eMemory 2Q22 Earnings Call Q&A Transcript

August 10th, 2022, 16:00-17:00 Taiwan Time

Q&A Introduction

In our Q&A session of the previous quarter, we spent a lot of time explaining the impact on the company during the semiconductor down cycle. Since our company operations do not involve manufacturing processes and finished products, we face no inventory and depreciation costs. In fact, the downturn is accelerating our customer's R&D, which is the best time for us to license our IPs to these customers.

Since the last quarter, the industries have begun inventory digestion and the impact on chip and foundry customers has emerged. According to the information disclosed during our customers' earnings calls, the inventory adjustment will last for several quarters.

Investors have a lot of questions related to this. More than 500 products embedded with our IPs are manufactured in more than 20 foundries and hundreds of process platforms every year. Because of this, it's very difficult to analyze it in simple way. In addition, there are more than 1000 new tape-outs accumulating over the past two years in the pipeline ready for production. These new tape-out products have no inventory issues. To begin our Q/A section, let's invite Michael to explain this further and hopefully we can provide a rough picture for you.

Michael Ho, President

NTO			Revenue (USD)		
Year	NeoBit	NeoFuse	NeoBit	NeoFuse	PUF-based
2003	28				
2004	39				
2005	69		$4,217,380		
2006	133		$6,202,270		
2007	220		$9,402,479		
2008	253		$12,896,211		
2009	268		$11,695,587		
2010	285		$15,873,331		
2011	254		$15,399,098		
2012	272		$19,620,768		
2013	370	1	$25,436,669	$382,084	
2014	371	3	$31,831,985	$328,787	
2015	314	11	$30,943,426	$1,080,373	
2016	273	31	$30,247,340	$3,636,142	
2017	256	61	$34,619,653	$5,238,351	
2018	256	87	$31,834,860	$10,773,223	$85,000
2019	228	111	$27,602,332	$14,466,279	$220,000
2020	249	185	$30,378,346	$26,437,660	$464,998
2021	258	266	$32,367,560	$44,011,223	$1,160,702
2022 H1	144	135	$18,099,790	$30,672,317	$2,064,415
Total	**4,540**	**891**	**$388,669,085**	**$137,026,439**	**$3,955,115**

Thank you, please turn your attention toward the slide. This table is the statistics of our revenue since 2005 in US dollars.

The NTO in this table refers to the number of new tape-outs each year. In other words, the number of chip products that have adopted our IPs. The revenue includes both licensing and royalties, with royalties accounting for more than 70% of our total revenue. Tape-outs will include design licensing fees for that year. We typically receive royalties at least 1-2 years later when these new tape-out moved to production, then we can receive royalty based on wafer volume and wafer ASP. So primary business contribution for each year is the result of customer tape-outs from 1-2 years ago or before.

Let's take our first technology, NeoBit, for example, mainly used in 8-inch and some 12-inch 90/55nm for DDI application. In the past, customers have migrated to more advanced processes and switched to NeoFuse, at the same time, there are still more than 200 new products adopting our IP each year. NeoBit actually took about 10 years from the first customer adoption to achieving a penetration rate of 20% for 8-inch at major foundries and continuing to perform steadily. NeoBit is our highest ROE technology as most of the IPs adopted by customers are from an existing library, requiring less R&D maintenance.

Let's look at NeoFuse, which kicked-off in 2013 and reached 1 million in wafer shipment in 2019. NeoFuse is mainly used in 12-inch and DRAM. We believe that the potential market is at least 10x that of NeoBit. The technology development for NeoFuse has already reached 4/5nm and customers have started mass producing in 6/7nm, still with very big potential for growth.

In addition, our third growth driver, PUF-related technologies, also saw a sharp increase in licensing fees during the second-quarter, and the growth momentum is just at the beginning.

MTP has also been introduced to large-volume applications, like PMIC and SPD for DDR 5 module. In addition, customers' inventory correction won't change our fundamental and core competence. Our design-in activities still remain very strong. All in all, we remain confident in our long term growth despite the current industry headwinds.

Q&A Transcript

1. **Second-tier foundries may start to reduce their wafer price. What impact does this have on eMemory??**
   >> Our average ASP increased by 4.9% last year when second-tier foundries increased their wafer prices the most. Part of the reason behind last year's ASP growth was driven by more contributions from 28nm and below. During the first half of this year, our ASP royalty per wafer increased 9.5%. Part of the reason was due to wafer price increase from our largest foundry customer, in addition to continuous increase of more leading edge contribution. Therefore, the price increase/decrease of second-tier foundries have less effect on our average royalty per wafer.

