%	31.3%	42.4%				
Over/Under Seasonal Avg	+11.3%	+8.2%	+5.9%	+15.0%	+17.3%	+22.7%	+19.8%	+29.9%				
10-yr AVG	8.7%	9.4%	9.7%	10.5%	11.3%	11.2%	11.5%	12.6%	8.6%	9.5%	10.1%	9.8%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-2.4%	-9.9%	29.0%	-7.7%	-1.4%	15.2%	-5.0%	1.5%				
Over/Under Seasonal Avg	+10.2%	-3.5%	+6.0%	+1.8%	-1.2%	-0.6%	+3.4%	+3.9%				
5-yr AVG	-12.6%	-6.4%	23.0%	-9.5%	-0.2%	15.7%	-8.3%	-2.4%	18.0%	-14.0%	-2.1%	13.9%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-2.4%	-9.9%	29.0%	-7.7%	-1.4%	15.2%	-5.0%	1.5%				
Over/Under Seasonal Avg	+7.9%	-2.5%	+6.3%	+1.5%	-1.8%	+2.0%	+0.6%	+2.1%				
10-yr AVG	-10.4%	-7.5%	22.6%	-9.3%	0.4%	13.1%	-5.6%	-0.6%	15.6%	-11.8%	-1.8%	10.6%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	17.0%	7.4%	20.2%	19.5%	21.0%	19.6%	21.6%	28.0%				
Over/Under Seasonal Avg	+14.6%	+3.7%	+15.9%	+17.0%	+18.1%	+14.9%	+17.8%	+23.5%				
5-yr AVG	2.3%	3.7%	4.3%	2.6%	2.9%	4.7%	3.8%	4.6%	5.7%	2.9%	2.6%	3.3%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	17.0%	7.4%	20.2%	19.5%	21.0%	19.6%	21.6%	28.0%				
Over/Under Seasonal Avg	+9.3%	-0.4%	+13.4%	+11.1%	+12.9%	+12.2%	+13.8%	+20.4%				
10-yr AVG	7.6%	7.8%	6.8%	8.5%	8.2%	7.4%	7.9%	7.6%	5.8%	6.4%	6.3%	6.0%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-14.4%	10.7%	-11.8%	7.7%	6.3%	-3.1%	7.5%	8.9%				
Over/Under Seasonal Avg	-17.5%	+4.3%	-3.8%	+4.3%	+2.2%	+4.1%	-0.0%	+2.0%				
5-yr AVG	3.1%	6.3%	-8.0%	3.3%	4.1%	-7.2%	7.6%	6.9%	-7.4%	15.6%	2.2%	-10.2%

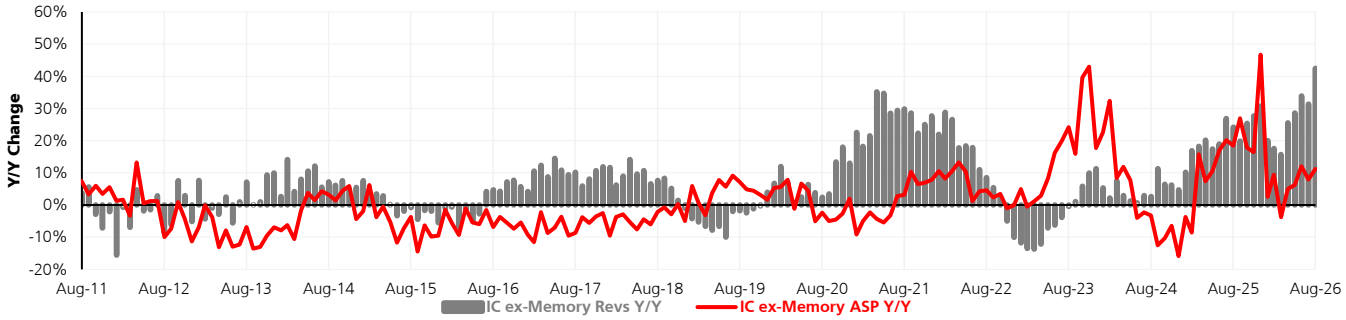
10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-14.4%	10.7%	-11.8%	7.7%	6.3%	-3.1%	7.5%	8.9%				
Over/Under Seasonal Avg	-15.8%	+4.6%	-3.4%	+4.2%	+4.8%	+1.2%	+3.6%	+4.4%				
10-yr AVG	1.4%	6.1%	-8.4%	3.5%	1.4%	-4.3%	4.0%	4.5%	-5.7%	11.5%	1.0%	-6.4%

5-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	2.6%	9.4%	-3.8%	5.0%	6.2%	12.0%	8.0%	11.2%				
Over/Under Seasonal Avg	-4.8%	+1.2%	-10.2%	-3.1%	-2.4%	+3.5%	-2.0%	+0.2%				
5-yr AVG	7.4%	8.2%	6.4%	8.1%	8.6%	8.5%	10.0%	11.1%	8.6%	11.4%	11.8%	11.3%

10-Year Seasonal Average	1	2	3	4	5	6	7	8	9	10	11	12
Actual	2.6%	9.4%	-3.8%	5.0%	6.2%	12.0%	8.0%	11.2%				
Over/Under Seasonal Avg	+0.6%	+6.7%	-6.7%	+2.6%	+2.5%	+7.9%	+3.8%	+6.0%				
10-yr AVG	2.0%	2.7%	2.9%	2.5%	3.7%	4.1%	4.1%	5.2%	3.5%	4.3%	4.9%	4.7%

