ASM Pacific Technology

# 2018 Q1 Results Announcement

April 20, 2018

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# ASMPT Recognized as TOP 100 Global Tech Leaders

2018 THOMSON REUTERS

TOP 100

GLOBAL TECH LEADER

***"The Top 100 Global Technology Leaders are the organizations poised to propel the future of technology"***, Brian Scanlon, Chief Strategy Officer

Thomson Reuters, 2018

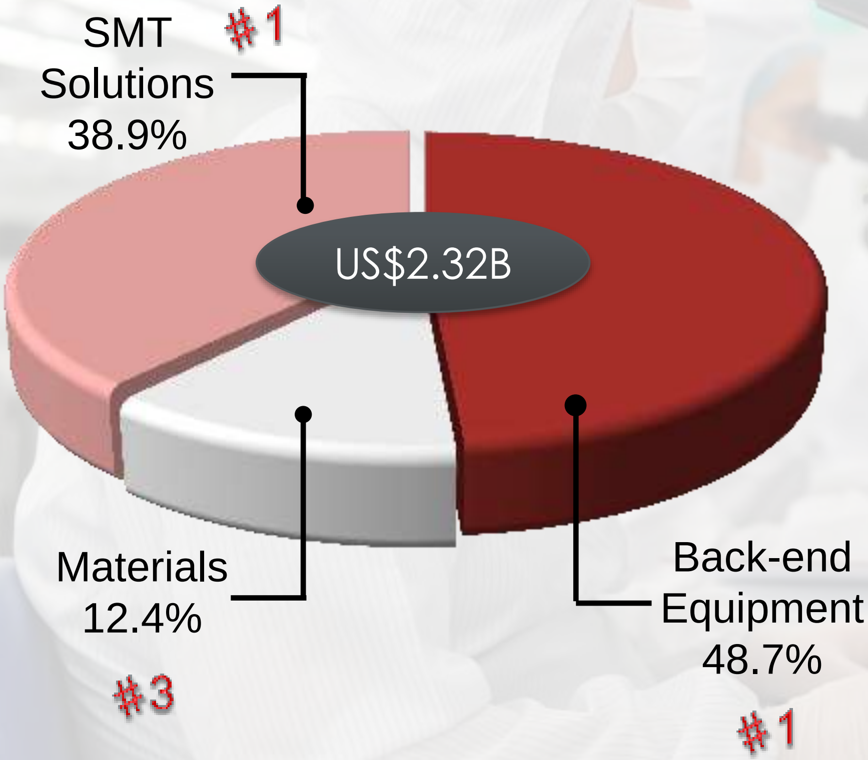
The **ONLY** Back-end Equipment Supplier Being Recognized

# CORPORATE OVERVIEW

# A World's Technology & Market Leader

## Q1 2018 LTM Group Revenue

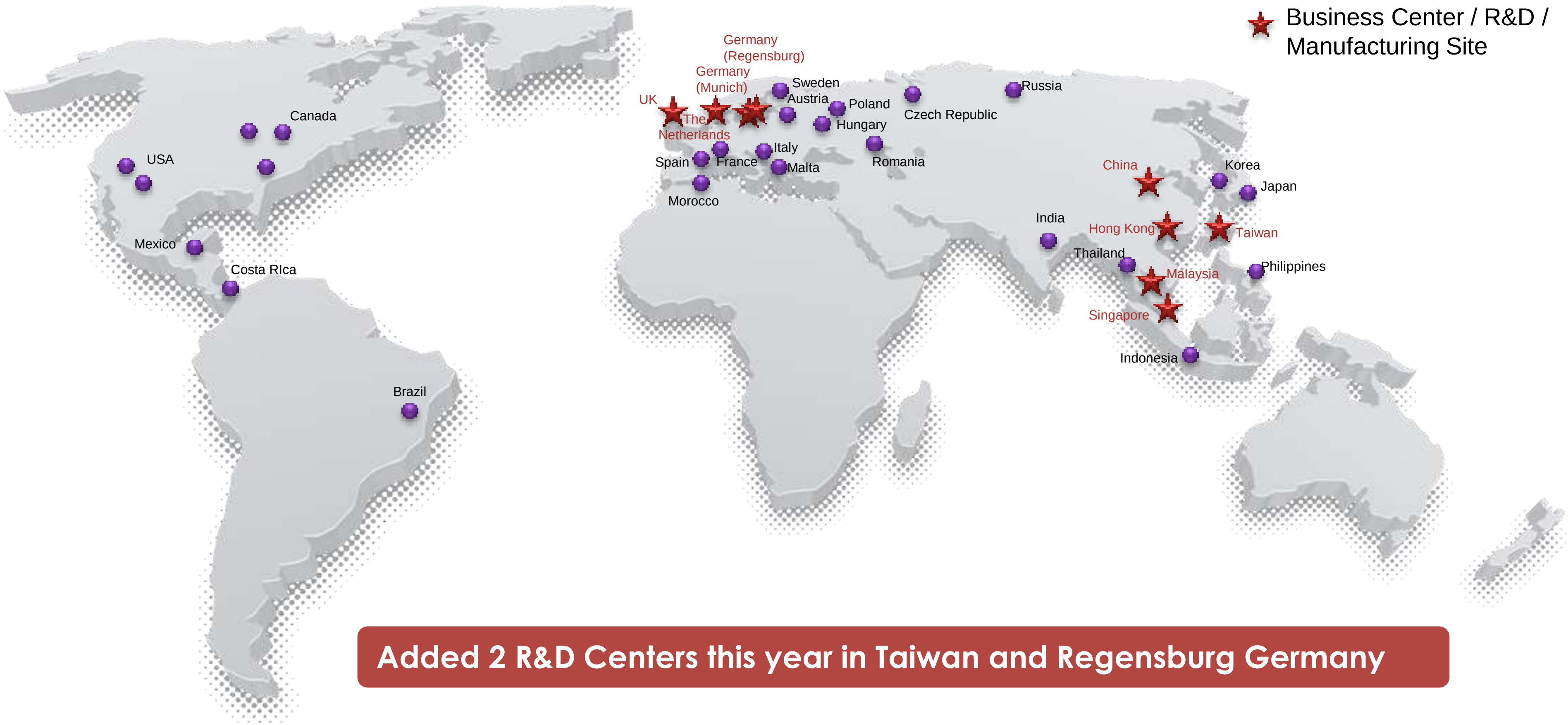
(CAGR 2008- Q1 2018 LTM 13.1 %)



- A leading Integrated Solutions Provider in the semiconductor assembly and packaging industry as well as in the SMT solutions market
- A leading player for CIS, LED, and Automotive
- 3 high growth markets accounted for 52% of group revenue in 2017

Q1 2018 LTM: April 1, 2017 – March 31, 2018

# ASMPT Global Presence



**Added 2 R&D Centers this year in Taiwan and Regensburg Germany**

**> 1,800**
global R&D staff

**> 1,100**
patents on key leading edge technologies

**8**
R&D centers worldwide

**11**
manufacturing facilities

# ASMPT Major Facilities around the World


Hong Kong, China


Yishun, Singapore


Munich, Germany


Regensburg, Germany


Longgang, China (龙岗)


Fuyong, China (福永)


Huizhou, China (惠州)


Chengdu, China (成都)


TaoYuan, Taiwan


Weymouth, UK


Beuningen, Netherlands


Johor Bahru, Malaysia


Extension of Malaysia plant ready for operation by 2019

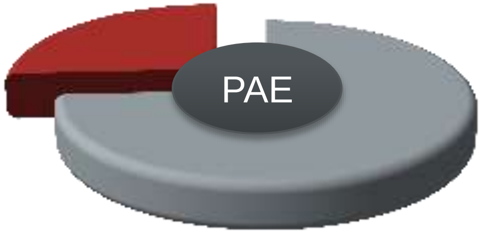
# Three Business Segments With Leading Market Positions

Worldwide Market Position & Share

**Back-end Equipment**

**#1 Assembly & Packaging Equipment Market**

**~25%**
(2017)

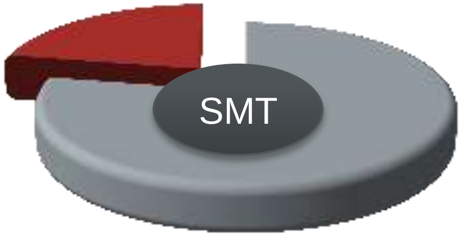


- #1 Die Bonders
- #2 Wire Bonders
- #1/2 Flip Chip Bonders
- #1 Thermal Compression Bonders (TCB)
- #1 LED Packaging Equipment
- #1 CMOS Imaging Sensors (CIS) Equipment
- #2 Encapsulation & Post Encapsulation Solutions
- #4 Turret Test Equipment (Test Handlers)
- #2 Laser Dicing and Grooving

