

# **Micron Technology, Inc. (NASDAQ: MU)**

January 12, 2024

---

Anastasiia Nechaieva | Joshua Daniel | Josh Klomp | Peter Nguyen

# Table of Contents

Micron Technology, Inc. (NASDAQ: MU)



Company Overview

Industry Overview

Investment Thesis I

Investment Thesis II

Investment Thesis III

Risk & Catalysts

Valuation

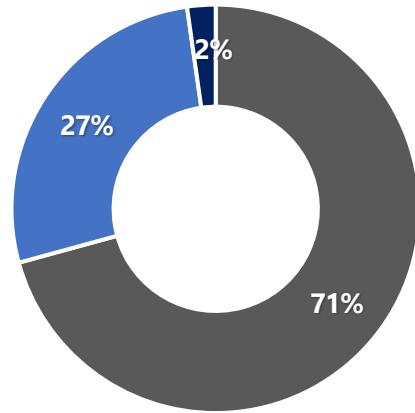
# Company Overview

Micron Technology Inc. (NasdaqGS: MU)



## Revenue Breakdown by Product

■ DRAM ■ NAND ■ Other



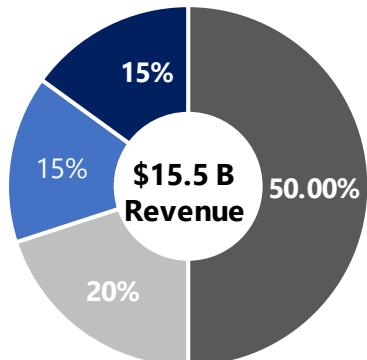
## The Management Team



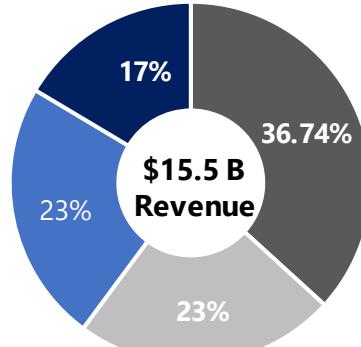
Name	Sanjay Mehrotra	Mark J. Murphy	Sumit Sadana	April S. Arnzen
Position	CEO	CFO	EVP & Chief Business Officer	SVP and Chief People Officer
Experience Yrs.	20+	7+	14+	15+
Market Value of Shareholdings	\$98.86 M	\$17.96 M	\$22.61 M	\$12.94 M

## Revenue: Geographic and Business Unit Segmentation

■ US  
■ Taiwan  
■ China  
■ Other



■ Compute & Networking  
■ Smartphone & Mobile  
■ Cloud & Storage  
■ Automotive & Industrial



## Partnerships



# Company Overview

Micron Technology Inc. (NasdaqGS: MU)



## Institutional Ownership: Top 5

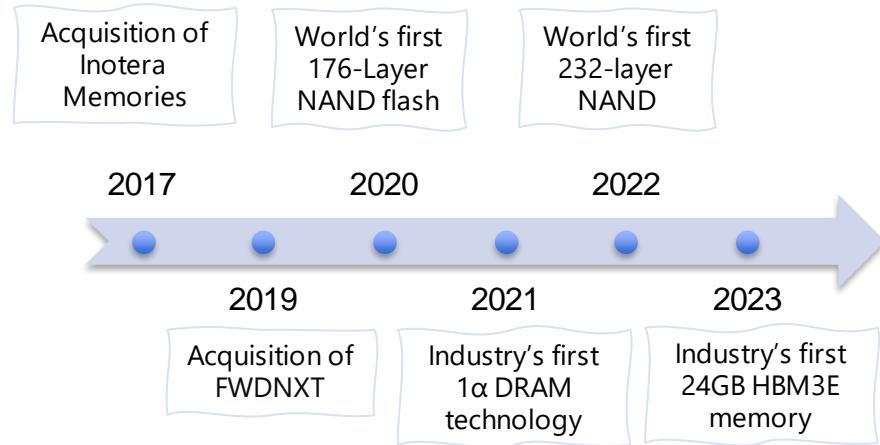


## Efficient Production & Manufacturing

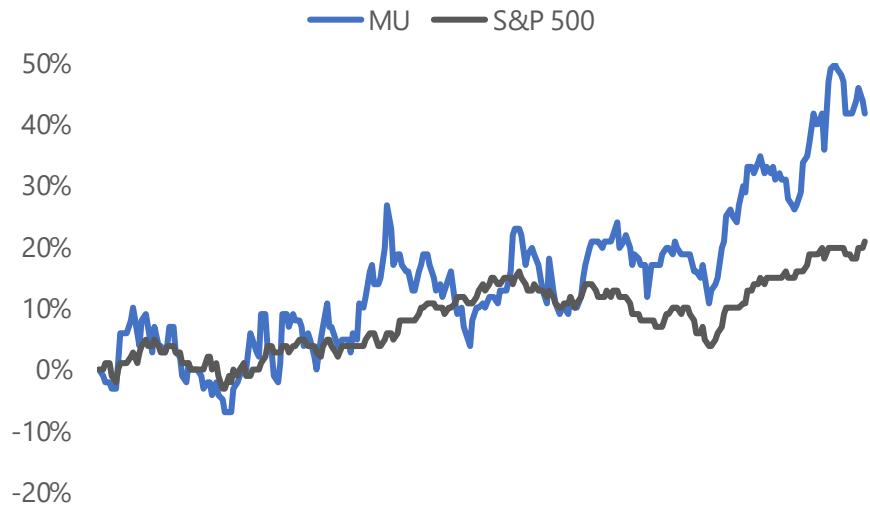
Integral to Micron Technology Inc.'s success is its **seamless production processes**, leading to:

- Greater Cost Efficiencies
- Enhanced Quality of Products Produced
- Greater Control of its own operations.
- Quicker Product Cycle times.

