2024第四季法人說明會

Feb 12th, 2025

Embedded Wisely, Embedded Widely

ememory

智慧財產權聲明

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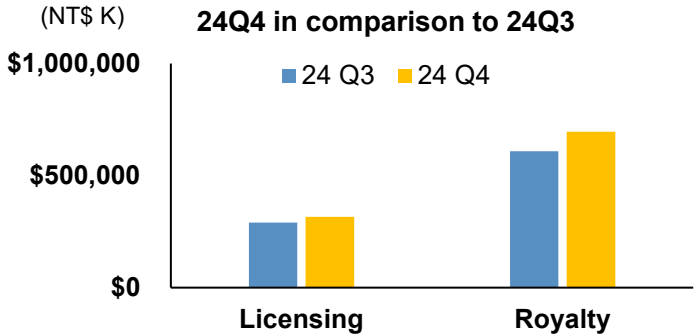
第四季綜合損益表

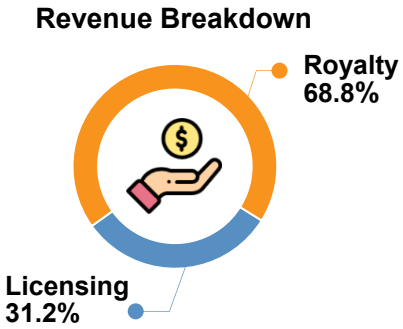
(thousands of NT dollars)

	Q4 2024 (unaudited)	Q3 2024	QoQ	Q4 2023	YoY	2024 (unaudited)	2023	YoY
Revenue	1,010,717	899,477	12.4%	898,858	12.4%	3,605,968	3,050,325	18.2%
Gross Margin	100%	100%	-	100%	-	100%	100%	-
Operating Expenses	444,784	394,561	12.7%	359,330	23.8%	1,619,317	1,357,725	19.3%
Operating Income	565,933	504,916	12.1%	539,528	4.9%	1,986,651	1,692,600	17.4%
Operating Margin	56.0%	56.1%	-0.1ppt	60.0%	-4.0ppts	55.1%	55.5%	-0.4ppt
*Net Income	514,608	413,969	24.3%	403,753	27.5%	1,834,250	1,474,443	24.4%
Net Margin	51.1%	45.5%	5.6ppts	44.5%	6.6ppts	50.5%	48.0%	2.5ppts
EPS (NT$)	6.89	5.54	24.4%	5.41	27.4%	24.57	19.76	24.3%
ROE	62.5%	54.6%	7.9ppts	53.1%	9.4ppts	55.7%	48.5%	7.2ppts

*Net income attributable to Shareholders of the Company

第四季營收分析 – 授權金&權利金





Revenue

NT$ Thousands	Q4 2024	Q3 2024	Change (QoQ)	Q4 2023	Change (YoY)	2024	2023	Change (YoY)
Licensing	315,330	290,639	8.5%	273,927	15.1%	1,134,009	925,838	22.5%
Royalty	695,387	608,838	14.2%	624,931	11.3%	2,471,959	2,124,487	16.4%
Total	1,010,717	899,477	12.4%	898,858	12.4%	3,605,968	3,050,325	18.2%

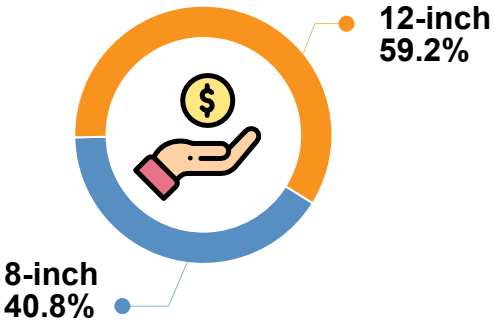
第四季營收分析 – 產品線

Technology	Q4 2024								
	Total Revenue			Licensing Revenue			Royalty Revenue		
	% of Q4 Revenue	Change (QoQ)	Change (YoY)	% of Q4 Licensing	Change (QoQ)	Change (YoY)	% of Q4 Royalty	Change (QoQ)	Change (YoY)
NeoBit	23.6%	-4.2%	14.2%	20.9%	-27.2%	-8.3%	24.8%	9.0%	26.1%
NeoFuse	62.5%	20.9%	7.2%	39.1%	41.9%	5.1%	73.1%	16.7%	7.8%
PUF-Based	7.1%	104.4%	140.2%	22.6%	104.1%	138.7%	0.1%	140.3%	631.8%
MTP	6.8%	-26.1%	-3.3%	17.4%	-30.1%	-0.2%	2.0%	-5.4%	-13.8%

