Memory Semis Monthly

October '26 Edition: Is the Wall of Worry justified?

Equities

Global

Semiconductors

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CXMT's possible 4F2 ramp not a concern for industry supply

According to the press (link), CXMT's President indicated "launching" 4F2 Vertical Channel Access Transistor (VCAT) DRAM before year end; it is unclear what "launching" means, but we suspect R&D or sample as 6F2 G5 (1a nm) manufacturing ramps in 2027. As we wrote before (link; link), 4F2 VCAT allows to increase density (all things being equal) by 50% vs. 6F2 whilst not changing the lithography half pitch; or less if relaxing it. Ultimately though, subsequent process nodes will need lower half pitch and more advanced litho. VCAT also has its own sets of challenges around deposition (ALD) and selective epi in particular. We note that Samsung is likely targeting 4F2 VCAT for 0a nm by late-2028, after 1d nm 6F2 ramp in 2027. Lastly, moving on a distinct path for DRAM process tech usually requires at least 3 process nodes iterations to maximize efficiency and performance. This may mean a later than otherwise move to 3D DRAM, which would, ultimately, remove the need for EUV litho for DRAM manufacturing. This, to us, would be the more material fork in the road.

HBM de-specing may continue amidst stronger server DDR/SSD demand

Our checks indicate that DRAM makers continue to see upsized orders into 2027 for server DDR5, boosted by agentic AI inferencing deployment. In addition, we believe that SOCAMM orders from Nvidia (for Vera CPUs) have gotten stronger over the past 2 months, now exceeding 50bn Gb in 2027. This is larger than total PC+GDDR DRAM bit consumption. This, in turn, has pressured down HBM shipments, which we estimate would likely only grow 49% YoY. Hence, HBM de-specing was largely unavoidable. We continue to expect Nvidia VR300 to adopt HBM4 8-Hi (then HBM4E). Feynman may adopt HBM4E 8 or 12-Hi, as well as TPU v9. Some inference-centric ASICs may be at 4-Hi. One consequence of HBM density de-specing for VR300 is an increase in demand for NAND (KV Cache; CMX for Nvidia), which our checks indicate has recently picked up.

Samsung may accelerate the cadence of capacity ramp further

We recently increased, again, our capex forecasts for Samsung (link). We expect Samsung to add 120k wpm of DRAM capacity 4Q26>4Q27 from 700k wpm to 820k wpm. This is on the back of P4 finishing its ramp and P5-1 starting to get equipment in July 2027. After this, in 2028, it is possible that Samsung would aim to start ramping up one clean room in P5-1 whilst the precedent one is still getting in equipment, and/or de-bottleneck P2/P3. This could allow Samsung to add >150k wpm in DRAM capacity in 2028, even assuming some NAND capacity addition in P5. This may not materially impact supply / demand before late 2028.

Correction in memory stocks may present an attractive opportunity

Memory stocks are now down 19% from the more recent peak in September, almost back to the July trough. We think this should push memory companies to get going on shareholder returns. At current average '27-30E FCF yields for our coverage (ex-CXMT) of 29%, we remain positive on the group. Our top pick remains Key Call Buy Samsung Electronics, whilst we maintain Buy ratings on all stocks in our coverage universe.

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KEY CHARTS

Figure 1: AI server GPU/accelerator unit forecasts ('000 units)

	HBM Gen.	HBM Content (GB)			2025	1Q26	2Q26	3Q26E	4Q26E	2026E	1Q27E	2Q27E	3Q27E	4Q27E	2027E
NVIDIA		**2025E**	**2026E**	**2027E**											
L40S	GDDR6	48			38										
H200	HBM3E	141			593										
H20 / H20E	HBM3 / 3E	96			441										
B200 (8Hi)	HBM3E	192			1,441										
GB200 (2x GPU - 8Hi)	HBM3E	384	384		1,080	103				103					
B300 (12Hi)	HBM3E	288	288	288	587	267	300	200	100	867	50				50
GB300 (2x GPU - 12Hi)	HBM3E	576	576	576	778	658	670	580	450	2,358	360	270	180	90	900
R200 (12Hi)	HBM4		288	288			20	200	320	540	360	400	320	240	1,320
RV200 (2x GPU - 12Hi)	HBM4		576	576			40	250	450	740	600	720	690	630	2,640
R300 (8Hi)	HBM4			192									250		250
R300 (8Hi)	HBM4E			256										400	400
RV300 (2x GPU - 8Hi)	HBM4			384									250		250
RV300 (2x GPU - 8Hi)	HBM4E			512										550	550
*Other GPU/Accel	HBM3 / 3E	288	384	576	107	60	80	80	80	300	70	70	80	80	300
Total Units					**5,066**	**1,088**	**1,110**	**1,310**	**1,400**	**4,908**	**1,440**	**1,460**	**1,770**	**1,990**	**6,660**
% YoY					*3%*	*-17%*	*0%*	*3%*	*3%*	*-3%*	*32%*	*32%*	*35%*	*42%*	*36%*
% QoQ						*-20%*	*2%*	*18%*	*7%*		*3%*	*1%*	*21%*	*12%*	
Total SiPs					**6,924**	**1,849**	**1,820**	**2,140**	**2,300**	**8,109**	**2,400**	**2,450**	**2,890**	**3,260**	**11,000**
% YoY					*38%*	*27%*	*23%*	*15%*	*8%*	*17%*	*30%*	*35%*	*35%*	*42%*	*36%*
% QoQ						*-13%*	*-2%*	*18%*	*7%*		*4%*	*2%*	*18%*	*13%*	
AMD															
MI300	HBM3	192			71										
MI325X (12Hi)	HBM3E	256	256		224	18				18					
MI355X (12Hi)	HBM3E	288	288		221	170	150	80	70	470					
MI308X	HBM3	192	192		96	29	28	5		62					
MI450 (12Hi)	HBM4		432	432				45	230	275	350	450	470	380	1,650
MI5XX (16Hi)	HBM4E			1024									60	160	220
*Other GPU/Accel	HBM3	192	192	288	4	1	1	1	1	6	2	2	2	2	8
Total Units					**616**	**218**	**179**	**131**	**301**	**831**	**352**	**452**	**532**	**542**	**1,878**
% YoY					*41%*	*81%*	*86%*	*-26%*	*37%*	*35%*	*61%*	*152%*	*305%*	*80%*	*126%*
% QoQ						*-1%*	*-18%*	*-27%*	*129%*		*17%*	*28%*	*18%*	*2%*	
Google															
TPU v5e	HBM2E	32			134										
TPU v5p	HBM2E	96			1,916										
TPU v6e	HBM3E	32	32		426	205	224	141	70	640					
TPU v7	HBM3E	192	192	192	90	520	720	800	750	2,790	600	450	300	150	1,500
TPU v8i (Dual die AX)	HBM3E		288	288				25	225	250	700	1,000	1,300	1,000	4,000
TPU v8t (Single die X)	HBM3E		216	216				70	380	450	700	1,200	1,500	1,000	4,400
*Other TPU/Accel	HBM3	96	144	144	77	7	9	10	10	37	25	25	25	25	100
Total Units					**2,643**	**732**	**953**	**1,046**	**1,435**	**4,167**	**2,025**	**2,675**	**3,125**	**2,175**	**10,000**
% YoY					*19%*	*14%*	*66%*	*82%*	*68%*	*58%*	*177%*	*181%*	*199%*	*52%*	*140%*
% QoQ						*-14%*	*30%*	*10%*	*37%*		*41%*	*32%*	*17%*	*-30%*	
Amazon															
Inferentia 2	HBM2E	32			88										
Trainium 2 / 2.5	HBM3E	96	144	144	496	130	220	140	100	590	50	10			60
Inferentia 3	HBM3	96	96	96	162	30	28	20	18	96	15	10			25
Trainium 3	HBM3E		144	144			320	620	840	1,780	840	780	640	540	2,800
Trainium 4	HBM4			256									40	240	280
*Other Accel	HBM3	144	144	144	37	5	6	8	10	28	8	8	7	7	30
Total Units					**783**	**165**	**574**	**788**	**968**	**2,494**	**913**	**808**	**687**	**787**	**3,195**
% YoY					*-8%*	*-17%*	*180%*	*302%*	*424%*	*218%*	*454%*	*41%*	*-13%*	*-19%*	*28%*
% QoQ						*-11%*	*248%*	*37%*	*23%*		*-6%*	*-12%*	*-15%*	*15%*	
Intel / Habana															
Gaudi 3	HBM2 / 3E	288	288		188	30	18	8		56					
Gaudi 4	HBM3E		288	288				10	25	35	25	20	15	10	70
*Others	HBM2 / 3E	192	192	192	25	6	4	4	5	18	4	4	4	4	16
Total Units					**213**	**36**	**22**	**22**	**30**	**109**	**29**	**24**	**19**	**14**	**86**
% YoY					*-32%*	*-20%*	*-60%*	*-63%*	*-46%*	*-49%*	*-19%*	*11%*	*-12%*	*-53%*	*-21%*
% QoQ						*-36%*	*-40%*	*0%*	*39%*		*-3%*	*-17%*	*-21%*	*-26%*	
Microsoft															
Maia 100	HBM3	120	120		34	3	1			4					
Maia 200	HBM3E		288	288		2	6	10	14	33	14	10	7	4	35
Maia 300	HBM4			288									8	14	22
*Others	HBM3	120	192	192	8	2	2	2	2	8	2	2	2	2	8
Total Units					**42**	**7**	**9**	**12**	**16**	**45**	**16**	**12**	**17**	**20**	**65**
% YoY					*22%*	*-27%*	*-19%*	*4%*	*84%*	*7%*	*119%*	*35%*	*36%*	*24%*	*45%*
% QoQ						*-17%*	*22%*	*40%*	*29%*		*0%*	*-25%*	*42%*	*18%*	
Meta															
MTIA v1	LPDDR5	64	64		421	20	5			25					
MTIA v2	LPDDR5	128	128		30	20	8	2		30					
MTIA v3	HBM3E	192	192	192	5	15	20	35	40	110	40	30	20	15	105
MTIA v4	HBM4			432							40	80	100	120	340
*Others	LPDDR5	64	128	128	28	3	1	1	1	6	5	5	5	5	20
Total Units					**484**	**58**	**34**	**38**	**41**	**171**	**85**	**115**	**125**	**140**	**465**
% YoY					*19%*	*-43%*	*-71%*	*-71%*	*-68%*	*-65%*	*47%*	*235%*	*228%*	*240%*	*171%*
% QoQ						*-56%*	*-41%*	*11%*	*8%*		*106%*	*35%*	*9%*	*12%*	
Tesla															
Dojo	HBM3	64	64	64	62	17	18	15	14	64	15	15	18	15	63
*Others	HBM3	64	64	64	44	7	7	6	6	26	6	6	5	5	22
Total Units					**106**	**24**	**25**	**21**	**20**	**90**	**21**	**21**	**23**	**20**	**85**
% YoY					*-39%*	*-12%*	*-9%*	*-24%*	*-16%*	*-15%*	*-12%*	*-17%*	*10%*	*2%*	*-5%*
% QoQ						*2%*	*6%*	*-17%*	*-7%*		*7%*	*0%*	*10%*	*-13%*	
Others															
Startups	HBM3	192	288	288	657	150	150	155	155	610	170	180	185	190	725
Others	HBM2E /3	192	288	288	361	30	30	39	39	138	60	63	65	67	254
Total Units					**1,019**	**180**	**180**	**194**	**194**	**748**	**230**	**243**	**250**	**257**	**979**
% YoY					*59%*	*-28%*	*-32%*	*-26%*	*-20%*	*-27%*	*28%*	*35%*	*29%*	*32%*	*31%*
% QoQ						*-26%*	*0%*	*8%*	*0%*		*18%*	*6%*	*3%*	*3%*	
Total GPU / Accelerator Units ('000)					**12,829**	**3,269**	**3,797**	**4,412**	**5,455**	**16,933**	**6,231**	**6,970**	**7,848**	**7,445**	**28,493**
% YoY					*27%*	*15%*	*34%*	*34%*	*42%*	*32%*	*91%*	*84%*	*78%*	*36%*	*68%*
% QoQ						*-15%*	*16%*	*16%*	*24%*		*14%*	*12%*	*13%*	*-5%*	