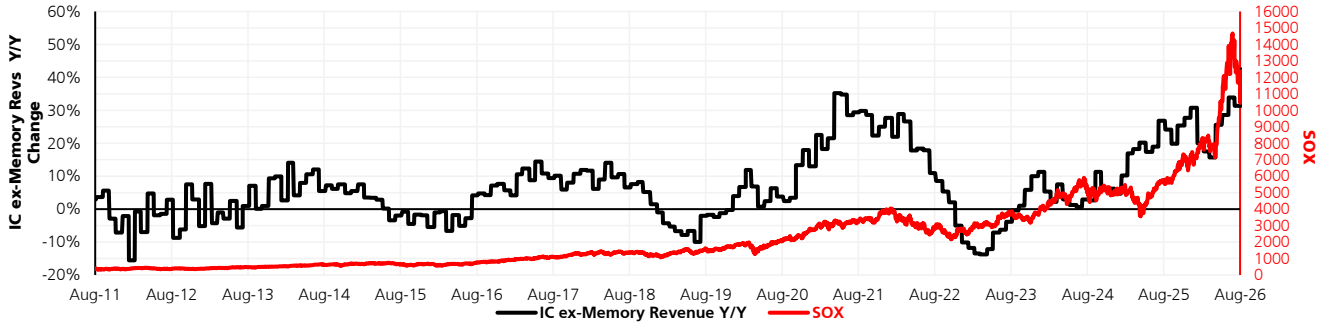
Source: UBS, SIA

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



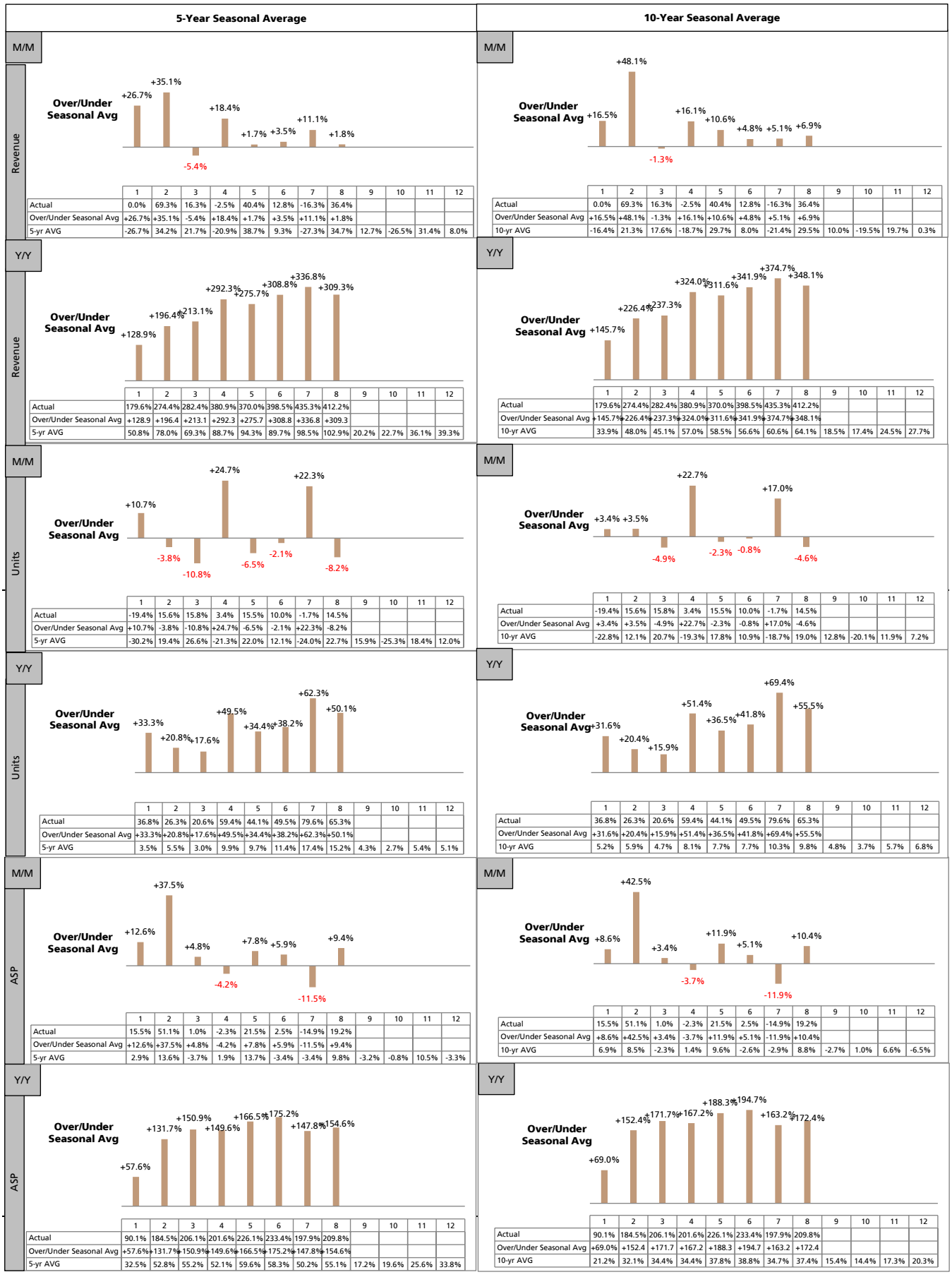
Source: UBS, SIA

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



Source: UBS, SIA, FactSet.

Figure 13: Total Memory Revenue and Units Relative to Seasonality



Revenue M/M (5-Year Seasonal Average)	1	2	3	4	5	6	7	8	9	10	11	12
Actual	0.0%	69.3%	16.3%	-2.5%	40.4%	12.8%	-16.3%	36.4%				
Over/Under Seasonal Avg	+26.7%	+35.1%	-5.4%	+18.4%	+1.7%	+3.5%	+11.1%	+1.8%				
5-yr AVG	-26.7%	34.2%	21.7%	-20.9%	38.7%	9.3%	-27.3%	34.7%	12.7%	-26.5%	31.4%	8.0%

Revenue M/M (10-Year Seasonal Average)	1	2	3	4	5	6	7	8	9	10	11	12
Actual	0.0%	69.3%	16.3%	-2.5%	40.4%	12.8%	-16.3%	36.4%				
Over/Under Seasonal Avg	+16.5%	+48.1%	-1.3%	+16.1%	+10.6%	+4.8%	+5.1%	+6.9%				
10-yr AVG	-16.4%	21.3%	17.6%	-18.7%	29.7%	8.0%	-21.4%	29.5%	10.0%	-19.5%	19.7%	0.3%

Revenue Y/Y (5-Year Seasonal Average)	1	2	3	4	5	6	7	8	9	10	11	12
Actual	179.6%	274.4%	282.4%	380.9%	370.0%	398.5%	435.3%	412.2%				
Over/Under Seasonal Avg	+128.9	+196.4	+213.1	+292.3	+275.7	+308.8	+336.8	+309.3				
5-yr AVG	50.8%	78.0%	69.3%	88.7%	94.3%	89.7%	98.5%	102.9%	20.2%	22.7%	36.1%	39.3%

Revenue Y/Y (10-Year Seasonal Average)	1	2	3	4	5	6	7	8	9	10	11	12
Actual	179.6%	274.4%	282.4%	380.9%	370.0%	398.5%	435.3%	412.2%				
Over/Under Seasonal Avg	+145.7%	+226.4%	+237.3%	+324.0%	+311.6%	+341.9%	+374.7%	+348.1%				
10-yr AVG	33.9%	48.0%	45.1%	57.0%	58.5%	56.6%	60.6%	64.1%	18.5%	17.4%	24.5%	27.7%

Units M/M (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%	-1.7%	14.5%				
Over/Under Seasonal Avg	+10.7%	-3.8%	-10.8%	+24.7%	-6.5%	-2.1%	+22.3%	-8.2%				
5-yr AVG	-30.2%	19.4%	26.6%	-21.3%	22.0%	12.1%	-24.0%	22.7%	15.9%	-25.3%	18.4%	12.0%

Units M/M (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%	-1.7%	14.5%				
Over/Under Seasonal Avg	+3.4%	+3.5%	-4.9%	+22.7%	-2.3%	-0.8%	+17.0%	-4.6%				
10-yr AVG	-22.8%	12.1%	20.7%	-19.3%	17.8%	10.9%	-18.7%	19.0%	12.8%	-20.1%	11.9%	7.2%

Units Y/Y (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%	79.6%	65.3%				
Over/Under Seasonal Avg	+33.3%	+20.8%	+17.6%	+49.5%	+34.4%	+38.2%	+62.3%	+50.1%				
5-yr AVG	3.5%	5.5%	3.0%	9.9%	9.7%	11.4%	17.4%	15.2%	4.3%	2.7%	5.4%	5.1%

Units Y/Y (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%	79.6%	65.3%				
Over/Under Seasonal Avg	+31.6%	+20.4%	+15.9%	+51.4%	+36.5%	+41.8%	+69.4%	+55.5%				
10-yr AVG	5.2%	5.9%	4.7%	8.1%	7.7%	7.7%	10.3%	9.8%	4.8%	3.7%	5.7%	6.8%

ASP M/M (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%	-14.9%	19.2%				
Over/Under Seasonal Avg	+12.6%	+37.5%	+4.8%	-4.2%	+7.8%	+5.9%	-11.5%	+9.4%				
5-yr AVG	2.9%	13.6%	-3.7%	1.9%	13.7%	-3.4%	-3.4%	9.8%	-3.2%	-0.8%	10.5%	-3.3%

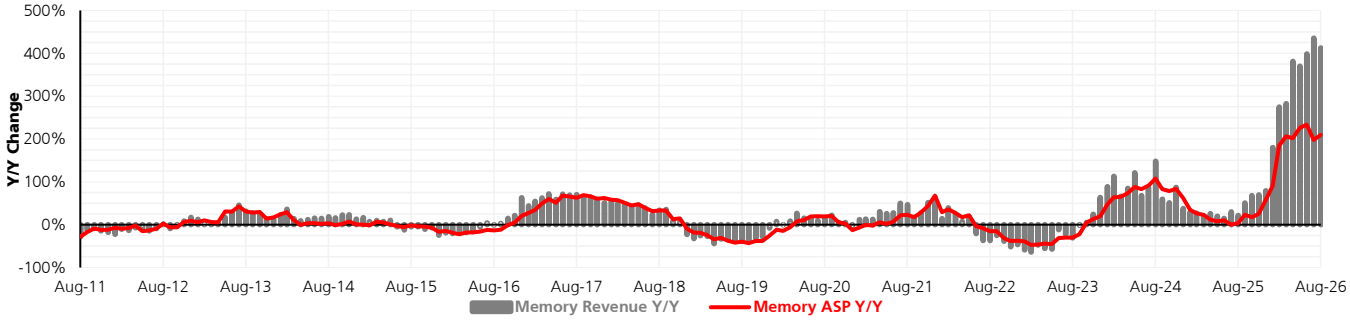
ASP M/M (10-Year Seasonal Average)	1	2	3	4	5	6	7	8	9	10	11	12
Actual	15.5%	51.1%	1.0%	-2.3%	21.5%	2.5%	-14.9%	19.2%				
Over/Under Seasonal Avg	+8.6%	+42.5%	+3.4%	-3.7%	+11.9%	+5.1%	-11.9%	+10.4%				
10-yr AVG	6.9%	8.5%	-2.3%	1.4%	9.6%	-2.6%	-2.9%	8.8%	-2.7%	1.0%	6.6%	-6.5%

ASP Y/Y (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%	197.9%	209.8%				
Over/Under Seasonal Avg	+57.6%	+131.7%	+150.9%	+149.6%	+166.5%	+175.2%	+147.8%	+154.6%				
5-yr AVG	32.5%	52.8%	55.2%	52.1%	59.6%	58.3%	50.2%	55.1%	17.2%	19.6%	25.6%	33.8%

