

Photronics, Inc.

Global Leader in the Merchant Photomask Industry

Analyst and Investor Day
May 23, 2018

Agenda

Troy Dewar, Director, IR

Peter Kirlin, CEO

Chris Progler, CTO

High-End Growth Drivers

HK Park, GM, China & Taiwan FPD

Frank Lee, GM, Asia IC

Pete Broadbent, VP, US & Europe

John Jordan, CFO

Q&A

Lunch

Welcome

Overview & Strategy

Technology Development

High-End FPD

High-End IC Logic

High-End IC Memory

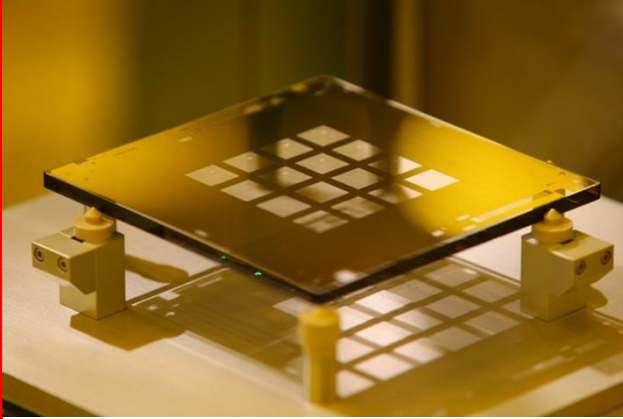
Financial Model & Outlook

Safe Harbor Statement

This presentation and some of our comments may contain projections or other forward-looking statements regarding future events, our future financial performance, and/or the future performance of the industry. These statements are predictions, and contain risks and uncertainties. Actual events or results may differ materially from those presented. These statements include words like “anticipate”, “believe”, “estimate”, “expect”, “forecast”, “may”, “should”, “plan”, “project” or the negative thereto. We cannot guarantee the accuracy of any forecasts or estimates, and we are not obligated to update any forward-looking statements if our expectations change. If you would like more information on the risks involved in forward-looking statements, please see the documents we file from time to time with the Securities and Exchange Commission, specifically our most recent Form 10K and Form 10Q.

Non-GAAP Financial Measures

This presentation and some of our comments may reference non-GAAP financial measures. These non-GAAP financial measures exclude certain income or expense items, and are consistent with another way management internally analyzes our results of operations. Non-GAAP information should be considered to be a supplement to, and not a substitute for, financial statements prepared in accordance with GAAP. Please see the “Reconciliation of GAAP to Non-GAAP Financial Information” in this presentation.



Peter Kirlin, CEO Overview & Strategy

What You Will Hear Today

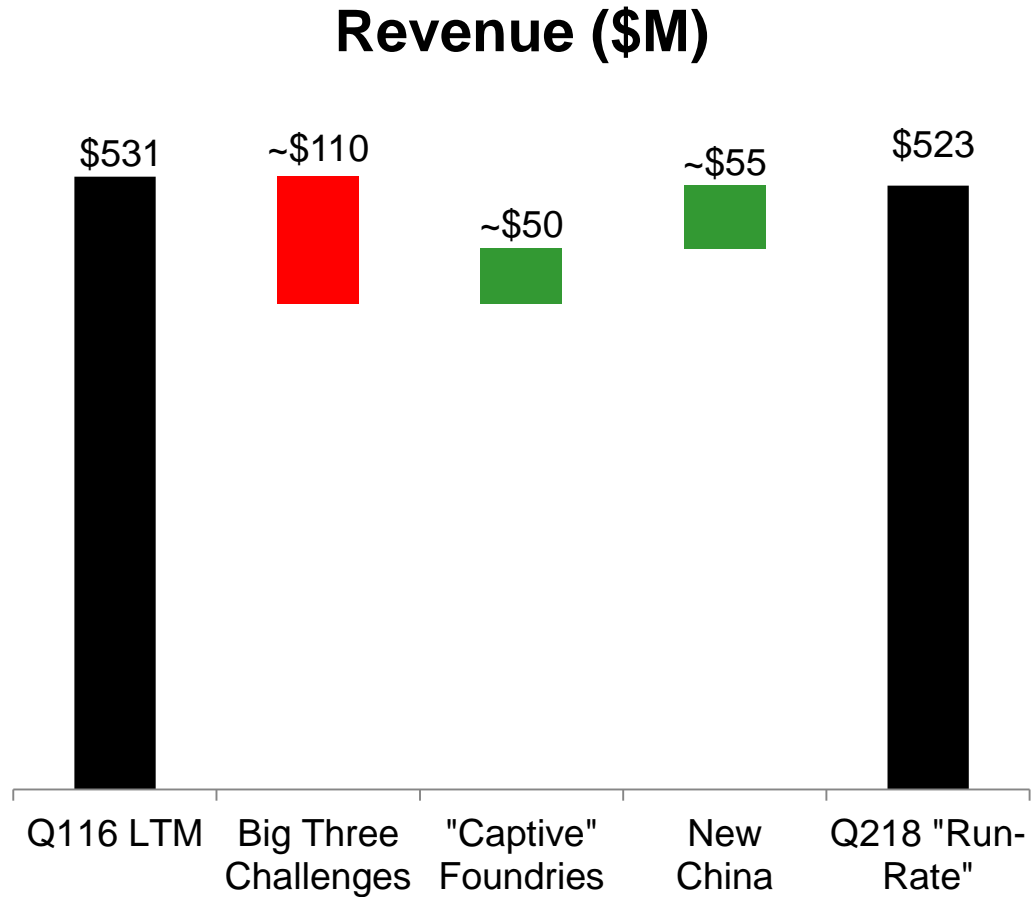
- ▶ **Q2 Reprise / Repositioning the company**
- ▶ **Sustainable growth strategy**
- ▶ **Conclusion**

Q2 2018 Summary

- ▶ **Revenue grew to \$131M; up 21% Y/Y and 6% Q/Q**
 - High-end IC biggest growth factor (+83% Y/Y)
 - China revenue doubled Y/Y; up 18% Q/Q
- ▶ **Gross and operating margins expanded on higher revenue and operating leverage**
- ▶ **Net income attributable to Photronics, Inc. shareholders of \$10.7M (\$0.15/share)**
- ▶ **Cash balance of \$321M; capex increased to \$33M as we invest in growth**
- ▶ **China investments on track**
 - Construction to be completed later this year
 - Production to begin first half of 2019

Investing in long-term, profitable growth to increase shareholder value

Repositioning the Company



▶ Three large customer challenges

- Micron produced more memory masks in-house
- Samsung Display shifts from LCD to AMOLED and brings highest-end masks in-house
- Major IC customer loses 28nm logic market share

▶ We've overcome challenges by winning business at other customers

- New business from foundries that are primarily captive
- New IC and FPD business in China

A Compelling Investment Thesis

▶ Global leader in merchant photomask industry

- *Delivering growth by leveraging core competences: Operational Excellence, Low Cost Producer, Technology Leadership, Customer Intimacy*

▶ Investing aggressively to exploit secular growth opportunities

- *China industry expansion – Made in China 2025*
- *Technology inflection from LCD to AMOLED*
- *Explosion of G10.5+ panel capacity*

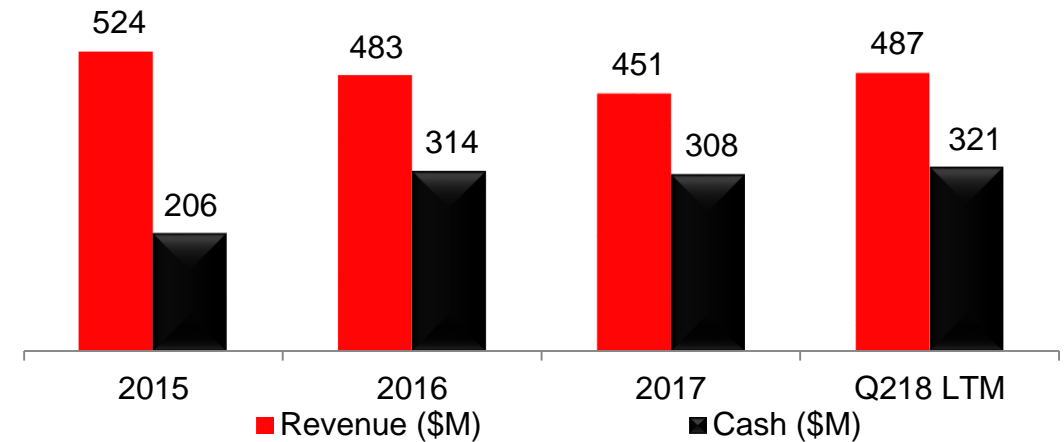
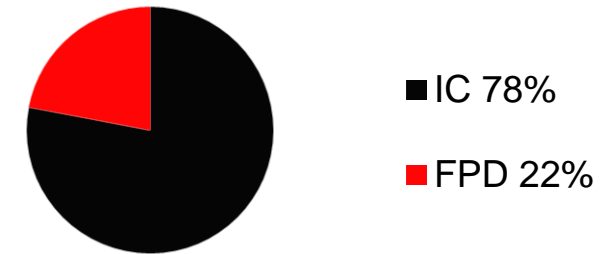
▶ Targeting \$630M / \$0.80 in revenue / EPS by 2020

- *Strategic investments bring top-line growth*
- *Operating leverage creates margin expansion*
- *Additional upside from potential M&A*

Photronics at a Glance

- ▶ Largest merchant photomask manufacturer
- ▶ Unmatched global footprint
- ▶ Investing to exploit market disruptions with reciprocal customer commitments
- ▶ Strong balance sheet to fund growth

Q218 LTM Revenue by Product \$487M



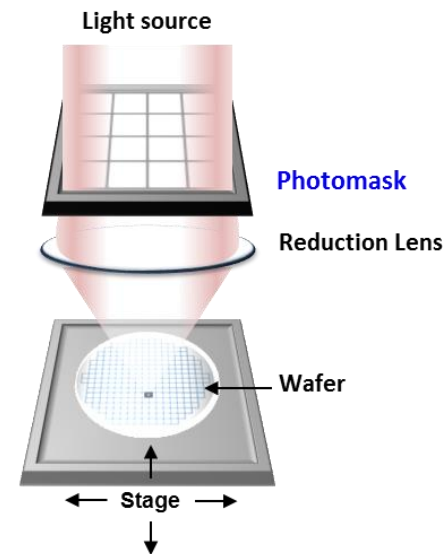
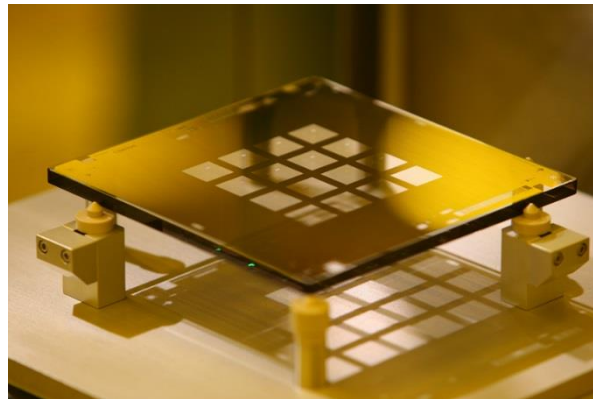
Photomasks are Critical to Electronic Manufacturing

