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AMKR.OQ - Q2 2024 Amkor Technology Inc Earnings Call

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PRESENTATION

Operator

Good day, ladies and gentlemen, and welcome to the Amkor Technology second quarter 2024 earnings conference call. My name is Diego, and I will be your conference facilitator today. (operator instructions) As a reminder, this conference is being recorded.

I would now like to turn the call over to Jennifer Jue, Head of Investor Relations. Ms. Jue, please go ahead.

Jennifer Jue - *Amkor Technology Inc - Vice President - Investor Relations*

Thank you, operator. Good afternoon, everyone, and thank you for joining us for Amkor's second quarter 2024 earnings conference call. Joining me today are Giel Rutten, our Chief Executive Officer, and Megan Faust, our Chief Financial Officer.

Our earnings press release was filed with the SEC this afternoon and is available on the Investor Relations page of our website, along with the presentation slides that accompany today's call. During this presentation, we will use non-GAAP financial measures and you can find the reconciliation to the US GAAP equivalent on our website.

We will make forward-looking statements about our expectations for Amkor's future performance based on the environment as we currently see it. Of course, actual results could differ. Please refer to our press release and SEC filings for information on risk factors, uncertainties, and exceptions that could cause actual results to differ materially from these expectations. Please note that the financial results discussed today are preliminary and final data will be included in our Form 10-Q.

And now I'll turn the call over to Giel.

Giel Rutten - *Amkor Technology Inc - President, Chief Executive Officer*

Thank you, Jennifer. Good afternoon, everyone, and thank you for joining the call today. Amkor delivered second quarter performance in line with expectations with revenue of \$1.46 billion and EPS of \$0.27. Total revenue increased 7% sequentially, driven by demand for advanced packaging, notably for premium-tier smartphones and 2.5D technology for AI solutions.

During the quarter, we maintained focused on our strategic pillars to elevate our leadership position. We successfully brought online additional capacity for 2.5D technology in Korea and qualified advanced SiP and memory technology in Vietnam to support production ramps in the third quarter.

Additionally, we are excited that we have reached a significant milestone in establishing a US manufacturing presence for advanced packaging. We aligned on a non-binding preliminary memorandum of terms with the US Department of Commerce for up to \$400 million in grants under the chips and science Act.

These funds will support building a new facility in Arizona, enabling advanced packaging and test for high-performance computing AI, communications and automotive markets. We look forward to being part of and strong ecosystem of front-end fabs, IDMs and suppliers in establishing a resilient US semiconductor supply chain.

Now, let me review the current dynamics in each of our end markets. Revenue in the communications end market increased 10% sequentially, within the iOS ecosystem, we experienced a larger than seasonal increase driven by builds for the full launch of premium tier smartphones.

Revenue within the Android supply chain declined slightly sequentially, but still showed a strong 20% year-on-year growth. Our advanced packaging technology supports a wide range of applications and functionality throughout the phone.

With our advanced SiP technologies for heterogeneous integration together with our proprietary flip chip package on package technologies, we support a full range of applications from RF and camera to the latest AI enabled apps processors that require high speed and high-density interconnect with fine pitch bonding.

Revenue from our automotive and industrial end market was down 2% sequentially. Recovery in this market is taking longer than anticipated due to weak demand and ongoing inventory corrections. Despite these near-term dynamics, we believe the long-term drivers for growth remain intact.

Semiconductor content per car is expected to continue to increase, driven by the proliferation of ADAS electrification, infotainment and telematics, all requiring advanced packaging technology. Amkor is the leading automotive assets. It has multiple decades of experience meeting the stringent requirements of the automotive industry.

With a broad portfolio of advanced and mainstream technologies and establish large-scale manufacturing base in critical regions like Europe and Japan and trusted relationships with key customers in the automotive supply chain, Amkor is well positioned to support the secular growth in this market when it exits the current cycle.

Revenue from the computing end market increased 20% sequentially, driven by strength in AI devices and several new product introductions for ARM-based PCs. We executed on our planned expansion for 2.5D capacity for AI devices more than tripling our capacity versus second quarter of 2023.

In the third quarter, we expect constraints in high-bandwidth memory supply to limit revenue growth. Amkor is leading the OSAT supply chain with the deployment of 2.5D technology. And with the robust demand and additional capacities we now expect the full year 2.5D revenue to quadruple versus 2023 levels.

We continue to partner with multiple customers on next-generation technology, utilizing organic interposers and expect those solutions to be brought to market in the first half of 2025.

Revenue from the consumer end market decreased 6% sequentially, driven by the wind-down of legacy IoT devices ahead of the expected ramp-up of next-generation products. Traditional consumer product demand has been muted. But the high volume production ramp of a new wearable product utilizing advanced SiP technology is expected to start in the third quarter.

