<table>
<thead>
<tr>
<th>Event</th>
<th>Speaker</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>Parag Agarwal</td>
<td>8:00-8:05</td>
</tr>
<tr>
<td>Strategic Overview</td>
<td>Keith Jackson</td>
<td>8:05-8:30</td>
</tr>
<tr>
<td>Q&amp;A</td>
<td></td>
<td>8:40-9:05</td>
</tr>
<tr>
<td>Markets and Revenue</td>
<td>David Somo</td>
<td>9:05-9:30</td>
</tr>
<tr>
<td>Analog Solutions Group</td>
<td>Vince Hopkin</td>
<td>9:05-9:30</td>
</tr>
<tr>
<td>Break</td>
<td></td>
<td>9:45-10:10</td>
</tr>
<tr>
<td>Intelligent Sensing Group</td>
<td>Taner Ozcelik</td>
<td>10:10-10:35</td>
</tr>
<tr>
<td>Power Solutions Group</td>
<td>Simon Keeton</td>
<td>10:55-11:20</td>
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<tr>
<td>Business unit Q&amp;A / Break</td>
<td></td>
<td>11:20-11:45</td>
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<tr>
<td>Manufacturing Strategy</td>
<td>Bill Schromm</td>
<td></td>
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<tr>
<td>Finance</td>
<td>Bernard Gutmann</td>
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<tr>
<td>Final Q&amp;A</td>
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SAFE HARBOR STATEMENT AND NON-GAAP AND FORECAST INFORMATION

This presentation contains "forward-looking statements," as that term is defined in Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. All statements, other than statements of historical facts, included or incorporated in this presentation could be deemed forward-looking statements, particularly statements about the future financial performance of ON Semiconductor, including financial guidance for the year ending December 31, 2019. Forward-looking statements are often characterized by the use of words such as “believes,” “estimates,” “expects,” “projects,” “may,” “will,” “intends,” “plans,” or “anticipates” or by discussions of strategy, plans, or intentions. All forward-looking statements in this presentation are made based on our current expectations, forecasts, estimates, and assumptions and involve risks, uncertainties, and other factors that could cause results or events to differ materially from those expressed in the forward-looking statements. These factors include, among other things: our revenue and operating performance; economic conditions and markets (including current financial conditions); risks related to our ability to meet our assumptions regarding outlook for revenue and gross margin as a percentage of revenue; effects of exchange rate fluctuations; the cyclical nature of the semiconductor industry; changes in demand for our products; changes in inventories at our customers and distributors; technological and product development risks; enforcement and protection of our intellectual property rights and related risks; risks related to the security of our information systems and secured network; availability of raw materials, electricity, gas, water, and other supply chain uncertainties; our ability to effectively shift production to other facilities when required in order to maintain supply continuity for our customers; variable demand and the aggressive pricing environment for semiconductor products; our ability to successfully manufacture in increasing volumes on a cost-effective basis and with acceptable quality for our current products; risks associated with our acquisition of Fairchild Semiconductor International, Inc. and with other acquisitions and dispositions, including our ability to realize the anticipated benefits of our acquisitions and dispositions; risks that acquisitions or dispositions may disrupt our current plans and operations, the risk of unexpected costs, charges, or expenses resulting from acquisitions or dispositions and difficulties arising from integrating and consolidating acquired businesses, our timely filing of financial information with the Securities and Exchange Commission (“SEC”) for acquired businesses, and our ability to accurately predict the future financial performance of acquired businesses; competitor actions, including the adverse impact of competitor product announcements; pricing and gross profit pressures; loss of key customers or distributors; order cancellations or reduced bookings; changes in manufacturing yields; control of costs and expenses and realization of cost savings and synergies from restructuring; significant litigation; risks associated with decisions to expend cash reserves for various uses in accordance with our capital allocation policy such as debt prepayment, stock repurchases, or acquisitions rather than to retain such cash for future needs; risks associated with our substantial leverage and restrictive covenants in our debt agreements that may be in place from time to time; risks associated with our worldwide operations, including changes in trade policies, foreign employment and labor matters associated with unions and collective bargaining arrangements, as well as man-made and/or natural disasters affecting our operations or financial results; the threat or occurrence of international armed conflict and terrorist activities both in the United States and internationally; risks of changes in U.S. or international tax rates or legislation, including the impact of the recent U.S. tax legislation; risks and costs associated with increased and new regulation of corporate governance and disclosure standards; risks related to new legal requirements; and risks involving environmental or other governmental regulation. Additional factors that could affect our future results or events are described under Part I, Item 1A “Risk Factors” in our 2018 Annual Report on Form 10-K filed with the SEC on February 20, 2019 (our “2018 Form 10-K”) and from time-to-time in our other SEC reports. Readers are cautioned not to place undue reliance on forward-looking statements. We assume no obligation to update such information, except as may be required by law. You should carefully consider the trends, risks, and uncertainties described in this presentation, our 2018 Form 10-K, and other reports filed with or furnished to the SEC before making any investment decision with respect to our securities. If any of these trends, risks, or uncertainties actually occurs or continues, our business, financial condition, or operating results could be materially adversely affected, the trading prices of our securities could decline, and you could lose all or part of your investment. All forward-looking statements attributable to us or persons acting on our behalf are expressly qualified in their entirety by this cautionary statement.

This presentation contains historical non-GAAP financial measures, including free cash flow (FCF), non-GAAP earnings per share (EPS), non-GAAP profit before taxes, and ratios based on them. See the Appendix for a description of these financial measures and a reconciliation of all such non-GAAP financial measures to GAAP. This presentation also contains forward-looking non-GAAP financial measures that are adjusted for certain special items. These special items are out of our control and could change significantly from period to period. As a result, we are not able to reasonably estimate and separately present the individual impact of these special items, and we are similarly unable to provide a reconciliation of the non-GAAP measures. The reconciliation that is unavailable would include a forward-looking income statement, balance sheet, and statement of cash flows prepared in accordance with GAAP.
KEITH JACKSON
PRESIDENT AND CEO
KEY TAKEAWAYS

1. ON’s structural transformation is accelerating and showing strong results

2. Enabling secular megatrends in automotive, industrial, and cloud power markets

3. Strong competitive moat – highly defensible & highly diversified business model

4. Strong & consistent execution – expanding margins & accelerating FCF
ACCELERATING STRUCTURAL TRANSFORMATION

ON IS ENABLING KEY MEGATRENDS – SECULAR TRENDS DRIVING STRONG GROWTH

- Exposed to fastest growing semiconductor end-markets: Automotive, industrial, cloud power

STRONG COMPETITIVE MOAT & HIGHLY DIVERSIFIED BUSINESS MODEL

- Highly differentiated power semiconductor, sensor and analog technologies
- Industry leading cost structure with formidable manufacturing scale
- Largest customer ~5% of revenue, and highly diversified end-market and geographical exposure

STRONG FREE CASH FLOW GROWTH AND SOLID MARGIN EXPANSION

- ~3.5x FCF growth in last five years
- 460 bps of gross margin and 660 bps of operating margin improvement in last five years
- 3.7x increase in non-GAAP EPS in last five years
ENABLING KEY MEGATRENDS

**AUTOMOTIVE**
- Image sensors, Radar and Lidar for ADAS
- Silicon Carbide and silicon power semiconductors for EV/HEV
- Power management for automotive CPUs

**INDUSTRIAL**
- Image sensors for machine vision and robotics applications
- MV and HV MOSFETs, and power modules for improving energy efficiency of industrial systems
- Connectivity and power management for Industrial IoT applications

**CLOUD POWER**
- Analog power management for server CPUs for datacenter and enterprise applications
- Mid-voltage MOSFETs for 5G infrastructure market
- Mid-voltage MOSFETs for power supplies for datacenter applications
EXPOSED TO FASTEST GROWING MARKETS

2018 REVENUE BY MARKET

- **Automotive**: 31%
  - Power semiconductors for electrification, sensors for ADAS, LED lighting, analog power management for automotive processors

- **Industrial**: 27%
  - Energy efficiency for industrial systems, machine vision, robotics

- **Cloud Power**: 6%
  - Server power management, 5G infrastructure

- **Communications**: 14%
  - Iceberg includes only smartphone related revenue

- **Client Computing**: 9%

- **Consumer**: 13%

2018 REVENUE $5.878B | GROSS MARGIN 38.1%
## STRONG COMPETITIVE MOAT

### Leading Technical Capabilities
- Power semiconductors, Silicon Carbide, Auto/Industrial image sensors, cloud-power, analog power management
- Strong track-record in automotive, industrial and cloud power markets

### Long Life Cycle Products
- Sticky portfolio with long life cycle products for critical applications
- Highly diversified customer base

### Broad and Synergistic Portfolio
- Broad and synergistic product portfolio for power, analog and sensor semiconductors
- 84,000 SKUs

---

**Vast global sales and application engineering network**

**Formidable manufacturing scale and industry leading cost structure**
STICKY PRODUCTS WITH STRONG GROWTH

ON Total Revenue

2018 PRODUCT LONGEVITY MIX

<table>
<thead>
<tr>
<th>Revenue $m</th>
<th>2016¹</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,600</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4,800</td>
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<tr>
<td>5,000</td>
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<td>5,200</td>
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<td>5,400</td>
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<tr>
<td>5,600</td>
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<td>5,800</td>
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<tr>
<td>6,000</td>
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</tbody>
</table>

2018 PRODUCT LONGEVITY MIX

- 0-3 Years 21%
- 3-7 Years 32%
- 7+ Years 47%

¹: FY2016 represents Q4'16 Annualized values.
TOP 20 END CUSTOMERS REPRESENT 36% OF 2018 REVENUE
RESULTS SUPPORT ACCELERATING TRANSFORMATION

