ememory

A Leading Logic NVM Company

Sep. 19, 2014

IPR Notice

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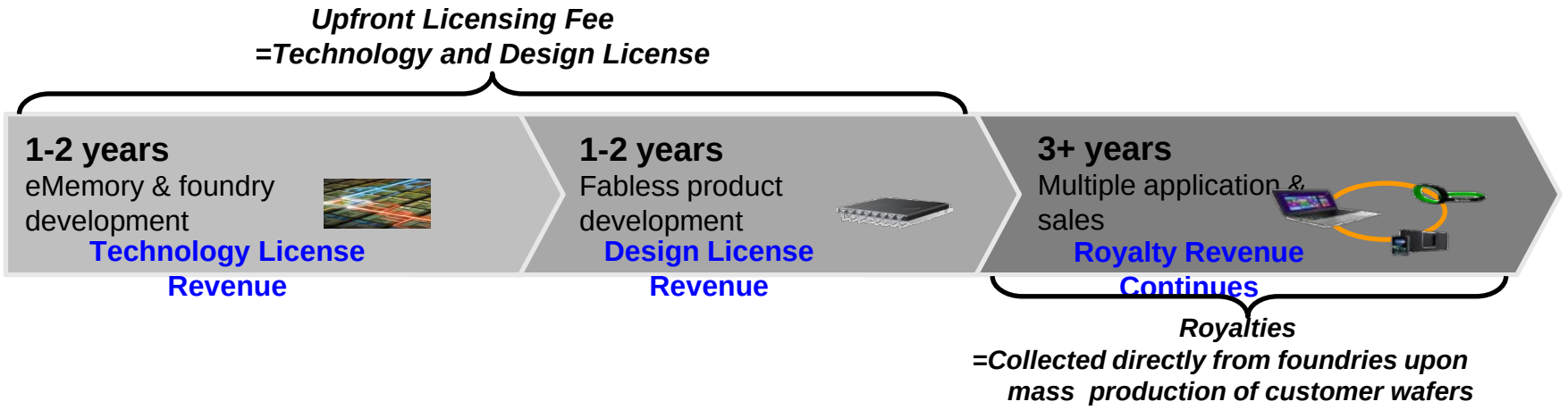
Outline

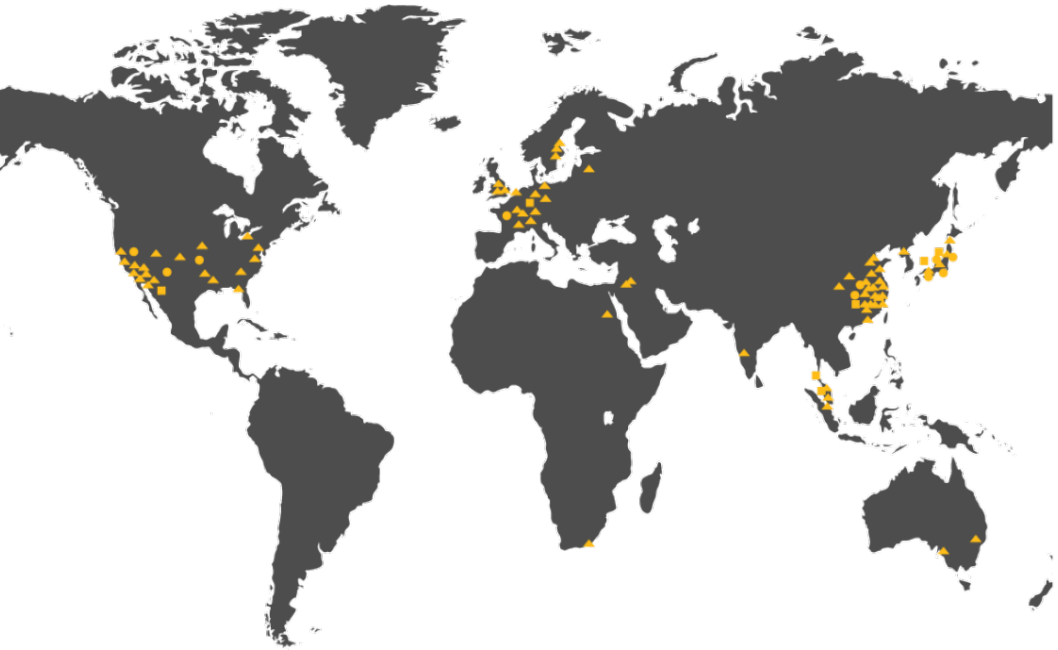
- **Business Model**
- **Review of Operations for 2Q and 1H2014**
- **Application and Growth Opportunity**
- **Future Outlook**
- **Q & A**

Business Model

- **Founded in 2000. First customer engaged in 2002. Achieved profitability in 2005 and IPO in 2011. The largest logic non-volatile memory IP company, 212 employees (149 R&D).**
- **Since its IPO, the company initiated no new fund raising or bank debt, and has distributed in excess of 100% of earnings in cash dividends.**
- **Growth Indices: 1) No. of on-going technology platforms**
  2) No. of design licenses
  3) Royalty



Worldwide Customers



	Taiwan	China	Korea	Japan	North America	Europe	Others
Foundry	5	6	3	2	1	0	1
IDM	0	0	0	8	2	1	0
Fabless	202	280	49	30	118	60	28

Foundry

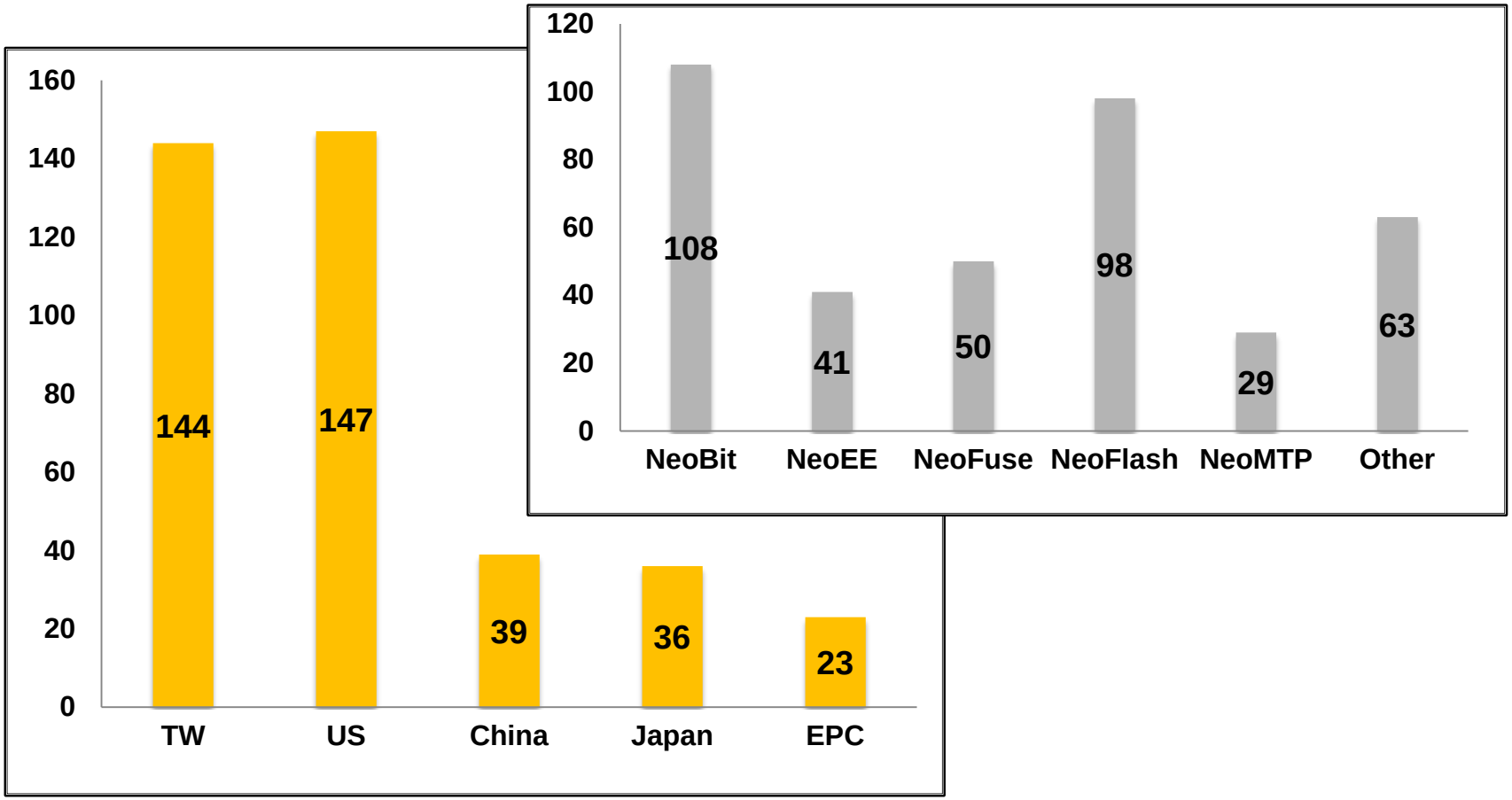
tsmc, UMC, VIS, SilTerra, Grace Semiconductor Manufacturing Corporation, GlobalFoundries, MagnaChip, Maxchip 鉅晶電子, ROHM Semiconductor, SK hynix, Dongbu HiTek, HeJian, Fujitsu, Powerchip 力晶科技, SMIC, CSMC A Leading Analog Foundry, HLMC, asmc Advanced Semiconductor Manufacturing Corporation Limited