Consumer IoT devices require miniaturization, with increasing levels of integration. Our advanced SiP technology for heterogeneous integration positions as well to meet these requirements and our new Vietnam facility enables us to continue to drive manufacturing scale and innovation.

During the second quarter, our manufacturing organization had to manage multiple challenges. On one hand, several factories still showed low utilization, we're focus was on cost control while maintaining high quality standards.

On the other hand, we executed the capacity ramp for 2.5D technology in Korea qualified advance SiP and memory technology in Vietnam, and prepared for the steep seasonal ramp in the third quarter. Additionally, the team further progressed with our advanced packaging and test facility in Arizona, by advancing factory design and construction planning, are working with customers to develop the technology roadmap and capacity loading scenarios.

During the second half of the year, cost and quality together with managing a steep seasonal ramp will remain top priorities.

Now, let me turn to our third quarter outlook. Considering current market conditions, we expect third quarter revenue of \$1.835 billion at the midpoint of guidance. This represents sequential growth of 26%, driven by advanced packaging in support of the seasonal launch of premium-tier smartphones. The ramp of a new consumer wearable device and continued strong demand in high-performance computing and ARM-based PCs.

The slower than expected recovery in the automotive and industrial markets, together with the continued weak demand in traditional data centers has dampened anticipated growth in the third quarter. Looking forward, we remain confident that the secular growth drivers for the industry remain in place. With our strong technology leadership in advanced packaging, a uniquely diversified global footprint and partnerships with lead customers, we are well positioned to accelerate while exiting this cycle.

With that, I will now turn the call over to Megan to provide more detailed financial information.

Megan Faust - Amkor Technology Inc - Chief Financial Officer, Executive Vice President, Treasurer

Thank you, Giel. And good afternoon, everyone.

Amkor delivered second quarter revenue of \$1.46 billion, this was in line with guidance and represents a 7% sequential increase driven by strength in advanced SiP and 2.5D technology.

Second quarter gross profit was \$212 million, and gross margin was 14.5%, while gross margin declined modestly from Q1 due to higher material content, gross profit dollars expanded 5%. Operating expenses for the quarter came in lower than expected at \$131 million. We expect Q2 to be the peak for operating expenses in 2024, due to preparation costs for our factory in Vietnam.

We are on track to begin production in Vietnam in Q3, and we expect a portion of the cost to move to cost of goods sold when production begins. Operating income was \$82 million and operating income margin was 5.6%.

Net income for the second quarter was \$67 million, resulting in EPS of \$0.27. Second quarter EBITDA was \$247 million and EBITDA margin was 16.9%. Our balance sheet remains strong, we ended the quarter with \$1.5 billion of cash and short-term investments and total liquidity of \$2.2 billion. Our total debt as of the end of the quarter is \$1.1 billion and our debt to EBITDA ratio is one times.

Moving on to our third quarter outlook. We expect Q3 revenue of around \$1.835 billion, representing a significant sequential increase of 26%. Our Q3 increase is primarily driven by advanced SiP products supporting the fall launch of premium tier smartphones, as well as a next-generation consumer wearable product.

While we have expanded our capacity for 2.5D technology supporting AI devices, high-bandwidth memory constraints may limit sequential revenue growth. Given the soft demand and ongoing inventory corrections in the automotive and industrial markets, we anticipate this end market may stay fairly flat compared to Q2.

We expect gross margin to be between 14% and 16%. We are anticipating a higher than seasonal material content due to a product mix concentrated in advanced SiP. While this does constrain gross margin, absolute profitability will expand at a much higher growth rate than revenue.

We expect Q3 operating expenses of around \$125 million. We expect our full year effective tax rate to be around 18%. Third quarter net income is expected to be between \$105 million to \$140 million, resulting in EPS of \$0.42 to \$0.56. This represents more than an 80% increase in profitability compared to Q2.

Our CapEx forecast for the year remains at \$750 million. Our investments are primarily focused on increasing advanced packaging capacity for 2.5D and advanced SiP, as well as expanding select manufacturing facilities.

Last week, Amkor signed a non-binding preliminary memorandum of terms. With the US Department of Commerce to receive up to \$400 million in direct funding as the part of the CHIPS and Science Act. We are proud to be the leading advanced packaging and test OSAT headquartered in the US, and this milestone underscores our commitment to ensuring US semiconductor manufacturing security and innovation.

In closing, Amkor continues to execute on our three strategic pillars. First, technology leadership by providing expanded capacity to support growing demand for 2.5D, enabling AI.

Second, expanding our broad geographic footprint, by hitting a significant milestone with our US manufacturing plans and signing a preliminary memorandum of terms for Chip's funding. And third, our focus on industry megatrends. We believe that the secular growth drivers for the industry remain in place and that our partnerships with leading semiconductor companies will drive future growth as we exit the cycle.

With that, we will now open the call up for your questions. Operator?