ASP Y/Y (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%	197.9%	209.8%				
Over/Under Seasonal Avg	+69.0%	+152.4	+171.7	+167.2	+188.3	+194.7	+163.2	+172.4				
10-yr AVG	21.2%	32.1%	34.4%	34.4%	37.8%	38.8%	34.7%	37.4%	15.4%	14.4%	17.3%	20.3%

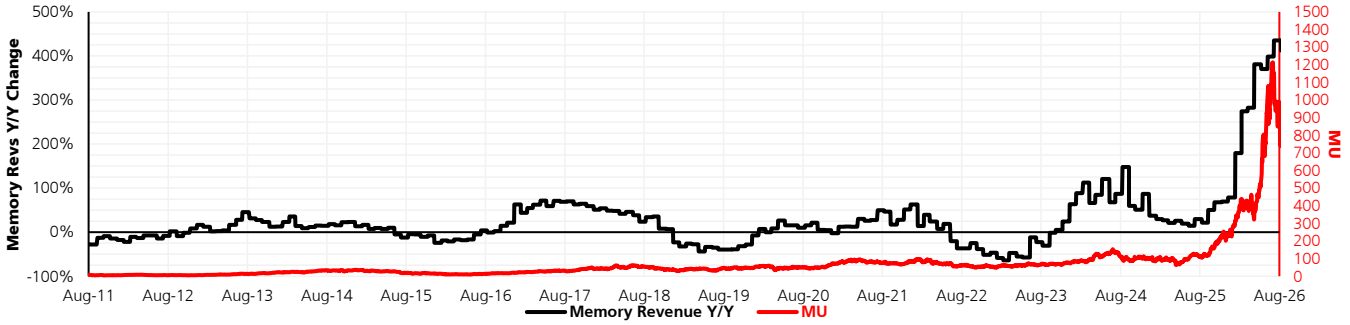
Source: UBS, SIA

Figure 14: Memory Revenue and ASP Change



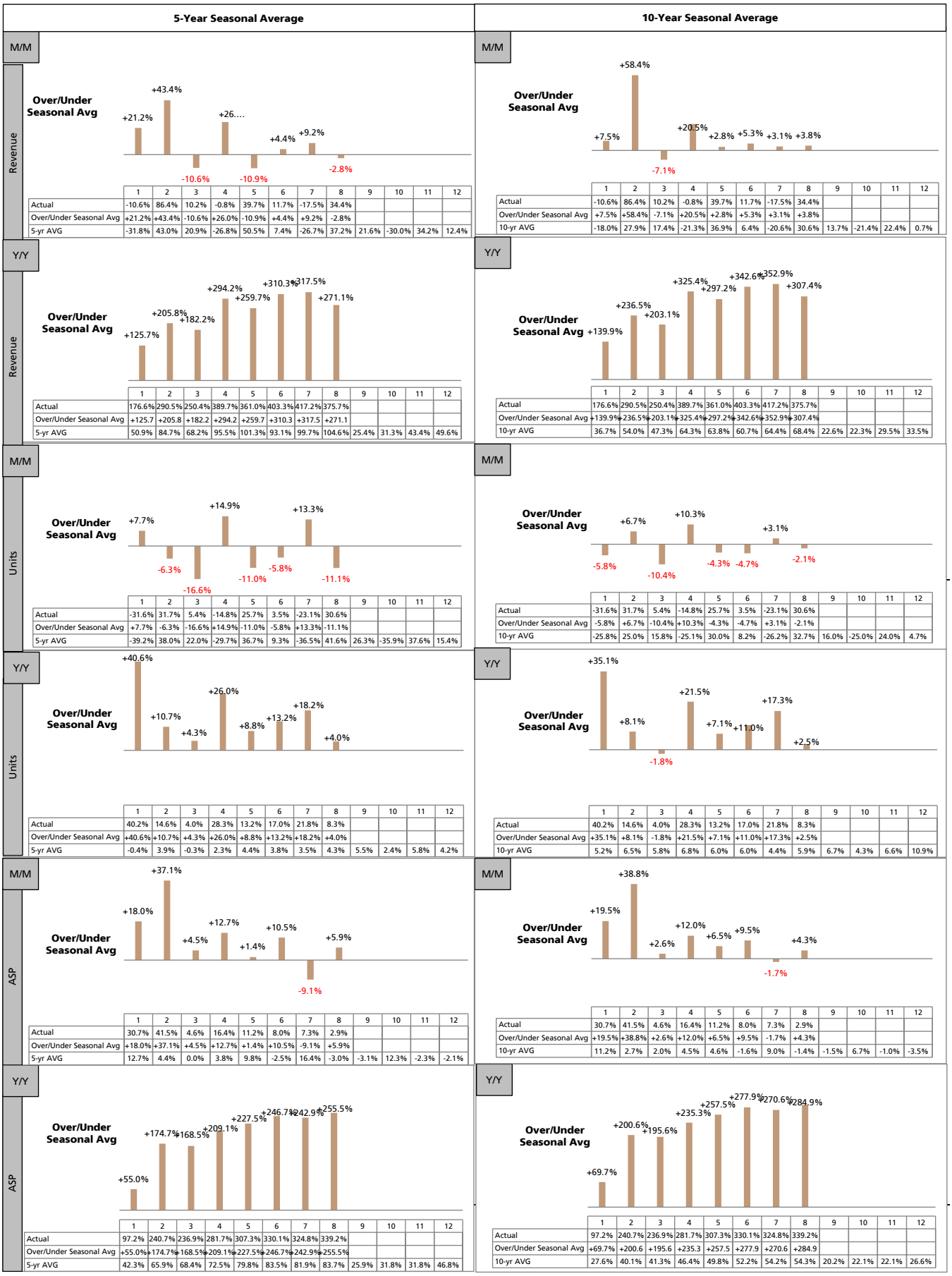
Source: UBS, SIA

Figure 15: Memory Revenue vs. MU Share price



Source: UBS, SIA, FactSet.

Figure 16: DRAM Revenue and Units Change Relative to Seasonality



Revenue M/M (5-Year)	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%	34.4%				
Over/Under Seasonal Avg	+21.2%	+43.4%	-10.6%	+26.0%	-10.9%	+4.4%	+9.2%	-2.8%				
5-yr AVG	-31.8%	43.0%	20.9%	-26.8%	50.5%	7.4%	-26.7%	37.2%	21.6%	-30.0%	34.2%	12.4%

Revenue M/M (10-Year)	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%	34.4%				
Over/Under Seasonal Avg	+7.5%	+58.4%	-7.1%	+20.5%	+2.8%	+5.3%	+3.1%	+3.8%				
10-yr AVG	-18.0%	27.9%	17.4%	-21.3%	36.9%	6.4%	-20.6%	30.6%	13.7%	-21.4%	22.4%	0.7%

Revenue Y/Y (5-Year)	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%	375.7%				
Over/Under Seasonal Avg	+125.7	+205.8	+182.2	+294.2	+259.7	+310.3	+317.5	+271.1				
5-yr AVG	50.9%	84.7%	68.2%	95.5%	101.3%	93.1%	99.7%	104.6%	25.4%	31.3%	43.4%	49.6%

Revenue Y/Y (10-Year)	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%	375.7%				
Over/Under Seasonal Avg	+139.9%	+236.5%	+203.1%	+325.4%	+297.2%	+342.6%	+352.9%	+307.4%				
10-yr AVG	36.7%	54.0%	47.3%	64.3%	63.8%	60.7%	64.4%	68.4%	22.6%	22.3%	29.5%	33.5%

Units M/M (5-Year)	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%	-23.1%	30.6%				
Over/Under Seasonal Avg	+7.7%	-6.3%	-16.6%	+14.9%	-11.0%	-5.8%	+13.3%	-11.1%				
5-yr AVG	-39.2%	38.0%	22.0%	-29.7%	36.7%	9.3%	-36.5%	41.6%	26.3%	-35.9%	37.6%	15.4%

Units M/M (10-Year)	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%	-23.1%	30.6%				
Over/Under Seasonal Avg	-5.8%	+6.7%	-10.4%	+10.3%	-4.3%	-4.7%	+3.1%	-2.1%				
10-yr AVG	-25.8%	25.0%	15.8%	-25.1%	30.0%	8.2%	-26.2%	32.7%	16.0%	-25.0%	24.0%	4.7%

Units Y/Y (5-Year)	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%	21.8%	8.3%				
Over/Under Seasonal Avg	+40.6%	+10.7%	+4.3%	+26.0%	+8.8%	+13.2%	+18.2%	+4.0%				
5-yr AVG	-0.4%	3.9%	-0.3%	2.3%	4.4%	3.8%	3.5%	4.3%	5.5%	2.4%	5.8%	4.2%