IDM

Fujitsu, OKI, Mitsumi, Mitsubishi Electric Changes for the Better, JRC, Maxim, Ricoh, Renesas, SII, Toshiba, ON Semiconductor, NXP

Patent Portfolio

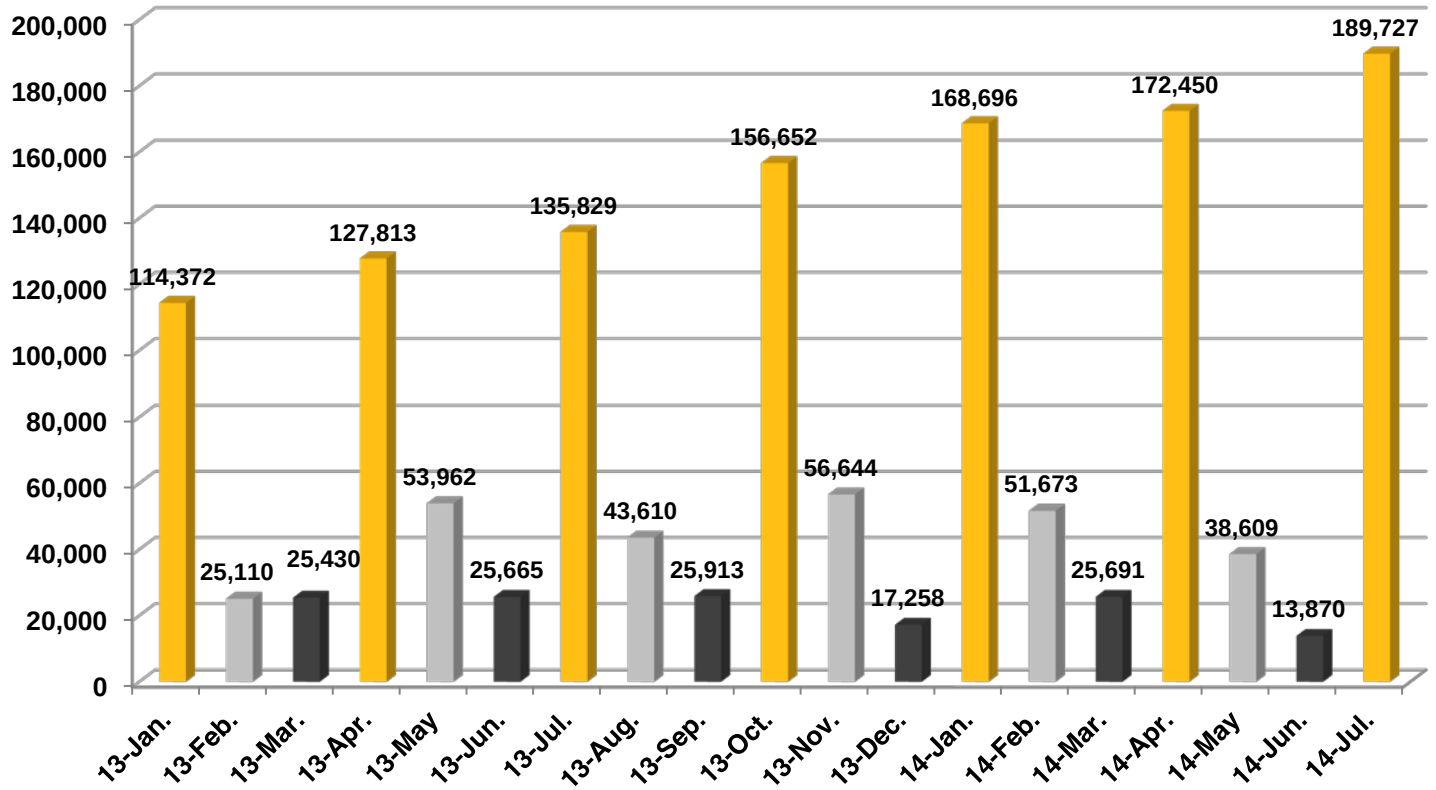
Totaled 389 patents as of July 2014 (239 issued / 150 pending)



Quarterly Revenue Pattern

- **The quarterly royalty from most of foundries are collected at first month of each quarter and from some other foundries are collected at second month, and none at third month.**

Unit：NTD Thousands



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2Q Revenue Breakdown

Unit：NTD Thousands

	2Q14	1Q14	QoQ Growth Rate	2Q13	YoY Growth Rate	1H14	1H13	YoY Growth Rate
Royalty	167,731	171,015	-1.92%	126,492	32.60%	338,746	240,652	40.76%
Licensing	57,198	75,045	-23.78%	80,948	-29.34%	132,243	131,700	0.41%
Total	224,929	246,060	-8.59%	207,440	8.43%	470,989	372,352	26.49%

Number of contract

		2Q14	1Q14	2Q13	1Q13
Technology License		6	6	8	4
Design License	NRE	12	33	14	7
	Usage	86	90	69	73

Financial Income statement

Unit: $ NT thousand	1H14	1H13	YoY
Revenue	470,989	372,352	26%
Gross Margin	100%	100%	-
Operating Expense	256,125	226,630	13%
Operating Margin	46%	39%	+7ppts
Non operating Income	5,091	4,054	26%
Net Income	193,321	127,721	51%
Net Margin	41%	34%	+7ppts
EPS (unit: $NTD)	2.55	1.71	49%
ROE	24%	17%	+7ppts