## History of Innovation



## 1Y Return relative to S&P 500

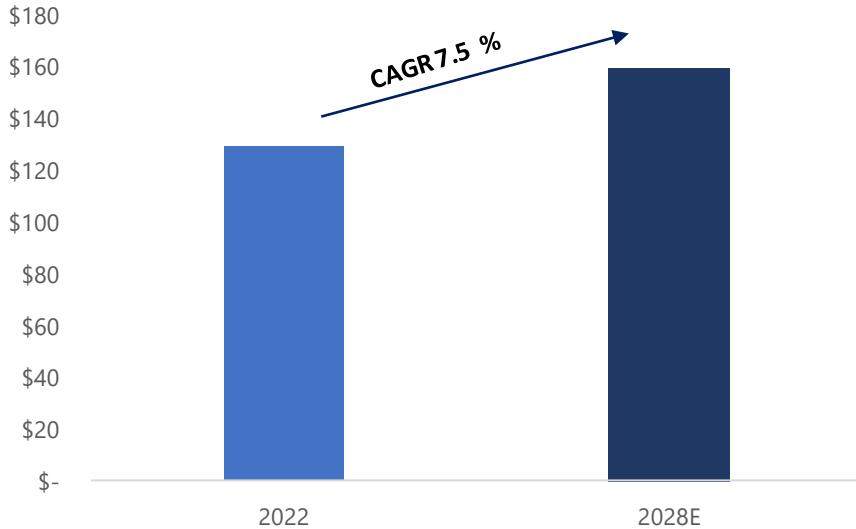


# Industry Overview

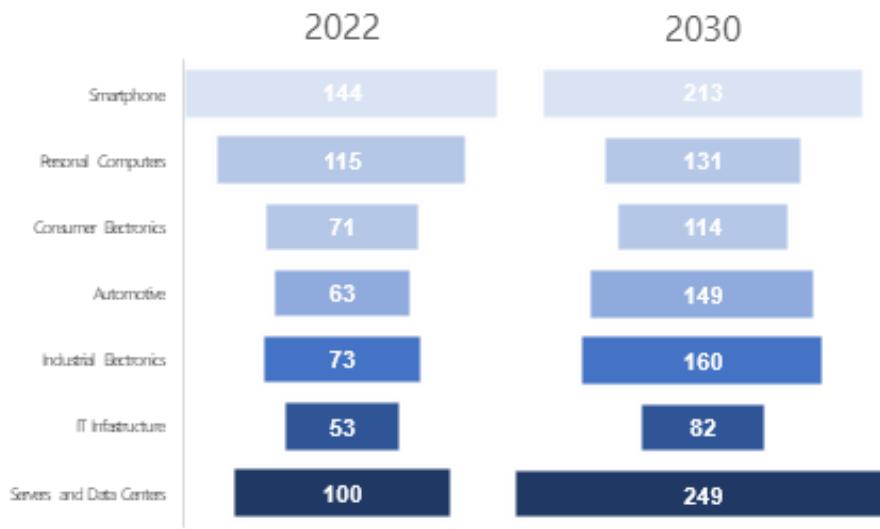
Micron Technology Inc. (NasdaqGS: MU)



## Global Memory Market Revenues (USD \$Bill)



## Key Drivers



## Key Drivers in The Memory Chip Markets



- Technological advancements in memory chips allowing for smaller designs with greater storage capacity. Which caters towards the need for efficient and compact memory solutions in various applications



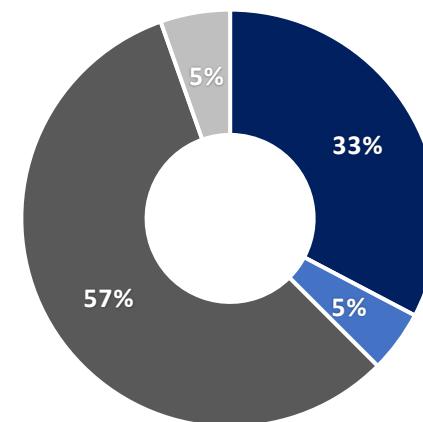
- Global demand for mobile devices such as laptops and smartphones increasing, allowing for concurrent need of memory chips



- Growth of data centers have increased significantly over recent years due to shift in cloud computing.

## Memory Market Share By Region

■ North America ■ Europe ■ APAC ■ Rest Of The World



# Industry Overview

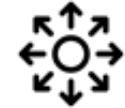
Micron Technology Inc. (NasdaqGS: MU)



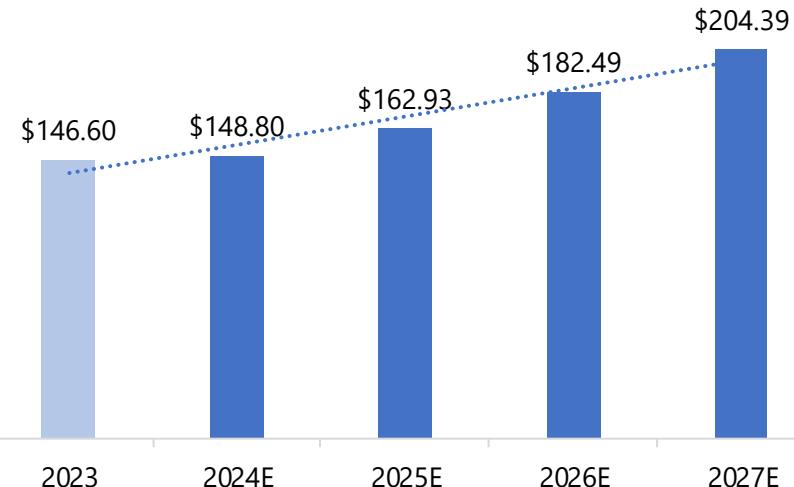
## Key Factors for Building Competitive Advantages



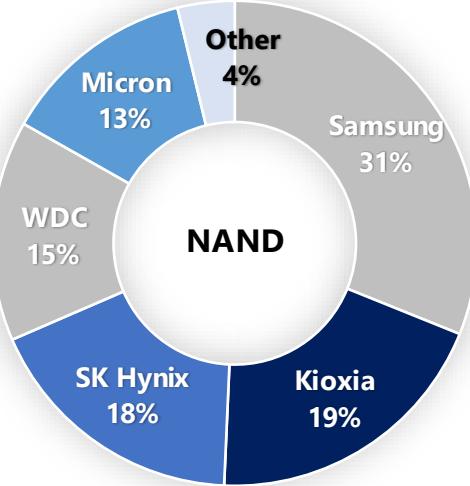
- **Large Capital:** To build memory chip factories requires a high amount of capital (\$2B Min)
- **Scaling:** Companies outsource production of memory chips to production plants that can consistently produce high quality chips and at a fast rate.
- **Expertise:** Having a deep pool of talent that can produce specialized memory chip design and manufacturing through extensive R&D can maintain a competitive edge



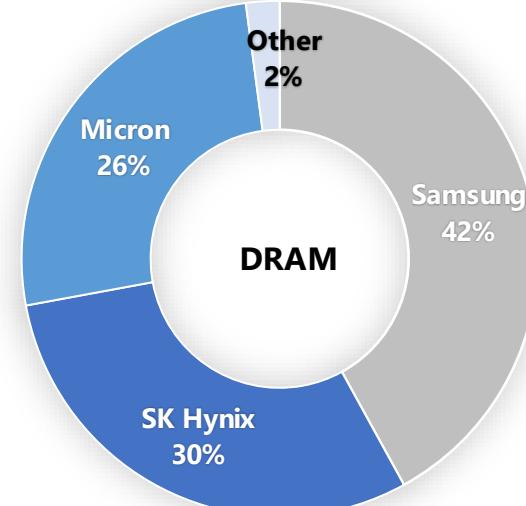
## Global CAPEX Growth (US \$Billions)



