

ATV Call Peter Schiefer Division President Automotive

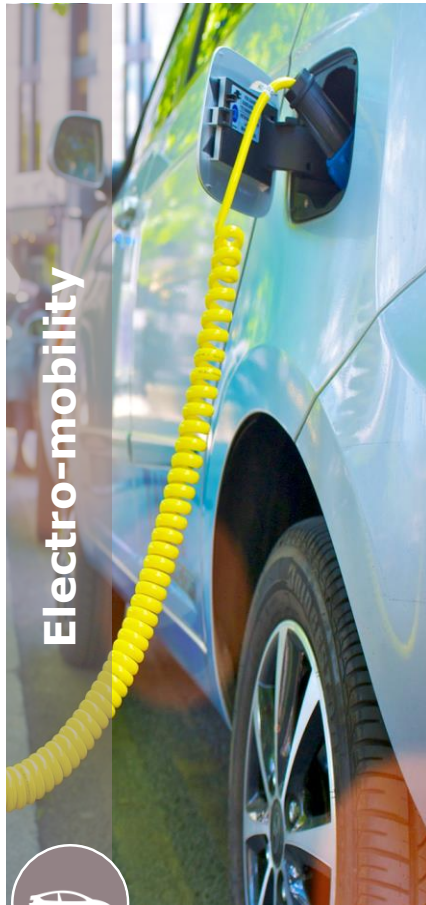
London, 2 October 2018

update on 5 October 2018



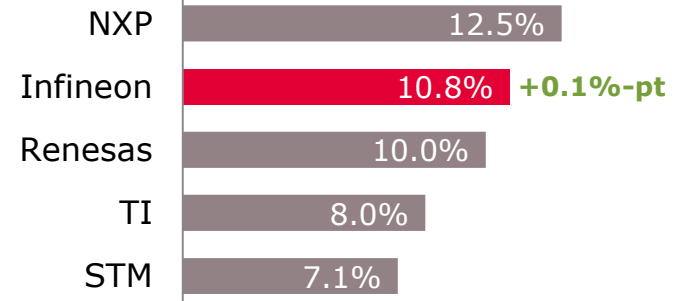
Infineon is well positioned in its addressed automotive product segments


Megatrends shaping the automotive market increasing semi content per car



Automotive semiconductors

2017 total market size: \$34.5bn



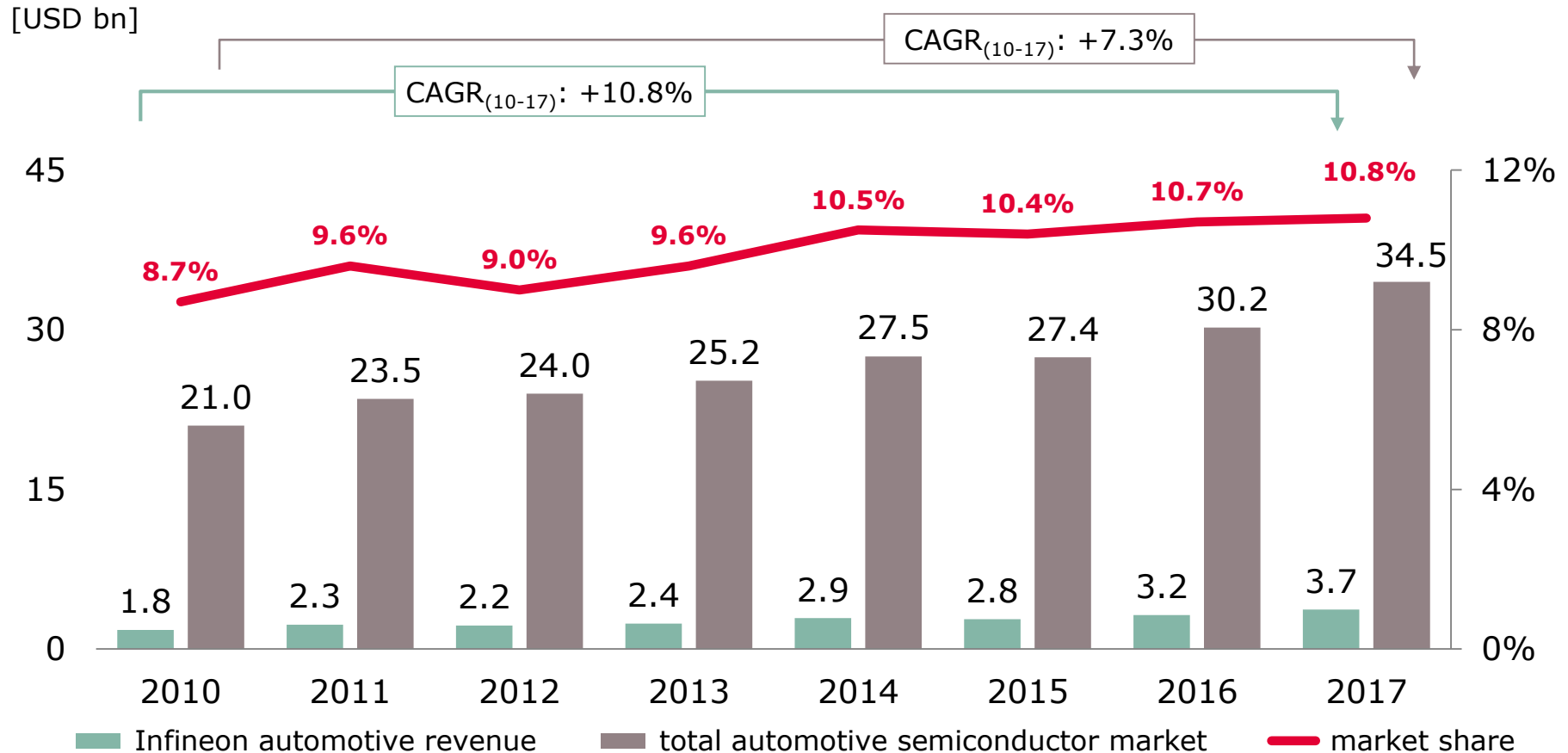
- › #1 in power with 26% (+0.4 %-pt)
- › #2 in sensors with 12.9% (+0.4 %-pt)
- › Significant design-wins for μ C in safety/ADAS/AD
- ›  Market share trend: Infineon benefits disproportionately from the megatrends
 - › Electro-mobility: power, drivers, μ C
 - › Automated driving: radar, lidar, μ C

Source: Strategy Analytics, "Automotive Semiconductor Vendor Market Shares", April 2018

Infineon is continuously outgrowing the automotive semiconductor market since 2010



Infineon automotive semiconductor market share development*

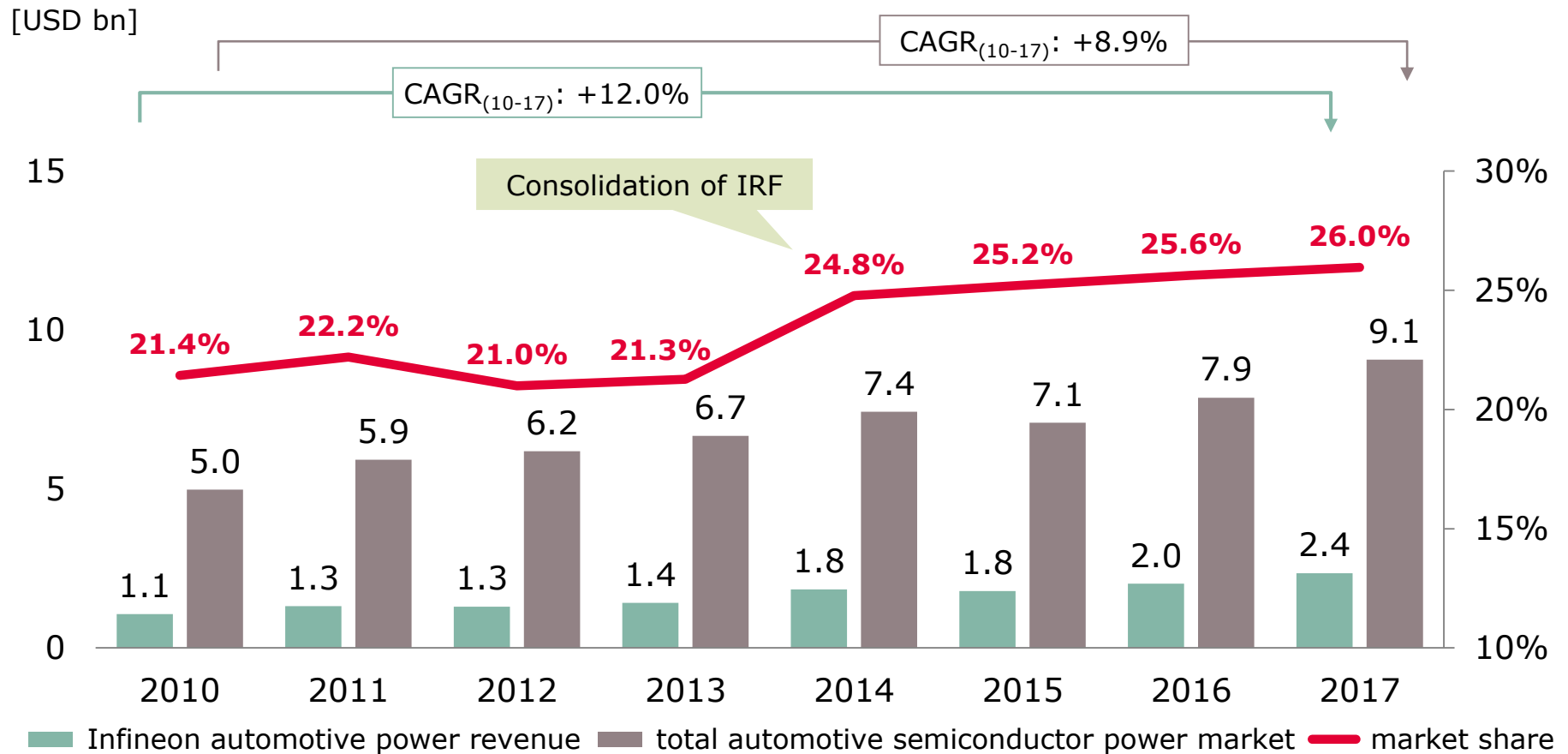


* Infineon automotive revenue as reported to Strategy Analytics incl. revenue from ATV, IPC and PMM. Adjusted to calendar year.
 Source: Strategy Analytics, "Automotive Semiconductor Vendor 2017 Market Share", April 2018.