Units Y/Y (10-Year)	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%	21.8%	8.3%				
Over/Under Seasonal Avg	+35.1%	+8.1%	-1.8%	+21.5%	+7.1%	+11.0%	+17.3%	+2.5%				
10-yr AVG	5.2%	6.5%	5.8%	6.8%	6.0%	6.0%	4.4%	5.9%	6.7%	4.3%	6.6%	10.9%

ASP M/M (5-Year)	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%	7.3%	2.9%				
Over/Under Seasonal Avg	+18.0%	+37.1%	+4.5%	+12.7%	+1.4%	+10.5%	-9.1%	+5.9%				
5-yr AVG	12.7%	4.4%	0.0%	3.8%	9.8%	-2.5%	16.4%	-3.0%	-3.1%	12.3%	-2.3%	-2.1%

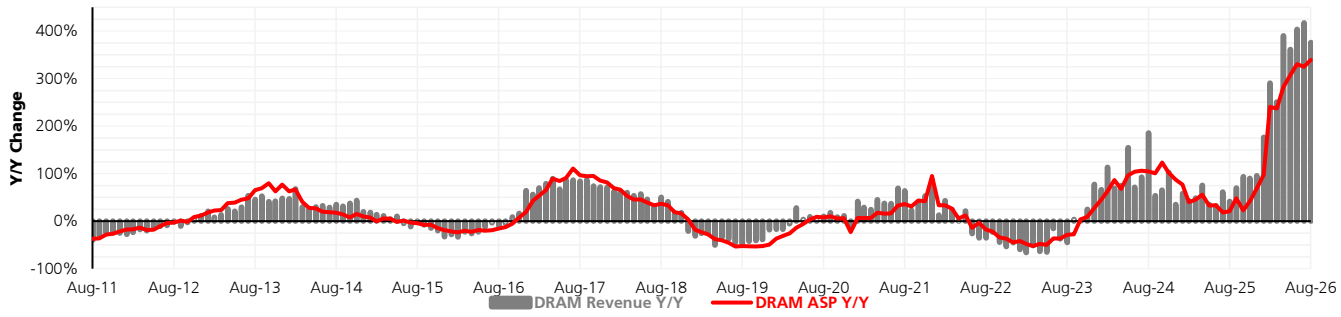
ASP M/M (10-Year)	1	2	3	4	5	6	7	8	9	10	11	12
Actual	30.7%	41.5%	4.6%	16.4%	11.2%	8.0%	7.3%	2.9%				
Over/Under Seasonal Avg	+19.5%	+38.8%	+2.6%	+12.0%	+6.5%	+9.5%	-1.7%	+4.3%				
10-yr AVG	11.2%	2.7%	2.0%	4.5%	4.6%	-1.6%	9.0%	-1.4%	-1.5%	6.7%	-1.0%	-3.5%

ASP Y/Y (5-Year)	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%	324.8%	339.2%				
Over/Under Seasonal Avg	+55.0%	+174.7%	+168.5%	+209.1%	+227.5%	+246.7%	+242.9%	+255.5%				
5-yr AVG	42.3%	65.9%	68.4%	72.5%	79.8%	83.5%	81.9%	83.7%	25.9%	31.8%	31.8%	46.8%

ASP Y/Y (10-Year)	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%	324.8%	339.2%				
Over/Under Seasonal Avg	+69.7%	+200.6	+195.6	+235.3	+257.5	+277.9	+270.6	+284.9				
10-yr AVG	27.6%	40.1%	41.3%	46.4%	49.8%	52.2%	54.2%	54.3%	20.2%	22.1%	22.1%	26.6%

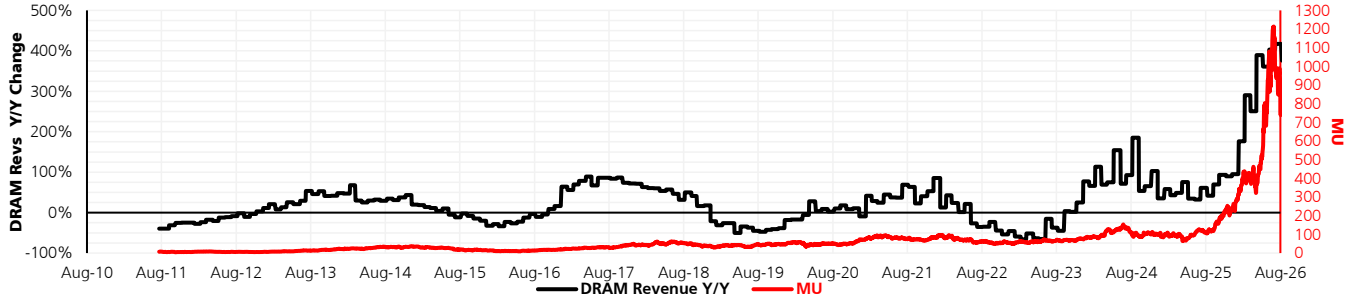
Source: UBS, SIA

Figure 17: DRAM Revenue and ASP Change



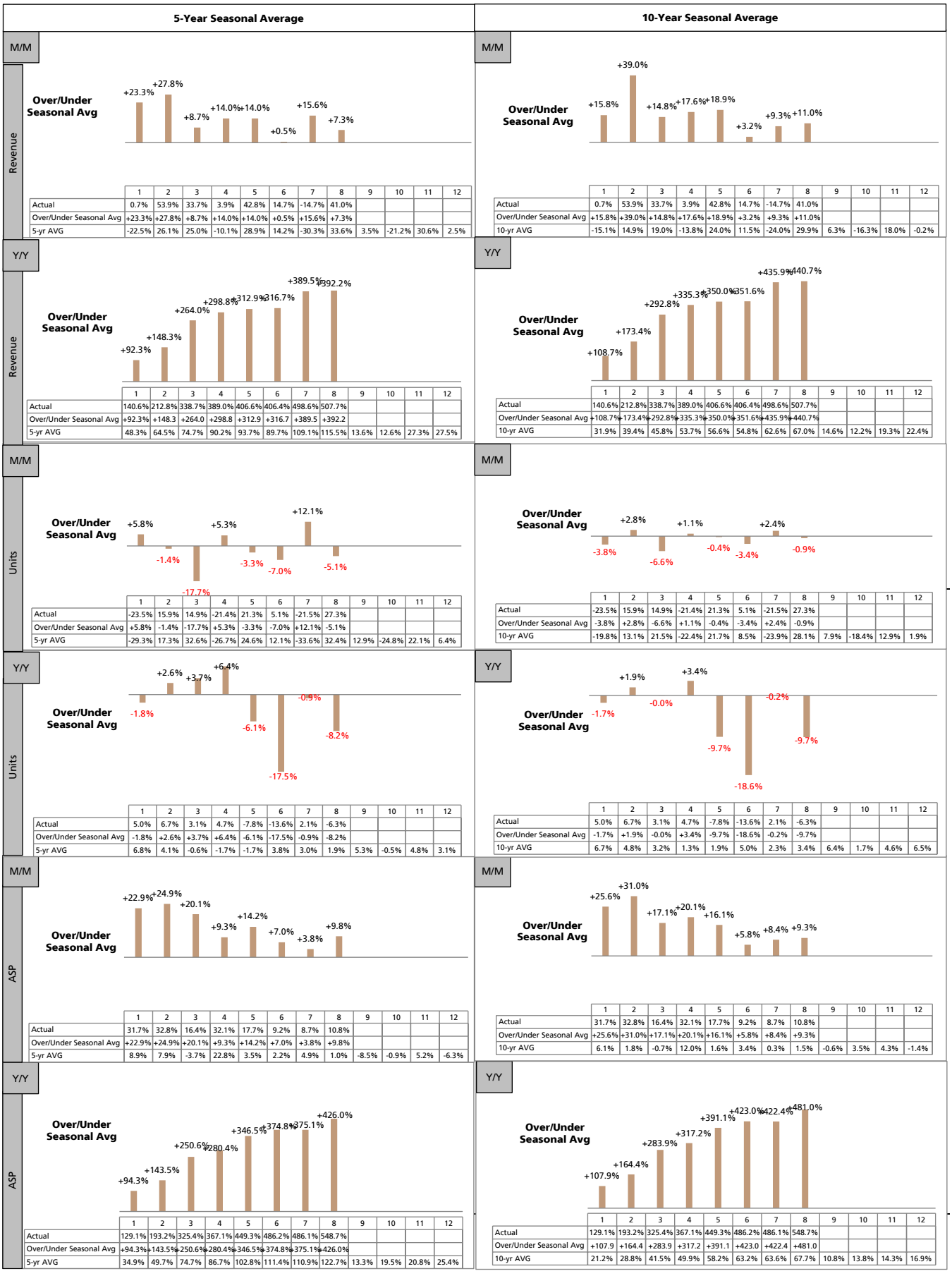
Source: UBS, SIA

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%	41.0%				
Over/Under Seasonal Avg	+23.3%	+27.8%	+8.7%	+14.0%	+14.0%	+0.5%	+15.6%	+7.3%				
5-yr AVG	-22.5%	26.1%	25.0%	-10.1%	28.9%	14.2%	-30.3%	33.6%	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%	41.0%				
Over/Under Seasonal Avg	+15.8%	+39.0%	+14.8%	+17.6%	+18.9%	+3.2%	+9.3%	+11.0%				
10-yr AVG	-15.1%	14.9%	19.0%	-13.8%	24.0%	11.5%	-24.0%	29.9%	6.3%	-16.3%	18.0%	-0.2%

