

# **EXHIBIT 9**

27-Sep-2023

# Micron Technology, Inc. (MU)

Q4 2023 Earnings Call - Post Earnings

## CORPORATE PARTICIPANTS

**Samir Patodia**

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**Manish Bhatia**

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*Analyst, BMO Capital Markets Corp.*

**Christopher Brett Danely**

*Analyst, Citigroup Global Markets, Inc.*

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## MANAGEMENT DISCUSSION SECTION

**Operator:** Thank you for standing by. Welcome to Micron's Post Earnings Analyst Call. At this time, all participants are in listen-only mode. After the speakers' remarks, there will be a question-and-answer session. [Operator Instructions]

And now, I'd like to introduce your host for today's program, Samir Patodia, Investor Relations. Please go ahead, sir.

**Samir Patodia**

*Investor Relation Contact, Micron Technology, Inc.*

Thanks, and welcome to Micron Technology's fiscal fourth quarter 2023 sell-side analyst call back. On the call with me today are Sumit Sadana, Micron's Chief Business Officer; Manish Bhatia, our EVP of Global Operations; and Mark Murphy, our CFO.

As a reminder, the matters we're 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 the statements made today. We refer you to the documents we filed with the SEC, including our most recent Form 10-K and 10-Q for a discussion of the risks that may affect our future results.

Jonathan, we can now open up for Q&A.

## QUESTION AND ANSWER SECTION

**Operator:** Certainly. One moment for our first question. And our first question comes from the line of Harlan Sur from JPMorgan. Your question, please?

**Harlan Sur**

*Analyst, JPMorgan Securities LLC*

Q

Hi. Good afternoon, everyone. Thanks for taking my question. So within the data center, the team is still anticipating excess customer inventories normalizing beginning of next calendar year. You've got enterprise, cloud, telco, data center markets. Product-wise, you've got DDR4, DDR5, HBM, LPDDR. And then you have your entire enterprise as a deep portfolio. So either by end market or product type, like, where are you guys seeing the most weakness in areas of slower inventory drawdown? And then conversely, on the sequential data center growth here in Q1, what are the areas that are driving strength?

**Samir Patodia**

*Investor Relation Contact, Micron Technology, Inc.*

A

Yeah, Harlan, thanks for the question. So, Sumit, who I announced will be joining the call, will join us just in a few minutes. So he hasn't arrived yet. We'll have him maybe follow up and answer – add more detail to the call, to your question. But we'll start off with Manish who can maybe start off with an answer.

**Manish Bhatia**

*Executive Vice President-Global Operations, Micron Technology, Inc.*

A

Okay, I don't know, Mark, did you want to – yeah. No, I was just going to say thanks for the question, Harlan, and thanks for calling out the fact that data center is this – is not one amorphous area. There's a lot different categories with their own inventory dynamics playing out.

I think it's well known that some of the higher-value segments are the ones that are in shorter supply. High-bandwidth memory for sure, today even, and as we step more into that over our fiscal year 2024 and become part of that, we would still expect that to be a relatively constrained area of the market – of the data center market.

DDR5, inventories are tighter there and more constrained there. Even as the industry continues to adopt more DDR5, the crossover point for DDR5 for the industry should be middle of next year. For us, we think it will be earlier in calendar 2024. And then some of the LP solutions we've talked about are somewhat customized, and we have some of those solutions that are unique with some of our customers.

And I'd say broadly that the DDR4 is where there's more inventory today, at least on the DRAM side. On then in the SSD side, I think there are a couple of different segments that are there. There's the classic hyperscaler side of data center and then there's some of the longer tail side. And we're seeing differing levels of inventory between those customers, but broadly feeling good about where both DRAM and NAND are in terms of being able to see pricing improve in both the markets, including in the data center as we go through 2024.

**Harlan Sur**

*Analyst, JPMorgan Securities LLC*

Q

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Okay. Perfect. I appreciate the insights there. And then, Mark, can you just true us up on the gross margin impact to underutilization charges and the associated higher cost inventory? So in other words, like, what's the current quarterly impact from underutilizations here in fiscal Q1? And how do we see that sort of trending going forward?