SOLID MARGIN PERFORMANCE
400 bps non-GAAP gross margin & 500 bps non-GAAP operating margin expansion during 2015-18

IMPRESSIVE EPS & FCF GROWTH
2.3x non-GAAP EPS and 3.8x FCF growth from 2015-18

STRONG OPERATING LEVERAGE
131% growth in non-GAAP operating profit vs. 68% growth in revenue from 2015-18

CONSISTENT EXECUTION
Consistently exceeded consensus non-GAAP EPS estimates
GROWTH DRIVEN BY HIGH VALUE REVENUE

PROVIDING ENABLING TECHNOLOGIES
Enabling EV/HEV, Autonomous driving, ADAS, Machine vision, factory automation, energy efficiency

EMERGENCE AS POWER SEMI LEADER
Emerged as #2 player in power semiconductors and a credible alternative to the market leader

PENETRATING NEW ATTRACTION MARKETS
Server power management, 5G infrastructure
STRATEGIC INTENT

Leadership in power, analog and sensor semiconductors for automotive, industrial & cloud power end-markets

Enable disruption - Drive growth by providing enabling technologies for emerging and disrupting megatrends

Deliver consistent business performance and strong execution

Improve margins, capital efficiency, and free cash flow
M&A STRATEGY

Value based approach - Goal is to create value for shareholders

- Transactions need to be accretive to stock price
- Return on investment has to be significantly above cost of capital

Deals have to make solid strategic sense

- Augment presence in automotive, industrial, and cloud power markets
- Expand scale and synergies to improve cost structure

M&A is critical part of ON’s strategy

- Strong competency in M&A
- Significant opportunity to generate shareholder value through synergies as semiconductor industry consolidates
THOUGHTS ON INDUSTRY CONSOLIDATION

Source: Morgan Stanley

Notes: There were 40+ completed acquisitions and 6 new additions of semiconductor companies between 2013 and 2017
ON Semiconductor was ranked 59 on the list of 100 Most Sustainable Companies in the U.S. The company was scored on 5 key areas: shareholders, employees, customers, community and planet.

ON Semiconductor has been named among world’s most ethical companies for four consecutive years by Ethisphere Institute. ON is one of only three honorees in semiconductor industry category in 2019.

ON Semiconductor was added to the North America Dow Jones Sustainability Index as one of four semiconductor companies in 2018.

137 individual projects focused on energy conservation, waste reduction, chemical recycling, material optimization and water conservation led to the company saving an estimated $7.3 million in 2018.

ON Semiconductor is a founding member of CSR Board.org. This group of companies, from different industries, is dedicated to being good corporate citizens through making an impact globally with their sustainability and corporate social responsibility programs.

In 2017, ON Semiconductor scored 85/100 in a 3rd party assessment of our environment, labor & human rights, fair business, and sustainable procurement practices. We were ranked in the top 1% of 150 companies in our category.
### TARGET MODEL 2022

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2018</th>
<th>2022 MODEL</th>
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<tbody>
<tr>
<td><strong>REVENUE</strong></td>
<td>$3.9 BILLION</td>
<td>$5.9 BILLION</td>
<td>$7.1 BILLION</td>
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<tr>
<td><strong>GROSS MARGIN(^1)</strong></td>
<td>35.0%</td>
<td>38.1%</td>
<td>43.0%</td>
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<tr>
<td><strong>OPERATING EXPENSES(^1)</strong></td>
<td>22.7%</td>
<td>21.4%</td>
<td>21.0%</td>
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<tr>
<td><strong>OPERATING MARGIN(^1)</strong></td>
<td>12.3%</td>
<td>16.7%</td>
<td>22.0%</td>
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<tr>
<td><strong>PROFIT BEFORE TAX(^1)</strong></td>
<td>$412 MILLION</td>
<td>$893 MILLION</td>
<td>$1,500 MILLION</td>
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<tr>
<td><strong>CASH TAX RATE</strong></td>
<td>6.7%</td>
<td>6.0%</td>
<td>17.5%</td>
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<tr>
<td><strong>NON-GAAP EPS(^1)</strong></td>
<td>$0.91</td>
<td>$1.96</td>
<td>$3.00</td>
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<tr>
<td><strong>FREE CASH FLOW(^1)</strong></td>
<td>$370 MILLION</td>
<td>$759 MILLION</td>
<td>$1,200 MILLION</td>
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\(^1\): Non-GAAP financial measure. See the Appendix for a reconciliation to the most directly comparable GAAP measure.
SUMMARY

1. Compelling value proposition – Secular growth, highly defensible model, expanding margins & free cash flow

2. Providing enabling technologies driving secular megatrends in automotive, industrial, and cloud power markets

3. Highly defensible business model with strong competitive position & diverse customer base

4. Solid financial performance – expanding margins and accelerating FCF\(^1\)

1: FCF: Free cash flow
Questions & Answers
DAVID SOMO
SENIOR VICE PRESIDENT
STRATEGY, MARKETING
& SOLUTIONS ENGINEERING
KEY TAKEAWAYS

1. Significant content increases in auto, industrial and cloud power key driver of ON’s revenue – approximately 65% of business exposed to these secular drivers

2. Automotive Growth Accelerators – Automated Driving (ADAS & Surround View), Vehicle Electrification and Advanced Lighting Systems

3. Industrial Growth Accelerators – Energy Infrastructure, Industrial Power & Motion Control, Industrial Automation and Industrial IoT (IIoT)

4. Cloud Power Growth Accelerators – Hyperscale Datacenters, 5G infrastructure
KEY MEGATRENDS TO DRIVE STRONG GROWTH

AUTOMOTIVE
- Expected 4 year revenue CAGR of 9%
- Strong relationships with global tier-1 integrators and OEMs
- Providing enabling technologies for EV/HEV, ADAS, Surround View, LED lighting and connectivity

INDUSTRIAL
- Expected 4 year revenue CAGR of 6%
- Broad presence with leading global industrial OEMs and strong distribution footprint
- Providing enabling technologies for improving energy efficiency and industrial automation

CLOUD POWER
- Expected 4 year revenue CAGR of 13%
- Leveraging relationships with computing and communications customers to penetrate new markets
- Providing enabling power management technologies for servers and 5G infrastructure
AUTOMOTIVE – EXPECTED REVENUE CAGR 9%

Revenue ($m)

- **ELECTRIC VEHICLES** – 42% TAM CAGR FOR 2017-22
  - Up to $500 in power semiconductor content
- **LED LIGHTING** – 24% TAM CAGR FOR 2017-22
  - LED Driver, Power Management, Motor Control and In-Vehicle Networking
- **ADAS & AUTONOMOUS DRIVING** – 18% TAM CAGR FOR 2017-22
  - Imaging, Radar, LiDAR, Power Management, Ultrasonic

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue ($m)</th>
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<tr>
<td>2014</td>
<td>952</td>
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<tr>
<td>2015</td>
<td>1,162</td>
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<td>2016</td>
<td>1,314</td>
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<td>2017</td>
<td>1,678</td>
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<tr>
<td>2018</td>
<td>1,834</td>
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</table>

Revenue ($m)
STEEP RISE IN AUTOMOTIVE ADDRESSABLE CONTENT

LEVEL 2 EV

$580

2018

- Radar Sensors
- Medium Voltage Discrete
- High Voltage Discretes
- Power Modules
- Matrix / Pixel Lighting

LEVEL 4 EV

$1,760

2022

- Lidar
- Sensor Fusion
- Wide-band Gap
- Laser lighting

$1,000

$500

$260

Body Convenience & Passive Safety

Electrification

Advanced Safety

2018

2022
VEHICLE ELECTRIFICATION

I.C.E.

OBC
IGBTs, SiC FETs
PIMs
DC-DC
IVN

PHEV/BEV

ON Content
Up to $40
HV-48V-12V
MOSFETs
SiC, GaN
Power Modules
DC-DC

ON Content
Up to $500

Auxiliary Motor Control
IPMs
Motor Drivers
MOSFETs
IVN

Main Drive
IGBTs, SiC FETs
PIMs
DC-DC
IVN

Starter-Generator
MOSFETs
Power Modules
Gate Driver,
Current Sense

ON

2019 Analyst Day

OBC: On board charger, PIM: Power integrated module, IVN: In vehicle networking, PHEV: Plug-in hybrid electric vehicle, BEV: Battery electric vehicle
AUTOMATED DRIVING

Level 0
Passive Safety
(Seat Belt & Airbags)

Level 2
Limited Autonomy
(ADAS, Viewing, ACC, LDWS, Auto-Braking)

Level 4
High Automation
(Self-driving with ability of driver to intervene)

ON Content
Up to $10

ON Content
Up to $150

ON Content
Up to $1,000

Power Management
PMIC, Drivers, DC-DC, LDO, IVN

Power
Power MOSFETs, Discretes

Sensors & Fusion
Image, Radar, Lidar, Ultrasonic, Processing

ADAS: Advanced driver assist system, ACC: Adaptive cruise control, LDWS: Lane departure warning system, LDO: Low dropout regulator
ADVANCED LIGHTING

**HID & Incandescent Lamps**

**LED**

**Interior and Rear**
- LED Drivers, Power Management, IVN, Discretes

**Front**
- LED, Matrix Beam, Pixel, Laser drivers, Power Management, IVN, Discretes

**ON Content**
- Up to $3
- Up to $30

HID: High intensity discharge
INDUSTRIAL POWER & MOTORS – 5% TAM CAGR FOR 2017-22
Need for power efficiency driving higher content - 6x the MOSFETs in BLDC motor, 6x the IGBTs in Industrial motors