Revenue Y/Y	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%	507.7%				
Over/Under Seasonal Avg	+92.3%	+148.3	+264.0	+298.8	+312.9	+316.7	+389.5	+392.2				
5-yr AVG	48.3%	64.5%	74.7%	90.2%	93.7%	89.7%	109.1%	115.5%	13.6%	12.6%	27.3%	27.5%

Revenue Y/Y	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%	507.7%				
Over/Under Seasonal Avg	+108.7%	+173.4%	+292.8%	+335.3%	+350.0%	+351.6%	+435.9%	+440.7%				
10-yr AVG	31.9%	39.4%	45.8%	53.7%	56.6%	54.8%	62.6%	67.0%	14.6%	12.2%	19.3%	22.4%

Units M/M	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%	-21.5%	27.3%				
Over/Under Seasonal Avg	+5.8%	-1.4%	-17.7%	+5.3%	-3.3%	-7.0%	+12.1%	-5.1%				
5-yr AVG	-29.3%	17.3%	32.6%	-26.7%	24.6%	12.1%	-33.6%	32.4%	12.9%	-24.8%	22.1%	6.4%

Units M/M	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%	-21.5%	27.3%				
Over/Under Seasonal Avg	-3.8%	+2.8%	-6.6%	+1.1%	-0.4%	-3.4%	+2.4%	-0.9%				
10-yr AVG	-19.8%	13.1%	21.5%	-22.4%	21.7%	8.5%	-23.9%	28.1%	7.9%	-18.4%	12.9%	1.9%

Units Y/Y	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%	2.1%	-6.3%				
Over/Under Seasonal Avg	-1.8%	+2.6%	+3.7%	+6.4%	-6.1%	-17.5%	-0.9%	-8.2%				
5-yr AVG	6.8%	4.1%	-0.6%	-1.7%	-1.7%	3.8%	3.0%	1.9%	5.3%	-0.5%	4.8%	3.1%

Units Y/Y	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%	2.1%	-6.3%				
Over/Under Seasonal Avg	-1.7%	+1.9%	-0.0%	+3.4%	-9.7%	-18.6%	-0.2%	-9.7%				
10-yr AVG	6.7%	4.8%	3.2%	1.3%	1.9%	5.0%	2.3%	3.4%	6.4%	1.7%	4.6%	6.5%

ASP M/M	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%	8.7%	10.8%				
Over/Under Seasonal Avg	+22.9%	+24.9%	+20.1%	+9.3%	+14.2%	+7.0%	+3.8%	+9.8%				
5-yr AVG	8.9%	7.9%	-3.7%	22.8%	3.5%	2.2%	4.9%	1.0%	-8.5%	-0.9%	5.2%	-6.3%

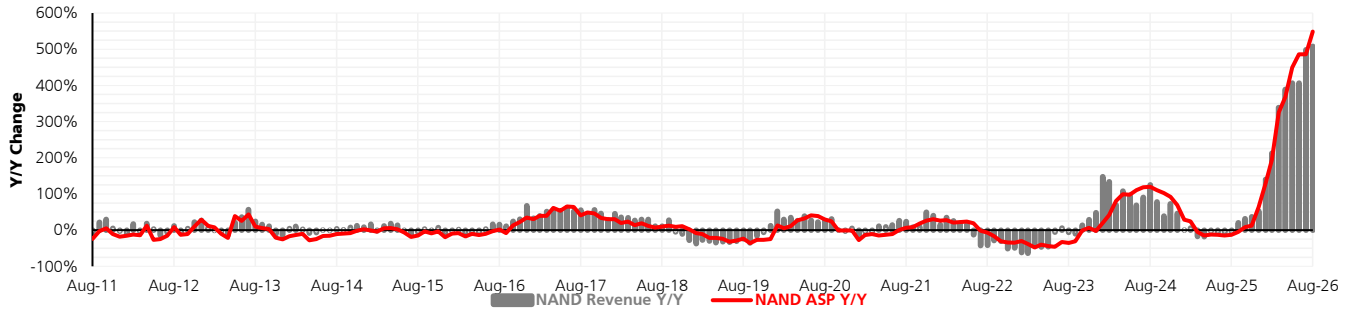
ASP M/M	1	2	3	4	5	6	7	8	9	10	11	12
Actual	31.7%	32.8%	16.4%	32.1%	17.7%	9.2%	8.7%	10.8%				
Over/Under Seasonal Avg	+25.6%	+31.0%	+17.1%	+20.1%	+16.1%	+5.8%	+8.4%	+9.3%				
10-yr AVG	6.1%	1.8%	-0.7%	12.0%	1.6%	3.4%	0.3%	1.5%	-0.6%	3.5%	4.3%	-1.4%

ASP Y/Y	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%	486.1%	548.7%				
Over/Under Seasonal Avg	+94.3%	+143.5%	+250.6%	+280.4%	+346.5%	+374.8%	+375.1%	+426.0%				
5-yr AVG	34.9%	49.7%	74.7%	86.7%	102.8%	111.4%	110.9%	122.7%	13.3%	19.5%	20.8%	25.4%

ASP Y/Y	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%	486.1%	548.7%				
Over/Under Seasonal Avg	+107.9	+164.4	+283.9	+317.2	+391.1	+423.0	+422.4	+481.0				
10-yr AVG	21.2%	28.8%	41.5%	49.9%	58.2%	63.2%	63.6%	67.7%	10.8%	13.8%	14.3%	16.9%

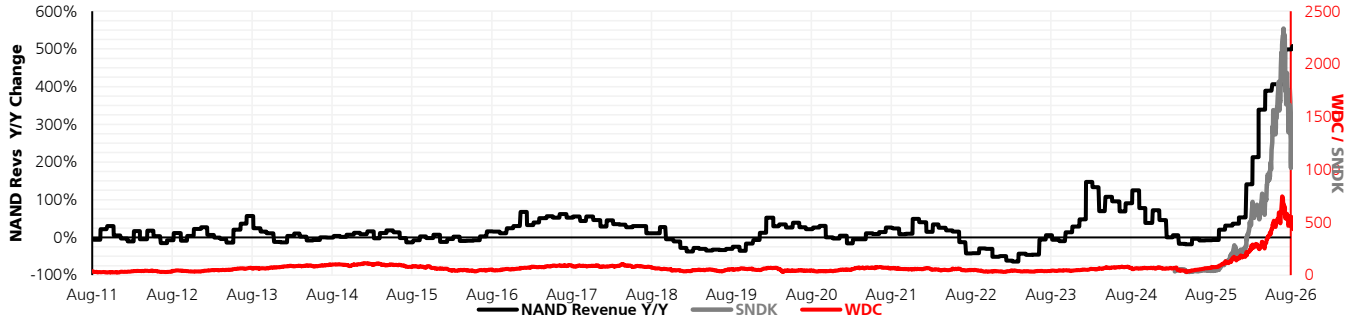
Source: UBS, SIA

Figure 20: NAND Revenue and ASP Change



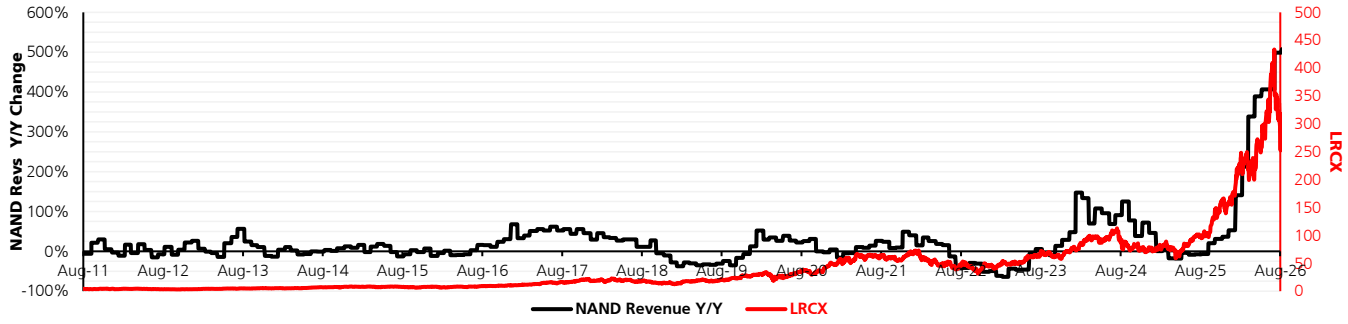
Source: UBS, SIA

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



	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-3.1%	-9.6%	17.3%	-4.4%	-5.8%	15.1%	3.8%	-3.1%				
Over/Under Seasonal Avg	+3.4%	-3.0%	+0.1%	+3.6%	-3.4%	+5.0%	+3.0%	-1.0%				
5-yr AVG	-6.6%	-6.6%	17.2%	-8.0%	-2.4%	10.1%	0.7%	-2.1%	10.1%	-3.5%	-4.2%	6.1%

