



Farhan Ahmad, Vice President, Investor Relations

Thank you, and welcome to Micron Technology's fiscal second-quarter 2023 financial conference call. On the call with me today are Sanjay Mehrotra, our president and CEO, and Mark Murphy, our CFO. Today's call is being webcast from our Investor Relations site at investors.micron.com, including audio and slides. In addition, the press release detailing our quarterly results has been posted on the website, along with the prepared remarks for this call.

Today's discussion of financial results is presented on a non-GAAP financial basis unless otherwise specified. A reconciliation of GAAP to non-GAAP financial measures may be found on our website. We encourage you to visit our website at micron.com throughout the quarter for the most current information on the company, including information on financial conferences that we may be attending. You can also follow us on Twitter at [MicronTech](https://twitter.com/MicronTech).

As a reminder, the matters we are discussing today include forward-looking statements regarding market demand and supply, our expected results, and other matters. These forward-looking statements are subject to risks and uncertainties that may cause actual results to differ materially from statements made today. We refer you to the documents we file with the SEC, including our most recent Form 10-K and 10-Q, for a discussion of risks that may affect our future results. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance, or achievements. We are under no duty to update any of the forward-looking statements to conform these statements to actual results.

I'll now turn the call over to Sanjay.

Sanjay Mehrotra, President and Chief Executive Officer

Thank you, Farhan.

Good afternoon, everyone.

Intro/FQ2 Highlights

Micron delivered fiscal second-quarter revenue within our guidance range, and excluding the impact of inventory write-downs, margins and earnings per share (EPS) were also within the guidance range. The semiconductor memory and storage industry is facing its worst downturn in the last 13 years, with an exceptionally weak pricing environment that is significantly impacting our financial performance. We have taken substantial supply reduction and austerity measures, including executing a companywide reduction in force.



We now believe that customer inventories have reduced in several end markets, and we see gradually improving supply-demand balance in the months ahead. Excluding the impact of inventory write-downs, we believe our balance sheet days of inventory outstanding (DIO) has peaked in fiscal Q2, and we are close to a transition to sequential revenue growth in our quarterly results. We are navigating the near-term, difficult environment with our strong technology position, deep manufacturing expertise, strengthening product portfolio, solid balance sheet and incredibly talented team. Beyond this downturn, we anticipate a return to normalized growth and profitability in line with our long-term financial model.

Technology

Micron continues to lead the industry in both DRAM and NAND technology. We are investing prudently to maintain our technology competitiveness, while managing node ramps to reduce our bit supply and align it with demand. In DRAM, 1 α (1-alpha) represents most of our DRAM bit production, and we continue to make great progress in initiating our transition to 1 β (1-beta). In NAND, 176-layer and 232-layer now represent more than 90% of NAND bit production. We also continue to lead the industry in quad-level cell (QLC) NAND. QLC accounted for over 20% of our NAND bit production and shipments in fiscal Q2. The Micron team's solid execution and implementation of smart manufacturing has driven superb yield enhancement across our leading-edge nodes. Yields on 1 α DRAM and 176-layer NAND have reached levels that are now higher than any node in our history. In addition, both our 1 β DRAM and 232-layer NAND have reached targeted yields ahead of schedule and faster than any of our prior nodes. We are well positioned to qualify these leading-edge nodes across our product portfolio and will ramp them based on customer demand. We are also making good progress toward the introduction of our extreme ultraviolet lithography (EUV)-based 1 γ (1-gamma) node in 2025. Similar to our 1 α and 1 β nodes, we expect this node to provide us with competitive performance, power, cost and density improvements.

End Markets

Now turning to our end markets.

As a result of inventory adjustments across our end markets, slowing demand growth and an extremely challenging pricing environment, revenue was down year over year in all end markets.

While our industry faces significant near-term challenges, we believe that the memory and storage total addressable market (TAM) will grow to a new record in calendar 2025 and will continue to outpace the growth of the semiconductor industry thereafter. Recent developments in artificial intelligence (AI) provide an exciting prelude to the transformational capabilities of large language models, or LLMs, such as ChatGPT, which require significant amounts of memory and storage to operate. We are only in the very early stages of the widespread deployment of these AI technologies and potential exponential growth in their commercial use cases. As more applications of this technology proliferate, we will see training workloads in the data center supplemented with widespread inference capabilities in the data center as



well as in end user devices — all of which will drive significant growth in memory and storage consumption.

Data Center

In data center, we believe that our revenue bottomed in fiscal Q2, and we expect to see revenue growth in fiscal Q3. Data center customer inventories should reach relatively healthy levels by the end of calendar 2023.