**SMT Solutions**

**#1 SMT Equipment Market**

**~22%**
(2017)



**Materials**

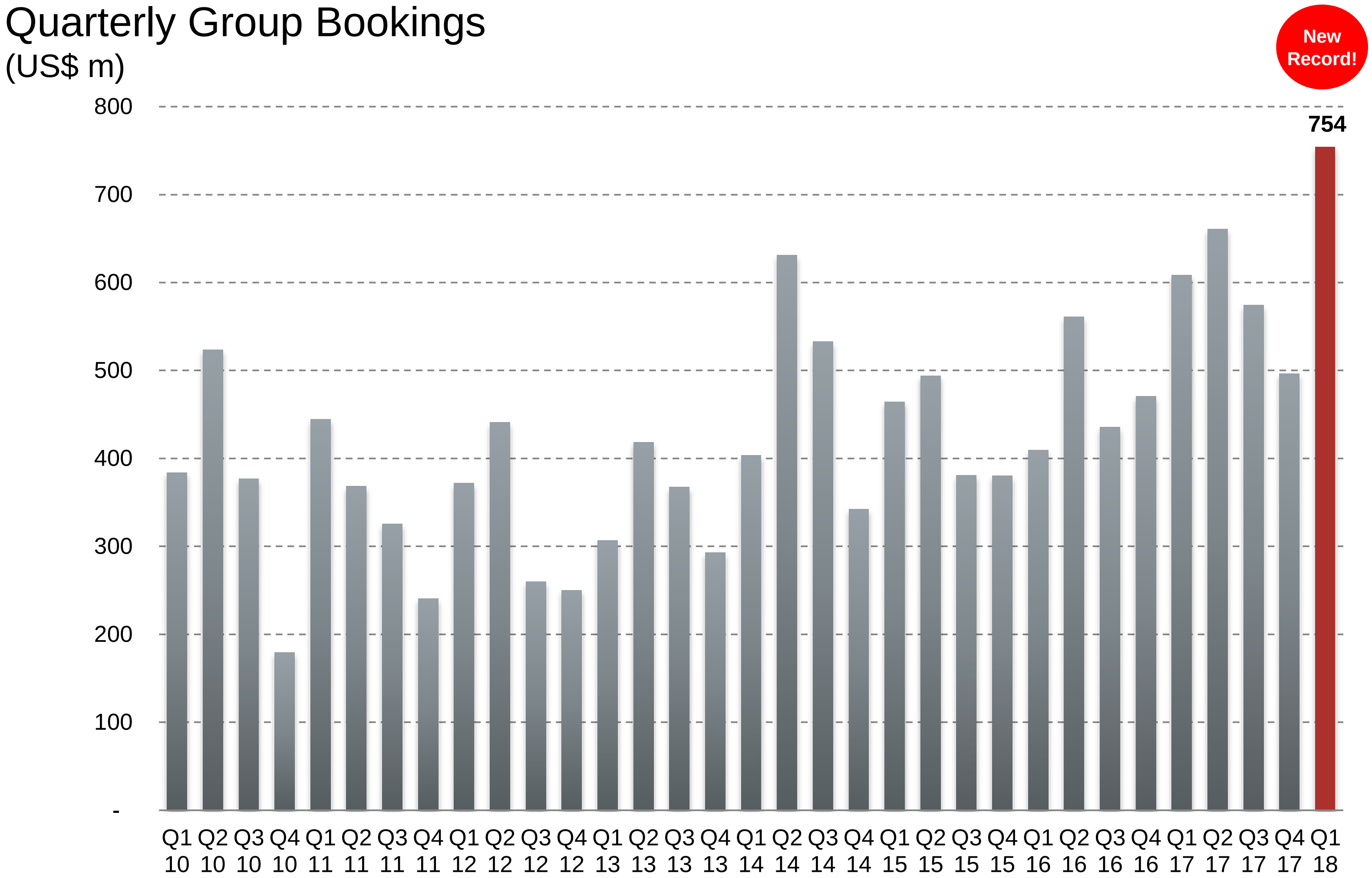
**#3 Leadframe Market**

**~8.7%**
(2017)

Sources:
Market share for Back-end Equipment is based on information on packaging and assembly equipment market by VLSI, leadframe market by SEMI, and SMT market by ASMPT SIPLACE Market Intelligence

# 2018 Q1 Highlights

# Group Bookings in Q1 Surged to a New Record High



**ASM Pacific Technology © 2018**

# Strong Q1 Bookings Growth

| | QoQ | YoY |
|---|---|---|
| Back-end Equipment | ↑ 82.0% | ↑ 25.3% |
| Materials | ↑ 11.4% | ↓ 16.7% |
| SMT Equipment | ↑ 32.4% | ↑ 40.0% |
| Group | ↑ 51.9% | ↑ 24.0% |

**Backend Equipment Bookings >US$400m**

**SMT Equipment Bookings Record High**

# Major Drivers for Strong Q1 Bookings

## Back-end

**IC / Discrete**

Power Management

IoT

Smartphones

Automotive

Industrial

**LED**

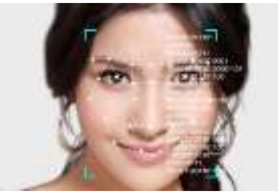
General Lighting

Large Display Panel

**CIS**

Dual Camera

3D Sensing



## SMT Solutions

**Strong Europe Market**

**Industrial**

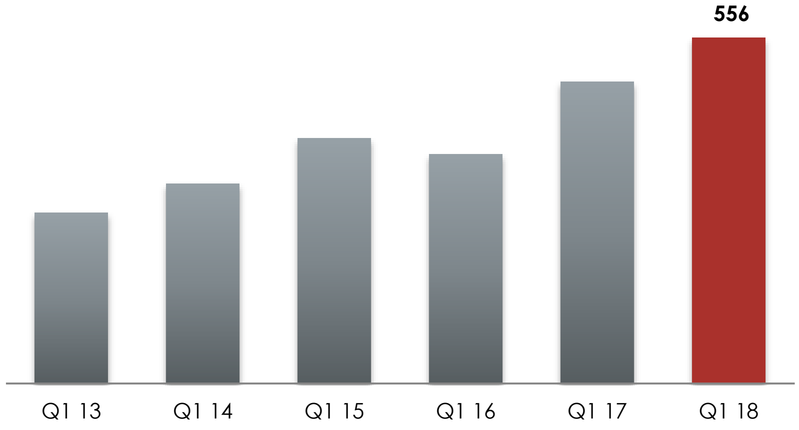
**Automotive**

**China Smartphones**

# Achieved New Q1 Records for Group/Segment Billings

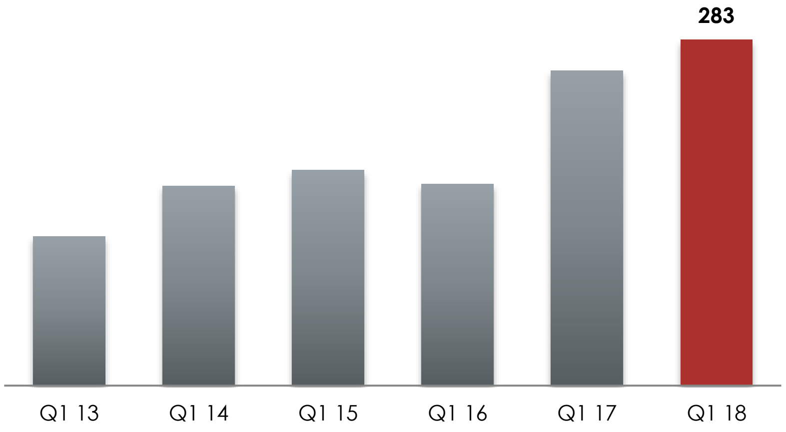
Group Q1 Billings
(US$ m)

New Q1 Record!



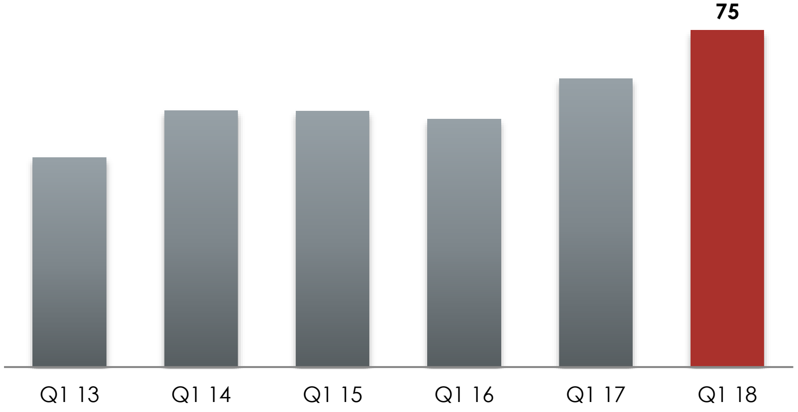
BE EQT Q1 Billings
(US$ m)

New Q1 Record!



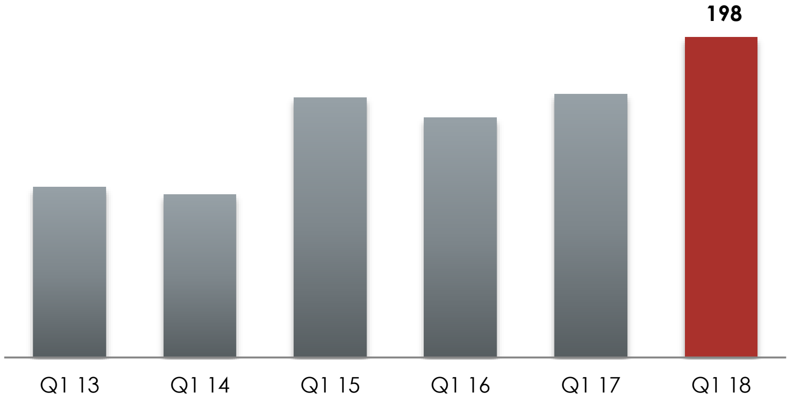
Materials Q1 Billings
(US$ m)

New Record!