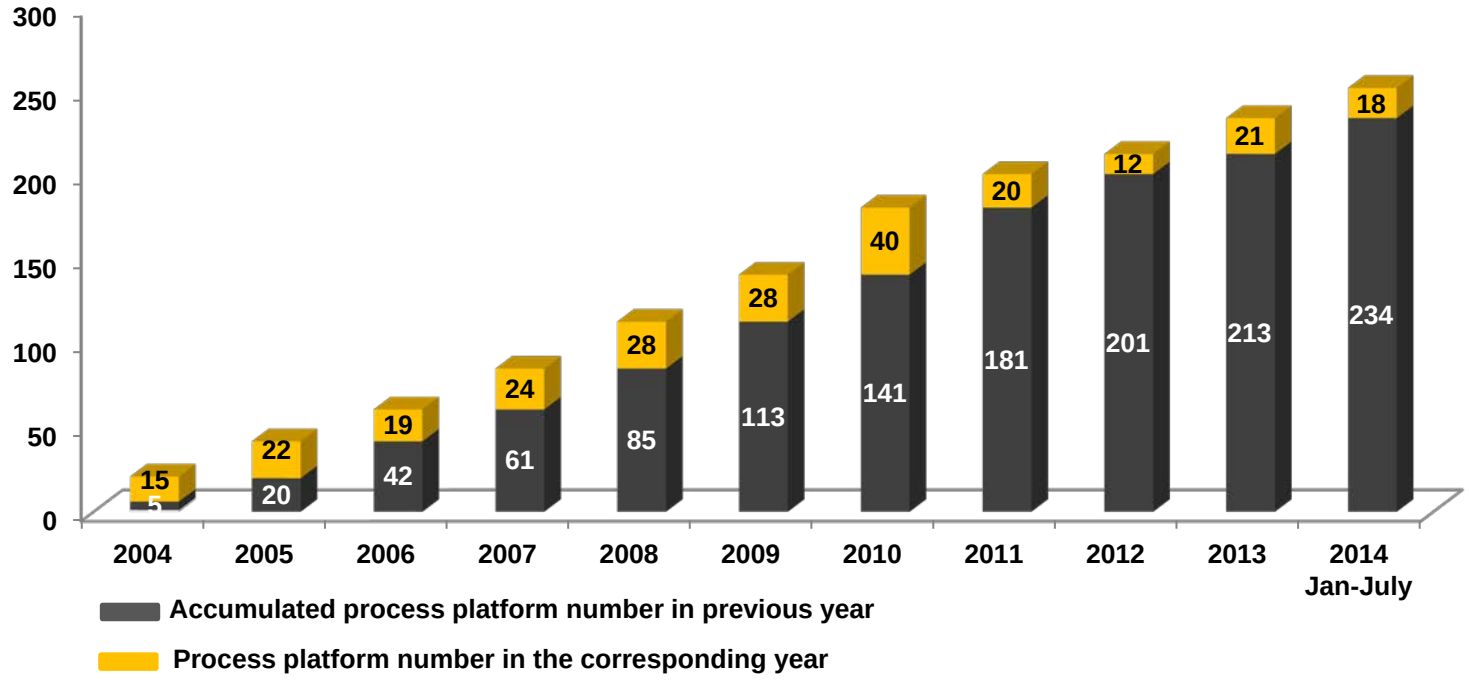
Technology License Statistics

Year	2012	2013	1Q2014	2Q2014
License number	12	19	6	6

Note: The 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.

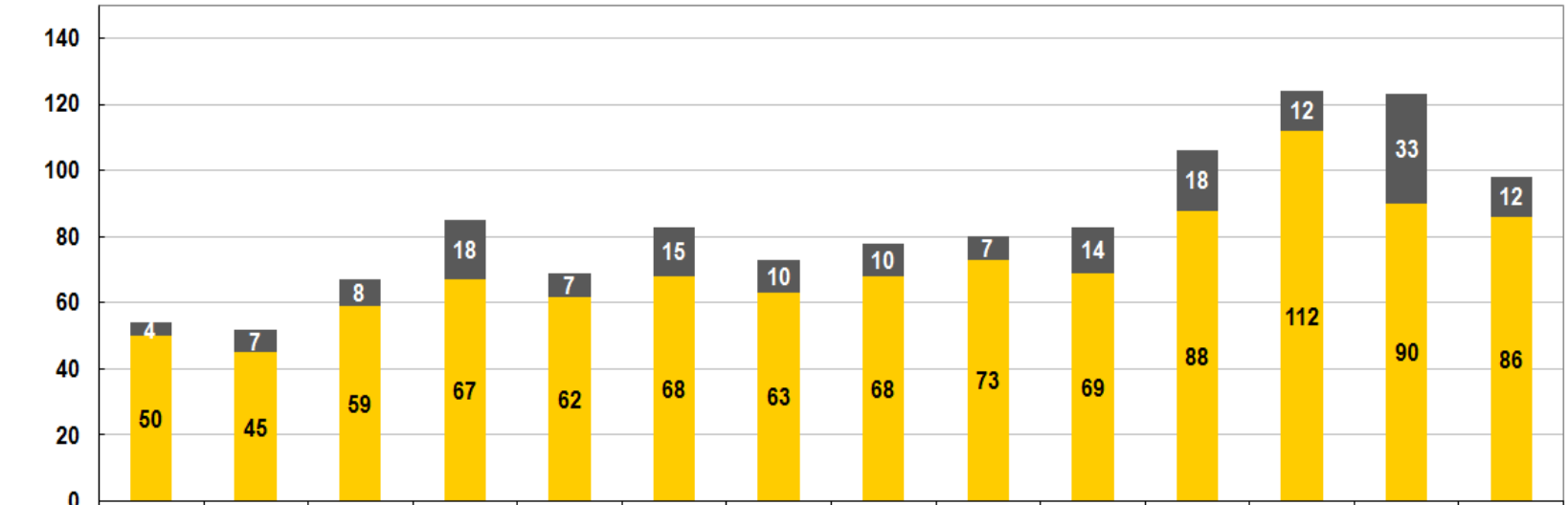
On going technology process platforms under development: 64

25 for the NeoBit, 23 for NeoFuse, 11 for NeoEE, 1 for NeoFlash and 4 for NeoMTP.



Quarterly Design Licensing (New Tape Out)

- Total 221 NTO in 1H2014 (393@2013, 303@2012, 258@2011)