Source: Company data, UBS estimates

Figure 2: HBM demand forecasts by GPU/accelerator

	HBM Gen.	HBM Content (GB)			2025	1Q26	2Q26	3Q26E	4Q26E	2026E	1Q27E	2Q27E	3Q27E	4Q27E	2027E
NVIDIA		**2025E**	**2026E**	**2027E**											
H200	HBM3E	141			83,571										
H20 / H20E	HBM3 / 3E	96			42,336										
B200 (8Hi)	HBM3E	192			276,649										
GB200 (2x GPU - 8Hi)	HBM3E	384	384		414,872	39,504				39,504					
B300A (12Hi)	HBM3E	144	144		0	0	0	0	0	0					
B300 (12Hi)	HBM3E	288	288	288	169,176	76,896	86,400	57,600	28,800	249,696	14,400				14,400
GB300 (2x GPU - 12Hi)	HBM3E	576	576	576	448,259	379,008	385,920	334,080	259,200	1,358,208	207,360	155,520	103,680	51,840	518,400
R200 (12Hi)	HBM4		288	288			5,760	57,600	92,160	155,520	103,680	115,200	92,160	69,120	380,160
RV200 (2x GPU - 12Hi)	HBM4		576	576			23,040	144,000	259,200	426,240	345,600	414,720	397,440	362,880	1,520,640
R300 (12Hi)	HBM4			192									48,000		48,000
R300 (12Hi)	HBM4E			256										102,400	102,400
RV300 (4x GPU - 12Hi)	HBM4			384									96,000		96,000
RV300 (4x GPU - 12Hi)	HBM4E			512										281,600	281,600
*Other GPU/Accel	HBM3 / 3E	288	384	576	30,787	23,040	30,720	30,720	30,720	115,200	40,320	40,320	46,080	46,080	172,800
Total ('000 GB)					**1,465,650**	**518,448**	**531,840**	**624,000**	**670,080**	**2,344,368**	**711,360**	**725,760**	**783,360**	**913,920**	**3,134,400**
Total (bn Gb)					**11.73**	**4.15**	**4.25**	**4.99**	**5.36**	**18.75**	**5.69**	**5.81**	**6.27**	**7.31**	**25.08**
AMD															
MI300	HBM3	192			13,685										
MI325X (12Hi)	HBM3E	256	256		57,294	4,608				4,608					
MI355X (12Hi)	HBM3E	288	288		63,569	48,960	43,200	23,040	20,160	135,360					
MI308X	HBM3	192	192		18,394	5,568	5,376	960		11,904					
MI450 (12Hi)	HBM4		432	432				19,440	99,360	118,800	151,200	194,400	203,040	164,160	712,800
MI5XX (16Hi)	HBM4E			1,024									61,440	163,840	225,280
*Other GPU/Accel	HBM3	192	192	288	812	274	285	282	281	1,123	576	576	576	576	2,304
Total ('000 GB)					**153,754**	**59,410**	**48,861**	**43,722**	**119,801**	**271,795**	**151,776**	**194,976**	**265,056**	**328,576**	**940,384**
Total (bn Gb)					**1.23**	**0.48**	**0.39**	**0.35**	**0.96**	**2.17**	**1.21**	**1.56**	**2.12**	**2.63**	**7.52**
Google															
TPU v5e	HBM2E	32			4,282										
TPU v5p	HBM2E	96			183,913										
TPU v6e	HBM3E	32	32		13,632	6,554	7,168	4,506	2,253	20,480					
TPU v7	HBM3E	192	192	192	17,280	99,840	138,240	153,600	144,000	535,680	115,200	86,400	57,600	28,800	288,000
TPU v8i (Dual die AX)	HBM3E		288	288				7,200	64,800	72,000	201,600	288,000	374,400	288,000	1,152,000
TPU v8t (Single die X)	HBM3E		216	216				15,120	82,080	97,200	151,200	259,200	324,000	216,000	950,400
*Other TPU/Accel	HBM3	96	144	144	7,389	1,044	1,359	1,492	1,440	5,335	3,600	3,600	3,600	3,600	14,400
Total ('000 GB)					**226,495**	**107,437**	**146,767**	**181,917**	**294,573**	**730,695**	**471,600**	**637,200**	**759,600**	**536,400**	**2,404,800**
Total (bn Gb)					**1.81**	**0.86**	**1.17**	**1.46**	**2.36**	**5.85**	**3.77**	**5.10**	**6.08**	**4.29**	**19.24**
Amazon															
Inferentia 2	HBM2E	32			2,823										
Trainium 2 / 2.5	HBM3E	96	144	144	47,574	18,720	31,680	20,160	14,400	84,960	7,200	1,440			8,640
Inferentia 3	HBM3	96	96	96	15,563	2,880	2,688	1,920	1,728	9,216	1,440	960			2,400
Trainium 3	HBM3E		144	144			46,080	89,280	120,960	256,320	120,960	112,320	92,160	77,760	403,200
Trainium 4	HBM4			256									10,240	61,440	71,680
*Other Accel	HBM3	144	144	144	5,375	691	818	1,123	1,380	4,012	1,152	1,152	1,008	1,008	4,320
Total ('000 GB)					**71,336**	**22,291**	**81,266**	**112,483**	**138,468**	**354,508**	**130,752**	**115,872**	**103,408**	**140,208**	**490,240**
Total (bn Gb)					**0.57**	**0.18**	**0.65**	**0.90**	**1.11**	**2.84**	**1.05**	**0.93**	**0.83**	**1.12**	**3.92**
Intel															
Gaudi 3	HBM2 / 3E	288	288		54,212	8,640	5,184	2,304		16,128					
Gaudi 4	HBM3E		288	288				2,880	7,200	10,080	7,200	5,760	4,320	2,880	20,160
*Others	HBM2 / 3E	192	192	192	4,789	1,152	691	691	960	3,494	768	768	768	768	3,072
Total ('000 GB)					**59,001**	**9,792**	**5,875**	**5,875**	**8,160**	**29,702**	**7,968**	**6,528**	**5,088**	**3,648**	**23,232**
Total (bn Gb)					**0.47**	**0.08**	**0.05**	**0.05**	**0.07**	**0.24**	**0.06**	**0.05**	**0.04**	**0.03**	**0.19**
Microsoft															
Maia 100	HBM3	120	120		4,050	360	120			480					
Maia 200	HBM3E		288	288		660	1,696	3,016	4,052	9,424	4,032	2,880	2,016	1,152	10,080
Maia 300	HBM4			288									2,304	4,032	6,336
*Others	HBM3	120	192	192	960	384	384	384	384	1,536	384	384	384	384	1,536
Total ('000 GB)					**5,010**	**1,404**	**2,200**	**3,400**	**4,436**	**11,440**	**4,416**	**3,264**	**4,704**	**5,568**	**17,952**
Total (bn Gb)					**0.04**	**0.01**	**0.02**	**0.03**	**0.04**	**0.09**	**0.04**	**0.03**	**0.04**	**0.04**	**0.14**
Meta															
MTIA v3	HBM3E	192	192	192	960	2,880	3,840	6,720	7,680	21,120	7,680	5,760	3,840	2,880	20,160
MTIA v4	HBM4			432							17,280	34,560	43,200	51,840	146,880
Total ('000 GB)					**960**	**2,880**	**3,840**	**6,720**	**7,680**	**21,120**	**24,960**	**40,320**	**47,040**	**54,720**	**167,040**
Total (bn Gb)					**0.01**	**0.02**	**0.03**	**0.05**	**0.06**	**0.17**	**0.20**	**0.32**	**0.38**	**0.44**	**1.34**
Others															
Tesla	HBM3	64	64		6,780	1,523	1,613	1,344	1,255	5,735	1,344	1,344	1,472	1,280	5,440
Startups / Etc.	HBM2E / 3	192	288		195,559	51,840	51,840	55,800	55,800	215,280	66,096	69,984	71,928	73,872	281,880
Total ('000 GB)					**202,339**	**53,363**	**53,453**	**57,144**	**57,055**	**221,015**	**67,440**	**71,328**	**73,400**	**75,152**	**287,320**
Total (bn Gb)					**1.62**	**0.43**	**0.43**	**0.46**	**0.46**	**1.77**	**0.54**	**0.57**	**0.59**	**0.60**	**2.30**
Total HBM Demand ('000 GB)					**2,184,545**	**775,025**	**874,103**	**1,039,582**	**1,332,654**	**4,021,364**	**1,604,832**	**1,831,968**	**2,098,536**	**2,154,672**	**7,690,008**
Total HBM Demand (bn Gb)					**17.48**	**6.20**	**6.99**	**8.32**	**10.66**	**32.17**	**12.84**	**14.66**	**16.79**	**17.24**	**61.52**
% YoY					*103%*	*97%*	*103%*	*72%*	*77%*	*84%*	*107%*	*110%*	*102%*	*62%*	*91%*
% QoQ						*3%*	*13%*	*19%*	*28%*		*20%*	*14%*	*15%*	*3%*	