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

A

Yeah. So in Q1, we're going to see the underutilization charges, specifically idle charges, we've been referring to as the period costs that are idle, will be about the same in Q1 as we saw in Q4. And it may be helpful at this point, since we're on the other side of all this complexity, to maybe kind of summarize all the various puts and takes we've seen over the last few quarters.

We've had this underutilization that we've been sort of increasing at 5%, then over 20%, then approaching 30% as we sit here today. And so that's driving those underutilization charges that we saw in the fourth quarter and continue into first. And that'll continue through fiscal 2024, but they'll come down, as I've said before. They'll come down gradually and through the year and in part because, as we move to lower wafer output over time, the utilization will increase on that lower wafer output.

Now on the write-downs and the associated sell-through, we're on the back end of that as well. If you recall, we did the \$1.4 billion write-off in second quarter. We did another \$400 million write-down in the third quarter. We realized the benefits of the sell-through in the third quarter of under \$300 million. So we came in, in the fourth quarter with about \$1.5 billion balance. And in the fourth quarter, we had the benefit of about \$560 million associated with sell-through of that lower-cost inventory.

So we enter fiscal 2024 with about \$1 billion lower-cost inventory benefit to realize. We'll realize about \$600 million of that in the first quarter, and then the balance, nearly \$400 million, in the second quarter. And then the results will be sorted out at that point.

I think maybe one last thing, back to underutilization, I did say – because we've talked about this, I just want to make sure it's clear in your analysis. I did say that we would have about \$1.1 billion impact associated with underutilization in fiscal 2023. And, yeah, we recognized about \$400 million of that through period costs in fiscal 2023.

So, that leaves \$700 million of the \$1.1 billion. About \$300 million of that \$700 million ran through as inventory, so that's cleared. Then there's another \$200 million that actually got written off associated with the inventory write-downs. So, we've got another \$200 million left or \$300 million left that will clear in early 2024.

**Harlan Sur***Analyst, JPMorgan Securities LLC*

Q

Okay. No, that's very helpful. Thank you.

**Operator:** Thank you. One moment for our next question. And our next question comes from the line of Ambrish Srivastava from BMO Capital Markets. Your question, please?

**Ambrish Srivastava***Analyst, BMO Capital Markets Corp.*

Q

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Hi. Thank you. Mark, it's just confusing. I think you had more on this last time. It's a bit complicated. So, the \$500 million you just called out from the \$700 million write-down, that's associated with inventory, and that's not part of the inventory write-down, right?

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

A

Which \$500 million are you talking about?

**Ambrish Srivastava***Analyst, BMO Capital Markets Corp.*

Q

Well, you just walked us through the \$1.1 billion impact in fiscal 2023, which was from the underutilization off this \$400 million...

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

A

Yes.

**Ambrish Srivastava***Analyst, BMO Capital Markets Corp.*

Q

...you took the period costs.

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

A

Yes.

**Ambrish Srivastava***Analyst, BMO Capital Markets Corp.*

Q

And in the remaining \$700 million bridge, you said \$300 million with inventory, and I thought you said \$200 million also associated with inventory. So that's not...

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

A

Yeah. And I'm talking the \$1.1 billion is the higher cost associated with underutilization, \$400 million of that was passed through as period costs.

**Ambrish Srivastava***Analyst, BMO Capital Markets Corp.*

Q

Period costs.

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

A

\$300 million of it has already cleared in inventories. And \$200 million of it was associated with the inventory write-down, okay? So that leaves \$300 million left that's going to clear with inventories in early 2024.

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Off of the \$1.1 billion, right?

Q

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

Yeah. Of the...

A

**Amrish Srivastava***Analyst, BMO Capital Markets Corp.*

So that sustained the \$1.1 billion?

Q

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

Exactly. Yeah. That's the \$1.1 billion walk.

A

**Amrish Srivastava***Analyst, BMO Capital Markets Corp.*

Got it. Got it. Got it. Okay. Thank you. And then, back to the factories that are running 30% lower production versus when you started down the path, the underutilization overhang should continue until you come back. I'm just trying to understand the mechanics of what causes that gap to close between underutilization charges being taken and when the factories get back to normal loading.

Q

**Manish Bhatia***Executive Vice President-Global Operations, Micron Technology, Inc.*

So, Amrish, maybe I'll start, and then Mark can cover the accounting mechanics. I'll cover the operational dynamics, and then between the two, it will give you and others a clear picture.

