



IFX Day 2018
Jochen Hanebeck
Chief Operations Officer

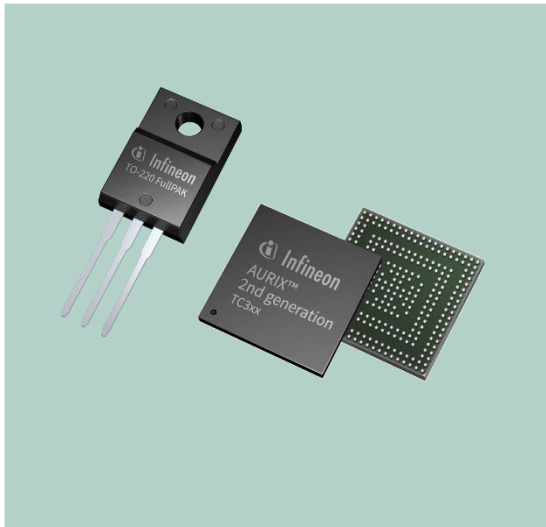
London, 12 June 2018



Infineon's fundamental manufacturing strategy remains unchanged



We manufacture **in-house** where we can gain a strategic advantage from our leading-edge manufacturing technologies and our outstanding process expertise. This results in a **differentiation potential in terms of cost and/or performance.**









We work with **outsourcing** partners in areas where we see no differentiation to **optimize our capital efficiency.** We cooperate with subcontractors and foundries in order to ensure adequate capacity growth and flexibility.

The global Infineon frontend manufacturing landscape follows a clear strategic direction



- › Scale matters
- › 300 mm power in Europe with high automation
- › 200 mm power expansion in Asia to benefit from labor cost advantage
- › Differentiating technology R&D and IP in Europe/US

Villach, Austria	Dresden, Germany	Regensburg, Germany	Kulim, Malaysia	Mesa, USA	Temecula, USA
					
300/200/ 150 mm: power, GaN, SiC	300 mm: power; 200 mm: embedded control, integrated sensors	200 mm: sensors, analog/ mixed signal	200 mm: power, sensors, analog/ mixed signal	Epitaxy	HiRel, power

When fully loaded 300 mm manufacturing provides a 20%–30% frontend cost advantage



Manufacturing cost of 200 mm vs. 300 mm for power semiconductors

[related to physical wafers]	200 mm	300 mm
wafer size	100%	225%
raw wafer cost	100%	~280%
equipment	100%	~170%
personnel	100%	~80%
other effects	100%	~150%
relative cost per mm²	100%	70% – 80%