ENERGY INFRASTRUCTURE – 19% TAM CAGR FOR 2017-22
Up to $650 content in solar inverter vs. none in coal
Early stage of long-term infrastructure shift

INDUSTRIAL AUTOMATION – 17% TAM CAGR FOR 2017-22
Robotics, machine vision, connectivity, and power

Revenue ($m)
ENERGY INFRASTRUCTURE

Coal Power Plant

ON Content
$0

Solar Farm

ON Content
$650

Inverter

PIMs
SJ MOSFETs
SiC FETs and Diodes

Boost Converter

PIMs
SJ MOSFETs
SiC FETs and Diodes

Gas Pump

ON Content
$0

EV Charging Station

ON Content
$500

DC-DC LLC

SJ MOSFETs
SiC FETs & Diodes

Power Factor Correction

IGBTs, SJ MOSFETs
Power Modules
SiC FETs and diodes

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INDUSTRIAL POWER AND MOTORS

AC Induction Drive

Variable Frequency Drive

ON Content

$0

$40

Power Conversion

IGBTs, SJ MOSFETs
SiC FETs & Diodes
PFC Controllers

Power Factor Correction

IGBTs, SJ MOSFETs
Power Modules
SiC FETs and Diodes

Motor Inverter

IGBTs, SJ MOSFETs
Power Modules
SiC FETs and Diodes

SJ: Superjunction, FET: Field effect transistor
INDUSTRIAL AUTOMATION

Human Manufacturing

ON Content $0

Robotic Manufacturing

ON Content $250

Machine Vision
- Image Sensors

Motor Drive
- MV MOSFETs
- Motor Drivers
- Power Modules

Power Conversion
- SJ MOSFETs
- SiC FETs & Diodes
- PFC Controllers
- MV MOSFETs

PFC: Power factor correction. MV: Medium voltage
5G INFRASTRUCTURE – 247% TAM CAGR FOR 2017-22
5x the MOSFET usage in a 5G radio
3-5x the number of base stations as 4G
Analog power management

SERVER – 15% TAM CAGR FOR 2017-22
Increasing rack power every generation requires high performance MV MOSFETs to meet efficiency targets
Analog power management for CPU, accelerators and memory
5G NETWORKS

4G: 2x2 TxRx

5G: MMIMO & Beamforming

ON Content
$9

ON Content
$170

Digital & Auxiliary Power

MV MOSFETs
Power Stages
Point of Load
PMICs

+ Radio Power

IGBTs, SJ MOSFETs
Power Modules
SiC FETs and Diodes

+ AC-DC Power Supply

SJ MOSFETS
SiC FETs & Diodes
PFC Controllers
MV MOSFETs
SERVERS

VR13 Server
ON Content $0
ON Content $45
ON Content $75

VR12 Server

VR14 Server

Core & Memory Power
VR14 Digital Controller
Smart Power Stage

Auxiliary Power
MV MOSFETs
Point of Load
eFuse

AC-DC Power Supply
SJ MOSFETS
SiC FETs & Diodes
PFC Controllers

PFC: Power factor correction, SJ: Superjunction
Positioned for leadership in automated driving and vehicle electrification with industry's best sensor and power portfolio

High exposure to key secular growth applications in Automotive, Industrial and Cloud Power drives significant content increase leading to outsized growth

Comprehensive sensor, power management, motor control and connectivity solutions driving above market growth in Industrial power and IIoT

Robust growth in Cloud Power servers and 5G infrastructure with new solutions and significant power content increases
ANALOG SOLUTIONS GROUP
VINCE HOPKIN
EXECUTIVE VICE PRESIDENT
KEY TAKEAWAYS

1. Driving secular growth through content increase in automotive, industrial and cloud power

2. Differentiation through ultra low power consumption, integration and high reliability

3. Leveraging analog power management expertise in auto and cloud markets

4. Margin expansion through portfolio optimization and improving efficiencies
ANALOG SOLUTIONS GROUP (ASG)

2018 REVENUE $2.071B | GROSS MARGIN 42.4%

2018 REVENUE BY MARKET

AUTOMOTIVE
Leader in LED front lighting, sensor interface ICs, ADAS power management

INDUSTRIAL
Leader in power conversion, power safety (ground fault/arc fault protection), and industrial ASIC

CLOUD POWER
Leader in smart power stage for server CPUs

2019 Analyst Day
ASG STRATEGIC INTENT

Invest in analog power management for automotive, industrial, and cloud power markets with ultra low-power differentiation

Leverage synergistic portfolios with ON’s other business groups to provide a total solution

Expand margins through portfolio optimization and operational improvements

Enable disruption - Drive growth by providing enabling technologies for emerging and disrupting megatrends
Participate in product categories in which we have competitive advantage - High volume analog, highly efficient and robust power management

Leverage differentiation in ultra low power consumption, power efficiency, integration, and high reliability

Focus on automotive, industrial and cloud power markets - High natural barriers to market entry, longevity, high percentage of sole-source products, and better margin profile

Leverage our manufacturing capabilities - stable/controllable supply, lower cost, highest quality
GROWTH OPPORTUNITIES IN STRATEGIC MARKETS

AUTOMOTIVE

31% of ASG revenue
TAM (2022) of $30B
2017-22 TAM CAGR of 6.2%

Key Solutions
ADAS Power Solutions
Sensor Interfaces
LED Lighting
Intelligent Power

INDUSTRIAL

24% of ASG revenue
TAM (2022) of $40B
2017-22 TAM CAGR of 7.1%

Key Solutions
Ultra Low Power Wireless Connectivity
Advanced Motor Drivers
Embedded MCUs

CLOUD POWER

6% of ASG revenue
TAM (2022) of $2.7B
2017-22 TAM CAGR of 16%

Key Solutions
Multi-Phase Power Control
Smart Power Stage
PoL Power Conversion
ASG AUTOMOTIVE BUSINESS

LIGHTING
#1 supplier of LED lighting solutions
Most competitive offerings in the industry

ULTRASONIC SENSOR INTERFACES
Greater than 20% growth in sensor content/car
Greater than 35% revenue growth 2018/2017

ADAS POWER & AUTONOMOUS DRIVING
Only ASIL certified power management supplier for the two leading ADAS processing platforms

¹: 2016 represents Q4 '16 Annualized values.
ASG KEY AUTOMOTIVE GROWTH DRIVERS

ASG Automotive TAM ($m)

- **FRONT, INTERIOR AND CONVENIENCE LIGHTING**
  - $25 per car: LED power, adaptive lighting

- **SAFETY AND DRIVE TRAIN SENSING**
  - $50 per car: signal conditioning, networking, and power management

- **INVESTING IN ADAS POWER**
  - $40 per car: multi-phase ASIL power management and power stage

Source: Strategy Analytics, ON Semiconductor
NEW CONTENT DRIVING GROWTH

Limited Assistance

ASG Content
$50

Sensing
Ultrasonic Pressure Position

Advanced Driver Assistance

In Vehicle Network
LIN/CAN/FlexRay SBC Embedded MCU

Safety, Comfort
LED lighting HVAC motor drivers

ADAS Power
Multi-phase Control Power Stage PoL

PoL: Point of load, HVAC: Heating, ventilation, and air-conditioning
ADAS POWER MANAGEMENT

ONLY PROVIDER OF ASIL QUALIFIED MULTI-PHASE POWER SOLUTIONS FOR LEADING ADAS PROCESSORS

#1 SUPPLIER OF BATTERY CONNECTED POWER CONVERSION SOLUTIONS

ON’S AUTOMOTIVE IMAGE SENSING LEADERSHIP DRIVES OPPORTUNITIES IN ADAS POWER MANAGEMENT

Source: ON Semiconductor
ASG INDUSTRIAL BUSINESS

ASG Industrial Revenue

WORLDS LOWEST POWER BLE
Strong opportunity funnel
Connecting the Personal Area Network

ULTRA LOW POWER CONNECTIVITY
Experiencing strong revenue growth
Multi-protocol software based radio

USB 3.X AND HIGH SPEED INTERFACES
$300M of new SAM
Signal management and conditioning

EMBEDDED PROCESSING
Intelligence for power, sensing and industrial automation

¹: 2016 represents Q4’16 Annualized values.
ASG KEY INDUSTRIAL GROWTH DRIVERS

**ASG Industrial Market TAM ($m)**

- **Industry 4.0**
- **High Speed Data**
- **Smart Building**
- **IOT Edge**

**IOT EDGE CONNECTIVITY**
Edge connectivity 2018-22 revenue CAGR of 15%
Rapid Growth in Industrial Connectivity

**SMART BUILDING & HOME CONTROL**
More than 8% 2018-22 revenue CAGR
Voice control solutions adding more than $250M of new opportunity

**HIGH SPEED DATA**
Greater than 30% 2018-22 revenue CAGR
Interface controls solutions of USB type-C

**INDUSTRY 4.0**
Content Growing more than 30%
Working closely with leading motor and robotics manufacturers on intelligent motion solutions

Source: IHS, ON Semiconductor
ASG CLOUD POWER BUSINESS

ASG Cloud Power Revenue

MULTI-PHASE POWER CONTROL
$600M of new opportunity in 2019
Greater than $75 per server in 2021

SMART POWER STAGE
The 2nd largest silicon content after processor
Greater than $150 content per AI Accelerator

POINT OF LOAD
$100 per 5G base station; $20 per server

BACK PLANE POWER CONVERSION
Expansion SAM for 48V solutions

¹: FY2016 represents Q4'16 Annualized values.
ASG KEY CLOUD POWER GROWTH DRIVERS

**AI ACCELERATORS**
Growing more than 115%/year during 2018-22
Smart power stage for high performance GPU’s

**5G and Data Networking**
Growing more than 110%/year during 2018-22
Complete solutions for every power node

**LARGE SCALE STORAGE**
Growing more than 70%/year during 2018-22
Power solutions for network processors and storage devices