QUESTIONS AND ANSWERS

Operator

(operator instructions)

Tom Diffely, D.A. Davidson.

Thomas Diffely - D.A. Davidson & Co. - Analyst

Yes, good afternoon. Thank you for letting me ask a few questions.

Megan, first question on the model itself. When you look at the margin guidance versus previous expectations for increased incremental gross margins as you ramped up revenue. I'm curious how big of an impact is it moving from the operating expense line to the gross margin line of this new facility? What is the relative kind of quarter over quarter impact of that?

Megan Faust - Amkor Technology Inc - Chief Financial Officer, Executive Vice President, Treasurer

Hi, Tom. With respect to the Vietnam production facility going online, that movement from operating expenses, the order of magnitude isn't going to be that much more than what you're seeing in our guide between Q2 and Q3 going down. So that's less than \$10 million. That is not, the biggest impact to the Q3 margin guidance.

Thomas Diffely - *D.A. Davidson & Co. - Analyst*

Okay. So when you look at the Q3 margin guidance, what is the biggest impact that's kind of counteracting the just the revenue growth, incremental margins?

Megan Faust - *Amkor Technology Inc - Chief Financial Officer, Executive Vice President, Treasurer*

Yeah, so really what's happening with respect to our Q3 profitability is, it's a function of utilization as it relates to certain products and product mix. So while we are anticipating an increase in our utilization in Q3, probably in the low 70s. The way that that's spreading amongst our factories is very dynamic.

We have high utilization in factories such as Korea that are supporting advanced SiP, while others are much lower than expected. And as what we had estimated previously. And that's really due to some ongoing lower demand in our traditional consumer, traditional data center, and as we had mentioned in our prepared remarks in the automotive and industrial.

So with respect to those dynamics, we are going to see a peak season of material content in Q3. So that's the biggest driver and that will constrain flow through, that is just a function of demand and product mix. It's not a structural cost. So that's where your first question about the Vietnam cost, it's not structural. In fact, the manufacturing costs estimated for Q3, which we characterize as labor, depreciation and OCOGS, that excludes materials. Those are only going to increase in the mid single digits as compared to the 26% increase in revenue.

Thomas Diffely - *D.A. Davidson & Co. - Analyst*

Great. Okay. Now I appreciate all the extra color on the margins. And then here when you look at the PC and server market, you talked about how some of the new PCs are getting more active, but yet the servers are still pretty weak. Is that different than normal seasonality. Is there seasonality in that? Or is it really just a cyclical impact that you see in the PC and servers?

Giel Rutten - *Amkor Technology Inc - President, Chief Executive Officer*

Yes, Tom. Let me try to give a little bit of color there.

Well, first of all, we see, some initial recovery in the general PC market, where we see specific growth for Amkor is in the ARM-based PCs and they were ramping up starting Q1, and that goes into Q4 of this year, with significant ramps and that goes across multiple customers.

Yeah, so it's general PC market gradually recovering and very specifically ARM-based PCs, that's a where we have a good position, it's ramping up in the course of this year.

Charles Shi - *Needham & Company, LLC. - Analyst*

Okay. Then on just on the server side, though, what's your expectation for that recovery?

Giel Rutten - *Amkor Technology Inc - President, Chief Executive Officer*

Sorry, can you repeat --

Charles Shi - *Needham & Company, LLC. - Analyst*

So just for the server chips and the server market itself?

Giel Rutten - Amkor Technology Inc - President, Chief Executive Officer

Well, I mean, the server market is a broad market. I mean, if we take the category of AI based servers, then we expect that to continue to grow into the remaining part of this year, and also into 2025. For the conventional servers, we still see weakness. We believe that in data centers, the investments that are being made by the hyperscalers are really tuned towards the AI servers. And that means that the more, -- let's say, conventional servers are still fairly, fairly weak. So far, I cannot report an improvement there.

Operator

Charles Shi, Needham & Company.

Charles Shi - Needham & Company, LLC. - Analyst

Hi, Giel, Megan. I want to ask a couple of questions. First up, I'm glad to hear that you guys are getting tractions on the organic interposer. You will come to the market in first half next year, 2025. I wonder, can you provide us a little bit more color because I believe you have three customers on your 2.5D technology, at least that was the case 90 days ago.

Wonder if you can give an update? And two, what's the mix in terms of engagement with your customer? How many are sticking with the silicon interposer and how many are actually looking at that organic interposer ramp with you in first half of next year? And if I may, just a third part of this question would be the tools you put in place for silicon interposer base at 2.5D versus organic interposer based at 2.5D, are they fungible? Thank you.