	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-3.1%	-9.6%	17.3%	-4.4%	-5.8%	15.1%	3.8%	-3.1%				
Over/Under Seasonal Avg	+2.3%	-2.4%	-0.2%	+4.0%	-3.6%	+4.7%	+4.5%	-2.5%				
10-yr AVG	-5.5%	-7.2%	17.5%	-8.4%	-2.2%	10.4%	-0.7%	-0.6%	11.2%	-4.4%	-3.9%	5.7%

	1	2	3	4	5	6	7	8	9	10	11	12
Actual	18.5%	12.2%	13.8%	15.1%	11.9%	22.6%	16.6%	15.2%				
Over/Under Seasonal Avg	+11.8%	+4.6%	+7.2%	+9.0%	+6.0%	+14.6%	+8.7%	+7.7%				
5-yr AVG	6.8%	7.6%	6.6%	6.1%	5.9%	7.9%	7.8%	7.5%	10.4%	8.7%	7.8%	8.5%

	1	2	3	4	5	6	7	8	9	10	11	12
Actual	18.5%	12.2%	13.8%	15.1%	11.9%	22.6%	16.6%	15.2%				
Over/Under Seasonal Avg	+9.5%	+3.5%	+6.0%	+5.6%	+3.1%	+14.2%	+7.4%	+6.7%				
10-yr AVG	9.0%	8.7%	7.8%	9.5%	8.8%	8.3%	9.2%	8.5%	7.0%	8.5%	8.5%	8.1%

	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-3.4%	-10.1%	31.9%	-9.5%	-2.8%	18.1%	-6.3%	1.2%				
Over/Under Seasonal Avg	+11.2%	-3.4%	+5.8%	+1.4%	-2.6%	-1.2%	+3.1%	+4.7%				
5-yr AVG	-14.6%	-6.7%	26.2%	-10.9%	-0.2%	19.3%	-9.5%	-3.5%	21.4%	-16.2%	-3.2%	19.4%

	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-3.4%	-10.1%	31.9%	-9.5%	-2.8%	18.1%	-6.3%	1.2%				
Over/Under Seasonal Avg	+9.8%	-2.7%	+6.0%	+1.8%	-3.3%	+2.3%	-0.0%	+2.0%				
10-yr AVG	-13.3%	-7.5%	25.9%	-11.3%	0.5%	15.8%	-6.3%	-0.8%	18.0%	-13.7%	-2.0%	14.7%

	1	2	3	4	5	6	7	8	9	10	11	12
Actual	20.7%	9.1%	23.9%	22.1%	22.3%	19.9%	22.4%	28.5%				
Over/Under Seasonal Avg	+16.6%	+3.5%	+18.0%	+18.1%	+18.2%	+13.8%	+17.5%	+22.8%				
5-yr AVG	4.1%	5.7%	5.9%	4.0%	4.1%	6.1%	4.9%	5.7%	7.0%	4.1%	3.4%	4.8%

	1	2	3	4	5	6	7	8	9	10	11	12
Actual	20.7%	9.1%	23.9%	22.1%	22.3%	19.9%	22.4%	28.5%				
Over/Under Seasonal Avg	+12.4%	+0.2%	+16.4%	+12.6%	+13.5%	+11.9%	+13.4%	+20.2%				
10-yr AVG	8.4%	8.9%	7.5%	9.6%	8.8%	7.9%	9.0%	8.3%	6.6%	7.3%	7.1%	6.9%

	1	2	3	4	5	6	7	8	9	10	11	12
Actual	0.5%	0.5%	-11.1%	5.6%	-3.2%	-2.5%	10.8%	-4.3%				
Over/Under Seasonal Avg	-10.8%	+0.4%	-4.7%	+2.4%	-1.0%	+5.0%	-0.6%	-5.8%				
5-yr AVG	11.3%	0.1%	-6.3%	3.3%	-2.2%	-7.5%	11.3%	1.5%	-8.3%	16.4%	-1.0%	-9.3%

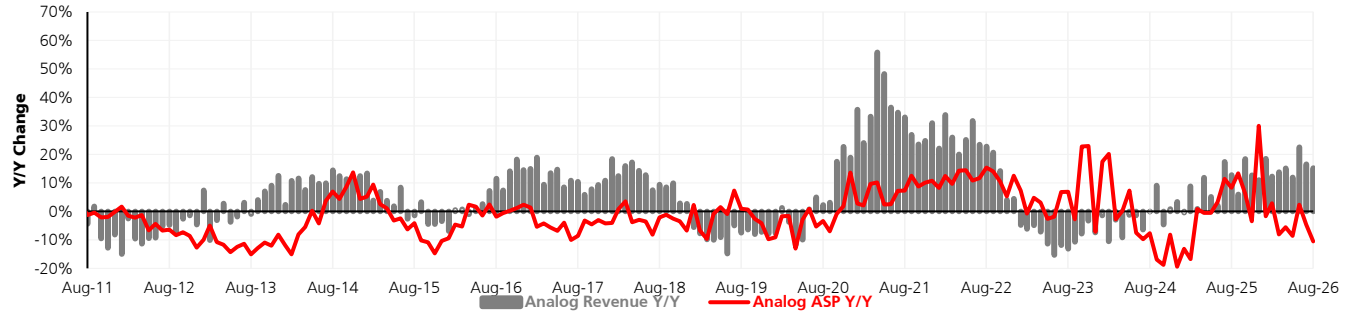
	1	2	3	4	5	6	7	8	9	10	11	12
Actual	0.5%	0.5%	-11.1%	5.6%	-3.2%	-2.5%	10.8%	-4.3%				
Over/Under Seasonal Avg	-9.6%	+0.1%	-4.8%	+2.2%	-0.7%	+2.0%	+4.6%	-4.6%				
10-yr AVG	10.1%	0.4%	-6.3%	3.4%	-2.6%	-4.5%	6.2%	0.2%	-5.2%	11.6%	-1.8%	-6.6%

	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-1.7%	2.8%	-8.1%	-5.6%	-8.6%	2.3%	-4.6%	-10.5%				
Over/Under Seasonal Avg	-5.4%	-0.7%	-8.9%	-7.9%	-10.6%	+0.9%	-7.7%	-13.0%				
5-yr AVG	3.6%	3.6%	0.9%	2.3%	2.0%	1.4%	3.1%	2.5%	4.0%	5.9%	5.3%	5.3%

	1	2	3	4	5	6	7	8	9	10	11	12
Actual	-1.7%	2.8%	-8.1%	-5.6%	-8.6%	2.3%	-4.6%	-10.5%				
Over/Under Seasonal Avg	-2.9%	+2.2%	-8.3%	-5.4%	-8.7%	+2.1%	-5.3%	-11.2%				
10-yr AVG	1.1%	0.7%	0.2%	-0.2%	0.1%	0.2%	0.6%	0.7%	0.9%	1.9%	1.9%	2.2%