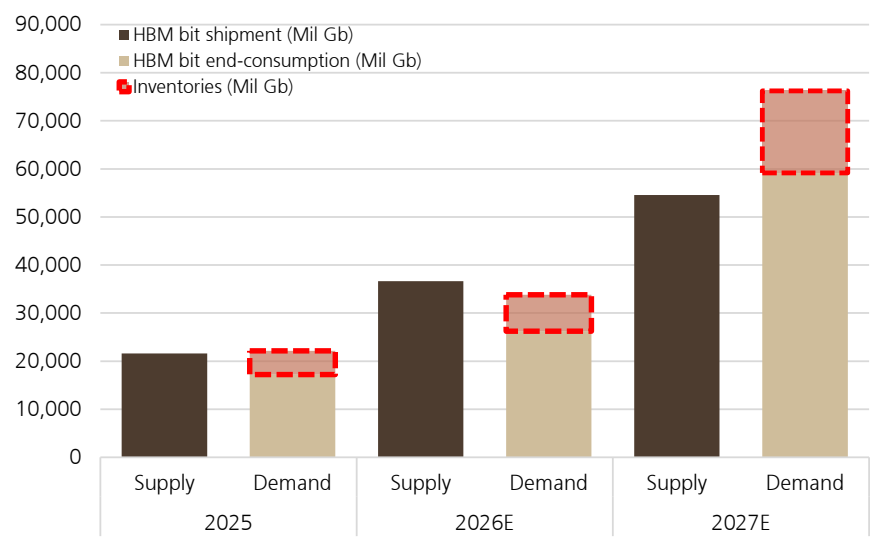
Source: Company data, UBS estimates

Figure 3: HBM vendors' bit shipments

(M 1Gb)		2025	Q126	Q226	Q326E	Q426E	2026E	Q127E	Q227E	Q327E	Q427E	2027E
SK Hynix		**12,628**	**3,803**	**3,804**	**4,559**	**5,273**	**17,438**	**4,611**	**4,812**	**5,058**	**5,587**	**20,068**
	% YoY	*86%*	*31%*	*20%*	*41%*	*59%*	*38%*	*21%*	*26%*	*11%*	*6%*	*15%*
	% QoQ		*15%*	*0%*	*20%*	*16%*		*-13%*	*4%*	*5%*	*10%*	
Samsung		**4,327**	**1,519**	**2,061**	**3,384**	**4,452**	**11,416**	**4,891**	**5,281**	**5,864**	**6,356**	**22,392**
	% YoY	*-15%*	*161%*	*170%*	*140%*	*183%*	*164%*	*222%*	*156%*	*73%*	*43%*	*96%*
	% QoQ		*-3%*	*36%*	*64%*	*32%*		*10%*	*8%*	*11%*	*8%*	
Micron		**4,584**	**1,612**	**1,821**	**1,985**	**2,243**	**7,662**	**2,468**	**2,714**	**3,067**	**3,466**	**11,716**
	% YoY	*417%*	*106%*	*60%*	*57%*	*60%*	*67%*	*53%*	*49%*	*55%*	*55%*	*53%*
	% QoQ		*15%*	*13%*	*9%*	*13%*		*10%*	*10%*	*13%*	*13%*	
CXMT		**53**	**21**	**26**	**31**	**44**	**122**	**53**	**74**	**111**	**165**	**403**
	% YoY		*168%*	*142%*	*93%*	*139%*	*130%*	*149%*	*191%*	*264%*	*272%*	*232%*
	% QoQ		*15%*	*20%*	*20%*	*44%*		*20%*	*40%*	*50%*	*48%*	
Total Supply		**21,591**	**6,955**	**7,712**	**9,959**	**12,012**	**36,638**	**12,022**	**12,882**	**14,100**	**15,574**	**54,579**
	% YoY	*69%*	*63%*	*52%*	*68%*	*90%*	*70%*	*73%*	*67%*	*42%*	*30%*	*49%*
	% QoQ		*10%*	*11%*	*29%*	*21%*		*0%*	*7%*	*9%*	*10%*	

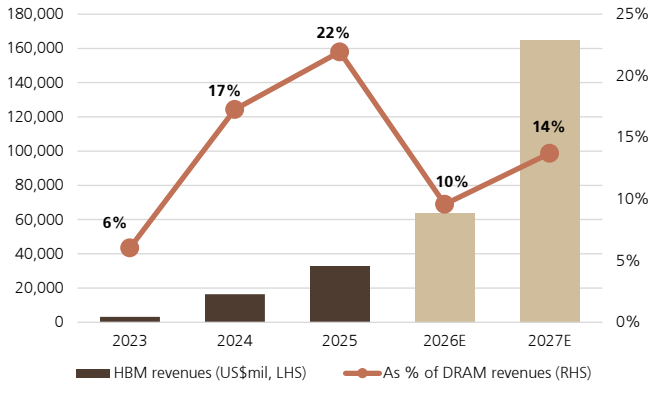
Source: Company data, UBS estimates

Figure 4: Adjusted HBM supply vs demand



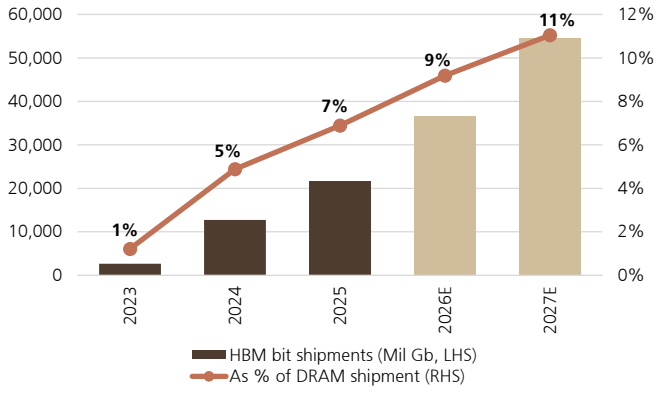
Source: Company data, UBS estimates

Figure 5: HBM as % of total DRAM revenues



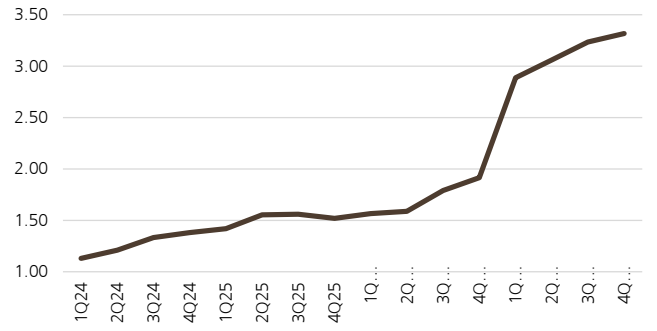
Source: UBS estimates

Figure 6: HBM as % of total DRAM bits



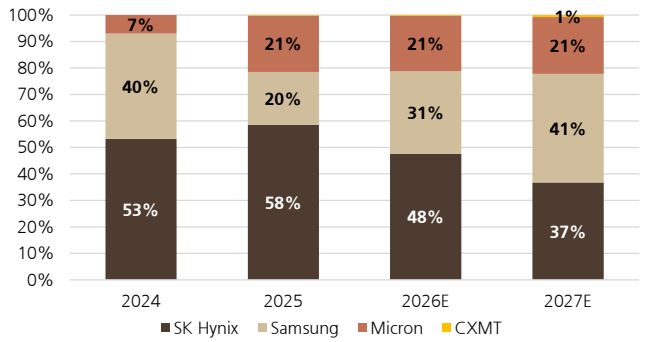
Source: UBS estimate

Figure 7: HBM ASP forecasts (US$/1Gb)



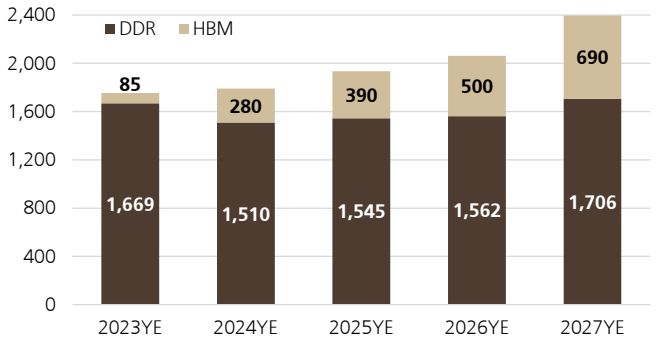
Source: UBS estimates

Figure 8: HBM bit share by vendor



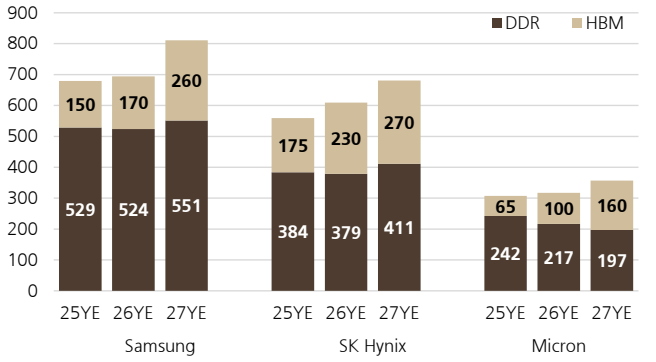
Source: Company data, UBS estimates

Figure 9: DRAM industry capacity (k wpm) breakdown between DDR and HBM



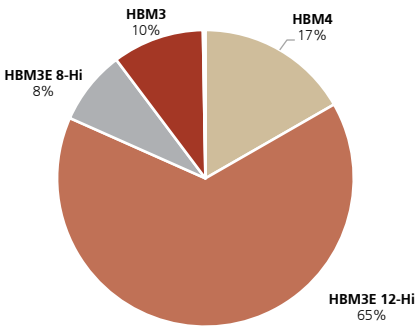
Source: Company data, UBS estimates

Figure 10: DRAM capacity (k wpm) breakdown between DDR and HBM supplier



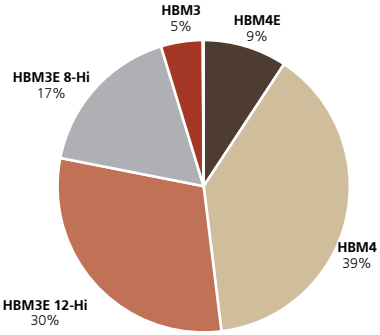
Source: Company data, UBS estimates

Figure 11: HBM demand by type (2026E)