## NAND Memory Market Share (Micron Positioned #5)



## DRAM Memory Market Share (Micron Positioned #3)



# Thesis I - Pace to Recovery



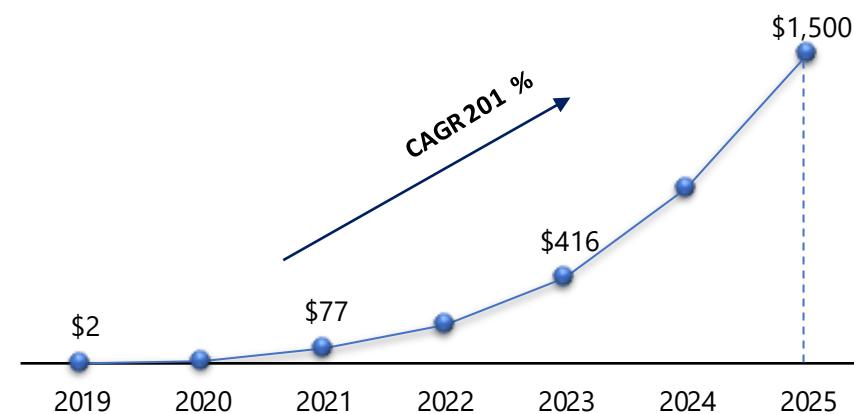
Micron Technology Inc. (NasdaqGS: MU)

**Well positioned to normalize profitability in the coming quarters**

**AI Market Size Worldwide (\$US Bill)**

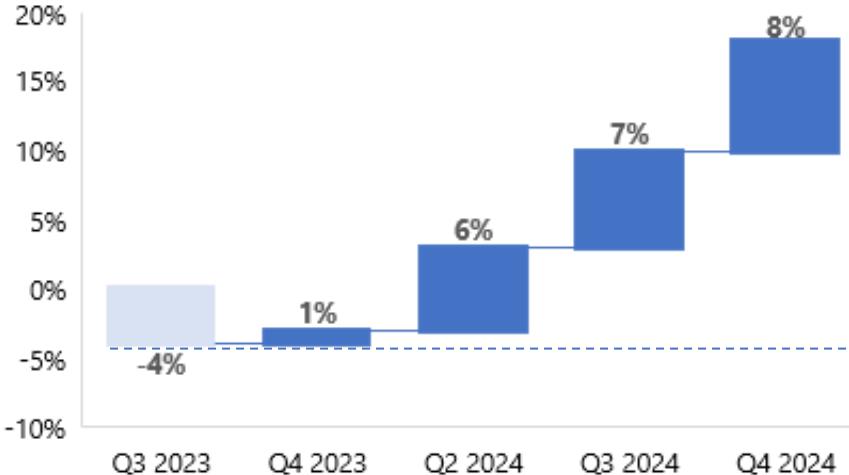


**Global Forecasted 5G-enabled Smartphones (\$US Mill)**



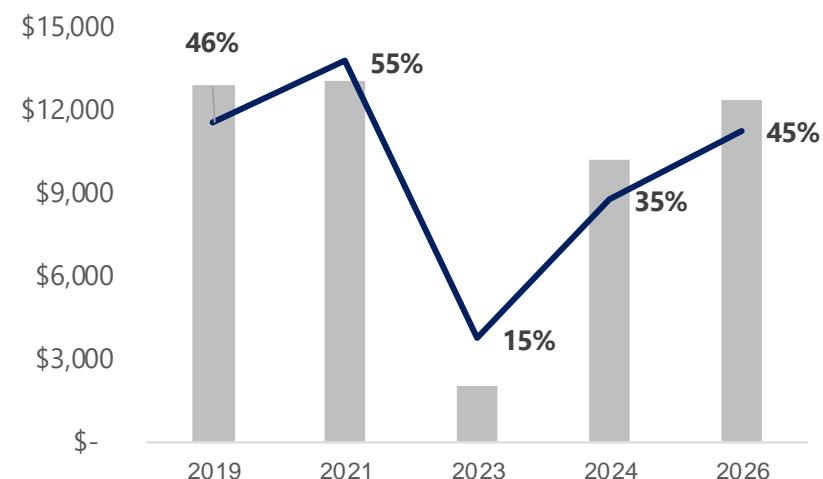
**DRAM Improving Pricing Dynamics (%)**

Decrease   Increase



**Forecasted EBITDA (\$US Mill) and EBITDA Margin (%)**

EBITDA   EBITDA Margin (%)



# Thesis II – Capacity Expansion



Micron Technology, Inc. (NASDAQ: MU)

## To capitalize on growing demand

### US Expansion

- **\$100 billion** investment over 20+ years for the largest U.S. fab, featuring four 600K sq. ft. facilities, with production starting in 2028.
- **\$15 billion** fab plant in Idaho, with production set to begin in 2026.
- **\$10 billion** semiconductor research facility offering opportunities for collaboration on R&D initiatives.



### Semiconductor Assembly and Test Facility in India

\$2.75B Worth Semiconductor Unit

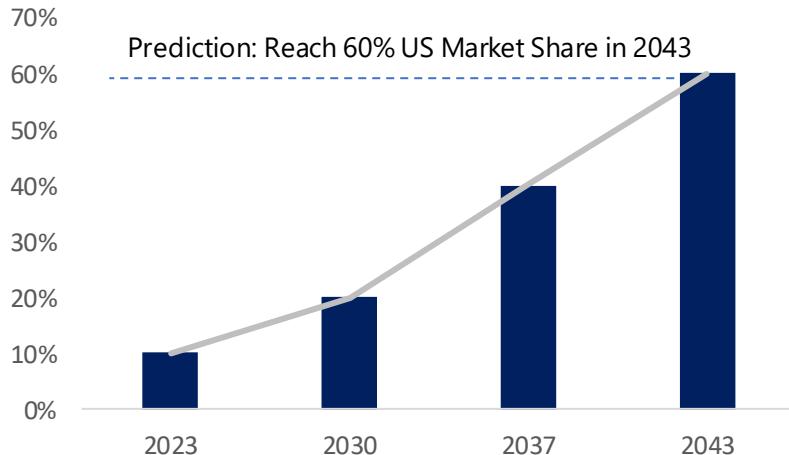
70% Funded by the Indian Government

First-of-its-kind DRAM and NAND Assembly

To Become Operational by Year-End 2024

1.4 M sq. ft. - Equivalent to 20 Football Fields

### Micron's Increase in US Share of DRAM Production



### Benefits from Indian Expansion



# Thesis III – Technology Leadership

Micron Technology, Inc. (NASDAQ: MU)



## Reinforced by Micron's dominant presence in the US

### LPDDR5X - 9600 Memory for 5G Smartphones



**Built on Micron's leading 1β (1-beta) process node:** Utilizing lithography, technology creates precise, small-scale patterns on memory chips, allowing it to store more data efficiently.