A

So, as we've said before, with this underutilized equipment and with the desire to be able to continue to migrate towards newer technology nodes to be able to support the product portfolio and to provide better performance in the products to our customers, we have been utilizing more of the underutilized equipment towards converting to new nodes. As you do that, you are reducing the capacity baseline of each factory where you're implementing that, right? So the wafer start capability is coming down.

**Amrish Srivastava***Analyst, BMO Capital Markets Corp.*

Yeah.

Q

**Manish Bhatia***Executive Vice President-Global Operations, Micron Technology, Inc.*

But then as you're bringing those tools on and fully utilizing them in the longer process step counts of the newer nodes, they're not really being underutilized anymore once they become part of the new reset lower capacity baseline. So, as that happened, the amount that's sort of charged off towards underutilization or period costs is lowered gradually, because you're utilizing the equipment towards the newer nodes.

A

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Got it. Got it.

Q

**Manish Bhatia***Executive Vice President-Global Operations, Micron Technology, Inc.*

And by utilizing the equipment towards the newer nodes, we don't buy new equipment to be able to maintain a higher production baseline capacity. So it helps us offset CapEx. It helps us utilize the equipment that we have so the period costs will gradually go down, as Mark has said. But we do end up with lower production capacity at the end of the day, which obviously isn't as cost effective as if we would have just maintained the full production capacity while we were doing the conversions. But it's more capital efficient to do it this way.

A

**Amrish Srivastava***Analyst, BMO Capital Markets Corp.*

Manish, and while you're...

Q

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

Yeah. Maybe just to add, Amrish.

A

**Amrish Srivastava***Analyst, BMO Capital Markets Corp.*

Yeah.

Q

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

So we were just talking about the \$1.1 billion. And generally, the underutilization creates this higher cost per wafer. And that's the \$1.1 billion. And it's when you enter the severe underutilization periods that a portion of that is going to be taken immediately to the P&L versus being hung up in inventory.

A

What's going to happen over time as the wafer capacity comes down, those costs still occur. It's just that as the baseline of our capacity is reset lower, more of those costs then can be absorbed due to inventories or pass through when inventories clear versus being...

**Amrish Srivastava***Analyst, BMO Capital Markets Corp.*

Okay. Thank you.

Q

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

...recognized as varying costs.

A

**Amrish Srivastava***Analyst, BMO Capital Markets Corp.*

Yeah. Thank you. I'll cede the floor. Thank you.

Q

**Operator:** Thank you. One moment for our next question. And our next question comes from the line of Chris Danely from Citi. Your question, please?

**Christopher Brett Danely**

*Analyst, Citigroup Global Markets, Inc.*

Q

Hey. Thanks, guys. So I guess what level of revenue do you need to get to, to crank up utilization rates. And what revenue level do you need to get to, or would you be at, to get back to the full utilization?

**Sumit Sadana**

*Chief Business Officer & Executive Vice President, Micron Technology, Inc.*

A

Well, I – go ahead. Manish, you want to...

**Manish Bhatia**

*Executive Vice President-Global Operations, Micron Technology, Inc.*

A

I'll just start a little bit operationally, then you can talk about it from a business perspective, Sumit. I think of it more as we have to see our inventories come down, right. And then we have to see the profitability in the business return to be able to change the CapEx profile that we've guided to, right.

We've talked about WFE being down, and the way we were able to do that while still migrating new technologies, as I was just explaining, is to be able to utilize more of the previously underutilized and coming towards that transition to the newer node. So it's no longer underutilized. It's contributing positively towards us being able to make those transitions to the newer node.

So it's really more about how we see our inventories coming down that drives our need to be able to produce new supply. And then the profitability of the business, as we see pricing improve, then we would look into being able to invest more, whether in CapEx or other areas, to be able to manage supply or grow supply more than what we're guiding to right now.

**Sumit Sadana**

*Chief Business Officer & Executive Vice President, Micron Technology, Inc.*

A

I mean I just want to emphasize one thing that Manish said and connect it back to what Sanjay had said earlier as well, which is as we have redeployed this equipment from other nodes to expand on the back of our newer nodes, there is a structural reduction of our wafer capacity that is happening. This is happening across the industry because everyone is trying to be reducing CapEx in an environment where operational cash flow and profitability has been so dramatically impacted. So it's a industry-wide thing that is occurring.