   Our view on the growth of our royalties per wafer has not changed as we will see increasing contribution from more advanced processes. Furthermore, increasing adoption of MTP technologies and PUF-based solutions will also enhance our ASP since royalty rate or royalty per wafer are much higher for these technologies compared to OTP

2. **Can eMemory IP work for 2 and 3nm? Why is the progress for advanced process adoption slower? Why haven't customers started adopting it? What do the most advanced processes customers currently use?**
   >> Foundry usually begins its development for most leading process with its own foundation IP, typically with its own OTP solution, called eFuse. Most advanced processes in the past have used eFuse for parameter setting, ID, or other functions that require OTP.

   For our IPs to be provided to customers, we need to pass all the verifications foundries require, which typically takes 1-2 years. Once our IPs are qualified, it's usually already too late for the most leading edge customers. For example, our design activities just significantly increased in 6/7nm after our IPs were qualified with customer production records. Most customer applications we engage with now migrated from 12/16nm, and most used eFuse in their previous generations. The reason customers replace eFuse with our IPs is to meet their density or security requirements because eFuse can only write 4K bits at most, while our IPs can accommodate densities a hundred times or higher. Even worse, eFuse can be easily been hacked by reverse engineering.

Due to the increasing demand for security and much higher storage density requirements, customers are constantly requesting our IP solutions in the most leading edge processes.

Moreover, our cooperation with Arm's Confidential Computing Architecture can be adopted by the most leading edge customers. We are working with customers and foundries to accelerate our qualification progress and hope we can catch up in the future.

3. **What are eMemory's automotive-related applications? What is the room for growth?**
   >> Many of our existing customers are developing or already in automotive, such as Driver, MCU, CIS/ISP, Networking and PMIC, which bring our IPs into automotive applications.

   For example, Dialog is our first design house customer. They started adopting our IPs in 2003; now, almost all their products have our IPs. After being acquired by Renesas last year, their target is to extensively expand into the automotive field, taking all our IPs along with their expansion. Our first NeoFuse customer Realtek, also adopted our IPs in all their automotive solutions. Realtek also start to adopt our PUF-based Root of Trust to upgrade their security function.

   Besides existing customers and applications, we have 7nm ADAS customer already in mass production. We believe the penetration rate in automotive related application have big potential for growth as our IPs provide chip customers with better yield, higher functionality and counterfeit protection and safety for car connection.

4. **TSMC mentioned that they would expand their capacity for specialty processes, especially for 28nm. What is the impact to eMemory IPs?**
   >> Foundry specialty processes are MEMS/ CMOS Image Sensors, Embedded NVM, RF, Analog, High Voltage and BCD processes. All are related to our IPs, like HV for driver, BCD for PMIC, and MEMS/ CIS, RF, Analog and embedded emerging memory. This will speed up our penetration rate in foundries.

5. **In times of downturn, customers will cost down, and ask suppliers to reduce prices. Since eMemory's gross profit is 100%, are you facing the pressure from your customers?**
   >> We have 100% gross profit because we don't have cost of goods sold. This is our business nature and has nothing to do with pricing.

   Our business model charges a relatively low design license fee from chip customers. Many large customers are annual fee-based. As long as they pay a small amount of annual fee, they can tape-out as many as they can by using our existing and developed IP library. Only customized IPs require extra payment, but is still much less than other IP vendors. Our main business relies on royalty which only occur when customers successfully design win and move into the production stage. This business model is very attractive for chip customers especially during the downturn when they need to speed up R&D and control expenses at the same time.

   For foundry customers, we work even more closely with them to provide our R&D support to help develop specialty processes for add-on value when utilization rate is relatively low, and still with a relatively low license fee.

6. **Does eMemory have any plans for M&A or raising capital?**
   >> Recently, there was an incident in Taiwan involving some fraud company using eMemory's name to raise capital. This company defrauded individual investors by asking for a money transfer. We are formally answering this question and clarifying that we do not have any fundraising activities.

   Since 2000, eMemory has relied on organic growth by inventing new technologies one after another. Since turning profitable in 2005, we have maintained a more than 90% dividend payout policy, which is different from most large international IP companies' buy-growth strategies to increase their IP portfolios.

   Our technology development strategies are all based on our core competence related to our existing technologies and platform. There is still considerable room for future growth, so we have not considered any mergers and acquisitions.

7. **In the cooperation with Arm, are PUF-based IPs a reference design or a recommendation?**
   >> Currently, our cooperation with Arm is still at the verification stage, which is considered as reference design. When joint promotion starts with Arm, they will directly recommend customers to adopt our solution. Because the PUF and OTP belong to hard macro and need to be qualified on foundry processes in advance, only eMemory solutions are available.