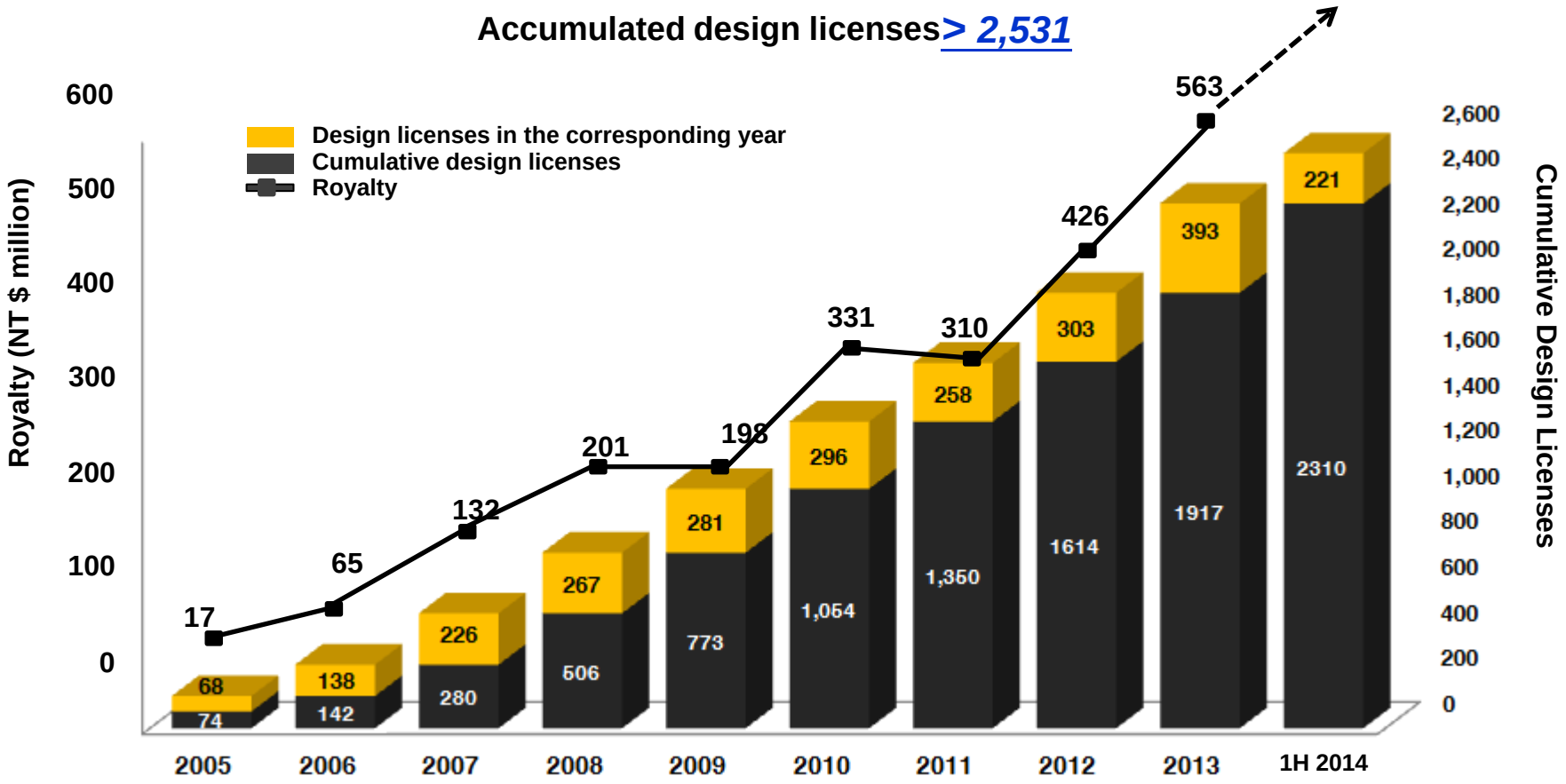


	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
	2011				2012				2013				2014	
TOTAL	54	52	67	85	69	83	73	78	80	83	106	124	123	98
NRE	4	7	8	18	7	15	10	10	7	14	18	12	33	12
USAGE	50	45	59	67	62	68	63	68	73	69	88	112	90	86

NRE: NRE covers the customization of IP that must undergo new verification or qualification. It typically requires 1 to 1.5 years before resulting in royalty revenue.

Usage：Usage of pre-qualified and verified IP (charged by per product tape out or annual package), the cycle time from design implementation to royalty payments for mass production is faster, typically less than one year.

Accumulated Licenses Drive Future Royalties



note 1: Due to the 2009 recession, royalty income was down annually 1.5%.
note 2: Pre-payment of royalty fees by a single customer contributed to 2010 annual growth of 67%, causing a drop of 6.3% in the following year, 2011.
note 3: CAGR for 2009-2013 was 30%.

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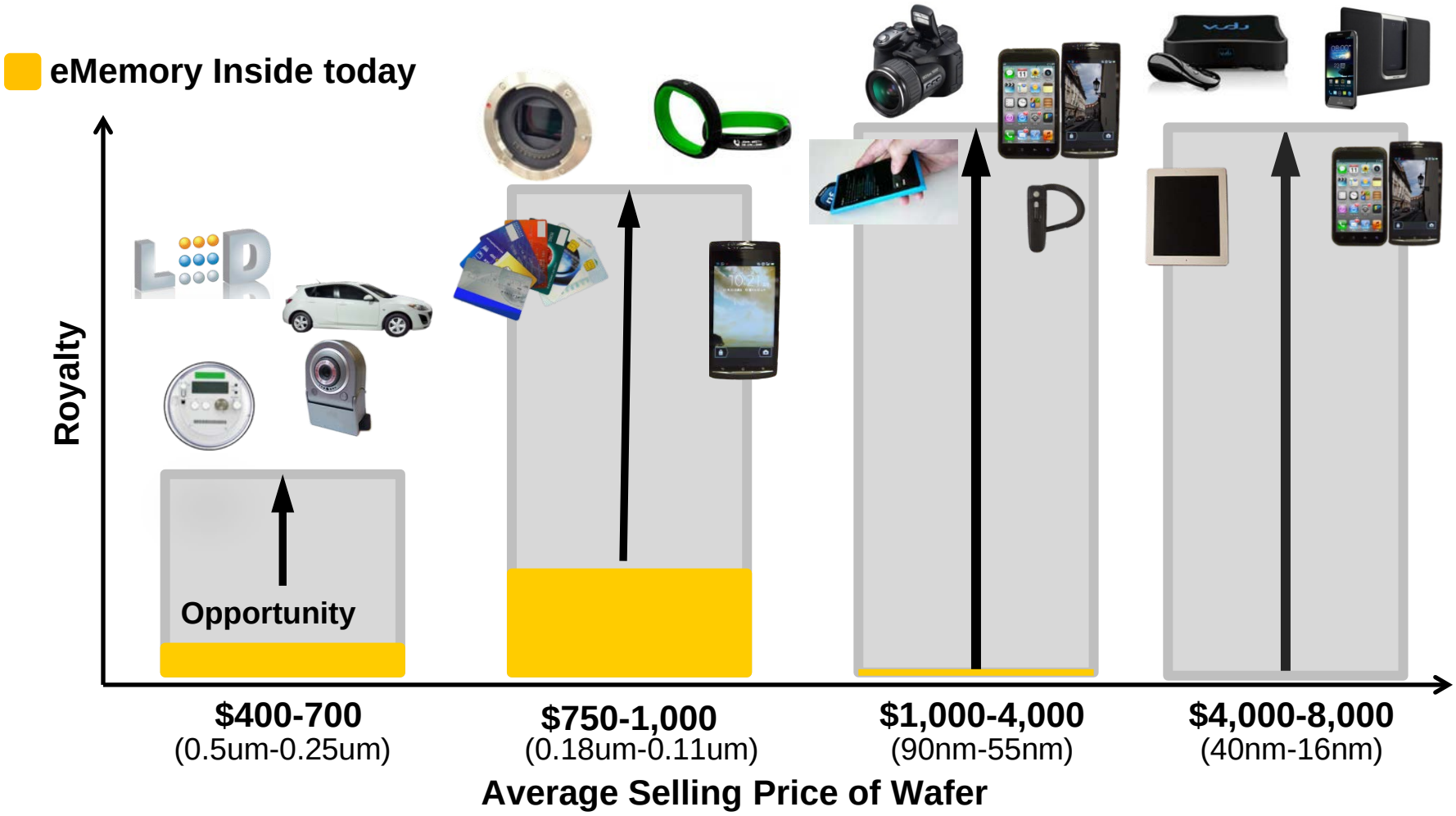
Opportunity at all Price Points



Note: 2.2 million 8” equivalent wafers with eMemory IP were shipped in 2013. (~5% of WW foundry shipment)

