

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	172-196L products ramping in 2021		
	Samsung	Vol.: 128L	- 2H'21 ramp of 176L product; will use double stack process	
	Kioxia (Toshiba)	Ramp: 128L	- Fab 7, Phase 1 construction starting 2021, production 2023E	
	SK Hynix	Ramp: 128L	- Starting 176L production; 128L+176L to be >80% of bit production exiting '21	
	Micron	Vol.: 128L	- Increase FY'22 CapEx for 176L transition.	
	Intel	Est: 9xL	- Selling Dalian fab to SK Hynix; expected 2021 close, full transition by 2025	
	YMTC	Vol: 64L	- Continue ramping 128L capacity, expected to be 80K wpm by year end.	
DRAM	Overall DRAM	EUV plans firmed: Samsung & SK Hynix for 1a, Micron for 1γ		
	Samsung	1z nm	- Accelerating migration to 1z and expanding application of EUV (1a).	
	SK Hynix	1z nm	- M16 capacity to ramp aligned to demand through 2022. - Initial EUV for 1a in 2H'21, broader use for 1b node.	
	Micron	1z nm	- \$150B investment thru 2030, initial speculation is new Japan DRAM fab - 1Z + 1a to be majority of production by year end. - EUV planned for 1-gamma, (2023), CapEx includes prepayments for tools.	
	ChangXin Mem. Tech. (CXMT)	1x ramp	- Raised ~\$2.4B equity. Capacity expansion expected to continue.	
	Nanya	1x	- New fab, production start 2024 and will be EUV capable.	
	Tsinghua DRAM	TBD	- Parent company seeking bankruptcy protection in Chinese courts.	
Foundry/Logic	Foundry/Logic	Running high capacity across all nodes. Leading & trailing nodes investment planned.		
	≤16nm	TSMC	5nm	- CapEx \$30B for 7nm+ and 5nm; multi-year capital intensity of ~50% to support 10-15% CAGR targets. Will spend >\$100B through 2023. - Arizona site sized for multiple fabs; announced fab for 5nm, 20K wspm.
		Intel	10nm	- 2021 CapEx of \$20B. 2022 CapEx \$25-28B, includes building fab shells ahead of demand to increase nimbleness. - CEO comments commit to Oregon expansion and EU foundry capacity.
		Samsung	5nm	- Upped value of foundry investment to \$150B (+\$50B) through 2030. - CapEx targeted at 5nm and growing capacity, with 2H'21 Pyeongtaek ramp - Site for new US fab not confirmed, Texas remains most likely location.
		GlobalFoundries	14nm	- Progressing with IPO; target \$2.6B (~10% of shares). - Seeking certification as "Trusted Foundry" by US government
		SMIC	14nm	- Trade restrictions continue to impact ability to expand 14nm capacity
	≥20nm	TSMC	28nm	- Expanding 28nm capacity in China (+15K) - Announced Japan 22-28nm fab (+\$7B CapEx). Europe fab remains possibility.
		UMC	28nm	- Partnering with customers for Fab 12A Phase 6 expansion (27.5K wpm) - 28nm capacity to increase 20%; seeking 200mm→300mm migration opps.
		SMIC	28nm	- Shenzhen 40K wspm fab, production to start 2022. - Shanghai 100K wpm fab (\$~\$9B) producing 28nm, Beijing 100K wpm by 2024
		GlobalFoundries	28nm, FDSOI	- New Singapore Fab (\$4B), customers order pre-commits helping to fund. - Malta new fab announced, 2021 investments of \$1B; Dresden \$1B spend
		Powerchip	45nm	- Groundbreaking for new fab, Phase 1 25K wspm starting 2023.
		TI	>28nm	- Purchased Micron Lehi facility (closes Dec'21), conversion to analog in 2022 - New Texas Fab under construction, initial output expected 2H'22.
		ST	>28nm	- Partnering with Tower (foundry) for 300m Agrate fab.
	Pkg	TSMC	-	- Japan packaging facility, joint with Japanese research center
Intel		-	- Rio Rancho investment (\$3.5B) for advanced 3D packaging	