**Leads in power, speed, performance:** Compared to the previous generation, the LPDDR5X - 9600 offers

- ✓ a **12%** improvement in speed (speed grade of 9.6 Gbps )
- ✓ a **30%** power improvement
- ✓ offered in capacities up to **16 gigabytes (GB)**



**Strategic partnership with Qualcomm:** involves Micron providing LPDDR5X memory for use with Qualcomm's AI-optimized Snapdragon 8 Gen 3 Mobile Platform; contributing to a new era of smartphone with AI capabilities.

### Variations of LPDDR5 memory

#### Micron (LPDDR5X -9600)

**Speed** 9.6 Gbps

**Storage** max of 16 GB

**Power Efficiency** max VDD voltage of 1.1V

#### SK Hynix (LPDDR5T)

9.6 Gbps

max of 16 GB

max VDD voltage of 1.13V

### Industry's Fastest HBM3 Gen2 | GPT 3.5 Training Time

**Industry's first > 1.2 TB/s memory bandwidth**

**50% more capacity**

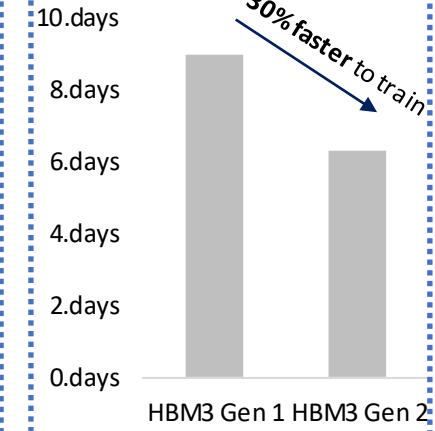
Increased to 24 GB

**> 2.5x improvement**

In performance/watt

**> 50% more**

Queries /day



### High Bandwidth Memory (HBM) US Growth

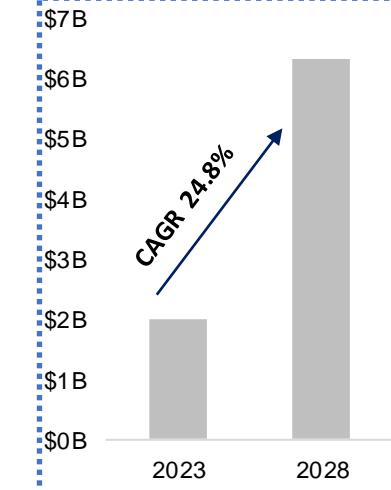
**Qualcomm**



**NVIDIA**



**Microsoft**



# Risks, Mitigants and Catalysts

Mitigated risks and attractive catalysts will ensure stable growth well into the future



## Risks



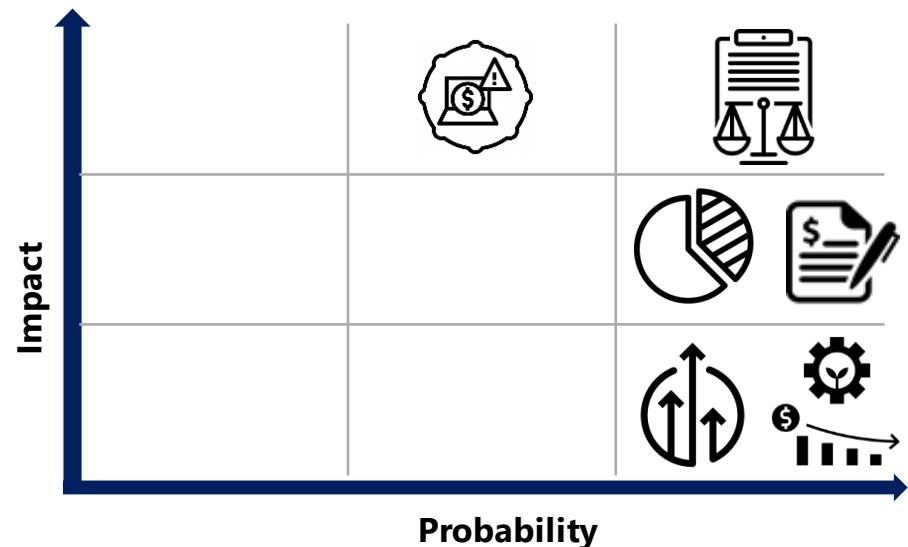
**Regulatory and Trade Risks:** Microns Segments in China have decreased in value due to the ongoing trade war between China and the US



**Fierce Competition:** Competition to maintain market dominance in the memory chip industry is fierce as noted by Micron's direct competitors in SK Hynix and Samsung



**High manufacturing costs:** Compared to APAC the US costs 20% more to create production plants for chips. With Micron's plans to focus on domestic growth this could affect operating margins



## Mitigations



**Investing in Global Industry With Good US Relations:** Micron announced its plan to Invest \$150+ billion global investment in manufacturing and R&D over the next decade



**Domestic Dominance:** Currently the US accounts for 33% of Memory Chip market share, the US Chip act has stopped Micron's competitors from expanding aggressively in the US paving the way for Micron's dominance in the market.