Technology	2024					
	Total Revenue		Licensing Revenue		Royalty Revenue	
	% of Revenue	Change (YoY)	% of Licensing	Change (YoY)	% of Royalty	Change (YoY)
NeoBit	25.2%	16.9%	24.5%	22.2%	25.5%	14.7%
NeoFuse	61.3%	14.6%	37.9%	7.2%	72.1%	16.5%
PUF-Based	4.5%	23.4%	14.3%	23.4%	0.0%	-
MTP	9.0%	52.8%	23.3%	59.0%	2.4%	30.3%

第四季營收分析 – 晶圓尺寸

Q4 Royalty Breakdown



- 8-inch wafers contributed 40.8% of royalty, up 13.9% sequentially and up 20.0% yearly.
- 12-inch wafers contributed 59.2% of royalty, up 14.4% QoQ and up 6.0% YoY.

Wafer Size	Q4 2024			2024	
	% of Q4	Change (QoQ)	Change (YoY)	% of FY	Change (YoY)
8-Inch	40.8%	13.9%	20.0%	41.7%	18.0%
12-Inch	59.2%	14.4%	6.0%	58.3%	15.2%

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Licensing & Royalty:

- **Licensing:**
  - We anticipate that licensing revenue will continue its growing momentum due to increasing demand from both foundries and end chip customers. We continue to launch new IPs, and available on increasing number of process nodes on worldwide foundries.
- **Royalties:**
  - We expect royalty revenue to continue its growth trend, driven by a robust number of tape outs in the pipeline that are moving into production. In 2024, we achieved a record-high in NTO numbers.

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New IP Technology & Business Development:

- **New IP Technologies:**
  - NeoFuse is advancing various derivative processes at leading edge nodes, having secured design wins in 3/4/5/6/7nm process nodes.
  - RRAM is broadening into automotive grade, and already have multiple customer design wins.
  - NeoFlash continues its progress in specialty processes, aiming to replace embedded flash and external NOR flash.
  - Developing 2nm technologies in collaboration with leading foundries.
- **Business Development Platform:**
  - We have joined Arm Total Design and introduced PUFrt as the hardware root of trust for the RSE in CSS.
  - We have developed PUFhsm, an embedded Hardware Security Module solution for automotive chips and high-performance computing (HPC). Together with the hardware root of trust (PUFrt), PUFhsm provides a comprehensive secure enclave solution.

Why Post-Quantum Cryptography (PQC) Needs PUF?

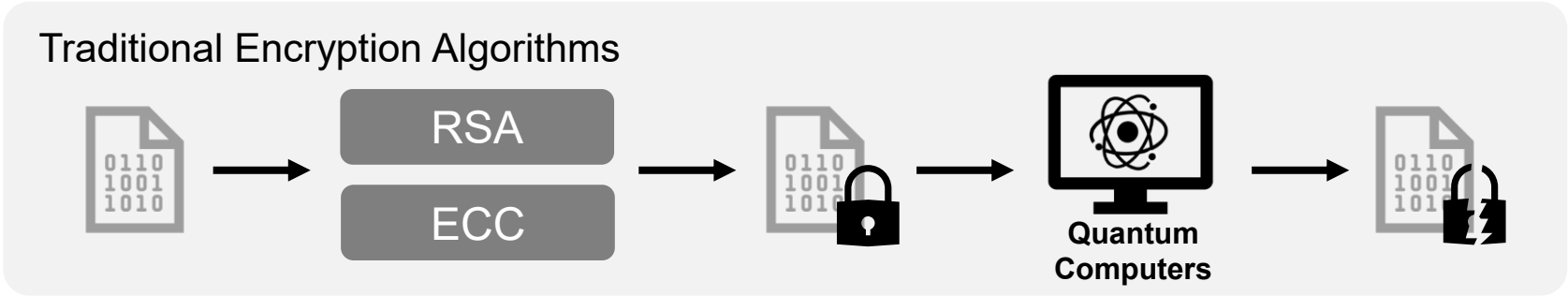
Why **PQC** Needs **PUF**?