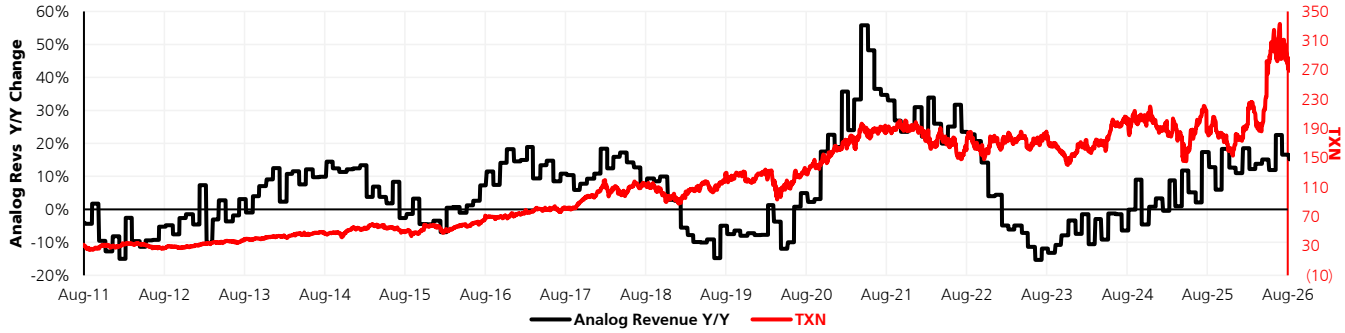
Source: UBS, SIA

Figure 24: Analog Revenue and ASP Change



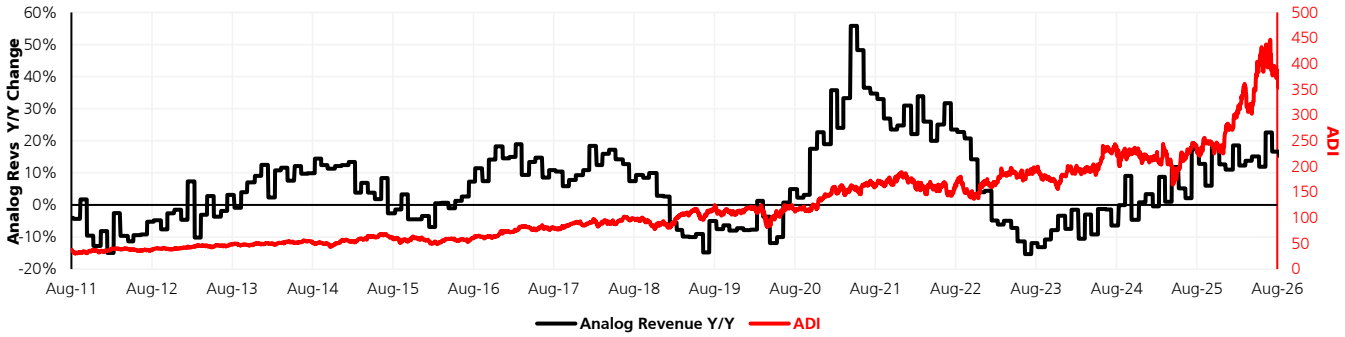
Source: UBS, SIA

Figure 25: Analog Revenue vs. TXN



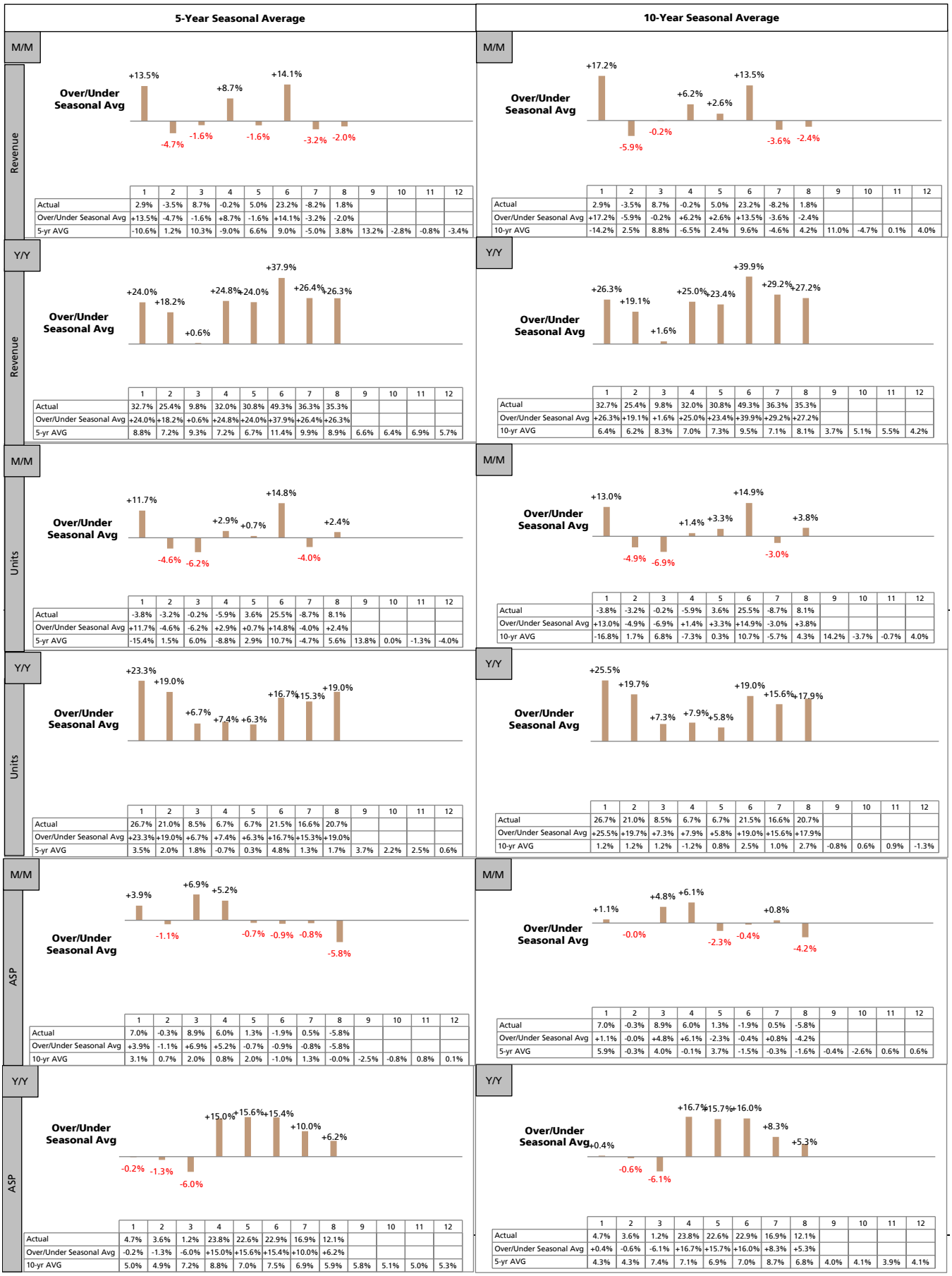
Source: UBS, SIA, FactSet.

Figure 26: Analog Revenue vs. ADI



Source: UBS, SIA, FactSet.

Figure 27: MPU Revenue and Units Change Relative to Seasonality



Revenue M/M	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%	1.8%				
Over/Under Seasonal Avg	+13.5%	-4.7%	-1.6%	+8.7%	-1.6%	+14.1%	-3.2%	-2.0%				
5-yr AVG	-10.6%	1.2%	10.3%	-9.0%	6.6%	9.0%	-5.0%	3.8%	13.2%	-2.8%	-0.8%	-3.4%

Revenue M/M	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%	1.8%				
Over/Under Seasonal Avg	+17.2%	-5.9%	-0.2%	+6.2%	+2.6%	+13.5%	-3.6%	-2.4%				
10-yr AVG	-14.2%	2.5%	8.8%	-6.5%	2.4%	9.6%	-4.6%	4.2%	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%	35.3%				
Over/Under Seasonal Avg	+24.0%	+18.2%	+0.6%	+24.8%	+24.0%	+37.9%	+26.4%	+26.3%				
5-yr AVG	8.8%	7.2%	9.3%	7.2%	6.7%	11.4%	9.9%	8.9%	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%	35.3%				
Over/Under Seasonal Avg	+26.3%	+19.1%	+1.6%	+25.0%	+23.4%	+39.9%	+29.2%	+27.2%				
10-yr AVG	6.4%	6.2%	8.3%	7.0%	7.3%	9.5%	7.1%	8.1%	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%	8.1%				
Over/Under Seasonal Avg	+11.7%	-4.6%	-6.2%	+2.9%	+0.7%	+14.8%	-4.0%	+2.4%				
5-yr AVG	-15.4%	1.5%	6.0%	-8.8%	2.9%	10.7%	-4.7%	5.6%	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%	8.1%				
Over/Under Seasonal Avg	+13.0%	-4.9%	-6.9%	+1.4%	+3.3%	+14.9%	-3.0%	+3.8%				
10-yr AVG	-16.8%	1.7%	6.8%	-7.3%	0.3%	10.7%	-5.7%	4.3%	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%	20.7%				
Over/Under Seasonal Avg	+23.3%	+19.0%	+6.7%	+7.4%	+6.3%	+16.7%	+15.3%	+19.0%				
5-yr AVG	3.5%	2.0%	1.8%	-0.7%	0.3%	4.8%	1.3%	1.7%	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%	20.7%				
Over/Under Seasonal Avg	+25.5%	+19.7%	+7.3%	+7.9%	+5.8%	+19.0%	+15.6%	+17.9%				
10-yr AVG	1.2%	1.2%	1.2%	-1.2%	0.8%	2.5%	1.0%	2.7%	-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%	-5.8%				
Over/Under Seasonal Avg	+3.9%	-1.1%	+6.9%	+5.2%	-0.7%	-0.9%	-0.8%	-5.8%				
10-yr AVG	3.1%	0.7%	2.0%	0.8%	2.0%	-1.0%	1.3%	-0.0%	-2.5%	-0.8%	0.8%	0.1%