We continue to see AI as a secular driver of demand growth in the data center. An AI server today can have as much as eight times the DRAM content of a regular server and up to three times the NAND content. We are well positioned to capture the memory and storage opportunities that AI and data-centric computing architectures will provide. Our product roadmap includes exciting HBM3 and CXL innovations, and I look forward to sharing more details about these solutions in the future. In fiscal Q2, we expanded shipments of CXL DRAM samples to OEM customers that service enterprise, cloud and high-performance computing (HPC) workloads.

Micron is leading the industry with world-class DDR5, or D5 technology. We are shipping D5 in high volume to data center customers and achieved our first customer qualification for our 1α 24Gb D5 product.

The latest generation of server processors, AMD's Genoa and Intel's Sapphire Rapids, require D5 DRAM. Servers using these new processors will drive higher D5 industry bit demand in the second half of calendar 2023, toward a mix crossover with D4 in mid-calendar 2024.

In fiscal Q2 we also began volume production and shipments of the fastest PCIe Gen4 x4 NVMe SSD in the market — our "9400" 176-layer performance NVMe data center SSD — which excels in AI and high-performance computing workloads.

PCs

In PCs, we now forecast calendar 2023 PC unit volume to decline by a mid-single-digit percentage, returning PC unit volume to pre-COVID levels last seen in 2019. Although still elevated, client customer inventories have improved meaningfully, and we expect increased bit demand in the second half of the fiscal year. With our strong product lineup, we are well positioned for the ongoing industry transition to D5. Client D5 adoption is expected to gradually increase through calendar 2023, with D4 to D5 mix crossover in early to mid-calendar 2024.



In fiscal Q2, our NAND QLC bit shipment mix reached a new record for the second consecutive quarter, driven by growth in both client and consumer SSDs. We qualified our Micron 2400 SSD, the world's only 176-layer QLC SSD qualified at OEMs, across the client customer base.

Graphics

In graphics, industry analysts continue to expect graphics TAM compound annual growth rate (CAGR) to outpace the broader market supported by applications across client and data center. Customers' inventory adjustments are progressing well, and we expect demand in the second half of calendar 2023 to be stronger than in the first half. As the performance leader in graphics, we are excited to see our proprietary 16Gb G6X featured in the recently launched NVIDIA GeForce RTX 4070 Ti.

Mobile

In mobile, we now expect calendar 2023 smartphone unit volume to be down slightly year over year. While some customer inventories are back to normal levels, other OEMs' inventories remain elevated. In aggregate, we expect mobile customer inventory to improve through the remainder of calendar 2023, and we expect growth in mobile DRAM and NAND bit shipments in the second half of our fiscal year versus the first half.

In fiscal Q2, we continued sampling and qualifying our industry-leading 1B 16Gb LP5X, receiving very positive feedback on its power, performance and quality from customers. We expect to generate revenue on this 1B product later this fiscal year. We showcased our leading products earlier this month at the Mobile World Congress, where we displayed eight flagship mobile customer design wins.

Auto & Industrial

Last, I'll cover the auto and industrial end markets, which now represent over 20% of our revenue and contribute more stable revenue and profitability. Micron is the market share leader in these important and fast-growing markets.

In fiscal Q2, auto revenue grew approximately 5% year over year. Our leadership in automotive was evidenced by several milestones in Q2. We reached a new record customer quality score, qualified the industry's first 176-layer e.MMC 5.1 automotive product, and began shipping the industry's first 176-layer UFS 3.1 automotive solution. We expect continued growth in auto memory demand for the second half of calendar 2023, driven by gradually easing nonmemory supply constraints and increasing memory content per vehicle.

The industrial market continued to soften in Q2, as our distribution channel partners reduced their inventory levels and end demand weakened for some customers. Inventories are starting to stabilize at



the majority of our customers, and we expect demand to improve in the second half of our fiscal year. In our fiscal second quarter, Micron achieved advanced product sampling and design-in across automation OEMs, ODMs and integrators with our latest generation of products.

Market Outlook

Now, turning to our market outlook.

Our expectations for calendar 2023 industry bit demand growth have moderated to approximately 5% in DRAM and low-teens percentage range in NAND, which are well below the expected long-term CAGR of mid-teens percentage range in DRAM and low 20s percentage range in NAND. The reduction in calendar 2023 demand from our prior forecast is driven by an assessment of customer inventories as well as some degradation in end market demand. We expect that improving customer inventories will support sequential bit demand growth for DRAM and NAND through the calendar year. China's reopening is also a positive factor for calendar 2023 bit demand.

Public reports indicate that there have been significant capital expenditure (capex) cuts throughout the industry, and utilization rates have declined at all DRAM and NAND suppliers. We now expect that the industry bit supply growth for DRAM and NAND in calendar 2023 will be below demand growth, which will help improve supplier inventories. While the supply-demand balance is expected to gradually improve, due to the high levels of inventories, industry profitability and free cash flow are likely to remain extremely challenged in the near term.