SMT Q1 Billings
(US$ m)

New Q1 Record!



# Q1 2018 Financial Highlights

| Group | Q1 2018 | |
|---|---|---|
| | YoY | QoQ |
| Bookings | ↑ 24.0% | ↑ 51.9% |
| Billings | ↑ 15.5% | ↑ 2.8% |
| Gross Margin | ↓ 234bps | ↓ 167bps |
| Net Profit | ↑ 16.8%* | ↑ 35.9% |
| Net Profit Margin | ↑ 15bps* | ↑ 345bps |

*Excludes adj. of liability component of CB

# Q1 2018 Segments Highlights

| Q1 2018 | Back-end Equipment Segment | | Materials Segment | | SMT Solutions Segment | |
|---|---|---|---|---|---|---|
| | YoY | QoQ | YoY | QoQ | YoY | QoQ |
| Bookings | ↑ 25.3% | ↑ 82.0% | ↓ 16.7% | ↑ 11.4% | ↑ 40.0% | ↑ 32.4% |
| Billings | ↑ 10.5% | ↑ 12.9% | ↑ 17.7% | ↑ 15.1% | ↑ 22.6% | ↓ 11.9% |
| Gross Margin | ↓228bps | ↓459bps | ↓116bps | ↑85bps | ↓224bps | ↑89bps |
| Segment Profit | ↑1.7% | ↑18.8% | ↓ 1.9% | ↑419.3% | ↑17.7% | ↑11.3% |
| Segment Profit Margin | ↓198bps | ↑113bps | ↓134bps | ↑522bps | ↓54bps | ↑271bps |

# RIDING ON THE BIG WAVE

# Key Strategies for Sustainable Growth & Profitability

**GAIN MARKET SHARE**

- Wire bonding
- Die bonding
- Lead Frames
- SMT

**INVEST IN NEW GROWTH AREAS**

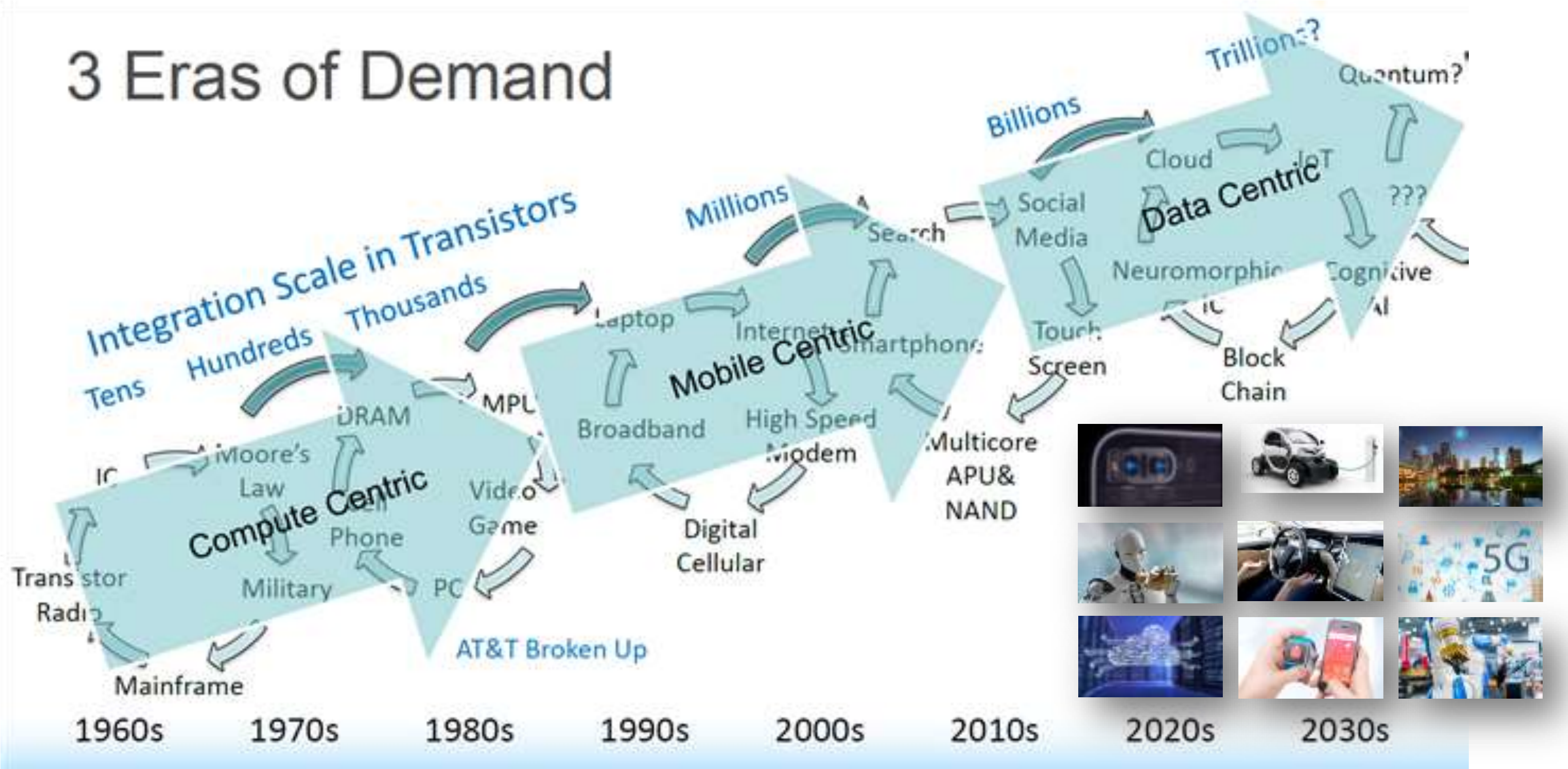
- CMOS Image Sensor
- Automotive
- Power Management
- Advanced Packaging
- Data Communication
- Micro / Mini LED

