

Blue are new market stabilizing or positive leaning information. **Orange** are new neutral to slightly negative information.

Device	Company	Production Profile	Comments	
NAND	Overall NAND	9x-layer products	going into production at top 4; lowering total bit growth forecasts.	
	Samsung	Ramp: 128L	- Timing for 2 nd Xi'an fab capacity adds dependent on market stability - Continuing to ramp 128L	
	Kioxia (Toshiba)	Volume: 9xL Ramp: 128L	- Jan 7, 2020 reported fire will reduce capacity. Possible 2 week recovery. - June 2019 power outage resulted in est. 6 exobytes of lost capacity	
	SK Hynix	Volume: 9xL Ramp: 128L	- Lower 2020 CapEx, continue slowly ramp of M15 and Wuxi (C2F) - Expect net NAND wafers to decline; not adding capacity during transition	
	Micron	Volume: 9xL Ramp: 128L	- Transitioning to new gate technology, 2020 NAND bit growth to be below industry average, but returns to industry rate in 2021. - Highlight initial X-Point products, claiming perf. above Intel's products	
	Intel	Est: 9xL	- NAND recovery slower than expected. Limited X-Point discussion.	
	YMTC	Volume: 32L	- Risk to 64L ramp and 128L development from COVID-19 outbreak	
DRAM	Overall DRAM	Focus on node transitions; capacity expansions could start in 2H'20 or 1H'21.		
	Samsung	1x→1y nm	- Power outage in Dec'19; expected to drive increases in contract prices - Pyeongtaek fab (Line 18) confirmed to be complete during 2020; fab sizing and ramp not decided and will depend on market conditions - Ramping 1y production, 1z could use EUV for some layers	
	SK Hynix	1x→1y nm	- M16 is forecast to open 2H'20. Lower 2020 CapEx - Confirmed continued expectation for net wafers reduction	
	Micron	1y→1z nm	- Taichung cleanroom expansion on track for Q4'20 completion; EUV compatible; possible insertion 1-gamma (4-5 yr) on current cost models.	
	ChangXin Mem. Tech. (CMT)	1x ramp	- Ramping production – approximately 2 generations behind competitors.	
	Tsinghua DRAM	TBD	- Announced DRAM division. Apparent replacement for JHICC	
Foundry	Foundry/Logic	7nm ramp with EUV & Intel transition to 10nm support continued spending.		
	≤16nm	TSMC	7nm	- Increasing investment in both 7nm+ and 5nm to meet demand. - Confirmed \$16-17B CapEx, 80% to support leading edge capacity.
		Intel	14→10nm	- 2020 CapEx of \$17B. Indicated 50/50 split facilities:equipment. Seeking to have shells available to ramp as demand emerges (similar to Samsung) - Targeting 25% capacity addition for 2nd year.
		Samsung	7nm	- Seeking double digit foundry growth in 2020 - Will complete 5nm product designs and 4nm process development in '20
		GlobalFoundries	16nm	- Focus on 12nm FinFET (differentiation vs. 14m)
		UMC	16nm	- No 14nm revenue in 3 quarters.
		SMIC	16nm	- Achieved initial 14nm revenue, targeted N+1 node by Q4'20; 10/7nm EUV tool delivery believed to have been delayed by US-government - Increased CapEx to \$3.1B (+~100% YoY)
		≥20nm	TSMC	28nm
	UMC		28nm	- CapEx of \$1B, ~\$330M for Fab 12x (Xiamen), \$330M for overall upgrades
	SMIC		28nm	- No indication of CapEx breakdown, majority anticipate for <16nm
	GlobalFoundries		28nm, FDSOI	- Focus on FDSOI & 22nm transition to provide differentiation (vs. 28nm).