Giel Rutten - Amkor Technology Inc - President, Chief Executive Officer

Yes, hi, Charles. Good to hear you. Let me start with the last part of your question, with respect to the tools that we are investing in a bit more specific there. I think we had a first tranche of investments finalized in the second quarter, and we went for a second tranche of the same order of magnitude of investment that will become available in the early part of 2025 late this year, early part of 2025. Most of these tools are fungible across wafer-based technology. So that's both 2.5D with interposer as well as what you call a organic interposer or high-density fan-out technology.

Now with respect to the transition from one technology to another, for these organic interposers, we are engaged with a broad range of customers that say between 5 and 10 customers. We are currently running pilot production initial rounds, and we expect to ramp into mass production early 2025. That engagement is broader from a customer engagement perspective and also from a product portfolio perspective.

If we take the traditional 2.5Ds with interposer, then we be indeed have the order of magnitude of three to five customers where we run, let's say, a variable that's a volume production currently, and we expect that to continue into 2025 also. So although initially there was expected a faster change over one technology to another, we now see that 2.5D will continue well into 2025.

Charles Shi - Needham & Company, LLC. - Analyst

Thank you. Yeah, that's great. And I may ask a second question, maybe to Megan.

Hey, Megan, I think you previously expect a 30% half-over-half revenue growth. Understandably, there is a little bit of a softness still in auto, in traditional consumer, 2.5 Dbrand. It looks like there's some upstream constraints on the HBM side. Is that -- does that change that 30% half-over-half growth outlook you originally thought is going to be the case, let's say, 90 days ago?

Megan Faust - Amkor Technology Inc - Chief Financial Officer, Executive Vice President, Treasurer

Hey, Charles. Yeah. So while there may have been some mix shift changes and we did perform slightly better in the second quarter than expected, our full year top-line expectations have not fundamentally changed. We are expecting a muted first half, followed by a stronger than seasonal significant growth in the second half. And what's driving that is also consistent with respect to our strong seasonal iOS launch cycle, our new consumer wearable program.

We have installed and have incremental capacity for our 2.5D. However, that will be limited with some of the high-bandwidth memory constraints. And really the only change then is with respect to the ongoing automotive and industrial continuing to be weak. However, for automotive and industrial we do expect Q2 to be the trough and we are expecting some mild recovery and increase in Q3. So overall, with respect to the shape of the year with Q1, and Q2 outperforming somewhat that might have adjusted the shape, but the full year exit stations are the same.

Operator

Randy Abrams, UBS.

Randy Abrams - UBS Investment Bank - Analyst

Okay, thank you. I wanted to follow-up just on that the prior comments you made on outlook. Just a couple of clarifications, one on the HBM constraints. Is that our view, is it a production or a yield issue that's limiting the ramp up? And is there a visibility or how you're feeling how long that constraint hold?

And then I wanted to ask pulp, I think your full year relatively unchanged despite a little bit of impact on third quarter. So if you could give an initial view, just the tail end of your fourth quarter, are you seeing above seasonal? And what do you see as kind of drivers continuing into Q4?

Giel Rutten - Amkor Technology Inc - President, Chief Executive Officer

Okay. Let me try to give a little bit color on the high-bandwidth memory constraints. Currently, we're working with all three suppliers for high-bandwidth memory. So we are fully qualified for all three. The constraint is not related to yield, it's related to supply from high-bandwidth memories, mostly from the biggest to supplier there. It started by the end of the second quarter, and it goes into, let's say, this month. And we expect that the next two months of the second quarter -- of the third quarter, it will normalize. But overall, it has some impact on the further revenue growth in the 2.5D business.

With respect to your second part of the question, what are the drivers in second half growth, there are in line what we expected in the, let's say at the end of the first quarter, the main drivers are, as Megan already highlighted, the ramp of seasonal launch of the iOS system together with Android recovering. So although that in the second quarter, Android was sequentially slightly down, we still see 20% year on year in the second quarter, and we expect that strength to continue in the remaining part of the year.

So definitely, in the communications side, we expect strength in the second half. Also, the ramp of the IoT wearable device, that will be here a meaningful contribution in the second half. We executed that qualification and we expect that ramp to go as planned, as is the 2.5D capacity expansion that we put in place. And there, the outlook, the forecast is in line with our expectation and that will grow.

Megan already mentioned the rebalancing in the automotive and industrial markets, that takes a slightly longer than expected. Although we believe that the second quarter of 2024 is the trough and that from here on, we see a much more balanced supply chain. The inventory situation on most of the subsegments in automotive is much more balanced than it was when we started this year. And the feedback from our customers is that in our going into Q3, there will be a slight recovery. And then going into Q4 and 2025, the automotive market will go back to original seasonality.

Megan Faust - Amkor Technology Inc - Chief Financial Officer, Executive Vice President, Treasurer

And Randy, just to add to your question about Q4, our historical seasonality for Q4 is usually a sequential flattish to up or down plus or minus 1%.