**STRATEGIC M&A**

- SMT Placement
- SMT Printing
- LASER Grooving / Dicing
- MIS
- AMICRA
- NEXX

**Continue to Fine-Tune Organization Structure & Business Strategies**

# Dawn of the Data Centric Era



Source: VLSI Research, ISS US, January 2018

# Huge amounts of Data will Spur Semiconductor Demand

**Transmit**

WiFi

LiFi

5G

WLFO

Silicon Photonics

WB

**Analyse**

AI

TPU

Data Analytics

HPC

WLFO

PLFO

LASER Grooving

TCB

Advanced Packaging

Advanced Packaging

**Collect**

3D Sensing

IIOT

Camera

IOT

Sensor

LIDAR

Active Alignment

CIS

Precision Die Attach

**Store**

Big Data Centre

Cloud Computing

Memory

Silicon Photonics

PLFO

TCB

WB

LASER Dicing

**Display**

AR

Micro LED

VR

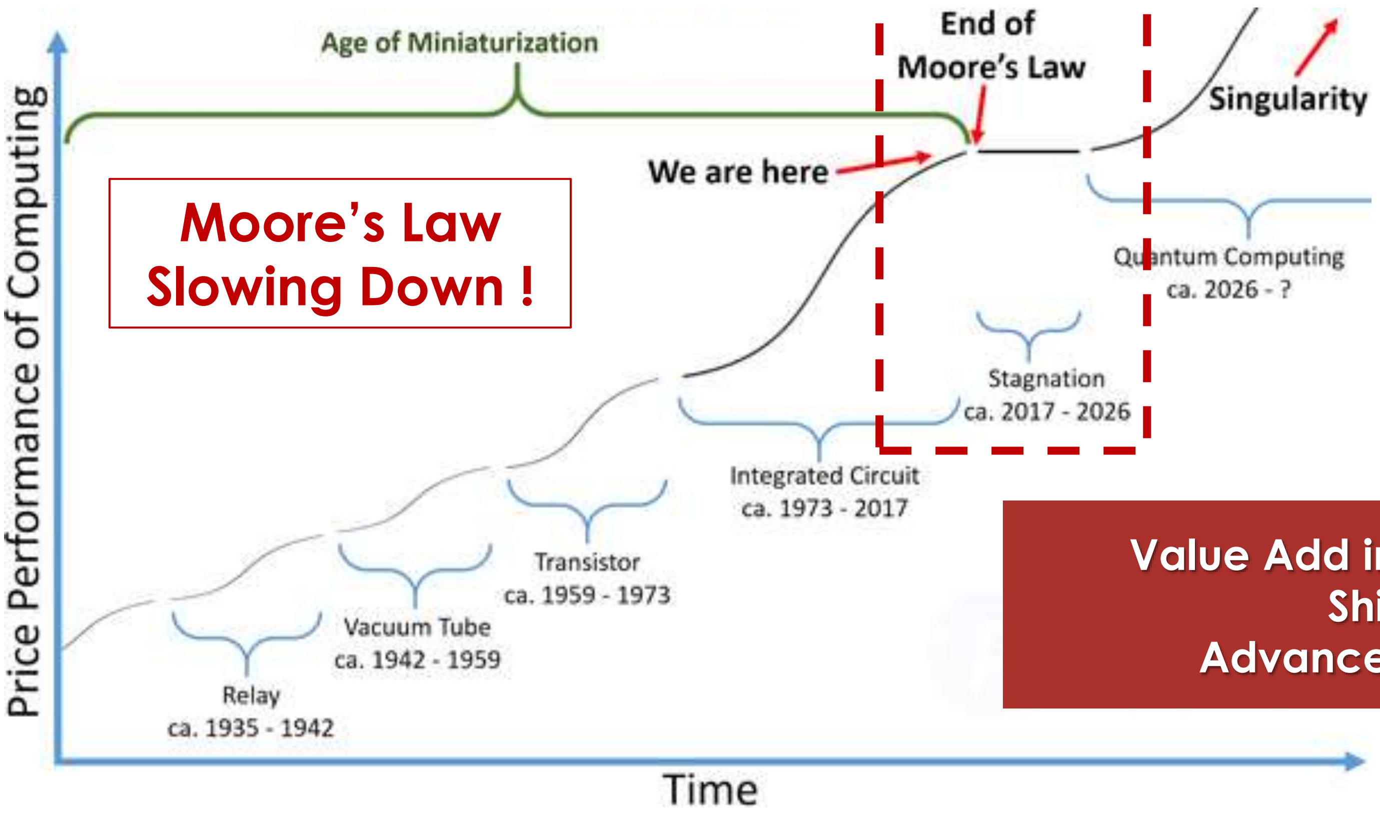
Mini LED

Precision Die Attach

TCB

# 5G will be the Data Highway

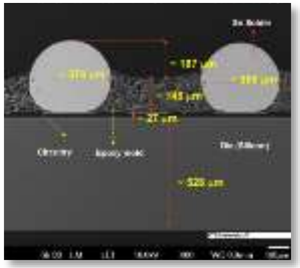
# Advanced Packaging is a High Growth Area



**Golden period for Advanced Packaging for next 10 years**

**Moore's Law Slowing Down !**


Advanced Packages



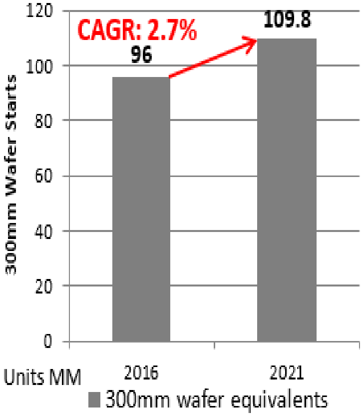
**Value Add in Semiconductor Shifting to Advanced Packaging**

Source: Quora

# Covering All Interconnection Technologies

## Wire Bond

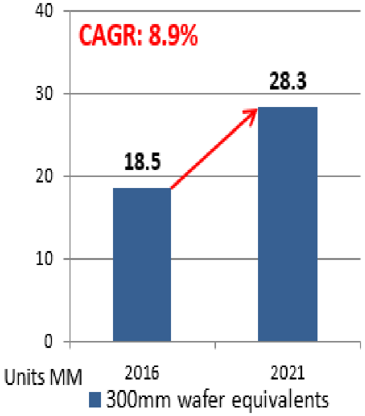
2016-2021



- Wire Bonding
- Die Bonding

## Flip Chip

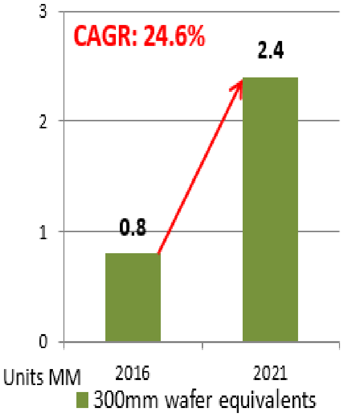
2016-2021



- Flip Chip/ NOVA Plus/ AFC Plus[2]
- TCB
- PVD[1]
- ECD[1]

## Fan Out

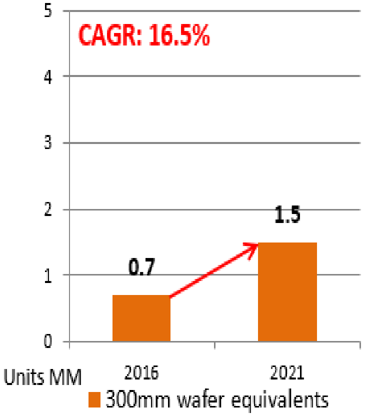
2016-2021



- NUCLEUS/ NOVA Plus Fan Out[2]
- ORCAS
- SUNBIRD
- Laser
- CA
- PVD[1]
- ECD[1]

## 3D TSV

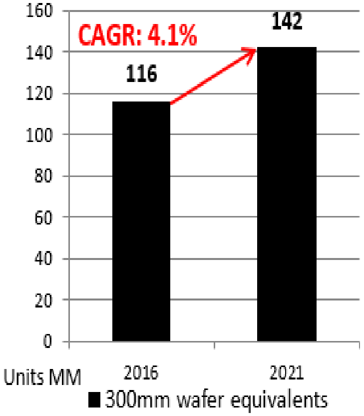
2016-2021



- TCB
- Laser
- PVD[1]
- ECD[1]

## Total Semi. Wafers

2016-2021



Source: Prismark Wafer Starts, 2017

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[1] NEXX Product
[2] AMICRA Product

# An Unparalleled Product Portfolio for Advanced Packaging


FIREBIRD
(TCB)


SIPLACE CA
(SiP Pick & Place)


NUCLEUS
(FO WLP & PLP – Pick & Place)


ORCAS
(Fan-out Molding)


LASER 1205
(Singulation)


SUNBIRD
(WLP Test & Pack)