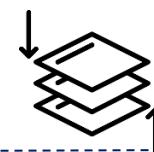


**US Science and Chip Act:** Under the act it provides \$52.7 billion in federal funding for companies operating in the US

## Catalysts



**Growth of 5G Networks:** 5G is expected to grow exponentially, by 2027 it 60% of data traffic will be 5G compared to 10% in 2023



**Innovations In Layering:** Breakthroughs in layering of memory chips are occurring nearly every year, the more layering happens the more efficient chips become



**AI/ML:** Innovations in AI becoming more commercialized will allow memory chips to play a huge role in the market.

# Comparable Company Analysis

Based on January 11, 2023



Company Name	Ticker	Share Price (\$US)	Market Cap (\$M)	Enterprise Value (\$M)	P/BV (LTM)	EV/EBITDA (LTM)	EV/EBITDA (NTM)	P/E (NTM)	Debt/Equity (TTM)	EV/Sales (NTM)
<b>Micron Technology, Inc.</b>	MU	\$ 87	\$ 96,106	\$ 100,506	2.2x	7.1x	10.2x	49.6x	33.0%	3.97x
<b>Intel Corporation</b>	INTC	\$ 51	\$ 212,908	\$ 239,517	2.1x	26.5x	13.5x	29.2x	41.1%	3.99x
<b>Western Digital Corporation</b>	WDC	\$ 53	\$ 17,107	\$ 24,063	1.7x	NM	33.0x	NM	73.8%	1.81x
<b>SK hynix Inc.</b>	A000660	\$ 109	\$ 74,868	\$ 95,007	1.8x	34.2	7.9	36.1x	62.6%	2.69x
<b>Samsung Electronics Co., Ltd.</b>	A005930	\$ 59	\$ 391,808	\$ 335,562	1.5x	9.4	8.5	22.5x	2.80%	1.50x
<b>High</b>						34.2x	33.0x	36.1x	73.8%	4.0x
<b>75th Percentile</b>						30.4x	18.4x	32.7x	65.4%	3.0x
<b>Mean</b>						23.4x	15.7x	29.3x	45.1%	2.5x
<b>25th Percentile</b>						18.0x	8.4x	25.9x	31.5%	1.7x
<b>Low</b>						9.4x	7.9x	22.5x	2.8%	1.5x
<b>Median</b>						26.5x	11.0x	29.2x	52%	2.3x

Bear Case	Base Case	Bull Case
NTM EBITDA	10,514	NTM EBITDA
NTM EV/EBITDA	7.9x	NTM EV/EBITDA
<b>Enterprise Value</b>	<b>83,057</b>	<b>Enterprise Value</b>
(+) Cash	9,048	(+) Cash
(-) Debt	-14,168	(-) Debt
<b>Equity Value</b>	<b>77,937</b>	<b>Equity Value</b>
Diluted Shares Outstanding (MMs)	1,104	Diluted Shares Outstanding (MMs)
<b>Implied Equity Value per Share (\$USD)</b>	<b>\$70.60</b>	<b>Implied Equity Value per Share (\$USD)</b>
Current Share Price	\$82.38	Current Share Price
<i>Implied Upside/Downside</i>	-14.3%	<i>Implied Upside/Downside</i>
		<i>Blended Price</i>
		\$113.67
		<i>Blended Implied Upside</i>
		38.0%

# Discounted Cash Flow Analysis



Base Case Scenario (In Millions USD)

Discounted Cash Flow Model (\$USD, MMs)							Terminal Value - EBITDA Multiple Approach
Fiscal Year	2023A	2024E	2025E	2026E	2027E	2028E	
Fiscal Year End Date	2023/12/31	2024/12/31	2025/12/31	2026/12/31	2027/12/31	2028/12/31	
Revenue	15,540	23,687	27,629	30,676	33,501	36,181	EBITDA Multiple 11.00x
% Revenue Growth	-49.5%	52.4%	16.6%	11.0%	9.2%	8.0%	PV of Terminal Value 81,400
EBITDA	2,297	10,514	11,080	12,340	11,694	12,919	Sum PV of FCFFs 19,214
EBITDA Margin %	14.8%	44.4%	40.1%	40.2%	34.9%	35.7%	<b>Total Enterprise Value</b> 100,614
EBIT	-5,459	3,108	3,180	3,926	2,823	3,618	(-) Debt -15,802
<b>NOPAT</b>	9.3%	<b>-4,952</b>	<b>2,820</b>	<b>2,885</b>	<b>3,562</b>	<b>2,561</b>	(+) Cash 16,666
(+) Depreciation & Amortization		7,405	7,901	8,414	8,871	9,300	
(-) Capital Expenditures		-6,940	-7,819	-7,454	-6,131	-6,621	
(-) Change in NWC		2,159	-849	-635	-645	-576	
<b>Free Cash Flows to Firm</b>		<b>5,444</b>	<b>2,117</b>	<b>3,886</b>	<b>4,656</b>	<b>5,386</b>	<b>Total Equity Value</b> 101,477
Discount Rate		11.8%	11.8%	11.8%	11.8%	11.8%	Diluted Shares Outstanding (000s) 1,103
Present Value of FCF to Firm		4,868	1,893	3,475	4,163	4,816	<b>Implied Equity Value per Share</b> \$92.00
<b>Sum PV of FCFFs</b>		<b>19,214</b>					Current Share Price \$82.38
							Implied Upside/Downside 12%

## Bear Case Scenario

Terminal Value - EBITDA Multiple	
EBITDA Multiple	11.00x
PV of Terminal Value	45,319
Sum PV of FCFFs	16,194
<b>Total Enterprise Value</b>	<b>61,512</b>
(-) Debt	-15,802
(+) Cash	16,666
<b>Total Equity Value</b>	<b>62,376</b>
Diluted Shares Outstanding (000s)	1,103
<b>Implied EV per Share</b>	<b>\$56.55</b>
Current Share Price	\$82.38
Implied Upside/Downside	-31%

## Sensitivity Analysis

Sensitivity for EBITDA Multiple Approach						
EBITDA Multiple						
	10.5x	11.0x	<b>11.5x</b>	12.0x	12.5x	\$114.
WACC	8.1%	\$102.29	\$106.26	\$110.24	22	\$118.19
	9.1%	\$98.38	\$102.18	\$105.98	78	\$113.57
	<b>10.1%</b>	\$94.68	\$98.31	<b>\$101.94</b>	57	\$109.19
	11.1%	\$91.17	\$94.64	\$98.10	57	\$105.04
	12.1%	\$87.83	\$91.15	\$94.47	8	\$101.10
						\$97.7

## Bull Case Scenario

Terminal Value - EBITDA Multiple	
EBITDA Multiple	11.00x
PV of Terminal Value	137,971
Sum PV of FCFFs	24,207
<b>Total Enterprise Value</b>	<b>162,178</b>
(-) Debt	-15,802
(+) Cash	16,666
<b>Total Equity Value</b>	<b>163,041</b>
Diluted Shares Outstanding (000s)	1,103
<b>Implied Equity Value per Share</b>	<b>\$147.82</b>
Current Share Price	\$82.38
Implied Upside/Downside	79%

# Recommendation



We Recommend a BUY at a Target Price of \$95

## Blended Valuation

Valuation Method	Weight	Target Price
DCF - Base	60%	\$92
Comps - Base	40%	\$100
Current Share Price (01/11/2024)		\$82
<b>Unrealized Return</b>		<b>16%</b>

## Commentary

- Micron's strategic global and U.S. expansion, along with a bullish outlook for the global semiconductor industry, positions it as a compelling investment opportunity primed for growth.
- Considering Micron's market-leading products and collaborations with leaders such as Nvidia, Microsoft, and Qualcomm, we believe the market has not fully accounted for its significant influence and strategic positioning.

