eMemory 4Q24 Earnings Call Q&A Transcript (Combined)

February 12th, 2025, 16:00-17:00 Taiwan Time

Q&A Transcript

1. **What is your perspective on the year-over-year decrease in operating profit margin during the fourth quarter of last year and your outlook for future operating profit margins?**
   >> More than 80% of our operating expense is employee salaries, and 30% of the salary expense is linked to employee profit sharing, which account for 15% of the pre-tax income. Since pre-tax income includes non-operating items, and our main non-operating factors are currency gains or losses related to our US dollar positions. The currency losses from the fourth quarter of 2023 led to a decrease in pre-tax profit due to non-operating reasons. This, in turn, reduced the corresponding employee profit sharing expense, and increased the operating profit margin. In Q4 of last year, on the other hand, currency gains were a contributing factor for the increase of expense, resulting in a 4% difference on operating margin year over year. Looking forward, we anticipate an upward trend in the overall operating margin.

2. **With the recent sharp decline in AI model costs, several CSPs and chip companies anticipate an acceleration in AI inference applications. What are your key advantages in the inference applications?**
   >> The decrease in AI costs benefits edge computing applications. In edge AI, data training is used to establish an AI model, which is then used to infer possible results. This entire process, including the protection of input data, the model, and the generated results, requires hardware security IPs. We provide high-performance PUF-based security IPs to make edge AI applications safer and accelerate industry development.

3. **Open Compute Project has defined Caliptra root of trust as recommendation for security architecture. eMemory has been preparing for this architecture for a long time. Could you elaborate on the revenue and profit contributions of related IPs?**
   >> The three key components outlined in the Caliptra specification are the same three key features (OTP, PUF,TRNG) that PUFrt was developed to provide over four years ago. Consequently, starting in mid-2024, we have indeed received inquiries from some customers regarding Caliptra. Notably, in the fourth quarter, several projects have already been licensed or are in the process of being finalized.

4. **SoftBank and Arm have joined the U.S. Stargate project, and eMemory already has a partnership with Arm. Are there other opportunities for future collaboration?**
   >> We're optimistic about it.

5. **The current utilization rate for mature processes is generally below 70%, and with China expanding its mature process capacity, this will inevitably exert long-term downward pressure on foundry prices. Since a significant portion of your royalties come from mature processes, how do you plan to address this issue?**

>> Our OTP is already an industry standard and widely applied in mature processes for major applications such as drivers, PMICs, ISP, and various sensors. As foundries expand their capacity, they will need to license our technology, which will increase our royalties. As existing customers transition to more advanced processes, royalties per chip will increase which can offset the downward pressure on foundry prices due to oversupply. To remain competitive, current foundries must focus on developing high-value-added specialty processes, such as MTP, embedded flash, and PUF, which is already underway. Royalties from MTP and security are much higher than those from OTP. Additionally, with advanced, high ASP processes starting to contribute, we expect the average royalty per chip to continue increasing.

Regarding regional political factors, Europe, the US and Japan are also expanding their capacities, which will require major customers to localize production. Since we are deploying our IP across foundries in all regions, this will make it easier for chip customers to use our technology, strengthening the stickiness of our IPs and further broadening the scope of our business.

6. **What function does NeoPUF technology serve in post-quantum encryption?**
>> NeoPUF is capable of generating long random numbers, reaching several megabits in length, which can serve as a secret key. Given that post-quantum cryptography (PQC) has secret keys with 20 to 60 times longer compared to conventional encryption techniques, NeoPUF can effectively meet this demand for generation. As a result, PQC applications depend on NeoPUF to deliver high-quality secret keys, enhancing the security of encryption systems.