Infineon is outgrowing the automotive power semiconductor market by 3%-points



Infineon automotive power semiconductor market share development*



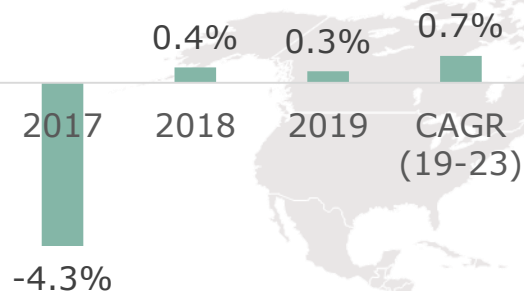
* Infineon automotive revenue as reported to Strategy Analytics incl. revenue from ATV, IPC and PMM. Adjusted to calendar year.
 Source: Strategy Analytics, "Automotive Semiconductor Vendor 2017 Market Share", April 2018.

WW car production in good shape for 2019; Impact from WLTP and tariffs not significant

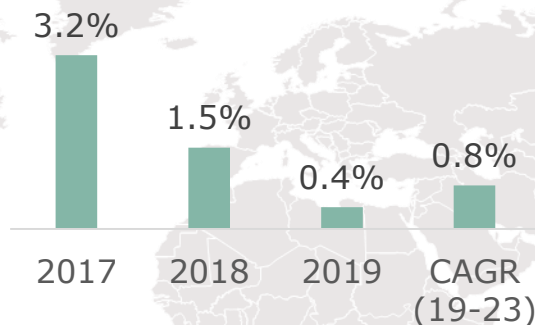
*** this slide has been presented at the call ***

Light vehicle car production

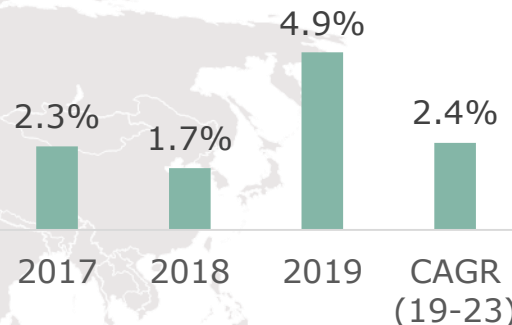
NAFTA* (y-y)



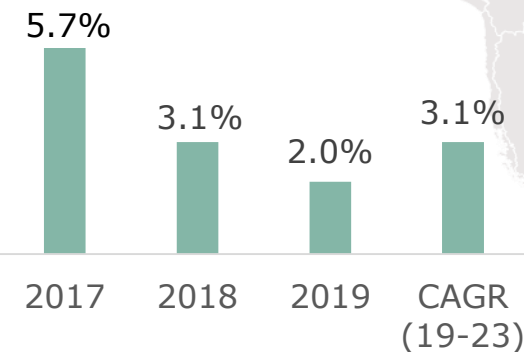
Europe* (y-y)



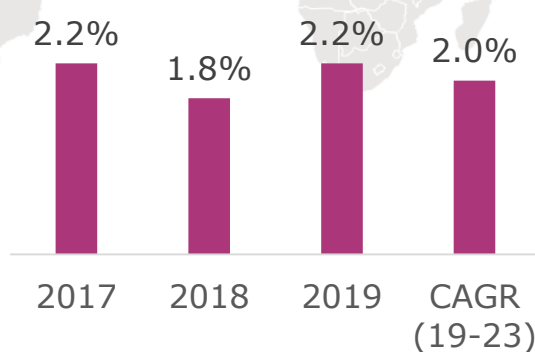
China* (y-y)



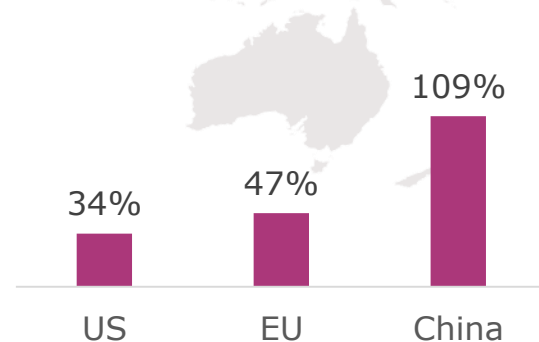
RoW* (y-y)



World* (y-y)



PHEV+BEV** (1H CY18 vs 1H CY17)



Source: * based on or includes content supplied by IHS Markit, Automotive Group, "Annual light vehicle production volumes", August 2018 update

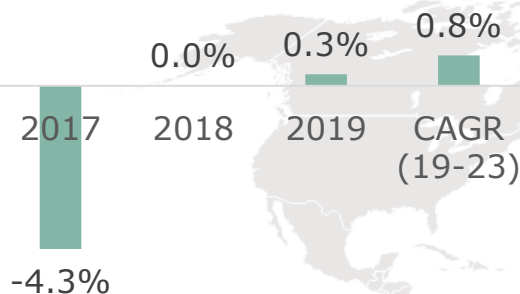
** Infineon

WW car production in good shape for 2019; Impact from WLTP and tariffs not significant

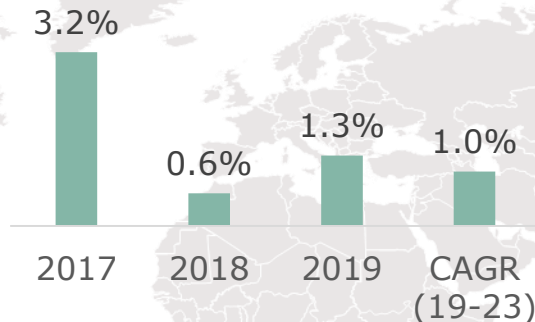
*** this slide has been updated after the call ***

Light vehicle car production

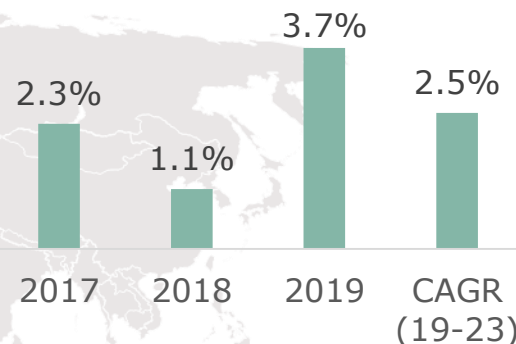
NAFTA* (y-y)



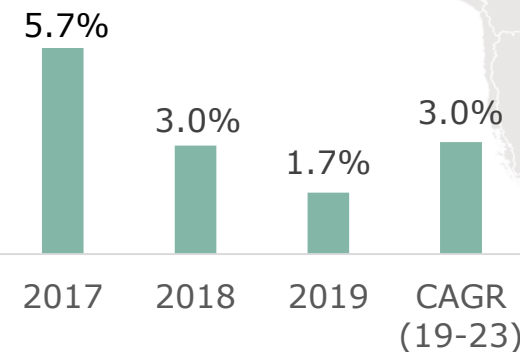
Europe* (y-y)



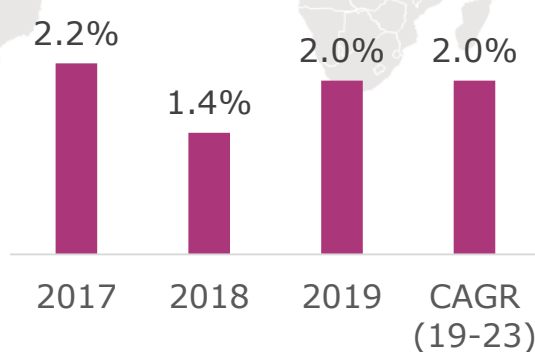
China* (y-y)