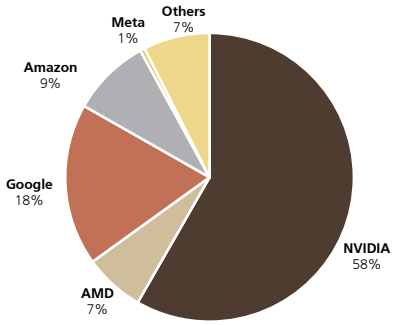
Source: UBS estimates

Figure 12: HBM demand by type (2027E)



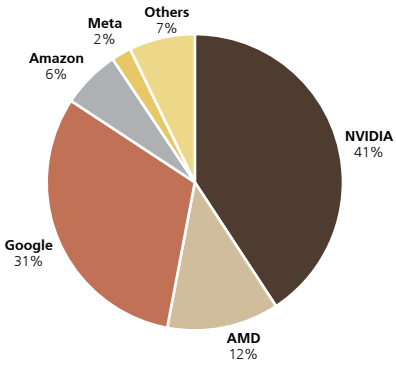
Source: UBS estimates

Figure 13: HBM demand by customer (2026E)



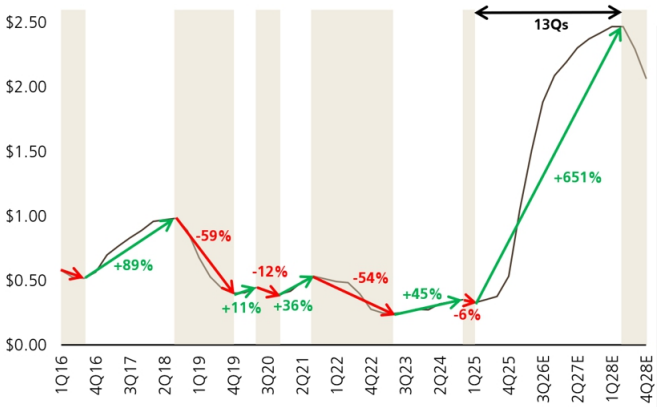
Source: UBS estimates

Figure 14: HBM demand by customer (2027E)



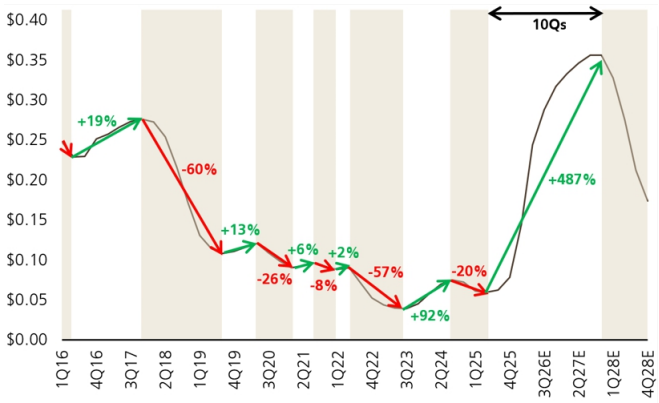
Source: UBS estimates

Figure 15: DDR cycles in context



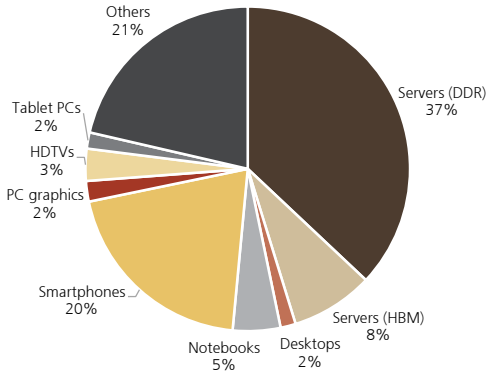
Source: Company data, UBS estimates

Figure 16: NAND cycles in context



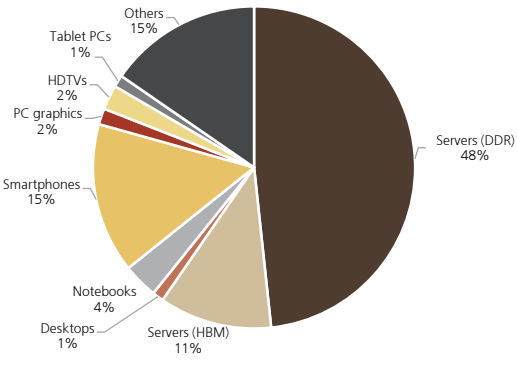
Source: Company data, UBS estimates

Figure 17: DRAM bit demand per application (2026E)



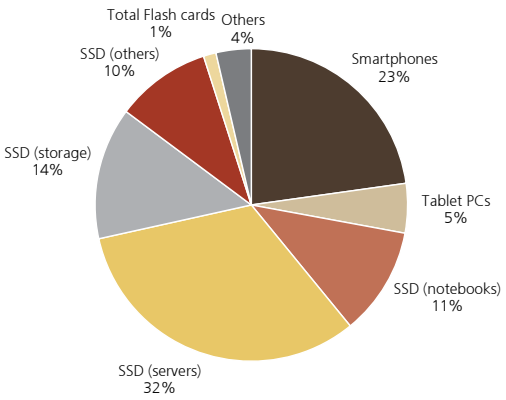
Source: Gartner, UBS estimates

Figure 18: DRAM bit demand per application (2027E)



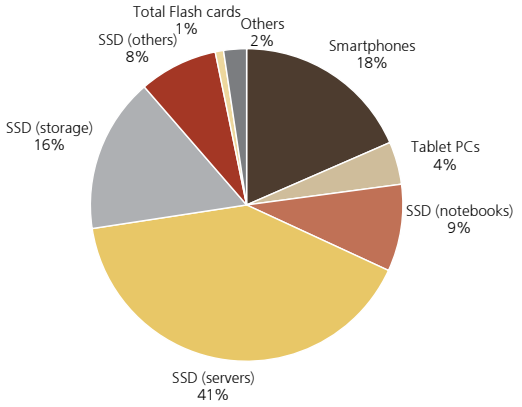
Source: Gartner, UBS estimates

Figure 19: NAND bit demand per application (2026E)



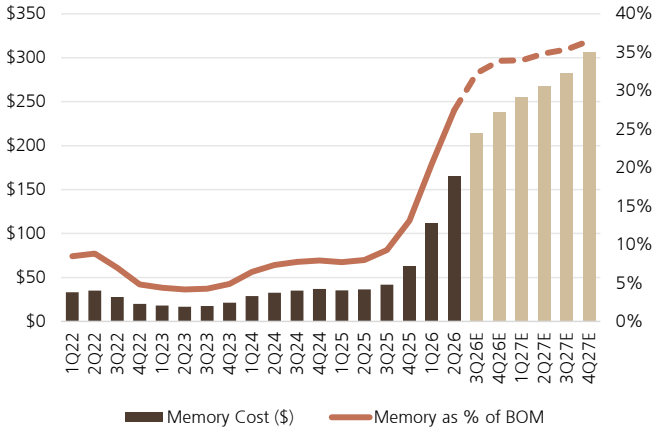
Source: Gartner, UBS estimates

Figure 20: NAND bit demand per application (2027E)



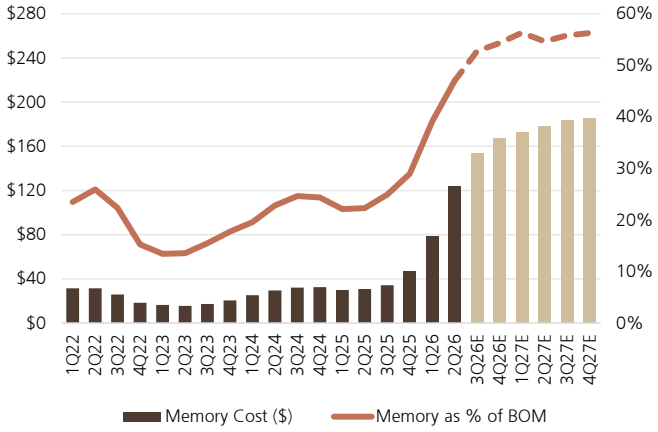
Source: Gartner, UBS estimates

Figure 21: Memory as % of flagship/premium smartphone BOM costs, 1Q22-4Q27E



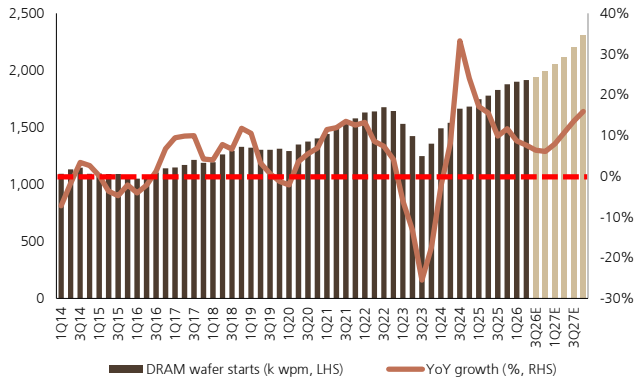
Source: Counterpoint, Fomalhaut, UBS estimates