**HIGH END GRAPHICS CARDS**
Growing more than 40%/year during 2018-22
Smart power stage for GPU’s

Source: IHS, ON Semiconductor
STEEP GROWTH IN ADDRESSABLE SERVER CONTENT


Grantley Haswell VR12.5 2014-2017
Purley Skylake VR13 2017-2019
Whitley Copper Lake VR13.HC 2020-2021
Eagle Stream Sapphire Rapids VR14 2021-2023

Instantaneous Peak Power
BOM Content $
After processor, smart power stages are the second largest component of silicon BOM

Hyper Scale Data Center

Number of servers in a typical data center - 3M

PUE (Power Usage Effectiveness) - 1.8

Server Operating Lifetime - 4.5 years

Lifetime Energy Savings of $38 million
ASG MARGIN FOCUS

**Portfolio management**
- High-value focused investments
- Strategic divestitures and rebalancing R&D spending to accelerate mix improvements

**Focus on secular growth applications**
- Cloud power solutions driving rapid high margin growth
- Low power connectivity
- Embedded solutions
- ADAS
- Medical

**Operational Improvements**
- Scale strengthens ON Semiconductor’s buying power
- Strategic capital investments reduce dependency on external manufacturing
- Continued technology advancements
SUMMARY

1. Secular content increase in auto, industrial and cloud applications to drive strong growth

2. Drive towards leadership position in markets in which we participate – differentiate through power management and reliability expertise

3. Accelerating traction in cloud power and ADAS power markets

4. Margin expansion through portfolio optimization and improving efficiencies
KEY TAKEAWAYS

1. Accelerating momentum in ADAS due to increasing content and expanding portfolio.

2. Further strengthening leadership position in automotive – extending competitive lead through innovation.

3. Leadership in industrial with growth in machine vision and robotics.

4. Rapidly improving margin profile and financials.
INTELLIGENT SENSING GROUP (ISG)

2018 Revenue by Market

**Automotive**
- 56% of revenue
- #1 market share
- Technology leadership
- Broadest product and customer portfolio

**Industrial**
- 29% of revenue
- #1 market share in machine vision
- Technology leadership
- Inspection, Scanning, Automation, Security, Robotics

**Edge AI**
- 15% of revenue
- Leading global shutter technology
- Retail, Smart building, Robotics, Consumer

2018 REVENUE $769M | GROSS MARGIN 41%
ISG STRATEGIC INTENT AND GOALS

- Sustain #1 position in Automotive and Machine Vision markets through continuous innovation and technology leadership
- Enable next generation ADAS by offering complete range of sensors including Radar and cost effective LiDAR
- Expand margins through portfolio optimization and operational improvements
- Enable disruption - Drive growth by providing enabling technologies for emerging and disrupting megatrends
SHIFT IN ISG PRODUCT MIX & MARGIN IMPROVEMENT

STRONG AUTOMOTIVE GROWTH
2014-18 ISG automotive revenue CAGR 24%

EXIT LOW MARGIN MARKETS
Mobile image sensors and low-end security

NEW DIFFERENTIATED PRODUCTS
New product performance and features increase ASP

IMPRESSIVE GROSS MARGIN EXPANSION
~800 bps gross margin improvement during 2016-18
First mover’s advantage in automotive - Most automotive imaging/ADAS software tailored to ON image sensors – high switching costs

Leading the market in most critical performance metrics – High dynamic range (HDR), Low Light, LED flicker mitigation (LFM), Cyber Security, ASIL

Comprehensive automotive portfolio addressing all imaging segments, expanding LiDAR and Radar

Broad industrial and edge AI portfolio, offering best performance and multiple product families for these diverse segments
ISG GROWTH OPPORTUNITIES IN STRATEGIC MARKETS

**AUTOMOTIVE**

- 56% of ISG revenue
- 2022 SAM of $2.6B
- 2017-22 SAM CAGR of 26%

**Key applications:**
- ADAS
- Autonomous Driving
- In-cabin (OMS, DMS)
- Viewing
- Radar
- LiDAR

**INDUSTRIAL**

- 29% of ISG revenue
- 2022 SAM of $1.8B
- 2017-22 SAM CAGR of 10%

**Key applications:**
- Robotics
- Machine Vision
- Intelligent Traffic Systems
- Factory Automation
- Scanning
- Security

**EDGE AI**

- 15% of ISG revenue
- 2022 SAM of $1.2B
- 2017-22 SAM CAGR of 22%

**Key applications:**
- IoT
- Retail
- Smart Building
- Robotics
- Drones

DMS: Driver Monitor System, OMS: Occupancy Monitor System
STRONG MOMENTUM IN AUTOMOTIVE

ISG Automotive Revenue

STRONG AUTOMOTIVE GROWTH
24% revenue CAGR during 2014-18

LEADER IN AUTO IMAGE SENSORS
62% share in overall market & 81% in ADAS

HIGHLY SUSTAINABLE COMPETITIVE POSITION
Installed base of ADAS software written for ON sensors – high switching costs

MARQUEE CUSTOMER BASE
Presence with all major global OEMs and Tier-1s

¹: FY2014 revenue includes full year Aptina revenue.
ISG KEY AUTOMOTIVE GROWTH DRIVERS

**VIEWING**
Surround view 1MP and 2MP, rearview VGA moving to 1MP

**ADAS**
Driver assist 1MP to 8MP, requires performance, ON is #1

**IN-CABIN & CMS**
Level 3 and higher needs driver monitoring
Occupancy monitoring growing
Mirror-less systems reduce drag, enable more design flexibility

**AUTONOMOUS DRIVING**
Requires multiple modalities
Function over size and cost

**RADAR**
Level 2+/3 systems: 360 short range and forward long range
Level 4/5 for AD with short, mid and long range 360

**LIDAR**
Expanding LiDAR usage for level 3/4/5

Source: Yole, TSR, ON Semiconductor
CMS: Camera Mirror-less System
AUTONOMOUS DRIVING PORTFOLIO EXPANSION

Radar, LiDAR & Image Sensor Fusion – Potential SAM growth of 10x

Energy Efficiency: 1 sensor pre-processor vs. 2
Size & Weight Reduction: 1 cable to central processor
Better Sensing: Robust AD algorithms use multiple modalities – Imaging, LiDAR, Radar

Source: BofA Merrill Lynch Global Research, ON Semiconductor
ADAS: Advanced driver-assistance systems, AD: Autonomous Driving
ON SEMICONDUCTOR, THE AUTOMOTIVE IMAGE SENSOR LEADER

**Automotive Imagers**
- 2016:
  - ON Semiconductor: 49%
  - Sony: 14%
  - Omnivision: 19%
  - Others: 18%

- 2018:
  - ON Semiconductor: 62%
  - Sony: 8%
  - Omnivision: 20%
  - Others: 10%

**Sensing Cameras (ADAS, AD)**
- 2016:
  - ON Semiconductor: 63%
  - Sony: 14%
  - Omnivision: 8%
  - Others: 15%

- 2018:
  - ON Semiconductor: 81%
  - Sony: 5%
  - Omnivision: 5%
  - Others: 9%

Source: Techno Systems Research Dec 18, Dec 16, Automotive camera Market Analysis 2018
### STRONG TECHNOLOGY LEAD OVER COMPETITION

<table>
<thead>
<tr>
<th>Feature</th>
<th>Competitor 1</th>
<th>Competitor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Breadth</td>
<td>☑️</td>
<td>☑️</td>
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<tr>
<td>ADAS/AD Products</td>
<td>☑️</td>
<td>☑️</td>
</tr>
<tr>
<td>System</td>
<td>☑️</td>
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<td>Pixel Technology</td>
<td>☑️</td>
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<tr>
<td>Global Shutter IQ</td>
<td>☑️</td>
<td>☑️</td>
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<tr>
<td>Image Quality @ High Temp</td>
<td>☑️</td>
<td>☑️</td>
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<tr>
<td>Customer Support</td>
<td>☑️</td>
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</tbody>
</table>

**LARGEST AUTOMOTIVE PORTFOLIO**
Sensors for ADAS, AD, rear view, surround view, CMS, in-cabin

**BROAD GLOBAL SHUTTER OFFERING**
VGA, to 45MP, 2u to 9u pixel, high speed, low power

**SENSORS WITH SYSTEM SOLUTIONS**
LFM+HDR for viewing + sensing, depth, cyber

**TECHNOLOGY FOR MISSION CRITICAL**
Technology hardened for mission critical applications as opposed to commodity mobile market

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ADAS: Advanced driver-assistance systems, AD: Autonomous Driving, CMS: Camera Mirror-less System, VGA: Video Graphics Array 640x480, MP: Mega-Pixel, LFM: LED Flicker Mitigation, HDR: High Dynamic Range
HIGHEST DYNAMIC RANGE IN AUTOMOTIVE

SONY

ON Semiconductor
# MOST COMPREHENSIVE AUTOMOTIVE PORTFOLIO

## Technology

<table>
<thead>
<tr>
<th>140dB HDR</th>
<th>Flicker Free</th>
<th>Clarity +</th>
</tr>
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<tbody>
<tr>
<td>✔️</td>
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## Products

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<thead>
<tr>
<th>4MP</th>
<th>3MP</th>
<th>2MP</th>
<th>1MP</th>
<th>SOC</th>
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</table>

## Viewing + Sensing

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<thead>
<tr>
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<th>8MP Cyber Security</th>
<th>2MP Cyber Security</th>
<th>1MP</th>
<th>SOC</th>
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<td>✔️</td>
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</table>