Applications by Technology

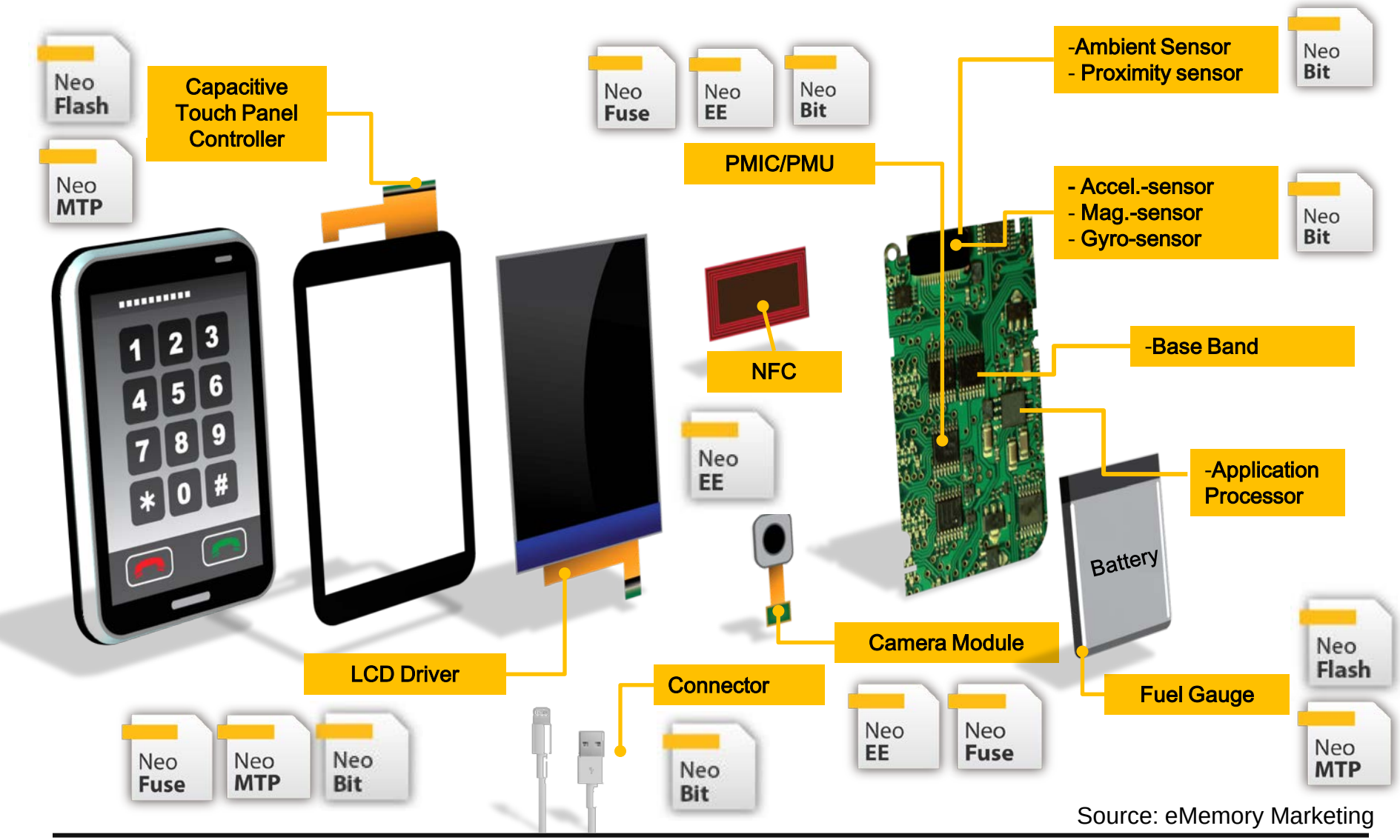
12"						8"		
16/20nm	28nm	40nm	55/65nm	80/90nm	110/130nm	160/180nm	250nm	350nm

eMemory's NVM Technologies

- **Logic NVM portfolio offers one-stop-shop solution.**
  - › Compatible to any process
  - › Competitive macro sizes
  - › Robust structure
  - › Easy integration
  - › Low process cost
  - › Easy porting

eMemory's NVM Technology	OTP		MTP		
	NeoBit	NeoFuse	NeoFlash	NeoEE	NeoMTP
Product Type	OTP	OTP	Flash	EEPROM	MTP
Endurance (Cycles)	10	10	1K~10K	10K~100K	1K~10K
Additional Mask Steps	0	0	2-3	0	0
Technology	Floating gate	Anti-Fuse	SONOS	Floating gate	Floating gate
Scalability	Simple	Simple	Simple	Simple	Simple
Memory Density	HD < 512Kb GHD < 16Mb	< 4Mb	< 2Mb	< 4Kb	< 512Kb

eMemory IP in Smart Phone



Source: eMemory Marketing

3Q14 Wafer Demand by IC Type

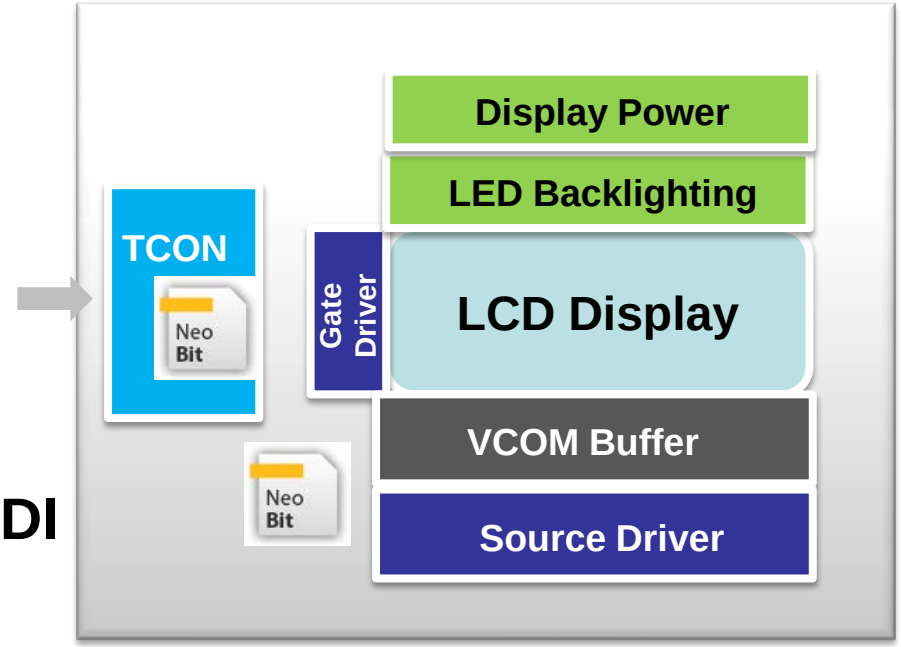
IC Type	Equ. to 8-inch wafer (K)
AP	4964
PMU	4756
CIS sensor	4226
Fingerprint	4000
Smart card controller	3000
Base Band	2935
LCD driver (with TCON)	2013
Gauge IC	627
Touch panel controller (C)	556
Connectivity	395
STB controller	335
TV controller	327
Wifi controller	245
LED driver	243
DC-DC/AC-DC	176
Accelerator sensor controller	124
Light snesor	121
Bluetooth controller	121
Gyroscope sensor controller	104
TAG IC	76
DVD controller	67
MCU (8bits, LV/3.3V)	56
MCU (8bits, LV/3.3V)	56
P-Gamma	52
MCU (8bits, pure 5V)	51
NB CAM controller	42
Pressure sensor controller	20
Touch pad controller	18
PC CAM controller	15
Touch panel controller (R)	5
TCON (w/o driver)	4

2014.8.29 updated

Advanced LCD Driver ICs

Process Technology : 0.11um HV/80nm HV/55nm HV

I/F
(LVDS, MIPI,…)

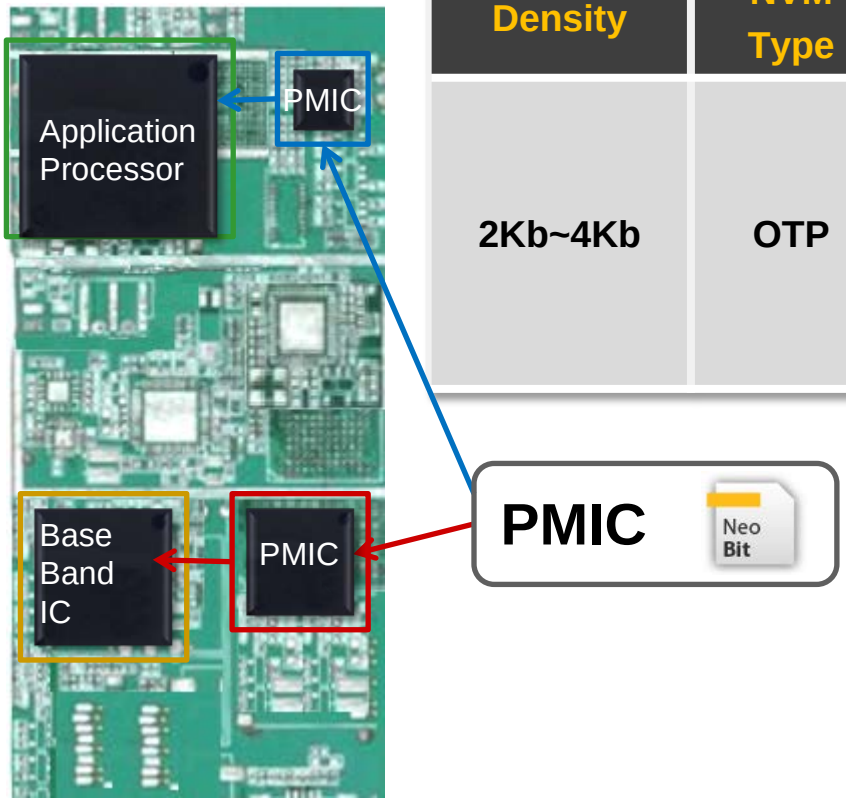


DDI

Density	Endurance	NVM Type	Purpose	NVM Usage
2K8~4K8	1	OTP	Trimming	1. Accuracy enhancement 2. Mismatch cancellation
			Code Storage	1. Gamma Correction Table 2. Timing Control Pattern 3. Color Engine Enhancement