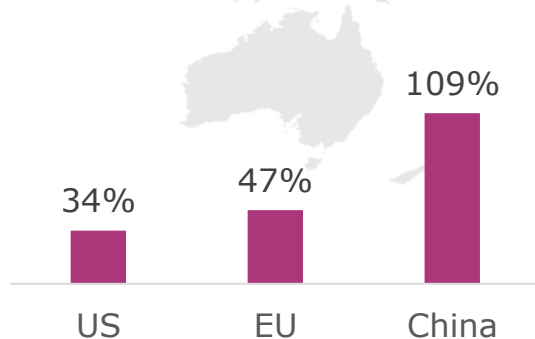
RoW* (y-y)



World* (y-y)



PHEV+BEV** (1H CY18 vs 1H CY17)



Source: * based on or includes content supplied by IHS Markit, Automotive Group, "Annual light vehicle production volumes", September 2018 update

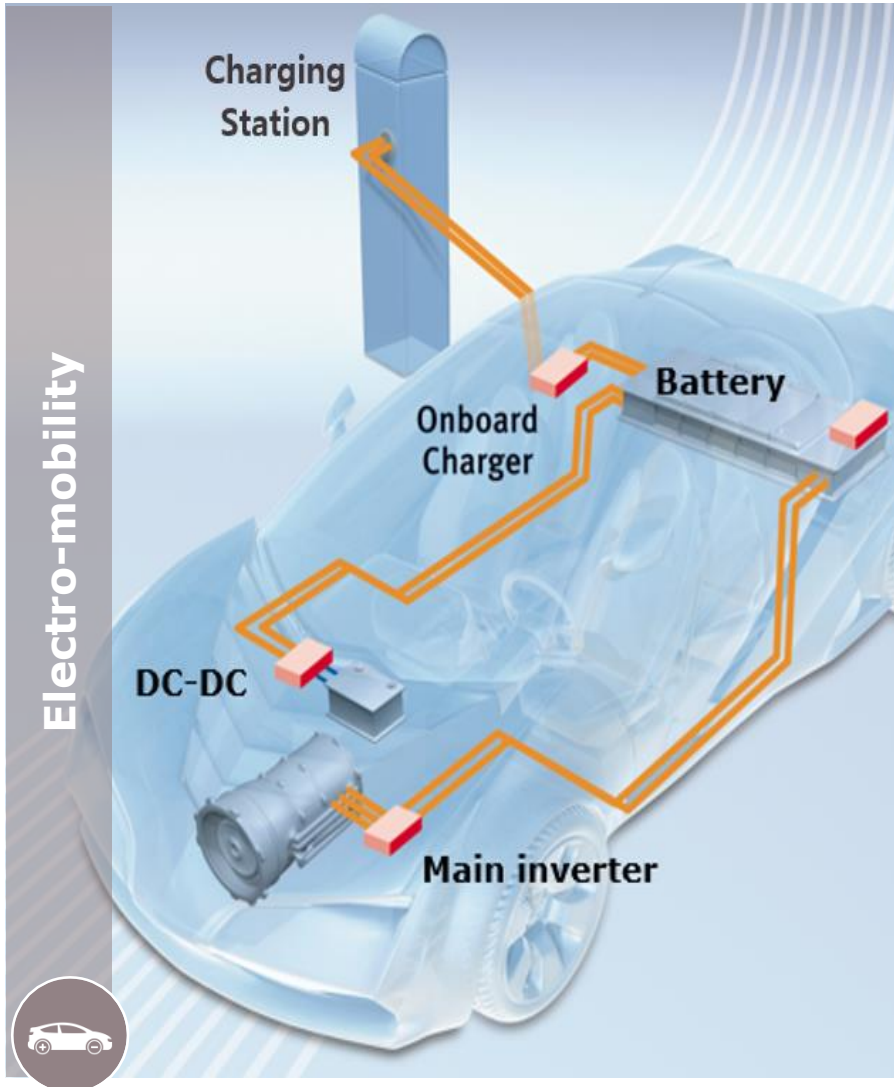
** Infineon



Electro-mobility



Megatrend electro-mobility is boosting businesses of ATV, IPC and PMM divisions



Charging station

- › Majority of charging points is Si-based (PMM: CoolMOS™, IPC: IGBTs)
- › First design-wins for SiC-based ultra high-power charger (> 350 kW) logged in (IPC)

Onboard charger

- › Si-based (PMM: CoolMOS™, ATV: IGBTs)
- › First application inside the car for SiC
- › long-term option for GaN

Main inverter (ATV)

- › Main source of power semi content
- › Dominated by Si-based solutions for the next decade
- › Premium cars will adopt SiC in 2020+; mass market to follow in 2025+

DC-DC converter (ATV)

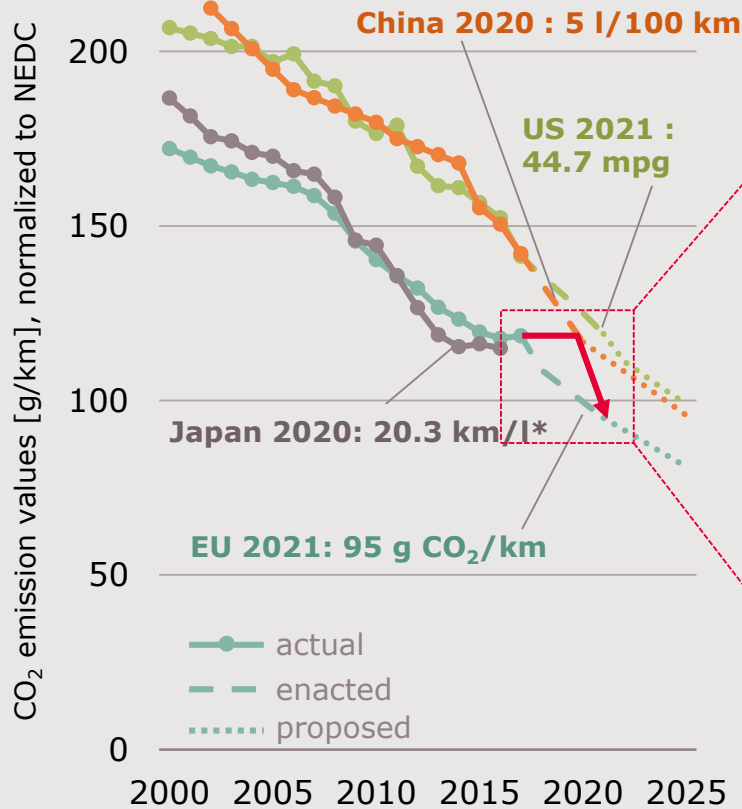
- › Si-based; long-term option for SiC and GaN

Battery

- › IGBTs (ATV) and CoolMOS™ (PMM) for battery switch

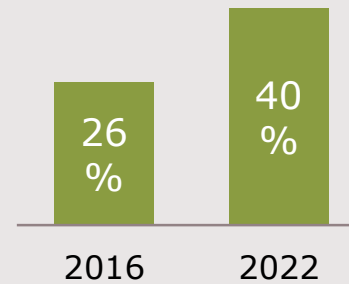
xEV growth driven by emission regulation; but consumer preferences thwart CO₂ reduction

CO₂ emission development and regulations for main regions



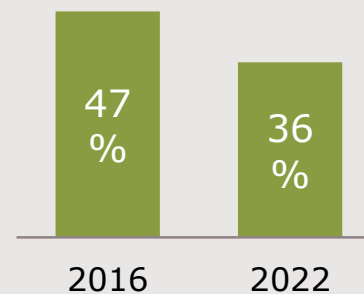
Two consumer trends countervail CO₂ reduction

(1) SUV share of registered cars in Europe¹⁾



> constantly increasing share of heavy ICE SUVs (~150 g CO₂/km) prevents fleet average to come down

(2) Diesel share of registered cars in Europe²⁾



> Lower positive contribution of Diesel (~15% less CO₂ emissions than gasoline) due to reduced acceptance

*Note: Japan has already met its 2020 statutory target as of 2013

Source: 1) based on or includes content supplied by IHS Markit, Automotive Group, "SUV-B segment to drive crossover growth in Europe", January 2018

2) based on or includes content supplied by IHS Markit, Automotive Group, "Light Vehicle Alternative Propulsion Forecast", March 2018

Short-term, MHEV/FHEV/PHEVs are first choice; mid-term BEVs are preferred solution

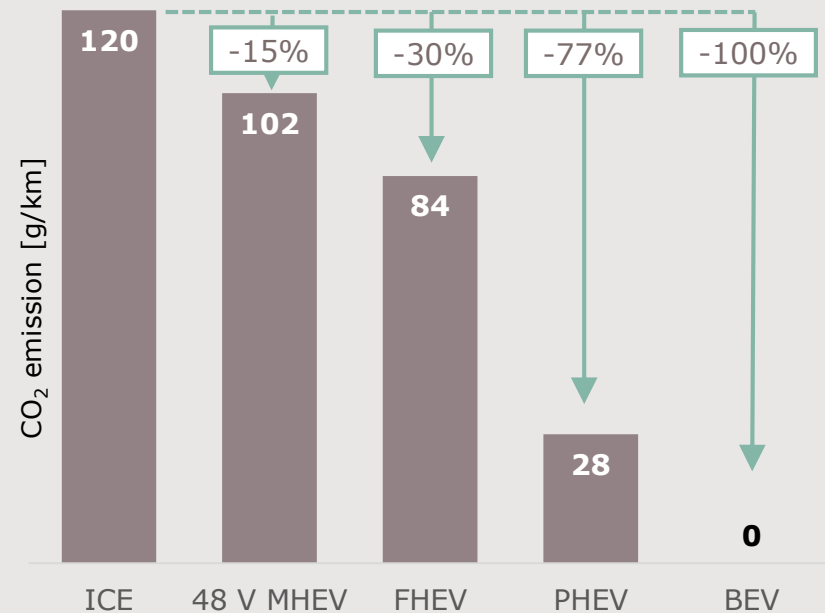
Growth drivers of electro-mobility

- + Regulation
- + Incentives; China industry politics
- + Decreasing Diesel share
- + Increasing SUV share