And the reduction in capacity that is occurring as we do this every month, every quarter, is going to transition our situation from more underutilization to just reduced amount of wafer capacity, which means there isn't the level of switching back on of underutilization that's even possible after we have gone through this transition, except maybe on some legacy nodes where we will still be running underutilization after we are done with this whole transition.

So just wanted to make sure that it's clear that ultimately since the wafer capacity is coming down, there won't be the switching back on of underutilization to create a lot more bits, especially on the leading edge. There will be

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new CapEx investment required, which of course will require increased pricing, increased margins, improved cash flow, improved financial performance for us to justify that CapEx investment to increase wafer capacity again.

**Christopher Brett Danely***Analyst, Citigroup Global Markets, Inc.*

Q

Sure. And just a clarification on that, guys. Is there an optimal inventory level in terms of dollars or days you're looking at or trying to get to? And then I'll cede the floor.

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

A

Yeah. Ultimately, we've said our target is 120 days, which if you just assume current COGS levels, let's say \$6 billion or so. We said we have about \$1 billion of what we call strategic stock on hand. So we've got \$1.5 billion or so of inventories that we need to work through. We are working through those. You've heard a lot of talk today about supply discipline. And really, our spending and our transitions are driven by the pricing environment and the associated inventory levels in the industry. So we're watching those go down. We're actively managing our inventories down.

We do believe as we go into the back half of fiscal 2024 that we'll only have a few weeks of, let's call it, above-target inventory on hand. And so we think we'll be in an even better place. But you're already seeing it. What we said a long time ago has transpired, and that is we said DIO would peak in the second quarter of 2023, which it did, and then that dollars should peak in the third quarter, which they did. And so we're just going to continue to monitor it and manage it closely.

**Christopher Brett Danely***Analyst, Citigroup Global Markets, Inc.*

Q

Yeah. That's helpful. Thanks, guys.

**Operator:** Thank you. One moment for our next question. And our next question comes from the line of Aaron Rakers from Wells Fargo. Your question, please?

**Aaron Rakers***Analyst, Wells Fargo Securities LLC*

Q

Yeah. Thanks for taking the questions and doing this follow-up call. I have two quick ones. And Mark, I apologize. I'm just trying to make sure I've got all the numbers correct here. Based on what you said, it looks like your in-period underutilization costs this last quarter is about \$240 million to be about \$400 million for the full year. Is that correct? I just want to clarify that.

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

A

You're talking period costs in Q4?

**Aaron Rakers***Analyst, Wells Fargo Securities LLC*

Q

Exactly. Exactly. Yeah.

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All right. \$220 million.

A

**Aaron Rakers***Analyst, Wells Fargo Securities LLC*

\$220 million. Okay. And then you've got it sounds like \$200 million to \$300 million more to carry through the first half of the year. I guess my quick follow-up question would be trying to think about the pace of the recovery, obviously the focus is on gross margin here. But I'm curious of how you think about the pace of operating expenses coming back into the model. You've done a good job managing operating expenses. As we think about gross margin turning positive, fundamentals improving, how do you think about bringing OpEx in? Or is there a structural thing to consider in OpEx just being structurally lower as we went through this these last several quarters?

Q

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

Well, we see OpEx moving up fourth quarter to first, and that's driven by resumption of certain compensation programs that are normal, that were reduced during the downturn or worst of the downturn. And then we have some timing on R&D-related expenditures. So, we've guided from \$842 million up to \$900 million.

A

**Aaron Rakers***Analyst, Wells Fargo Securities LLC*

Right.

Q

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

And then the rest of the year, we haven't guided by quarter, but we said that the year would be up slightly, low-single-digit. So you do that and you end up with, call it, 1%, 2%, up \$3.7 billion or below on the full year. So we're going to manage it very tightly. We did have a lot of productivity gains through the year and we're going to work our best to hold those productivity gains.

A

**Aaron Rakers***Analyst, Wells Fargo Securities LLC*

And then final, just one real quick one, is your impact from China still estimated to be kind of low-double-digit? Is that – you didn't change that estimate?

