



# Fourth Quarter FY 2024 Quarterly Update

Infineon Technologies AG  
Investor Relations



# Infineon at a glance

## Addressing long-term high-growth trends



**Energy**  
green and efficient



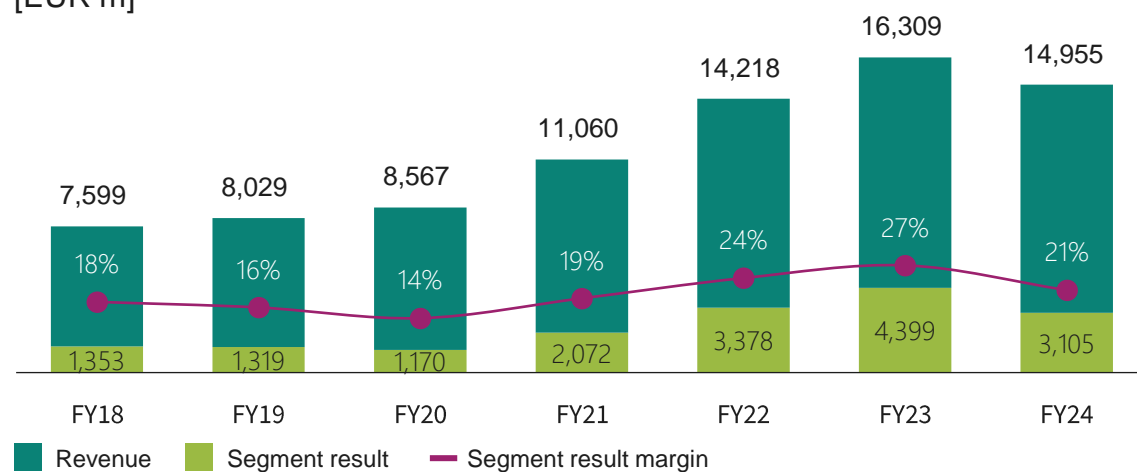
**Mobility**  
clean and safe



**IoT**  
smart and secure

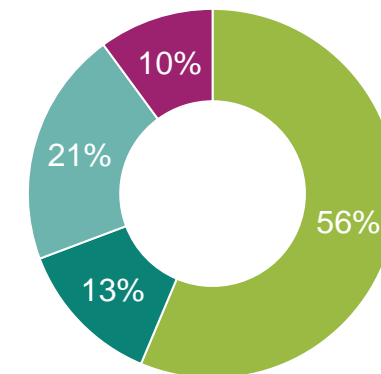
## Financials

[EUR m]

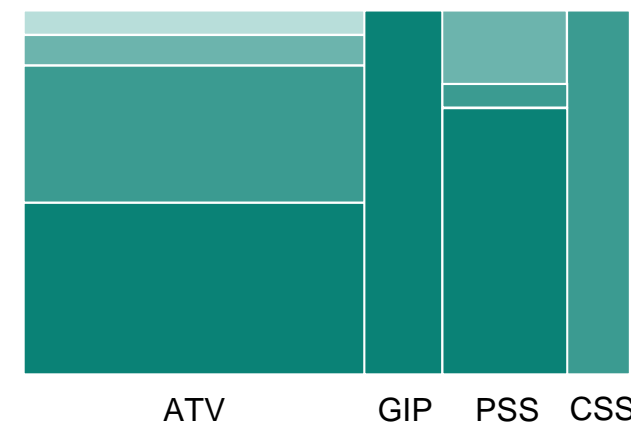
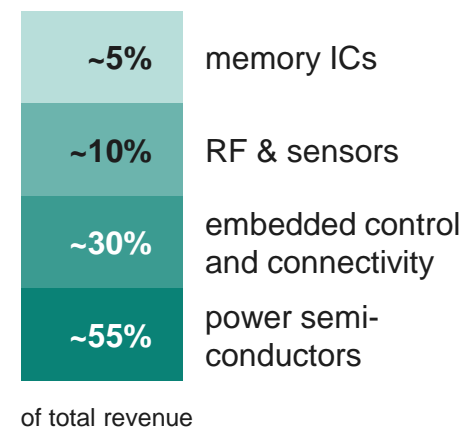