## Football Field



## Theses Recap



# **Appendix**

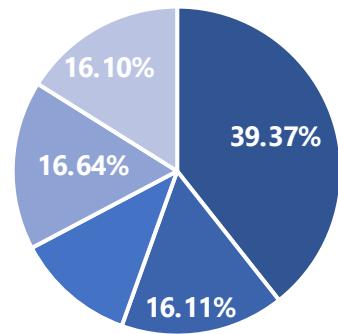
Micron Technology, Inc. (NASDAQ: MU)

---

# Appendix I: Competitor Analysis - Samsung Electronics

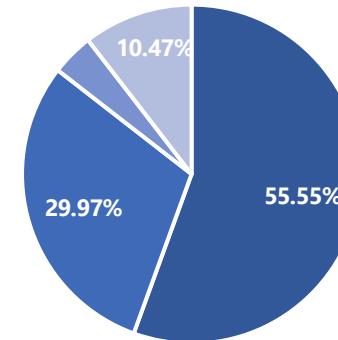
## Operating Geography

America    Asia and Africa    China    Europe    South Korea



## Operating Segments

Device Experience (DX)    DS    Harman    SDC



## Strength and Weaknesses



- Diversified Portfolio:** Has a diverse revenue portfolio. Compared to SK Hynix and Micron, Samsung was the only company to post positive revenues for 2023.
- Range In Price Products:** Samsung offers products in the premium and lower-end segments. The range in pricing allows Samsung to target different demographics, and given its reputation provides customer loyalty.
- Efficient Supply Chain:** Samsung has been known for its innovative supply chain management; this is in part due to aligning its operations and production processes with customer needs, and implementing the latest technology such as AI and IOT

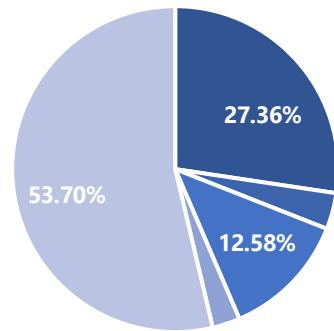


- Dependency:** Samsung is dependent on the American and Smartphone market both of which are subjected to shifts in policy changes and consumer perspective
- Vertical Supply Chain Issues:** Despite having an efficient supply chain system in place, Samsung is vulnerable to external factors such as Geopolitics and Economic Downturns. As seen in a recent case where the US chip act almost diverted business from China
- Unattractive To Potential Employees:** Compared to Micron, Samsung pays roughly half the salary, which has made the company unappealing for skilled engineers within the chip industry. A lack of skilled engineers could lead to stagnation in innovation.

## Appendix II: Competitor Analysis - SK Hynix

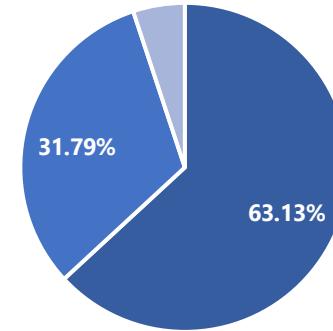
### Operating Geography

■ China ■ Europe ■ Other ■ South Korea ■ USA



### Operating Segments

■ DRAM ■ NAND Flash ■ Others



### Strength and Weaknesses



- **Strong Acquisition Program:** Acquisitions have provided SK Hynix with valuable intellectual property and technology. A notable acquisition was Intel's SSD business and Dalian NAND Flash Manufacturing Facility assets in China.
- **Reputable Customers:** SK Hynix is partnered with large corporations in the tech industry. These include companies such as Apple, Microsoft and Dell.
- **High Margins:** Compared to competitors such as Samsung and Micron, SK Hynix is making higher profit margins despite downward pressure on profitability.



- **Dependency:** SK Hynix is dependent on the American and DRAM market both of which are subjected to shifts in policy changes and supply and demand. For 2023 SK Hynix reported negative earnings due to waning demand in memory chips.
- **Vertical Supply Chain Issues:** As with Samsung, SK Hynix being a Korean based company is vulnerable to external factors such as Geopolitics and Economic Downturns. The CEO of SK Hynix described the US Chip act as onerous given the geopolitical situation.
- **Declining Market Share:** In Q2 2023, Micron a direct competitor overtook SK Hynix in its DRAM Market share. With projections for the company being outpaced by the chip industry this could lead to the company to decline even further.

## Appendix III: Mergers and Acquisitions

### Acquisition of Intesa Memories

- Micron acquired Inotera Memories on Dec 6th, 2016 for \$4 Billion USD
- The acquisition was meant to help Micron increase its profit margins and transition Inotera's existing production of DRAMs into newer versions
- Inotera at the time of the acquisition had a Fab 11 plant located in Taiwan, which constituted to around 35% of Micron's total output

### Acquisition of Numonyx

- Micron acquired Numonyx on Feb 9th, 2010 for \$1.27 Billion USD
- Micron intended to build upon Numonyx NAND and PCM portfolio (which later developed into 3D XPoint Memory)
- Numonyx at the time of acquisition had plants built in Israel and Singapore. In addition, the company also had a R&D fab in Italy