Randy Abrams - UBS Investment Bank - Analyst

Okay. And maybe to clarify, I got two follow-ups, quick follow-ups. The flat plus or minus, which sounds like your implied is it's growing, all those pieces up should at this stage. It seems like it's all better. And I guess you entered into just further clarification, the ILS -- and it seems like your competitor (inaudible) over the earlier build. Is that what you're seeing to notice in the second quarter? I think you had a bit. Is it -- do you feel that it was a little earlier or do you think it's actually strong? It feels like it's actually stronger, so that kind of ties to the fourth quarter being up better than that, flat plus or minus?

Giel Rutten - Amkor Technology Inc - President, Chief Executive Officer

Yeah, we believe it's for the IOS ramp, we saw a second quarter revenue better than expected. In my view, there are two elements to this. One is indeed an early build for the second half ramp. And also, we saw a very large correction in the first quarter. So I believe that that correction was probably too significant and therefore, it needed to be corrected a little bit in the second quarter. So two main effects. The net effect is more strength in the second quarter, but we also expect that to continue in the third and fourth quarter.

Operator

Craig Ellis, B. Riley Securities.

Craig Ellis - B. Riley Financial, Inc. - Analyst

Yeah, thanks for taking the question. I wanted to follow up on some comments that seem to have been a theme through a number of prior questions and it relates to the changes in views versus three months ago in auto industrial, the traditional server part of the PC market, and some of the upstream constraints and high-bandwidth memory.

I'm wondering if that's possible to, one, just rank those in terms of how they're impacting the business in the third quarter versus what you would have expected three months ago? And then in aggregate, can you quantify what that impact is versus what you're thinking are back in the April timeframe?

Giel Rutten - Amkor Technology Inc - President, Chief Executive Officer

Megan, can you comment to that?

Megan Faust - Amkor Technology Inc - Chief Financial Officer, Executive Vice President, Treasurer

Yeah. So Craig, I'll give some color there. One, we didn't guide Q3, a quarter ago. So I just want to establish that there that they're surely not a baseline for us to compare to. But as far as it does really, we did indicate either margin profile which would have had a product mix associated with that. The auto and industrial, we had expected that to start to recover faster than it is. So that's probably the largest of the three that you mentioned, followed by the traditional data center. That one also has continued to decline, and we -- it's more difficult to see that within our computing segment because that's being offset by the strength in ARM-based PCs as well as the really significant 2.5D.

And last and that's not -- that is impacting Q3 is, as you mentioned, a bit of a slower start on the incremental capacity that we've installed, given some of the high-bandwidth memory constraints that we are seeing start to come back through. So from that perspective, that's the order of magnitude on those three items.

Craig Ellis - *B. Riley Financial, Inc. - Analyst*

That's really helpful, thanks for clarifying, Megan. And the second thing I wanted to do is just understand the market dynamic a little bit better. So it's encouraging to see that the business should be up a little bit in 3Q. The question maybe more for Giel regarding what you're hearing from some of your bigger customers in that area, and immediately there might be a lot of smaller ones. But what are they indicating about the timing of when that business really start to come back? Would it gain materially in the fourth quarter? Are they setting an expectation that it really isn't coming back to something resembling prior health until 2020 time?

Giel Rutten - *Amkor Technology Inc - President, Chief Executive Officer*

Yeah, that's a good question, Greg. And from the customer feedback, I can give you a bit color here. First of all, calling the second quarter this year, the trough quarter for for automotive, that seems to be across our customer base, a consistent message. There are a few exceptions there, but the portfolio that they serve for the automotive market is slightly different. So if you look to our own exposure to the automotive markets, then our customers really consistently give us the message, the second quarter is the trough.

Going from here, if you take the impact on Amkor's revenue on a year-on-year basis, it's roughly 20% down in automotive and industrial. So from here on, we expect a gradual improvement. Now if we take the, let's say, the improvement in the second and the third quarter, it is still moderate, let's say a low to mid single digit up versus the second quarter, but we expect that improvement to continue. But it will continue well into 2025 before we are back to our normal run rate. That's one thing.

Second thing is, of course, for us, it's very important to check our market position and validate that. And we are convinced that we are still gaining market share in the automotive markets. And you may have seen the announcements in Europe with one of the biggest power companies in automotive for silicon carbide, where are we investing or co-investing in our factory in in Portugal. And that project continues as planned. And actually, to some extent are accelerating there because they expected the demand going towards the second half 2025 and 2026 is actually increasing.

So overall, yes, step-by-step improvement into Q3, Q4, and further improvement into 2025. To exactly predict when we are back at the full run rate is difficult to say. Although some feedback from customers gives also the indication that the tier-ones and the OEMs are actually sort of overreacting to the, let's say, inventory situation. So currently, some of the tier-ones seem to go back to two-week inventory level. So you may see a swing there of getting out of this correction in 2025. But for now, I think that's our assumption.