- Cost and range vs. ICE
- Limited charging infrastructure
- Further ICE improvements
- Attractive oil price

CO₂ emission reduction by powertrain system



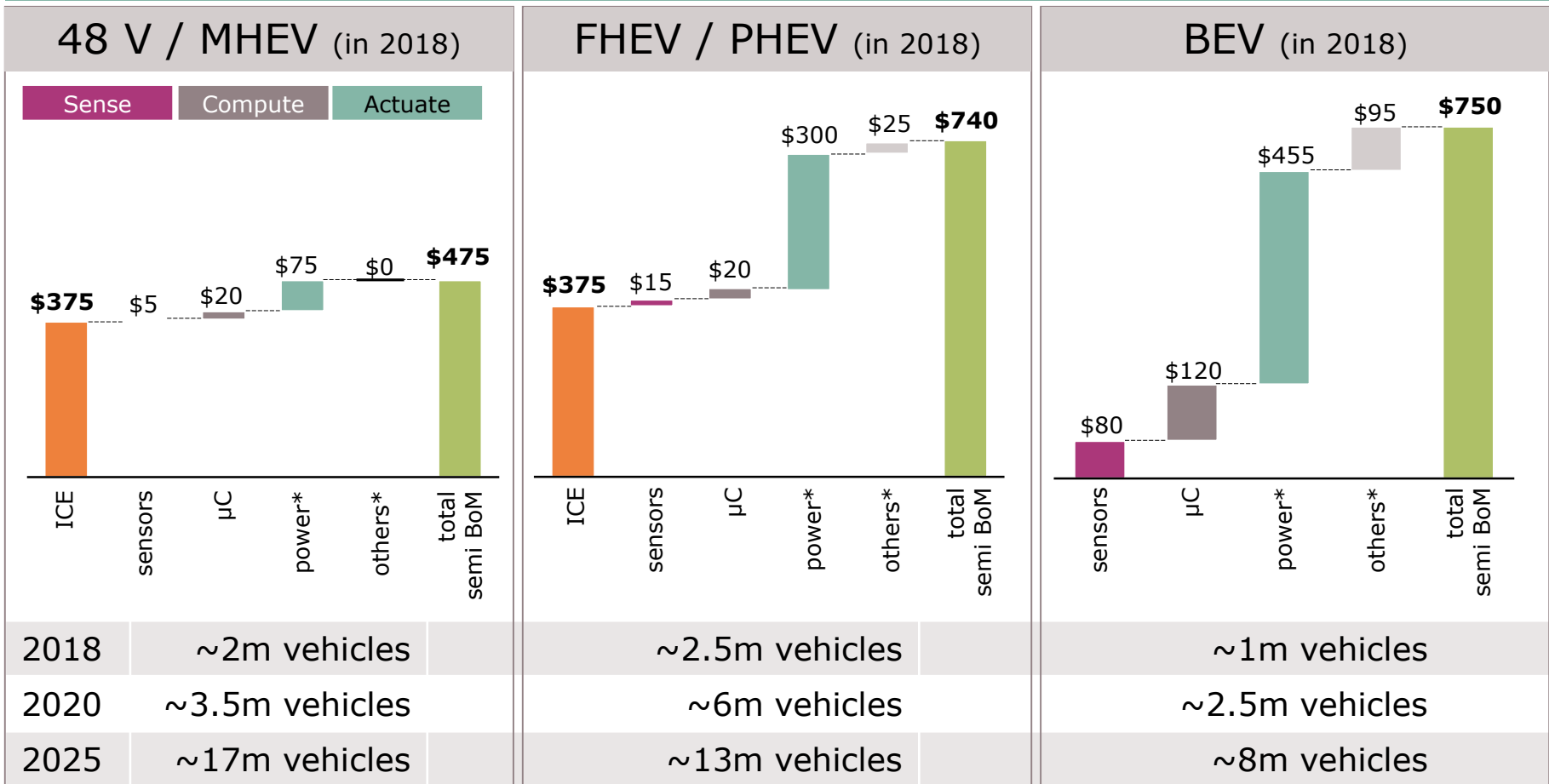
Source: Infineon estimates

- > Due to absence of improvements in CO₂ reduction in the past years, OEMs have to switch to "catch-up" mode until 2021
- > OEMs expected to push 48 V MHEV, FHEV, PHEV systems near-term to meet CO₂ targets
- > Mid- to long-term, BEVs will become the preferred solution

The incremental demand of power semi-conductors is a significant opportunity



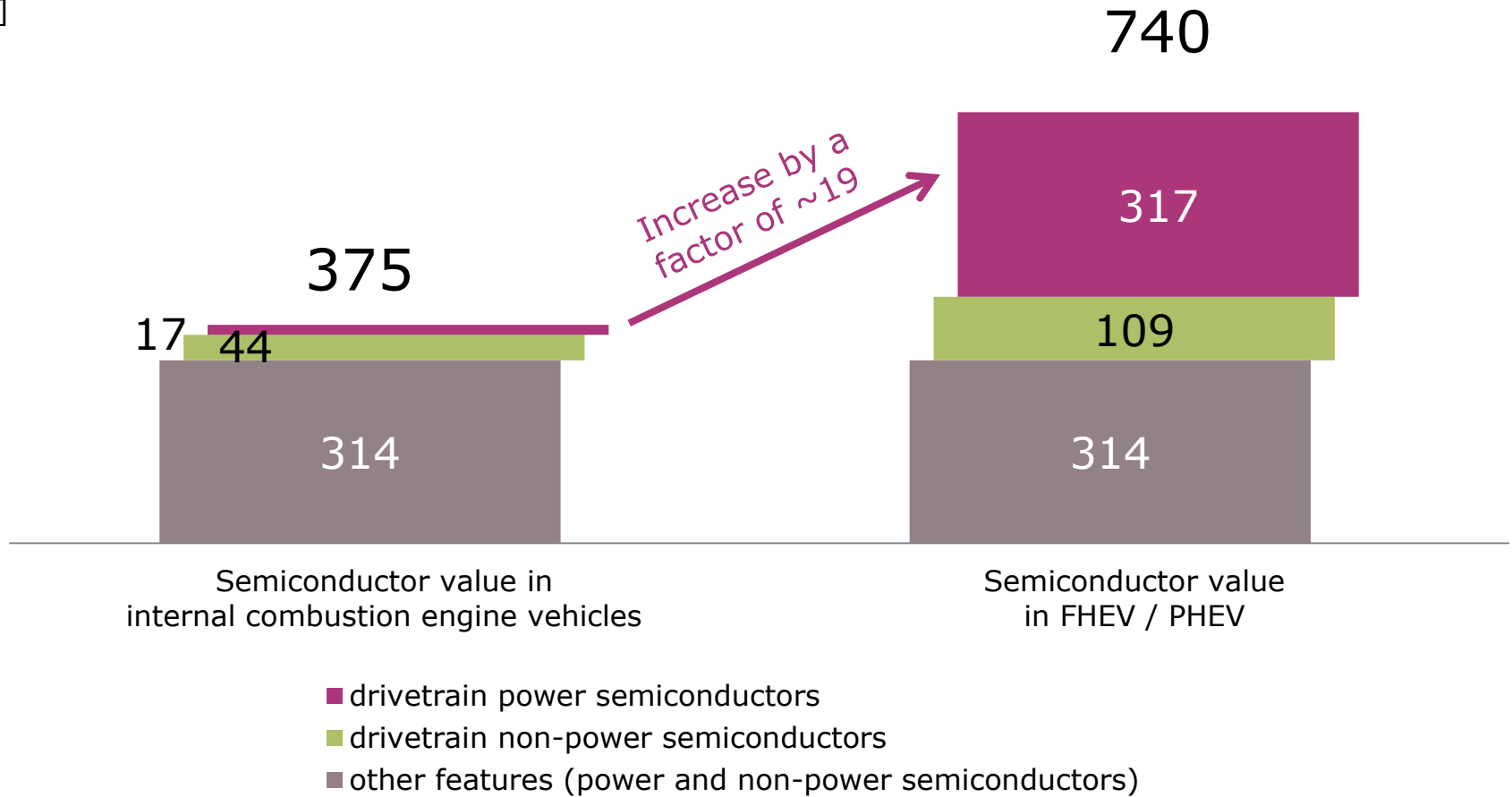
2018 average xEV semiconductor content by degree of electrification



Source: Strategy Analytics, "Automotive Semiconductor Content", May 2018; Infineon
 * "power" includes linear and ASIC; "others" include opto, small signal discrete, memory

Transition from ICE to FHEV / PHEV increases demand for power semis in drivetrain by ~19x

[USD]