Component
Design

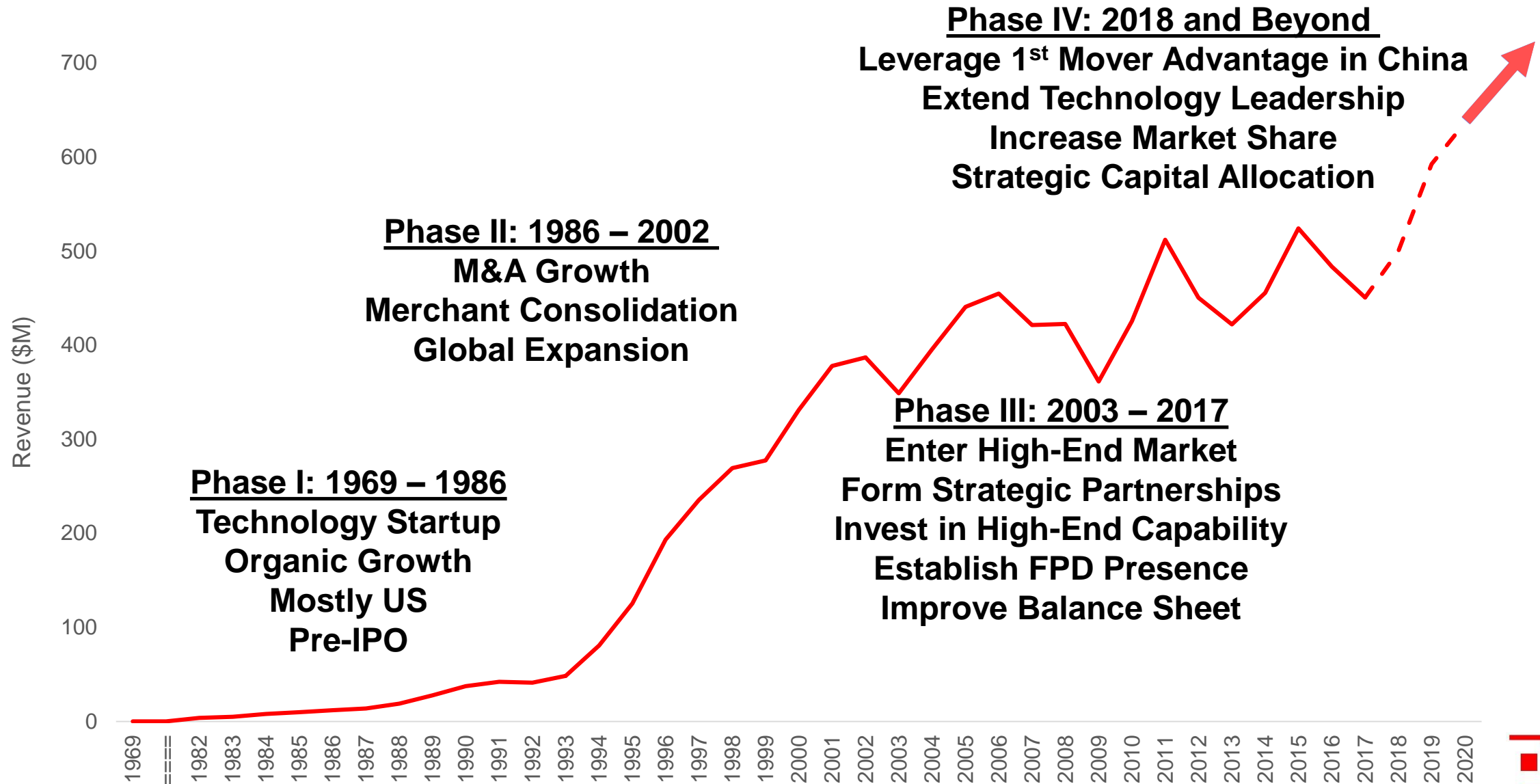
Photomask

Manufacturing
Process

End
User



Phases of Photronics Revenue Growth



Core Competencies Underpin Sustainable Growth

Low Cost Producer

**Cost control
Supply chain optimization**

Operational Excellence

**Flexible delivery
High yields**

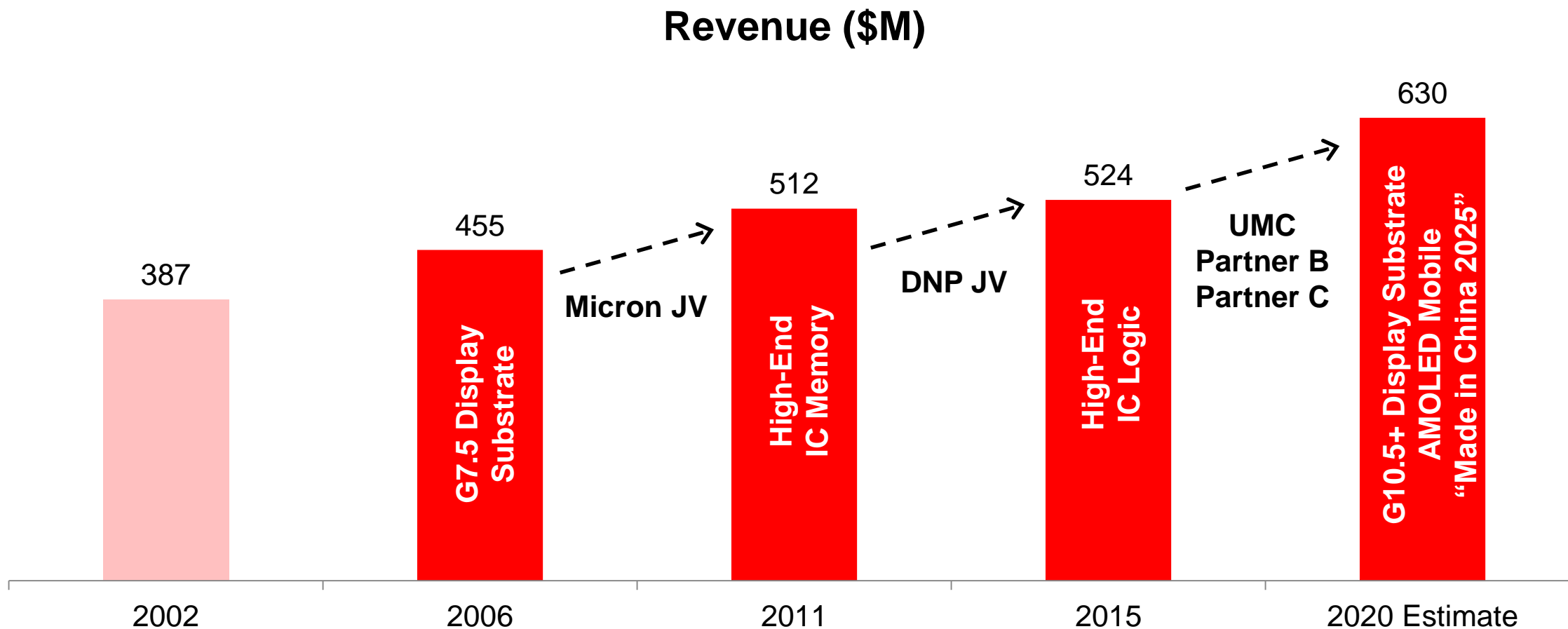
Customer Intimacy

**Trusted partner
Wafer yield enhancement**

Technology Leader

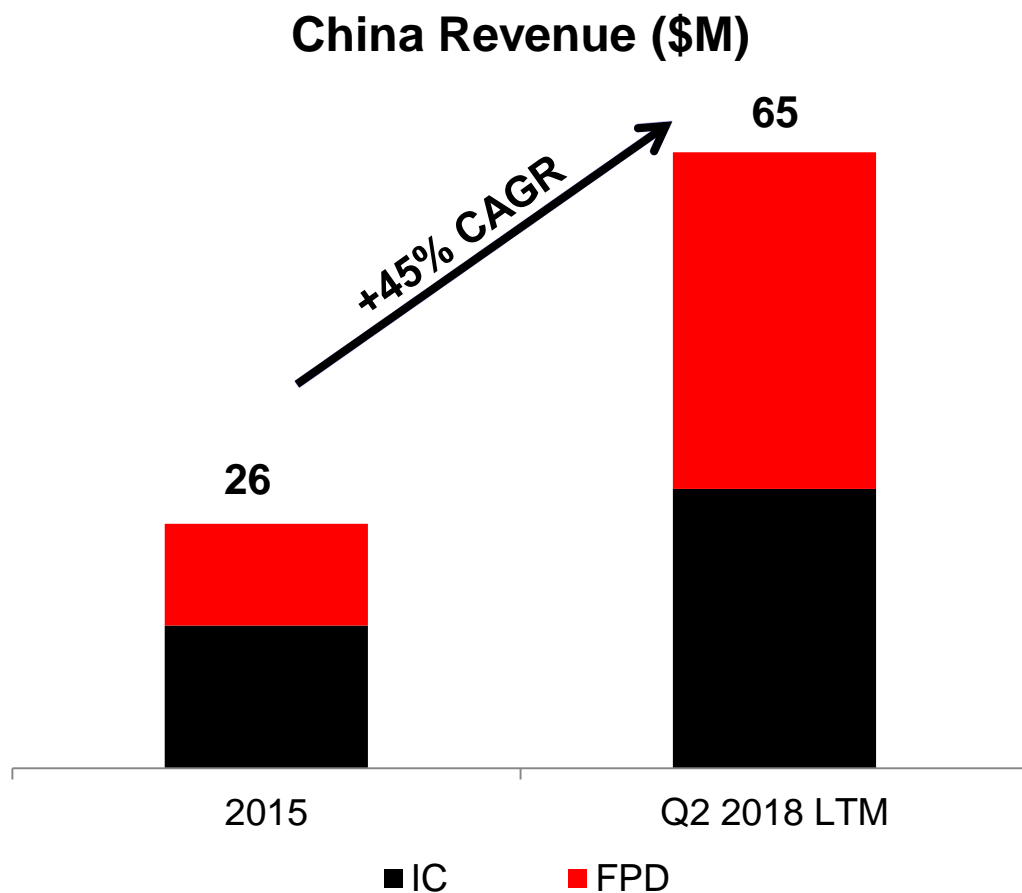
**Process know-how
Advanced PoR**

Exploiting/Creating Disruptions Drives Revenue Growth



The Right Technology ... in the Right Place ... at the Right Time

Successfully Developing China Business



▶ We already have growing business in China

- \$39M YTD 2018 (15% of total revenue)
- Growing strong since 2015 (IC +31% CAGR; FPD +62% CAGR)
- 13% of Q2 2018 LTM revenue (8% of IC; 33% of FPD)

▶ Manufacturing presence in China should accelerate growth

- Customer contracts will help quickly ramp facilities
- Investment incentives reduce risk and improve returns
- IC JV enables us to compete more effectively

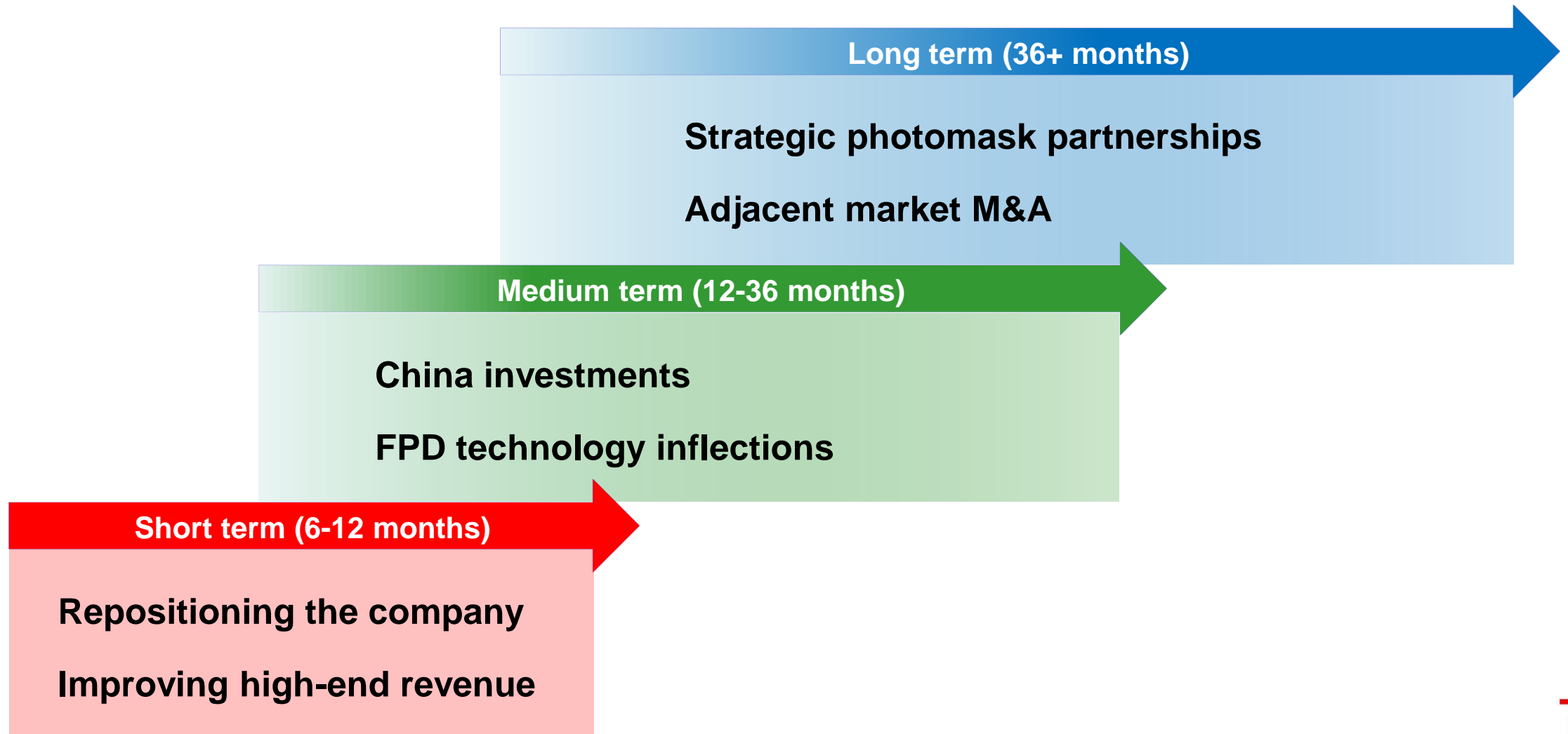
Investing in China Operations

	IC	FPD
Location	Xiamen	Hefei
Investment Amount	\$160M	\$160M
Cleanroom Size	~2,500 m ²	~4,500 m ²
Ownership Structure	Majority-owned (50.01%) JV	Wholly-owned
Technology	High-end, mainstream, logic, memory	Up to G10.5+, AMOLED
Production Start	First half of 2019	First half of 2019
Incremental Revenue	\$150M (total for both operations)	

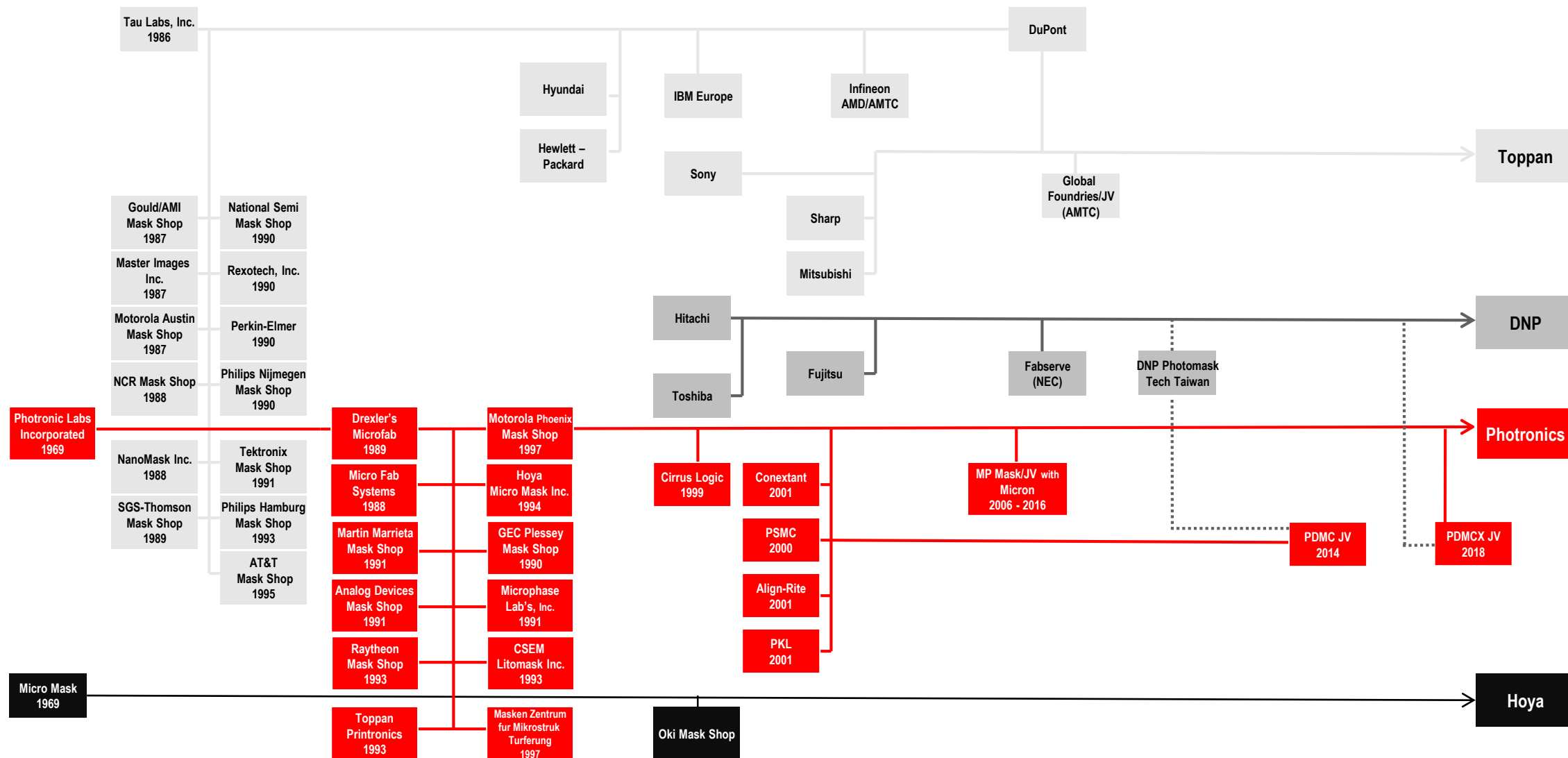
Customer commitments totaling ~\$300M over next three years
 Enables Hefei facility to operate profitably
 Enables Xiamen facility to achieve breakeven

PLAB well positioned for these investments
 Global merchant market and technology leader
 Strong footprint in Asia
 Balance sheet to support investment

Driving Sustainable, Profitable Growth



Global Consolidation of Photomask Industry 2018



1969// 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018

M&A Criteria

▶ **Photomask industry**

- Significant market share
- Advanced technology
- Valuable manufacturing assets

▶ **Adjacent markets**
















- Revenue diversification
- Synergies to business model

▶ **Financial benchmarks**

- Meets ROIC hurdles
- Accretive to earnings and cash flow

World Class Management Team

Significant Industry Experience

Name	Title	Years with Photonics	Years in Industry	Experience
Peter Kirlin, Ph.D.	CEO	10	33	  
Chris Progler, Ph.D.	VP, CTO, and Strategic Planning	18	30	  
HK Park	GM, China and Taiwan, FPD	13	23	
Frank Lee, Ph.D.	GM, Asia IC	12	38	  
Peter Broadbent	VP, US & Europe	5	5	 
John Jordan	SVP, CFO	1	5	  

A Compelling Investment Thesis

▶ **Global leader** in merchant photomask industry

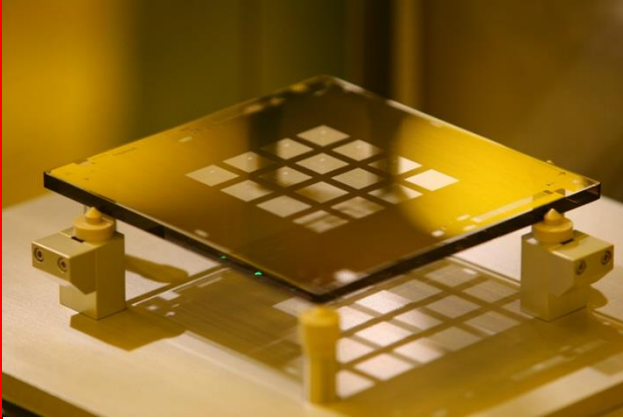
- *Delivering high-end growth by leveraging core competences: Operational Excellence, Low Cost Producer, Technology Leadership, Customer Intimacy*

▶ **Investing aggressively** to exploit secular growth opportunities

- *China industry expansion – Made in China 2025*
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Chris Progler, CTO Technology Development

Trends Guiding our Technology Portfolio

- ▶ **China's IC and display aspirations and investments**
- ▶ **Diversification in mid to high-end IC applications – the 4th Industrial Revolution**
- ▶ **New lithography intensive display form factors and enhancements**
- ▶ **Increased focus on process of record and integrated solutions**
- ▶ **Complexity, cost and scale drive consolidation and partnerships**
- ▶ **New innovations in manufacturing**

Photronics Patterning Leadership

► IC: (Data, IoT, AI)

- Introduce EUV production
- Innovate to extend previous nodes

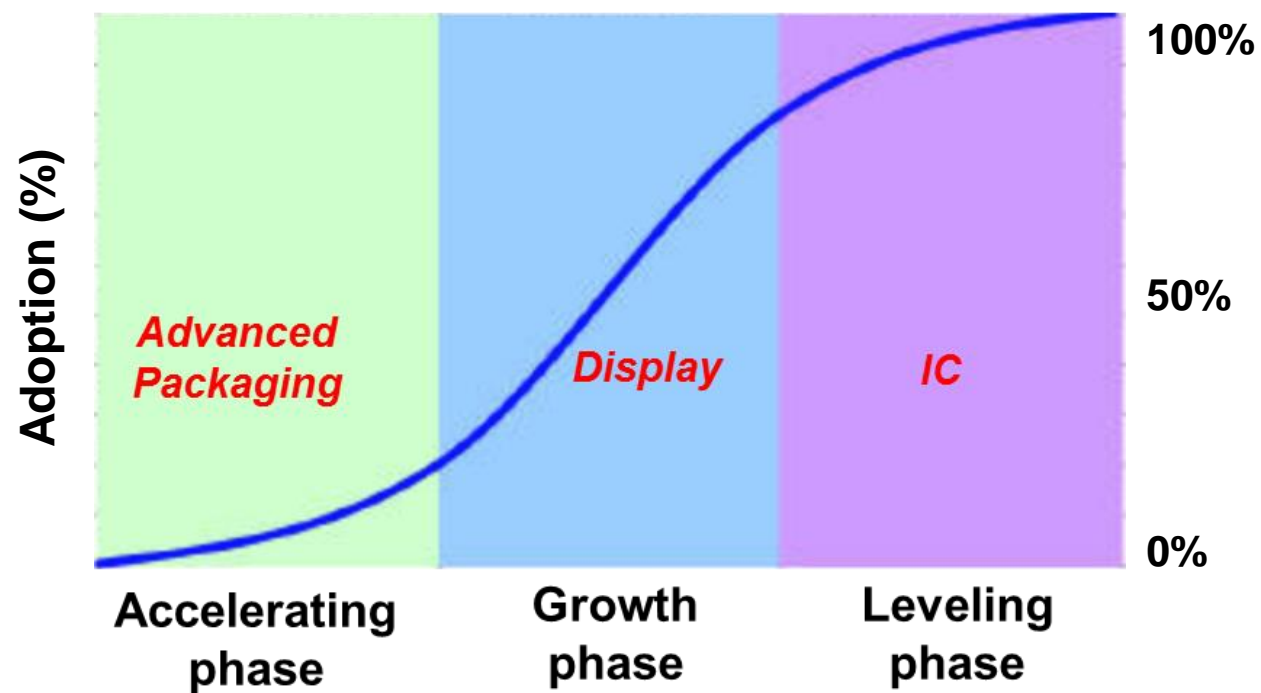
► FPD: (AMOLED, G10.5+, VR)

- Accelerate IC type mask tech
- Larger substrate, finer dimension

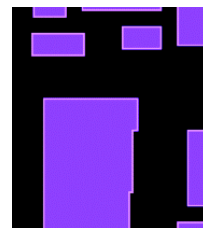
► AP: (Fan Out, Panel)

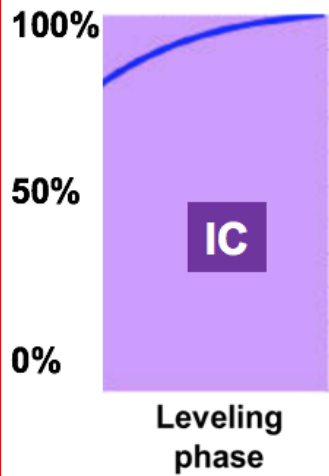
- Introduce FPD type mask tech
- Substrate and resolution roadmap