PUF can **efficiently generate keys with long length**, which is needed for PQC.

PUF can **efficiently provide random numbers,** which are needed for **anti-tampering** in PQC.

What is **PQC?**

- PQC aims to create cryptographic systems that can withstand attacks from quantum computers.



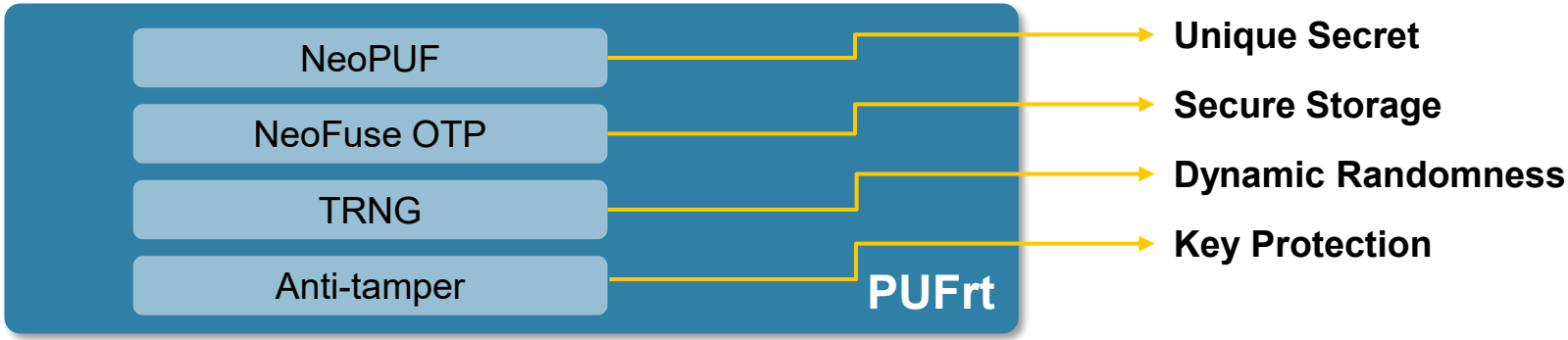
Why is **PQC** Needed?

- As quantum computing progresses, the demand for encryption capable of resisting quantum attacks becomes critical.
- The sooner we implement PQC, the sooner we can guarantee the security of our data in a quantum future.

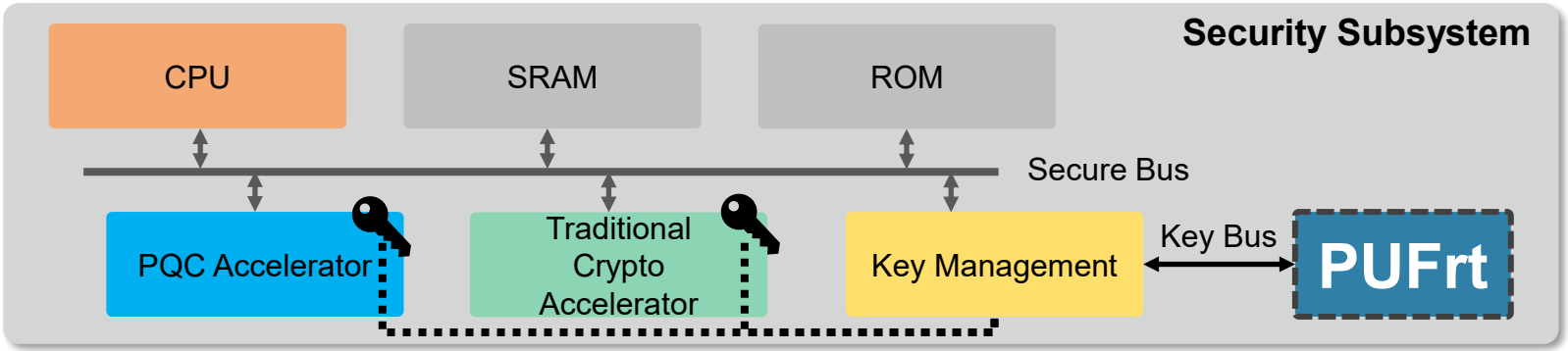
- In 2024, NIST officially announced three standards for PQC:
  - FIPS 203, Module-Lattice-Based Key-Encapsulation Mechanism Standard
  - FIPS 204, Module-Lattice-Based Digital Signature Standard
  - FIPS 205, Hash-Based Digital Signature Standard