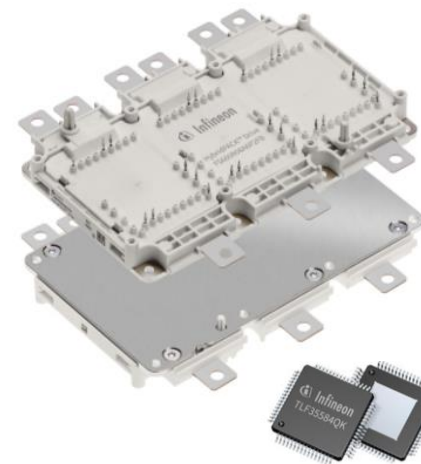


Source: Strategy Analytics, "Automotive Semiconductor Content", May 2018; Infineon

Design-win for drivetrain platform proves Infineon's strength in xEV system solutions

Key facts

- › Design-win at a North American tier-1 for the key BEV drivetrain platform of a major European OEM
- › Complete system solution:
 - HybridPACK™ Drive IGBT module
 - IGBT driver IC
 - AURIX™ 32-bit μ C
 - power management IC
 - several small signal components
- › start of production: 2020



HybridPACK™ Drive IGBT module

IGBT driver IC

AURIX™

power management IC

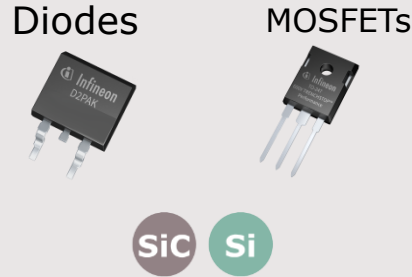
Infineon has unparalleled expertise and portfolio for high-power xEV applications



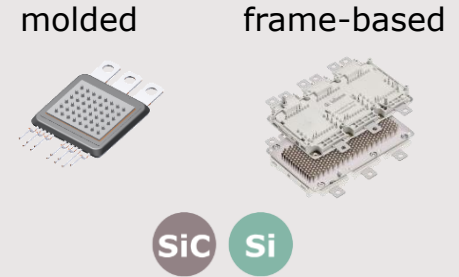
Bare dies



Discretes



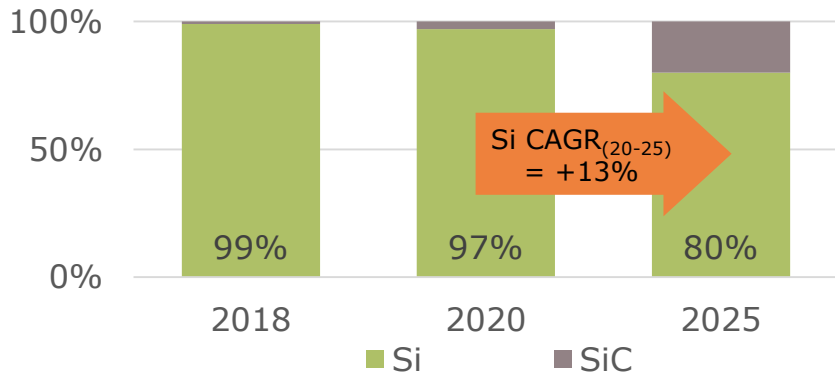
Modules



Si will dominate the xEV market throughout next decade*



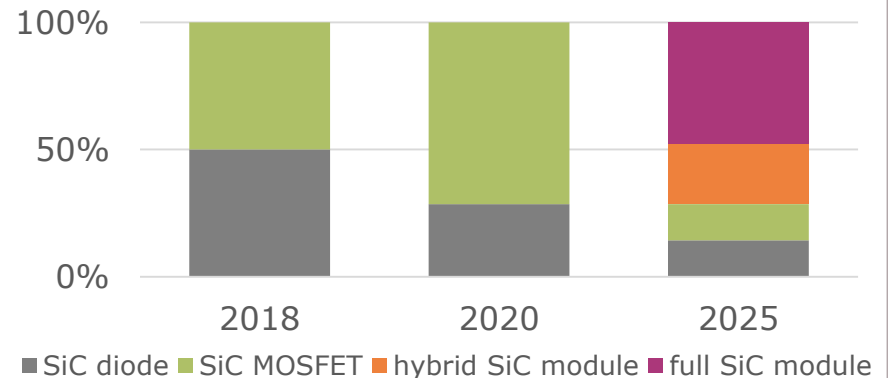
[by \$ value]



Modules will be preferred form factor in SiC mass market*



[by \$ value]



* Source: Infineon estimates

Infineon offers the complete automotive-grade portfolio of SiC components



CoolSiC™ Automotive Schottky diode



on-board charger



ramp in
2018!

CoolSiC™ Automotive MOSFET



on-board charger

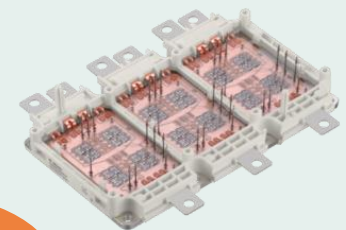


ramp in
2019!

Full SiC module HybridPACK™ Drive CoolSiC™



main inverter



ramp in
2020!

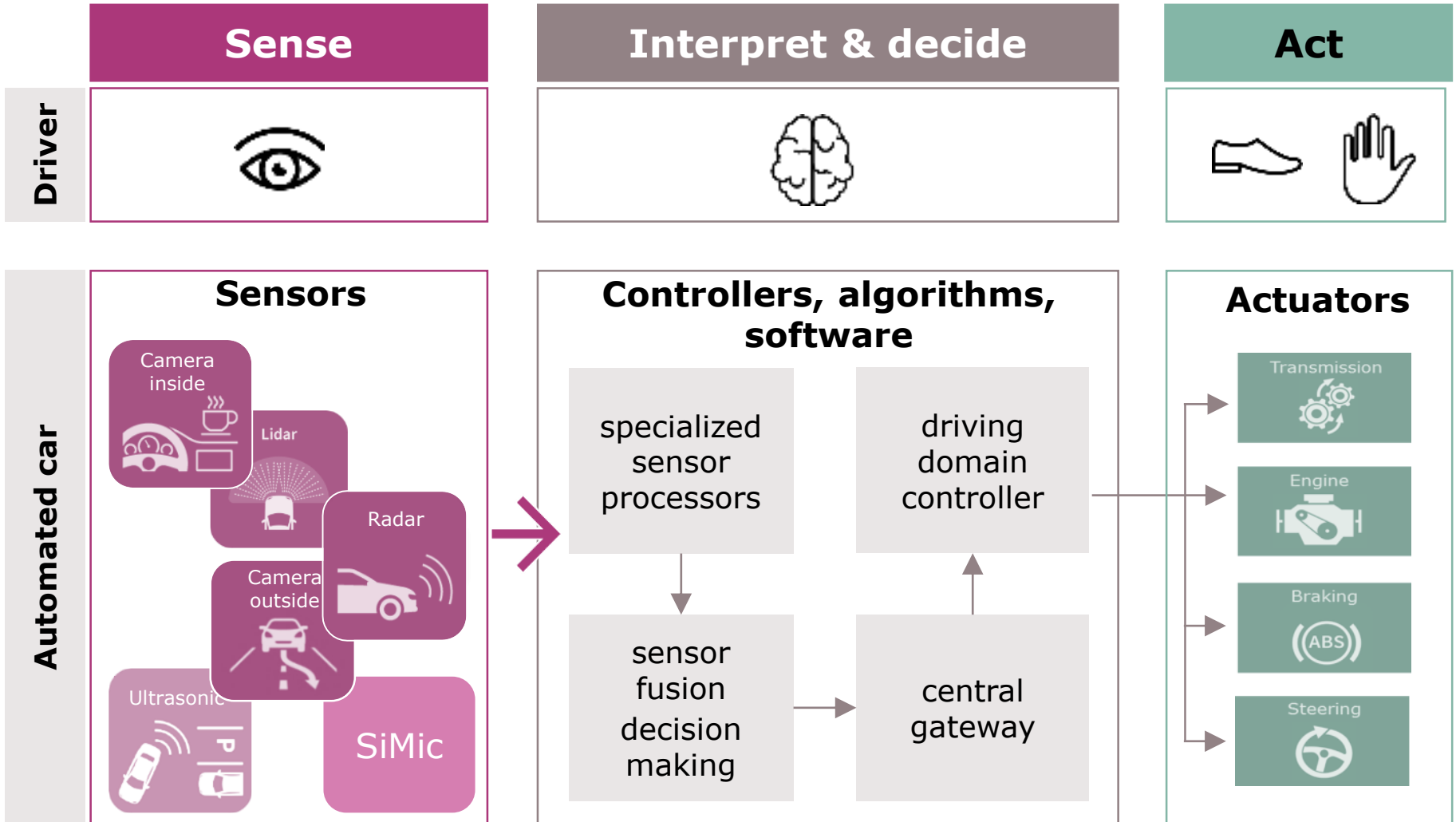
- › More than 20 leading OEMs and tier-1s are evaluating Infineon's SiC solutions for automotive
- › Customer feedback clearly shows that Infineon has deepest understanding of technical quality threats
- › Infineon's internal quality test procedures exceed common industry norm; test results proof that Infineon's SiC products reach that quality level
- › Industry's broadest portfolio allows customer to "pick what they need" rather than to "take what we have"



