



# Consumer Applications – The Evolution of SSD Form Factor in Consumer Applications

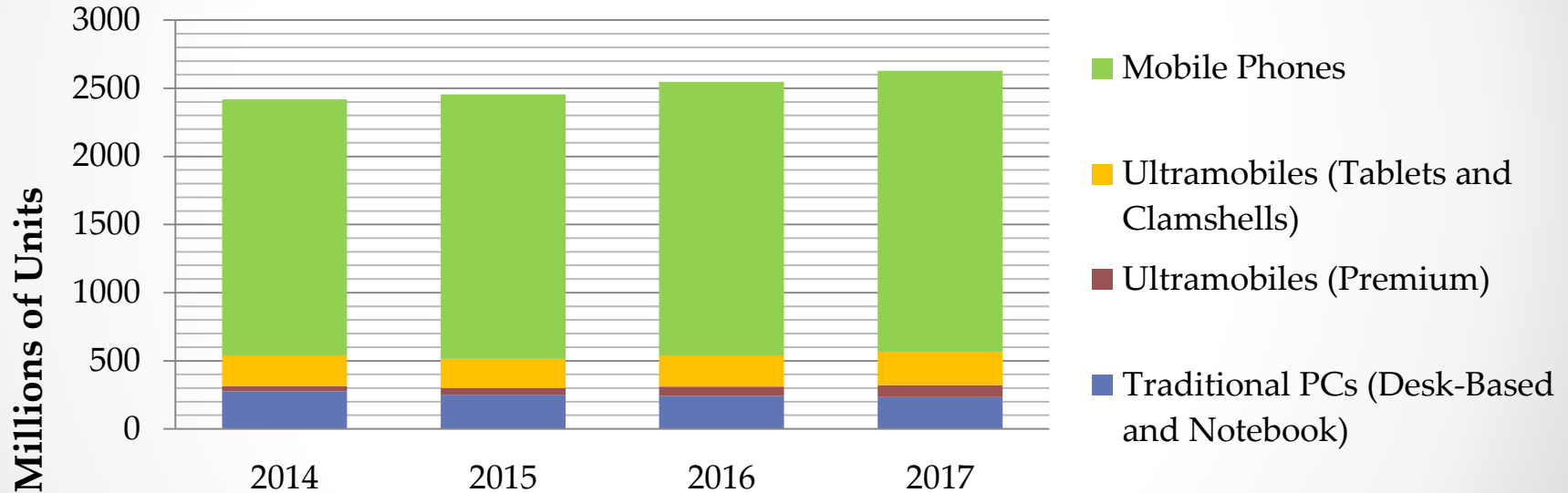
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2015.08.11

# Agenda

- Storage Trend 2014 ~2017
- Client Market Segmentation
- NAND Trend
- Form Factor Trend
- Take Away

# Storage Trends

- Worldwide Device Shipments to Grow 1.5% Percent, to Reach 2.5 Billion Units in 2015



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# SSD Market Segmentation

- AIC, 2.5", M.2



Enthusiast  
Tower

- 2.5", M.2

Mainstream  
DT and All-  
In-One (AIO)



- M.2, BGA

Convertible  
Notebooks/  
Ultramobile

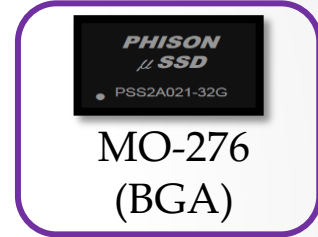
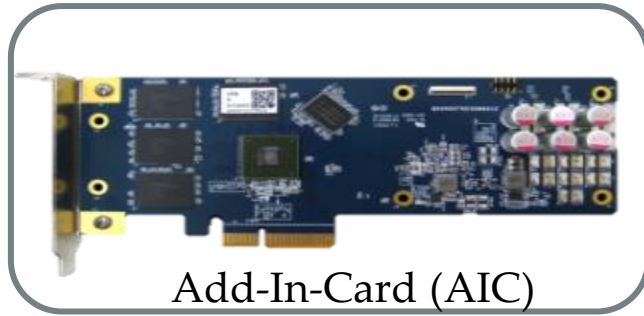
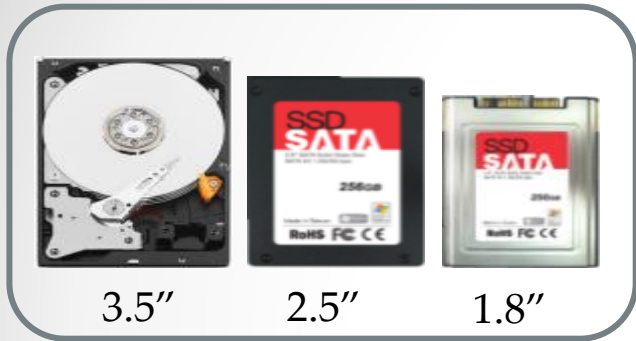


