eMemory 1Q25 Earnings Call Q&A Transcript

May 9th, 2025, 16:00-17:00 Taiwan Time

Q&A Transcript

1. **PUF-related revenue saw a notable decline in Q1. Do you expect it to grow this year?**
   >> For customers using security-related IP, especially in advanced processes, considerations for CPU and hardware security architecture must be integrated from the outset when defining chip specifications. The process—from architecture discussions, IP specification customization, design integration, tape-out, to chip mass production—takes significantly longer than for customers using only OTP. Based on trends observed over the past few years, these security-related licensing cases exhibit clear seasonality. As mentioned, discussions with customers can be lengthy, and due to budget cycles, the end of the year is typically a peak period for finalizing deals, resulting in the highest licensing revenue in the fourth quarter. In the first quarter, as customers initiate new annual projects, discussions are usually still ongoing, marking the lowest point of the year. Licensing revenue in April and May has already shown a noticeable uptick, so this year is likely to follow the historical pattern of quarter-on-quarter increases, with sustained growth throughout the year.

2. **Can you provide more information about the partnership between eMemory and Intel Foundry, especially after the Chairman's recent involvement in Intel's presentation?**
   >> Our specialty on OTP and PUF-based hardware security can support Chiplet security very well. Intel Foundry 18A processes are very important platform for HPC products, particularly pioneering in Chiplet technology. We are in the Intel Chiplet alliance to support Chiplet security innovations and solutions.

3. **The company originally planned to complete 3nm verification in 2025. What is the recent schedule update?**
   >>Our 3nm OTP has already been integrated into customer designs, with several other customers currently in discussions and integration stages.

4. **As we move into the 2nm era, the standard supply voltage for devices is expected to decrease. How is eMemory getting ready for this change? With the transition from FinFET to GAA architecture, will eMemory's IP need any structural modifications?**
   >> In the 2nm GAA process, the supply voltage will indeed decrease, and only core devices are available, with no I/O devices included. In response to these changes in process architecture, we have made some adjustments to our OTP design. As previously mentioned, we have divided the OTP design into several smaller modules, which have already been validated on a 3nm shuttle. This approach significantly increases our chances of success, allowing us to effectively launch 2nm OTP and security IP for our customers.

5. **Have you implemented any foreign exchange risk management strategies in response to the recent appreciation of the New Taiwan Dollar, in order to mitigate potential impacts on profitability?**
   >> In response to the recent appreciation of the New Taiwan Dollar, we have reduced our exposure to U.S. Dollar holdings. We employ a hedging strategy by promptly converting payments into NTD. Since most of our clients are international IC design firms that primarily quote in USD, the appreciation of the NTD has a negative impact on our revenue when converted to NTD. However, our primary operating costs, such as salaries, utilities, and materials, are mostly in NTD, resulting in a minor impact from exchange rate fluctuations.

6. **Although tariffs do not directly impact the company's licensing, a decline in end-product demand and reduced shipments could indirectly affect overall royalty income. Has the company observed such situations? What are your views and strategies regarding potential future impacts?**
>> Our royalties are received after foundry shipments. Based on recent earnings calls from chip customers, their outlook for the second half of the year tends to be conservative. If end-market demand is affected by tariffs, royalties from existing customers' mass production will inevitably be impacted. However, new customer applications entering mass production will also contribute. Overall, the impact on us is expected to be relatively small. We will more proactively develop advanced process platforms to integrate our IPs into high-end IC applications such as security and HPC, which currently account for a small portion of our revenue but will drive future growth momentum.

7. **Regarding the PUF-based edge server mentioned by Chairman Hsu, are you planning to enter the server sales business? What is the current status of this initiative? What is the business model, and do you already have a proven track record or customer engagements?**
>> 1. The primary reason we developed the HSM edge server solution is that over the past few years, many clients, such as those in blockchain and financial services, approached us asking if we could provide random number generation services. They explained that the current approach—using cloud-based key services costing over $4 per hour—is a significant burden for them. Over the years, we've validated PUF technology at foundries with numerous test chips. Our R&D team created boards for real-world testing, leveraging PUF's inherent randomness to generate large quantities of random numbers quickly and at low cost, without requiring expensive hardware. Building on this, we developed a chip and created a multi-channel accelerator card, paired with parallel processing software, which can be inserted into server slots to instantly generate high-speed, high-efficiency random numbers. Beyond random number generation, all other hardware security functions can also be executed rapidly.