## FY24 revenue by segment

- Automotive (ATV)
- Green Industrial Power (GIP)
- Power & Sensor Systems (PSS)
- Connected Secure Systems (CSS)



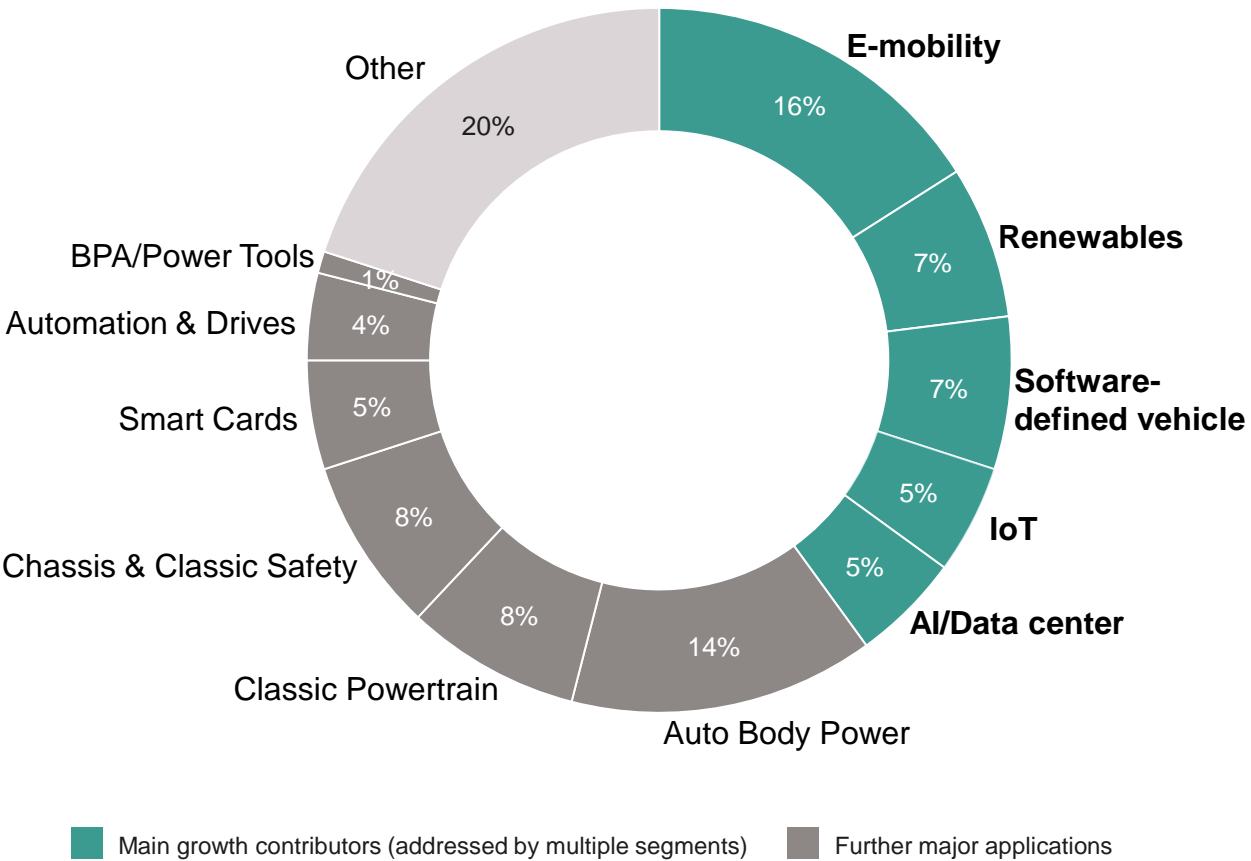
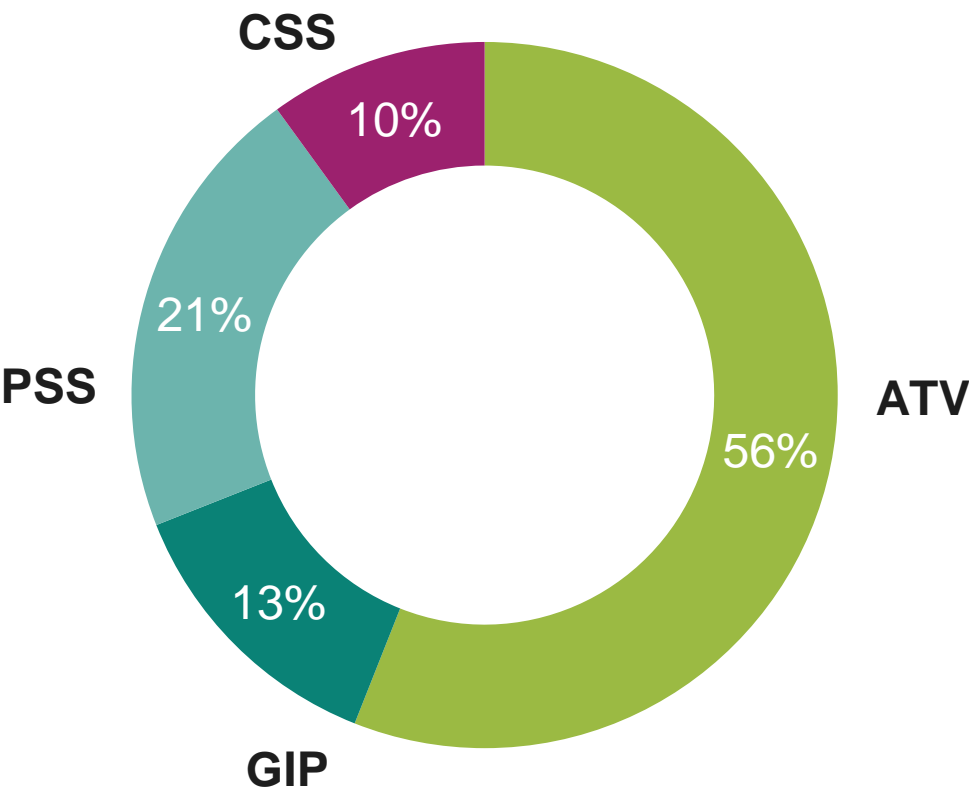
## FY24 revenue by product category