## ADAS + AD

<table>
<thead>
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</table>

## GS / In Cabin

<table>
<thead>
<tr>
<th>Leading IQ</th>
<th>Ecosystem</th>
<th>RGB NIR</th>
<th>Advanced ISP</th>
<th>Clarity+ Support</th>
<th>On Chip Analytics</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

## SPU

<table>
<thead>
<tr>
<th>3MP</th>
<th>2MP</th>
<th>1MP</th>
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<tbody>
<tr>
<td>✔️</td>
<td>✔️</td>
<td>✗</td>
</tr>
</tbody>
</table>

## Radar, LiDAR

<table>
<thead>
<tr>
<th>Radar MIMO+</th>
<th>Short and long range</th>
<th>Low noise SiPM</th>
<th>Radar 77GHz</th>
<th>LiDAR SiPM</th>
<th>SiPM Arrays</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔️</td>
<td>✔️</td>
<td>✗</td>
<td>✔️</td>
<td>✔️</td>
<td>✗</td>
</tr>
</tbody>
</table>

## Notes

- **ADAS**: Advanced driver-assistance systems, **AD**: Autonomous Driving, **GS**: Global Shutter, **SPU**: Sensor Processing Unit, **HDR**: High Dynamic Range, **SiPM**: Silicon PhotoMultiplier, **MIMO**: Multiple-Input Multiple Out put
- **Best performance**: ✔️
- **Supported, lower perf**: ○
- **Not supported**: ✗
STRONG PROGRESS ON AUTOMOTIVE RADAR

1ST PRODUCT, DIFFENTIATED FEATURES
MIMO+ enables higher resolution
1st in market with 4 simultaneous transceivers
Scalable design supports short and long Radar
Cascade for flexible configurations

GROWING MARKET - $90 CONTENT/CAR
2018 systems 360° short range and forward long range Radar
BOM growing to $90 for level 4
2021 systems with 360° mid range Radar
By 2025, advanced systems for Autonomous Driving

ON SEMICONDUCTOR ENTERING MARKET
Design activity with leading OEMs and system providers
1st revenue in 2021

2018
Level 2+/3: 360° 3D Map

2021
Level 3/4: Extended Range

2025
Level 4/5: AD Radar
ISG INDUSTRIAL BUSINESS

**GROWTH**
Expanding PYTHON Machine Vision products
Strong showing by XGS products &
global shutter product families
Continued flat panel inspection from CCD

**LEGACY**
Harvest non-focus markets
Exit low margin product lines

<table>
<thead>
<tr>
<th>Year</th>
<th>Growth ($m)</th>
<th>Legacy ($m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>150</td>
<td>200</td>
</tr>
<tr>
<td>2016</td>
<td>150</td>
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<tr>
<td>2017</td>
<td>150</td>
<td>200</td>
</tr>
<tr>
<td>2018</td>
<td>150</td>
<td>200</td>
</tr>
</tbody>
</table>

ISG Industrial Revenue ($m)

CCD: Charge-Coupled Device

2019 Analyst Day
ISG INDUSTRIAL & EDGE AI GROWTH DRIVERS

INDUSTRIAL VISION
Robotics, Inspection

FACTORY AUTOMATION
High speed capture, Cobot, Quality control

INTELLIGENT TRAFFIC SYSTEMS
High resolution imaging, New machine vision features

SCANNING
Portable and Industrial barcode, 1D, 2D and QR

SMART BUILDING
Lighting, Assistants, Appliances, IP Cam

FUTURE RETAIL
Smart vending, Checkout-free

ROBOTICS
Drones, Personal Robotics, Delivery

Source: Yole, Markets and Markets, ON Semiconductor
LEADERSHIP IN MACHINE VISION THROUGH XGS

Price

- SONY

Speed

- Frame Capture Speed
  - SONY

Performance

- Low Light Image Quality
  - ON Semi
  - Sony Pregius

Footprint

- SONY
- Supports 29x29 camera format

Portfolio

- # of Sensors
  - SONY

Support / System

- Ease of Use
  - SONY
ISG MARGIN IMPROVEMENT PLANS

Manufacturing Optimization
- Continue yield and test time improvements
- Packaging cost reductions
- Manufacturing insourcing

Portfolio Evolution
- Focus on higher margin, differentiated products
- ADAS, Autonomous driving, LiDAR, Radar, Machine Vision, Edge AI

Operating Expenses
- Operating expense leverage and rationalization
SUMMARY

1. Accelerating growth in ADAS – Building on leadership position
2. Extending competitive lead through leadership in sensor fusion
3. Leadership in industrial - Increasing momentum in machine vision and robotics
4. Margin expansion through operational improvements and mix
KEY TAKEAWAYS

1. PSG has established leadership in power semiconductor market – power is one of the most compelling growth opportunities in semiconductors.

2. Well positioned to benefit from huge opportunity in Silicon & Silicon Carbide for electric vehicles.

3. Power content to continue to grow in industrial and cloud applications.

4. Headroom for margin improvement driven by mix and operational improvements.
2018 REVENUE $3.030B | GROSS MARGIN 37%

**AUTOMOTIVE**
Leadership in most product categories
Well positioned to benefit from Silicon and Silicon Carbide opportunity in EVs

**INDUSTRIAL**
Leadership in power modules, IGBTs, Power MOSFETs
Benefitting from increased power content for energy efficiency

**CLOUD POWER**
Leadership in MV and LV MOSFETs
Accelerating growth in 5G infrastructure

Communications include only smartphone related revenue
**Leadership in Power semiconductors and Modules for automotive, industrial, and cloud power end-markets**

**Drive share gains with inflection in power semiconductor technology - Ownership of complete SiC supply chain, including substrates and epi**

**Position to benefit from impending growth in EV Market - Provide broad portfolio of auto qualified Silicon and Silicon Carbide power semiconductors and modules**

**Enable disruption - Drive growth by providing enabling technologies for emerging and disrupting megatrends**
1. Leading technical capabilities in power semiconductor and modules - HV modules for EV and industrial market, MOSFET & IGBT performance leader, accelerating traction in Silicon Carbide

2. Broad product portfolio encompassing a vast voltage range – LV to HV, and synergy and pull-through from portfolios of ASG and ISG

3. Manufacturing footprint and scale - Industry leading cost structure & vertically integrated supply chain

4. Focus on critical applications in auto, industrial, & cloud power markets - Longevity of design wins, high natural barriers to market entry, and high quality & qualification requirements from customers
MOVE TO HIGHER VALUE PRODUCTS AND MARKETS

**AUTOMOTIVE**

- 25% of PSG revenue
- TAM (2022) of $7.8B
- 2017-22 TAM CAGR of 7%

**Key applications:**
- HEV/EV
- Body & Comfort
- ADAS/Autonomous Driving

**INDUSTRIAL**

- 28% of PSG revenue
- TAM (2022) of $15.7B
- 2017-22 TAM CAGR of 8.9%

**Key Applications**
- Alternative Energy
- Efficient Motors
- EV Charging Stations

**CLOUD POWER**

- 7% of PSG revenue
- TAM (2022) of $2.9B
- 2017-22 TAM CAGR of 7.5%

**Key Applications**
- 5G Infrastructure
- Server
- High End Computing

2019 Analyst Day
PSG TRANSFORMATION TOWARDS POWER

2016
- Power: 45%
- Non-Power: 55%

2018
- Power: 67%
- Non-Power: 33%

2022
- Power: 76%
- Non-Power: 24%
PSG AUTOMOTIVE BUSINESS

**HEV/EV**
Super Junction FETs in on-board chargers, SiC diodes and MOSFETs in EVs

**BODY AND COMFORT**
Medium voltage FETs for BLDC motors

**ADAS & AUTONOMOUS DRIVING**
Power management for sensors

---

**PSG Automotive Revenue**

Revenue $m

<table>
<thead>
<tr>
<th>Year</th>
<th>2016¹</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>560</td>
<td>580</td>
<td>600</td>
</tr>
</tbody>
</table>

¹: 2016 represents Q4' 16 Annualized values
PSG KEY AUTOMOTIVE GROWTH DRIVERS

HEV & EV: 22% 2017-22 TAM CAGR
$400 of addressable in power content in an EV – ON leader in both silicon and SiC

BODY & COMFORT: 14% 2017-22 TAM CAGR
3x Power switches required for redundant systems and increased comfort driven by motors

ADAS & AUTONOMOUS DRIVING: 25% 2017-22 TAM CAGR
$15 in power management solutions for all sensing functions

PSG Automotive TAM ($m)

Source: IHS, ON Semiconductor

2019 Analyst Day
EV/HEV AND VEHICLE ELECTRIFICATION

I.C.E.