Figure 22: Memory as % of mid-range/lower-end smartphones, 1Q22-4Q27E



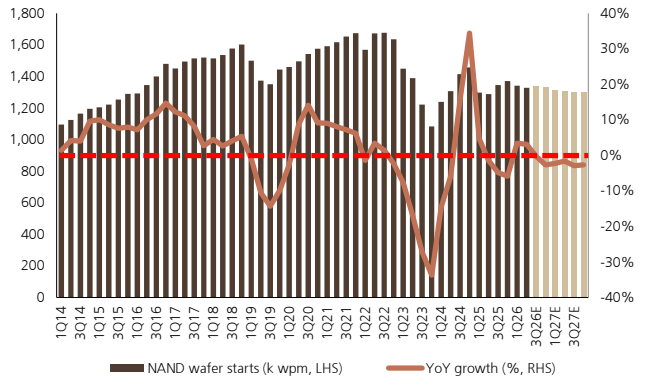
Source: UBS estimates

Figure 23: DRAM industry wafer starts and YoY growth



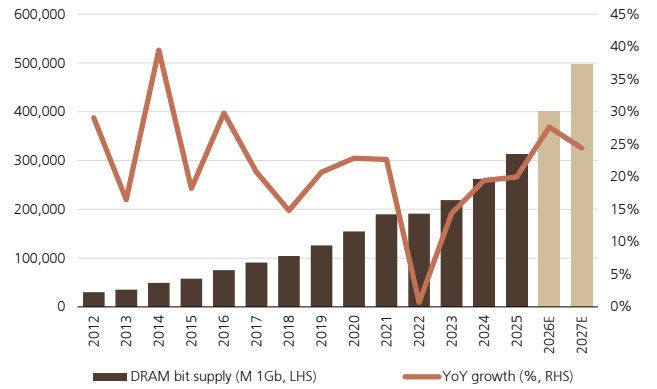
Source: Company data, UBS estimates

Figure 24: NAND industry wafer starts and YoY growth



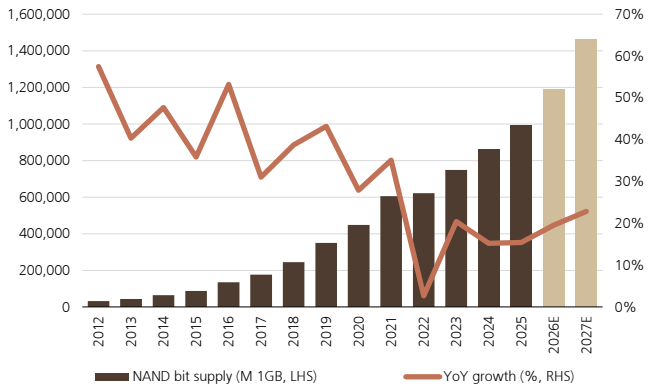
Source: Company data, UBS estimates

Figure 25: DRAM industry bit supply and YoY growth



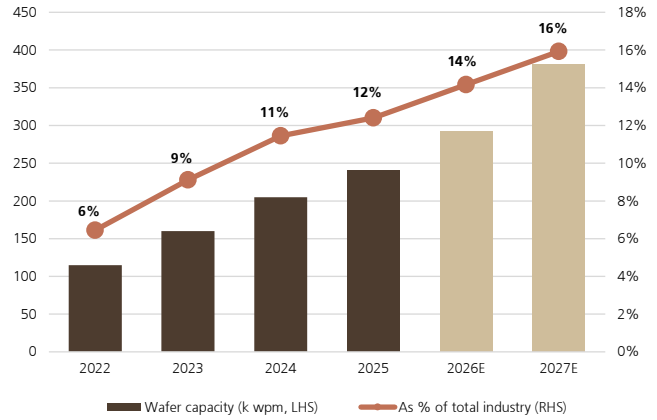
Source: Company data, UBS estimates

Figure 26: NAND industry bit supply and YoY growth



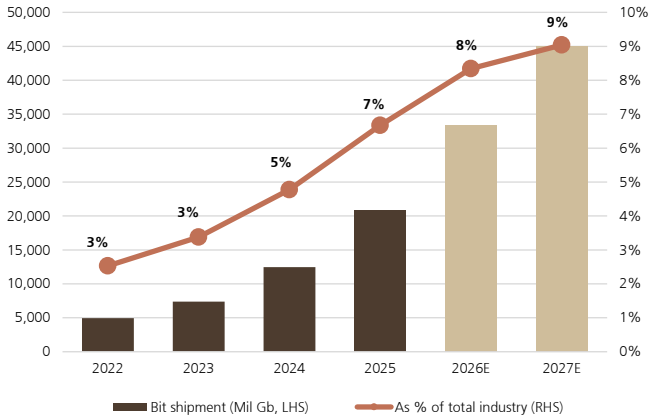
Source: Company data, UBS estimates

Figure 27: CXMT wafer capacity and as % of DRAM industry



Source: UBS estimates

Figure 28: CXMT bit shipments and as % of DRAM industry



Source: UBS estimates

Figure 29: UBS DRAM supply/demand summary

	Q125	Q225	Q325	Q425	2025	Q126	Q226	Q326E	Q426E	2026E	Q127E	Q227E	Q327E	Q427E	2027E
Revenues ($ mil)	**26,415**	**31,776**	**39,234**	**52,958**	**150,384**	**98,124**	**146,329**	**193,867**	**227,347**	**665,667**	**258,641**	**288,546**	**316,883**	**337,869**	**1,201,939**
% QoQ	*-7.3%*	*20.3%*	*23.5%*	*35.0%*		*85.3%*	*49.1%*	*32.5%*	*17.3%*		*13.8%*	*11.6%*	*9.8%*	*6.6%*	
% YoY	*46.4%*	*39.0%*	*54.3%*	*85.8%*	*58.6%*	*271.5%*	*360.5%*	*394.1%*	*329.3%*	*342.6%*	*163.6%*	*97.2%*	*63.5%*	*48.6%*	*80.6%*
Supply (Shipments Based) (M 1Gb)	**64,317**	**75,938**	**85,576**	**87,400**	**313,229**	**89,789**	**96,748**	**103,476**	**109,808**	**399,821**	**114,091**	**121,028**	**128,428**	**133,830**	**497,376**
% QoQ	*-2.6%*	*18.1%*	*12.7%*	*2.1%*		*2.7%*	*7.8%*	*7.0%*	*6.1%*		*3.9%*	*6.1%*	*6.1%*	*4.2%*	
% YoY	*3.4%*	*14.2%*	*28.9%*	*32.3%*	*19.9%*	*39.6%*	*27.4%*	*20.9%*	*25.6%*	*27.6%*	*27.1%*	*25.1%*	*24.1%*	*21.9%*	*24.4%*
Demand (End Consumption) (M 1Gb)	**69,879**	**73,066**	**87,229**	**94,120**	**324,295**	**89,600**	**91,657**	**100,847**	**109,294**	**391,398**	**111,919**	**124,474**	**143,094**	**164,161**	**543,648**
% QoQ	*0.2%*	*4.6%*	*19.4%*	*7.9%*		*-4.8%*	*2.3%*	*10.0%*	*8.4%*		*2.4%*	*11.2%*	*15.0%*	*14.7%*	
% YoY	*17.5%*	*21.0%*	*35.1%*	*34.9%*	*27.6%*	*28.2%*	*25.4%*	*15.6%*	*16.1%*	*20.7%*	*24.9%*	*35.8%*	*41.9%*	*50.2%*	*38.9%*
DDR Demand (M 1Gb)					**306,809**					**359,227**					**482,128**
% YoY					*24.9%*					*17.1%*					*34.2%*
Inventory adjustment	-6,150	3,250	200	-700	-3,400	17,300	13,200	6,700	4,000	41,200	8,500	3,500	-7,500	-24,500	-20,000
Inventory Adj. Demand (M 1Gb)	**63,729**	**76,316**	**87,429**	**93,420**	**320,895**	**106,900**	**104,857**	**107,547**	**113,294**	**432,598**	**120,419**	**127,974**	**135,594**	**139,661**	**523,648**
% QoQ	*-5.8%*	*19.8%*	*14.6%*	*6.9%*		*14.4%*	*-1.9%*	*2.6%*	*5.3%*		*6.3%*	*6.3%*	*6.0%*	*3.0%*	
% YoY	*1.6%*	*10.5%*	*28.7%*	*38.1%*	*20.0%*	*67.7%*	*37.4%*	*23.0%*	*21.3%*	*34.8%*	*12.6%*	*22.0%*	*26.1%*	*23.3%*	*21.0%*
Wafer out (k wpm, 12" equi.)	**1,716**	**1,764**	**1,804**	**1,854**	**1,784**	**1,889**	**1,907**	**1,929**	**1,964**	**1,922**	**2,017**	**2,080**	**2,159**	**2,254**	**2,127**
% QoQ	*2.5%*	*2.8%*	*2.3%*	*2.8%*		*1.9%*	*1.0%*	*1.2%*	*1.8%*		*2.7%*	*3.1%*	*3.8%*	*4.4%*	
% YoY	*17.9%*	*16.5%*	*13.4%*	*10.8%*	*14.5%*	*10.1%*	*8.1%*	*7.0%*	*5.9%*	*7.7%*	*6.8%*	*9.1%*	*11.9%*	*14.8%*	*10.7%*
% Sufficiency Ratio	***0.9%***	***-0.5%***	***-2.1%***	***-6.4%***	***-2.4%***	***-16.0%***	***-7.7%***	***-3.8%***	***-3.1%***	***-7.6%***	***-5.3%***	***-5.4%***	***-5.3%***	***-4.2%***	***-5.0%***
Blended ASP incl. HBM ($/Gb)	**0.41**	**0.42**	**0.46**	**0.61**	**0.48**	**1.09**	**1.51**	**1.87**	**2.07**	**1.66**	**2.27**	**2.38**	**2.47**	**2.52**	**2.42**
% QoQ	*-4.8%*	*1.9%*	*9.6%*	*32.2%*		*80.4%*	*38.4%*	*23.9%*	*10.5%*		*9.5%*	*5.2%*	*3.5%*	*2.3%*	
% YoY	*41.5%*	*21.8%*	*19.7%*	*40.4%*	*32.2%*	*166.1%*	*261.4%*	*308.6%*	*241.7%*	*246.8%*	*107.4%*	*57.6%*	*31.7%*	*21.9%*	*45.1%*
DDR ASP ($/Gb)	**0.33**	**0.35**	**0.38**	**0.53**	**0.40**	**1.05**	**1.51**	**1.88**	**2.09**	**1.66**	**2.19**	**2.30**	**2.37**	**2.42**	**2.33**
% QoQ	*-6.2%*	*7.0%*	*7.0%*	*42.0%*		*97.0%*	*43.0%*	*25.0%*	*11.0%*		*5.0%*	*5.0%*	*3.0%*	*2.0%*	
% YoY	*20.3%*	*10.6%*	*11.8%*	*52.5%*	*26.4%*	*220.3%*	*328.0%*	*400.0%*	*290.9%*	*309.4%*	*108.3%*	*53.0%*	*26.0%*	*15.8%*	*40.5%*
HBM ASP ($/Gb)	**1.42**	**1.55**	**1.56**	**1.52**	**1.52**	**1.57**	**1.59**	**1.79**	**1.91**	**1.75**	**2.89**	**3.06**	**3.23**	**3.32**	**3.14**
% QoQ	*2.7%*	*9.4%*	*0.4%*	*-2.5%*		*3.0%*	*1.4%*	*12.7%*	*7.0%*		*50.8%*	*6.0%*	*5.7%*	*2.6%*	
% YoY	*25.6%*	*28.3%*	*16.9%*	*10.0%*	*15.6%*	*10.3%*	*2.3%*	*14.8%*	*26.0%*	*15.0%*	*84.3%*	*92.7%*	*80.7%*	*73.2%*	*79.8%*