Power Management ICs for Baseband and Application Processor

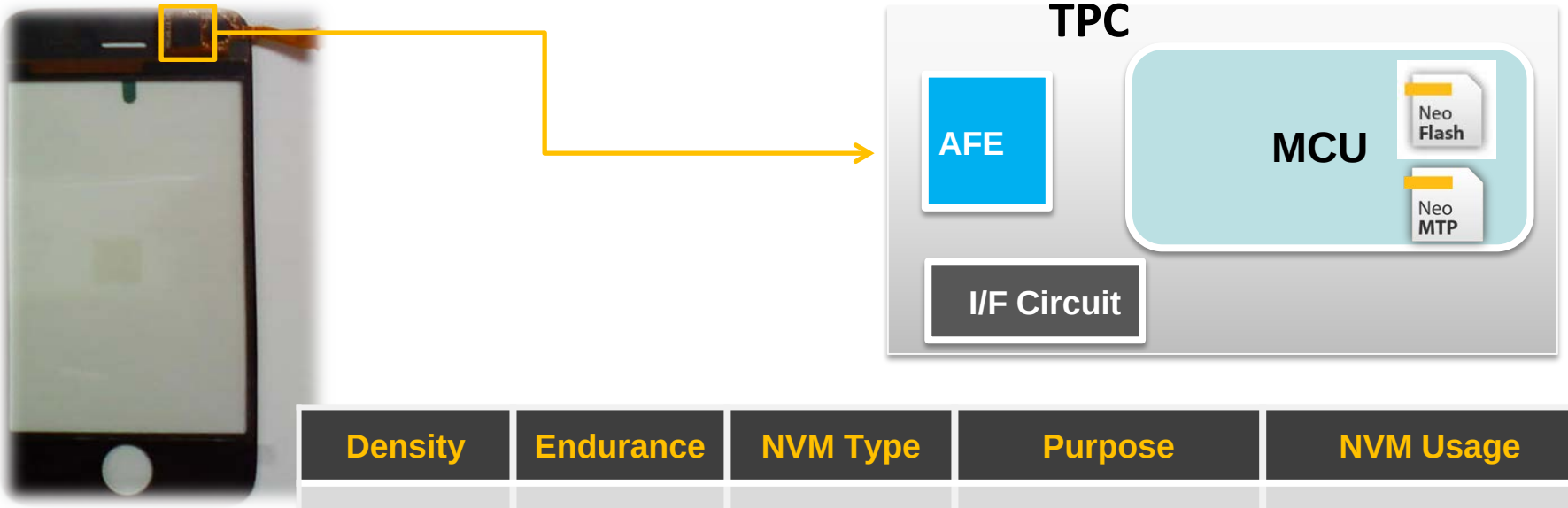
Process Technology : Advanced 0.25um BCD/ 0.18um BCD/ 0.13um BCD
Mature 0.18um/0.16um/0.152um Logic



Density	NVM Type	Purpose	NVM Usage
2Kb~4Kb	OTP	Trimming	DC/DC, Bandgap
		Parameter Setting	Design flexibility & Performance optimization
		Code Storage	Start-up behavior & smart power saving algorithm

Touch Panel Controller ICs

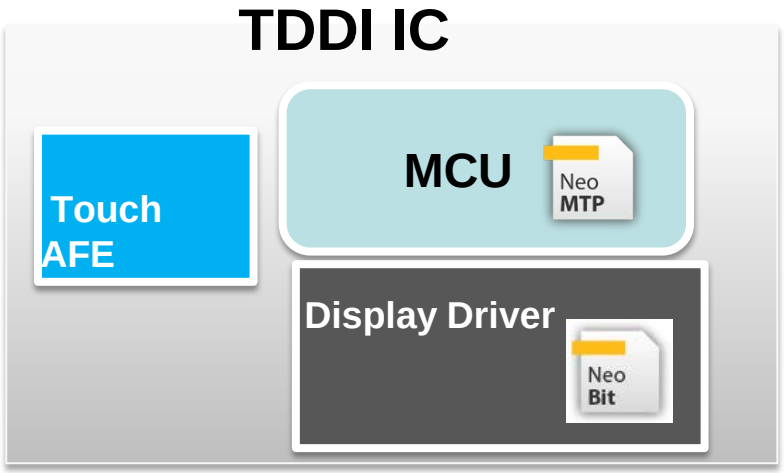
Process Technology : 0.16um HV/0.11um G



Density	Endurance	NVM Type	Purpose	NVM Usage
16K8~32K8	<1000	MTP	Code Storage	F/W code
			Parameter setting	Customized model and performance optimization

In-Cell Touch Panel Controllers ICs

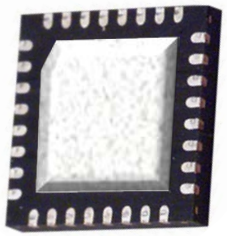
Process Technology : 0.11um HV/80nm HV/55nm HV

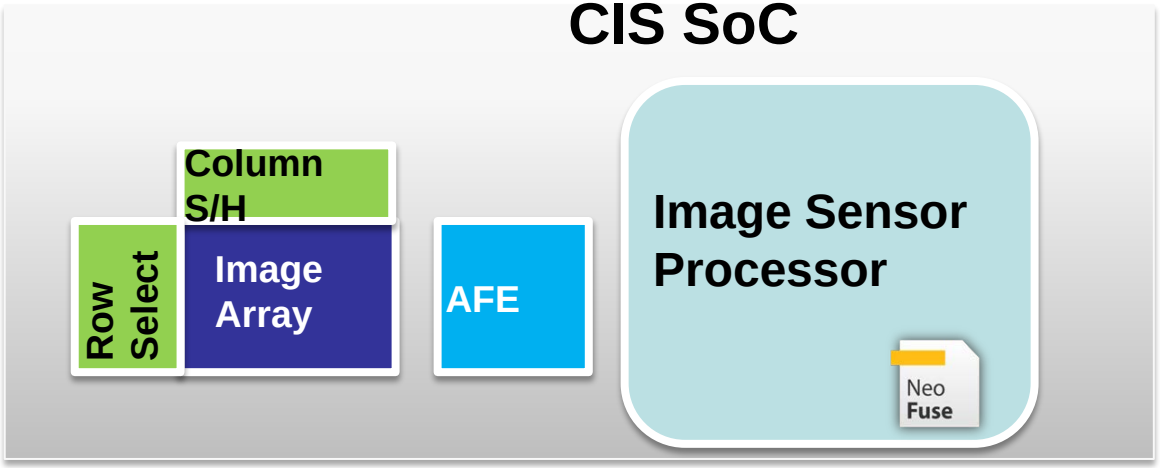


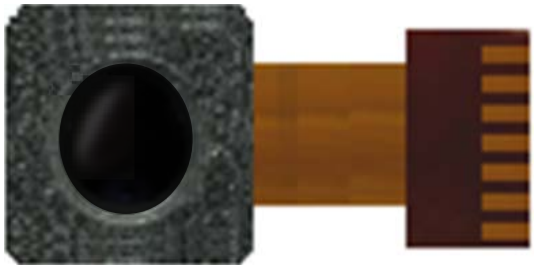
Density	Endurance	NVM Type	Purpose	NVM Usage
2K8~4K8	1	OTP	Trimming	Accuracy
			Code Storage	Gamma Table
16K8~32K8	<1000	MTP	Code Storage	Touch F/W Code
			Parameter setting	Performance Optimization

