Investor Conference

Embedded wisely, Embedded widely





IPR Notice

All rights, titles and interests contained in this information, texts, images, figures, tables or other files herein, including, but not limited to, its ownership and the intellectual property rights, are reserved to eMemory. This information may contain privileged and confidential information. Some contents in this information can be found in Logic Non-Volatile Memory (The NVM solutions from eMemory), published in 2014. Any and all information provided herein shall not be disclosed, copied, distributed, reproduced or used in whole or in part without prior written permission of eMemory Technology Inc.

eMemory, NeoBit, NeoFuse, NeoEE, NeoMTP, NeoROM, EcoBit and NeoPUF are all trademarks and/or service marks of eMemory in Taiwan and/or in other countries.



Cautionary Statement

This presentation contains forward-looking statements, which are subject to risk factors associated with semiconductor and intellectual property business. It is believed that the expectations reflected in these statements are reasonable. But they may be affected by a variety of variables, many of which are beyond our control. These variables could cause actual results or trends to differ materially which include, but are not limited to: wafer price fluctuation, actual demand, rapid technology change, delays or failures of customers' tape-outs into wafer production, our ability to negotiate, monitor and enforce agreements for the determination and payment of royalties, any bug or fault in our technology which leads to significant damage to our technology and reputation, actual or potential litigation, semiconductor industry cycle and general economic conditions. Except as required by law, eMemory undertakes no obligation to update or revise any forward-looking statements, whether as a result of new information, future events, or otherwise.



Contents







PUF is the Key for Zero Trust Security







Review of Operations



Q1 2021 Financial Results

The EPS of Q1 2021 was 3.93 NTD, ROE was 54.6%

(thousands of NT dollars)

	Q1 2021	Q4 2020	Change (QoQ)	Q1 2020	Change (YoY)
Revenue	596,734	496,682	20.1%	415,436	43.6%
Gross Margin	100%	100%	-	100%	-
Operating Expenses	259,023	261,327	-0.9%	221,463	17.0%
Operating Income	337,711	235,355	43.5%	193,973	74.1%
Operating Margin	56.6%	47.4%	9.2 ppts	46.7%	9.9 ppts
Net Income Attributable to Shareholders of the Company	292,982	193,343	51.5%	176,758	65.8%
Net Margin	48.8%	38.7%	10.1 ppts	42.5%	6.3 ppts
EPS (Unit: NTD)	3.93	2.60	51.2%	2.38	65.1%
ROE	54.6%	41.8%	12.8 ppts	39.5%	15.1 ppts

Note: Revenue of Q1 2021 in terms of US\$ is US\$21.03 mil, up 22.2% QoQ, and up 51.5% YoY.

Revenue in Different Stream

Q1 revenue up 51.5% YoY in US dollar terms



	Q12021	Q4 2020	QUQ	QT 2020	101
Licensing	176,993	154,472	14.6%	106,446	66.3%
Royalty	419,741	342,210	22.7%	308,990	35.8%
Total	596,734	496,682	20.1%	415,436	43.6%
US\$ Thousands	Q1 2021	Q4 2020	QoQ	Q1 2020	ΥοΥ
Licensing	6,241	5,350	16.7%	3,542	76.2%
Royalty	14,788	11,859	24.7%	10,336	43.1%
Total	21,029	17,209	22.2%	13,878	51.5%

ememory

Revenue

Revenue by Technology

The royalty of NeoFuse has a growth of 99.4% YoY in Q1

- ✓ The royalty revenue of NeoBit up 8.9% QoQ and 7.1% YoY. Its licensing revenue up 3.3% QoQ and 13.4% YoY.
- ✓ The licensing revenue of NeoFuse down 17.6% QoQ, but up 21.6% YoY. Its royalty revenue up 44.5% QoQ and 99.4% YoY.
- ✓ The licensing revenue of MTP technology up 249.7% QoQ and 652% YoY; while its royalty revenue down 3.2% QoQ and 8.2% YoY.
- ✓ The licensing revenue of PUF-based up 115.3% QoQ and 812.6% YoY.

	Q1 2021									
	Total Revenue			Licensing Revenue			Royalty Revenue			
Technology	% of Q1 Revenue	Change (QoQ)	Change (YoY)	% of Q1 Licensing	Change (QoQ)	Change (YoY)	% of Q1 Royalty	Change (QoQ)	Change (YoY)	
NeoBit	40.4%	8.3%	7.7%	15.4%	3.3%	13.4%	50.8%	8.9%	7.1%	
NeoFuse	48.0%	16.7%	65.8%	51.3%	-17.6%	21.6%	46.7%	44.5%	99.4%	
PUF-Based	0.9%	115.3%	812.6%	3.1%	115.3%	812.6%	0.0%	0.0%	0.0%	
MTP	10.7%	144.5%	244.2%	30.2%	249.7%	652.0%	2.5%	-3.2%	-8.2%	

Royalty Revenue by Wafer Size

12-inch wafer increased 70.9% YoY in Q1

Q1 Royalty Breakdown



- ✓ 8-inch wafers contributed 54.8% of royalty, up 10.2% sequentially and 16.2% YoY.
- ✓ 12-inch wafers contributed 45.2% of royalty, up 42.1% QoQ and 70.9% YoY.

Wafer Size	Q1 2021					
	% of Q1	Change (QoQ)	Change (YoY)			
8-Inch	54.8%	10.2%	16.2%			
12-Inch	45.2%	42.1%	70.9%			

ememory

Rovaltv

Future Outlook

eMemory Embedded Everywhere

eMemory's IP seeks to penetrate across all the applications



✓ Product Applications:

eMemory's IP are already applied into different applications, which includes PMIC, LCD driver, Sensors, RFID, OLED Driver, Connectivity IC, DTV, STB, SSD Controller, Bluetooth, TDDI, MCU, Fingerprint Sensor, Smart Meters, Surveillance, ISP, CIS, DRAM, embedded Flash and FPGA.