Source: Company data, UBS estimates

Figure 30: DRAM vendors' market share in bit shipments

	Q125	Q225	Q325	Q425	2025	Q126	Q226	Q326E	Q426E	2026E	Q127E	Q227E	Q327E	Q427E	2027E
Samsung	39.7%	37.5%	38.3%	38.2%	38.4%	37.6%	38.7%	38.0%	35.3%	37.3%	35.7%	36.4%	36.5%	36.5%	36.3%
SK Hynix	29.1%	30.9%	29.6%	29.2%	29.7%	28.3%	28.3%	29.2%	32.0%	29.6%	31.1%	30.6%	30.3%	29.8%	30.4%
Micron	23.0%	23.4%	23.9%	23.5%	23.5%	24.1%	23.0%	22.9%	22.8%	23.2%	23.1%	22.9%	22.9%	23.0%	23.0%
Nanya Tech	1.0%	1.4%	1.6%	1.8%	1.5%	1.6%	1.5%	1.3%	1.2%	1.4%	1.1%	1.1%	1.1%	1.2%	1.1%
CXMT	6.8%	6.5%	6.4%	7.0%	6.7%	8.2%	8.3%	8.3%	8.6%	8.3%	8.8%	8.9%	9.0%	9.4%	9.0%
Others	0.3%	0.3%	0.2%	0.2%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Total Supply	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: Company data, UBS estimates

Figure 31: DRAM vendors' bit shipments QoQ and YoY growth

	Q125 QoQ	Q225 QoQ	Q325 QoQ	Q425 QoQ	2025 YoY	Q126 QoQ	Q226 QoQ	Q326E QoQ	Q426E QoQ	2026E YoY	Q127E QoQ	Q227E QoQ	Q327E QoQ	Q427E QoQ	2027E YoY
Samsung	1.5%	11.5%	15.0%	2.0%	9.7%	1.0%	11.0%	5.0%	-1.6%	24.1%	5.3%	8.0%	6.6%	4.2%	21.0%
SK Hynix	-7.0%	25.0%	8.0%	0.8%	24.3%	-0.3%	7.5%	10.3%	16.4%	27.0%	0.9%	4.4%	5.1%	2.6%	28.0%
Micron	-8.0%	20.3%	15.0%	0.5%	21.8%	5.1%	3.0%	6.7%	5.5%	25.9%	5.0%	5.5%	6.0%	4.5%	23.3%
Nanya Tech	8.4%	68.0%	26.4%	11.9%	54.3%	-6.2%	-0.2%	-5.1%	-5.7%	19.1%	0.0%	0.5%	7.0%	12.6%	-0.2%
CXMT	14.0%	12.5%	10.8%	12.8%	67.5%	19.2%	9.4%	7.6%	9.1%	59.7%	7.2%	6.8%	7.9%	7.9%	34.8%
Others	-4.8%	2.5%	2.4%	2.4%	3.1%	-2.3%	0.0%	2.4%	0.0%	2.4%	-2.3%	0.0%	2.4%	0.0%	0.0%
Bit supply Growth	**-2.6%**	**18.1%**	**12.7%**	**2.1%**	**19.9%**	**2.7%**	**7.8%**	**7.0%**	**6.1%**	**27.6%**	**3.9%**	**6.1%**	**6.1%**	**4.2%**	**24.4%**

Source: Company data, UBS estimates

Figure 32: DRAM vendors' wafers out (k wpm, 12" equivalent)

	Q125	Q225	Q325	Q425	2025	Q126	Q226	Q326E	Q426E	2026E	Q127E	Q227E	Q327E	Q427E	2027E
Samsung	663	667	668	674	668	676	678	685	691	682	703	724	752	790	742
SK Hynix	475	499	519	544	509	564	572	583	600	580	618	636	654	672	645
Micron	315	313	311	309	312	307	307	307	307	307	317	327	337	347	332
Nanya Tech	49	53	59	60	57	60	60	60	60	60	60	60	63	70	65
CXMT	164	182	198	217	190	232	240	244	256	243	269	284	304	325	295
Other	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Total	**1,716**	**1,764**	**1,804**	**1,854**	**1,784**	**1,889**	**1,907**	**1,929**	**1,964**	**1,922**	**2,017**	**2,080**	**2,159**	**2,254**	**2,127**
% YoY	*17.9%*	*16.5%*	*13.4%*	*10.8%*	*14.5%*	*10.1%*	*8.1%*	*7.0%*	*5.9%*	*7.7%*	*6.8%*	*9.1%*	*11.9%*	*14.8%*	*10.7%*

Source: Company data, UBS estimates

Figure 33: DRAM bit demand growth by application

	Q125 QoQ	Q225 QoQ	Q325 QoQ	Q425 QoQ	2025 YoY	Q126 QoQ	Q226 QoQ	Q326E QoQ	Q426E QoQ	2026E YoY	Q127E QoQ	Q227E QoQ	Q327E QoQ	Q427E QoQ	2027E YoY
Total PC DRAM	**-6.1%**	**13.8%**	**18.5%**	**3.0%**	**20.2%**	**-15.2%**	**-2.0%**	**1.2%**	**-1.4%**	**-4.6%**	**-13.5%**	**9.3%**	**15.2%**	**5.5%**	**0.3%**
Desktops	0.4%	10.8%	9.3%	5.6%	22.8%	-12.9%	-5.4%	-6.1%	0.2%	-9.7%	-6.5%	9.3%	11.2%	10.6%	4.0%
Notebooks	-8.1%	14.6%	20.7%	2.2%	24.3%	-15.3%	-0.2%	2.5%	-1.1%	-2.3%	-13.9%	10.1%	17.0%	5.7%	2.6%
Upgrade Modules	-8.1%	17.3%	27.5%	1.9%	-10.9%	-20.0%	-8.3%	12.1%	-8.3%	-8.7%	-30.0%	0.0%	10.0%	-18.6%	-32.2%
Servers	**5.4%**	**7.2%**	**35.8%**	**11.1%**	**57.3%**	**0.9%**	**7.1%**	**18.6%**	**9.1%**	**49.9%**	**16.8%**	**19.7%**	**21.3%**	**16.8%**	**83.1%**
Graphics	13.2%	13.4%	17.5%	-1.0%	26.8%	-9.7%	5.3%	13.4%	0.0%	10.5%	-8.4%	4.9%	13.1%	-0.2%	8.8%
Game Consoles	22.7%	4.2%	4.0%	1.9%	18.3%	0.3%	2.3%	4.2%	-8.5%	6.5%	2.3%	2.7%	4.3%	-3.4%	1.5%
HDTVs	-17.5%	1.8%	21.2%	5.8%	9.7%	-21.5%	1.3%	16.2%	14.5%	2.0%	-21.1%	3.4%	15.7%	12.2%	7.2%
Total Mobile DRAM	**-5.6%**	**-1.0%**	**14.1%**	**10.2%**	**15.6%**	**-13.2%**	**-5.1%**	**2.6%**	**12.0%**	**-0.7%**	**-8.6%**	**-2.9%**	**3.5%**	**18.0%**	**3.4%**
Smartphones	**-4.8%**	**-1.4%**	**14.6%**	**10.1%**	**16.7%**	**-13.2%**	**-5.8%**	**2.4%**	**12.1%**	**-1.3%**	**-8.0%**	**-3.5%**	**3.1%**	**18.8%**	**3.4%**
Apple	-31.8%	-5.6%	29.4%	80.5%	31.3%	-32.6%	-6.7%	5.4%	70.0%	26.9%	-28.7%	-6.7%	1.7%	82.1%	19.8%
Samsung	26.2%	-7.0%	11.5%	-2.8%	17.6%	8.3%	4.5%	-3.1%	-5.2%	10.4%	16.8%	-10.0%	10.0%	-9.8%	-18.6%
Non-Apple/Samsung	-3.0%	1.7%	11.8%	-6.1%	12.0%	-9.7%	-9.6%	3.6%	-5.5%	-14.9%	-2.6%	1.8%	0.5%	-0.5%	4.6%
Tablet PCs	-16.0%	5.0%	8.9%	10.2%	3.2%	-13.1%	4.1%	5.1%	10.2%	6.8%	-16.2%	5.3%	8.4%	8.9%	3.3%
Others	4.3%	4.0%	2.8%	2.9%	12.2%	3.0%	2.6%	1.8%	7.3%	12.8%	-11.3%	2.6%	3.7%	8.8%	0.7%
Total Bit Demand	**0.2%**	**4.6%**	**19.4%**	**7.9%**	**27.6%**	**-4.8%**	**2.3%**	**10.0%**	**8.4%**	**20.7%**	**2.4%**	**11.2%**	**15.0%**	**14.7%**	**38.9%**

Source: Gartner, Company data, UBS estimates

Figure 34: DRAM content assumptions (MB/unit) by application

	Q125	Q225	Q325	Q425	2025	Q126	Q226	Q326E	Q426E	2026E	Q127E	Q227E	Q327E	Q427E	2027E
Total PC	**12,038**	**12,569**	**12,982**	**13,302**	**12,766**	**13,312**	**13,548**	**13,745**	**13,965**	**13,637**	**13,996**	**14,201**	**14,686**	**15,214**	**14,560**
% YoY	*9%*	*12%*	*15%*	*16%*	*13%*	*11%*	*8%*	*6%*	*5%*	*7%*	*5%*	*5%*	*7%*	*9%*	*7%*
Desktops	11,860	12,370	12,422	12,422	12,283	12,422	12,622	12,822	13,022	12,708	13,022	13,222	13,722	14,222	13,582
Notebooks	12,401	13,001	13,601	14,081	13,328	14,081	14,281	14,481	14,681	14,379	14,681	14,881	15,381	15,881	15,247
Upgrade Modules	9,900	10,100	10,300	10,500	10,232	10,500	10,700	10,900	11,100	10,794	11,100	11,100	11,100	11,300	11,144
Servers	**667,847**	**707,847**	**770,462**	**836,694**	**752,827**	**871,694**	**916,694**	**966,694**	**1,026,434**	**949,280**	**1,176,434**	**1,376,434**	**1,576,434**	**1,792,029**	**1,490,002**
% YoY	*17%*	*20%*	*26%*	*34%*	*26%*	*31%*	*30%*	*25%*	*23%*	*26%*	*35%*	*50%*	*63%*	*75%*	*57%*
Smartphones	**7,739**	**7,829**	**8,255**	**8,611**	**8,126**	**8,664**	**8,680**	**8,977**	**9,317**	**8,912**	**9,277**	**9,123**	**9,406**	**10,098**	**9,491**
% YoY	*11%*	*11%*	*13%*	*15%*	*13%*	*12%*	*11%*	*9%*	*8%*	*10%*	*7%*	*5%*	*5%*	*8%*	*6%*
Apple	7,600	7,700	8,940	9,590	8,652	9,690	9,690	10,400	10,800	10,222	11,000	11,000	11,400	12,800	11,702
Samsung	8,619	8,359	8,866	8,764	8,655	9,573	9,202	9,746	9,626	9,528	10,054	9,578	10,195	10,005	7,682
Non-Apple/Samsung	7,500	7,700	7,900	8,100	7,801	8,000	8,100	8,200	8,300	8,144	8,200	8,200	8,300	8,400	8,275