# Well-balanced portfolio among segments and key applications, highest growth coming from Decarbonization and Digitalization



FY24 revenue of €14,955m by segment and key application

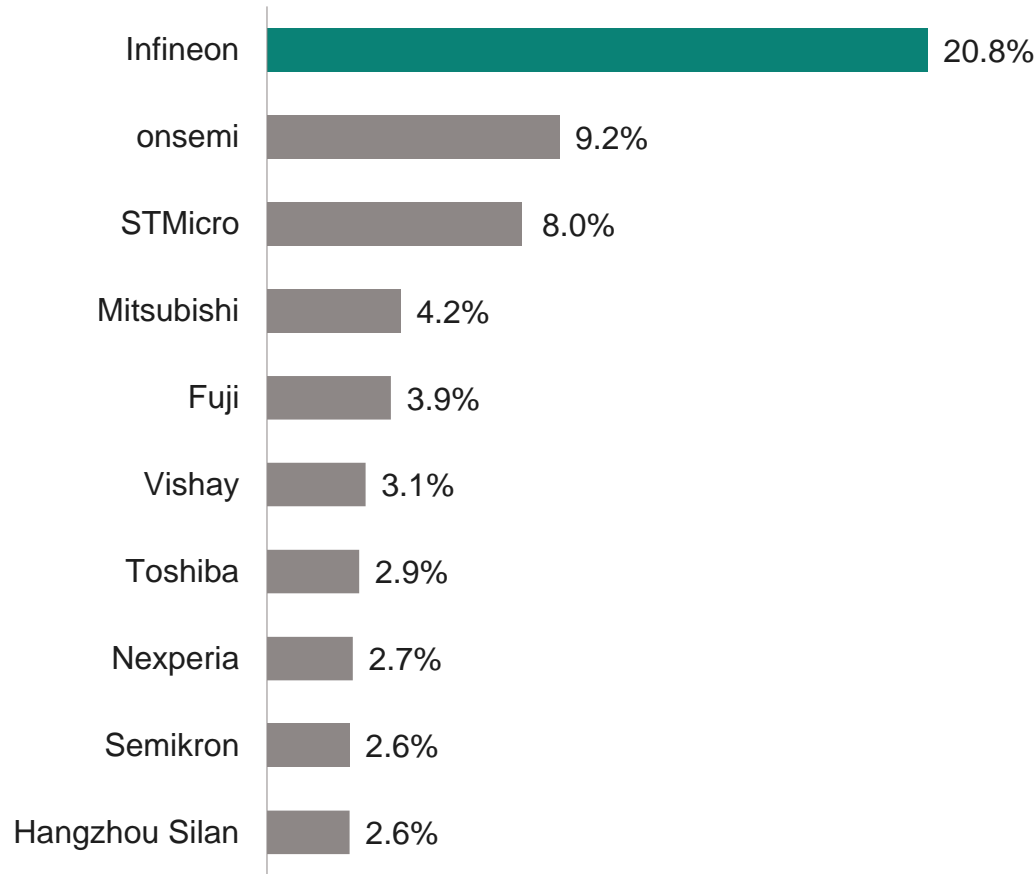


# Infineon is a global player, clear #1 in power semiconductors, Automotive semis and automotive microcontroller markets



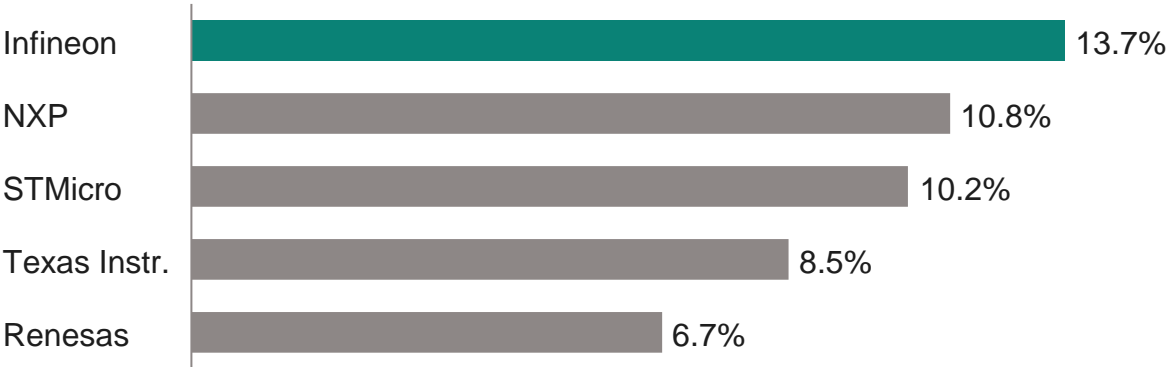
## Power discretes and modules

2023 total global market: \$35.7bn<sup>1</sup>