Q

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

We did not change that estimate. We're obviously managing it actively as you could say. The impact has been below that number. It's below that number in the first quarter and no update.

A

**Sumit Sadana***Chief Business Officer & Executive Vice President, Micron Technology, Inc.*

Yeah. I just want to clarify that...

A

**Aaron Rakers***Analyst, Wells Fargo Securities LLC*

Okay. Thank you, guys.

Q

**Sumit Sadana***Chief Business Officer & Executive Vice President, Micron Technology, Inc.*

...the low-double-digit number you quoted was the total risk that we had said. So as Mark said, the impact in China is less than that. And then we have had some success in some mitigation factors, which we're continuing to work on. And – so obviously there is a net number, net of the mitigation that is lower as well.

A

**Aaron Rakers***Analyst, Wells Fargo Securities LLC*

Perfect. Thanks, guys.

Q

**Operator:** Thank you. One moment for our next question. And our next question comes from the line of Vivek Arya from Bank of America Securities. Your question, please?

**Vivek Arya***Analyst, BofA Securities, Inc.*

Thanks for taking my questions. I had a few as well. First, what kind of HBM market share is contemplated in your outlook for next year, and how would you kind of generally characterize the visibility in achieving that? Because I understand the technology strength that you have, but when we look at your Korean competitors, they're also talking up their technology capability and their ability to hold on to a lot of this market share. So I'm just curious, what is your visibility and confidence and what kind of rough market share assumptions you have in HBM for next year?

Q

**Sumit Sadana***Chief Business Officer & Executive Vice President, Micron Technology, Inc.*

Yeah. I mean, we have skipped the HBM3 generation. We commercialized HBM2E, and we went straight to HBM3E in order to get ahead. And we are very excited about this technology because the samples that our customers have in their hands have industry-leading head and shoulders above capability versus competitors, both from a performance perspective as well as amazingly good power consumption capability well below that of our competitors.

A

And so, we are very excited about this. Our customers are very excited, very enthusiastic about this. And so, we are now focused on getting the product qualified. As we have mentioned, we have been embedded now as a lead driver of HBM3E in our customers' roadmaps, and we have focused on qualification and the high-quality, high reliability ramp, the production ramp of which will start in early calendar 2024, and then become meaningful in fiscal 2024, and then be pretty big in the back half of calendar 2024, and then from there on, build from there into 2025.

And our goal is to ensure that we get our HBM share to be similar to our DRAM supply share, and to get there as soon as the hard ramp will allow. So that's what we are focused on, and we have confidence in our plan to execute that.

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**Vivek Arya**

*Analyst, BofA Securities, Inc.*

Q

Okay. And for my follow-up, I think, Mark, you mentioned gross margin. You said positive in Q3 or Q4. I just wanted to clarify what was said about gross margin. And how should we think about when EPS turns positive, is that Q3? Q4? I imagine it's more Q4 than Q3. But just what was said so that our expectations are set the right way in terms of gross margins for Q3 and Q4?

**Mark Joseph Murphy**

*Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

A

Yeah. Thanks, Vivek. So on gross margin, and this is consistent with what we said several quarters, we do expect continuing improvement in gross margin quarter-to-quarter. We guided this negative 4% down, 500 basis points off of negative 9% in the fourth quarter actuals. We do expect continued gross margin improvement in the second quarter relative to the first.

We expect pricing to gain momentum in the second half, and so expect further improvement on that and just the volume leverage in the business in the second half. And so through the second half, so third and fourth quarters, we expect there to be positive gross margin. And again, that pricing effect will be stronger and gross margin improvement.

And as far as profitability, we did not update our profitability. We've said before that we expect to be profitable within the second half of fiscal 2024, and so no update to that. But I do think that it is notable that last time, we said that gross margin would be positive in the fourth quarter. This time we're saying that gross margin is positive through the second half. So I think that's an incremental improvement as it relates to profitability.

**Vivek Arya**

*Analyst, BofA Securities, Inc.*

Q

Thank you. Thank you.

**Operator:** Thank you. One moment for our next question. Thank you. And our next question comes from the line of Karl Ackerman from BNP Paribas. Your question, please?