Source: Gartner, Company data, UBS estimates

Figure 35: UBS server DRAM bottom-up model

	2020	2021	2022	2023	2024	2025	2026E	2027E
Total Server shipments (K unit)	**13,550**	**13,967**	**14,943**	**14,087**	**16,025**	**20,078**	**23,874**	**27,844**
% YoY	***7.5%***	***3.1%***	***7.0%***	***-5.7%***	***13.8%***	***25.3%***	***18.9%***	***16.6%***
Traditional enterprise	**5,403**	**5,147**	**5,028**	**4,217**	**4,283**	**4,214**	**4,298**	**4,384**
% YoY	*-5.9%*	*-4.7%*	*-2.3%*	*-16.1%*	*1.6%*	*-1.6%*	*2.0%*	*2.0%*
% of total	*39.9%*	*36.8%*	*33.6%*	*29.9%*	*26.7%*	*21.0%*	*18.0%*	*15.7%*
Hyperscalers	**8,147**	**8,822**	**9,915**	**9,883**	**11,102**	**15,864**	**19,576**	**23,460**
% YoY	*25.2%*	*8.3%*	*12.4%*	*-0.3%*	*12.3%*	*42.9%*	*23.4%*	*19.8%*
% of total	*60.1%*	*63.2%*	*66.4%*	*70.2%*	*69.3%*	*79.0%*	*82.0%*	*84.3%*
Standard servers	**7,355**	**7,914**	**8,916**	**8,841**	**9,265**	**14,363**	**18,164**	**21,427**
% YoY	*23.8%*	*7.6%*	*12.7%*	*-0.8%*	*4.8%*	*55.0%*	*26.5%*	*18.0%*
% of total hyperscalers	*90.3%*	*89.7%*	*89.9%*	*89.5%*	*83.5%*	*90.5%*	*92.8%*	*91.3%*
% of total servers	*54.3%*	*56.7%*	*59.7%*	*62.8%*	*57.8%*	*71.5%*	*76.1%*	*77.0%*
AI Servers	**520**	**630**	**730**	**783**	**1,591**	**1,243**	**1,146**	**1,759**
% YoY	*73.3%*	*21.2%*	*15.9%*	*7.3%*	*103.1%*	*-21.8%*	*-7.8%*	*53.5%*
% of total hyperscalers	*6.4%*	*7.1%*	*7.4%*	*7.9%*	*14.3%*	*7.8%*	*5.9%*	*7.5%*
% of total servers	*3.8%*	*4.5%*	*4.9%*	*5.6%*	*9.9%*	*6.2%*	*4.8%*	*6.3%*
Database servers	**272**	**278**	**270**	**259**	**246**	**258**	**266**	**274**
% YoY	*2.0%*	*2.0%*	*-3.0%*	*-4.0%*	*-5.0%*	*5.0%*	*3.0%*	*3.0%*
% of total hyperscalers	*3.3%*	*3.1%*	*2.7%*	*2.6%*	*2.2%*	*1.6%*	*1.4%*	*1.2%*
% of total servers	*2.0%*	*2.0%*	*1.8%*	*1.8%*	*1.5%*	*1.3%*	*1.1%*	*1.0%*
Avg. DRAM content (GB)	**392**	**457**	**461**	**524**	**576**	**735**	**927**	**1,455**
% YoY	***32.5%***	***16.7%***	***0.9%***	***13.5%***	***9.9%***	***27.7%***	***26.1%***	***57.0%***
Traditional enterprise	**356**	**417**	**420**	**464**	**470**	**480**	**500**	**520**
% YoY	*27.4%*	*17.3%*	*0.7%*	*10.3%*	*1.4%*	*2.1%*	*4.2%*	*4.0%*
Hyperscalers Blended	**416**	**480**	**482**	**549**	**650**	**803**	**1,021**	**1,630**
% YoY	*27.3%*	*15.5%*	*0.4%*	*13.8%*	*18.4%*	*23.5%*	*27.1%*	*59.7%*
Standard servers	**385**	**430**	**432**	**459**	**464**	**480**	**515**	**555**
% YoY	*28.3%*	*11.7%*	*0.5%*	*6.3%*	*1.1%*	*3.4%*	*7.3%*	*7.8%*
AI servers	**600**	**840**	**860**	**1,348**	**1,647**	**4,435**	**8,961**	**14,754**
% YoY	*7.1%*	*40.0%*	*2.4%*	*56.8%*	*22.1%*	*169.3%*	*102.1%*	*64.7%*
Database Servers	**900**	**1,100**	**1,120**	**1,200**	**1,210**	**1,280**	**1,340**	**1,420**
% YoY	*36.4%*	*22.2%*	*1.8%*	*7.1%*	*0.8%*	*5.8%*	*4.7%*	*6.0%*
Total DRAM Demand (mn Gb)	**42,491**	**51,095**	**55,158**	**59,039**	**73,831**	**118,088**	**177,057**	**324,124**
% YoY	***42.3%***	***20.2%***	***8.0%***	***7.0%***	***25.1%***	***59.9%***	***49.9%***	***83.1%***
Total DDR Demand (mn Gb)	**42,491**	**51,095**	**55,158**	**56,355**	**65,224**	**100,602**	**144,886**	**262,604**
% YoY	***42.3%***	***20.2%***	***8.0%***	***2.2%***	***15.7%***	***54.2%***	***44.0%***	***81.2%***
Traditional enterprise	**15,382**	**17,191**	**16,908**	**15,641**	**16,106**	**16,181**	**17,193**	**18,238**
% YoY	*19.8%*	*11.8%*	*-1.6%*	*-7.5%*	*3.0%*	*0.5%*	*6.3%*	*6.1%*
Hyperscalers	**27,110**	**33,904**	**38,250**	**43,398**	**57,725**	**101,907**	**159,864**	**305,886**
% YoY	*59.3%*	*25.1%*	*12.8%*	*13.5%*	*33.0%*	*76.5%*	*56.9%*	*91.3%*
Standard servers	**22,652**	**27,225**	**30,813**	**32,465**	**34,393**	**55,152**	**74,835**	**95,136**
% YoY	*58.9%*	*20.2%*	*13.2%*	*5.4%*	*5.9%*	*60.4%*	*35.7%*	*27.1%*
AI servers	**2,496**	**4,234**	**5,022**	**8,448**	**20,952**	**44,111**	**82,179**	**207,639**
% YoY	*85.7%*	*69.6%*	*18.6%*	*68.2%*	*148.0%*	*110.5%*	*86.3%*	*152.7%*
HBM DRAM Demand				***2,684***	***8,607***	***17,486***	***32,171***	***61,520***
% YoY					*220.7%*	*103.2%*	*84.0%*	*91.2%*
DDR DRAM Demand				***6,081***	***12,345***	***26,625***	***50,009***	***146,119***
% YoY					*103.0%*	*115.7%*	*87.8%*	*192.2%*
LPDDR / SOCAMM Demand					***468***	***7,613***	***14,626***	***38,001***
% YoY						*1527.9%*	*92.1%*	*159.8%*
Database Servers	**1,962**	**2,445**	**2,415**	**2,484**	**2,380**	**2,643**	**2,850**	**3,111**
% YoY	*39.1%*	*24.7%*	*-1.2%*	*2.9%*	*-4.2%*	*11.1%*	*7.8%*	*9.1%*