Tech Adoption in Lithographic Applications



Pattern Correction Phases →



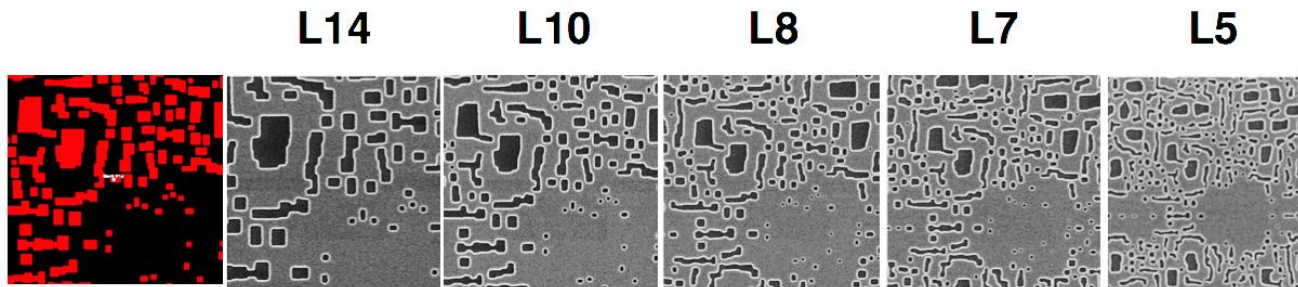


IC: Investing in Technology Opportunities

- ▶ Entered 14nm logic, 20nm DRAM, 3D-NAND production (2014)
- ▶ First with advanced EBM 9000 writing tool (2016)
- ▶ First qualified for 1x DRAM (2016) and 1y DRAM (2017)
- ▶ First to deliver yielding 7nm class logic EUV masks (2017)

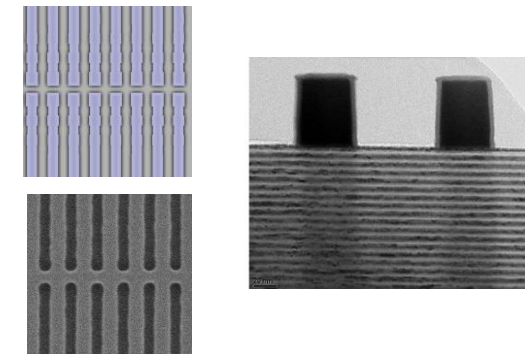
			LVIP to Mass Production	
Type	2017	2018	2019	2020
Logic	10nm	7nm	5nm (EUV)	
DRAM	1x	1y	1z + new architectures	
3D-NAND	Gen 2	Gen 3	Gen 4 + new architectures	

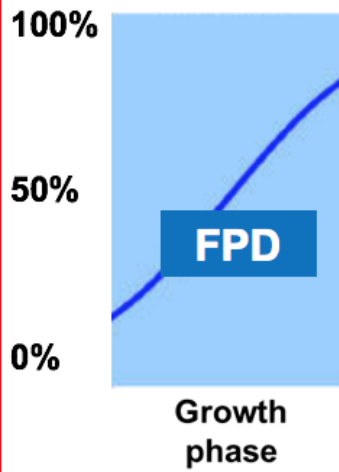
Optical Mask Scaling on Existing Equipment



EUV Device Masks

Single Expose Metal





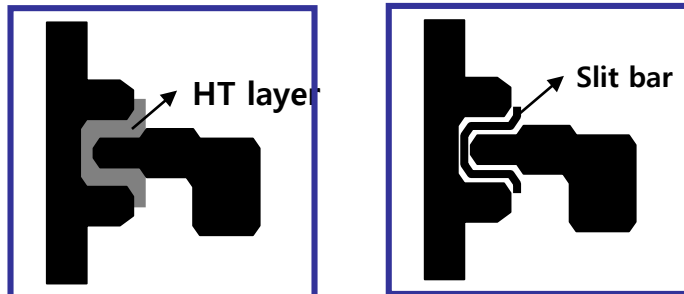
FPD: Widening Tech Lead

- ▶ Entered FPD phase shift mask technology for AMOLED (2013)
- ▶ Delivered Quad HD masks for OLED (2014)
- ▶ Qualified slit type (2010) and half-tone type (2016) efficiency solutions
- ▶ First to market P-800 (2018) and P-80 (2015) writing systems
- ▶ Plan first to G10.5 in China

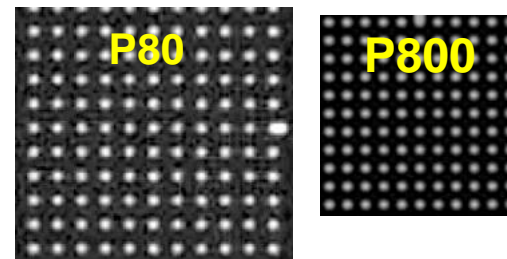
LVIP to Mass Production

Type	2017	2018	2019	2020
TV	UHD(4K) QD LCD	UHD(8K) QD OLED		
Mobile(OLED)	QHD (6xx ppi)	UHD1 (8xx ppi)	UHD2 (12xx ppi)	
Mask Size	8.5G	10.5G		

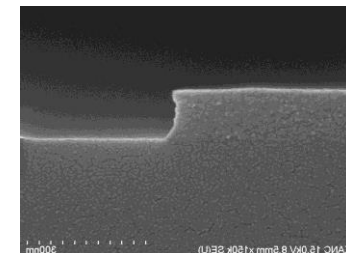
Multi-Dose Mask

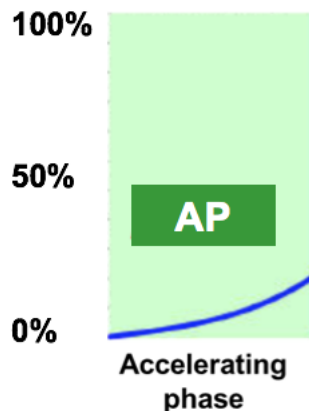


Contact Hole Resolution



Phase Shift Mask



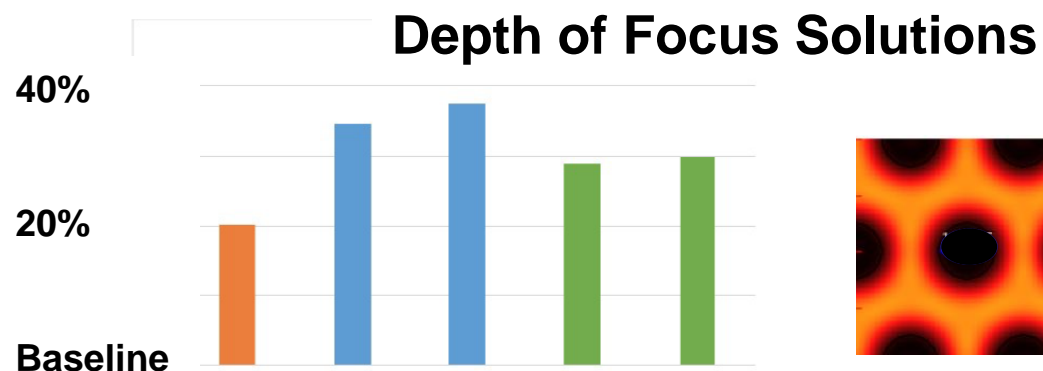


AP: Establishing New Products and PoR

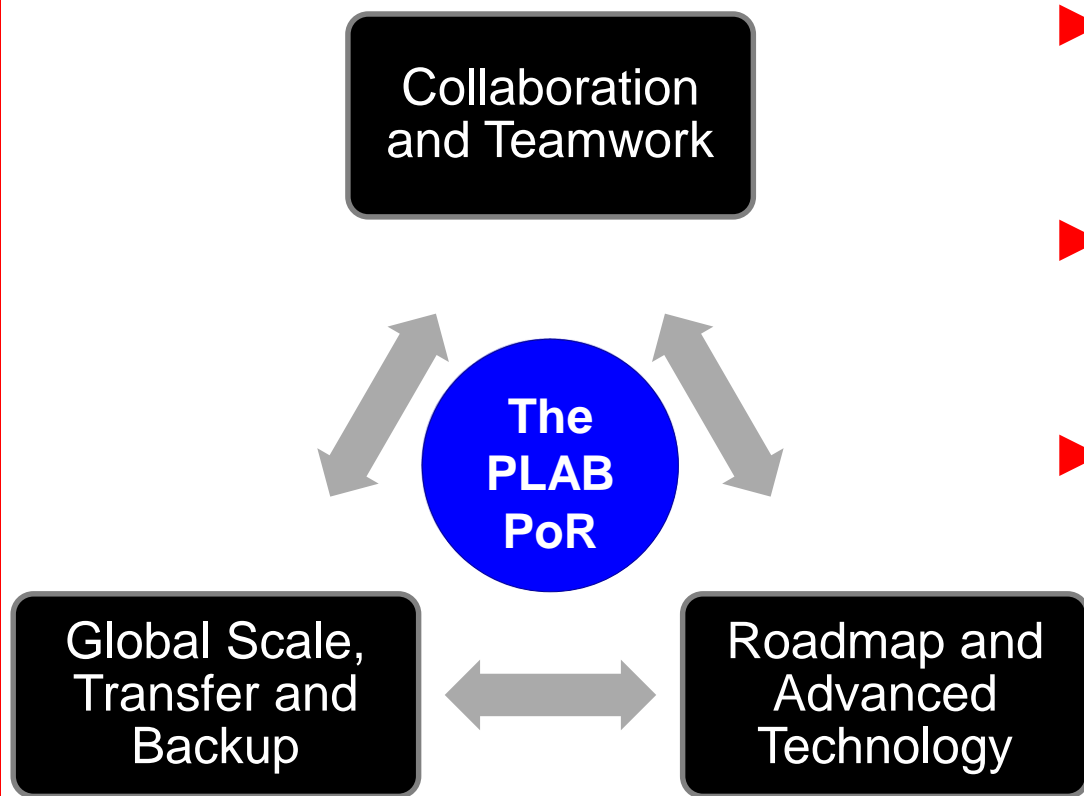
- ▶ Sampling custom mask solutions for AP litho challenges
- ▶ Preparing resolution enhancement infrastructure (mask, software, design)
- ▶ Evolve capability and lead as lithography importance grows

Type	2018	2019	2020
WLP/Panel Fan Out	Mask resolution and registration Application specific lithography extensions 9" and 14" to panel size		
Heterogeneous Integration			

Co-designing new AP mask technology to increase substrate warp tolerance



Partnering with Our Customers for Success



- ▶ **7 high-end PoR* relationships across IC and FPD**
 - Critical for ROI on capability investments
- ▶ **Custom design tools to strengthen connections**
 - Delivering measurable end product yield enhancements
- ▶ **Striving for virtual captive model**
 - Customized, flexible, interlocked, fast

Strong Portfolio of Joint Development Projects →

IBM Nov 2017

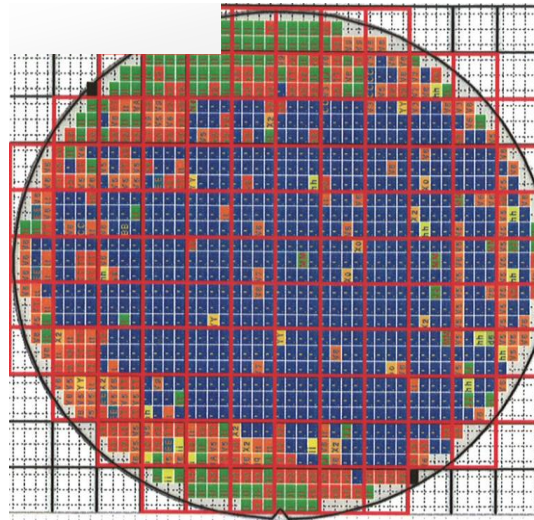
Joint program accelerates EUV mask development for advanced nodes

[Learn more](#)

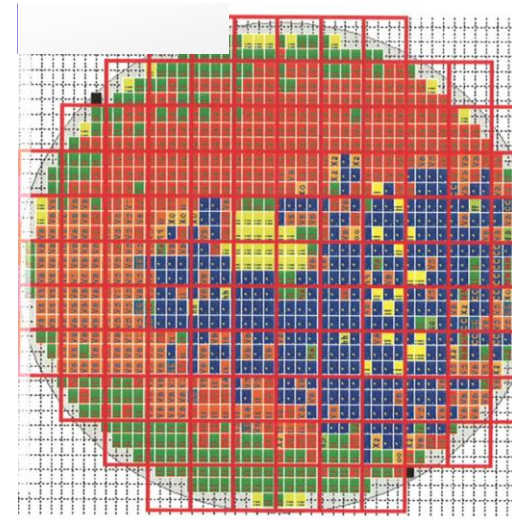
* Process of record

Why PoR Partners Trust a Photronics Built Mask

Ours



Theirs

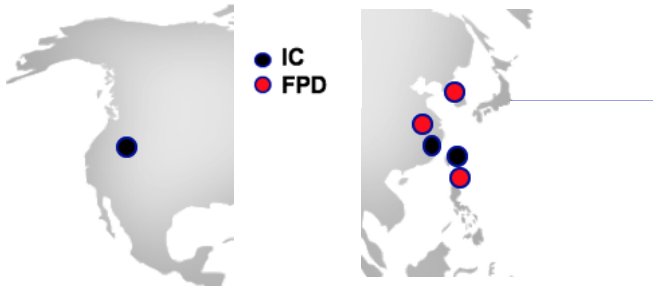


Successful mask for high yield on complex device has many factors

- ▶ Process Capability – right specs, pattern quality, no critical defect
- ▶ Mask to Substrate (wafer, panel) Know-How – simulate, characterize, improve
- ▶ Reproducibility – matching, transfer, ramp and volume experience
- ▶ Protection – IP, systems, mask lifetime management

Technology Matching and Moving: A Competitive Strength

FPD: Korea => Taiwan, China
IC: US => Taiwan, Taiwan => China



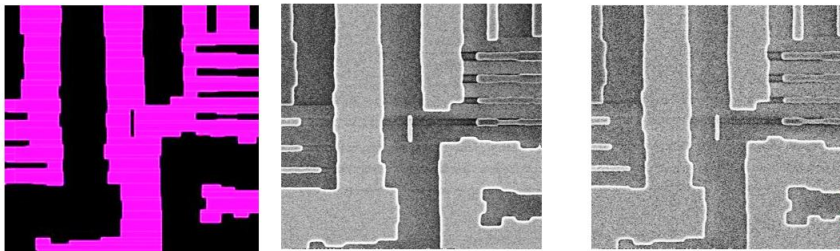
► Powerful know-how for inter-mask matching

- Site to site transfers for expanding production
- Captive process signatures for backup
- Within site ramp, reproducibility and yield
- Hybrid inter-site process support

► Recent success stories

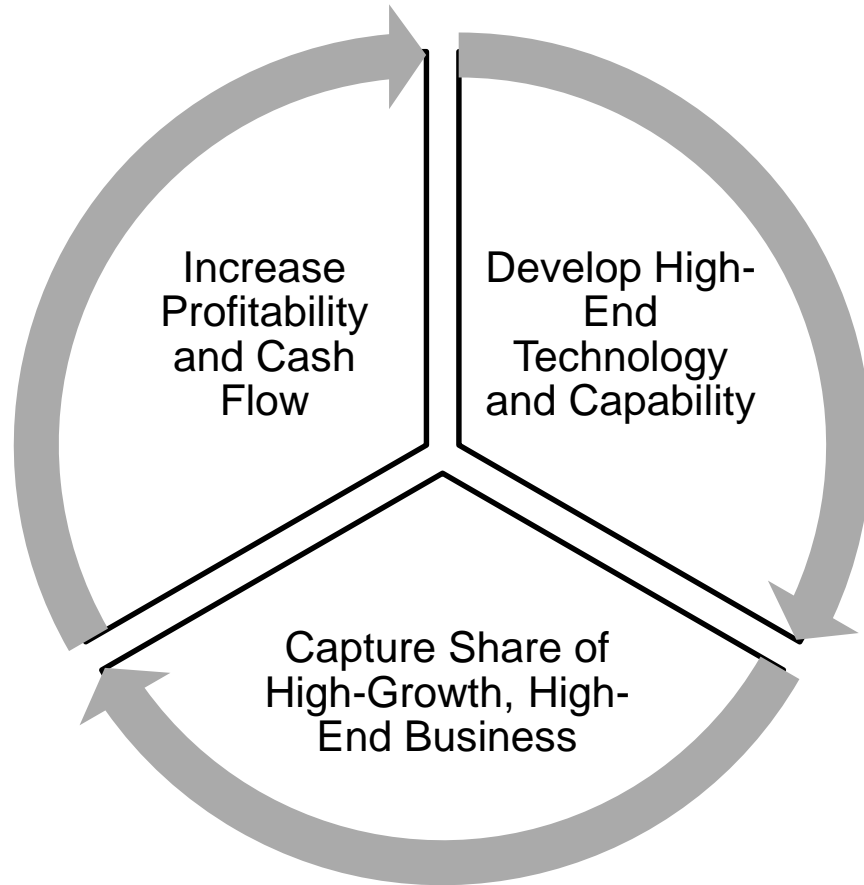
- 25nm DRAM, 3D-NAND, 14nm logic: US to Taiwan
- 22nm to 7nm logic: captive mask and module matching
- FPD enhancement module: Korea to Taiwan