PSG Content
$40

HEV/EV

PSG Content
$400

Motors, Pumps
IPM & FET Modules

ON-Board Charger
650V SJ, IGBT & SiC
Gate Dr. & Isolation

Battery Management
40V FETs

HV Loads
650V SJ, IGBT & SiC
Auto Modules

Main Drive
1200V IGBT & SiC FET
Auto Modules

12V-48V DC-DC
30, 40, 80 & 100 V MOSFETs
I-Sense OA
eFuse

STRONG TRACTION IN BOTH SILICON AND SILICON CARBIDE
POWER SEMIs DOMINANT OPPORTUNITY IN EV

Power Semi Silicon TAM in EV ($m)

POWER SEMIs PRESENT THE BIGGEST OPPORTUNITY IN EV
TAM of $3.7B in 2022 with 2017-22 CAGR of 22%

TRACTION INVERTERS ARE LARGEST EV OPPORTUNITY
IGBT traction invertors likely to be dominant in mid to low-end EV, SiC initially likely to be limited to high-end EV

ON LEADER IN IGBT MODULES FOR TRACTION INVERTERS
Strong market presence and customer engagement, with future path to SiC

2017-22 Power Semi CAGR: 22%

Source: ON Semiconductor
ACCELERATED ADOPTION
Adoption of Silicon Carbide in EVs likely to be faster than most expectations

GROWTH IN UNITS AND CONTENT
Content could be more than double of current content of $300

COMPELLING VALUE PROPOSITION
20% increase in range, space savings, reduced cooling costs, lower weight, faster charging

STRONG TRACTION IN MARKET
Engaged with many leading OEMs and Tier-1s - currently shipping 650/1200V diodes & 1200V MOSFETs
PSG INDUSTRIAL BUSINESS

**ALTERNATIVE ENERGY**
Leadership in power integrated modules (PIM) for Solar Inverters

**MOTOR EFFICIENCY**
IPMs & FETs in Industrial Motors, C-HVAC, Robotics

**EV CHARGING STATIONS**
IGBTs & superjunction FETs in Level 3 stations

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¹: FY2016 represents Q4'16 Annualized values.
INFRASTRUCTURE REVOLUTION

Coal → Reduce Pollution → Solar/Wind → Grid Stabilization → Energy Storage → HEV/EV → Gas Pump

- $0 → $650 → $836 → $500 → $0 → $0 → $0

Industrial Motor → Efficiency → Coal-to-Elec. → C-HVAC → Battery Life → Robotics

- $0 → $40 → $30 → $6
SILICON CARBIDE IN INDUSTRIAL APPLICATIONS

**EV CHARGING STATIONS – 130% 2017-22 TAM CAGR**
SiC enabling higher power charging stations in same size.

**SOLAR INVERTER – 28% 2017-22 TAM CAGR**
SiC provides smaller and cheaper solution at same power

**POWER FACTOR CORRECTION – 7% 2017-22 TAM CAGR**
SiC enables power supplies to reach 80 PLUS ‘TITANIUM’ power density & efficiency

**MOTOR DRIVE – 40% 2017-22 TAM CAGR**
SiC reduces component count & cost by 40%

Source: Yole 2019 Analyst Day
PSG CLOUD POWER BUSINESS

5G INFRASTRUCTURE
80-150V MOSFETs in BBU & RRU power supplies

SERVER
25V to 650V MOSFETs in high power density power supplies

HIGH END COMPUTING
25-30V MOSFETs in high end graphic cards

PSG Cloud Power Revenue

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue $m</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016¹</td>
<td>125</td>
</tr>
<tr>
<td>2017</td>
<td>135</td>
</tr>
<tr>
<td>2018</td>
<td>145</td>
</tr>
</tbody>
</table>

¹: 2016 represents Q4'16 Annualized values.
PSG KEY CLOUD POWER GROWTH DRIVERS

**5G INFRASTRUCTURE – 247% CAGR 17-22**
5x the MV MOSFET usage in a 5G radio

**SERVER POWER SUPPLY – 5% CAGR 17-22**
Requiring high performance superjunction FETs to meet efficiency targets

---

Source: ON Semiconductor

2019 Analyst Day
CLOUD-POWER CONTENT INCREASE

4G: 2x2 TxRx

PSG Content $9

5G: mMIMO & Beamforming

PSG Content $144

Source: ON Semiconductor
PSG MARGIN IMPROVEMENT PLANS

Aligned with high-growth strategic markets

Providing higher value proposition product

Manufacturing innovation in standard products

HEV/EV

Power Modules

Silicon Carbide

Up to 35% Increase in Die/Wafer

Industrial, Energy

5G

Silicon

Plasma Etched

Traditional Wafer

2019 Analyst Day
1. PSG has established leadership in power semiconductor market

2. Huge opportunity in SiC for automotive applications

3. Power content to continue to grow in automotive, industrial and cloud applications

4. Headroom for margin improvement driven by higher value products and operational improvements
BILL SCHROMM
CHIEF OPERATING OFFICER
KEY TAKEAWAYS

1. ON manufacturing prowess presents one of the most formidable barriers for competitors

2. Scale matters – ON’s vast network drives its industry leading cost structure

3. ON’s investment in 300mm will be driven by economics

4. Investing to extend ON’s competitive advantage - Be best in class quality, cost, delivery
### One of the most formidable barriers for competitors

- Scale matters – One of most cost effective manufacturing networks in the Industry
- Network of 12 wafer fabs and 9 Assembly & Test sites
- Flexibility – Able to add capacity and source from multiple sites

### Better control on quality and delivery

- Quality and delivery are key differentiators in automotive and industrial markets
- Customers in certain markets prefer IDMs

### Enables development of new technologies & products

- Accelerates time to market for new technologies and materials
- Ability to fine tune processes for maximizing performance
Scale provides industry leading cost structure - 76 billion units shipped in 2018
Front-end capabilities key source of competitive advantage in power and analog
Internal capacity to manufacture 150mm and 200mm silicon substrates
One of world’s largest and most efficient back-end operations (~1.4 billion units every week)

Front-end & Substrate Facilities
- Aizu, Japan
- Gresham, OR, USA
- Czech Republic Fab
- Czech Republic Substrates
- Bucheon, Korea
- Portland, ME, USA
- Oudernaarde, Belgium
- Seremban, Malaysia
- Pocatello, ID, USA
- Mountain Top, PA, USA
- Niigata, Japan
- Rochester, NY, USA

Back-end Facilities
- Leshan, China
- Suzhou, China
- Shenzhen, China
- Carmona, Philippines
- Tarlac, Philippines
- Cebu, Philippines
- Seremban, Malaysia
- Vietnam OSBD
- Vietnam OPP/IPM
INDUSTRY LEADING BACK-END COST STRUCTURE

PARALELLISM
Driving parallelism in probe as high as x256 in EEPROM technology

SCALE
Scale drives assembly cost savings up to 70% as compared to outsourced OSAT companies

VERTICAL INTEGRATION
Vertical integration of Power Modules with in house DBC

PATENTS
Patented lowest cost thinning methodology in the industry

HIGH-DENSITY LEAD FRAMES
Extremely high density lead-frames drive cost efficiency in material and productivity
TRANSFORMATION TIMELINE – GLOBAL MANUFACTURING

**Tools Selected**
- Proactive Safety
- Camstar
- RTD
- Exensio Yield
- CDEP/yBORG
- FabGuard FDC
- SPACE SPC
- APC
- eOCAP
- Barcode
- FabTime
- MaiMa
- AOI/ILM
- Systems
- Fab TV
- Optimal +
- xFCS
- FabTime
- MaiMa

**Systems and Data Integration**
- Camstar, FDC
- Phased implementation
- Operational integration teams
- Optimal + analytics
- Data Lake as foundational enabler

**2017**
- Transformation Plan
  - Benchmarking
  - Gap Analysis
  - Manufacturing survey
- Roadmap Development
  - Survey tools
  - Evaluate tools for gap closure
  - Confirm choices

**2018**
- Implementation
  - Project methodology
  - Cross functional/Cross factory teams
  - Lean/Six Sigma
  - Implement analytics
  - Maintenance efficiency
  - Bring in xFCS factories onto corporate tools

**2019**
- Learning / Improvement
  - Continuous improvement
  - Refine Heuristics/Analytics
  - Reactive-Preventative Culture
  - Big Data correlation
  - AI/Predictive Yield

**2020**

**2021**

**Vision**
- Best Safety
- Best Quality
- Best Delivery
- Best Cost

**BEST IN CLASS IN SEMICONDUCTOR MANUFACTURING ON**
### Key Tenets on Industry 4.0 at ON Semiconductor Operations

**Shift AIM use from control to efficiency:**
- Automation
- Speed of decision making and automation of decision making

**Build a catalogue of Industry 4.0 technologies**

**Experiment ➔ Scale pilots globally as per provided proof & business case (ROI)**

**Global standardization and virtual factory:**
- Improve in tracking and driving maturity of systems across factories
- Install culture and change management (e.g. removal of old systems needed)

**When cost of prediction goes down, replace rule-based applications by AI/ML ➔ Pilot:**
- Predictive yield
THOUGHTS ON 300MM

1. 300mm fabs can make sense at right price
   - Open to acquiring used 300mm fab if economics are right
   - Greenfield 300mm fab is not an option – return on $1.5B investment challenging

2. Very competitive cost structure with current network
   - Back-end scale key source of competitive cost structure
   - Very competitive cost structure with 200mm and 150mm fabs

3. Don’t see any meaningful competitive threats
   - 300mm fabs are competitively helpful only if economics are favorable
   - Focusing on efficiency and scale
MANUFACTURING GROSS MARGIN DRIVERS

Scale
- Absorption of fixed cost over larger revenue base
- Leverage with external suppliers
- Target internal cost reductions above ASP declines

Improving efficiency
- Productivity and yield improvement
- Advanced test methods to reduce cost
- Equipment efficiency

Materials
- Increase in-house production of substrates

Expansion at low cost sites
- Demand environment key driver of expansion
# KEY AREAS OF INVESTMENT

<table>
<thead>
<tr>
<th>Front-End</th>
<th>Back-end</th>
<th>Substrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ Cost effective capacity to support growth in power semiconductors</td>
<td>➢ Back-end has been an area of high investment to sustain ON’s leadership in packaging technologies</td>
<td>➢ Expansion of internal substrate capacity to offset increasing prices from external suppliers</td>
</tr>
<tr>
<td>➢ Analog cloud power is another area of investment</td>
<td>➢ Investments to support strong growth in power modules and packages</td>
<td></td>
</tr>
<tr>
<td>➢ Implementation of new tools and systems to improve productivity</td>
<td>➢ Analog test has been an area of increased investment</td>
<td></td>
</tr>
<tr>
<td>➢ Expansion of low-cost sites to improve costs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
OUTSOURCING STRATEGY

1. Target model – 80/20
   - Target of 80 percent production in house

2. Outsource where it makes sense
   - Deep sub-micron
   - Image sensors
   - Packages/nodes in small volume

3. Flex capacity
   - Maintain flex capacity to sustain utilization during slowdown
   - Relationships with all front-end and back-end providers

4. Dual-sourcing and risk mitigation
   - Qualify external suppliers to mitigate the risk of supply disruptions
   - Many OEMs demand dual source of supply
1. ON manufacturing prowess presents one of the most formidable barriers for competitors.