**Karl Ackerman**

*Analyst, BNP Paribas Exane*

Q

Yes. Thank you. Two questions, if I may. First, I suppose this is for Manish or Sumit, but just on the CAC restrictions, you noted that your data center and networking business was impacted by the CAC in the August quarter, but should we assume that current restrictions are impacting your smartphone business in the November quarter?

**Sumit Sadana**

*Chief Business Officer & Executive Vice President, Micron Technology, Inc.*

A

Yeah. So the CAC impact was meant to be on CII operators, and that means they're largely limited to data center and networking type of products that relate to customers who are deemed to be CII operators. So no, we don't see an impact to the smartphone business. And the impact that we spoke about is indeed data center and networking.

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**Karl Ackerman**

*Analyst, BNP Paribas Exane*

Q

Thank you for that clarification. You indicated that test and packaging CapEx could double next year, but I guess I'm just trying to find a baseline here. I guess what is your packaging CapEx in fiscal 2023, perhaps both in absolute terms and maybe relative to the size of fiscal 2022. That would be very helpful just to set some guide posts in terms of the investments that you're making relative to total portion of WFE. Thank you.

**Manish Bhatia**

*Executive Vice President-Global Operations, Micron Technology, Inc.*

A

I don't think we've broken that out before. I think the color that we provided as we think about 2023 going to 2024 on CapEx is that both construction and assembly tests are going to be increasing meaningfully, while WFE will be down. And so you can imagine that the mix of both – and we've said that the total CapEx number will be slightly above fiscal year 2023's number. So you can imagine that assembly tests as a percentage is going up.

**Mark Joseph Murphy**

*Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

A

We can say generally that it's typically below 10%, and I believe next year it could be above 10%. I think it's a simple way to frame it, Karl. Yeah.

**Manish Bhatia**

*Executive Vice President-Global Operations, Micron Technology, Inc.*

A

Good.

**Mark Joseph Murphy**

*Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

A

Okay.

**Manish Bhatia**

*Executive Vice President-Global Operations, Micron Technology, Inc.*

A

And a significant portion of that increase is to support the strong HBM ramp that Sumit was talking about that our customers are excited about and that we're looking to put in place.

**Karl Ackerman**

*Analyst, BNP Paribas Exane*

Q

Thank you.

**Operator:** Thank you. One moment for our next question. And our next question comes from the line of Brian Chin from Stifel. Your question, please?

**Brian Edward Chin**

*Analyst, Stifel, Nicolaus & Co., Inc.*

Q

Hi. Thanks for letting us ask a few questions. Maybe kind of doubling back on sort of the output discussion, the die-size penalty for HBM3E over D5 is 2x, I think you said, is a bit bigger than I would have expected. What else can you elaborate on that? And more importantly, as a comparison to your peers and the larger footprint, but then inclusive of that, inclusive of the efficiencies and other line kind of conversions, et cetera, how much output do you

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think you and the peers or just the industry could take out next year? Could it be something like 10% reduction in the denominator of capacity? What's sort of your thoughts?

**Manish Bhatia***Executive Vice President-Global Operations, Micron Technology, Inc.*

A

All right. So maybe I'll just clarify. Are you looking for a comment that's on just the HBM effect, or are you looking for a comment on sort of overall between the multiple effects we discussed? HBM and DRAM will absorb a significant amount of production capacity. And then you have the wafer production capacity that will be reduced based on the conversion to newer nodes, which we discussed earlier on this call. Are you looking for a number on both of those or just on really the HBM question?

**Brian Edward Chin***Analyst, Stifel, Nicolaus & Co., Inc.*

Q

Yeah. Maybe the all-in since there's a couple of different attributions, right? So maybe the all-in, but also maybe the amount of that that's driven by HBM, because it should be a sizable portion of it as well, the HBM it sounds like.

**Manish Bhatia***Executive Vice President-Global Operations, Micron Technology, Inc.*

A

Yeah. I think that the HBM number, just to give you some color, this approximately doubled the die size per bit, is kind of there for everyone in the industry and it's derived from a couple of different factors. One is just the JEDEC standard for the size of the interface die. It's also what's needed to be able to get to the high performance of the spec. And it kind of gets more complex each generation of HBM.