nanoFab to PDMC OPC Reproducibility

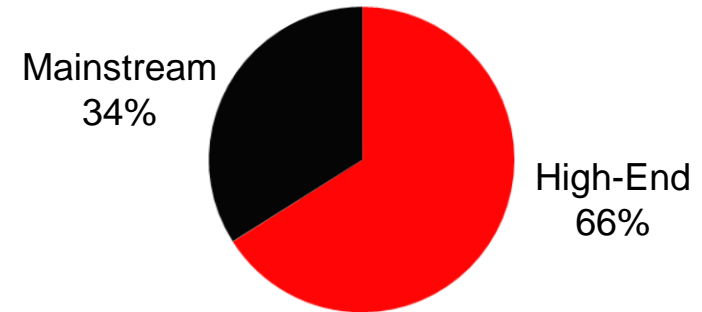


Technology as a Tool to Support Business Growth

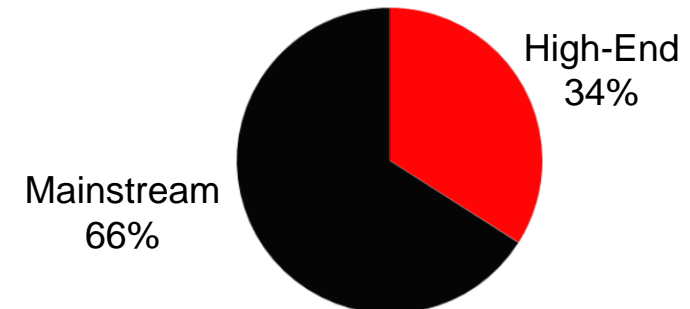
Growth Investment Cycle



Q2 2018 LTM FPD Revenue \$107.6M

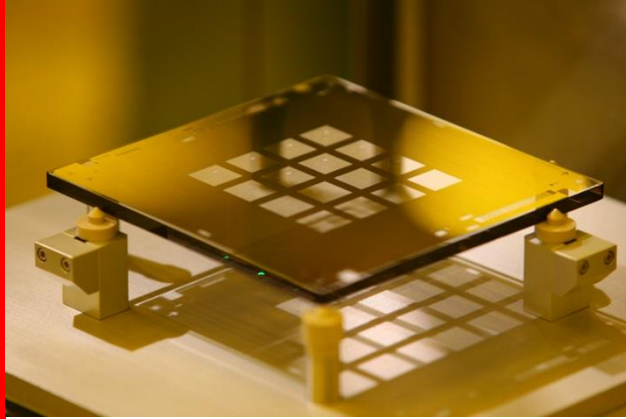


Q2 2018 LTM IC Revenue \$379.1M



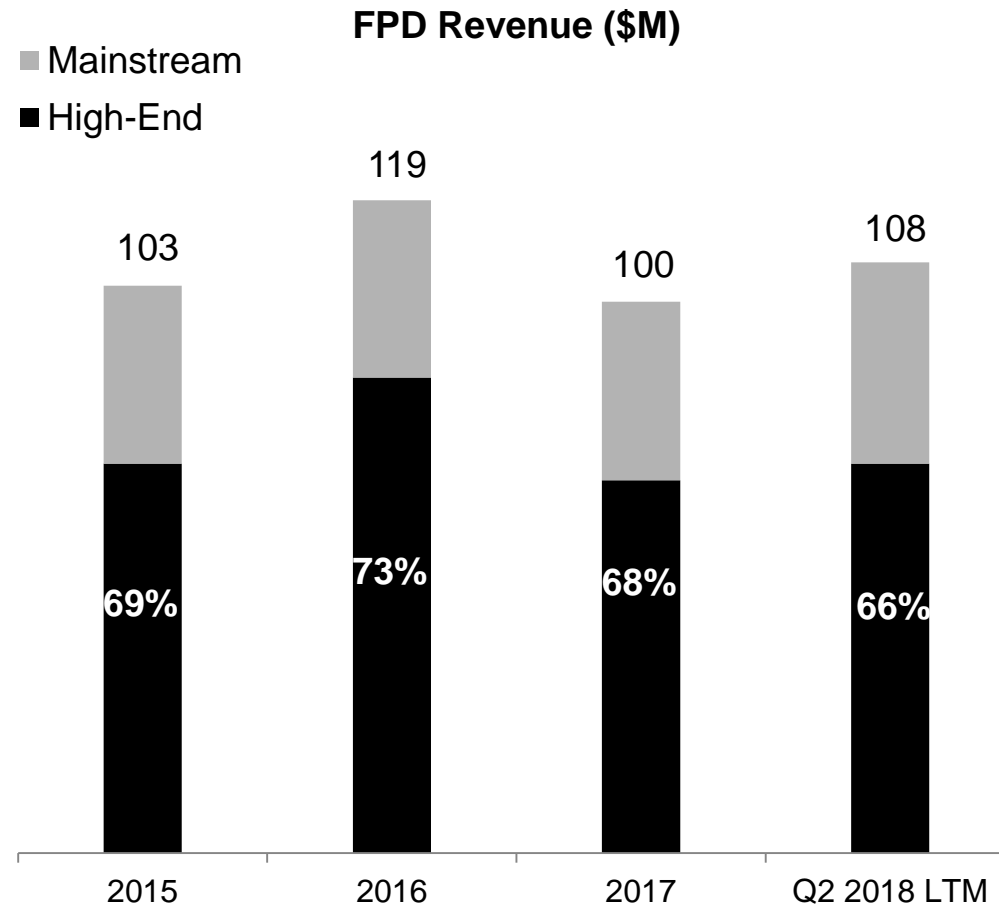
Technology Summary

- ▶ **Tech and innovation keys to ROIC, even as Moore's Law slows**
- ▶ **Proven leadership roadmap across all key lithographic applications**
 - IC extensions, FPD rising complexity, AP stage setting
- ▶ **Partnerships and PoR bring differentiated technology to products**
 - Results, trust, know-how and consistency
 - Delivering integrated solutions and measurable user yield impact
- ▶ **Technology portability as a competitive advantage**
 - Matching in and transferring technology
 - Verified and cost effective multi-site solutions



HK Park, GM, China and Taiwan, FPD High-End FPD

FPD Recent Performance



▶ Aligning with market drivers

- Mobile transition to AMOLED
- Larger TV screens
- Higher resolution

▶ Extending technology leadership

- Leading portfolio of advanced mask writers
- Leveraging IC know-how for FPD process development

▶ Growing presence in China

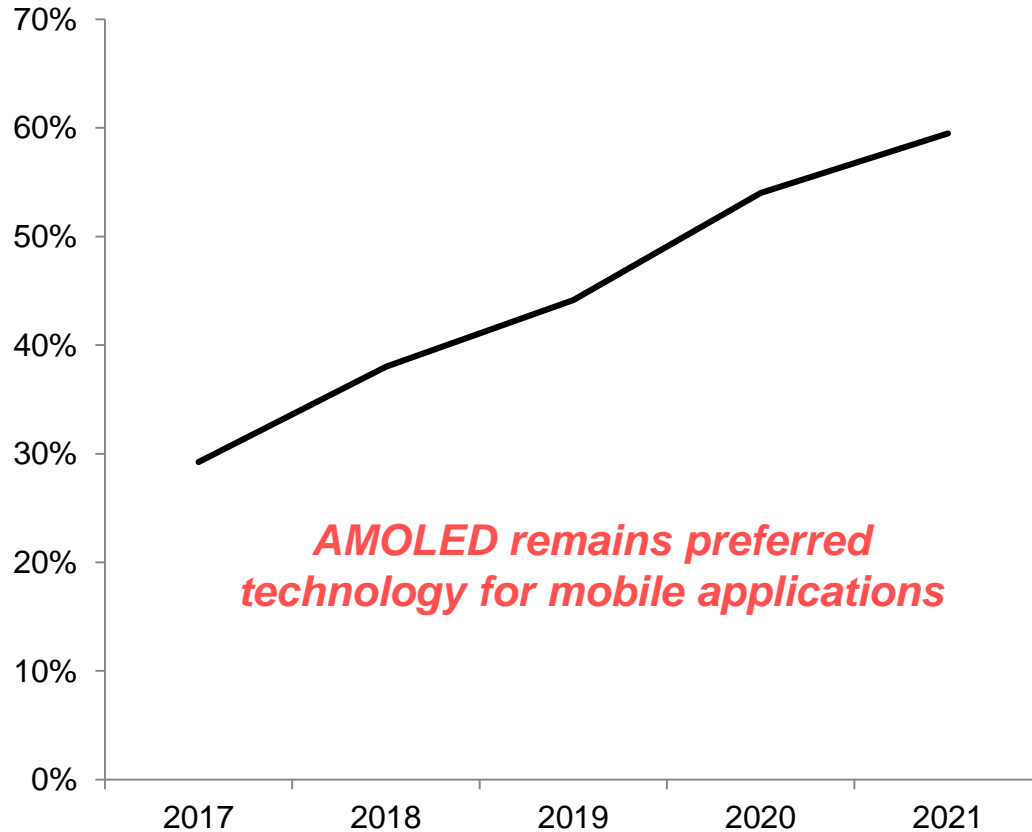
- 33% of revenue Q2 2018 LTM
- Should accelerate with Hefei production

Strategic Priorities

- ▶ **Align global footprint with dominant geographic panel technologies**
 - Most advanced AMOLED technology in Korea
 - Large format (G10.5+) LCD TV in China
 - Established mainstream producers in Taiwan
- ▶ **Successfully establish China operating presence**
 - Hefei manufacturing facility
 - G10.5+ masks for large screen TV
 - Integrate into global network to optimize customer service
- ▶ **Extend technology leadership**
 - Higher resolution AMOLED displays
 - Technology transfer from IC to FPD
- ▶ **Grow to be global, merchant market share leader**

Leveraging Technology Leadership for Mobile Display AMOLED Adoption

Smartphone AMOLED Adoption



Source: Internal Estimates

▶ Mobile devices moving from LCD to AMOLED

- Superior visual characteristics
- Lower power consumption
- Enables flexible format
- Preferred for VR/AR devices

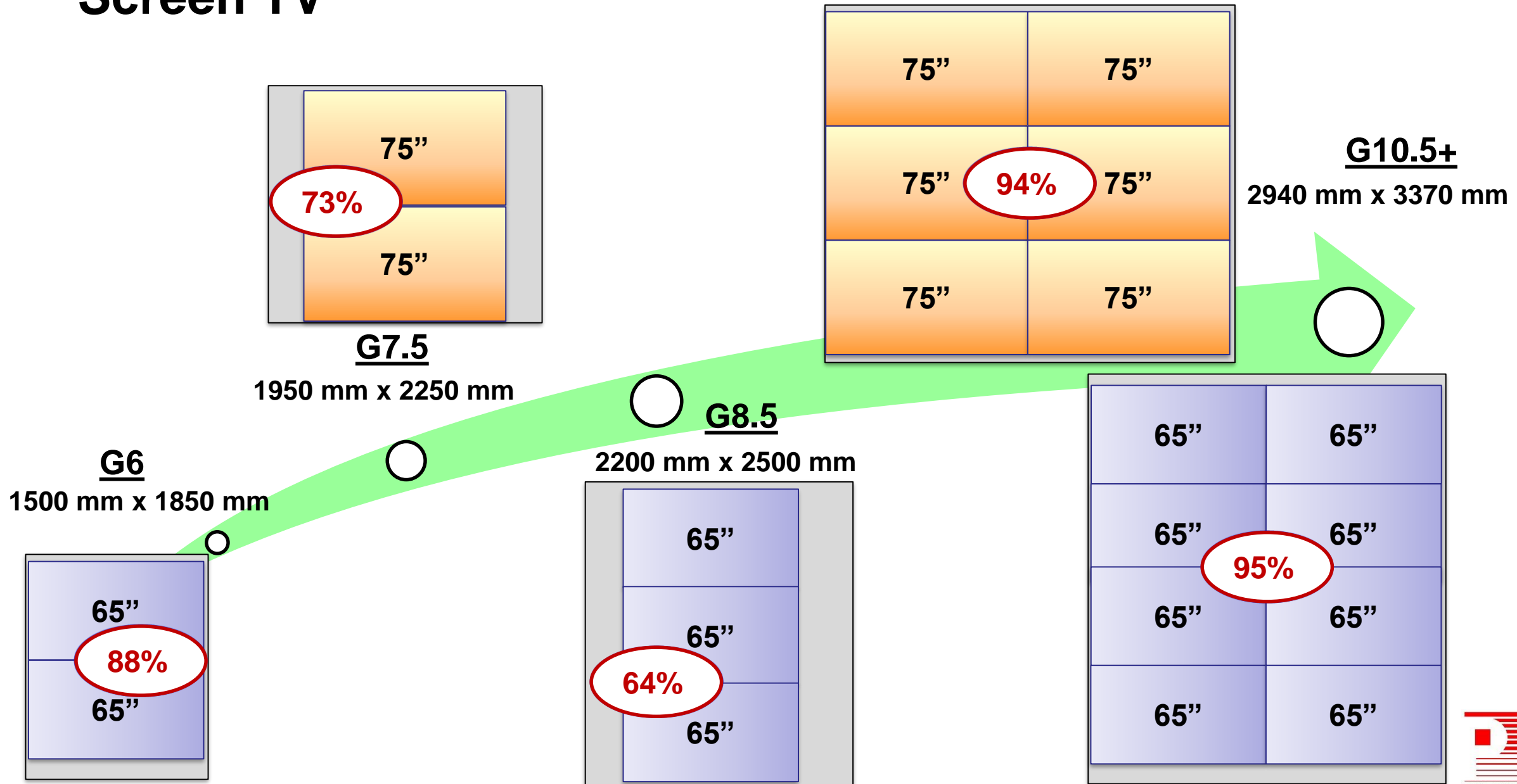
▶ Increases mask complexity

- More mask layers per set
- Tighter specs on each layer

▶ Qualifying P-800 in Korea

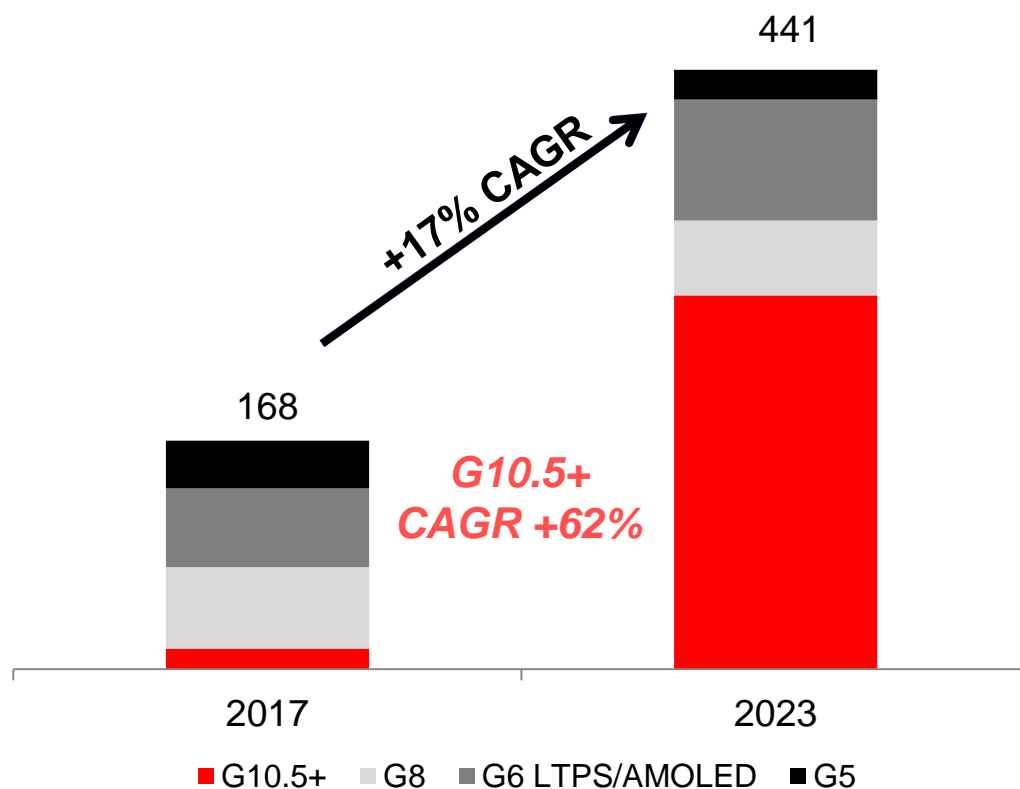
- 1st to qualify this advanced mask writer
- Produces highest resolution AMOLED masks
- Competitive advantage vs. all merchants and captives

G10.5+ → Improved Glass Efficiency for Ultra-Large Screen TV



“Made in China 2025” Driving Growth in FPD Market

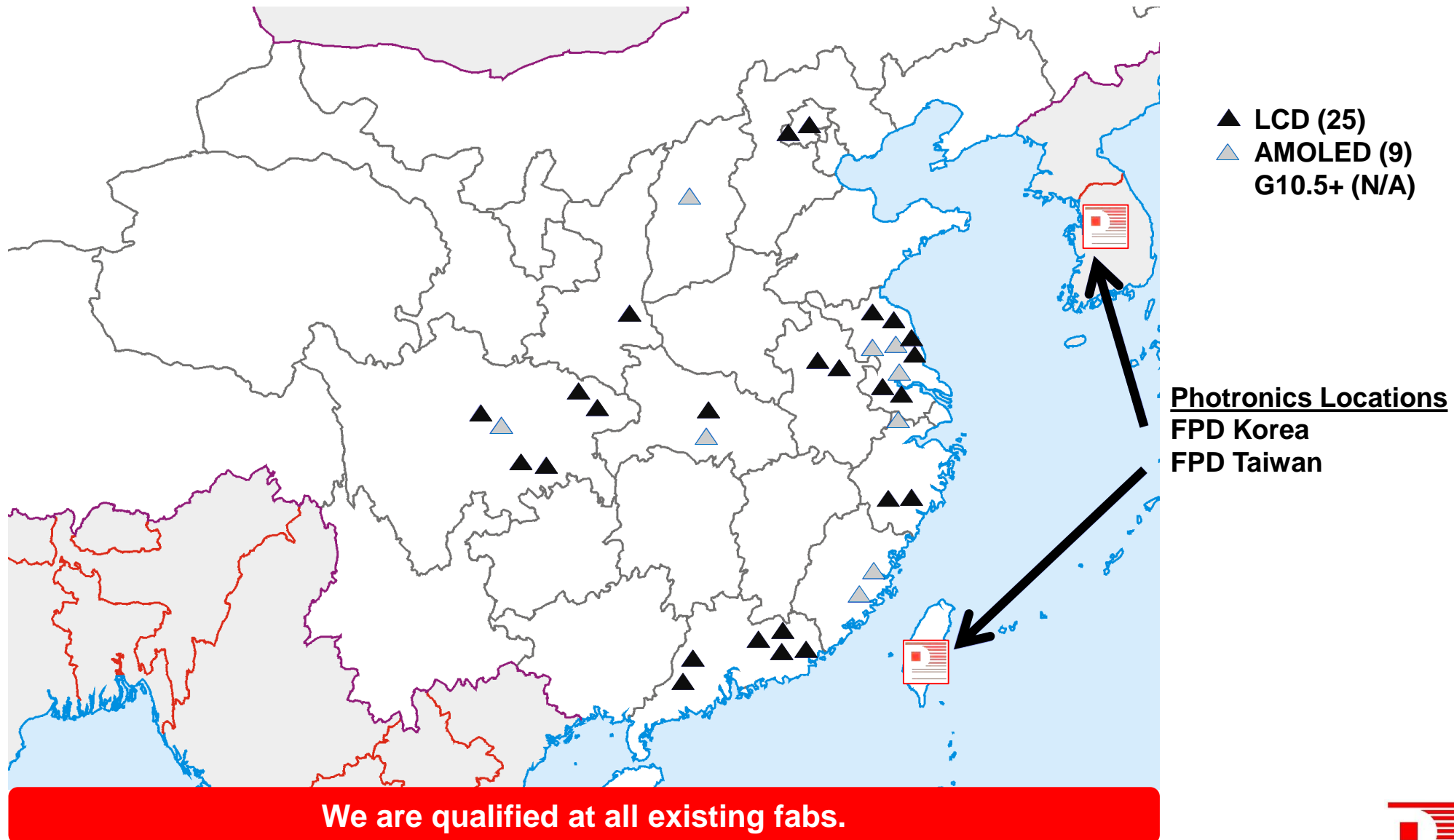
China FPD Mask Production (\$M)