New Villach 300 mm module will add significant capacity in power semiconductors

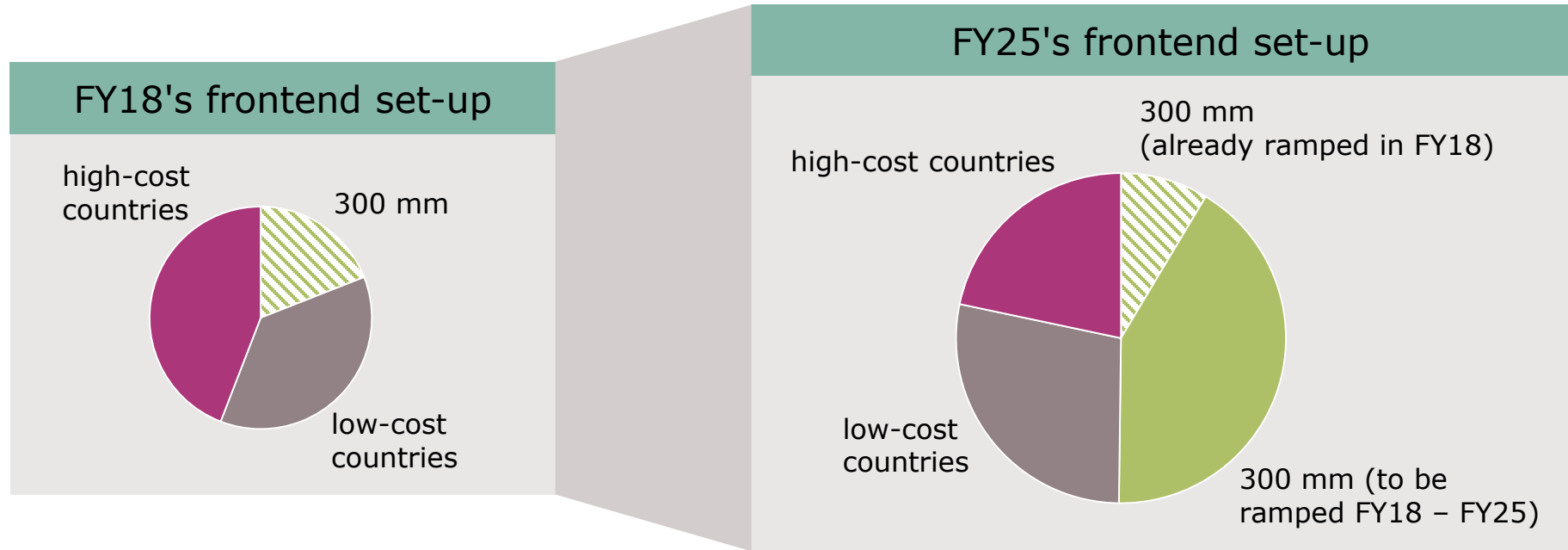
Key criteria for site selection

- › Economies of scale
- › Time to revenue
- › Geographic diversification



Building space	~60,000 m ²
Total frontend investment	> €1.6bn over 6 years
Revenue potential	> €1.8bn per year
Start of construction	early 2019
Ready-for-equipment	mid 2020
Ready-for-production	early 2021
Technologies	IGBT and MOSFET for all end markets