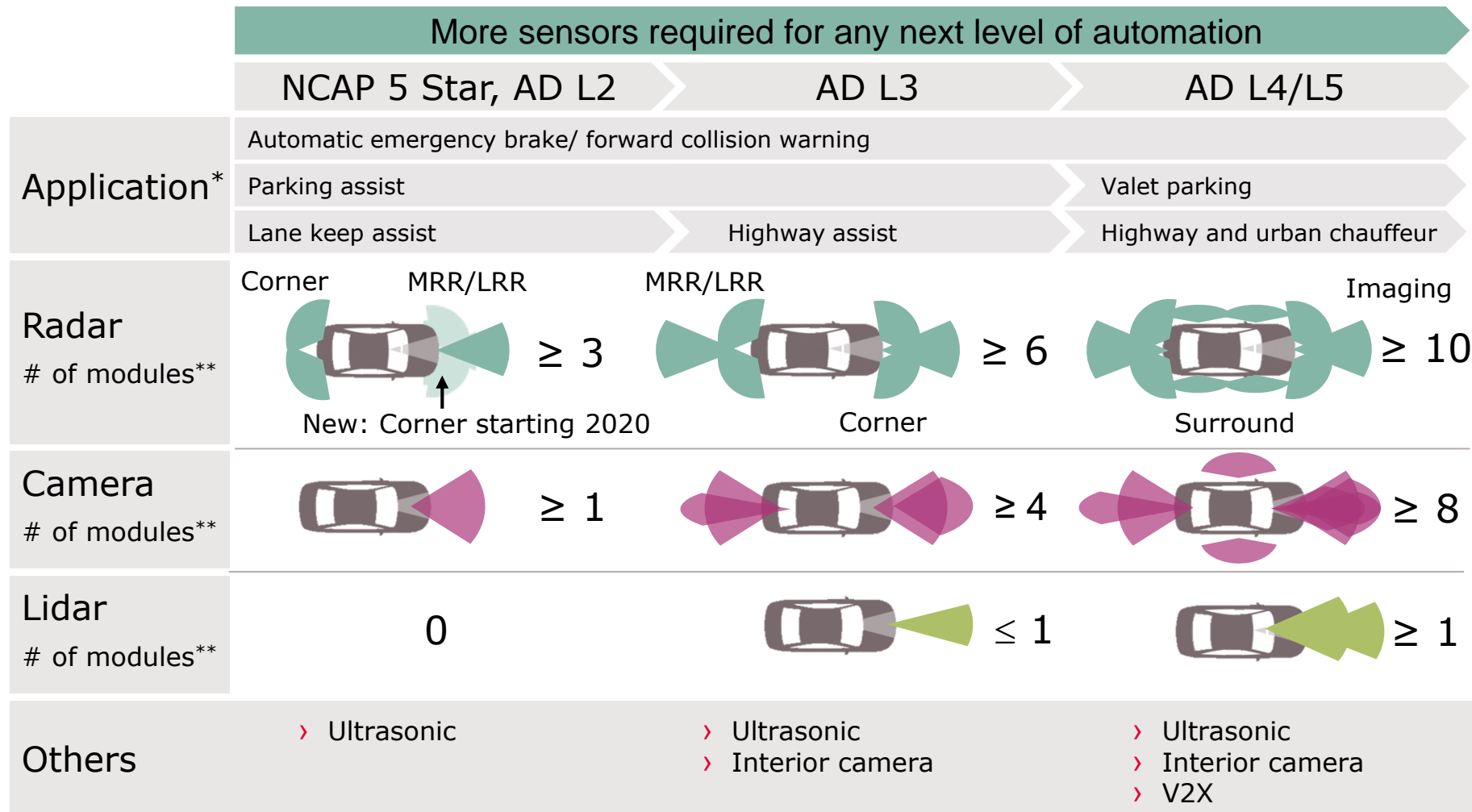
Automated Driving



For Automated Driving more compute power but also a higher security and safety is needed



Increased sensor requirements drive the content in the next 5 years and beyond



* Source: VDA (German Association of the Automotive Industry); Society of Automotive Engineers

** Market assumption

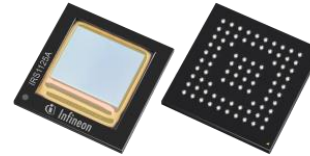
First major 3D ToF sensor design-win for gesture camera and in-cabin sensing

Key facts

- › Major European OEM selected Infineon 3D ToF sensor XENSIV™ REAL3™
- 1st use case: gesture camera**
 - › outstanding sensitivity and sunlight robustness, high dynamic range performance at 50% reduced illumination power*
 - › 50% reduced system BoM through higher integration and lower LED counts*
 - › used in facelifts for all OEM car models from mid class to premium class
- 2nd use case: in-cabin sensing**
 - › same unique sensor features enable extended use-cases covering driver and passenger
 - › used in next-generation car platforms
- › start of production: 2020

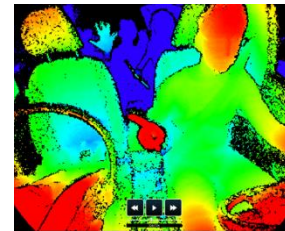
* compared to the next best solution in the market

About 3D in-cabin sensing



Infineon automotive-grade 3D ToF sensor XENSIV™ REAL3™ (IRS1125A) in optical BGA package

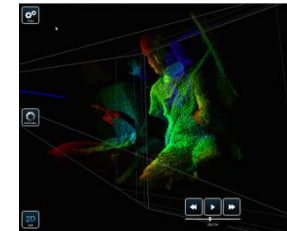
ToF provides depth and amplitude simultaneously



depth picture



amplitude picture



rotated 3D point cloud

Examples of use-cases:

- › hand gestures: pointing direction, touch prediction
- › occupant detection
- › body position
- › smart airbag
- › object in hand: eating, reading, using phone

Infineon opens the door for mass-deployable lidar systems for Automated Driving



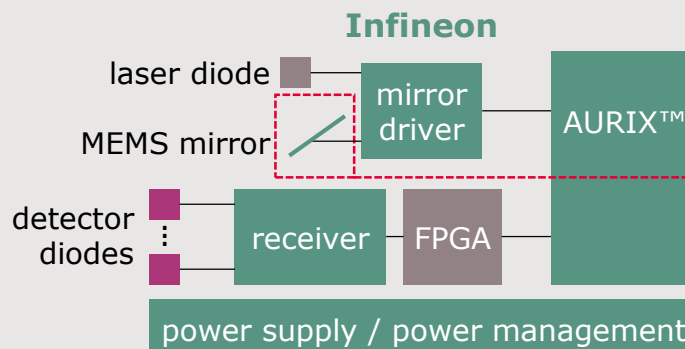
Classification of long-range lidar systems

mechanically moving mirror	solid state optical system		
	scanning optical phased array	flash lidar	scanning MEMS-based mirror
<ul style="list-style-type: none"> ⊕ proven concept ⊖ bulky ⊖ expensive 	<ul style="list-style-type: none"> ⊕ allows optical beam forming ⊖ high demand of laser power, especially for long-range 	<ul style="list-style-type: none"> ⊕ no moving parts ⊖ more complex laser system (more expensive, higher power demand) 	<ul style="list-style-type: none"> ⊕ robust signal path ⊕ more compact ⊕ more cost-effective ⊕ roadmap for higher level of integration

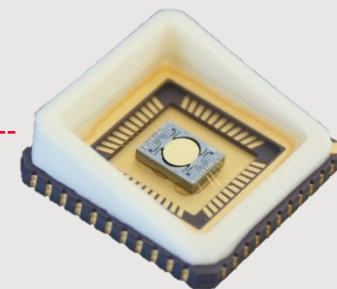


- > Lidar is Infineon's AD portfolio expansion adjacent to radar
- > Infineon intends to repeat its radar success story
- > In addition to MEMS, room to increase BoM by receiver, microcontroller, power management ICs