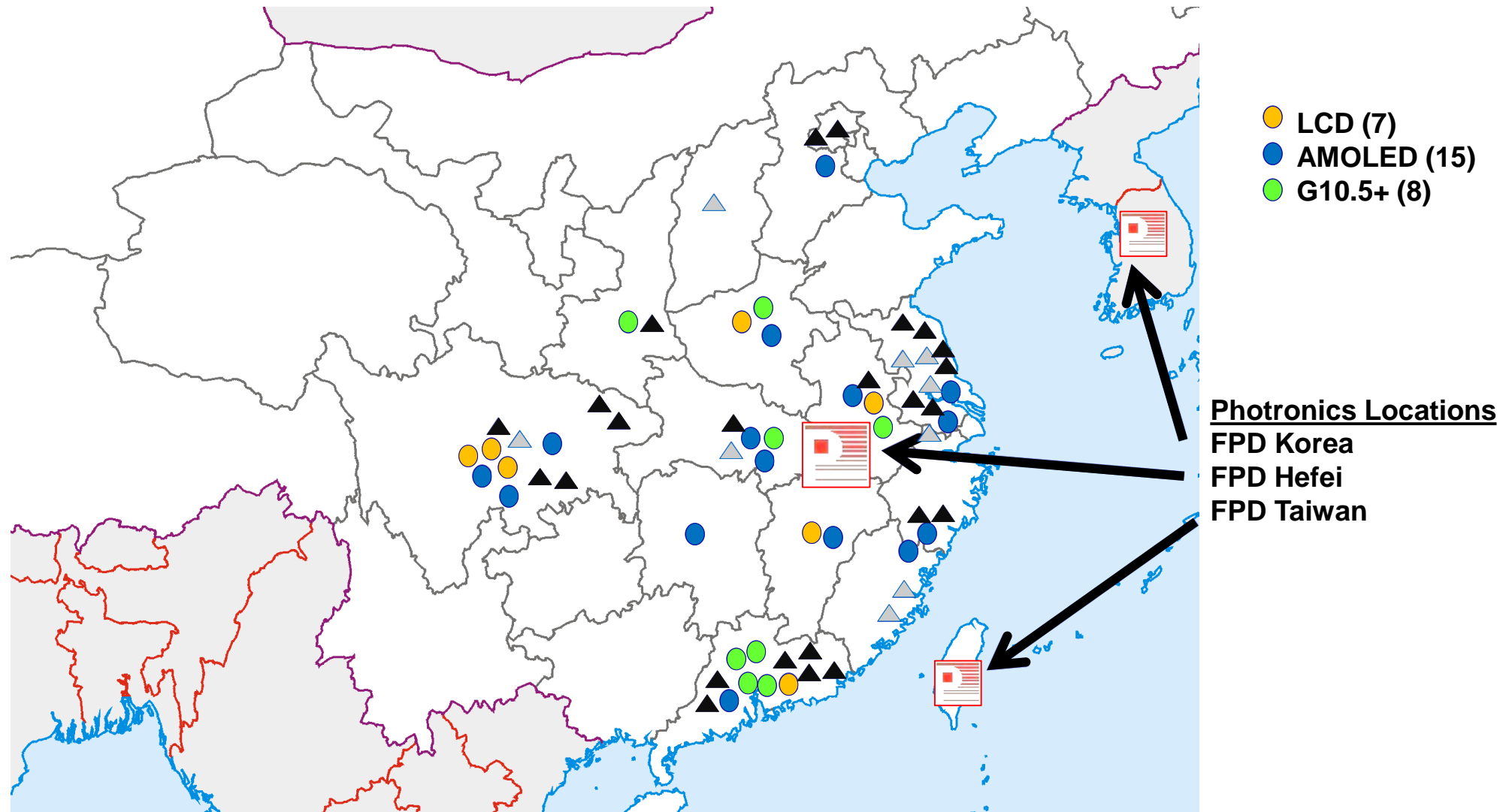
Source: Internal Estimates

- ▶ **China represents fastest growing display region**
 - 64 fabs in production, under construction or being planned
 - Largest display producer (Korea 2nd)
- ▶ **Photomask opportunities in China are attractive**
 - Wide range of display technology, including AMOLED & G10.5+
 - No merchant photomask producer with high-end experience
 - No G10.5+ photomask producer

34 Existing China Display Fabs



30 New China Display Fabs in Production by 2022



New Hefei Facility



**Construction complete by end of fiscal year 2018.
Tool move in during fiscal Q119.**



New Hefei Facility

Facility
Building

FAB

Office Building

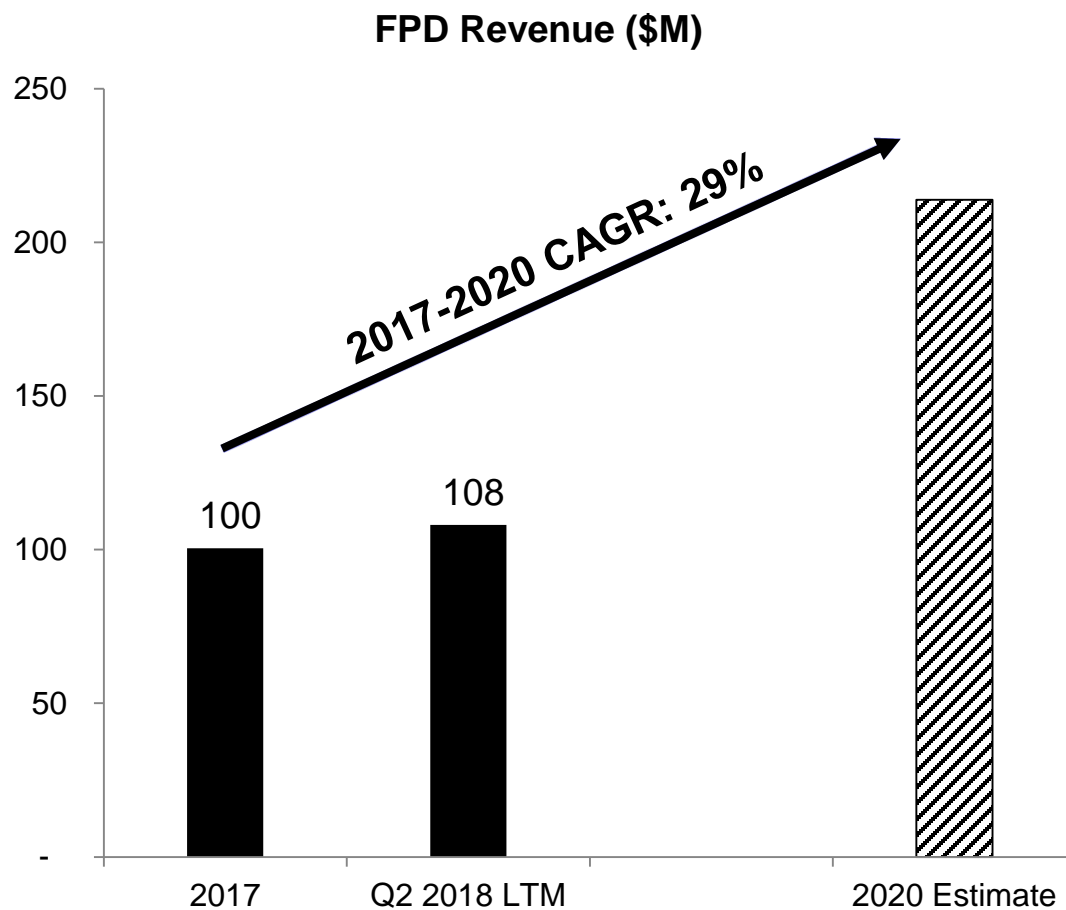
Front Door



How We Win

- ▶ **Become G10.5+ market share leader**
- ▶ **Extend AMOLED technology leadership**
- ▶ **Establish China market share leadership**
- ▶ **Integrated global manufacturing facilities with outstanding customer service**

FPD Outlook

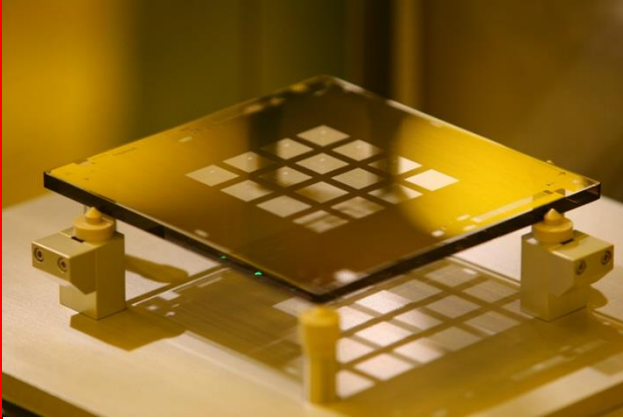


Key Success Factors

- ▶ **Hefei ramp**
 - G10.5+ launch
 - Will be our largest FPD facility
- ▶ **AMOLED mobile display technology inflection**
- ▶ **Diversify customer concentration**
- ▶ **FPD revenue expected to double over next 3 years**

FPD Summary

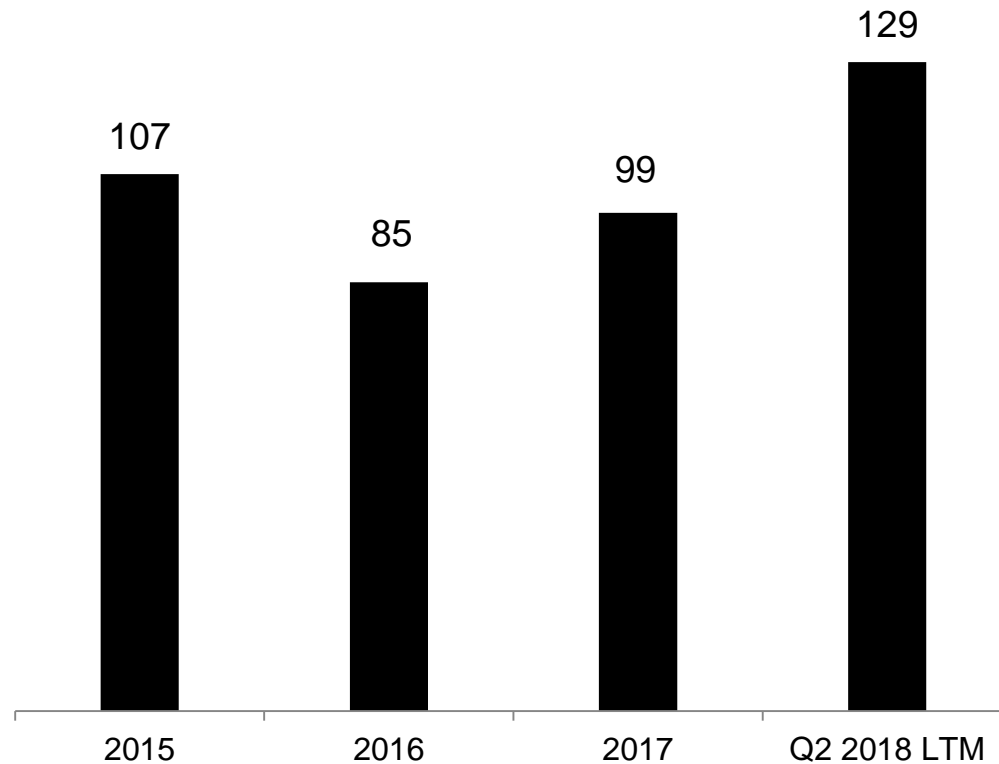
- ▶ **Repositioned the business**
- ▶ **China investment on track**
- ▶ **Investing to exploit industry trends**
- ▶ **Business expected to double over next 3 years**



Frank Lee, GM, Asia IC High-End IC Logic

High-End IC Logic Recent Performance

High-End IC Revenue (\$M)



- ▶ **Repositioning the business**
- ▶ **Strong demand from Asia logic foundries**
 - Korea IC revenue up 24% YTD
 - Revenue to Taiwan foundries up 58% YTD
- ▶ **Expanding penetration at captive manufacturers**
- ▶ **Increasingly seen as trusted technology partner**
 - High-end capacity and capability
 - Close proximity to customer

Successful Partnership with DNP

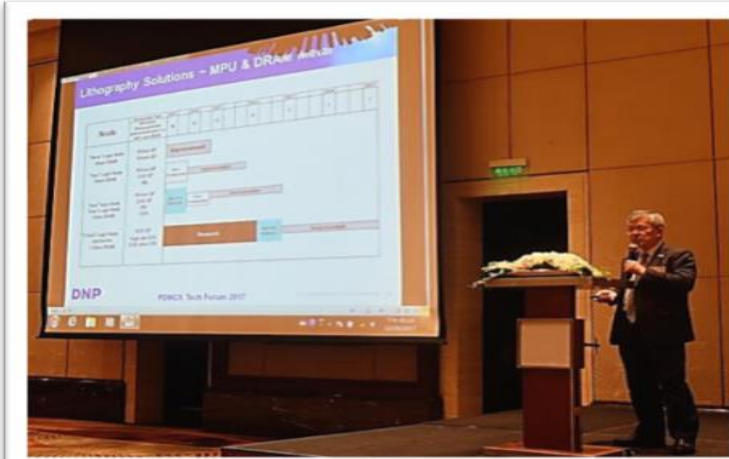
- ▶ **Two JV's serving Asia**
 - Taiwan JV, PDMC, formed in 2014
 - China JV, PDMCX, formed in 2018
- ▶ **Combines technology, know-how and customer relationships of two leading merchant mask producers**
- ▶ **Reduces risk of Xiamen investment**
 - Facility should ramp more quickly due to complimentary sales organizations
 - Allows us to compete more effectively
- ▶ **Photronics owns 50.01% of both JVs**
 - Photronics management team
 - Consolidate financial results

Photronics DNP Mask Corp.



Joint Venture of 2 World Leading Mask Companies

Shanghai Technology Forum



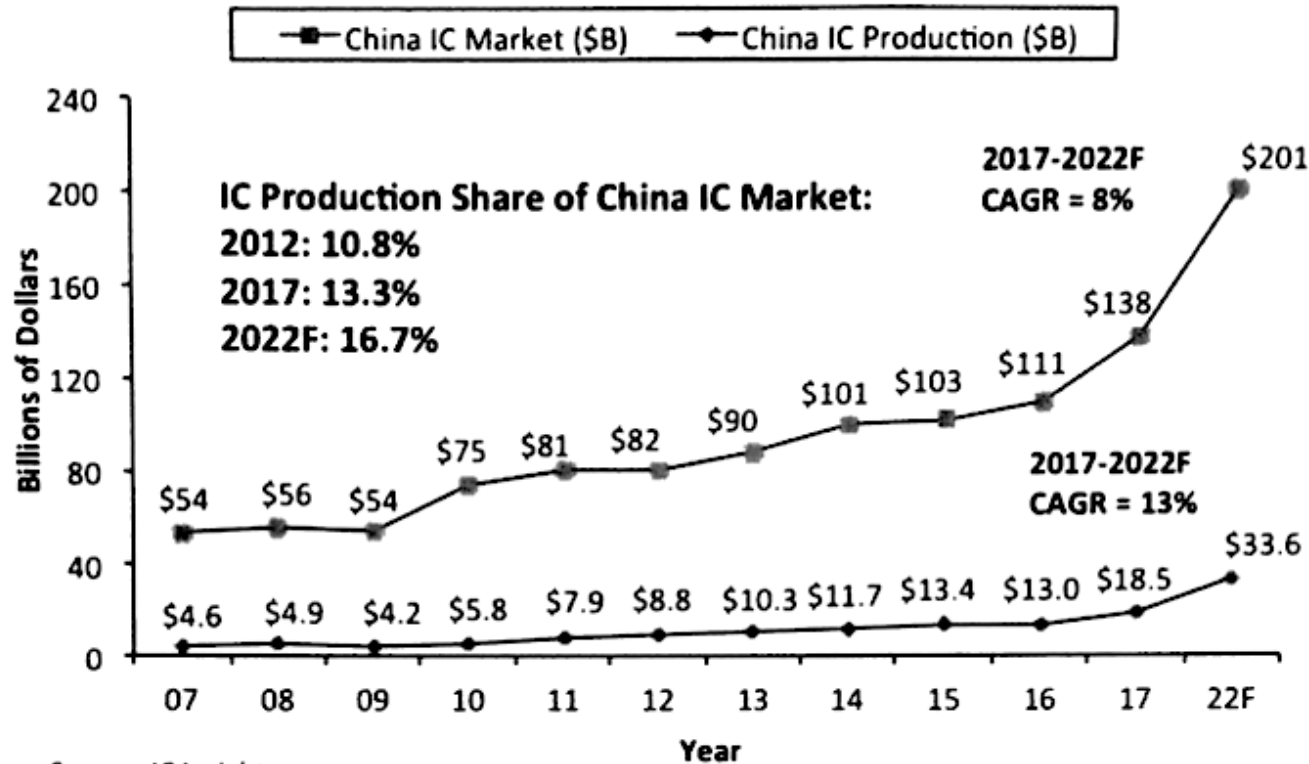
- ▶ Large group of customers, suppliers, partners, and local officials in attendance
- ▶ JV seen as technology partner for advanced IC manufacturing
- ▶ China producers eager to have local source of high-end photomasks



Strategic Priorities

- ▶ **Leverage JV's in Taiwan and China to win market share**
 - Maintain and extend market leadership in Taiwan
 - Build China market share into leadership position
 - Draw on combined technology, experience, and customer relationships
- ▶ **Increase business globally with large foundries and IDMs**
- ▶ **Prevent formation of additional captive manufacturing in China**
- ▶ **Successfully ramp China manufacturing facility**