## Investing Ahead of the Curve


**AMICRA NOVA Plus / Fan Out**

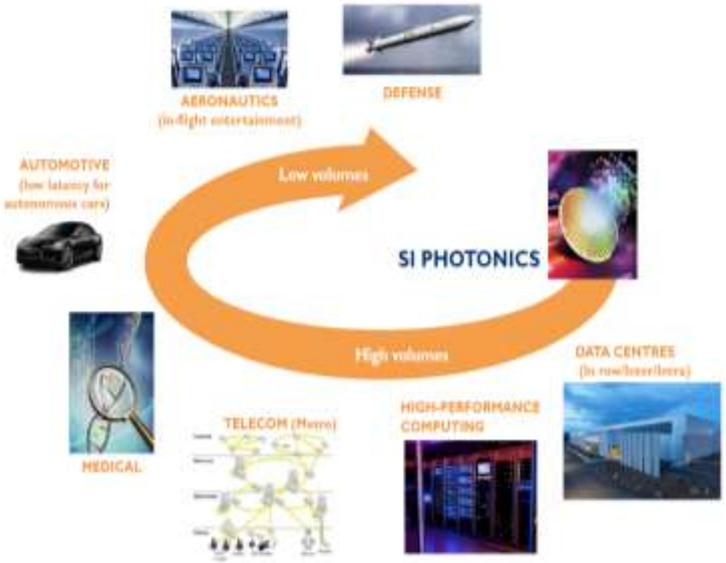

**AMICRA AFC Plus**


**NEXX Conductor FO/FI (PVD)**


**NEXX Stratus$^{TM}$ P500 (ECD)**

# Si Photonics is Another High Growth Area

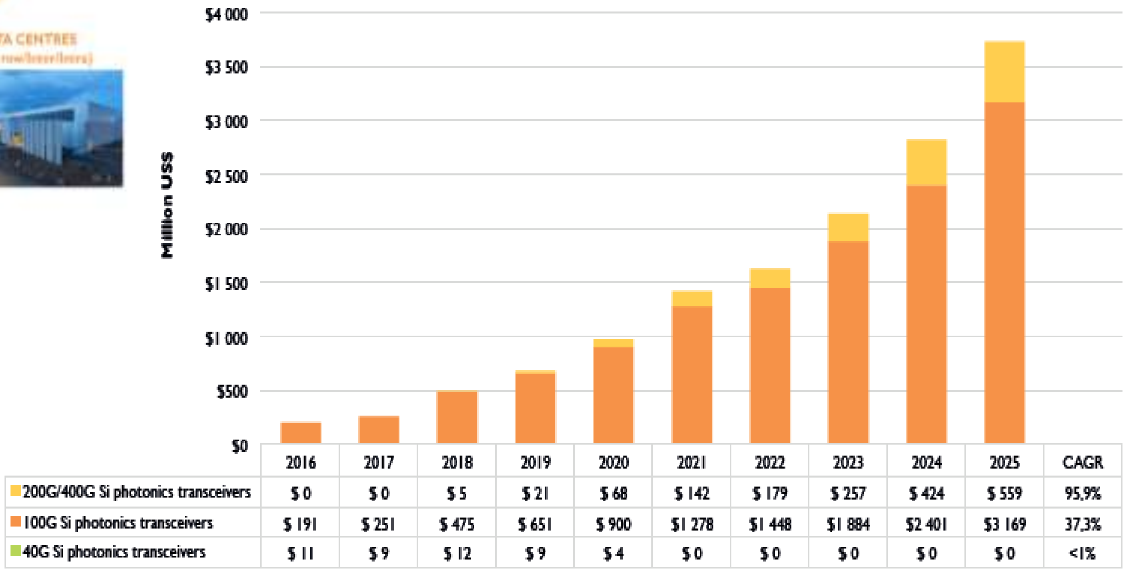
## Silicon Photonics - Applications



***Si Photonics Market to reach US$1B in 2020/US$3.5B+ in 2025***

***Major Market Attraction currently are the fast growing Data Centers and High Performance Computing***

Silicon photonics transceivers market forecast

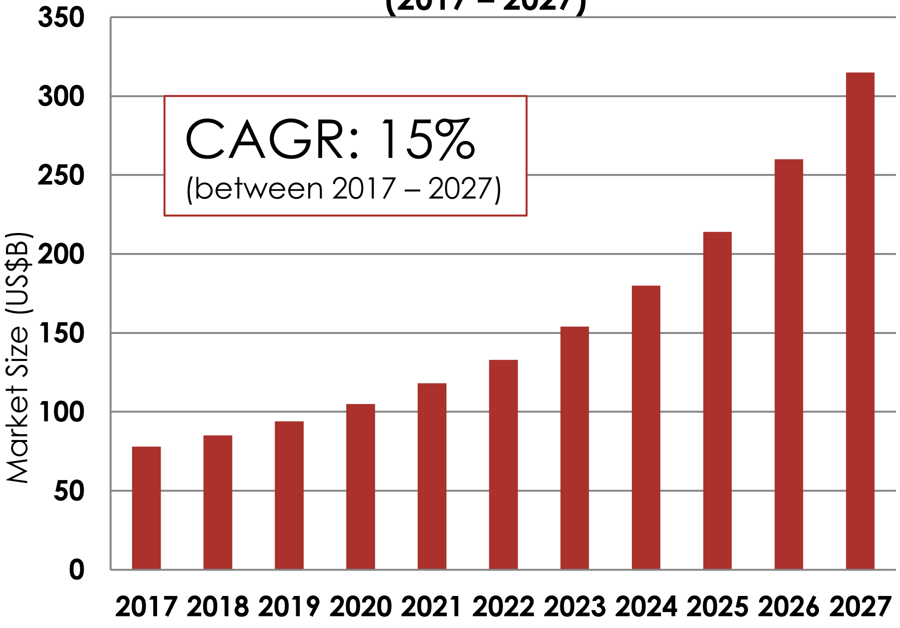


| | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | CAGR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 200G/400G Si photonics transceivers | $ 0 | $ 0 | $ 5 | $ 21 | $ 68 | $ 142 | $ 179 | $ 257 | $ 424 | $ 559 | 95,9% |
| 100G Si photonics transceivers | $ 191 | $ 251 | $ 475 | $ 651 | $ 900 | $1 278 | $1 448 | $1 884 | $2 401 | $3 169 | 37,3% |
| 40G Si photonics transceivers | $ 11 | $ 9 | $ 12 | $ 9 | $ 4 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | <1% |

*(Yole Développement, January 2018)*

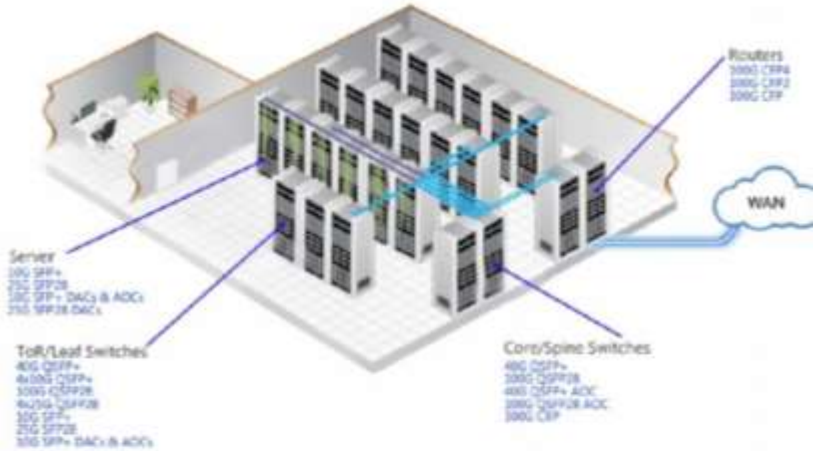
# Si Photonics is the Answer to Hyper Scale Data Centers

Global Cloud Computing Market Forecast (2017 – 2027)



Source: Market Research Future, Mar 2018

> ***"Almost three-quarters of all data center traffic will originate from within the data center."***
>
> Source: Yole Developpement



**Photonics is the enabling technology for 100G / 400G data communication within data centers.**

**Data Center of Google in Eemshaven, Netherlands**

# New Target Market for ASMPT -- Memory

- ☐ Wire Bonding System (NAND)
- ☐ LASER Grooving & Dicing (thin wafer)
- ☐ TCB (high bandwidth memory)
- ☐ WLFO / PLFO

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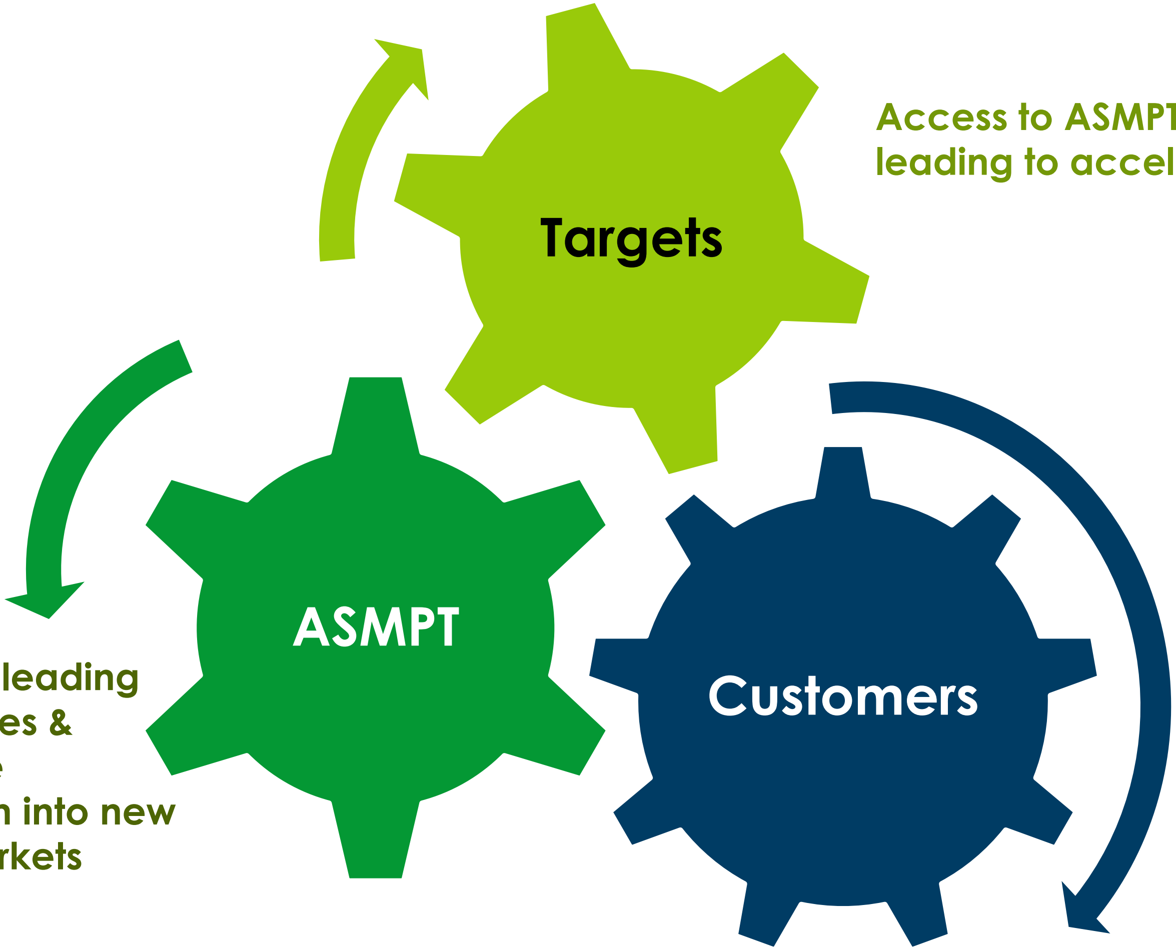
# Triple Win Strategy