Gross margin potential driven by 300 mm manufacturing for power and sensors

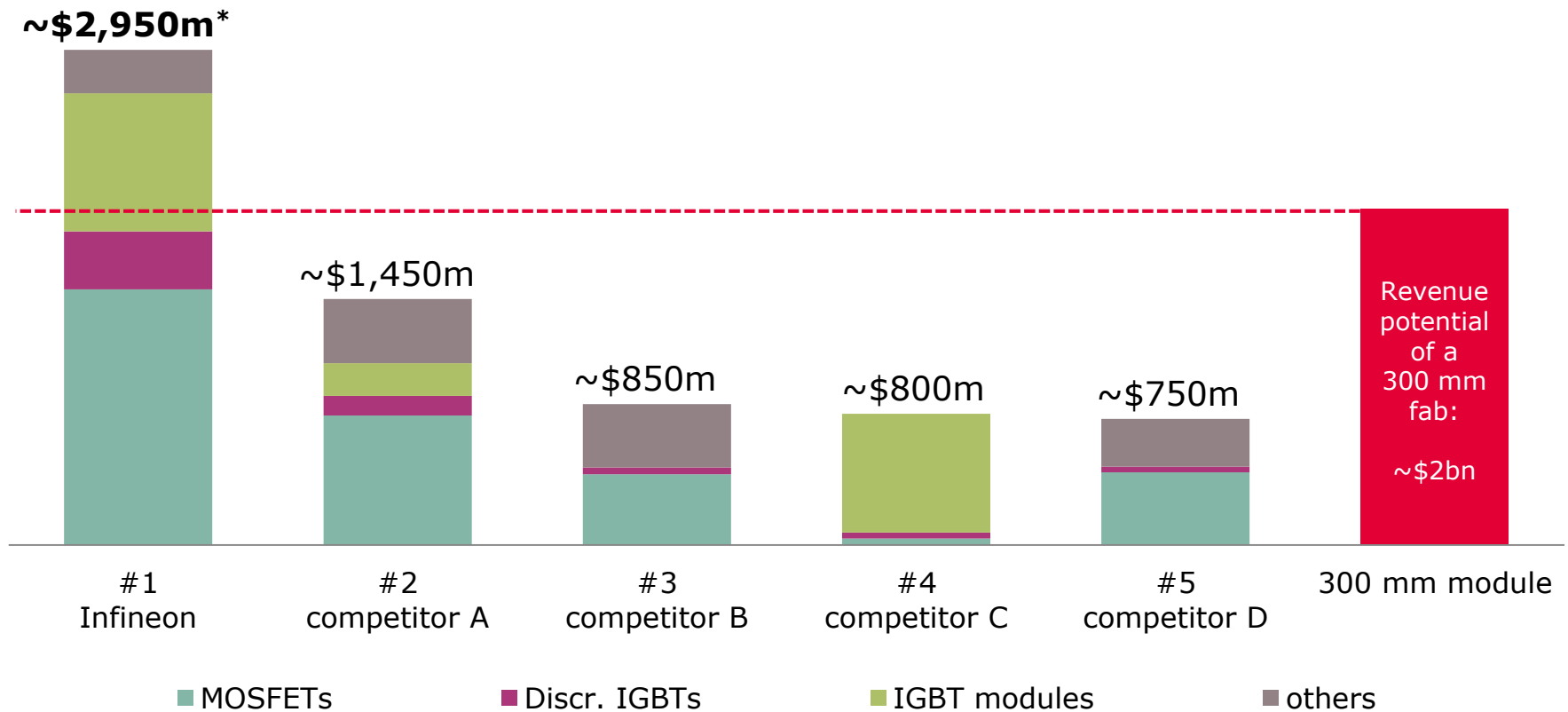


- › 300 mm vs. 200 mm: 20% - 30% cost advantage when fully loaded
- › ~6% cost advantage on frontend level
- › ~2.25%-points gross margin improvement excluding counter effects

Infineon has ~2x the size of next competitor with regard to products feasible for 300 mm



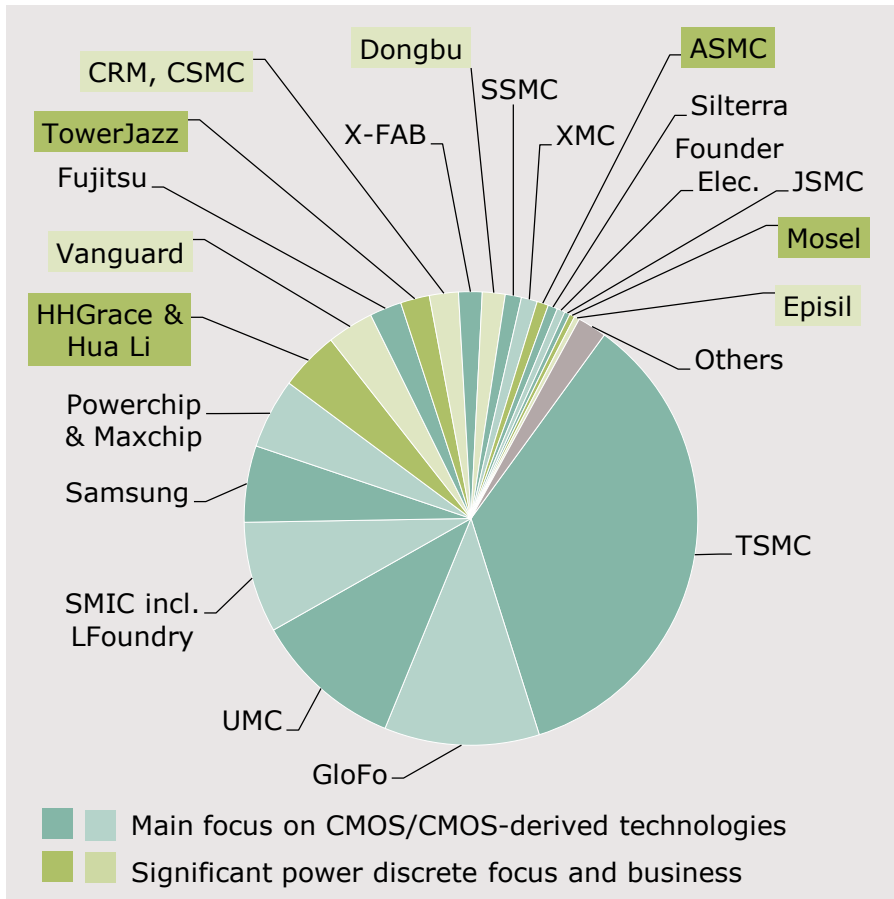
2016 total market for discrete power semiconductors and modules: \$15.9bn



* rounded figures; source: based on or includes content supplied by IHS Markit, Technology Group, "Power Semiconductor Annual Market Share Report", August 2017

Only limited outsourcing options for high-volume discrete power semiconductors available

Power-focused foundries represent only ~15% of total foundry capacity



In the next five years, the Infineon **frontend outsourcing** share will increase from ~22% to ~30%; of that

- › **CMOS:** from ~50% to ~70%
- › **Power:** up to ~15%
Outsourcing share is restricted by limited capacity of most of the power-focused foundries