CMOS Image Sensor

Process Technology : 0.11um CIS/90nm CIS/65nm CIS







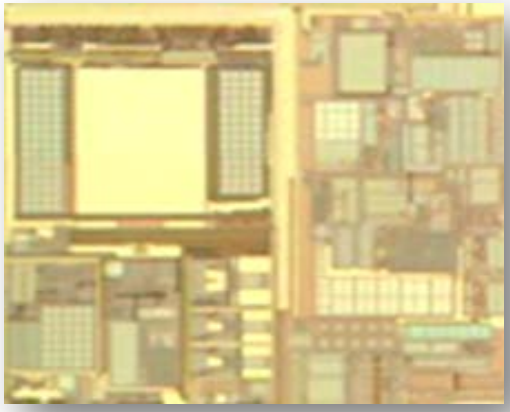
Density	Endurance	NVM Type	Purpose	NVM Usage
2Kb~4Kb	1	OTP	Identification Setting	Product code
			Parameter Setting	Start-up initial setting
32K8	1	OTP/ROM	Code Storage	Boot load

Security & Protection

Authorized Product

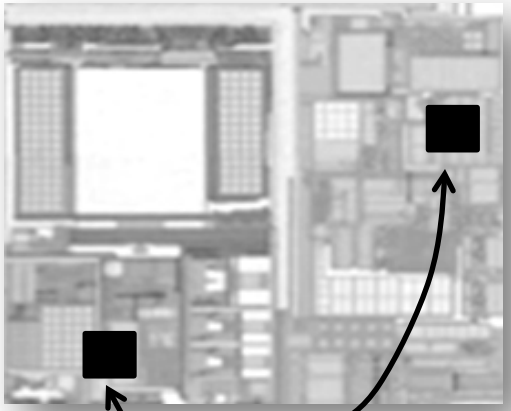
reverse copy

re-produce



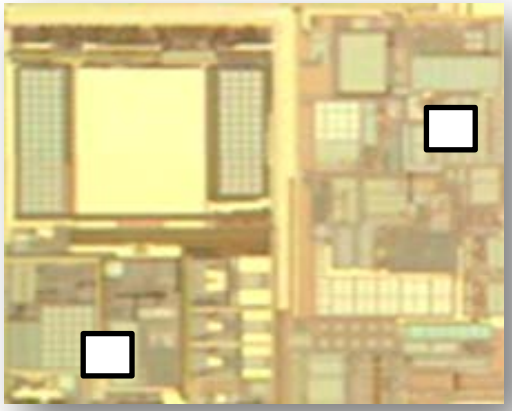
Fake Product

without protection



reverse copy

re-produce

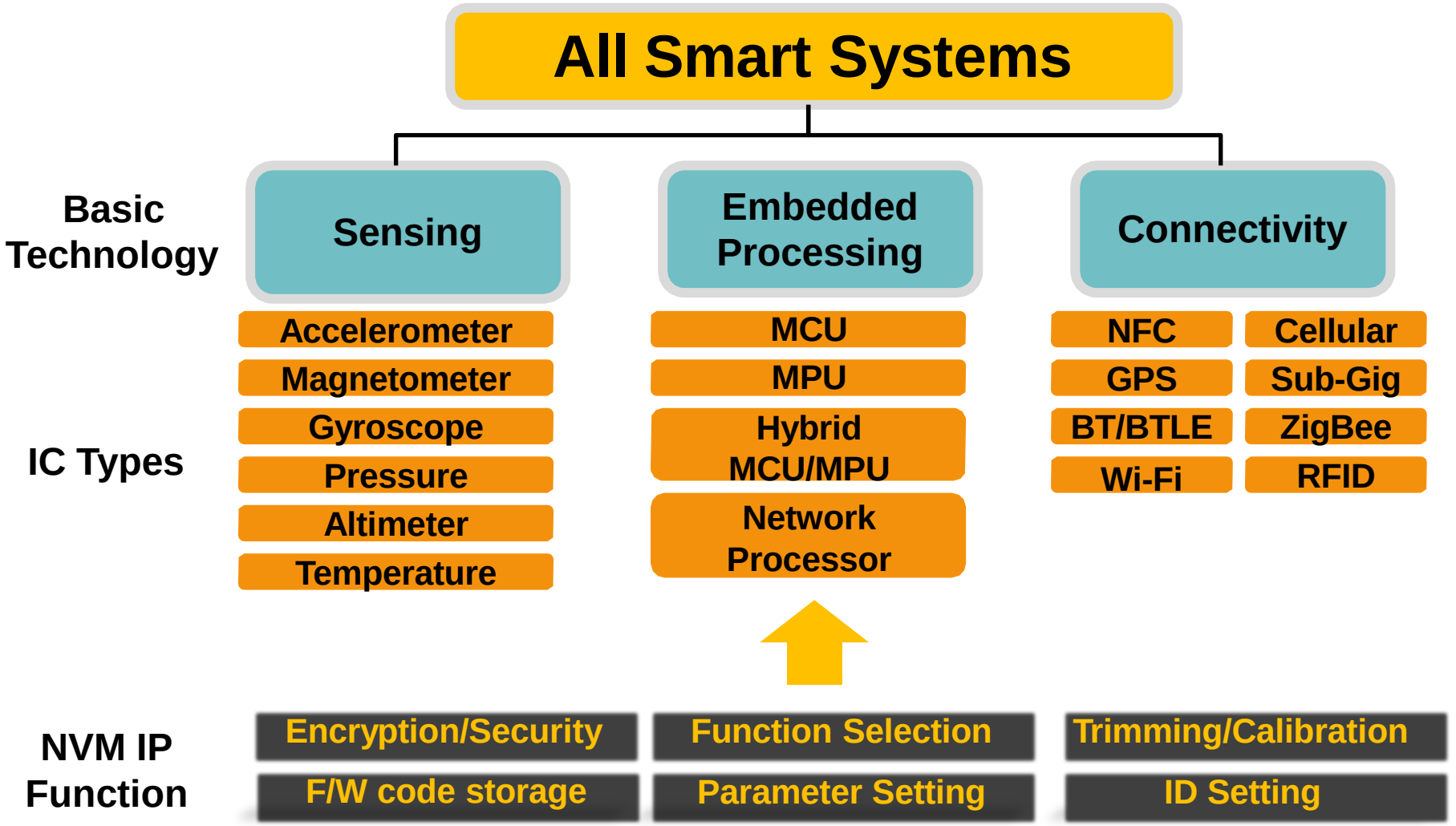


with protection

Security IP/Code by Authorized Use

Can NOT Work w/o Security IP/Code

NVM IP Demand in IoT

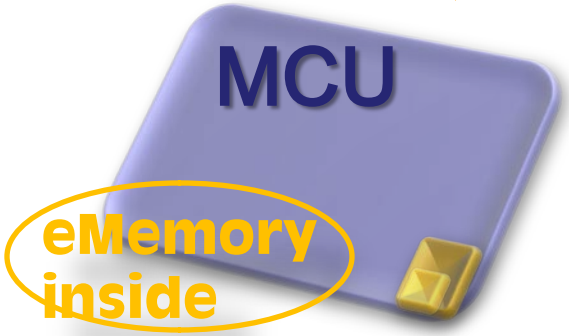


Replacement of Embedded Flash for Competitiveness Improvement

product design & manufacturing by embedded Flash
Logic Process + 10 Masks

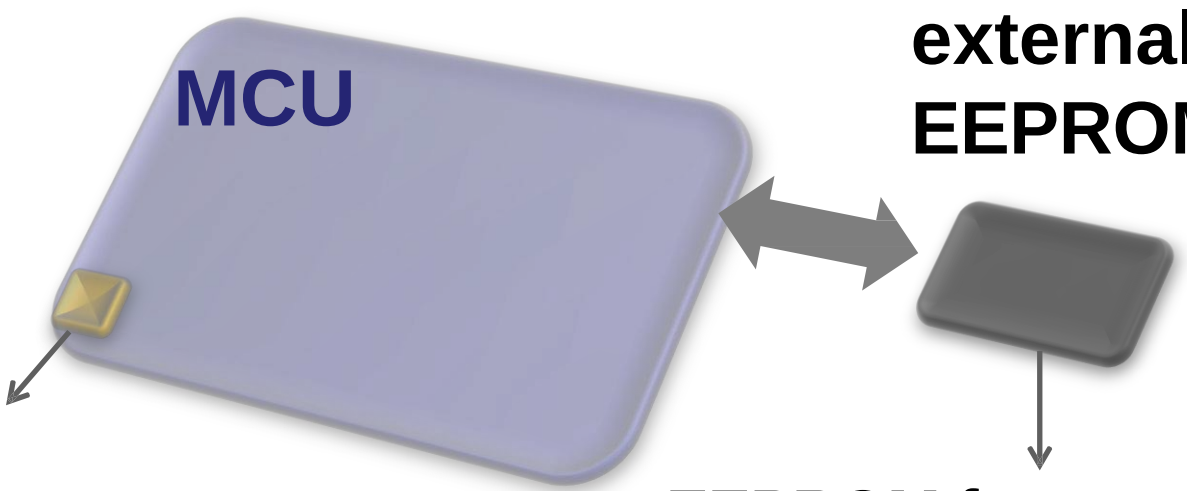
30% more cost reduction

wafer cost & testing time



product design & manufacturing by Embedded Logic NVM (OTP/MTP) Logic Process

MCU Applications with EEPROM

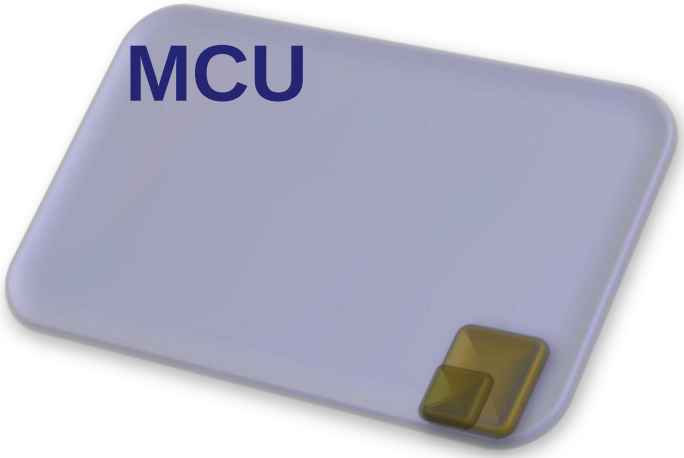


One-time storage for ID, trimming, encryption…

EEPROM for user data, parameter setting, system function…

NeoBit + NeoEE

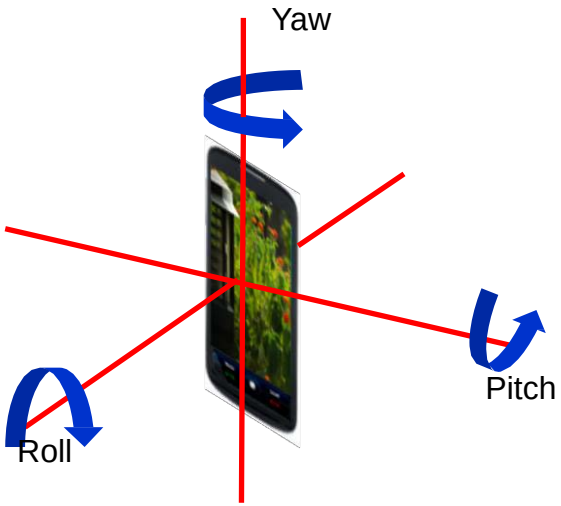
Hybrid NVM solution (NeoBit + NeoEE) with customized SPEC & optimized size

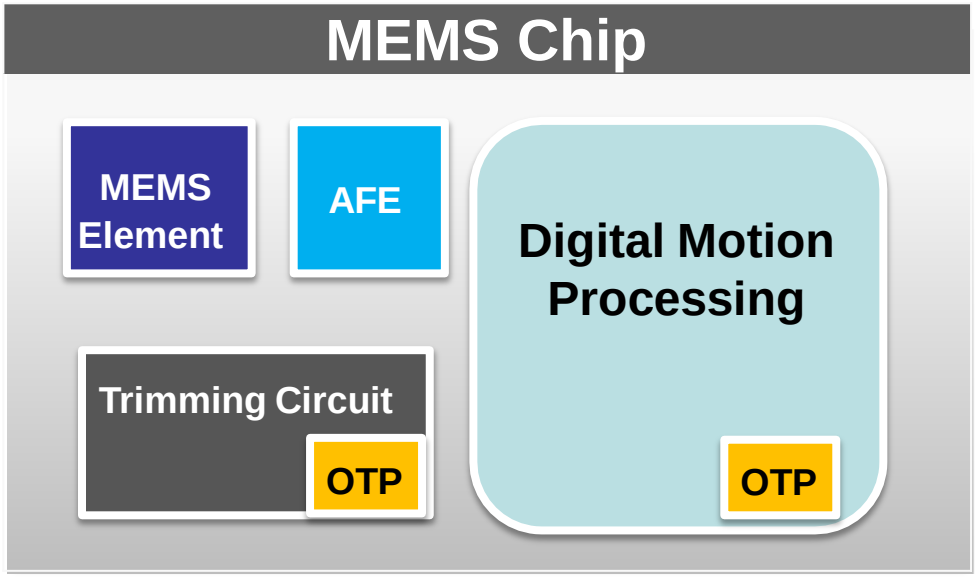


- **One single IP by integration of NeoBit & NeoEE**