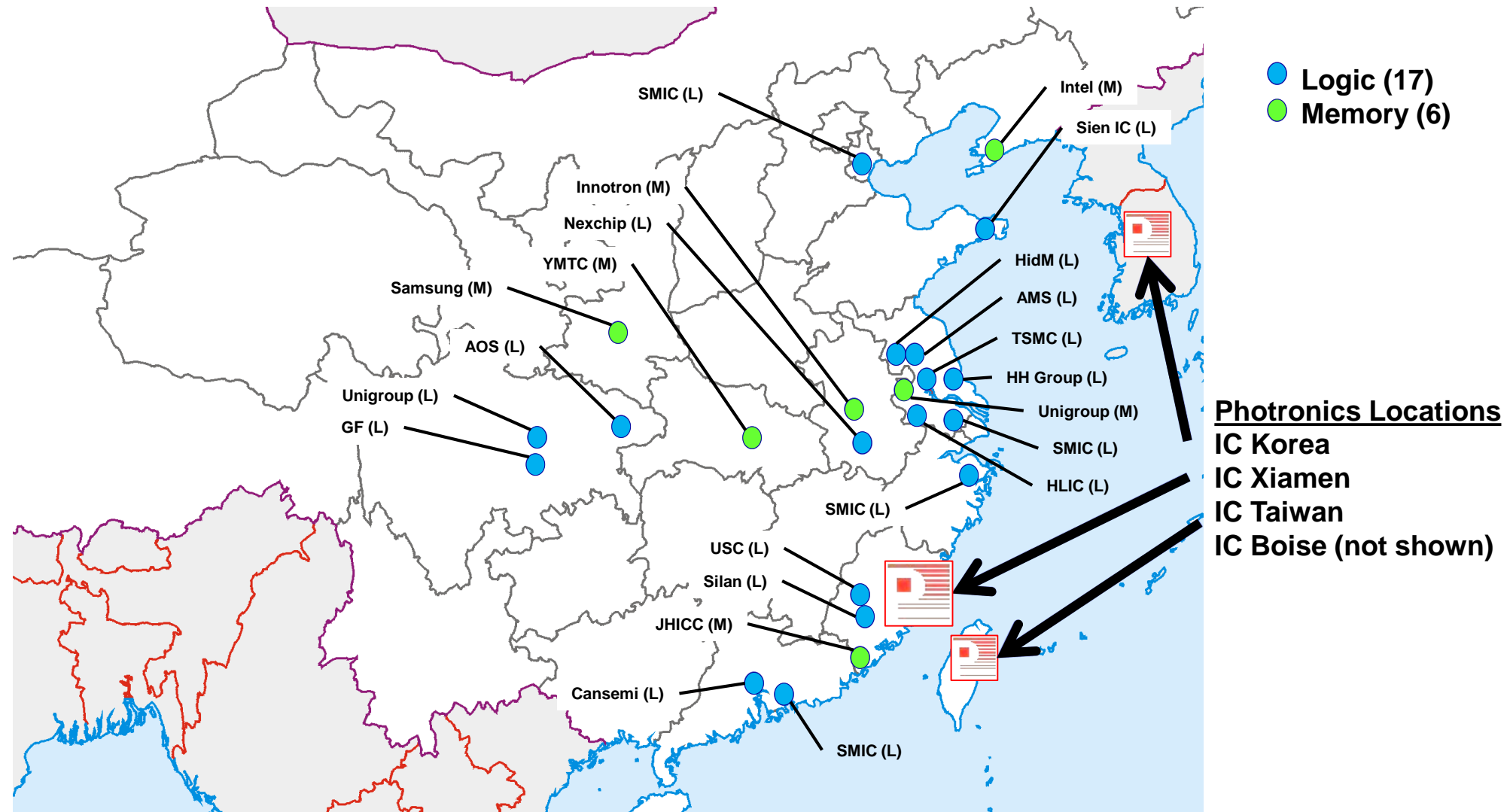
“Made in China 2025” Driving Growth in IC Market



Source: IC Insights

- ▶ **China represents fastest growing semiconductor region**
 - Growing domestic producers
 - Investments by multi-nationals
- ▶ **More investment needed to meet national targets**
 - 2022 forecast is 17%
 - China government target is 40% by 2020, 70% by 2025
- ▶ **Photomask opportunities in China are attractive**
 - Wide range of nodes in logic and memory
 - No strong domestic merchant mask producer

23 New China 12" IC Fabs



New Xiamen IC Facility



**Construction complete by end of fiscal year 2018.
Tool move in during fiscal Q119.**

New Xiamen IC Facility

Facility Building

FAB

Supporting Building

Office Building



How We Win

▶ **Technology leadership in both logic & memory**

- Develop high-end capacity and capability
- Obtain PoR for new nodes (28nm, 14nm)

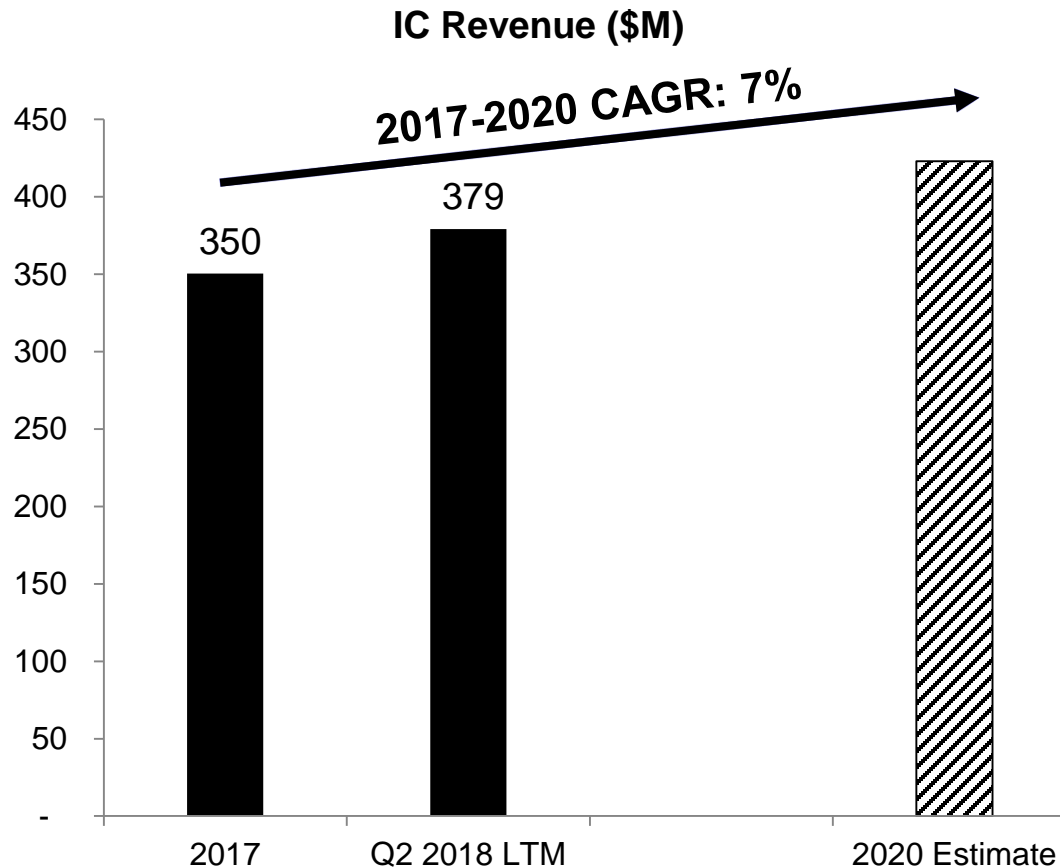
▶ **Customer relationships that lead to business partnerships**

- Proximity to large customers (fast delivery, comprehensive customer support)
- Act as virtual captive, providing joint development programs and technology support
- Cross-site collaboration and integration

▶ **Grow market share**

- Win majority of merchant opportunities
- Grow by serving captive customers

High-End IC Logic Outlook

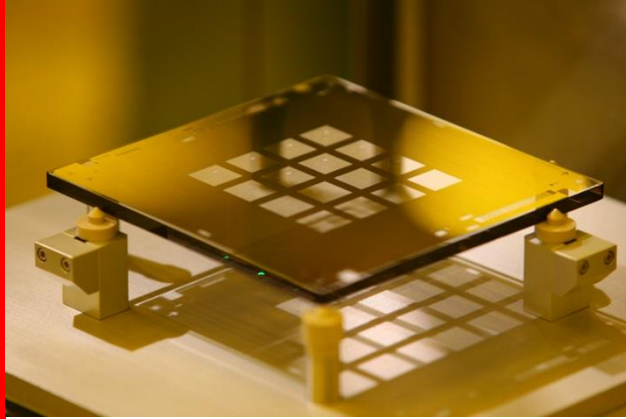


Key Success Factors

- ▶ “Made in China 2025” expansion
- ▶ Node migration (14nm, 10nm, 7nm)
- ▶ Captive business penetration
- ▶ Leverage JV & partnership to compete more effectively
- ▶ Win majority market share of growing foundry demand
- ▶ Cross-site collaboration to serve global customers

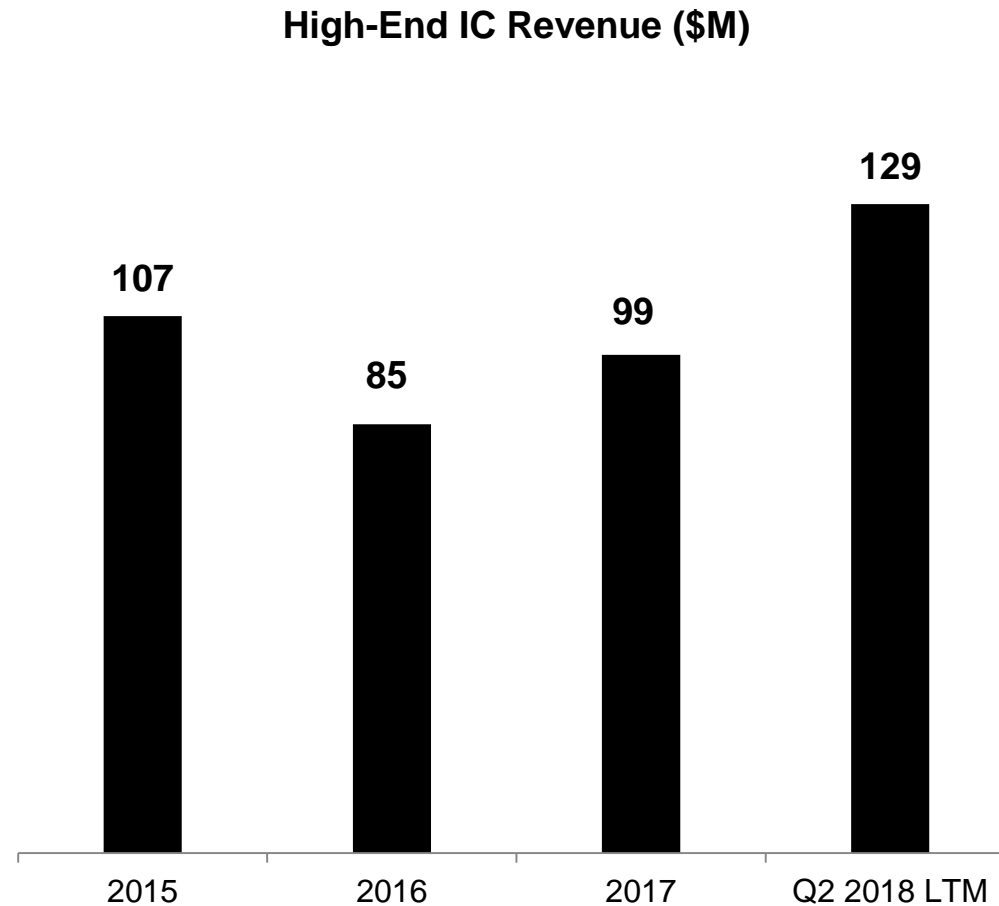
High-End IC Logic Summary

- ▶ Repositioned the business to grow high-end market share
- ▶ China investment on track
- ▶ Growing business globally with logic foundries and IDMs
- ▶ JV's in China and Taiwan allow us to compete more effectively
- ▶ Increasingly seen as business and technology partner



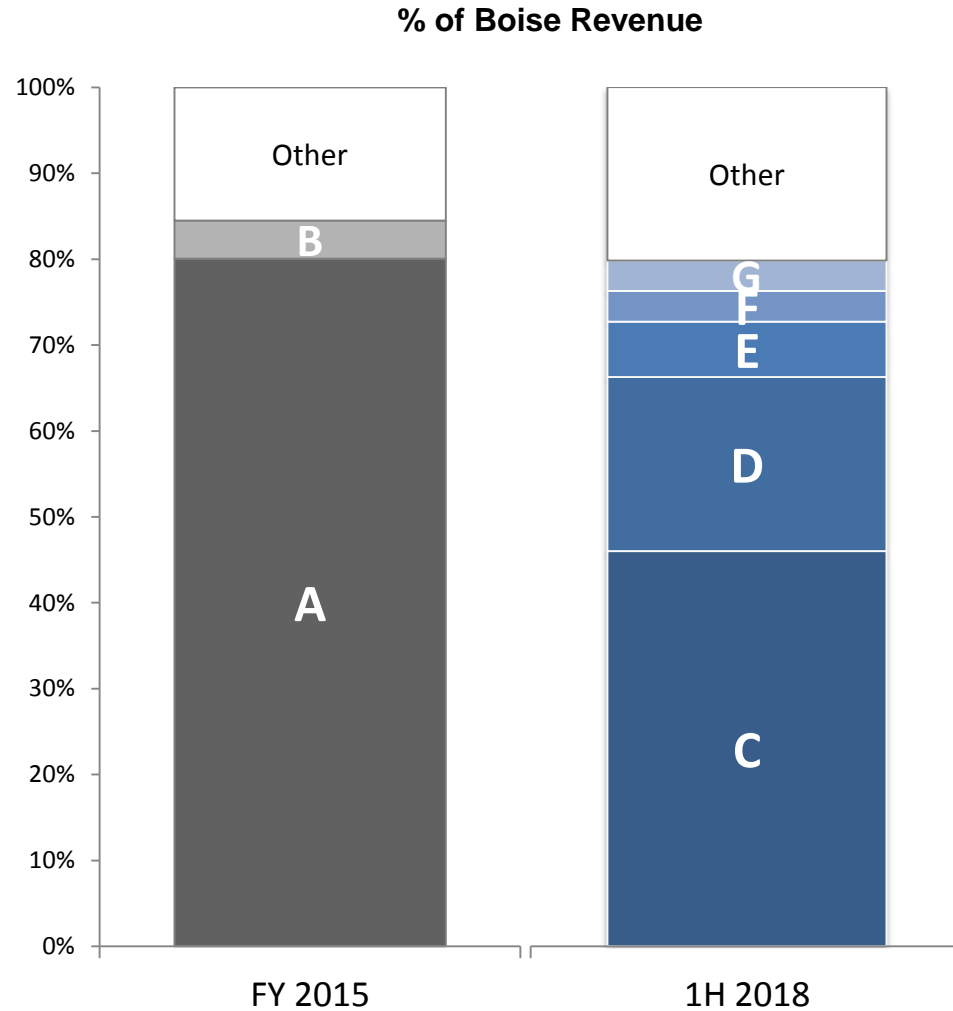
Pete Broadbent, VP US & Europe High-End IC Memory

High-End IC Memory Recent Performance



- ▶ Repositioning the customer base
- ▶ Extremely strong memory demand – revenue to top memory customers up 78% YTD vs. 2017
- ▶ High market share with specialty and emerging memory foundries
- ▶ Benefitting from Micron technology foundation
- ▶ Trusted technology partner
 - High-end capacity and capability
 - Technology, global engineering support

Repositioning Boise



- ▶ We have replaced nearly all of the revenue lost from Micron insourcing
- ▶ Strong diversity of high-end customers
- ▶ Cost structure improved during downturn – more profitable at same revenue level
- ▶ Robust qualification pipeline – PoR development with key memory customers

Customer Transition



Strategic Priorities

- ▶ **Maintain and grow market leadership in Asia memory (DRAM & 3D-NAND)**
- ▶ **Provide virtual captive technology, capability and customer service**
- ▶ **Increase high-end business with foundries (China, U.S.)**
- ▶ **Integrate global high-end manufacturing locations to better serve customers**