Market recovery can accelerate if there is a year-to-year reduction in production or, in other words, negative DRAM and NAND industry bit supply growth in 2023.

In response to the industry environment, Micron has taken a number of decisive actions in fiscal 2023.

First, we are further reducing our supply. We have made additional reductions to our fiscal 2023 capex plan and now expect to invest approximately \$7 billion, down more than 40% from last year, with wafer fab equipment (WFE) down more than 50%. In fiscal 2024, we expect WFE to fall further, as we ramp 1B and 232-layer nodes in a capital efficient manner. We have further reduced DRAM and NAND wafer starts, which are now down by approximately 25%. As a result, for calendar 2023 we now expect Micron's year-on-year bit supply growth to be meaningfully negative for DRAM. We also expect to produce fewer NAND bits in calendar 2023 than in calendar 2022. Excluding the impact of inventory write-downs, we expect Micron's DIO to decline sequentially going forward from its peak in the second quarter.

Second, we have made further reductions to our operating expenses beyond the executive salary cuts and suspension of Micron's fiscal 2023 bonuses companywide. We now expect our overall headcount



reduction to approach 15%. This will occur through a combination of workforce reductions — which are now largely complete — as well as anticipated attrition through the remainder of the calendar year.

Third, Micron continues to execute to a strategy of maintaining flat annual bit share in both DRAM and NAND. While we have had to reduce price to remain competitive in the market, we have not done so in an attempt to gain share, as such share changes at customers are generally transitory.

Lastly, we have taken additional steps to ensure ample liquidity. Mark will go into further detail. Micron continues to have the strongest balance sheet among the pure-play memory and storage companies, and our strong liquidity will enable us to weather this downturn while ensuring our product and technology competitiveness.

I will now turn it over to Mark.

Mark Murphy, Executive Vice President and Chief Financial Officer

Thanks, Sanjay.

Opening

Fiscal Q2 results reflected challenging market conditions, with continued deterioration in pricing and profitability.

Revenue

Total fiscal Q2 revenue was approximately \$3.7 billion, down 10% sequentially and 53% year over year. Fiscal Q2 revenue included \$114 million from an insurance settlement disclosed at the time we provided guidance.

DRAM

Fiscal Q2 DRAM revenue was \$2.7 billion, representing 74% of total revenue. DRAM revenue declined 4% sequentially, with bit shipments increasing in the mid-teens percentage range and prices declining by approximately 20%. Fiscal Q2 DRAM bit shipments benefited from the timing of shipments between fiscal Q1 and fiscal Q2.

NAND

Fiscal Q2 NAND revenue was \$885 million, representing 24% of Micron's total revenue. NAND revenue declined 20% sequentially with bit shipments increasing in the mid-to-high single-digit percentage range and prices declining in the mid-20s percentage range.



Revenue by Business Unit

Now turning to revenue by business unit.

Compute and Networking Business Unit revenue was \$1.4 billion, down 21% sequentially. On a sequential basis, cloud revenue was down while client revenue was stable.

Revenue for the Mobile Business Unit was \$945 million, up 44% sequentially. Mobile revenue benefited from the timing of some shipments between fiscal Q1 and fiscal Q2.

Embedded Business Unit revenue was \$865 million, down 14% sequentially. On a sequential basis, automotive markets were relatively stable while industrial and consumer end markets experienced weakness.

Revenue for the Storage Business Unit was \$507 million, down 25% sequentially, impacted by challenging conditions in the NAND market.

Operating Results

Gross Margin

The consolidated gross margin for fiscal Q2 was negative 31.4%. This result was negatively impacted by approximately \$1.4 billion or 38.7 percentage points of inventory write-downs recorded in the quarter. These noncash write-downs, which lower the cost basis of inventory, result from projected selling prices falling below the cost of inventory and are not a result of obsolescence.

Opex

Operating expenses in fiscal Q2 were \$916 million, down roughly \$80 million sequentially. We continue to aggressively manage our operating expenses and expect them to decline sequentially in both fiscal Q3 and fiscal Q4.

Operating Income

We had an operating loss of roughly \$2.1 billion in fiscal Q2, resulting in an operating margin of negative 56%, down from negative 2% in the prior quarter and positive 35% in the prior year. The operating loss included \$1.4 billion inventory write-downs recorded in the quarter for a 39-percentage point impact to operating margin.



Taxes

Fiscal Q2 taxes were \$53 million. As mentioned in previous quarters, despite a consolidated loss on a worldwide basis, we still have taxes payable in certain geographies due to taxable income levels reported in those geographies.