Operator

Ben Reitzes, Melius Research.

Ben Reitzes - *Melius Research LLC - Analyst*

Yeah, hi. Thanks for the question. I wanted to talk about gross margin and utilization rates. So if you could just discuss the puts and takes on gross margin as we head into the second half, looks like about a 0.5 point improvement on the midpoint in the 3Q, and I was wondering if you were going to get more leverage in the 4Q, how material that could be, given the pace of sales? And then, I know you had a depreciation benefit in the prior quarter. I just was wondering and if there's any other puts and takes we need to be thinking about with regard to what we just saw in your outlook? Thanks.

Megan Faust - Amkor Technology Inc - Chief Financial Officer, Executive Vice President, Treasurer

Hi, Ben. So with respect to our Q3 guide with 15% at the midpoint for gross margin. Utilization is what is constraining that, which has then, I would say, had an impact on the product mix based on the nature of the of the products that are underutilized or the factories that are underutilized. So with respect to our automotive and industrial being weaker than expected, that is having an impact on what we would say are highly profitable products as well as the 2.5D, where we're not seeing the magnitude of sequential growth that we would have anticipated.

That being said, we are seeing really strong growth as it relates to communications and consumers. That is primarily supported by our advanced SIP technology, and that has a very high material content. So while that is constraining the gross margin to around 15%, we are seeing very significant bottom line earnings expansion. So you'll note that our bottom-line EPS is growing more than 80%. So there continues to be significant leverage in our financial model.

You've also asked about potential Q4 puts-and-takes. While we're not guiding Q4 at this time, we do anticipate some of those product mix items to have some growth, as Giel has, just mentioned with respect to automotive as well as our 2.5D technology specifically. And then, you also asked about the depreciation change in useful life, that was a \$0.05 benefit and had an impact of it's around 100 basis points in Q1. That's a fairly similar impact for Q2, and that will also be similar, albeit it will somewhat decline as we get into the second half and some of those assets roll off.

Did that address your question, Ben?

Ben Reitzes - Melius Research LLC - Analyst

Yes. So the depreciation was still a \$0.05 benefit in the quarter you just had, and it will diminish as you go throughout the year. Is that --

Megan Faust - Amkor Technology Inc - Chief Financial Officer, Executive Vice President, Treasurer

Correct, yes, comparable to Q1.

Ben Reitzes - Melius Research LLC - Analyst

Okay. And then just with regard to the interposer comment that Giel made that for the first half of '25, is there anything what we need to be aware of with regard to seasonality or impact on margin as you make that transition and help those customers move to that? Is there something that with regard to the model that when it comes out that we should be aware of?

Giel Rutten - Amkor Technology Inc - President, Chief Executive Officer

Few comments that Ben. With respect to the organic interposer versus the 2.5D with interposer, the value adds that we deliver in organic interposer is more significant, is larger than for 2.5D because there we procure the interposers. That interposer is not present there, but we we delivered basically an organic interposer ourself. So we expect some uplift in margin in that transition.

How that transition exactly pans out depends on the product changeover. And what we're currently seeing is that products in the older technology seem to last longer and that some of the newer products may be launched a little bit later than expected, but that's the impact that we foresee.

Ben Reitzes - Melius Research LLC - Analyst

Okay. And so it's safe to say just pulling back that communication is better than expected outcome and that's continuing throughout the year. Is that the same case with the AIPC or is the -- so there's been some reports that the AIPC has been a little muted, but you're saying it's going to

increase sequentially throughout the year. So I believe that hits in the computing segment. So are you seeing strength in the AIPC area like you are in smartphones? Or are you seeing it kind of below expectations? That's my final question. Thanks

Giel Rutten - *Amkor Technology Inc - President, Chief Executive Officer*

Overall, the absolute revenue in AIPC is still small. However, made the transition from x86 to architecture is definitely an upside for Amkor, and we believe that we have a good market position there. We started with our lead customers three generations ago, and they are currently ramping up. They are also expanding their own silicon in that same PC, so that gives us more traction.

But also a second customers that launched products that seem to be very attractive for the PC makers and they now launching new products in the market with that architecture. So we believe it will have legs and it will further grow. Some specifics over the growth during the year or in the year, we see that over the quarters there is a step-up quarter on quarter, and from what we see now, that will continue into 2025.

Ben Reitzes - *Melius Research LLC - Analyst*

Thank you.

Operator

Toshiya Hari, Goldman Sachs.

Toshiya Hari - *The Goldman Sachs Group, Inc. - Analyst*

Hi, good afternoon and thank you for taking the question. My first one is your Q3 revenue guide. Megan, you mentioned auto industrial should be up modestly, if I caught right. I'm curious how you're thinking about coms, consumer and computing? Coms from a seasonal the seasonality perspective, I'm guessing strong double digits. But computing and in particular, with some of the HBM constraints that you spoke to, can that business grow double digits? Or is it more like single digits? Any sort of quantitative context that would be super helpful.