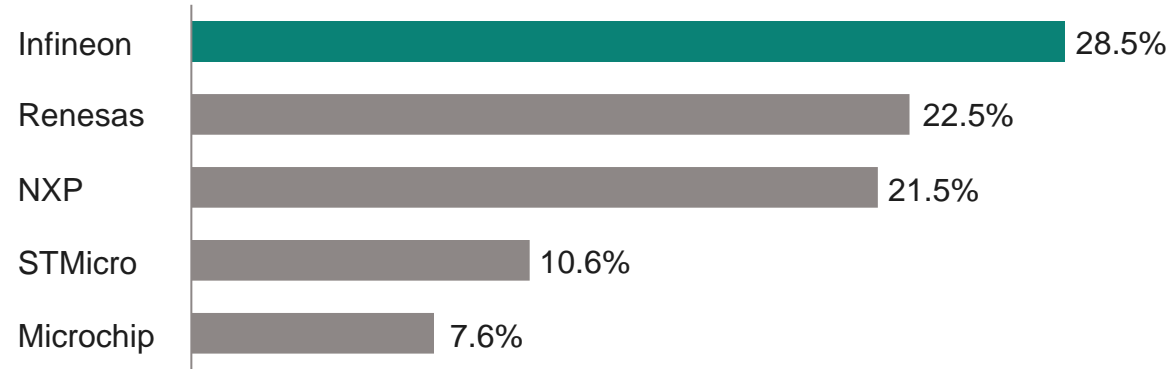


## Automotive semiconductors

2023 total market: \$69.2bn<sup>2</sup>



## Automotive MCUs



<sup>1</sup> Based on or includes research from Omdia: *Power Semiconductor Market Share Database – 2023*. October 2024. | Results are not an endorsement of Infineon Technologies AG. Any reliance on these results is at the third party's own risk. <sup>2</sup> Based on TechInsights: *Automotive Semiconductor Vendor Market Shares*. March 2024.