And then on top of that – so that's [ph] 2x. Maybe (00:35:11) on top of that, you have the impact on overall production capacity because we have our interface die that needs to be produced. It's a logic die that will take up production capacity in the fabs as well. And then you have the more complex backend integration as your overall yields for the product that are a little bit lower than standard products, right, because of the complexity of the package.

So when you put all that together, you end up seeing more than 2x impact there. And so you can imagine depending on the estimate for overall HBM percentage in bits for the industry, you can then estimate more than 2x of that coming out just because of HBM, right.

And then for the duration of capacity as we convert to newer nodes, it will vary based on each supplier. But what we've said is that we're approaching 30% of our wafer starts to be reduced from their peak 2022 levels. And today most of that is underutilized capacity. As we look towards the end of fiscal 2024, for us, we're moving to where most of that will be on true structural wafer capacity reduction because we have implemented – we've taken that equipment and utilized it in newer nodes.

So that just gives you a sense of both of those two, and you can project it for others in the industry and how they're going to take their underutilized equipment, repurpose it along with whatever their CapEx plans are to be able to end up with structurally lower wafer capacity. And that's a statement both for DRAM and NAND. Obviously, the HBM is only for DRAM.

**Brian Edward Chin***Analyst, Stifel, Nicolaus & Co., Inc.*

Q

**Micron Technology, Inc.** (MU)

Q4 2023 Earnings Call - Post Earnings

**C** Corrected Transcript  
27-Sep-2023

Okay. And just to clarify, you're 30% underutilized and if you did not increase your wafer starts, you could actually approach full utilization rights based on the type of structural consolidation of the footprint?

**Manish Bhatia***Executive Vice President-Global Operations, Micron Technology, Inc.*

A

Maybe I'll say it again just to make sure I'm clear. As we go through the year, we will be taking the equipment that's currently underutilized and converting it to be used in newer technology nodes. It will no longer be underutilized. It will be part of a lower wafer start baseline, but with a richer mix of the newer node. Did that make it clear?

**Brian Edward Chin***Analyst, Stifel, Nicolaus & Co., Inc.*

Q

Okay.

**Manish Bhatia***Executive Vice President-Global Operations, Micron Technology, Inc.*

A

Did that make it clear?

**Brian Edward Chin***Analyst, Stifel, Nicolaus & Co., Inc.*

Q

Yeah. I think directionally. Maybe my follow-up, really quickly then, is the right way to characterize kind of gross margins – so maybe, Mark. Is the right way to characterize the fiscal 1Q and directional fiscal 2Q gross margin guide as that – your expectations for improved memory prices is upward, but somewhat benign? Is that the right way to characterize?

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

A

Yeah, I think it's definitely improving from the fourth. And as we talked about, as the market is transitioning here, there, we need to meet the market where it is and there are some deals that have been done, which will contribute to maybe a muted first quarter and then maybe even into the second quarter price upward trajectory. We think it will be up, but how much?

Prices have been going down for over a year. They're not going to go back up to the levels we want in one quarter. It's going to take a little bit of time. But the market is clearly recognizing that prices are going up. We believe that the second half will see much stronger price improvement relative to the first. So, we think that's strength in the second half. And it will, of course, have a favorable effect on the gross margin and the profitability of the business and cash flows.

**Brian Edward Chin***Analyst, Stifel, Nicolaus & Co., Inc.*

Q

That's good. Thank you.

**Operator:** Thank you. One moment for our next question. And our next question comes from the line of Quinn Bolton from Needham & Company. Your question, please?

**Quinn Bolton***Analyst, Needham & Co. LLC*

Q

Hi, guys. Thanks for taking my questions. Wanted to follow up on the question or topic of the net reduction in wafer starts as you reallocate to HBM and more advanced nodes. What role does just improving demand play in that? I mean, are you assuming that most of that 30% that's underutilized today gets utilized in these more advanced nodes at constant demand? Or are you sort of factoring in some improvement in demand as part of that equation?

**Manish Bhatia***Executive Vice President-Global Operations, Micron Technology, Inc.*

A

Well, I mean, certainly, we said that we do expect there to be robust growth in DRAM and NAND next year in terms of bit growth with DRAM bit growth being higher than the long-term CAGR that we've talked about before and NAND being around that long-term CAGR. So that's certainly part of our plans.