The purposes of launching this solution are:
a. To enable individuals and organizations to conveniently use high-level security functions to protect their data and assets.
b. To accelerate post-quantum cryptography (PQC) migration, as much critical local data does not go to the cloud.
c. To facilitate the implementation of Zero Trust security, which can only be achieved when every chip has PUF.

2. In terms of business, similar to our IP business model, we provide solutions and collect licensing fees and royalties without selling servers or accelerator cards. We are currently collaborating with server manufacturers and several cybersecurity software companies. As this is a novel concept and solution, we are partnering across industries to create the solutions customers need.

8. **What is eMemory's niche in pursuing this business? If other companies also license your PUF to develop chips and create similar servers, would they be able to compete directly?**
>>We provide total solutions that enable the ecosystem business of Security as a Service. Based on this system architecture, we have also developed PUF-based IP, a PUF-based crypto coprocessor, as well as software IP such as APIs and drivers. This innovation is protected by patents covering the system architecture for parallel processing and key management, which gives us a strong competitive advantage.

9. **If smartphone chip manufacturers face tariff challenges, could they potentially transition from using NeoFuse to the eFuse integrated within the foundry to cut expenses?**
>> It's improbable. The foundry covers the royalties for NeoFuse, meaning tariffs won't raise expenses for the chip manufacturer. Additionally, NeoFuse provides superior reliability and performance compared to eFuse. Transitioning to eFuse could result in decreased yield and system instability. NeoFuse has been widely produced across top process nodes for several years and is a reliable option, making it unlikely to be substituted solely for cost considerations.

10. With the U.S. and Europe encouraging localized semiconductor supply chains, will this trend influence the use of PUF-based solutions?

>>In fact, PUF can act as a basis for verifying chip identity and the origin of manufacturing. This assists local foundries in the U.S. or Europe in demonstrating that chips were made domestically, which aligns with government mandates for traceable and secure supply chains, while also improving the reliability and compliance of the chips. Therefore, PUF-based solutions actively support the localization of semiconductor supply chains in the U.S. and Europe.

11. Given the rising demand for cybersecurity and the development of post-quantum cryptography (PQC), are the company's PUF-based solutions an indispensable component in achieving a PQC security architecture? Compared to similar security solutions in the market, what are the specific technical differences and competitive advantages? Are these advantages gradually being reflected in customer adoption ?

>> In the field of security solutions, most IP providers in the market primarily focus on supplying Cryptography IP, such as algorithms and encryption modules. However, in addition to supporting traditional and PQC algorithms, we provide a complete and verifiable Root of Trust IP, which is a critical foundation for achieving high-level security architectures.

Our NeoPUF technology offers a unique and unclonable hardware identity for chips, combined with components like OTP and TRNG, forming a comprehensive Root of Trust solution. This solution meets stringent security certification standards such as PSA Level 3 and FIPS, offering greater integrity and resistance to attacks compared to solutions that only provide algorithms.

These differences are gradually being reflected in customer adoption. Our PUF-based solutions are already widely applied in fields such as HPC, AI, IoT, SSD, and automotive, securing licensing agreements and design wins from multiple global chip industry leaders. We expect adoption rates to continue expanding as cybersecurity regulations in Europe and the U.S. advance and the demand for PQC implementation grows.

12. Could you provide an update on the progress of technology adoption and design projects related to the Chiplet architecture? Is this expected to be a significant growth driver in the future?

>> We continue to collaborate with customers and foundries to integrate Chiplet-related applications. Chiplet technology enables heterogeneous components to be integrated across different processes, improving yield, cost efficiency, and time-to-market. This technology has the potential to break through the limitations of Moore's Law, driving the semiconductor industry forward. eMemory and NeoPUF focus on OTP and PUF-based hardware security technologies, which can enhance Chiplet yield and support Chiplet security requirements. We are already working with key partners in this area and believe it will bring significant contributions in the future.

13. What is your view on the development trends and market potential of RRAM?

>> In process nodes below 28nm, it has become increasingly difficult to advance traditional split-gate or stacked-gate eFlash technologies. Additionally, in 12-inch BCD processes, customers have expressed concerns about the complexity and high costs associated with conventional eFlash solutions. These challenges present opportunities and growing demand for RRAM technology.

RRAM offers advantages such as low power consumption, high integration density, and fast performance, making it well-suited for applications in IoT, wearables, MCUs, edge AI, and automotive electronics. With ongoing improvements in process maturity and yield, RRAM is expected to become one of the most competitive solutions among emerging memory technologies.