How **PUF-based Solutions** Help **PQC?**

- Our PUF-based Root of Trust (PUFrt) can help PQC:



- By integrating the PUFrt into the security subsystem, it can effectively manage the long and complex keys required for PQC algorithms.



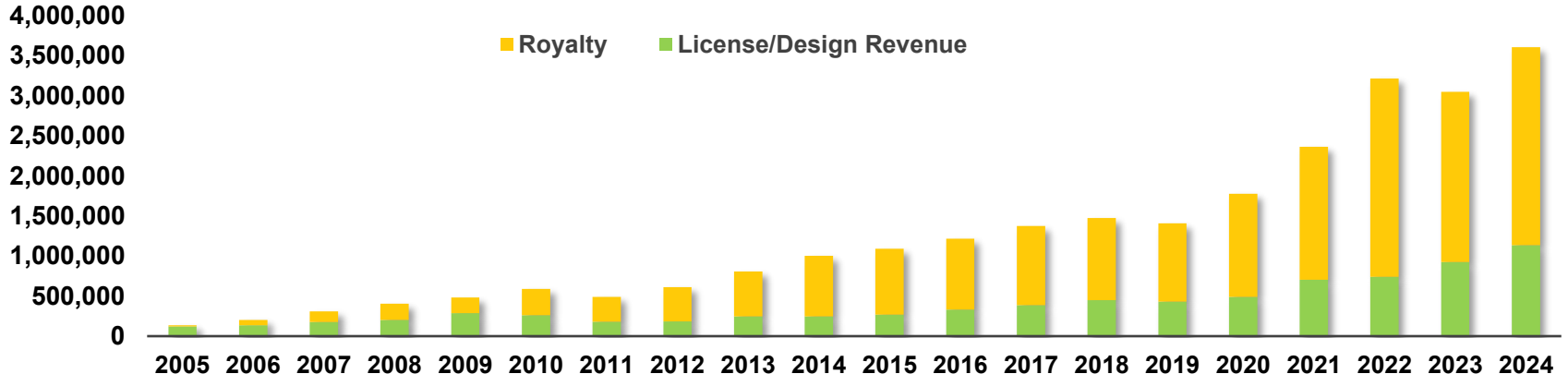
Q&A

Appendix

Company Overview

- eMemory is the global leader of embedded non-volatile memory IP

Revenue Trend
(Unit: NT$ 1,000)