2. Scale matters – ON’s vast network drives its industry leading cost structure.

3. 300mm fab not critical for success, but beneficial at right price.

4. Investing to extend ON’s competitive advantage - Be best in class quality, cost, delivery.
BERNARD GUTMANN
CHIEF FINANCIAL OFFICER
KEY TAKEAWAYS

1. Raising financial targets significantly to align with our market and profitability outlook

2. Solid and consistent financial results – strong progress towards prior target model

3. Efficient deployment of shareholders' capital to maximize returns & shareholder value

4. ON is going through transformational changes – 2022 target a milestone, not the destination
## PROGRESS REPORT – 2018 VS. PRIOR TARGET MODEL

### 2016
- **Revenue**: $3.9 billion
- **Gross Margin**: 35.0%
- **Operating Expenses**: 22.7%
- **Operating Margin**: 12.3%
- **Profit Before Tax**: $412 million
- **Cash Tax Rate**: 6.7%
- **Non-GAAP EPS**: $0.91
- **Free Cash Flow**: $370 million

### 2018
- **Revenue**: $5.9 billion
- **Gross Margin**: 38.1%
- **Operating Expenses**: 21.4%
- **Operating Margin**: 16.7%
- **Profit Before Tax**: $893 million
- **Cash Tax Rate**: 6.0%
- **Non-GAAP EPS**: $1.96
- **Free Cash Flow**: $759 million

### 2020 Model
- **Revenue**: $5.6 billion
- **Gross Margin**: 40.0%
- **Operating Expenses**: 21.0%
- **Operating Margin**: 19.0%
- **Profit Before Tax**: $950 million
- **Cash Tax Rate**: 12%
- **Non-GAAP EPS**: $2.00
- **Free Cash Flow**: $900 million

---

**VERY CLOSE TO 2020 EPS TARGET 2 YEARS AHEAD OF SCHEDULE**

1. 2020 target model was published at 2017 analyst day on March 10, 2017
2. Non-GAAP financial measure. See the Appendix for a reconciliation to the most directly comparable GAAP measure
## KEY DRIVERS OF VARIANCE FROM 2020 MODEL

<table>
<thead>
<tr>
<th>Positive Variance</th>
<th>Negative Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REVENUE</strong></td>
<td>Revenue growth exceeded expected CAGR of 3%(^1) - 2018 revenue was $5.9B, as compared to 2020 target of $5.6B</td>
</tr>
<tr>
<td><strong>PRICING</strong></td>
<td>Pricing has been benign as compared to historic trend</td>
</tr>
<tr>
<td><strong>FACTORY CONSOLIDATION CONSTRAINTS</strong></td>
<td>Goal was to consolidate network to improve costs</td>
</tr>
<tr>
<td><strong>MIX</strong></td>
<td>Computing(client) &amp; consumer were expected to decline by 6% to 4%(^1), and by 5% to 7%(^1), per year, respectively</td>
</tr>
<tr>
<td><strong>INCREASED RAW MATERIAL COSTS</strong></td>
<td>Up to 20-30% increase in costs of certain raw materials including substrates</td>
</tr>
<tr>
<td><strong>INCREASED CAPEX</strong></td>
<td>Capex guidance was for 6-8% of revenue</td>
</tr>
</tbody>
</table>

1: From 4Q16 annualized base
## TARGET MODEL 2022

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2018</th>
<th>2022 MODEL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REVENUE</strong></td>
<td>$3.9 BILLION</td>
<td>$5.9 BILLION</td>
<td>$7.1 BILLION</td>
</tr>
<tr>
<td><strong>GROSS MARGIN</strong></td>
<td>35.0%</td>
<td>38.1%</td>
<td>43.0%</td>
</tr>
<tr>
<td><strong>OPERATING EXPENSES</strong></td>
<td>22.7%</td>
<td>21.4%</td>
<td>21.0%</td>
</tr>
<tr>
<td><strong>OPERATING MARGIN</strong></td>
<td>12.3%</td>
<td>16.7%</td>
<td>22.0%</td>
</tr>
<tr>
<td><strong>PROFIT BEFORE TAX</strong></td>
<td>$412 MILLION</td>
<td>$893 MILLION</td>
<td>$1,500 MILLION</td>
</tr>
<tr>
<td><strong>CASH TAX RATE</strong></td>
<td>6.7%</td>
<td>6.0%</td>
<td>17.5%</td>
</tr>
<tr>
<td><strong>NON-GAAP EPS</strong></td>
<td>$0.91</td>
<td>$1.96</td>
<td>$3.00</td>
</tr>
<tr>
<td><strong>FREE CASH FLOW</strong></td>
<td>$370 MILLION</td>
<td>$759 MILLION</td>
<td>$1,200 MILLION</td>
</tr>
</tbody>
</table>

1: Non-GAAP financial measure. See the Appendix for a reconciliation to the most directly comparable GAAP measure.

Target model assumes flat share count from 4Q18 adjusted for share repurchases in 1Q19 as disclosed in 2018 10K.
REVENUE CAGR OF 5%, ASSUMING INDUSTRY CAGR OF 3-3.5%
PATH TO 2022 TARGET MODEL – GROSS MARGIN

**MIX – 120 BPS**
Improving mix of automotive, industrial, and cloud-power

**MANUFACTURING OPTIMIZATION – 130 BPS**
Production transition to more efficient facilities

**FALLTHROUGH – 200 BPS**
50% fallthrough on incremental revenue

**PORTFOLIO MANAGEMENT – 40 BPS**
Divestiture and/or end-of-life of low margin businesses

**STRONG TRACK RECORD OF MARGIN EXPANSION**
MAJORITY OF MARGIN EXPANSION INDEPENDENT OF REVENUE
MIX AND PORTFOLIO OPTIMIZATION HAVING IMPACT

**GROWTH DRIVEN BY HIGH QUALITY REVENUE**
Providing highly differentiated products for automotive, industrial, and cloud power markets

**DIVESTITURE/CLOSURE OF NON-CORE BUSINESSES**
Divested and end of life of low margin and non-core businesses

**END-MARKET MIX SHIFT**
Mix largely trended along expected lines, but impact was partially offset by growth in consumer & client computing

---

1: 2016 represents Q4’16 Annualized values
2: Non-GAAP financial measure. See the Appendix for a reconciliation to the most directly comparable GAAP measure
CHANGE IN MIX 2018 TO 2022

2018 REVENUE BY MARKET

- Automotive: 31%
- Industrial: 27%
- Cloud Power: 6%
- Client Computing: 9%
- Communications: 14%

2022 REVENUE BY MARKET

- Automotive: 36%
- Industrial: 28%
- Client Computing: 6%
- Cloud Power: 8%
- Communications: 12%
- Consumer: 10%

Communications include only smartphone related revenue
PATH TO 2022 TARGET MODEL – OPERATING MARGIN

- GM FALLTHROUGH – 490 BPS
  Gross margin improvement

- OPEX LEVERAGE – 40 BPS
  Leverage from revenue growth
OPERATING EXPENSES

OPEX INTENSITY TARGET OF 21%
21% opex. intensity needed to leverage new opportunities

NEW MARKETS REQUIRE HIGHER R&D INVESTMENTS
EV/HEV, SiC, Sensors (Image, Radar, & LiDAR) for ADAS, Cloud-power

STRONG TRACK RECORD OF GENERATING OPEX LEVERAGE
Approaching 2020 target of 21% opex intensity

1:Non-GAAP financial measure. See the Appendix for a reconciliation to the most directly comparable GAAP measure.
## Path to 2022 Target Model – Free Cash Flow

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2018</th>
<th>2022 Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating Cash Flow</strong></td>
<td>$581 Million</td>
<td>$1,274 Million</td>
<td>$1,800 Million</td>
</tr>
<tr>
<td><strong>Net Cash Interest</strong></td>
<td>$67 Million</td>
<td>$86 Million</td>
<td>$50 Million</td>
</tr>
<tr>
<td><strong>Cash Taxes</strong> (% of Pretax Income)</td>
<td>6.7%</td>
<td>6.0%</td>
<td>17.5%</td>
</tr>
<tr>
<td><strong>Depreciation &amp; Amortization</strong></td>
<td>$364 Million</td>
<td>$509 Million</td>
<td>$564 Million</td>
</tr>
<tr>
<td><strong>Capital Expenditure</strong></td>
<td>$211 Million</td>
<td>$515 Million</td>
<td>$575 Million</td>
</tr>
<tr>
<td><strong>Free Cash Flow</strong></td>
<td>$370 Million</td>
<td>$759 Million</td>
<td>$1,200 Million</td>
</tr>
</tbody>
</table>

1: Non-GAAP financial measure. See the Appendix for a reconciliation to the most directly comparable GAAP measure.
CAPITAL EXPENDITURE

CAPEX INTENSITY TARGET OF 8%
Investment need to strengthen leadership in strategic markets – automotive, industrial, & cloud power

GROWTH NECESSITATES HIGHER INVESTMENTS
EV, cloud-power, & sensors expected to drive strong growth