Megan Faust - *Amkor Technology Inc - Chief Financial Officer, Executive Vice President, Treasurer*

Hi, Toshiya. Yeah, I can give you some color there.

So as I mentioned, automotive, we said would have mild growth sequentially. As it relates to computing, we aren't seeing that double digit growth that was possible, given some of the dynamics with the high-bandwidth memory constraints. So that's also going to be in the low to mid single digits for computing. Communications is going to be very strong.

Historically, we've seen very, very strong sequential communications ramp. That being said, we did have a stronger than seasonal Q2, so that Q3 seasonality will probably be a little bit softer, but overall, it will be very significant. Consumer, however, with our new launch of a IoT wearable device, that will have the largest percentage increase sequentially for the quarter, and that can be up to 75% or more sequential growth given the scale of that launch.

Toshiya Hari - *The Goldman Sachs Group, Inc. - Analyst*

That's very helpful, thank you. And then as my follow-up, a multipart question on the US facility. I know it's early, but just wanted to get a feel as to how you're thinking about Arizona. So timing of CapEx or capital spending outlay over the next couple of years, several years, in terms of

CHIPS Act funding, how does that come through? And again, long term, what percentage of capacity do you expect to have in the US and the cost competitiveness of your facility in the US vis a vis your current locations? Any color around that would be very, very helpful. Thank you.

Giel Rutten - Amkor Technology Inc - President, Chief Executive Officer

Okay. Let me start and then Megan can help on the on the financial part term. Toshi. The facility that we're planning to build in the US is a sizable facility. I think we started off with a 40,000 square meter clean room. And currently, we're working with the design companies to look at a closer to a 60,000 square meter clean room. So it's sizable.

How much will it contribute to Amkor total, I think it will be less than 10%, significantly less than 10% of our total. But that's the order of magnitude that we will grow to in the future. The rate of growth and which customers or which technologies that we will ramp up, I think that's currently under evaluation. We are working with customers on the roadmap and on the ramp scenarios for that facility.

There is definitely a high interest in the high-performance computing part, but also in the communication part. So early to tell, but it's a significant sizable facilities in the size of what we are currently having in our K5 facility in Korea, and the same technologies will run in the US as what we're currently running in in Korea.

Megan Faust - Amkor Technology Inc - Chief Financial Officer, Executive Vice President, Treasurer

I can add a few comments on the investment. As far as it relates to '24, this won't have any material impact on our 2024 investment. We'll start to see some of that CapEx come into play in 2025 as we're planning to break ground in the second half of 2025. But the most significant investments, which will include our machinery and equipment, those will happen in '26 and '27. So as it relates to CHIPS funding, it's a bit too early to tell. Typically, those will lag the investments themselves. And so as we get closer, we'll update you. With respect to '25, we do anticipate being able to continue in our low-teens capital intensity.

Toshiya Hari - The Goldman Sachs Group, Inc. - Analyst

Very helpful. Thank you so much.

Operator

Krish Sankar, TD Cowen.

Krish Sankar - TD Securities Inc. - Analyst

Yeah, hi, thanks for taking my question. Giel, I had a first question. You mentioned of [sensing AI] and ARM-based compute of strong. I just has a -- very small -- is there a way to quantify how much is the company's revenues or total revenues today? And where could it be exiting calendar '24, and repeat about the shape of the growth longer term?

Giel Rutten - Amkor Technology Inc - President, Chief Executive Officer

Hi, Krish. The line is not very clear, but the part of your question, the second part was, as I understood it well, this the revenue contribution of AI currently. What I can say there is that we shared the capacity ramp that we triple our capacity by the second quarter of this year, and we executed upon that. What we can share on top of that is that we share for 2024, we will quadruple our revenue versus 2023. So it is a significant ramp or 40 years. The exact percentage of total revenue for Amkor is still in the single digits, but it's growing rapidly.

Krish Sankar - TD Securities Inc. - Analyst

Giel, I was (technical difficulty) Is it that small. Is it fair to assume that?

Giel Rutten - Amkor Technology Inc - President, Chief Executive Officer

sorry, I think we missed the line is breaking up. Let me look here at Jennifer.

Jennifer -- can you repeat, Krish?

Krish Sankar - TD Securities Inc. - Analyst

What percentage of your compute revenues almost is it today?

Giel Rutten - Amkor Technology Inc - President, Chief Executive Officer

Our compute revenue to date as a percentage of total revenue, let me find that for you. It's in the order of 15% to 17% of total revenue.

Krish Sankar - TD Securities Inc. - Analyst

And on PCs, like the (inaudible) how much is that?