Access to ASMPT's resources leading to accelerated growth

Best of both worlds: Access to good technologies now backed by a strong company

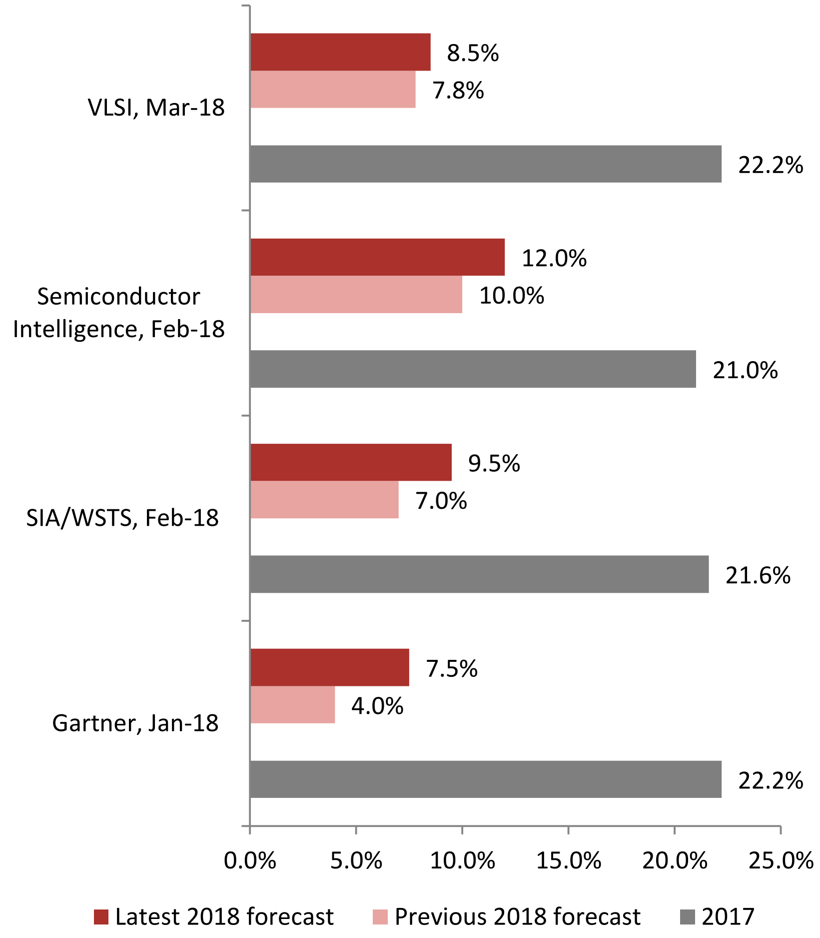
Access to leading technologies & accelerate penetration into new growth markets

ASM Pacific Technology © 2018

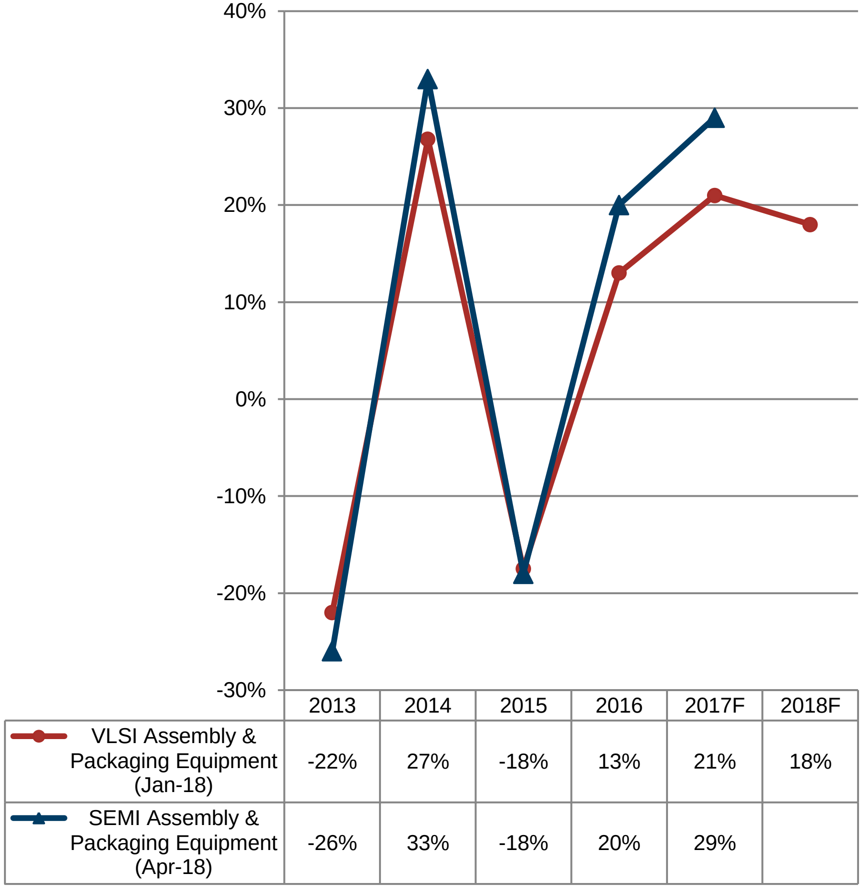
# OUTLOOK

# Industry Growth Forecast (2017-2018)

## Semiconductor Industry

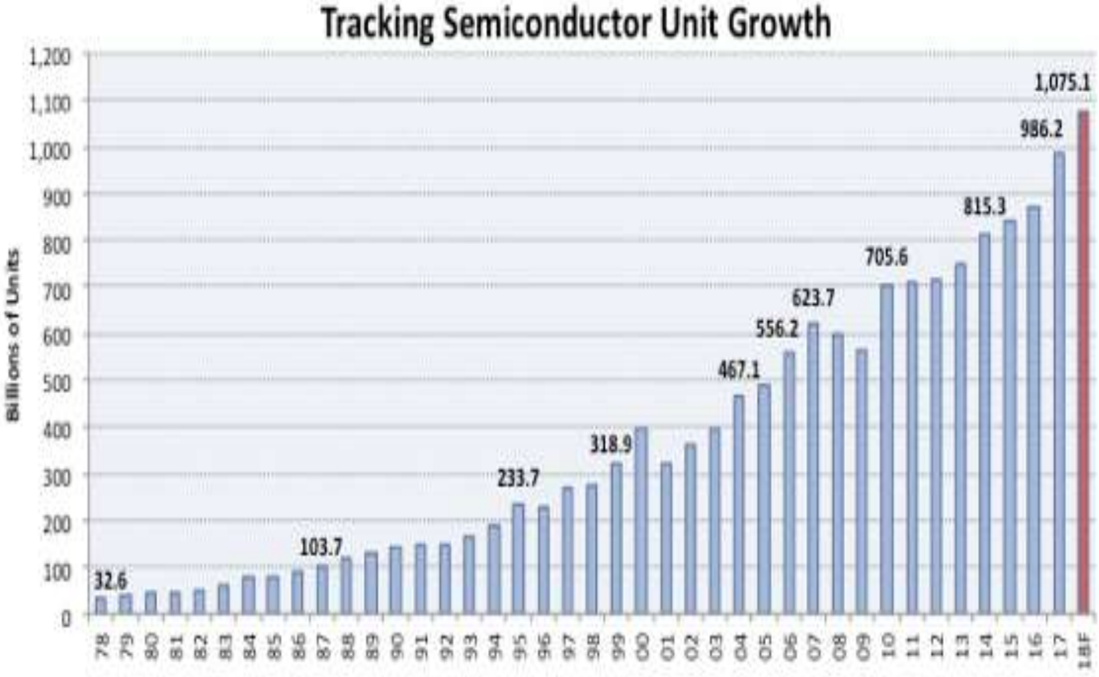


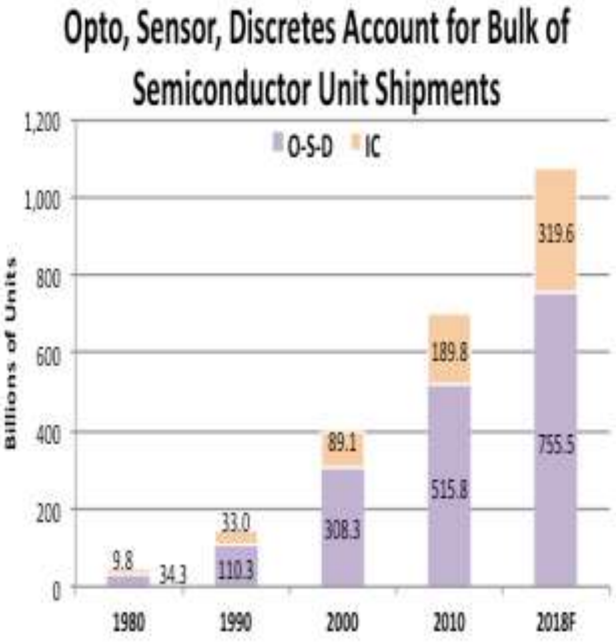
## Forecast Global Assembly & Packaging Equipment Market



| | 2013 | 2014 | 2015 | 2016 | 2017F | 2018F |
|---|---|---|---|---|---|---|
| VLSI Assembly & Packaging Equipment (Jan-18) | -22% | 27% | -18% | 13% | 21% | 18% |
| SEMI Assembly & Packaging Equipment (Apr-18) | -26% | 33% | -18% | 20% | 29% | |