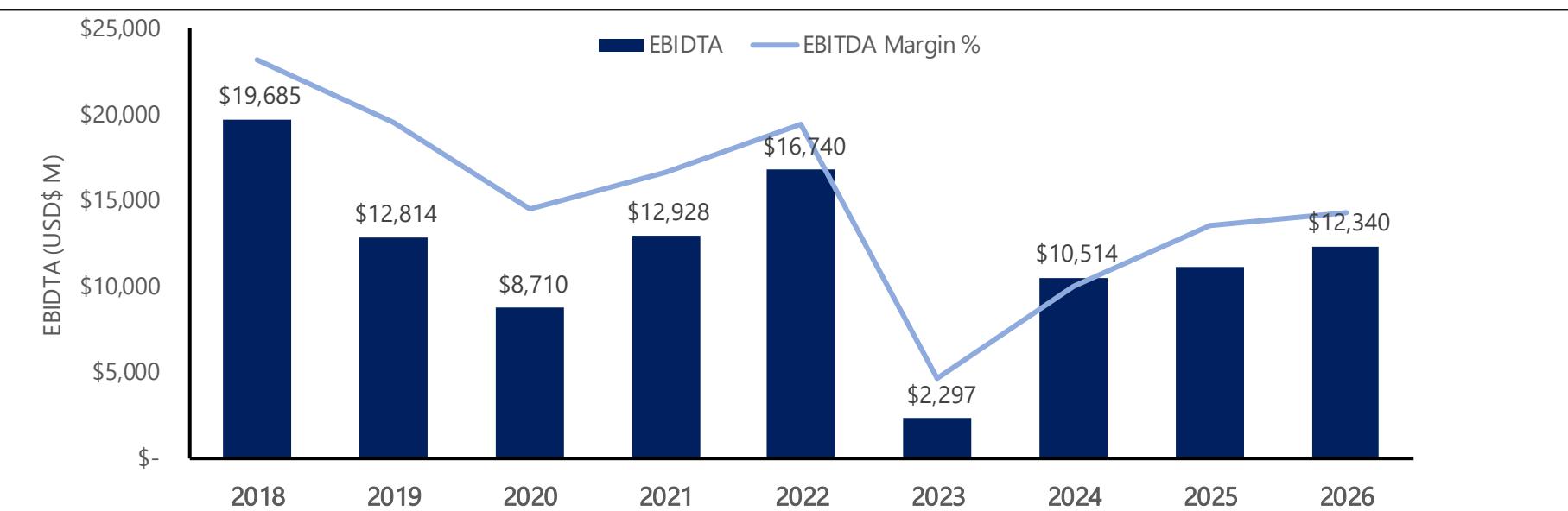
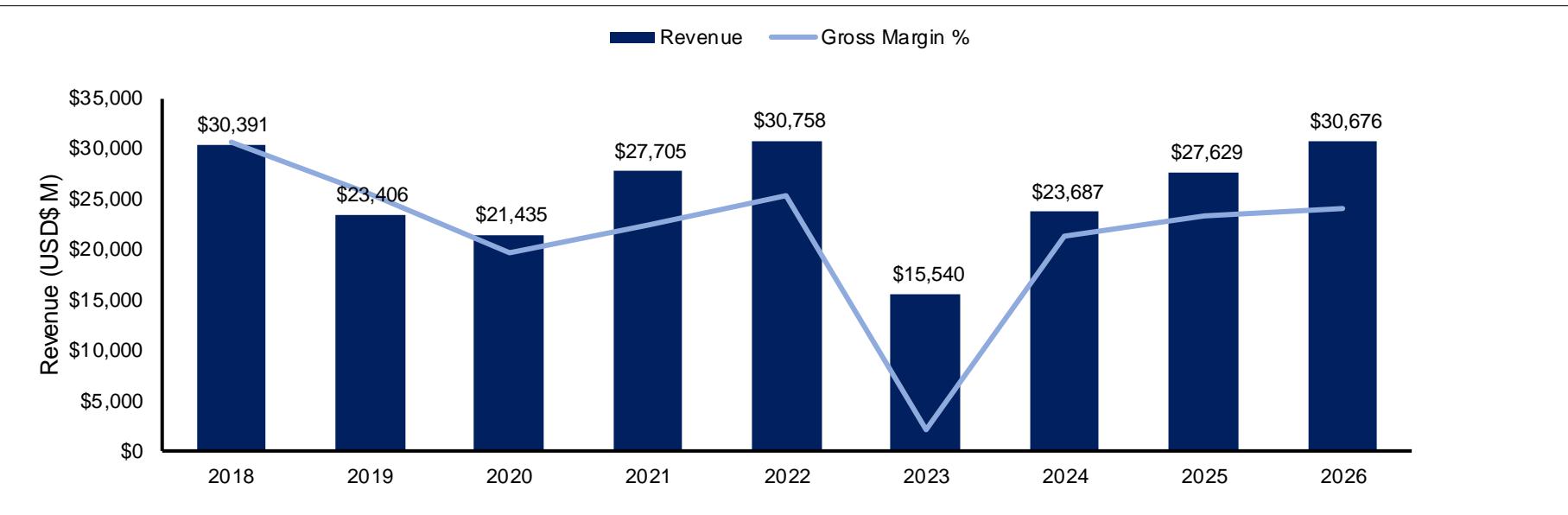
### Acquisition of Rexchip Electronics Corporation

- Micron acquired Rexchip Electronics Corporation on July 31, 2013 for \$1.08 Billion USD
- The goal of the acquisition was to provide enhanced R&D and manufacturing scale, significant cost and production synergies.
- Rexchip Electronics Corporation at the time of acquisition had plants built in Japan and Taiwan. These plants provided a manufacturing boosts of 185,000 300mm wafers per month

### Acquisition of FWDNXT

- Micron acquired FWDNXT Corporation on Oct. 24, 2019.
- FWDNXT at the time provided products in fast-time-to-market edge AI solutions
- Micron combined FWDNXT to create the Micron Deep Learning Accelerator (DLA) technology, which is powered by the AI inference engine from FWDNXT

## Appendix IV: Revenue, Gross Margin, EBITDA, EBITDA Margin (USD\$ M)



## Appendix V: Income Statement (USD\$ M)

Income Statement								
Fiscal Year	2021A 2021-12-31	2022A 2022-12-31	2023A 2023-12-31	2024E 2024-12-31	2025E 2025-12-31	2026E 2026-12-31	2027E 2027-12-31	2028E 2028-12-31
Fiscal Year End Date								
Revenue	27,705	30,758	15,540	23,687	27,629	30,676	33,501	36,181
Cost of Goods Sold	-17,223	-16,860	-16,956	-14,568	-17,130	-18,590	-21,273	-22,975
<b>Gross Profit</b>	<b>10,482</b>	<b>13,898</b>	<b>-1,416</b>	<b>9,119</b>	<b>10,499</b>	<b>12,086</b>	<b>12,228</b>	<b>13,206</b>
SG&A Expense	-894	-1,066	-920	-758	-967	-1,227	-1,407	-1,520
R&D	-2,663	-3,116	-3,114	-23	-30	-38	-44	-47
Other Operating Expenses	0	0	0	-2,032	-2,294	-2,294	-2,594	-2,594
	-119	-7	-9	-3,198	-4,028	-4,601	-5,360	-5,427
	0	0	0	0	0	0	0	0
<b>EBITDA</b>	<b>13,020</b>	<b>16,825</b>	<b>2,297</b>	<b>10,514</b>	<b>11,080</b>	<b>12,340</b>	<b>11,694</b>	<b>12,919</b>
Depreciation and Amortization	-6,214	-7,116	-7,756	-7,405	-7,901	-8,414	-8,871	-9,300
<b>EBIT</b>	<b>6,806</b>	<b>9,709</b>	<b>-5,459</b>	<b>3,108</b>	<b>3,180</b>	<b>3,926</b>	<b>2,823</b>	<b>3,618</b>
Interest Expense	-183	-189	-388	-1,020	-1,002	-942	-861	-716
Interest Income	37	96	468	192	250	297	385	478
<b>EBT, Excluding Unusual Items</b>	<b>6,697</b>	<b>9,639</b>	<b>-5,362</b>	<b>2,280</b>	<b>2,428</b>	<b>3,281</b>	<b>2,346</b>	<b>3,381</b>
	0	37	4	2	0	0	0	0
	0	0	0	0	0	0	0	0
<b>EBT, Including Unusual Items</b>	<b>6,265</b>	<b>9,575</b>	<b>-5,656</b>	<b>2,280</b>	<b>2,428</b>	<b>3,281</b>	<b>2,346</b>	<b>3,381</b>
Income Tax Expense	-394	-888	-177	-212	-225	-304	-218	-314
<b>Net Income to Company</b>	<b>5,871</b>	<b>8,687</b>	<b>-5,833</b>	<b>2,069</b>	<b>2,203</b>	<b>2,976</b>	<b>2,128</b>	<b>3,067</b>
Minority Interest	0	0	0	-14	-15	-21	-15	-21
<b>Net Income</b>	<b>5,871</b>	<b>8,687</b>	<b>-5,833</b>	<b>2,054</b>	<b>2,187</b>	<b>2,955</b>	<b>2,114</b>	<b>3,046</b>
Basic EPS	\$5.24	\$7.81	-\$5.34	\$1.87	\$2.00	\$2.72	\$1.96	\$2.83
Diluted EPS	\$5.15	\$7.74	-\$5.34	\$1.87	\$2.00	\$2.72	\$1.96	\$2.83