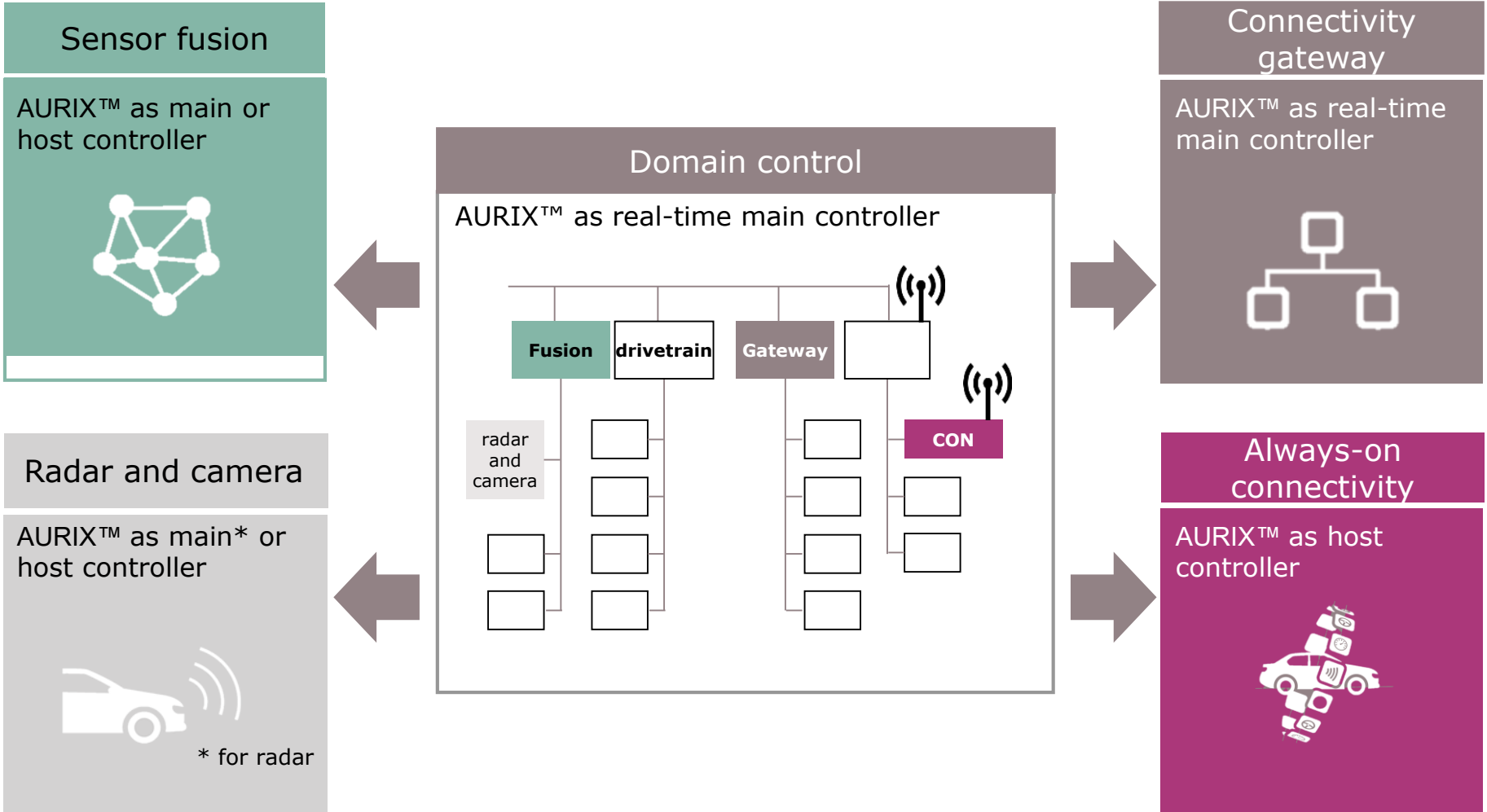
1st System reference design



MEMS mirror



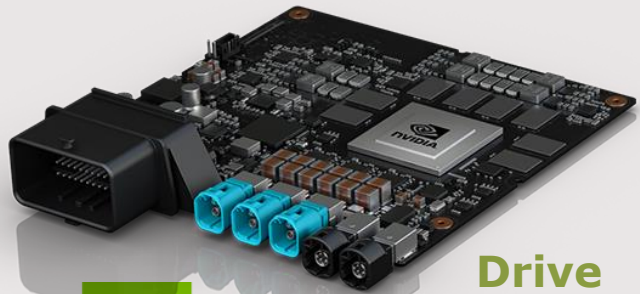
AURIX™ has been selected as domain controller by leading OEMs



Outstanding characteristics make AURIX™ first-choice μ C in the AD platform market



AURIX™ is the market reference as host controller in central computing platforms complementing CPU/GPU to make central computer robust and fail operational

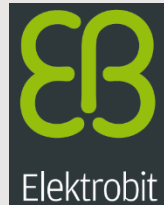


Drive
PX2



NVIDIA®

TTTech
MotionWise

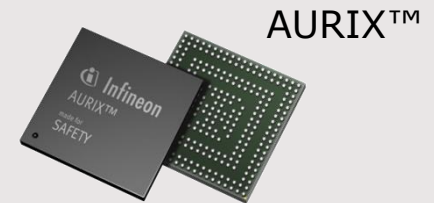


EB robinos



Go™ Automated Driving
Platform with AURIX™

Baidu 百度
Apollo 2.0
Self Driving
Platform



AURIX™

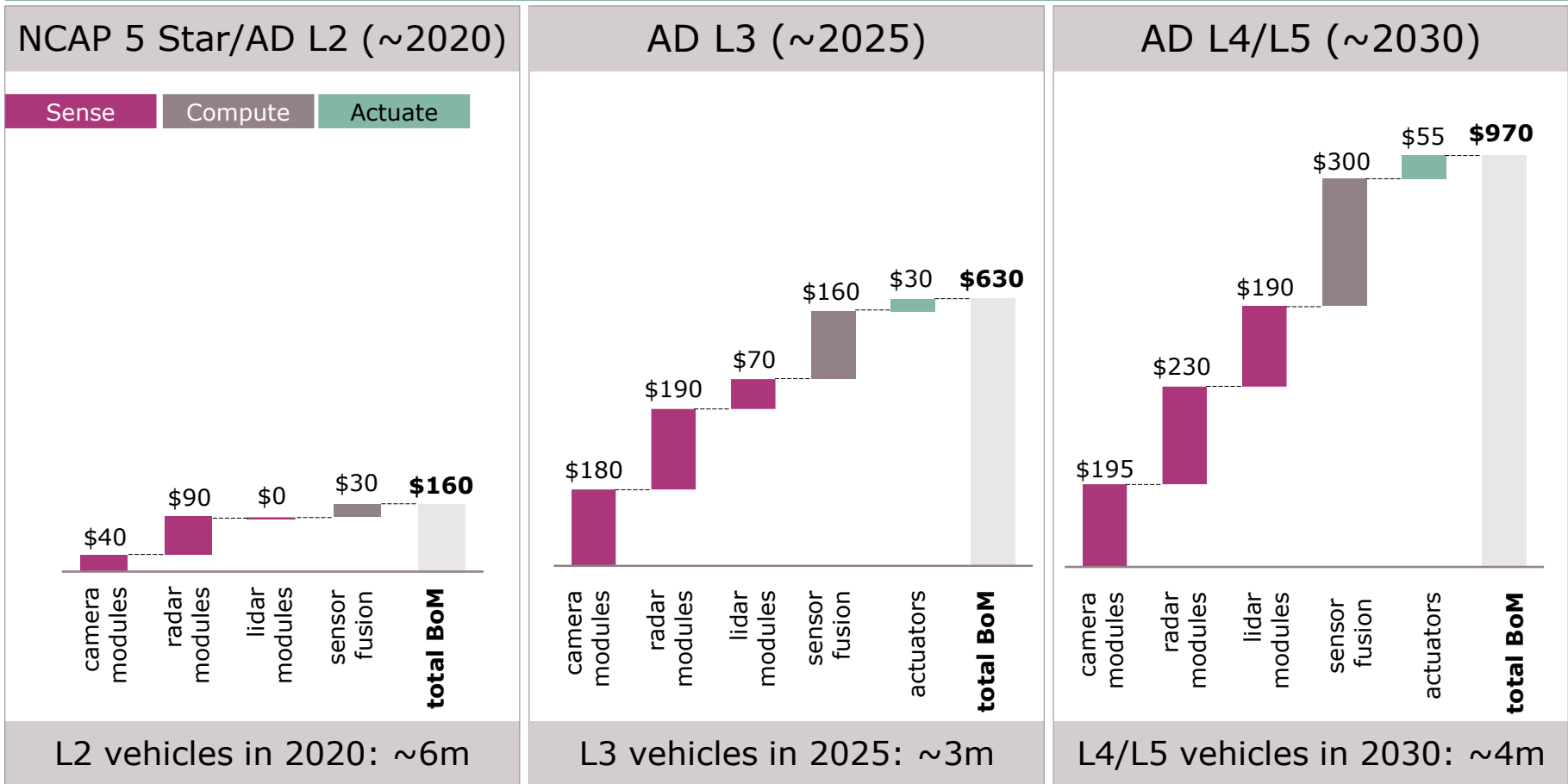
- › Safety host monitoring the operation of the data fusion ECU enables ISO 26262 ASIL-D
- › Safe and secure gateway to the vehicle network
- › Fallback operation in case of a GPU/CPU fail
- › Safe communication to actuator control units

- › Awareness for safety and security aspects of AD is increasing rapidly
- › Infineon is cooperating with the leading AD platform providers

ADAS/AD semi growth driven by radar and camera sensor modules over the next 5 years



Average semi content per car by level of automation at the given years



Source: Strategy Analytics; Infineon
 Bill of material (BoM) contains all type of semiconductors (e.g. radar modules include μ C); sensor fusion does not include memory
 BoM are projected figures for the respective time frame