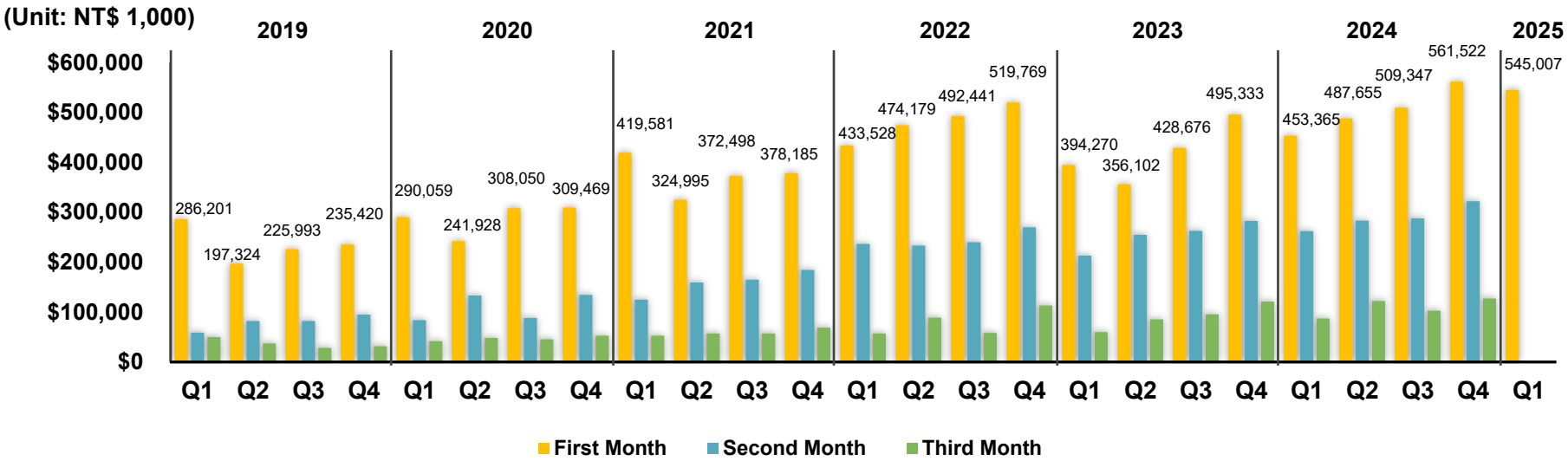
Founded
In 2000
Based in Hsinchu, Taiwan. IPO in 2011. Over 65M wafers shipped.

1260+
Patents Issued
203 pending patents. 360 employees with 68% R&D personnel.

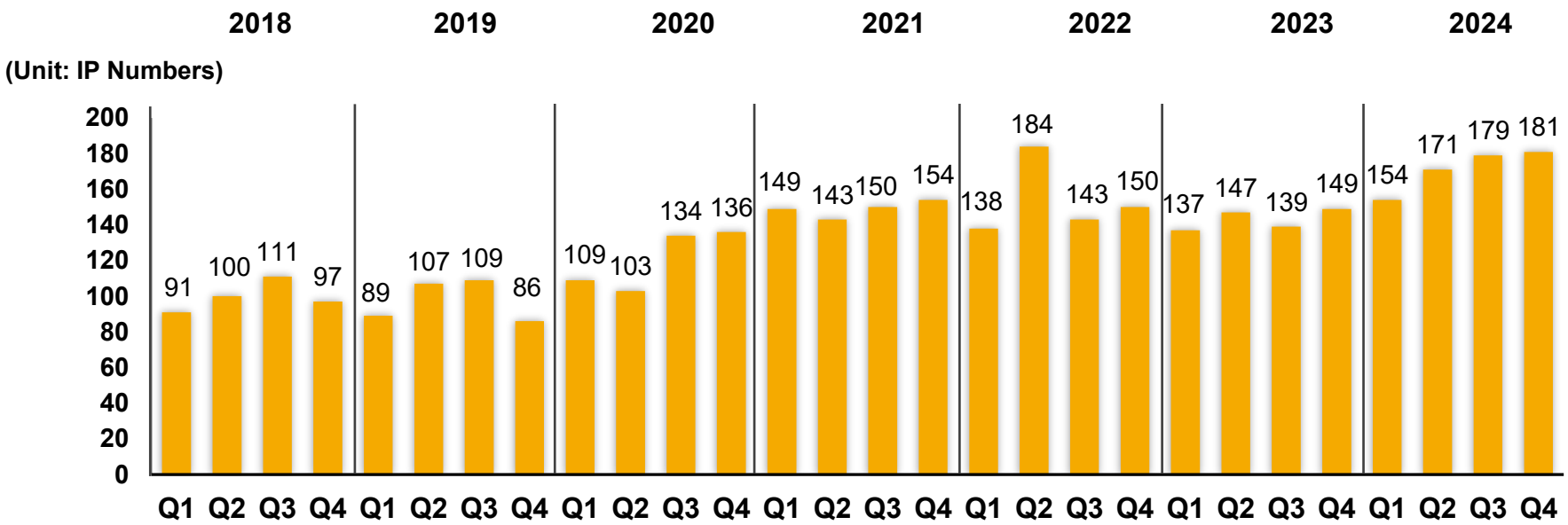
Best IP Partner
With TSMC
TSMC Best IP Partner Award since 2010.