High End  
Notebook

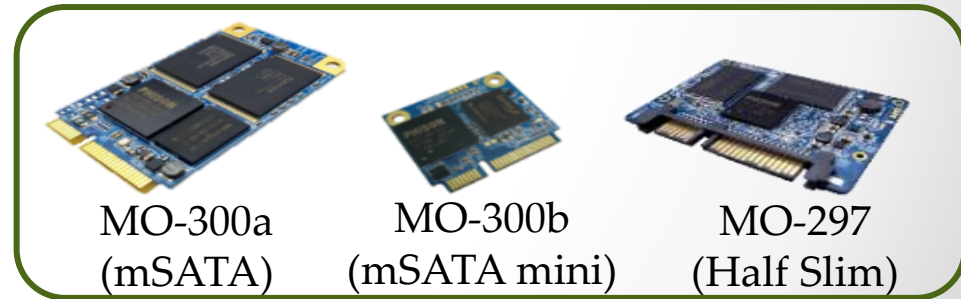
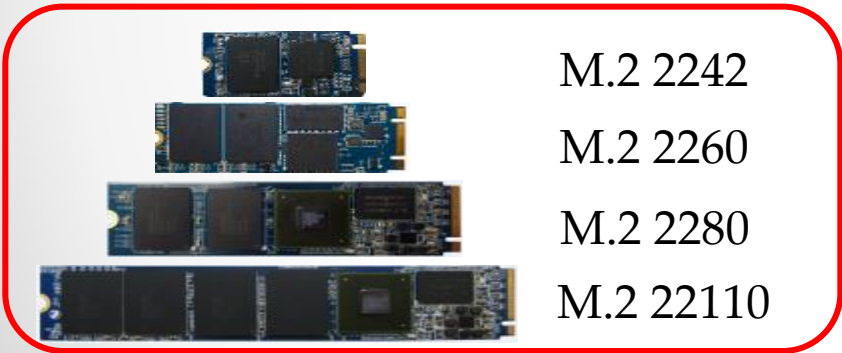
- M.2



# Storage Form Factor



## Mainstream in 2015



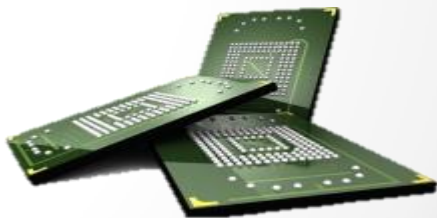
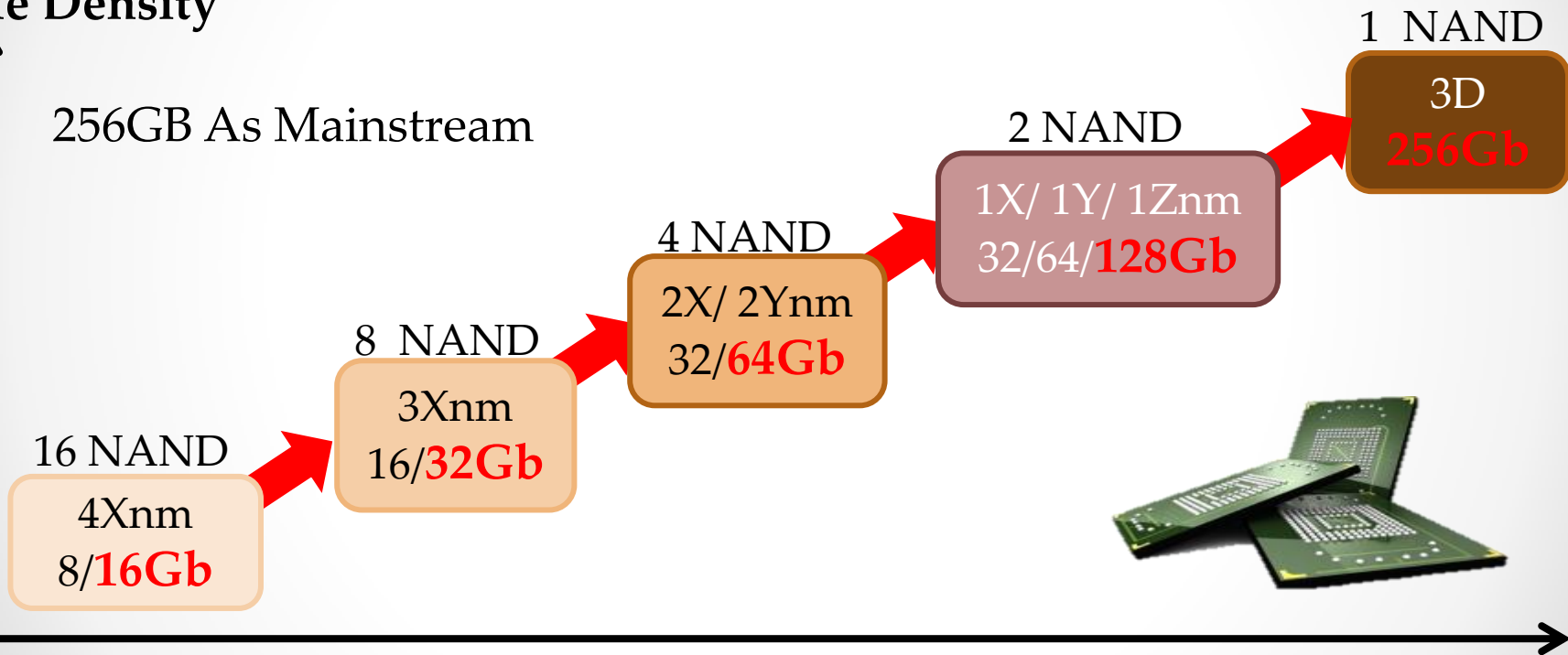
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# NAND Mono Density Is Increasing