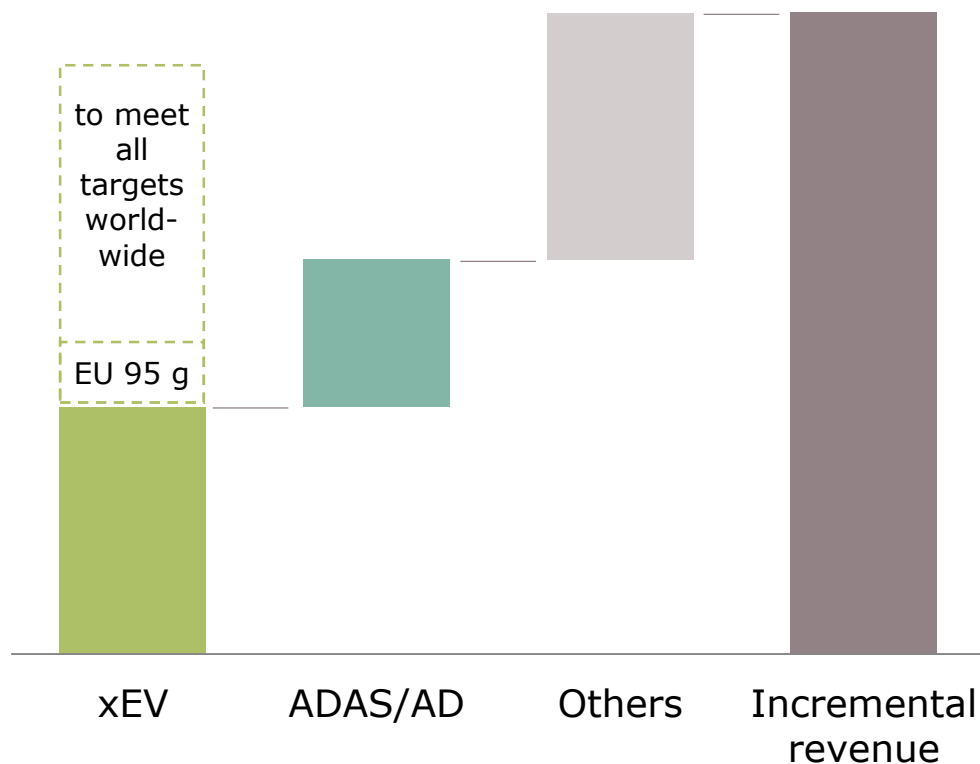


Mid-term outlook



ATV's mid-term growth is strongly driven by xEV and ADAS/AD

Composition of incremental € revenue over five year planning horizon by application



xEV

- › Driven by emission regulations and consumer preferences towards SUV and reduced acceptance of diesel
- › Short-term, PHEVs and MHEVs are first choice; mid-term BEVs are the preferred solution

ADAS/AD

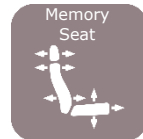
- › NCAP and ADAS/AD Level 1-2 drive the semiconductor content in the next years
- › AD Level 3-5 will create structural growth long-term

ATV's trendline growth:
~10%

Comfort and design will further drive innovation and growth in 'classical' segments

Examples of growing applications in classical segments

Comfort



Market CAGR₍₁₈₋₂₃₎ **7.7%**



Market CAGR₍₁₈₋₂₃₎ **6.9%**



Market CAGR₍₁₈₋₂₃₎ **10.3%**

Comfort features drive growth within the body & infotainment segments.

Source: Strategy Analytics, May 2018

Design



Market CAGR₍₁₈₋₂₃₎ **7.7%**

Lighting is becoming a key element of OEM brand recognition and design signature

Clean cars, ADAS/AD, and adoption of premium features drive growth

Drivers for semiconductor content per car

Vehicle production

Electro-mobility

Automated Driving

Comfort, premium



- > ~2% growth p.a.

- > Legislation
- > Improvements of ICE
- > Higher efficiency of all electric consumers
- > Adoption of xEV

Today

- > crash avoidance
- > ADAS

Tomorrow

- > Autonomous Driving

- > Premium cars are early adopters of high-end comfort and safety features
- > Trickling down to mid-range

~10% p.a. through-cycle growth



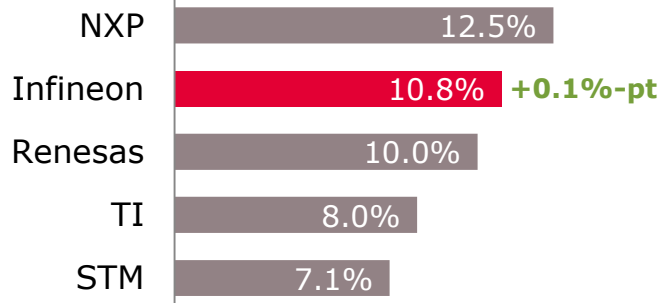
Part of your life. Part of tomorrow.



Infineon is well positioned in its addressed automotive product segments



Automotive semiconductors 2017 total market size: \$34.5bn

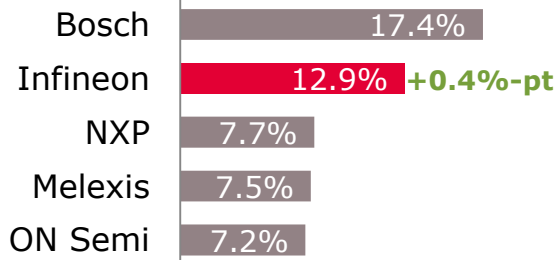


Market share trend

- > Infineon benefits disproportionately from the two mega trends
 - ADAS/AD
 - clean cars

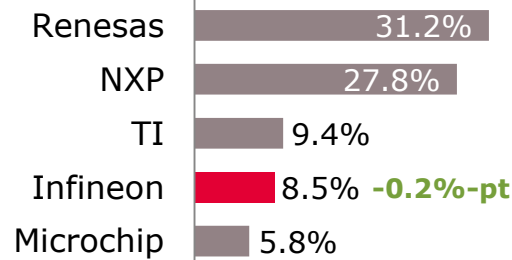


Sensors



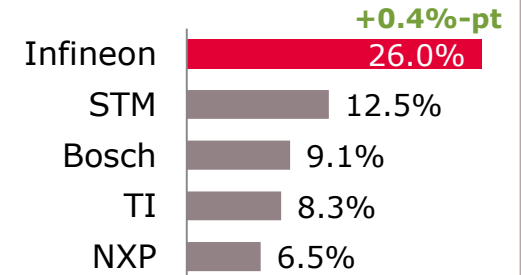
- long-term drivers:
- > 24 / 77 GHz Radar
 - > Lidar

Microcontrollers



- long-term drivers:
- > ADAS/AD
 - > Powertrain

Power



- long-term drivers:
- > xEV penetration
 - > EPS
 - > Lighting

Source: Strategy Analytics, "Automotive Semiconductor Vendor Market Shares", April 2018

Glossary

AD	automated driving	micro-hybrid	vehicles using start-stop systems and limited recuperation
ADAS	advanced driver assistance system	MHEV, mild-hybrid	mild-hybrid electric vehicle; vehicles using start-stop systems, recuperation, DC-DC conversion, e-motor
AEB	automatic emergency braking	OBC	on-board charger
EPS	electric power steering	PHEV	plug-in hybrid electric vehicle
EV	electric vehicle	SiC	silicon carbide
FHEV	full-hybrid electric vehicle	SiGe	silicon germanium
FPGA	field programmable gate array	ToF	time-of-flight
GaN	gallium nitride	V2X	vehicle-to-everything communication
HEV	hybrid electric vehicle	xEV	all degrees of vehicle electrification (EV, MHEV, FHEV, PHEV)
HSM	hardware security module		
ICE	internal combustion engine		
lidar	light detection and ranging		

Peter Schiefer

Division President Automotive



- › since 2016: Division President Automotive
- › Sep 2012: Head of Operations, responsible for Manufacturing, Supply Chain, Purchasing
- › Jan 2012: Division President Power Management & Multimarket
- › 2013 – 2016: Member of the Supervisory Board of Infineon Technologies Austria
- › since 2012: Member of the Supervisory Board of Infineon Technologies Dresden
- › since 2018: Member and Vice Chairman of the Board of Directors of the JV SIAPM (SAIC Infineon Automotive Power Modules (Shanghai) Co. Ltd.)

- › Peter Schiefer was born in Munich, Germany, in 1965. He holds a Diploma in Electrical Engineering from the University of Applied Sciences in Munich.
- › He joined Infineon (Siemens AG until 1999) in 1990.

Disclaimer

Disclaimer:

This presentation contains forward-looking statements about the business, financial condition and earnings performance of the Infineon Group.

These statements are based on assumptions and projections resting upon currently available information and present estimates. They are subject to a multitude of uncertainties and risks. Actual business development may therefore differ materially from what has been expected.

Beyond disclosure requirements stipulated by law, Infineon does not undertake any obligation to update forward-looking statements.

Specific disclaimer for IHS Markit reports, data and information referenced in this document:

The IHS Markit reports, data and information referenced herein (the "IHS Markit Materials") are the copyrighted property of IHS Markit Ltd. and its subsidiaries ("IHS Markit") and represent data, research, opinions or viewpoints published by IHS Markit, and are not representations of fact. The IHS Markit Materials speak as of the original publication date thereof and not as of the date of this document. The information and opinions expressed in the IHS Markit Materials are subject to change without notice and neither IHS Markit nor, as a consequence, Infineon have a duty or responsibility to update the IHS Markit Materials or this presentation. Moreover, while the IHS Markit Materials reproduced herein are from sources considered reliable, the accuracy and completeness thereof are not warranted, nor are the opinions and analyses which are based upon it. IHS Markit and the trademarks used in the data, if any, are trademarks of IHS Markit. Other trademarks appearing in the IHS Markit Materials are the property of IHS Markit or their respective owners.