# Semiconductor Shipments Forecast to Exceed 1 Trillion Devices in 2018


Tracking Semiconductor Unit Growth


Opto, Sensor, Discretes Account for Bulk of Semiconductor Unit Shipments

Source: IC Insights, January 2018

# Outlook

- Expect Q2 Group Billings to be in the range of US$650m to US$710m
  - Supported by the strong backlog
- Anticipate Q2 Bookings to achieve a single digit percent YoY growth
  - Following very strong bookings in Q1
- Expect Q2 Group GM to improve over Q1, supported by the expected high turnover
- Strong Q1 booking momentum reaffirmed our belief that the semiconductor industry has entered into a different phase and driven by multiple growth drivers such as
  - IoT, industry automation, robotics, smart factory, power management, automotive, smart city, cloud computing, data center, AI, big data analysis, and smartphone
- Together with 5G mobile network, these diversified applications will spur up demand for semiconductors devices and our products

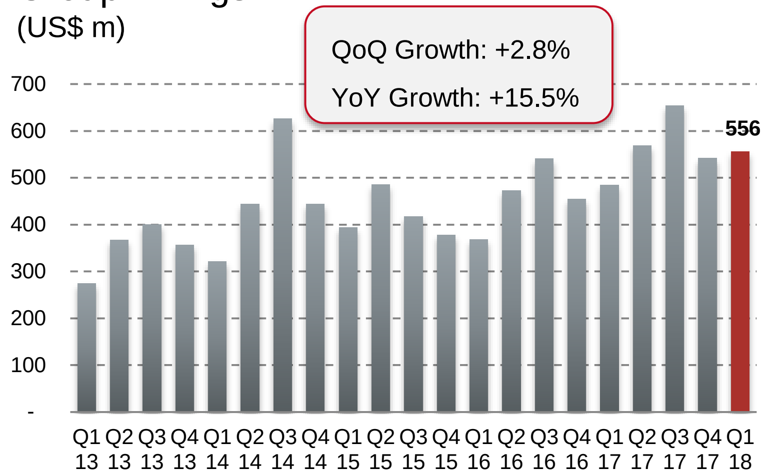
# ASMPT Sustainable Competitive Advantages

- Multiple product growth drivers (and a strong leader in a few of these drivers including CIS/AA, LED, Automotive, TCB)
- Diversified product portfolio addressing multiple applications markets
- Unique and comprehensive product portfolio in Advanced Packaging
- Broad and diverse customer base
- Breadth and depth of enabling technologies
- Investing ahead of the curve and bearing fruits
- Strong and extensive marketing/support network
- Size, scale and strong balance sheet & financial resources
- Steadfast execution of strategies
- Keep reinventing itself

# 2018 Q1
# FINANCIAL RESULTS

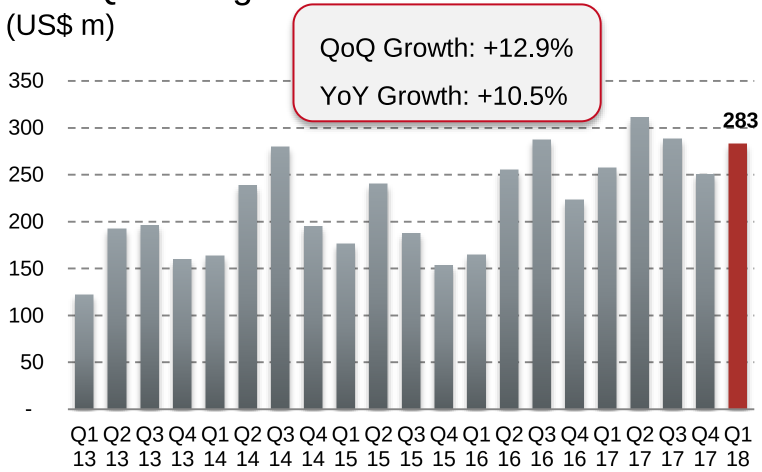
# Q1 2018 Quarterly Billings

Group Billings
(US$ m)



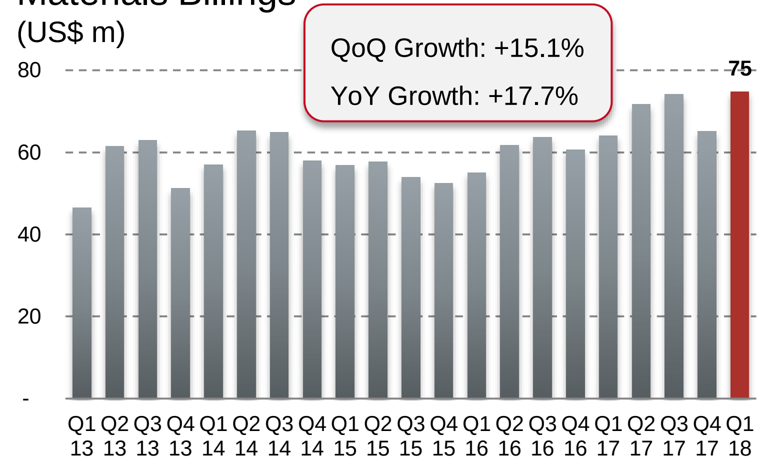
QoQ Growth: +2.8%
YoY Growth: +15.5%

BE EQT Billings
(US$ m)



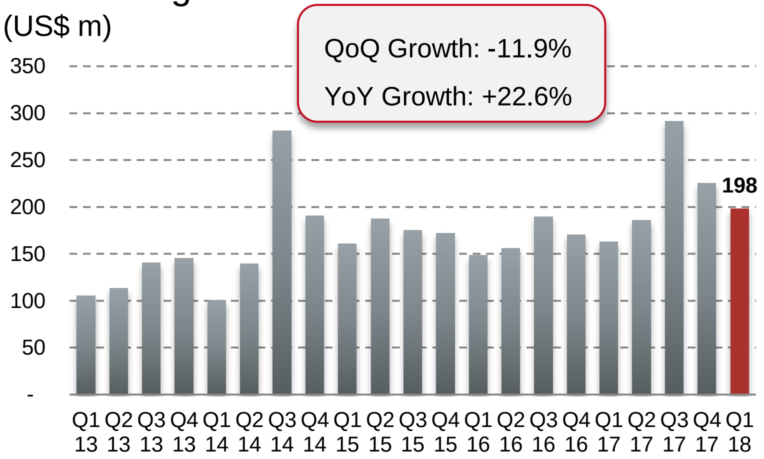
QoQ Growth: +12.9%
YoY Growth: +10.5%

Materials Billings
(US$ m)



QoQ Growth: +15.1%
YoY Growth: +17.7%

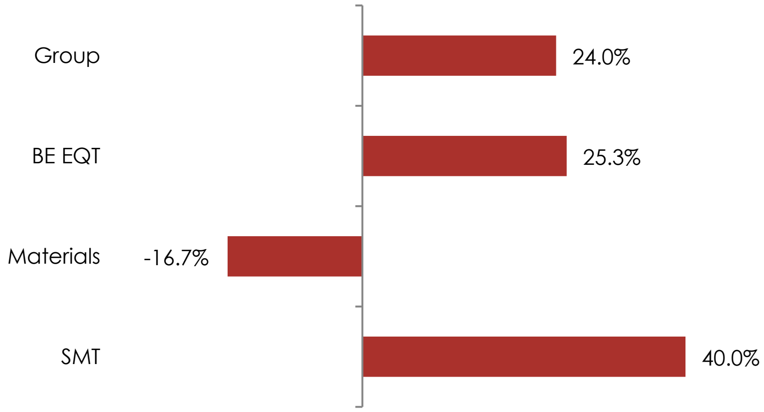
SMT Billings
(US$ m)



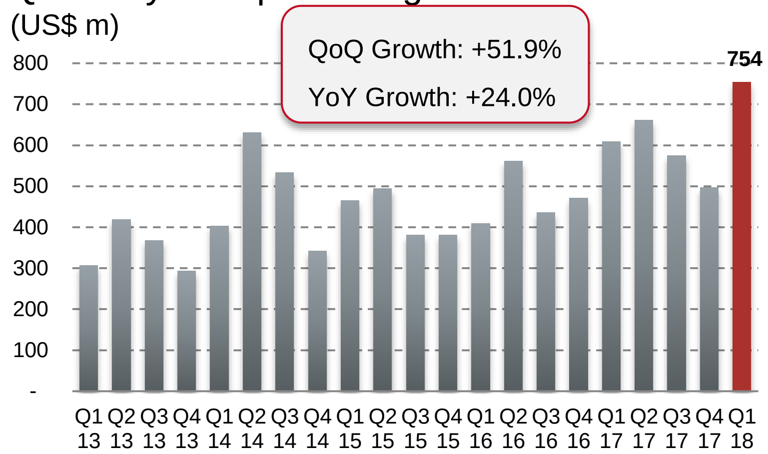
QoQ Growth: -11.9%
YoY Growth: +22.6%

# Q1 2018 Booking, Backlog and Segment Profits

Q1 2018 Booking
(YoY % Growth)

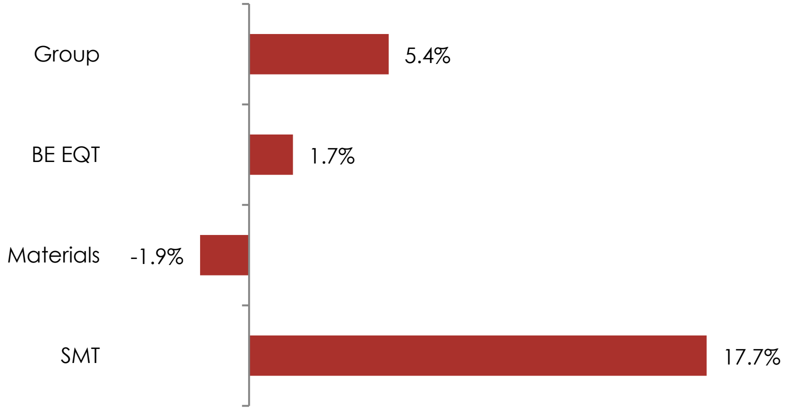


Quarterly Group Bookings
(US$ m)