## Appendix VI: Cash Flow Statement (USD\$ M)

Cash Flow Statement									
Fiscal Year	2021A 2021-12-31	2022A 2022-12-31	2023A 2023-12-31	2024E 2024-12-31	2025E 2025-12-31	2026E 2026-12-31	2027E 2027-12-31	2028E 2028-12-31	
Fiscal Year End Date									
<b>Operating Activities</b>									
Net Earnings				2,054	2,187	2,955	2,114	3,046	
Depreciation and Amortization				7,405	7,901	8,414	8,871	9,300	
Change in Receivables				-1,126	-594	-459	-426	-404	
Change in Inventory				2,883	-968	-552	-1,014	-643	
Change in A/P and Accrued Charges				462	859	489	899	570	
Change in Prepaid Expenses and Other Current Assets				-59	-146	-113	-105	-99	
<b>Cash Flow from Operating Activities</b>				<b>8,492</b>	<b>9,238</b>	<b>10,734</b>	<b>10,339</b>	<b>11,770</b>	
<b>Investing Activities</b>									
Capital Expenditures				-6,940	-7,819	-7,454	-6,131	-6,621	
<b>Cash Flow from Investing Activities</b>				<b>-6,940</b>	<b>-7,819</b>	<b>-7,454</b>	<b>-6,131</b>	<b>-6,621</b>	
<b>Financing Activities</b>									
Proceeds from Long-term Debts				5,623	5,412	5,312	4,129	3,726	
Repayment of Long-term Debt				-3,983	-3,870	-3,512	-2,981	-2,170	
Issuance (Repayment) of Short-term Debt				0	0	0	0	0	
Issuance of Common Shares				0	0	0	0	0	
Repurchases of Common Shares				-425	-500	-550	-550	-550	
Dividends Paid				150	-116	-157	-112	-161	
<b>Cash Flow from Financing Activities</b>				<b>1,365</b>	<b>926</b>	<b>1,093</b>	<b>486</b>	<b>845</b>	
<b>Net Change in Cash</b>				<b>2,916</b>	<b>2,346</b>	<b>4,374</b>	<b>4,695</b>	<b>5,994</b>	
Beginning Cash				9,594	12,510	14,856	19,229	23,924	
<b>Ending Cash</b>				<b>9,594</b>	<b>12,510</b>	<b>14,856</b>	<b>19,229</b>	<b>23,924</b>	<b>29,918</b>

## Appendix VII: WACC

WACC (\$USD, MMs)			
<b>WACC Calculation Inputs</b>			
<u>Equity</u>		<u>Debt</u>	
Diluted Shares Outstanding	1,103	Short-term Debt	\$1
Share Price	\$82.38	Long-term Debt	\$14,127
		Lease Liabilities	\$1,676
Risk-Free Rate	4.02%	Cost of Debt	5.97%
2-Yr Beta	1.18		
Expected Return on Market	12.26%	Tax Rate	21.10%
<b>CAPM</b>			
Risk-Free Rate	4.02%	Total Equity	\$90,865
Beta	1.10	Total Debt	\$15,803
Market Risk Premium	8.24%	Total Capital	\$106,668
Cost of Equity	13.08%	Weight of Equity	85.18%
		Weight of Debt	14.82%
<b>WACC</b>			
Weight of Equity	85.18%	Weight of Debt	14.82%
Cost of Equity	13.08%	Cost of Debt, after-tax	4.71%
<b>Weighted Average Cost of Capital</b>			<b>11.84%</b>

## Appendix VIII: Comparability Criteria

		(1)Geographic Location	(2)Industry	(2.1) Nature of operations & Product Segments:	(3) Size: Mark Cap & Revenue		
					Market Cap (mm):	F2023 Revenue:	Source:
Micron Technology, Inc.	(NasdaqGS:MU)	United States	Semiconductors	Develops, manufactures, and sells <b>memory and storage</b> products (DRAM, NAND, NOR Flash ) SSDs and component-level solutions	\$ 96,106.30	\$ 16,181.00	Capital IQ
SK hynix Inc.	(KOSE:A000660)	South Korea.	Semiconductors	Offers DRAM <b>memory</b> and <b>storage</b> products, SSD; in addition to MCP, and CMOS image sensors.	\$ 74,868.00	\$ 22,495.60	Capital IQ
Samsung Electronics Co., Ltd.	(KOSE:A005930)	South Korea.	Semiconductors	Offers <b>memory</b> and <b>storage</b> products	\$ 391,808.00	\$ 202,020.20	Capital IQ
Intel Corporation	(NasdaqGS:INTC)	United States	Semiconductors	The company offers <b>memory</b> and <b>storage</b> products; in addition to platform products, such as central processing units and chipsets products.	\$ 212,908.00	\$ 52,864.00	Capital IQ
Western Digital Corporation	(NasdaqGS:WDC)	United States	Semiconductors	The company develops, manufactures, and sells <b>data storage devices</b> , hard disk drives (HDDs) and solid state drives ( <b>SSDs</b> ).	\$ 17,107.10	\$ 11,332.00	Capital IQ