Earnings Per Share

The non-GAAP loss per share in fiscal Q2 was \$1.91, down from a loss per share of \$0.04 in the prior quarter and earnings per share of \$2.14 in the prior year. Fiscal Q2 EPS included approximately \$1.34 of losses from the impact of the inventory write-down.

Operating Cash Flow

Turning to cash flows and capital spending, we generated \$343 million in cash from operations in fiscal Q2, representing approximately 9% of revenue.

Capital Allocation

Capital expenditures were \$2.2 billion during the quarter. We expect fiscal 2023 capex to be two-thirds front-half weighted, with a higher mix of construction spend in the second half.

Free cash flow was negative \$1.8 billion in the quarter.

Inventory

Our ending fiscal Q2 inventory was \$8.1 billion and reflects the impact of the \$1.4 billion write-down. Average days of inventory for the quarter was 153 days and excluding write-downs, 235 days. Inventory levels in days are higher in NAND than in DRAM. Our actions on supply reflect our intent to work down days of inventories from these levels.

Total Cash/Debt

At quarter end, we held cash and investments of \$12.1 billion and had total liquidity of \$14.6 billion when considering our untapped credit facility.

Given macroeconomic uncertainty and the market environment, during the quarter we bolstered our liquidity further through the addition of \$1.9 billion of long-term debt. Our fiscal Q2 ending debt was \$12.3 billion.

Under a net debt position, our net interest income moves to net interest expense in Q3.



Micron's balance sheet is solid with ample liquidity, low net debt and a weighted average maturity on debt of December 2029.

Financial Outlook

Now turning to our outlook for the fiscal third quarter.

Market conditions remain extremely challenging. However, we expect that, for the rest of this calendar year, DRAM and NAND bits shipments will continue to increase, and supply demand balance will gradually improve. Included in the fiscal third quarter guide is an insurance recovery, separate and unrelated to that recognized in fiscal Q2, of approximately \$110 million, \$70 million of which we expect to recognize as revenue. In fiscal Q3, we expect gross margins to be negatively impacted by pricing, write-down of inventory, costs of underutilization, and a higher mix of NAND. On write-down of inventory, our guidance assumes a write-down of approximately \$500 million associated with inventory produced during fiscal Q3. Small changes to price expectations beyond fiscal Q3 could have a substantial positive or negative impact to the inventory write-down amount in FQ3. Potential variances of inventory write-downs are not factored in the guidance ranges for gross margin and EPS.

As market conditions remain weak, we will continue to aggressively manage our expense profile. As Sanjay mentioned, we increased our headcount reduction target to approach 15% from our previous target of approximately 10%. We now expect opex to fall below \$850 million in the fiscal fourth quarter of 2023. For nonoperating items, we expect a net interest expense of approximately \$5 million in fiscal Q3.

We now project fiscal 2023 taxes to be less than \$140 million.

We expect profitability to remain extremely challenged in the near term. We do project profitability to improve sequentially due to lower inventory write-down and free cash flow to improve slightly driven by reduced capital spend. But we forecast operating margin and free cash flow to remain significantly negative through the fiscal year.

Non-GAAP Guidance

With all these factors in mind, our non-GAAP guidance for fiscal Q3 is as follows.

We expect revenue to be \$3.7 billion, plus or minus \$200 million; gross margin to be in the range of negative 21.0%, plus or minus 250 basis points; and operating expenses to be approximately \$900 million, plus or minus \$15 million. We expect tax expense of approximately \$50 million.

Based on a share count of approximately 1.09 billion shares, we expect EPS to be a loss of \$1.58, plus or minus \$0.07.



Closing

In closing, we continue to aggressively manage through this period of challenging market conditions, preserving our competitive technology and product positions, strong operational capability, and solid balance sheet. Following this downturn, we expect to capitalize on the secular demand trends and growth in memory and storage. We believe we are close to a transition to sequential revenue growth in our quarterly results. We are focused on significantly improving profitability and returning to positive quarterly free cash flow within fiscal 2024. We remain confident in our financial model and will continue to operate the business in a disciplined manner to generate long-term profitability, cash flow and shareholder returns.

Sanjay Mehrotra, President and Chief Executive Officer

Thank you, Mark.

We are carefully managing our business to weather this industry downturn, preserving our technology and product portfolio competitiveness and our manufacturing capabilities. Micron is the leader in DRAM and NAND process technology and one of only a handful of leading-edge semiconductor manufacturers in the world. Our team continues to drive new breakthroughs for our customers.

Memory and storage are at the heart of systems and solutions that fuel the global economic engine, drive new efficiencies, create higher productivity, and spur advances that make life better for people around the world. We look forward to a normalization of market conditions, and we remain confident in the long-term demand for our solutions based on the value they create across multiple end markets.

Thank you for joining us today. We will now open for questions.