



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	128L increasingly mainstream	
	Samsung	Vol.: 128L	- Adding production line in Pyeongtaek, production to start 2H'21. - Volume production in Xi'an; continuing to ramp 128L (all sites).
	Kioxia (Toshiba)	Ramp: 128L	- IPO delayed; Fab 7, Phase 1 construction starting 2021, production 2023E
	SK Hynix	Ramp: 128L	- Starting 128L production; 96L+128L to be >70% of bit production by Q4'20
	Micron	Vol.: 128L	- Ramping new gate technology; bit growth returns to industry rate in 2021. - Increased discussion of X-Point product as key element of portfolio.
	Intel	Est: 9xL	- Selling Dalian fab to SK Hynix; expected 2021 close, full transition by 2025
	YMTC	Volume: 64L	- OEMs indicting tools shipping to plan for Chinese memory makers.
DRAM	Overall DRAM	1 α -layer products entering discussions, production late 2021.	
	Samsung	1x \rightarrow 1y nm	- Pyeongtaek fab (Line 18) confirmed to be complete during 2020; fab sizing and ramp not decided and will depend on market conditions. - Announced first DRAM with EUV, "14nm" technology ramping early 2021.
	SK Hynix	1y \rightarrow 1z nm	- M16 forecast to complete cleanroom in 2020; EUV 10nm (1a) ramp 2H'21.
	Micron	1y \rightarrow 1z nm	- FY'21 CapEx will increase (to \$9B), majority construction and assembly. - Retaining flexibility to increase equipment spending on favorable market
	ChangXin Mem. Tech. (CXMT)	1x ramp	- Ramping production – approximately 2 generations behind competitors. - OEMs indicting tools shipping to plan for Chinese memory makers.
	Tsinghua DRAM	TBD	- Breaking ground for first DRAM Fab. Production starting 2022.
Foundry/Logic	Foundry/Logic	SMIC restrictions implemented, shift business to other foundries beginning.	
	\leq 16nm	TSMC	7nm \rightarrow 5nm - Increased CapEx \$1B to \$16-17B for 7nm+ and 5nm to meet demand. - Announced \$12B investment in US fab in Arizona.
		Intel	14 \rightarrow 10nm - Reduced 2020 CapEx additional ~0.5B (2H'20 down ~\$1.5B). - Leading edge plans (insource vs. foundry) to be clarified Jan'21.
		Samsung	7nm - Building new Pyeongtaek EUV foundry line. Production to start in 2H'21. - Investing in 7nm and launching 5nm in '20.
		GlobalFoundries	14nm - Fab 8 be become compliant with US International Traffic in Arms Regulations (ITAR) standards & Export Administration Regulations (EAR).
		SMIC	14nm - Suppliers seeking export licenses to continue equipment and parts shipments, timing of decisions uncertain.
		\geq 20nm	TSMC
	UMC		28nm - High utilization; indicating investment of
	SMIC		28nm - Export licenses will be required for equipment and parts shipments.
	GlobalFoundries		28nm, FDSOI - No updates
	TI		- New fab in Richardson, TX, shell to be completed by end of 2021.

Note: Samsung expected to start additional fab construction Q3/4'20 for additional fab, production expected 2023. Device type not identified.