- **Help for system size reduction**

MEMS

180/160/15x nm HV/Logic for MEMS Controller





Density	NVM Type	Purpose	NVM Usage
2Kb~4Kb	OTP	Trimming	Factory trimming
		Parameter Setting	Signal filtering
		Code Storage	Geometric computation

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Outlook for 3Q and Beyond

- **Double digit revenue growth in the coming two quarters.**
- **Our penetration rate in the world's leading foundry has continued to rise, and we forecast this trend to continue and spread to other foundries.**

embedded eMemory IP in T Company ($revenue)

	Process node	*% of T	2Q13	1Q14	2Q14
8"	0.5+	1%	0%	0%	0%
	0.25/0.35	4%	16.8%	23.8%	34.2%
	0.15/0.18	14%	9.8%	14.7%	13.3%
	0.11/0.13	3%	15.4%	21%	20.4%
12"	90nm	7%	4.7%	15.3%	18.3%
	65nm	15%	0%	0%	0%
	40/45nm	19%	0%	0%	0%
	28nm	37%	0%	0%	0%
8"		22%	11%	16%	17%
12"		78%	0.5%	1.4%	1.6%
Total		100%	3.1%	4.7%	5.1%

*** % of Process node in T company total revenue in 2Q14**

Key Growth Drivers

Growth in value per mobile devices	• More chip applications per smartphone/tablet product
Growth into more markets	• From consumer electronics and mobile devices to wearable devices • Adding new NVM product lines further enable more product applications
Growth in more advanced technology	• Higher royalty per wafer is contributed from more advanced technology nodes.
IOT great era	• Embedded Logic NVM will be a must.

Q & A

ememory

Embedded Wisely, Embedded Widely