Die Density

256GB As Mainstream



Process Node



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# Client Market Trend

Portability/ Responsiveness/ Reliability/ Cost Orientated



3.5 Inch

2.5 Inch

M.2



2.5 Inch

mSATA

M.2

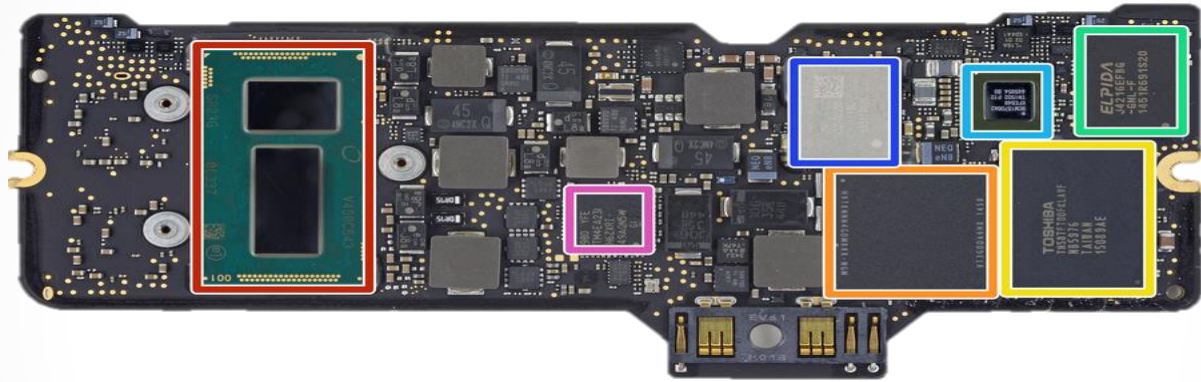


mSATA

M.2

BGA

# An Example



It was from DRAM, now is SSD.....

\*Picture from iFixit.com

# Key Takeaways

- M.2 is the current generation cost effective SSDs storage
- M.2 Enables expanded capacity options
- Once 256Gb mono mature and become mainstream, BGA SSD will replace module. SSD will be embedded!

**BGA Form Factor will be the Future**

# Phison SSD Advancement

## Market Leadership

- ✓ In-house SATA III, PCIe Gen 3 IP  
Process node moving into 40nm & **28nm**
- ✓ StrongECC for the next generation 3D MLC/TLC; more advantageous compared to LDPC

## Aggressive SSD Development Plan

- ✓ 4 SATA controllers currently in productions
- ✓ 6 NEW SSD controllers to be expected from 2015 – 2016 1H
- ✓ Broad Portfolio:
  - SATA III: 8Ch, 4Ch, 2Ch
  - PCIe: Gen3x4, Gen3x2, Gen3x1



EL Enterprise

Industrial

High-end Client

Entry-Level Client

# Phison Product Line Up

## PCIe Gen3 Ultra Speed Solution

- x2(2GB/s)
- x4 (4GB/s)



## SATA 6Gb/s Mainstream Storage

- 8CH
- 4CH
- 2CH



## eMMC Mobile Device

- 4.41
- 4.5
- 5.0
- UFS



# Rich Diversity Of SSD Solution

	AIC	2.5"	Half Slim	mSATA	M.2 22110	M.2 2280	M.2 2260	BGA uSSD
SATA 6Gb/s		✓	✓	✓	✓	✓	✓	✓
PCIe	✓	✓			✓	✓		✓



# Thank You

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