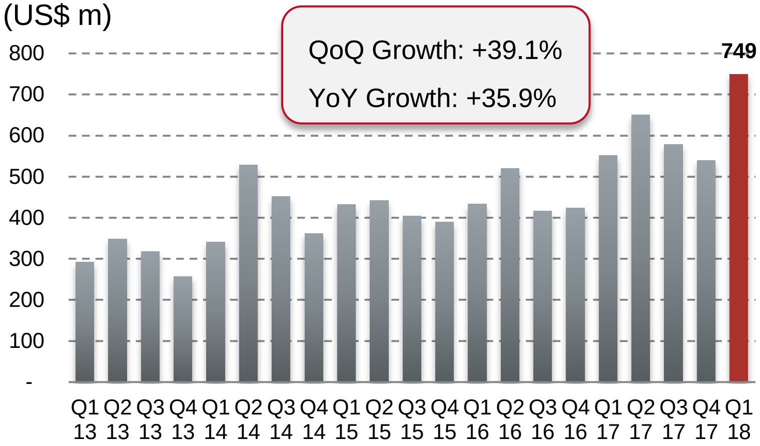

QoQ Growth: +51.9%

YoY Growth: +24.0%

Q1 2018 Segment Profits
(YoY % Growth)

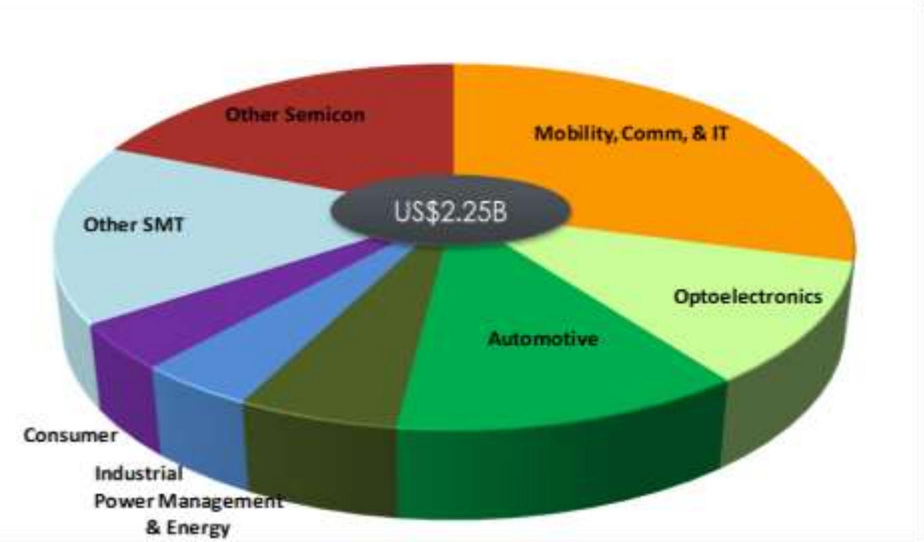


Quarterly Group Backlog
(US$ m)

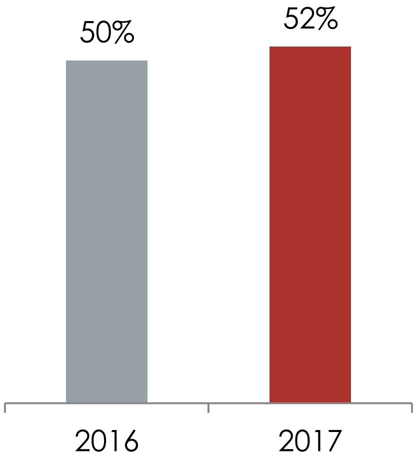

QoQ Growth: +39.1%

YoY Growth: +35.9%

# ASMPT Revenue Breakdown by Application Markets (2017)



**Mobility, Comm & IT, Optoelectronics and Automotive % of Group Revenue**



**Multiple Application Markets is a key strategy**

# AWARDS & RECOGNITION

# Recent Awards & Recognition

- Technology Achievement Grand Award of HKIA 2017
  (for the third time)
  Federation of HK Industries

- Directors of the Year Awards 2017
  Hong Kong Institute of Directors

- Hong Kong Outstanding Enterprises 2017
  HK Economic Digest

- 2017 All Stars of the Semiconductor Industry
  VLSI Research

VLSIresearch's 2017 All Stars

# Recent Awards & Recognition

- Factory of the Year 2016 Award (for SMT) by Produktion/AT Kearney

DIE FABRIK DES JAHRES
Global Excellence in Operations
Produktion ATKearney

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- Ranked among Top 10 of Best Managed HK Companies
- Ranked among Top 10 of Best at Investor Relations

FinanceAsia
ASIA'S BEST COMPANIES 2016

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- Ranked among Top 5 of the 10 BEST Chip Making Equipment Suppliers
- Ranked among Top 3 of Assembly Equipment
- Ranked among Top 4 of Test Equipment

VLSIresearch 10 BEST SUPPLIERS
Customer Satisfaction
2016

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- 2016-17 Corporate Governance Asia – Best Investor Relations Company (HK)
- 2017 Corporate Governance Asia – Best CEO (Investor Relations)

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- 2015 Hong Kong Awards for Industries: Technology Achievement Grand Award

2015
HONG KONG AWARDS FOR INDUSTRIES
TECHNOLOGICAL ACHIEVEMENT GRAND AWARD

# VLSI Awards 2017

| 10 BEST Segment | 10 BEST CHIP MAKING EQUIPMENT SUPPLIERS OF 2017 | VLSI STARS |
|---|---|---|
| LARGE | ADVANTEST<br>TERADYNE | ★★★★★ |
| | ASML<br>ASM Pacific Technology<br>Hitachi Kokusai Electric | ★★★★½ |
| | APPLIED MATERIALS<br>Lam RESEARCH<br>TEL TOKYO ELECTRON | ★★★½ |
| | Hitachi High-Tech | ★★★ |
| FOCUSED | Plasma-Therm | ★★★★½ |
| | ACCRETECH TOKYO SEIMITSU<br>axcelis<br>EVG<br>FORMFACTOR INC.<br>SPTS<br>Xcerra | ★★★★ |

RATINGS FOR
THE BEST SUPPLIERS OF 2017

| TEST EQUIPMENT | VLSI STARS |
|---|---|
| Advantest<br>Teradyne | ★★★★★ |
| ACCRETECH Tokyo Seimitsu<br>ASM Pacific Technology<br>FormFactor<br>Xcerra | ★★★★ |

| ASSEMBLY EQUIPMENT | VLSI STARS |
|---|---|
| ASM Pacific Technology | ★★★★ |

WHAT
THE BEST SUPPLIERS OF 2017
ARE BEST AT

| | | | |
|---|---|---|---|
| ACCRETECH TOKYO SEIMITSU | Uptime<br>Product Performance | ADVANTEST | Trust in Supplier<br>Technical Leadership |
| APPLIED MATERIALS | Technical Leadership<br>Trust in Supplier | ASML | Technical Leadership<br>Partnering |
| ASM Pacific Technology | Field Engineering Support<br>Overall Value | axcelis | Field Engineering Support<br>Spares Support |
| EVG | Technical Leadership<br>Trust in Supplier | FORMFACTOR INC. | Partnering<br>Technical Leadership |
| Hitachi High-Tech | Trust in Supplier<br>Partnering | Hitachi Kokusai Electric | Process Support<br>Field Engineering Support |
| JSR JAPAN ELECTRONIC MATERIALS | Trust in Supplier<br>Recommend Supplier | Lam RESEARCH | Trust in Supplier<br>Partnering |
| Plasma-Therm | Trust in Supplier<br>Commitment | SPTS | Trust in Supplier<br>Uptime |
| SV TCL | Support After Sales<br>Recommend Supplier | TECHNOPROBE | Technical Leadership<br>Trust in Supplier |
| TERADYNE | Recommend Supplier<br>Trust in Supplier | TEL TOKYO ELECTRON | Uptime<br>Usable Performance |
| VAT | Product Performance<br>Recommend Supplier | Xcerra | Commitment<br>Support After Sales |


ASM Pacific Technology
ENABLING THE DIGITAL WORLD
SIPLACE Placement Solution
DEK Printing Solution
Coreless Molded Interconnect Substrate Technology
Fully Automatic Turret Sorting Handler
Multibeam Laser Technology
Compression Molding for Wafer Level & Panel Level Packaging
Comprehensive LED Solutions
All-in-one Solution for 3D & 2D Optical Inspection
Smart Assembly Line Solutions for Industry 4.0
X POWER
Dual Directional Transducer Technology
Patented Imaging Technology for Ball Placement
Chip to Chip Packaging Solutions
Wi-Fi
Li-Fi
Poster Design by ATS Marcom