8. **To pass Arm's PSA Certification, does each core need to be re-certified? (For example, does Cortex M3/M0/A9 need to be certified three times separately?)**
   >> There's no need to re-certify. Our PUFcc IP has passed all certifications required.
   We are cooperating with Arm by combining PUFcc with Arm Corestone and Mbed ecosystem and will help customers quickly pass Level 3 device certification.

9. **The license fee for NeoPUF increased significantly in 2Q22. What kind of applications contributed to this progress? When will these applications start to mass produce?**
   >> They are AI SoC, FPGA, Security MCU, Setup Box and HPC-related CPU and DPU. We expect these products will enter mass production in the second half of next year and contribute to royalties.

10. **What is the impact of MTK's IFS order placement on eMemory's future? Can you explain from both the Foundry and Fabless point of view?**
    >> There are little impact to us as TSMC and Intel are all our foundry partners.

11. What is the difference between eMemory's IP business and other IP company's IP business?

>> There are two categories in IP companies:

1) Pure design IP companies
   These companies use existing transistors to design specific functional IPs, such as standard cell, SRAM, high speed IO, etc. They license to fabless companies directly and are companies like ARM, Synopsys, and M31 and RISC-V related.

2) Technology + Design IP companies
   These companies have their own device technology developed at foundry and they license the technology to foundries, such as OTP, MTP, and Flash. They also use the device they invented to design IP for fabless companies. These companies are, for example, eMemory and SST. SST's Flash cell is only on the embedded Flash process, while eMemory's OTP cell covers all the processes. Therefore, OTP's market size is much bigger than Flash.

12. What is the reason why PUF's license began to increase?

>> The reason for the fast growing demand of our PUF-based security IPs is because: high security architecture can be simply implemented.

Security is now a required element to be connected to cloud services. As security becomes necessary for applications in edge and cloud devices, high-security solutions that can be easily implemented are preferred. Our PUF-based solutions provide integrated secure storage and secure Root of Trust, becoming a popular choice for security applications. In the past, creating a security system requires complicated cryptographic processing. With our perfect randomness PUF IPs, security functions can be implemented much easier and faster into chip functions without complicated crypto-processing, which typically increases chip size, sacrificing speed and power consumption.

13. **How is eMemory and PUFsecurity's crypto co-processor unique compared to others?**

>> In the past, when people seek security solutions, they have to look around and search for a couple of providers to provide 1) security storage, 2) Root of Trust, and 3) crypto engines. After they have IPs with all three components, they still need to figure out how to integrate all into a solution. To become to a security co-processor, SoC designers need to add firmware and API such that it can be easily embedded into SoC.

Our PUFcc integrates all three elements into one security solution and is able to provide firmware and API to facilitate the design of SoC. Since our solutions is built on our existing OTP process platforms, we are able to provide our solutions quickly as we currently have more than 600 OTP process platforms ready. No other security IP companies are able to do this.

14. **PUFsecurity recently obtained the Riscure Common Criteria Certification. Does this mean that PUFsecurity can enter the security IP application market more quickly?**

>> The benefits for customers are: if customers adopt our solution for their product designs, we can help customers pass security certifications, without extra R&D and certification costs.

15. **The US CHIPS Act restricts those who received subsidies from going to China. Will this affect eMemory?**

>> The CHIPS Act subsidizes foundries that built fabs in the US. It is only applicable to those who build fabs with the money from the subsidies. Since we did not receive any subsidies, we're not within the restricted scope.

16. **The license fee in July has decreased significantly compared to previously. Was this because of the economic downturn?**

>> The drop in our license fee was mainly related to deferred licensing from several customers so we should see license up for August and September. Therefore, this part is unrelated to the economic downturn.

17. **Can you update us on the progress of MTP? What applications will require MTP?**

>> The licensing of MTP dropped this year was mainly due to a one-time big license payment from China MRAM fab last year and it will take a few years to commercialize before it can contribute to royalty. In terms of royalties, we have already seen significant growth in MTP due to mass production of applications over the previous years.

In addition, NeoEE, (an MTP-related technology) was introduced to the SPD and PMIC for DDR 5 module, which will drive MTP royalties grow further once the adoption of DDR 5 increases.

18. **Can the US Government restrict eMemory's security-related IPs from being licensed to a Chinese company if eMemory wants to do business with the US government?**

>> As mentioned before, our IPs are our original invention, we have patent rights for our IPs in major regions of the world. We also did not receive any subsidies from these governments so we're not restricted by any national government.