Backend outsourcing share will increase from 23% to 32%

Source: Infineon analysis based on Semi.Org, "Semi World Fab Forecast", August 2017 edition

Increased average-cycle investment-to-sales model necessary to fuel growth

Current investment-to-sales model

~8% p.a.
revenue
growth



~13%
investment-
to-sales

thereof 11%-pt capex*, thereof:

› 6%-pt fixed

› **5%-pt capacity expansion**

growth-
driven

New investment-to-sales model

~9% p.a.
revenue
growth



~15%
investment-
to-sales

thereof 13%-pt capex*, thereof:

› 6%-pt fixed

› **7%-pt capacity expansion**

additionally:

- › Near-term: low triple-digit €m amount for potential revenue upsides and structural changes
- › FY19 – FY23: ~€700m for major fab and office buildings

* Infineon reports under IFRS and has therefore to capitalize development costs which represents currently ~2% of sales

Various effects lead to increased average-cycle investment-to-sales model



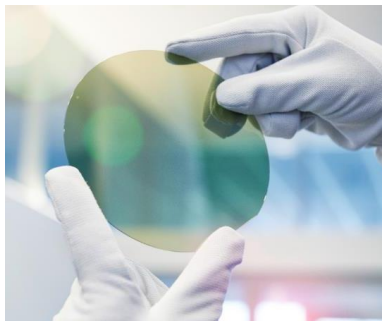
Automotive segment

- › Strongest growth in areas with higher capital intensity and below-average outsourcing share



Equipment/refurbishment

- › Higher prices for equipment due to tight market situation
- › Limited availability of used equipment
- › Forced to do refurbishment of used equipment by OEM at higher prices



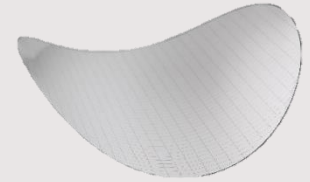
Structural investments

- › Significant expansion of SiC and GaN capacity near- and mid-term

New Villach set-up enables growth also for SiC and GaN

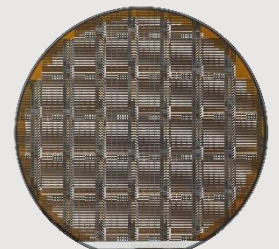
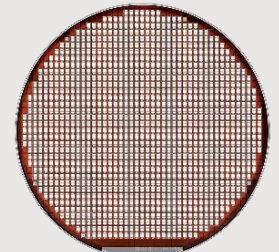
Si
300 mm
(~90% of
site capacity)

- › Significant expansion of capacity
- › Restructuring of Si manufacturing lines will free up capacity for SiC and GaN



**SiC,
GaN**
(~10% of
site capacity)

- › **SiC**
 - 150 mm transfer completed
 - reuse of buildings and manufacturing lines
 - most capex-efficient capacity expansion
 - triple-digit €m investment in capacity increase
- › **GaN**
 - significant expansion of 150 mm near- and mid-term
 - 200 mm manufacturing line in preparation



Key take-aways

A close-up, slightly blurred image of a semiconductor wafer, showing a grid of small, colorful square dies in shades of orange, yellow, and blue.

Significant capacity expansion for power semiconductors is necessary to meet growing demand and strengthen our leading position.

Outsourcing share for power is exploited. We invest into highly efficient and differentiating **in-house fabs**.

Increased investment-to-sales ratio is necessary to fuel our growth. This will allow Infineon to organically consolidate the power semiconductor market.

The **Villach 300 mm fab** is the next milestone to foster Infineon's #1 position in power semiconductors. It improves our cost position and enables growth in SiC and GaN.



Part of your life. Part of tomorrow.



Glossary

BE	backend
FE	frontend
GaN	gallium nitride
IGBT	insulated gate bipolar transistor
IP	intellectual property
μC	microcontroller
MOSFET	metal oxid semiconductor field effect transistor
OEM	original equipment manufacturer
Si	silicon
SiC	silicon carbide

Jochen Hanebeck

Chief Operations Officer



- › since 2016: COO, responsible for Manufacturing, Logistics, Quality, and Purchasing
- › 2008: Division President Automotive
- › 2007: Head of Microcontroller Business Unit
- › Jochen Hanebeck was born in Dortmund, Germany, in 1968. He holds a Diploma in Electrical Engineering from the RWTH Aachen University, Germany.
- › He joined Infineon (Siemens AG until 1999) in 1994.

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