Quarterly Revenue **Pattern**

- 1st month: Receive License Fees of the month and Royalty from most foundries on previous quarter's wafer shipments.
- 2nd month: Receive License Fees of the month and Royalty from other foundries.
- 3rd month: License Fees Only.



Quarterly Number of **New Tape-outs**



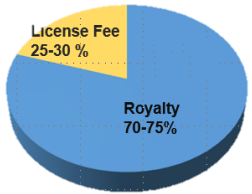
Worldwide Customers

- Our IP solutions are adopted by leading foundries, IDMs and fabless worldwide

Country	Foundry	IDM	Fabless
Taiwan	4	1	350
China	12	0	1361
Korea	4	0	103
Japan	1	9	88
North America	2	2	368
Europe	2	2	237
Others	1	0	127

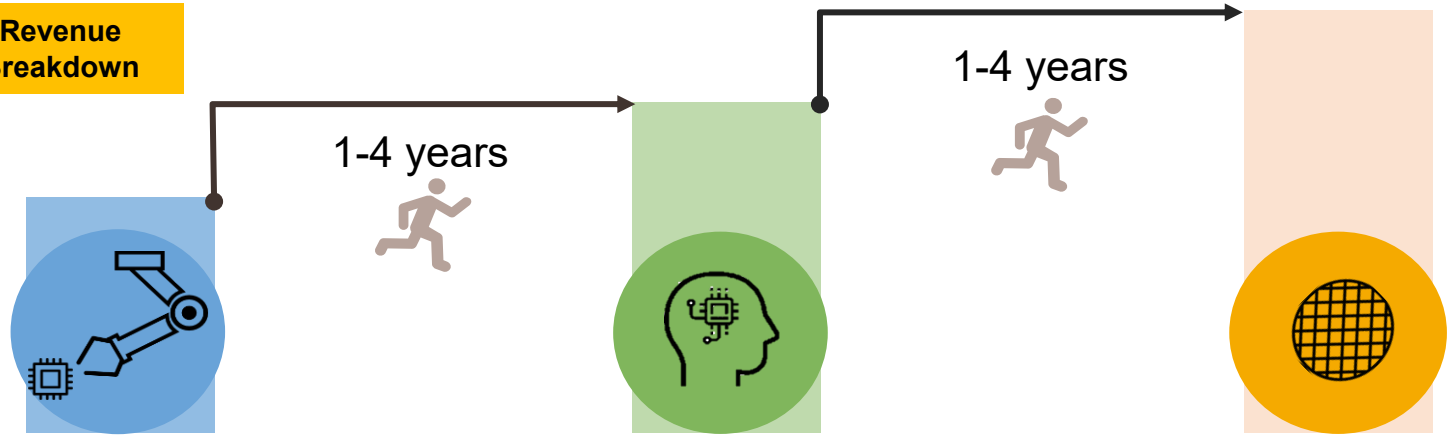
Business Model

- Recurring royalty is the backbone of our business



Revenue Breakdown

- 70-75% revenue are from royalty based on wafer production
- More adoption = more volume shipment
- More advanced node wafers = higher ASP per wafer