# Our Target Operating Model: committing to ambitious financial goals and being the sustainability leader



## Target Operating Model through cycle



Revenue growth

**>10%**



Segment Result Margin

**25%**



Adj. Free Cash  
Flow Margin<sup>1</sup>

**10-15%**

**Sustainability leader**  
CO<sub>2</sub> neutrality 2030

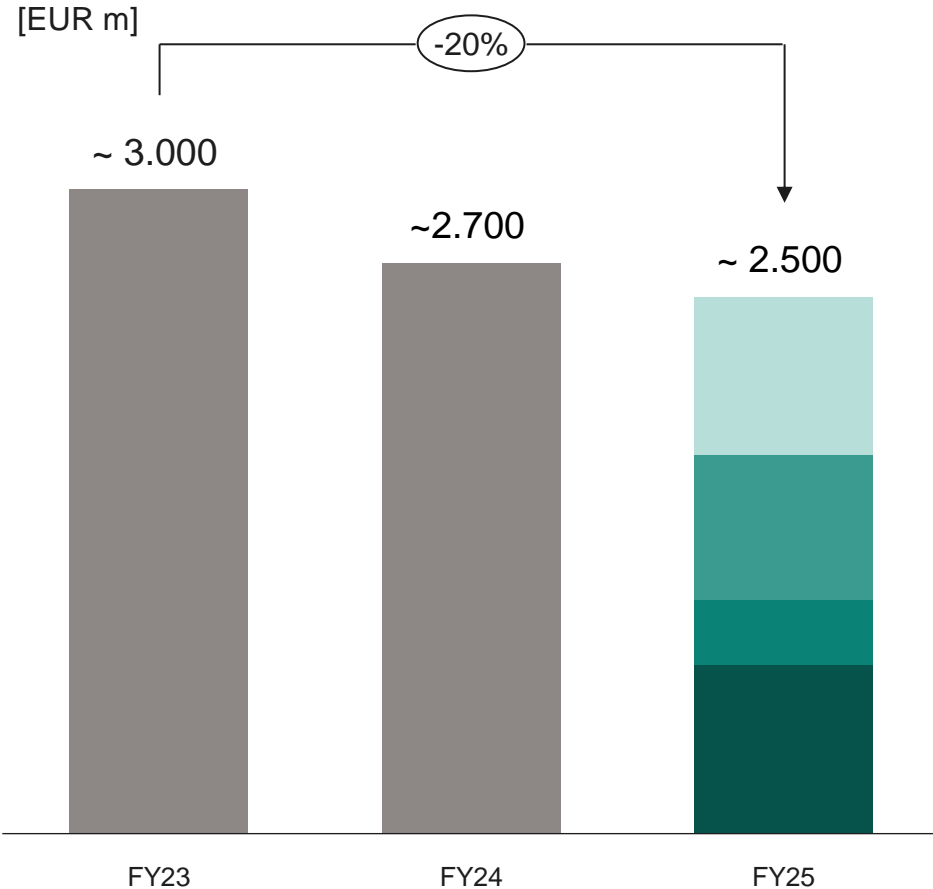


<sup>1</sup> Excluding major frontend buildings



# Modular investment approach allows ramp-up in line with market demand to ensure long-term value creation

## Infineon investments<sup>1</sup> FY 23-25



### Strategic investments – shell construction

- Dresden M4

### Capacity investments – key growth areas

- SiC/GaN: transition to 200mm/300mm
- Smart power and logic: enabling further growth for "powering AI" and analog/mixed-signal products

### Research and development

- IFRS capitalization of development cost

### Basic investments

- Maintenance, process optimization, quality, IT

<sup>1</sup> Investments are defined as the total amount invested in property, plant and equipment and in other intangible assets, including capitalized development costs

# Outlook for Q1 FY25 and FY25

	Outlook <b>Q1 FY25<sup>1</sup></b>	Outlook <b>FY25<sup>1</sup></b>
Revenue	~€3.2bn	slightly down versus prior year
Adj. Gross Margin		~40%
Segment Result Margin	mid-teens	mid-to-high-teens