But I think what's important is that the demand for the higher-value newer solutions is also growing maybe even bigger as a part of that growth. So, the industry is in the middle of multiple different transitions, whether it's D4 to D5, LP4 to LP5, HBM2 and HBM3 to HBM3E. All of those newer products are most efficiently produced or only produced on the leading-edge nodes. So, for us, in 1-beta, for example, great node, strong leadership ahead – well ahead of the rest of the industry, great power performance. So we've got it in D5. We've got it in LP5. We've got in HBM3E. And eventually, we'll have it in Graphics 7.

So, it's definitely driven by assumption that demand will return as inventories have – and our customers have normalized in many areas and will normalize as we go through the year in the other areas. But it's also about the demand mix being more towards high-value products that are best produced on the leading-edge nodes. And similar for NAND in terms of the performance specs that we're seeing with higher on-fee performance that we're going to, yeah, achieve on our 232-layer.

I think a great example is on our UFS product that we've launched as well as, I think, the fastest time certainly in our history, if not the industry's history from introduction of a node to a data center SSD shipping in volume to an OEM customer. I mean, it just shows the demand is there for higher-performance, lower-power, and higher-quality technologies.

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

A

Maybe, Quinn, if I could just add, the downturn here has lasted now over a year. And over time, our products continue to advance. Customers want the best performance. And so we're finding the need to serve those products. And HBM is one good example. But we are working to have that product capacity for the latest generation and do it in the most capital-efficient way, which is, as we've said, taking equipment from more legacy nodes. And so as a result, we end up with our wafer starts down over time.

The rate and pace of what we do and the supply effects of it are going to be driven by the inventory levels we see in the industry and the level of profitability. And it's sort of the pay-as-you-go sort of approach here in the sense that we're going to be constantly looking at the health of inventories and profitability as we make our capacity decisions.

**Quinn Bolton***Analyst, Needham & Co. LLC*

Q

**Micron Technology, Inc.** (MU)

Q4 2023 Earnings Call - Post Earnings

**C** Corrected Transcript  
27-Sep-2023

Got it. Then Mark, my follow-up, you gave us very detailed year review of the underutilization charges in fiscal 2023 at \$1.1 billion, \$400 million period costs, \$700 million flows through inventory. Do you have an estimate you can provide for fiscal 2024? Because it feels like you've got \$300 million of inventory charges that hit you in early 2024, leftover from fiscal 2023, but I assume that there's additional underutilization charges that are going to be coming to the model for fiscal year 2024. And I just want to make sure I've got that – thinking about that correctly.

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

A

Yeah. So I'm not going to provide a number and I'll explain why briefly. Let's remember that we have period costs, which include the idle costs. So if you go back to December call, I went through various period costs that we have. We have idle costs front end, idle costs back end, and then a whole bunch of other period costs, freight, royalties, and other things, inventory, scrap and so forth.

So we'll always have period costs. They've been elevated because of the underutilization that we had in 2023 and going into 2024. And that underutilization has been so severe that the front end has experienced pretty high, what we call, idle charges, which go to period costs. And that's part of what I gave you on the walk in 2023 and the \$1.1 billion impact.

We will have in the first quarter another \$200 million of idle charges related to the front end, related to the underutilization, and we will have charges in the second quarter as well. But over time, those period costs or idle charges will go down over time in part because, as we mentioned, we're bringing our wafer capacity down. And when we do that, the utilization just naturally increases. And so those costs will still exist, but they will go into inventories and then pass through the P&L through inventories rather than directly through period costs that you're seeing now.

**Quinn Bolton***Analyst, Needham & Co. LLC*

Q

Right. [indiscernible] (00:46:18)

**Mark Joseph Murphy***Chief Financial Officer & Executive Vice President, Micron Technology, Inc.*

A

Again, I want to emphasize that the rate and pace of our capacity decisions are going to be driven by where we see inventory levels and the profitability in the industry, and we're seeing positive trends relative to last time.

**Quinn Bolton***Analyst, Needham & Co. LLC*

Q

Got it. Okay. Thank you.

**Operator:** Thank you. This does conclude the question-and-answer session as well as today's program. Thank you, ladies and gentlemen, for your participation in today's conference. You may now disconnect. Good day.

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