License Fee
Foundries Process Development

Design License Fee
Fabless Product Development

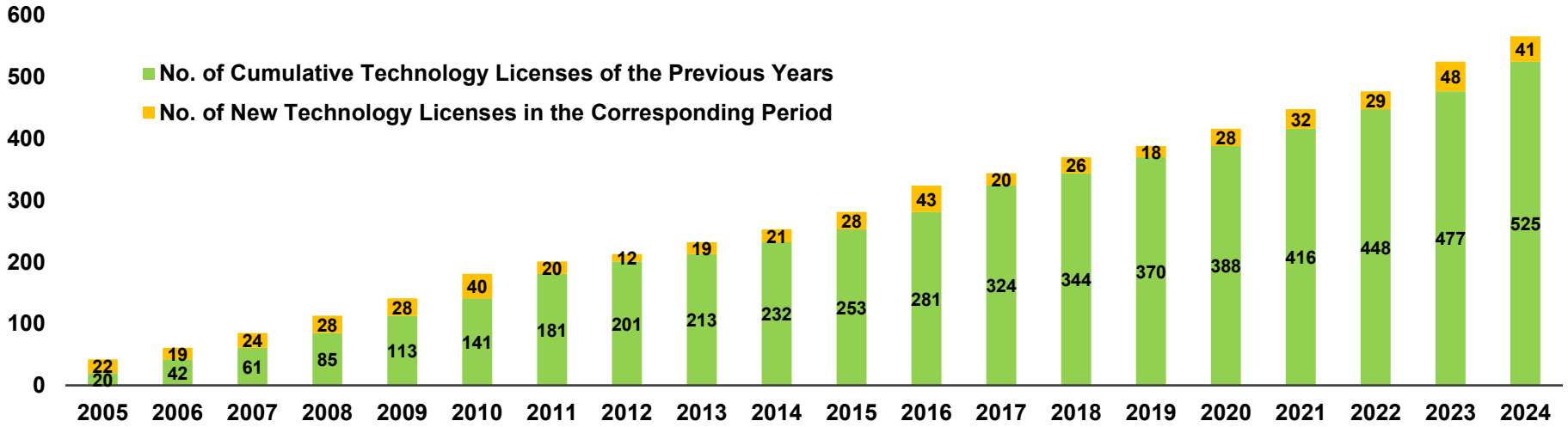
Royalty
Wafer Mass Production

Technology **Licenses**

Number of Licenses

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024
License	43	20	26	18	28	32	29	48	41

Note: Terms (including number of process platforms and licensing fees) for each technology license are set contractually. Payments are made according to set milestones, and there are no particular seasonal factors involved.



Technology Development

- Developments by process nodes

12" Fabs	Production	Development	IP Type	Process Type
2nm	0	2	OTP, PUF	GAA
3nm	0	6	OTP, PUF	FF, FFP
4/5nm	6	2	OTP, PUF	FF, FF-Auto
6/7nm	4	4	OTP, PUF	FF, FF+
12/16nm	12	12	OTP, PUF	FF, FF+, FFC. FFC+, LPP, DRAM, HV
22/28nm	59	35	OTP, PUF, MTP	LP/ULP/ULL, HPC/HPC+, HV-OLED, DRAM, SOI, RRAM, MRAM, E-Flash, BCD, WoW
40nm	25	20	OTP, PUF, MTP	LP/ULP, E-Flash, HV-DDI/OLED, ReRAM, BCD+
55/65nm	59	22	OTP, PUF, MTP	LP/ULP, E-Flash, HV-DDI/OLED, DRAM, CIS, BCD, PM
80/90nm	31	18	OTP, MTP	HV-DDI/OLED, LP, Generic, BCD, CIS
0.11/0.13um	23	7	OTP, MTP	HV-DDI, BCD, Generic
0.15/0.18um	12	17	OTP, MTP	BCD, Generic
Total	231	145		

8" Fabs	Production	Development	IP Type	Process Type
80/90nm	9	3	OTP	HV-DDI, LL, BCD
0.11/0.13um	85	28	OTP, PUF, MTP	HV/HV-MR, BCD, LP/LL, CIS, Green, Flash, SOI, Generic, BiCMOS
0.152/0.16/0.18um	252	25	OTP, MTP	HV/HV-MR, BCD, LP/LL, CIS, Green, Generic
0.25um	42	2	OTP	BCD
0.3/0.35um	53	0	OTP, MTP	UHV, BCD
0.4/0.5um	11	0	OTP	UHV, BCD
Total	452	58		

Note: As of December 31st, 2024

THANKS

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For more information, please visit:
eMemory Website: https://www.ememory.com.tw/
PUFsecurity Website: https://www.pufsecurity.com/