Memory Market Dynamics

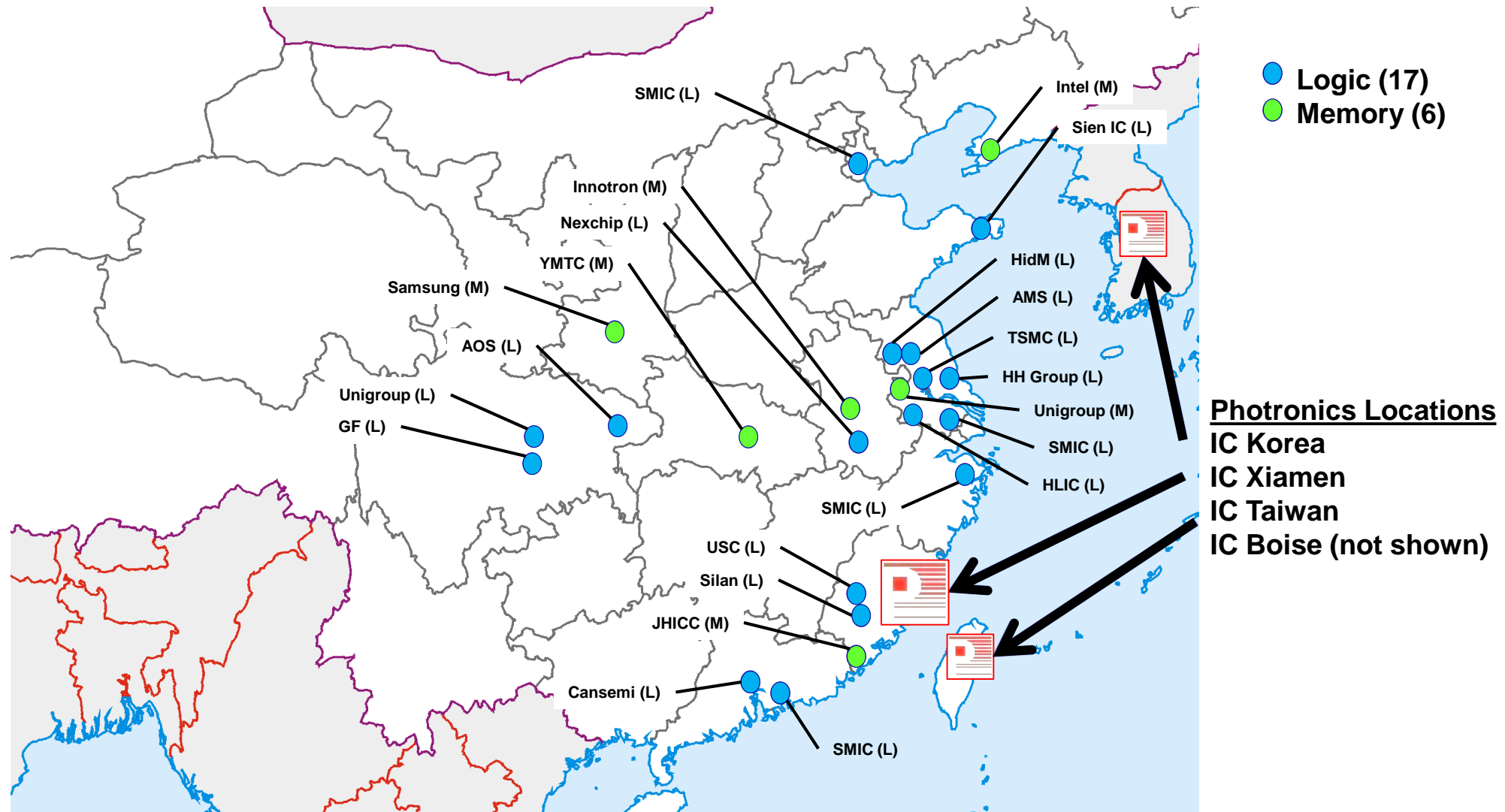
- ▶ Strong memory growth trend
- ▶ Diversity of technology, applications
- ▶ Currently dominated by large, captive producers
- ▶ Merchant opportunity with emerging memory producers, foundries
- ▶ Most emerging memory production in Asia (Taiwan and China)

China New Fabs - \$70B+ Investments			
Company	\$B	Memory	Site
Tsinghua Unigroup	30	DRAM	Nanjing
Yangtze Memory Technologies (YMTC)	24	3D-NAND	Wuhan
Innotron	8	DRAM	Hefei
Fujian Jin Hua IC (JHICC)	8	DRAM	Fujian

China Existing Fabs		
Company	Memory	Site
Intel	3D-NAND	Dalian
Samsung	3D-NAND	Xi-An
SK Hynix	DRAM	Wu-Xi
JHICC/UMC	DRAM	Xiamen
Nexchip	DRAM	Hefei
YMTC	DRAM	Wuhan

Source: company reports

23 New China 12" IC Fabs



How We Win

- ▶ **Technology leadership in both logic & memory**
 - Develop high-end capacity and capability
 - Establish PoR for new nodes (DRAM, 3D-NAND)
 - Joint development for next generation nodes

- ▶ **Customer relationships that lead to business partnerships**
 - Act as virtual captive provider
 - Cross-site collaboration and integration

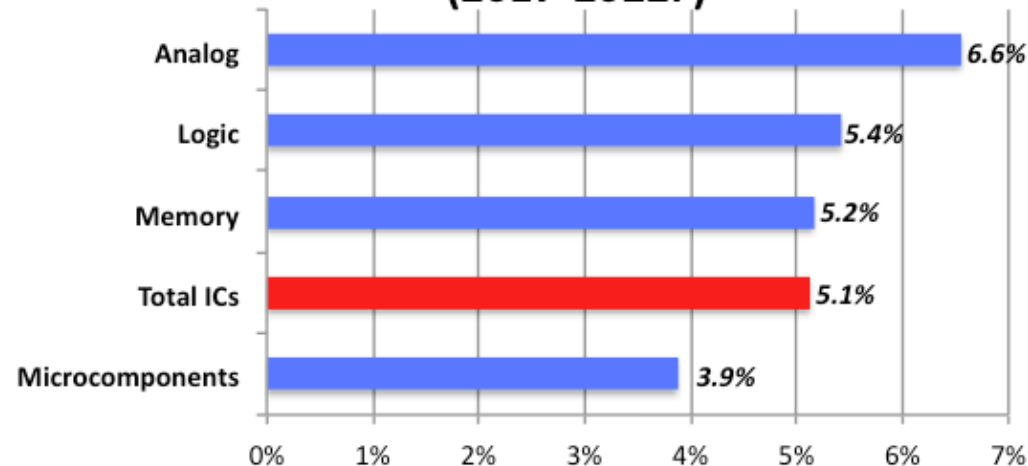
- ▶ **Grow market share**
 - Win majority of merchant opportunities
 - Grow merchant market by serving captive customers



Mainstream – Steady IC Contributor

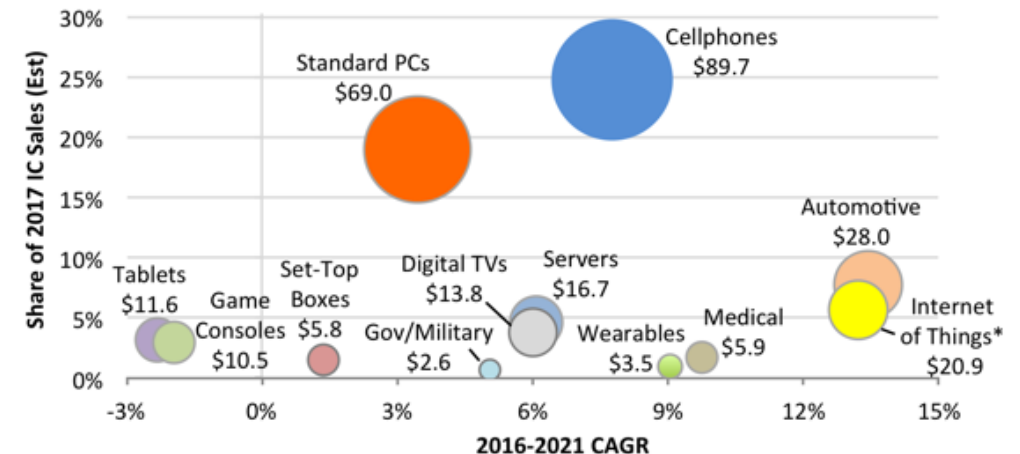
- ▶ Stable demand – less cyclical
- ▶ Good margins and cash flow
- ▶ Low consumer of capital
- ▶ Very competitive – more like a commodity market
- ▶ Auto and IoT driving analog growth

Market CAGRs of Major Product Categories
(2017-2022F)



Source: IC Insights

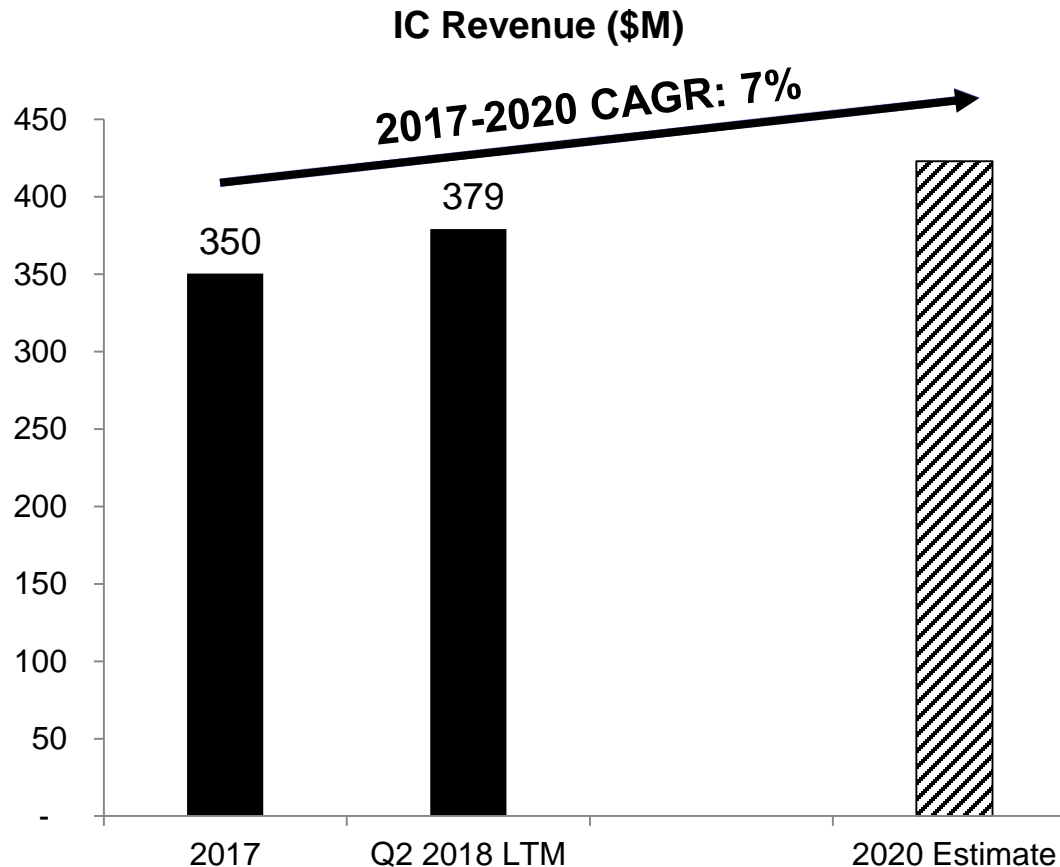
IC End-Use Markets (\$B) and Growth Rates



*Covers only the Internet connection portion of systems.

Source: IC Insights

High-End IC Memory Outlook

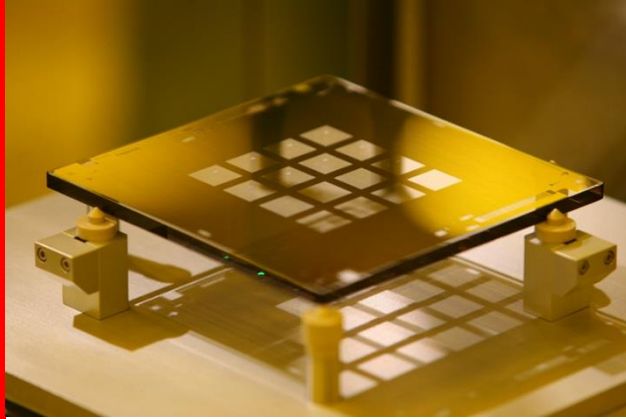


Key Success Factors

- ▶ “Made in China 2025” expansion
- ▶ Node migration (DRAM, 3D-NAND)
- ▶ Strong market drivers
- ▶ Maintain leading market share with specialty foundry producers
- ▶ Cross-site collaboration to serve global customers
- ▶ Mainstream stability, growth of auto, IoT

High-End IC Memory Summary

- ▶ **Repositioned the business**
- ▶ **Boise performance back to JV levels**
- ▶ **Growing business with Asia specialty memory foundries**
- ▶ **Extending technology leadership, developing partnerships**



John Jordan, CFO

Financial Model & Outlook

Early Observations

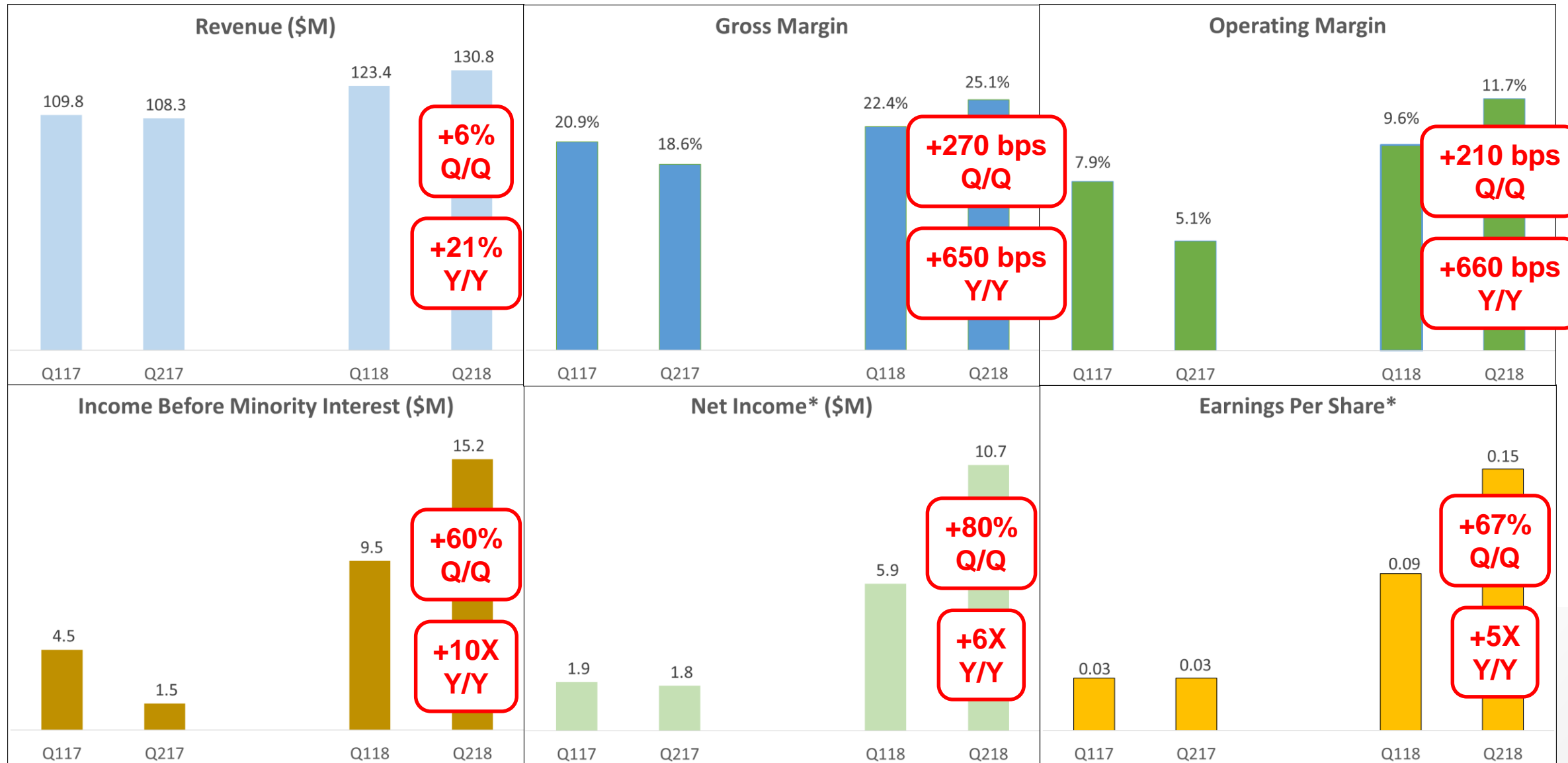
► **My observations coming from outside**

- Lean, no-frills well-organized business
 - Transparent across boundaries
 - Devoid of unnecessary redundancies
- All key players are respected industry experts with years in the industry
- Insistence on operational excellence and maintaining a death grip on cost
- Passionate respect for customers and relationships
- A passion to win and a passion to improve the value equation for shareholders

► **Finance observations:**

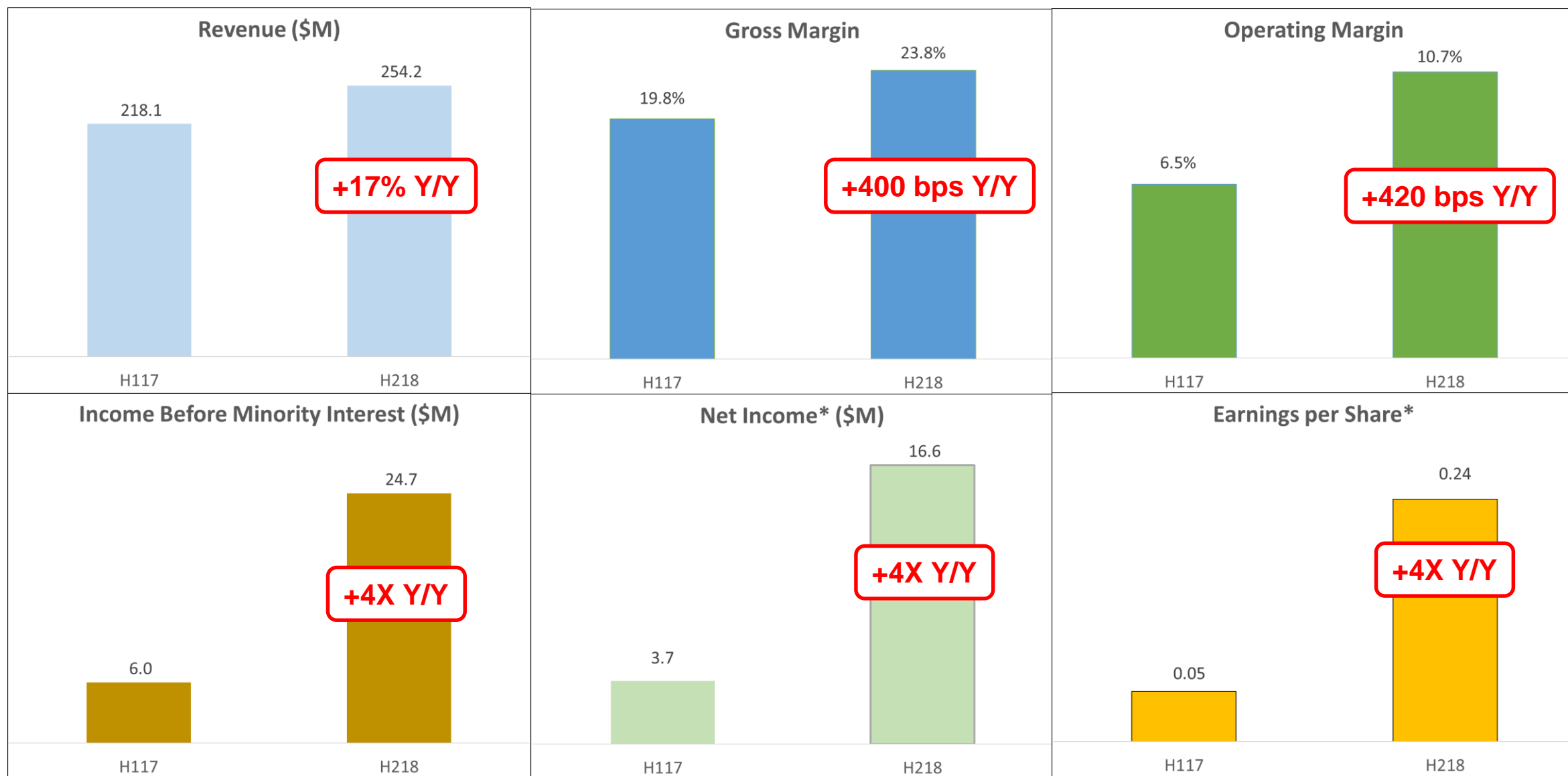
- Excellent controls environment
 - Appropriate competence levels in all positions
 - Tone at the top to do the right thing
- Opportunity to automate and improve processes to achieve best practice
- Desire to support the drive to improve ROIC