✓ Future Target:

AP, GPU, CPU, Flash, IoT, AI, autonomous driving



✓ The Future in Security Chip IP:

The rapid growth in AloT and 5G drive the demand for hardware security. OTP and PUF are indispensable for root of trust in hardware security.

PUF-based Security Solutions:

To satisfy the market needs, eMemory developed a new series of PUF-based security solution, including PUFrt, PUFiot, PUFse and PUFflash.

Security

ememo

Tech

Core

Our Perspectives

eMemory continue to create value for the industry and our shareholders

Licensing & Royalty



✓ Licensing:

• Licensing revenue will grow due to continuing strong demand from NeoFuse, PUF-based solutions, and MTP.

✓ Royalty:

- 8" royalties will grow due to demand and content increases for PMIC, MCU, and Sensor-related in 5G, Automotive, and IoT.
- 12" royalties will have a strong growth as customers are increasing production for TDDI, OLED, ISP, DTV, STB, WiFi 6, Bluetooth, Ethernet, Switch, TWS, DRAM, and others.
- Royalties from 16nm and below start to kick in, followed by 7nm in the second half of the year.

emen

Embedded Wisely, Embedded Widely

Our Perspectives

eMemory continue to create value for the industry and our shareholders

✓ For New Business Development:

- NeoFuse in advanced process is adopted for secure key storage. This will be a trend for security requirement.
- Business activities of PUF-based security solutions are in progress in applications of IoT, IIoT, AI, Blockchain, FPGA, DPU, UFS, and Automotives.
- PUFrt and PUFiot have customer adoption in various applications.
- Customer adoption cases have been successful in the collaboration with ARM, and will expand the cooperation to more product applications.

✓ For New IP Technology Development:

- 6nm is going into qualification.
- 5nm plus (N5P) is going into characterization.
- Announced adoption of IP by Achronix for FPGA Hardware RoT.
- Develop PUF-based solution to be implemented in HSM.

New Business & IP Technology Development



PUF is the Key for Zero Trust Security



Zero Trust Security

A new security model

- Never trust, always verify
- Authenticated and authorized users and device only
- De-perimeterization security protection
- Identity-centric policy



ememo

Why Zero Trust Security?

Security boundary is no longer easy to maintain

Borderless security strategy is essential due to:



emem

PUF Will Be A Must for Zero Trust

PUF enables inborn ID and self-generated key for security services



PUF is Essential for Zero Trust Requirements

PUF is the root of trust for achieving security services





放送法法

动力的

Appendix

Company Overview

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



Founded

Based in Hsinchu, Taiwan. IPO in 2011. Over 35M wafers shipped. Embedded Widely

800+ Patents Issued

234 pending patents. 296 employees with 67% R&D personnel.

Best IP Partner

TSMC Best IP Partner Award since 2010.

Quarterly Revenue Pattern

eMemory's quarterly revenue pattern

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



Worldwide Customers

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



Business Model

Recurring royalty is the backbone of our business



Technology Licenses

Cumulative technology licenses

Number of Licenses

Year	2016	2017	2018	2019	2020	Q1 2021
License	43	20	26	18	28	5

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.



New Technology Under Development

Products in different process nodes

- \checkmark New technologies are being developed for 105 platforms by Q1 2021.
- ✓ 5 licensing contracts were signed.

Technology	5/6nm	7/10nm	12/16nm	22/28nm	40nm	55/65nm	80/90nm	0.11~ 0.13um	0.15~ 0.18um	>0.25um
NeoBit	-	-	-	-	-	1	3	9	13	1
NeoFuse	2	1	4	10	2	10	8	1	1	-
PUF-Based	2	-	-	-	2	1	-	-	-	-
МТР	-	-	-	2	1	3	4	10	14	-

Note: As of Mar 31st, 2021

emem

Technology Development

Developments by process nodes

12" Fabs	Production	Development	IP Type	Process Type
5/6nm	0	4	OTP, PUF	FF
7/10nm	2	1	OTP	FF, FF+
12/16nm	5	4	OTP	FF, FF+, FFC, FFC+
22/28nm	34	12	OTP, MTP	LP/ULP/ULL, HPC/HPC+, HV-OLED, DRAM, SOI
40nm	16	5	OTP, PUF, MTP	LP/ULP, E-Flash, HV-DDI/OLED
55/65nm	26	15	OTP, PUF, MTP	LP/ULP, E-Flash, HV-DDI/OLED, DRAM, CIS, BCD, PM
80/90nm	16	13	OTP, MTP	HV-DDI/OLED, LP, Generic, BCD, CIS
0.11/0.13um	17	3	OTP, MTP	HV-DDI, BCD, Generic
0.18um	1	3	OTP	BCD, Generic
Total	117	60		

8" Fabs	Development	IP Туре	Process Type
90nm	2	OTP	HV-DDI, LL, BCD
0.11/0.13um	17	OTP, MTP	HV/HV-MR, BCD, LP/LL, CIS, Green, Flash, SOI, Generic
0.152/0.16/0.18um	25	OTP, MTP	HV/HV-MR, BCD, LP/LL, CIS, Green, Generic
0.25um	1	ОТР	BCD
0.35um	0	ОТР	UHV
Total	45		

Note: As of Mar 31st, 2021



Embedded wisely, Embedded widely