Giel Rutten - Amkor Technology Inc - President, Chief Executive Officer

We don't go into the details. I just mentioned before that, that category of PCs is just ramping up now. We have two main customers being introduced in the market. It's still below \$100 million of revenue in the quarter. So it's still relatively small.

Krish Sankar - TD Securities Inc. - Analyst

Got it. And then a follow-up for Megan. Thanks for the color on the \$400 million in PMP from [chip sack]. But if I understand it right, the \$400 million PMP you get from chip sack, we didn't want to spend a total of \$2.7 billion in CapEx, about \$2.3 billion out of your own pocket. Is that a fair assumption? And you mentioned that the majority income (inaudible) So should we assume this \$2.3 billion as we spent from calendar '25 you can replace some of calendar '28?

Megan Faust - Amkor Technology Inc - Chief Financial Officer, Executive Vice President, Treasurer

So Krish, again, we're trying to make sure we heard your question appropriately. I think you're referring to the timing and magnitude of our US investment and how that counter plays with the chips funding. And for the full project, we're expecting to spend about \$2 billion, and we are going to do that in phases, which is what this particular chip program is aligned to. So as it relates to phase one, we expect that to be within the next three years be up and running.

So we will have had an investment in the order of magnitude of \$1.5 billion in order to get that phase up and running to its fullest. The timing of that investment will be concentrated in '27 -- '26 and '27. And the chip's reimbursement traditionally will lag that investment. And as it relates to that. We can't share further details on that at this time.

Operator

Randy Abrams, UBS.

Randy Abrams - UBS Investment Bank - Analyst

Yes, thank you. Just a couple of follow-up questions. First, on the gross margin, it seems like the one area lagging aside from chips is the mature notes. So curious, as you go into next year and you see pickup, how the leverages? And then also, how do you see the fall-through for leverage for investment in the advanced packaging, given you have to spend to grow that business?

Giel Rutten - Amkor Technology Inc - President, Chief Executive Officer

Okay. Let me start to give some initial comments here on mature notes. In our mature notes, we have in our for Amkor, if we take our mature notes portfolio, specifically related to wirebond the lead frame, and that's very much tuned towards the automotive industrial market. So we are not exposed to the commodity segments of the mature note markets, where there's significant competition from China evolving supply chain.

So we believe that in the automotive market, although that declined significantly year on year, we were able to hold our market position for mature notes in the automotive markets, and we work with critical customers there, mostly in Europe, US, but a year on our manufacturing, but also in Japan. And the dynamics in each of these markets is similar but not completely the same, but we expect that going towards the end of the year and early next year. We see here a gradual recovery there.

That relates to the mature notes with respect to the investment in advanced packaging. We already mentioned the profitability for that investment portfolio and our product and service portfolio is higher than corporate average, and we believe that's a good investment for the company. We also believe that the 2.5D, the high density fan-out technology is a technology, let's say, is developing as a standard technology in the high-performance computing and AI domain. We have a leadership position there. And given the interest we get from a broad customer base that we believe that that will be a sustainable position going forward.

Randy Abrams - UBS Investment Bank - Analyst

And the final question you had on the OpEx with the ramp-up of these more complex technologies. Do you see changed R&D intensity or OpEx level that you need to spend like absolute dollars had to pickup or OpEx ratio to advance some of these new technologies?

Megan Faust - Amkor Technology Inc - Chief Financial Officer, Executive Vice President, Treasurer

Hi, Randy. Yeah, we continue to focus and invest in R&D in order to ensure that we're supporting our customers in these new technologies. We don't see what I would characterize a step function in R&D that can be lumpy from time to time, where we have programs that are accelerating before they move into production and move into COGS. I would say from a total OpEx perspective, I wouldn't see that increasing above 8%.

Operator

Thank you. At this time, I'm showing no further questions, I would like to turn the call back over to Giel for closing remark.

Giel Rutten - Amkor Technology Inc - President, Chief Executive Officer

Okay. Thank you. Let me recap the key messages. Amkor delivered second quarter results in line with our expectations with revenue of \$1.46 billion and EPS of \$0.27. We successfully brought online additional capacity for 2.5D technology and qualified our Vietnam facility to support production

ramps in the third quarter. We are expecting third quarter revenue to grow significantly with revenue of \$1.835 billion at the midpoint of guidance, reflecting a 26% sequential increase.

We reached a significant milestone with the US Department of Commerce and aligned on a preliminary memorandum of terms for up to \$400 million in direct funding under the Chips and Science Act to support our planned advanced packaging and test facility in Arizona.

Looking forward, we remain confident that the secular growth drivers for the industry remain in place. And with our strong technology leadership in advanced packaging, uniquely diversified global footprints, and partnerships with lead customers, we are well positioned to accelerate while exiting the cycle.

Thank you for joining the call today.

Operator

Thank you, ladies and gentlemen, this concludes today's conference call. You may now disconnect.

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