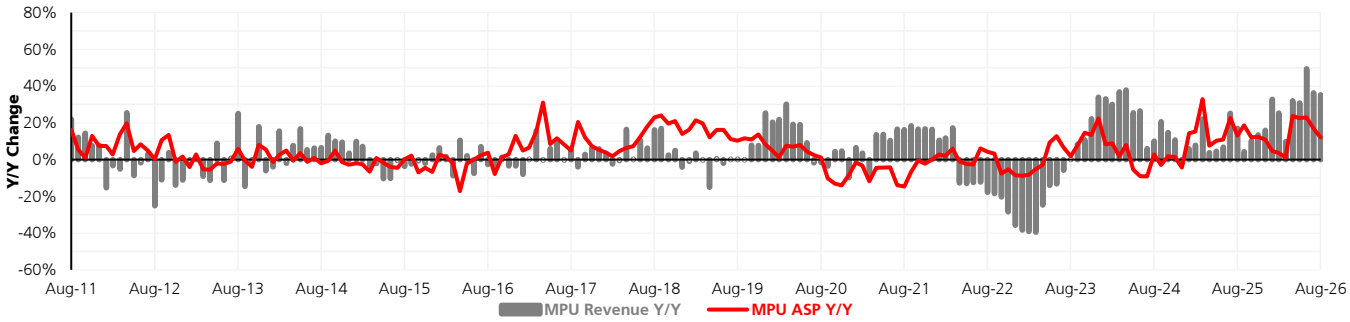
ASP M/M	1	2	3	4	5	6	7	8	9	10	11	12
Actual	7.0%	-0.3%	8.9%	6.0%	1.3%	-1.9%	0.5%	-5.8%				
Over/Under Seasonal Avg	+1.1%	-0.0%	+4.8%	+6.1%	-2.3%	-0.4%	+0.8%	-4.2%				
5-yr AVG	5.9%	-0.3%	4.0%	-0.1%	3.7%	-1.5%	-0.3%	-1.6%	-0.4%	-2.6%	0.6%	0.6%

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%	12.1%				
Over/Under Seasonal Avg	-0.2%	-1.3%	-6.0%	+15.0%	+15.6%	+15.4%	+10.0%	+6.2%				
10-yr AVG	5.0%	4.9%	7.2%	8.8%	7.0%	7.5%	6.9%	5.9%	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%	12.1%				
Over/Under Seasonal Avg	+0.4%	-0.6%	-6.1%	+16.7%	+15.7%	+16.0%	+8.3%	+5.3%				
5-yr AVG	4.3%	4.3%	7.4%	7.1%	6.9%	7.0%	8.7%	6.8%	4.0%	4.1%	3.9%	4.1%

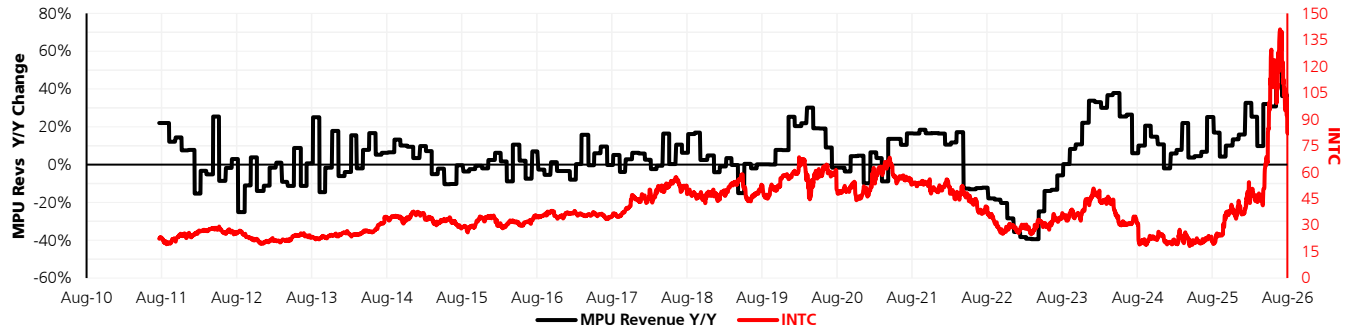
Source: UBS, SIA

Figure 28: MPU Revenue and ASP Change



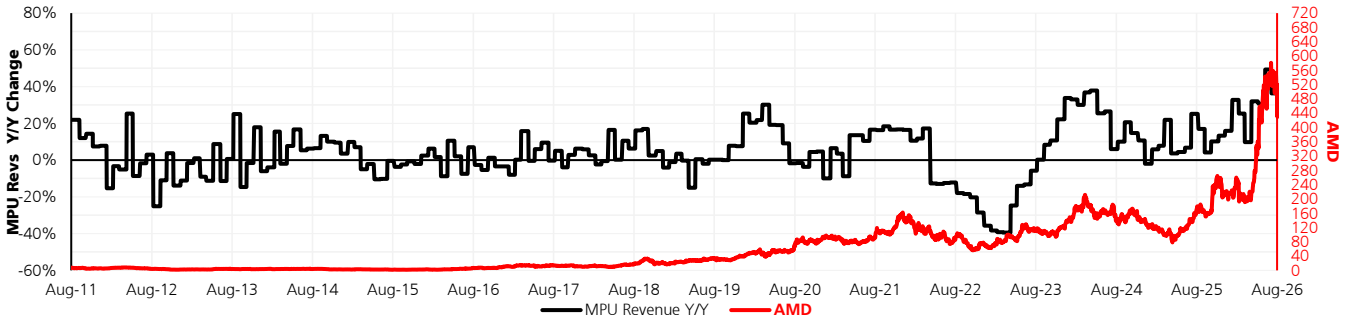
Source: UBS, SIA, FactSet.

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	+21.9%	+40.1%			-11.6%	+15.7%			-3.0%	+3.4%			+3.3%	+8.6%			+4.6%	+14.0%			-1.4%	+16.1%			+81.7%	+64.1%		
10-yr Average	-1.9%	+8.1%	+8.3%	+3.2%	-6.1%	+4.2%	+8.1%	+4.6%	-2.7%	+1.0%	+8.0%	+1.5%	-0.4%	+2.9%	+4.9%	-2.1%	-2.8%	+3.6%	+8.3%	+6.7%	-8.5%	+4.1%	+8.3%	+4.3%	+6.2%	+16.9%	+8.2%	+3.3%
5-yr Average	-0.3%	+12.2%	+7.4%	+4.8%	-7.0%	+5.6%	+7.8%	+5.4%	-3.4%	+1.3%	+7.3%	+1.1%	+1.4%	+3.1%	+4.0%	-1.5%	+0.7%	+5.2%	+7.7%	+7.5%	-9.5%	+4.8%	+8.1%	+5.1%	+11.7%	+25.9%	+5.3%	+6.5%
LT Average	-2.7%	+5.6%	+8.1%	+0.5%	-4.8%	+3.6%	+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%	+1.0%	+9.9%	+7.9%	+0.6%
Median	-2.3%	+4.8%	+8.1%	+0.9%	-4.8%	+2.6%	+8.4%	+1.9%	-2.6%	+3.3%	+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	+0.9%	+9.6%			+4.4%	+9.2%			+4.5%	+8.5%			+3.8%	+3.7%			+4.3%	+12.7%			-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%	+5.6%	+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%	+6.3%	-4.7%	+8.2%	+4.8%	-0.7%
5-yr Average	-3.7%	+6.7%	+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%	+4.7%	+1.2%	+0.0%	-15.8%	+0.5%	+10.5%	+7.7%	-3.9%	+13.3%	-0.3%	+0.4%
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%	+2.0%	-2.0%	+7.4%	+4.9%	-0.7%
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%	+3.2%	-1.7%	+4.8%	+6.1%	-1.0%

Source: UBS, SIA

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.