INVESTMENTS NEEDED FOR NEW MATERIALS AND TECHNOLOGIES
Silicon Carbide, etc.
**CAPITAL ALLOCATION STRATEGY**

<table>
<thead>
<tr>
<th>ACCELERATE VIRTUOUS INVESTMENT CYCLE</th>
<th>ABSOLUTE COMMITMENT TO CAPITAL EFFICIENCY</th>
<th>BALANCE RISKS AND REWARDS IN CAPITAL ALLOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invest to strengthen ON’s business, improve competitive position, increase free cash flow, repeat</td>
<td>Capital will be deployed in a manner to maximize returns for shareholders</td>
<td>Exercise strong discipline in capital allocation and have ability to react quickly to changing macroeconomic conditions</td>
</tr>
</tbody>
</table>
### Organic growth of business – R&D, Sales & Marketing, Capex

- Significant opportunities for generating value through organic investments
- Investments geared towards differentiated products in auto, industrial, and cloud power markets
- Capex investments to improve profitability and grow capacity for fast growing products

### Inorganic growth initiatives – M&A

- M&A will continue to be a critical component of ON’s strategy
- Industry consolidation presents attractive opportunities for value creation through synergies
- High hurdle rate – M&A investments have to generate returns significantly above cost of capital and have to make strong strategic sense
- Strong track record of value creation through M&A

### Share repurchase

- Strong commitment to returning capital to shareholders
- Share repurchase will be primary vehicle for cash return to shareholders
- Strong track record of share repurchases – Under last (2014) authorization, repurchased 51.2m shares at average price of $13.90

### Debt reduction

- Will continue to pay down debt, but intend to have net debt on balance sheet
- No idle net cash sitting on balance sheet for a long period
REVENUE SENSITIVITY TO 2022 TARGET MODEL

Non-GAAP Earnings/Share¹

Gross Margin¹

Free Cash Flow¹

Operating Margin¹

1: Non-GAAP financial measure. See Slide 3 for a discussion of forward-looking non-GAAP financial measures.
SUMMARY

1. Sharp focus on capital deployment – goal is to maximize returns and shareholder value

2. Strong business outlook – strong revenue growth coupled with solid margin expansion and accelerating FCF

3. Company specific margin drivers in place – majority of margin expansion independent of revenue

4. ON is going through transformational changes – 2022 target a milestone, not the destination
Questions & Answers
THINK ON.

ENERGY EFFICIENT INNOVATIONS
## APPENDIX: NON-GAAP DEFINITIONS AND RECONCILIATIONS

Some data in this presentation includes non-GAAP financial measures. Following is the reconciliations of non-GAAP financial measures used in this presentation to the most directly comparable measures under GAAP.

<table>
<thead>
<tr>
<th>(in millions, except per share data)</th>
<th>FY2018</th>
<th>FY2017</th>
<th>FY2016</th>
<th>FY2015</th>
<th>FY2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAAP Revenue</td>
<td>$5,878.3</td>
<td>$5,543.1</td>
<td>$3,969.6</td>
<td>$3,495.8</td>
<td>$3,161.8</td>
</tr>
<tr>
<td>a) Amortization of acquisition related intangible assets</td>
<td>0.0</td>
<td>-155.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Non-GAAP Revenue</td>
<td>$5,878.3</td>
<td>$5,388.0</td>
<td>$3,969.6</td>
<td>$3,495.8</td>
<td>$3,161.8</td>
</tr>
</tbody>
</table>

| Non-GAAP Gross Profit                | $2,239.7 | $1,990.2 | $1,368.0 | $1,192.4 | $1,115.8 |
| Non-GAAP Gross Margin                | 38.1% | 36.9% | 35.0% | 34.1% | 35.3% |

| GAAP Gross Profit                    | $2,238.7 | $2,035.6 | $1,300.5 | $1,193.2 | $1,084.9 |
| GAAP Gross Margin                    | 38.1% | 36.7% | 33.3% | 34.1% | 34.3% |

| a) Sell-through to sell-in adjustment | 0.0 | -59.0 | 0.0 | 0.0 | 0.0 |
| b) Expensing of appraised inventory at fair market value step up | 1.0 | 13.6 | 67.5 | 0.0 | 27.0 |
| c) Actuarial losses on pension plans and other pension benefits | 0.0 | 0.0 | 0.0 | -0.8 | 3.9 |

### Non-GAAP operating expenses

<table>
<thead>
<tr>
<th>(in $millions, except per share data)</th>
<th>FY2018</th>
<th>FY2017</th>
<th>FY2016</th>
<th>FY2015</th>
<th>FY2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAAP operating expenses</td>
<td>$1,391.5</td>
<td>$1,354.0</td>
<td>$1,053.7</td>
<td>$932.1</td>
<td>$850.5</td>
</tr>
<tr>
<td>GAAP operating expenses % of revenue</td>
<td>23.7%</td>
<td>24.4%</td>
<td>27.0%</td>
<td>26.7%</td>
<td>26.9%</td>
</tr>
<tr>
<td>a) Amortization of acquisition related intangible assets</td>
<td>(111.7)</td>
<td>(123.8)</td>
<td>(104.8)</td>
<td>(135.7)</td>
<td>(68.4)</td>
</tr>
<tr>
<td>b) Actuarial gains (losses) on pension plans and other pension benefits</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>4.2</td>
<td>8.4</td>
</tr>
<tr>
<td>c) Restructuring, asset impairments and other, net</td>
<td>(4.3)</td>
<td>(20.8)</td>
<td>(33.2)</td>
<td>(9.3)</td>
<td>(30.0)</td>
</tr>
<tr>
<td>d) Goodwill and intangible asset impairments</td>
<td>(6.8)</td>
<td>(13.1)</td>
<td>(22.2)</td>
<td>(3.8)</td>
<td>(4.6)</td>
</tr>
<tr>
<td>e) Third party acquisition related costs</td>
<td>(4.4)</td>
<td>(3.2)</td>
<td>(25.8)</td>
<td>(3.5)</td>
<td>(8.1)</td>
</tr>
<tr>
<td>f) R&amp;D costs related to licensing income</td>
<td>(7.0)</td>
<td>(10.0)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

| Non-GAAP operating expenses           | $1,257.3 | $1,183.1 | $887.7 | $748.0 | $731.0 |
| Non-GAAP operating expenses % of GAAP revenue | 21.4% | 22.0% | 22.7% | 22.4% | 23.1% |

### GAAP income before income taxes

<table>
<thead>
<tr>
<th>(in $millions, except per share data)</th>
<th>FY2018</th>
<th>FY2017</th>
<th>FY2016</th>
<th>FY2015</th>
<th>FY2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAAP income before income taxes</td>
<td>$755.0</td>
<td>$547.5</td>
<td>$310.6</td>
<td>$219.8</td>
<td>$191.9</td>
</tr>
<tr>
<td>a) Sell-through to sell-in adjustment</td>
<td>0.0</td>
<td>(59.0)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>b) Expensing of appraised inventory at fair market value step up</td>
<td>1.0</td>
<td>13.6</td>
<td>67.5</td>
<td>0.0</td>
<td>27.0</td>
</tr>
<tr>
<td>c) Amortization of acquisition-related intangible assets</td>
<td>111.7</td>
<td>123.8</td>
<td>104.8</td>
<td>135.7</td>
<td>68.4</td>
</tr>
<tr>
<td>d) Restructuring, asset impairments and other, net</td>
<td>4.3</td>
<td>20.8</td>
<td>33.2</td>
<td>9.3</td>
<td>30.5</td>
</tr>
<tr>
<td>e) Goodwill and intangible asset impairment</td>
<td>6.8</td>
<td>13.1</td>
<td>2.2</td>
<td>3.8</td>
<td>9.6</td>
</tr>
<tr>
<td>f) Third party acquisition and divestiture related costs</td>
<td>7.0</td>
<td>10.0</td>
<td>25.8</td>
<td>3.5</td>
<td>0.0</td>
</tr>
<tr>
<td>g) R&amp;D costs related to licensing income</td>
<td>5.8</td>
<td>19.0</td>
<td>10.0</td>
<td>(5.0)</td>
<td>12.3</td>
</tr>
<tr>
<td>h) Actuarial (gains) losses on pension plans and other pension benefits</td>
<td>4.6</td>
<td>47.2</td>
<td>6.3</td>
<td>0.4</td>
<td>0.0</td>
</tr>
<tr>
<td>i) Loss on debt refinancing and prepayment</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>j) Gain on sale of available-for-sale securities</td>
<td>36.1</td>
<td>30.8</td>
<td>26.1</td>
<td>17.5</td>
<td>7.0</td>
</tr>
<tr>
<td>k) Non-cash interest on convertible notes</td>
<td>0.0</td>
<td>0.0</td>
<td>48.3</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>l) Adjustment to contingent consideration</td>
<td>(2.1)</td>
<td>1.8</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>m) Licensing Income</td>
<td>(36.6)</td>
<td>(47.6)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>n) Gain on divestiture of business</td>
<td>(5.0)</td>
<td>(12.5)</td>
<td>(92.2)</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

| Non-GAAP income before income taxes | $893.0 | $694.6 | $411.2 | $379.6 | $354.8 |

(1) Amounts have been adjusted for the retroactive adoption of ASU 2017-07 - “Improving the presentation of Net Periodic Pension Cost and Net Periodic Pension Benefit Cost” (“ASU 2017-07”). Under ASU 2017-07, service cost is included in operation income while the other components are reported outside of operating income. The adoption of the standard in 2018 did not have a material impact on current or prior period financial statements.

(2) Amounts are presented as previously reported and have not been adjusted for the retroactive adoption of ASU 2017-07.
Some data in this presentation includes non-GAAP financial measures. Following is the reconciliations of non-GAAP financial measures used in this presentation to the most directly comparable measures under GAAP.

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