Source: Dell'Oro Group, Gartner, Company data, UBS estimates



Figure 36: UBS NAND Flash supply/demand summary

	Q125	Q225	Q325	Q425	2025	Q126	Q226	Q326E	Q426E	2026E	Q127E	Q227E	Q327E	Q427E	2027E
Revenues ($ mil)	**12,302**	**14,726**	**16,969**	**21,320**	**65,317**	**39,006**	**70,496**	**88,144**	**102,417**	**300,063**	**111,872**	**121,870**	**134,230**	**140,439**	**508,411**
% QoQ	*-20.1%*	*19.7%*	*15.2%*	*25.6%*		*83.0%*	*80.7%*	*25.0%*	*16.2%*		*9.2%*	*8.9%*	*10.1%*	*4.6%*	
% YoY	*-1.0%*	*-1.1%*	*4.9%*	*38.5%*	*10.9%*	*217.1%*	*378.7%*	*419.4%*	*380.4%*	*359.4%*	*186.8%*	*72.9%*	*52.3%*	*37.1%*	*69.4%*
Supply (Shipments Based) (M 1GB)	**201,828**	**247,795**	**271,936**	**273,324**	**994,882**	**270,305**	**289,071**	**306,300**	**323,547**	**1,189,224**	**336,586**	**352,566**	**377,010**	**394,451**	**1,460,613**
% QoQ	*-6.0%*	*22.8%*	*9.7%*	*0.5%*		*-1.1%*	*6.9%*	*6.0%*	*5.6%*		*4.0%*	*4.7%*	*6.9%*	*4.6%*	
% YoY	*-6.3%*	*15.1%*	*25.6%*	*27.3%*	*15.4%*	*33.9%*	*16.7%*	*12.6%*	*18.4%*	*19.5%*	*24.5%*	*22.0%*	*23.1%*	*21.9%*	*22.8%*
Demand (End Consumption) (M 1GB)	**233,782**	**243,225**	**283,072**	**320,542**	**1,080,621**	**288,920**	**305,787**	**341,845**	**400,069**	**1,336,621**	**374,129**	**389,468**	**421,432**	**468,022**	**1,653,052**
% QoQ	*-8.8%*	*4.0%*	*16.4%*	*13.2%*		*-9.9%*	*5.8%*	*11.8%*	*17.0%*		*-6.5%*	*4.1%*	*8.2%*	*11.1%*	
% YoY	*10.5%*	*13.2%*	*21.0%*	*25.1%*	*17.9%*	*23.6%*	*25.7%*	*20.8%*	*24.8%*	*23.7%*	*29.5%*	*27.4%*	*23.3%*	*17.0%*	*23.7%*
Inventory adjustment	-38,000	3,700	-8,000	-32,900	-75,200	37,000	30,000	-24,000	-67,000	-24,000	-31,000	-29,700	-42,000	-73,500	-176,200
Inventory Adj. Demand (M 1GB)	**195,782**	**246,925**	**275,072**	**287,642**	**1,005,421**	**325,920**	**335,787**	**317,845**	**333,069**	**1,312,621**	**343,129**	**359,768**	**379,432**	**394,522**	**1,476,852**
% QoQ	*-8.1%*	*26.1%*	*11.4%*	*4.6%*		*13.3%*	*3.0%*	*-5.3%*	*4.8%*		*3.0%*	*4.8%*	*5.5%*	*4.0%*	
% YoY	*-14.4%*	*10.1%*	*24.8%*	*35.0%*	*13.4%*	*66.5%*	*36.0%*	*15.5%*	*15.8%*	*30.6%*	*5.3%*	*7.1%*	*19.4%*	*18.5%*	*12.5%*
Wafer out (k wpm, 12" equi.)	**1,418**	**1,288**	**1,268**	**1,352**	**1,331**	**1,366**	**1,333**	**1,338**	**1,351**	**1,347**	**1,331**	**1,307**	**1,303**	**1,299**	**1,310**
% QoQ	*-0.4%*	*-9.2%*	*-1.5%*	*6.6%*		*1.1%*	*-2.5%*	*0.4%*	*1.0%*		*-1.5%*	*-1.8%*	*-0.3%*	*-0.3%*	
% YoY	*23.7%*	*2.5%*	*-5.8%*	*-5.1%*	*2.9%*	*-3.6%*	*3.5%*	*5.5%*	*-0.1%*	*1.2%*	*-2.6%*	*-2.0%*	*-2.6%*	*-3.9%*	*-2.8%*
% Sufficiency Ratio	***3.1%***	***0.4%***	***-1.1%***	***-5.0%***	***-1.0%***	***-17.1%***	***-13.9%***	***-3.6%***	***-2.9%***	***-9.4%***	***-1.9%***	***-2.0%***	***-0.6%***	***0.0%***	***-1.1%***
NAND ASP ($/1GB)	**0.06**	**0.06**	**0.06**	**0.08**	**0.07**	**0.14**	**0.24**	**0.29**	**0.32**	**0.25**	**0.33**	**0.35**	**0.36**	**0.36**	**0.35**
% QoQ	*-15.0%*	*-2.5%*	*5.0%*	*25.0%*		*85.0%*	*69.0%*	*18.0%*	*10.0%*		*5.0%*	*4.0%*	*3.0%*	*0.0%*	
% YoY	*5.8%*	*-14.1%*	*-16.5%*	*8.8%*	*-3.9%*	*136.7%*	*310.4%*	*361.2%*	*305.8%*	*284.3%*	*130.3%*	*41.7%*	*23.7%*	*12.5%*	*38.0%*

Source: Company data, UBS estimates

Figure 37: NAND Flash bit demand growth by application

	Q125 QoQ	Q225 QoQ	Q325 QoQ	Q425 QoQ	2025 YoY	Q126 QoQ	Q226 QoQ	Q326E QoQ	Q426E QoQ	2026E YoY	Q127E QoQ	Q227E QoQ	Q327E QoQ	Q427E QoQ	2027E YoY
Total Embedded	**-8.8%**	**4.1%**	**16.8%**	**13.6%**	**18.7%**	**-9.7%**	**6.0%**	**12.0%**	**17.3%**	**24.9%**	**-6.4%**	**4.2%**	**8.3%**	**11.2%**	**24.2%**
Smartphones	**-7.9%**	**-3.2%**	**19.0%**	**26.3%**	**25.4%**	**-21.5%**	**-7.6%**	**-1.6%**	**24.8%**	**-1.0%**	**-14.8%**	**-6.6%**	**1.1%**	**30.6%**	**0.2%**
iPhones	-29.0%	-7.7%	24.8%	69.7%	28.1%	-34.5%	-5.8%	-1.0%	65.2%	12.4%	-29.4%	-5.9%	2.0%	68.3%	11.3%
Samsung	48.8%	-12.2%	13.4%	-3.6%	24.9%	12.6%	-0.9%	-3.8%	-7.5%	7.8%	26.2%	-13.9%	6.3%	-11.7%	4.2%
Non- iPhone/Samsung	1.7%	6.1%	16.3%	-1.5%	22.7%	-15.0%	-13.5%	-0.9%	-9.8%	-20.0%	-4.8%	-1.8%	-4.3%	-5.4%	-19.8%
Tablet PCs	-21.6%	10.0%	9.5%	17.2%	6.4%	-20.2%	12.2%	4.1%	17.1%	11.2%	-24.4%	13.1%	10.6%	14.3%	6.8%
SSD-Total	**-6.1%**	**7.6%**	**18.6%**	**8.3%**	**21.8%**	**2.6%**	**11.7%**	**18.1%**	**15.8%**	**48.8%**	**-1.7%**	**6.8%**	**10.1%**	**6.9%**	**36.1%**
SSD (notebooks)	-7.2%	11.8%	18.0%	0.9%	21.6%	-15.3%	-1.0%	1.7%	-1.9%	-5.8%	-13.8%	9.7%	14.3%	4.5%	-0.5%
SSD (servers)	-10.9%	7.2%	35.4%	16.7%	29.9%	7.0%	16.5%	27.4%	19.1%	88.1%	5.2%	6.9%	10.6%	7.2%	55.2%
SSD (storage)	6.2%	4.1%	3.9%	4.3%	33.4%	33.0%	29.3%	20.9%	27.4%	106.4%	-3.6%	6.9%	6.6%	6.4%	45.2%
SSD (others)	-4.8%	5.8%	4.0%	4.6%	3.7%	-4.7%	-2.7%	6.5%	7.2%	4.9%	-13.4%	2.6%	9.5%	9.1%	2.2%
Total Flash cards	**-7.7%**	**0.0%**	**0.8%**	**-4.5%**	**-9.7%**	**-21.1%**	**-5.4%**	**-2.9%**	**-6.3%**	**-28.8%**	**-10.3%**	**-2.2%**	**0.2%**	**-0.8%**	**-18.6%**
Mobile Phones - Flash cards	-6.3%	-1.5%	5.3%	-1.6%	-0.8%	-3.8%	-4.9%	-0.9%	-7.2%	-8.5%	3.2%	0.3%	0.0%	-4.3%	-5.0%
Total Bit Demand	**-8.8%**	**4.0%**	**16.4%**	**13.2%**	**17.9%**	**-9.9%**	**5.8%**	**11.8%**	**17.0%**	**23.7%**	**-6.5%**	**4.1%**	**8.2%**	**11.1%**	**23.7%**

Source: Gartner, Company data, UBS estimates

Figure 38: NAND Flash content assumptions (GB/unit) by application

	Q125	Q225	Q325	Q425	2025	Q126	Q226	Q326E	Q426E	2026E	Q127E	Q227E	Q327E	Q427E	2027E
Smartphones - Blended	**206**	**207**	**235**	**273**	**231**	**242**	**236**	**235**	**275**	**247**	**251**	**238**	**241**	**288**	**255**
% YoY	*18%*	*22%*	*20%*	*32%*	*24%*	*18%*	*14%*	*0%*	*1%*	*7%*	*4%*	*1%*	*3%*	*5%*	*3%*
iPhones	517	512	573	579	538	568	573	579	584	563	589	594	617	640	599
Samsung	235	216	232	228	228	258	235	248	239	245	269	245	252	242	253
Non- iPhone/Samsung	137	146	156	168	152	156	151	146	142	149	137	132	127	122	129
SSD - Notebook PCs	**692**	**704**	**758**	**778**	**735**	**763**	**751**	**779**	**789**	**770**	**779**	**766**	**794**	**812**	**789**
% YoY	*10%*	*13%*	*15%*	*16%*	*14%*	*10%*	*7%*	*3%*	*1%*	*5%*	*2%*	*2%*	*2%*	*3%*	*2%*
SSD - Servers	**3,189**	**3,433**	**3,726**	**4,117**	**3,656**	**4,409**	**4,898**	**5,386**	**6,070**	**5,252**	**6,265**	**6,460**	**6,656**	**6,851**	**6,570**
% YoY	*4%*	*12%*	*21%*	*33%*	*19%*	*38%*	*43%*	*45%*	*47%*	*44%*	*42%*	*32%*	*24%*	*13%*	*25%*
SSD - Storage	**11,895**	**12,383**	**12,871**	**13,420**	**12,642**	**14,885**	**16,838**	**18,792**	**20,745**	**18,095**	**21,428**	**22,112**	**22,795**	**23,479**	**22,483**
% YoY	*51%*	*37%*	*26%*	*18%*	*31%*	*25%*	*36%*	*46%*	*55%*	*43%*	*44%*	*31%*	*21%*	*13%*	*24%*

Source: Gartner, Company data, UBS estimates

Valuation Method and Risk Statement

Investing in the technology sector involves a high degree of risk. Rapid technological changes, increasing competition and exposure to macroeconomic cycles are among the many risks faced by investors in technology stocks. Moreover, it is extremely difficult to project the financial results of tech companies since their operating models are highly volatile and unpredictable. Finally, valuing technology stocks can prove challenging, as neither traditional nor non-traditional valuation measures have provided much insight into how these stocks trade.

Samsung: Roughly 1/3 of Samsung's operating profit comes from mobile phones directly (and more indirectly for components) where we see revenue growth for the industry decelerating as the smartphone market starts to mature. The industry is characterized by product cycles, intense competition and requires significant scale and ongoing expenses for marketing/promotional activities. Some of its divisions (Memory and Display Panels) operate in industries which are cyclical and characterized by fluctuations in supply, demand and capital spending. Both industries have commodity-like features – although it is to be noted that the DRAM industry is now operating with significantly fewer players than before. Whilst overall cyclical risks have decreased longer term for DRAM (our "Goldilocks scenario"), cyclical corrections will likely occur. Consumer exposure overall at Samsung is universally high across products, although well balanced in terms of geographies. Strength in the Korean Won vs. major currencies can penalize earnings. Being a large component of the KOSPI, Samsung faces country risks as well indirectly. Corporate governance risks re the Samsung group center around some degree of opacity in decision-making, and limited consideration for shareholder returns (this may change). On the flipside, Samsung Electronics is the "crown jewel" of the group and its interests tend to supersede those of other Samsung companies. We value Samsung Electronics ordinary shares using a target 12-month forward P/BV multiple based on long-term average ROE and cost of equity.