Performance Improved During 2nd Quarter



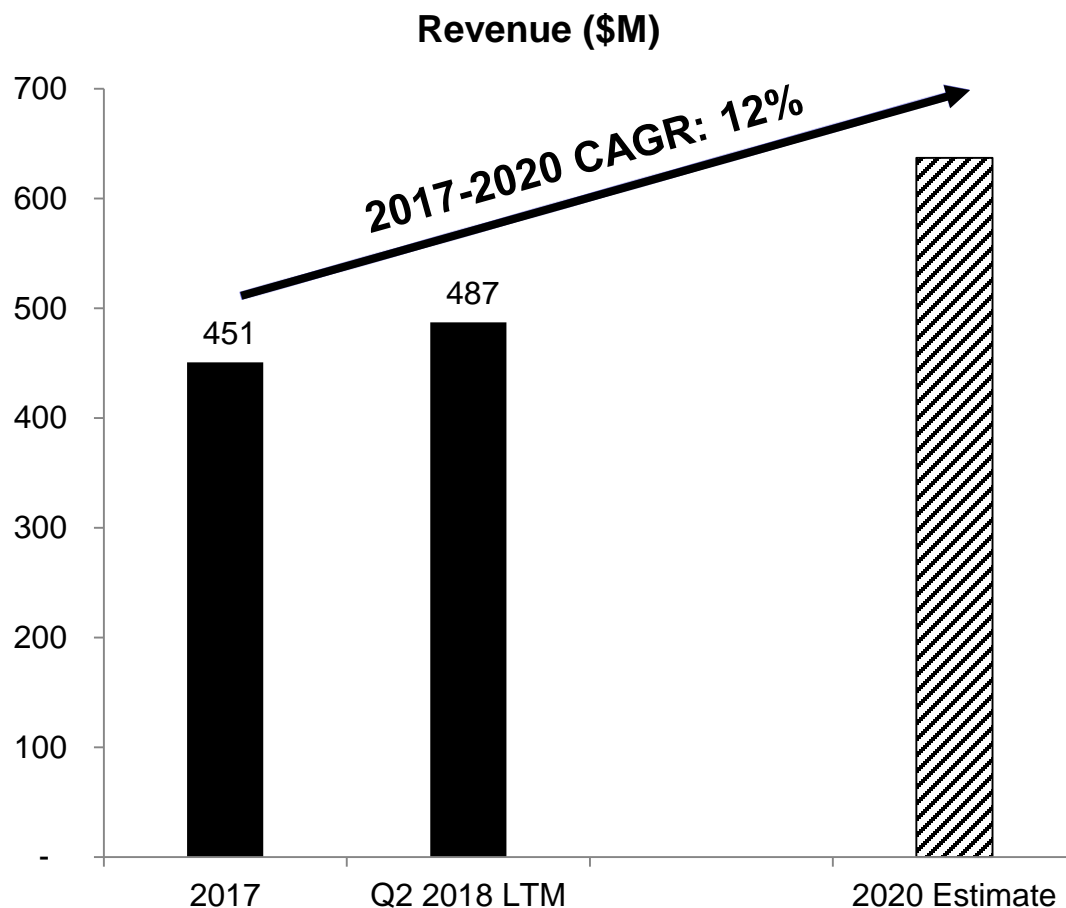
*Net income attributable to Photronics, Inc. shareholders

Performance Improved During 1st Half



*Net income attributable to Photronics, Inc. shareholders

Positive Growth Outlook



Key Success Factors

- ▶ “Made in China 2025” – new facilities
- ▶ FPD technology inflections
- ▶ Repositioning the company
- ▶ Node migration (logic & memory)
- ▶ Growing business with captive producers
- ▶ IC JV’s in China and Taiwan
- ▶ Stable mainstream business
- ▶ Cross-site collaboration to serve global customers

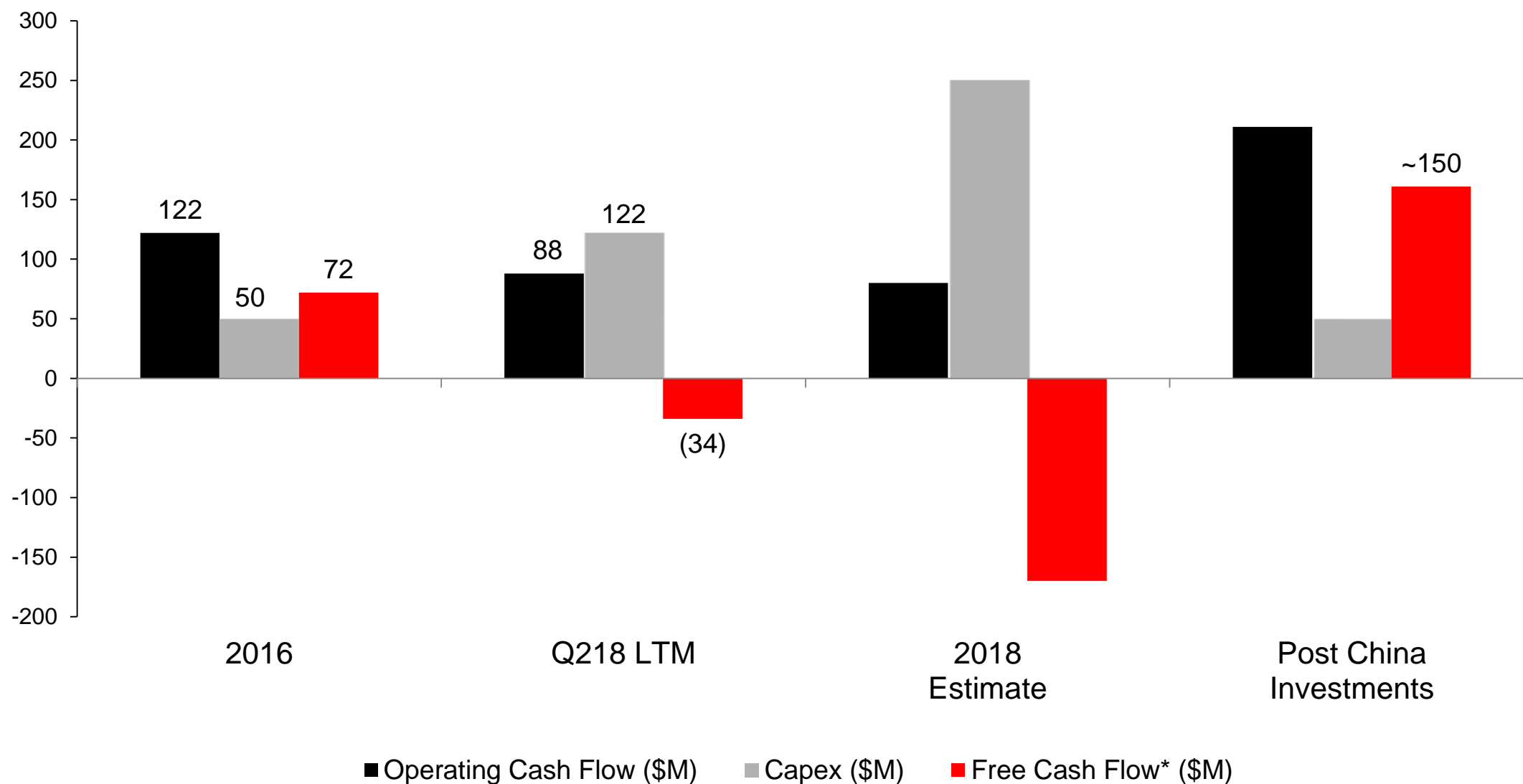
Strategic Priorities to Improve Shareholder Value

- ▶ **Disciplined focus on investments to improve ROIC**
- ▶ **Maintain strong balance sheet through China investment period**
 - Financial stability through economic downturn
 - Flexibility to invest in other growth opportunities (organic or M&A)
- ▶ **Continue to drive cost out to improve customer value proposition and improve shareholder return**

Solid Financial Fundamentals

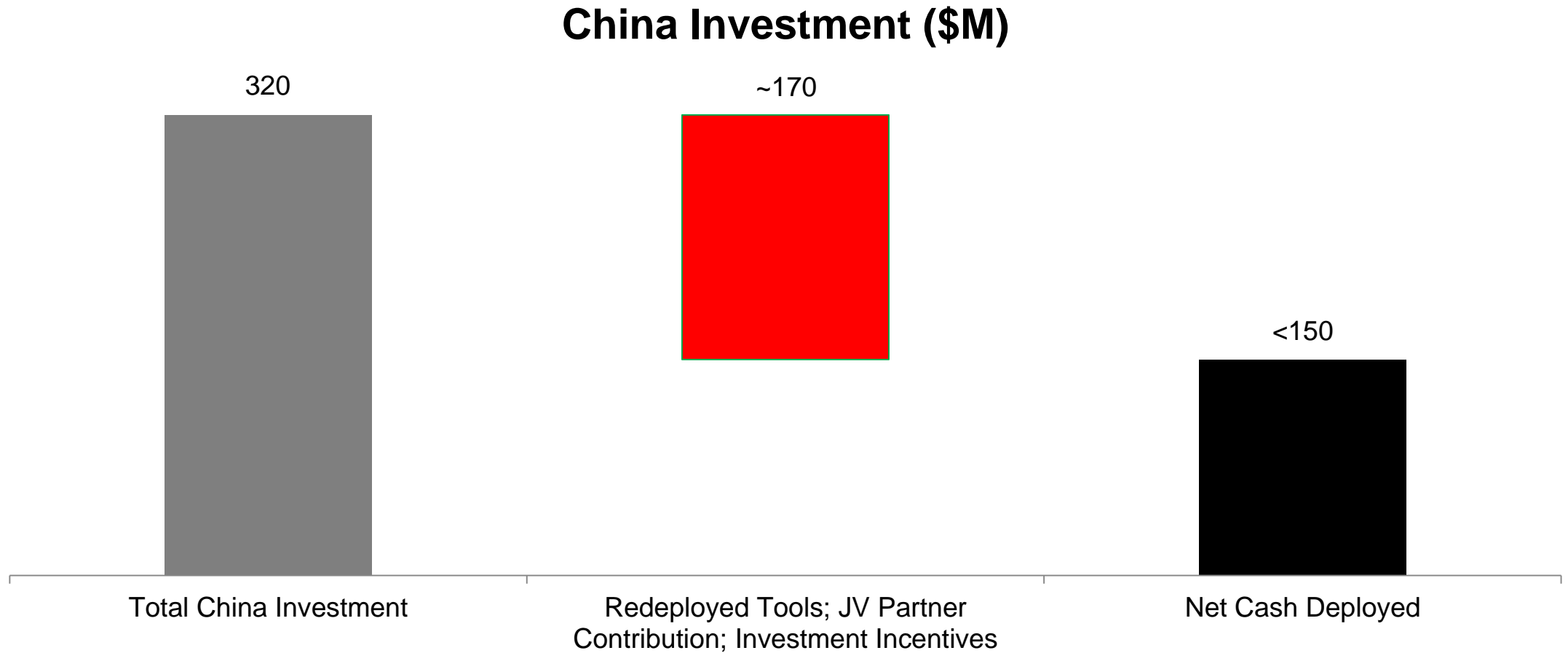
- ▶ **Strong operating cash flow generator**
- ▶ **Powerful operating leverage: target 50%**
- ▶ **Positive free cash flow every fiscal year since 2009**
- ▶ **Solid balance sheet**

Free Cash Flow Much Stronger Post China Investments



*Free cash flow equals operating cash flow less capex

Reducing Risk of China Investment



Clear Capital Deployment Priorities

► Fund organic growth

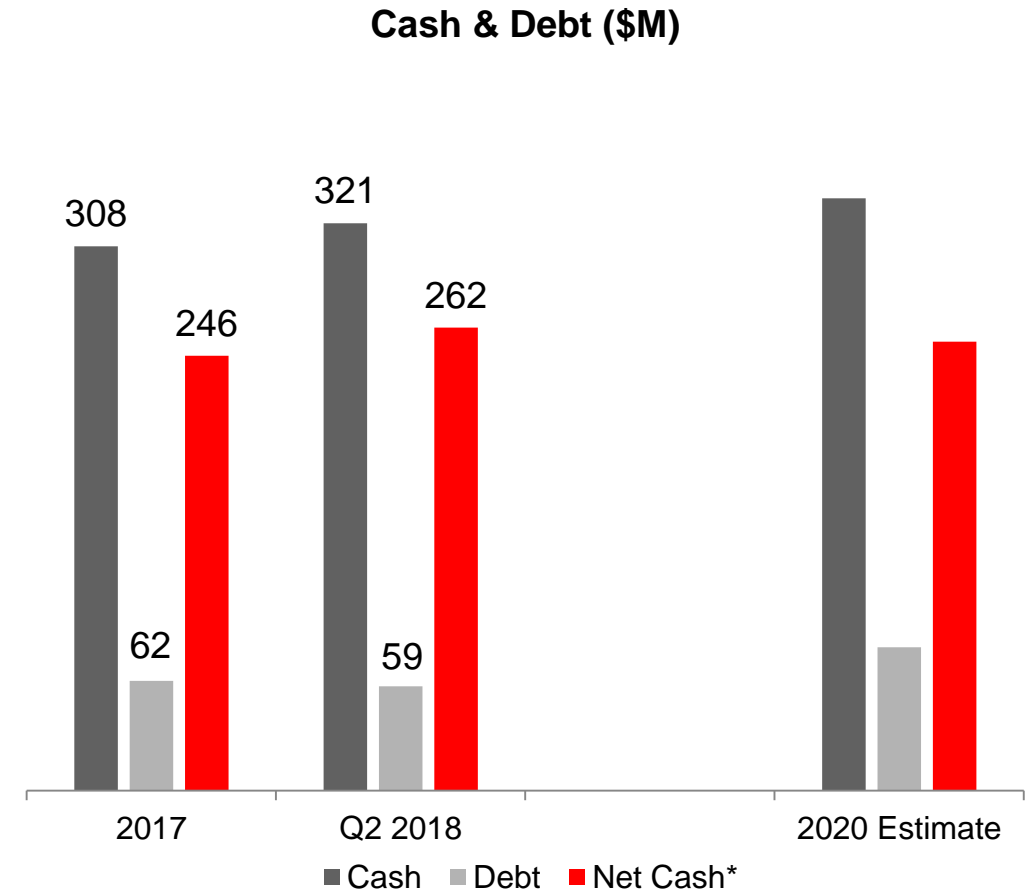
- Geographic expansion into China
- Technical investments to maintain leadership position

► Explore strategic M&A

- Photomask industry – IC & FPD
- Adjacencies to increase revenue diversification

► Debt repayment

- Converts mature in 2019
- Incurring local debt in China



*Net cash defined as cash and cash equivalents less long-term borrowings (including current portion)

Financial Summary

- ▶ **Clear path to profitable growth**
- ▶ **Prudent stewardship of balance sheet**
- ▶ **Financial model to grow income faster than revenue**
- ▶ **Financial targets**
 - Revenue \$630M & EPS \$0.80 by 2020
 - Operating margin > 15%
 - Minimum \$100M net cash
 - Improve ROIC – no projects accepted below hurdle rate

A Compelling Investment Thesis

▶ Global leader in merchant photomask industry

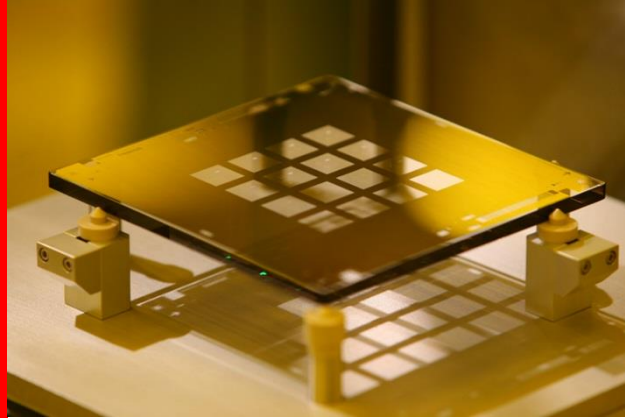
- *Delivering high-end growth by leveraging core competences: Operational Excellence, Low Cost Producer, Technology Leadership, Customer Intimacy*

▶ Investing aggressively to exploit secular growth opportunities

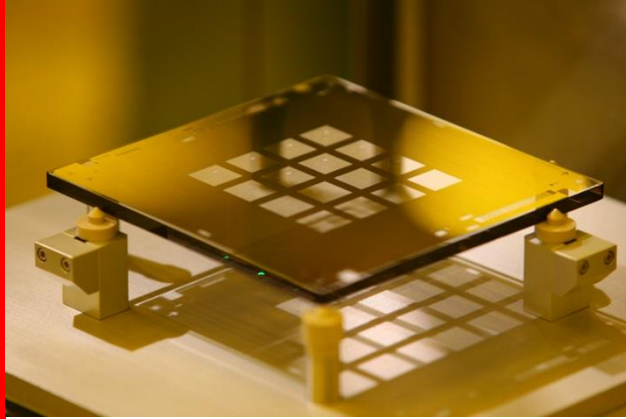
- *China industry expansion – Made in China 2025*
- *Technology inflection from LCD to AMOLED*
- *Explosion of G10.5+ panel capacity*

▶ Targeting \$630M / \$0.80 in revenue / EPS by 2020

- *Strategic investments bring top-line growth*
- *Operating leverage creates margin expansion*
- *Additional upside from potential M&A*



Questions?



Thank you for your interest!

For Additional Information:

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tdewar@photonics.com