7. **In previous earnings calls, it was mentioned that the 3nm CPU project, which began last October, has already had a positive impact on revenue. Can we infer that major IP companies in hardware security do not provide these solutions directly but prefer to collaborate with you instead? Will these big IP companies actively endorse PUF technology and suggest it to their clients?**
>> This trend is consistent among these IP companies, as most of them have not continued developing hardware security IP, while they pay more attention to digital cryptography development. Nevertheless, we are committed to enhancing root of trust technology, ranging from 55/40nm down to 5/4/3nm. Consequently, leading IP companies and ASIC design service providers are working with us across different process nodes to promote PUF-based solutions to their clients.

8. **What are the primary uses for MRAM and RRAM?**
>> MRAM and RRAM are both emerging non-volatile memory technologies, each offering unique benefits and use cases. MRAM is characterized by its high speed, low power consumption, and ability to handle numerous rewrites, making it well-suited for applications that demand data reliability and quick access, such as IoT devices, smartphones, automotive electronics, and industrial automation. In contrast, RRAM has a simpler design, is cost-effective, and consumes less power, making it ideal for IoT applications, microcontrollers, and wearable technology. Additionally, as RRAM technology advances, it may find applications in automotive electronics and potentially in AI accelerators and neural network chips in the future.

9. **Could you provide more insights into SRAM repair technology? We understand it will be deployed in advanced nodes such as 5nm, 3nm, and 2nm. When do you expect to see revenue contributions from this technology?**
>> Using our OTP for SRAM repair has always been the main reason why DDI customers choose our OTP IP. They rely on it because their DDI ICs use large-capacity SRAM, and to maintain high yields and good

product performance, OTP is necessary. Now, we're seeing a similar trend in advanced nodes for HPC and AI applications. As these high-end digital ICs require large-capacity SRAM for fast computation, they'll also start adopting OTP as a standard, just like DDI customers do, to repair SRAM. Across various advanced nodes, we have the demand that customers incorporate our OTP in their designs for SRAM repair.

10. **With CXMT and Samsung stocking up on DDR4, the resulting oversupply has driven prices way down. This might push DDR4-focused companies like Nanya to speed up DDR5 development. Since eMemory's MTP technology is already being used in DDR5 PMICs and SPDs, do you think this shift in the market boost your business? Has eMemory put any plans or strategies in place for this trend?**
>> Our OTP and MTP technologies have been adopted by several major customers in DDR5 PMIC and SPD ICs. As DDR5 adoption continues to grow, our licensing fees and royalties will increase accordingly.

11. **Security is a significant trend, and numerous companies are providing cybersecurity software and services. How does your company fit into the broader security landscape?**
>> We offer hardware security solutions based on PUF technology to protect data usages, while many security software and services companies use software for data encryption and secret key generation. The use of software method to secure data usages is easy to be attacked through internet. For a system to be secure, secret keys must be generated randomly and stored in hardware. Our cutting-edge technology combines both the generation and storage of secret keys, providing the most secure foundation for security applications and ensuring data protection.

12. **EDA companies are now leveraging AI to assist customers in IC design. When engineers select IP and design modules, AI can automatically generate a design layout, which saves a lot of time. As a result, being included as a module in the EDA software becomes important. EDA companies tend to prioritize their own IPs, and unless customers insist on external IPs, the automatically generated design layout will likely default to using their in-house IPs. What do you view this trend?**
>>The EDA companies primarily apply AI-assisted design to purely digital IPs, using standard transistors in these designs. In contrast, our IP design uses our own OTP transistors, which are protected by our patents. Unlike digital IPs, OTP and PUF IPs are specialized analog IPs, making them challenging to design using AI. This is because AI relies on large datasets for training, and they do not have sufficient OTP data to enable effective AI-driven design.

13. **Trump highlights the importance of making America great again, which may lead to an increase in customers relocating their production to U.S. foundries like Intel or GlobalFoundries. What is the current situation regarding your OTP or PUF implementation in these U.S. foundries? Are your IPs available for customers at all process nodes?**
>> We have licensed our technology and IP to foundries I and G for all their process nodes. Furthermore, other foundries like T and U and others also utilize our technology and IP in their process nodes at their fabs in the United States.