FCF/adj. FCF		~€900m/~€1.7bn
Investments		~€2.5bn
D&A		~€2.0bn <sup>2</sup>

<sup>1</sup> Based on an assumed average exchange rate of \$1.10 for €1.00

<sup>2</sup> Including the amortization of approximately 370 million Euros from purchase price allocations



# Undisputed power systems leadership mastering all three key materials



- » Reliable multi sourcing of raw materials
- » World-scale fabs



- » Application understanding
- » Packaging know-how and hybridization competence

## Leadership in Power Systems across all materials and technologies

### Silicon

Diode – MOSFET – IGBT – Driver – Controller



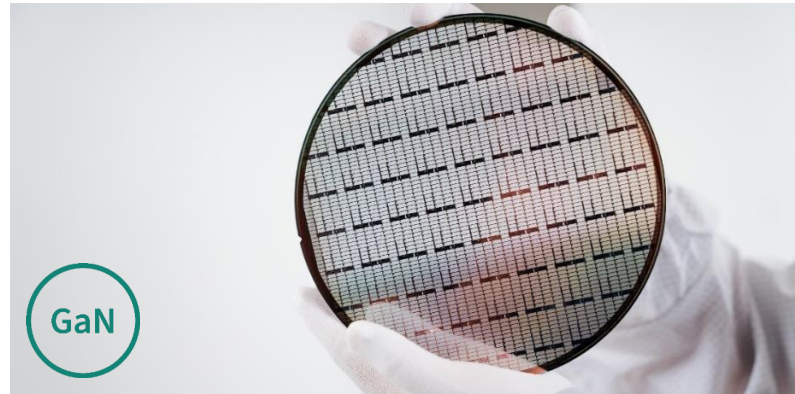
### Silicon carbide

Diode – MOSFET



### Gallium nitride

HEMT – Driver





# Infiniteon is the leader across all power semiconductor technologies

## – unparalleled portfolio and know-how



### World's thinnest silicon power wafer with 20µm on 300mm

- Broadest Si-power portfolio in the market
- Unmatched quality and leading in all figures of merit (FOM)
- Best price/performance ratio



### World's most competitive 200mm silicon carbide power fab

- Broadest portfolio covering auto and industrial applications
- Leading trench performance
- High reliability and robustness in extreme conditions
- Smaller system size



### World's first 300mm gallium nitride power wafer

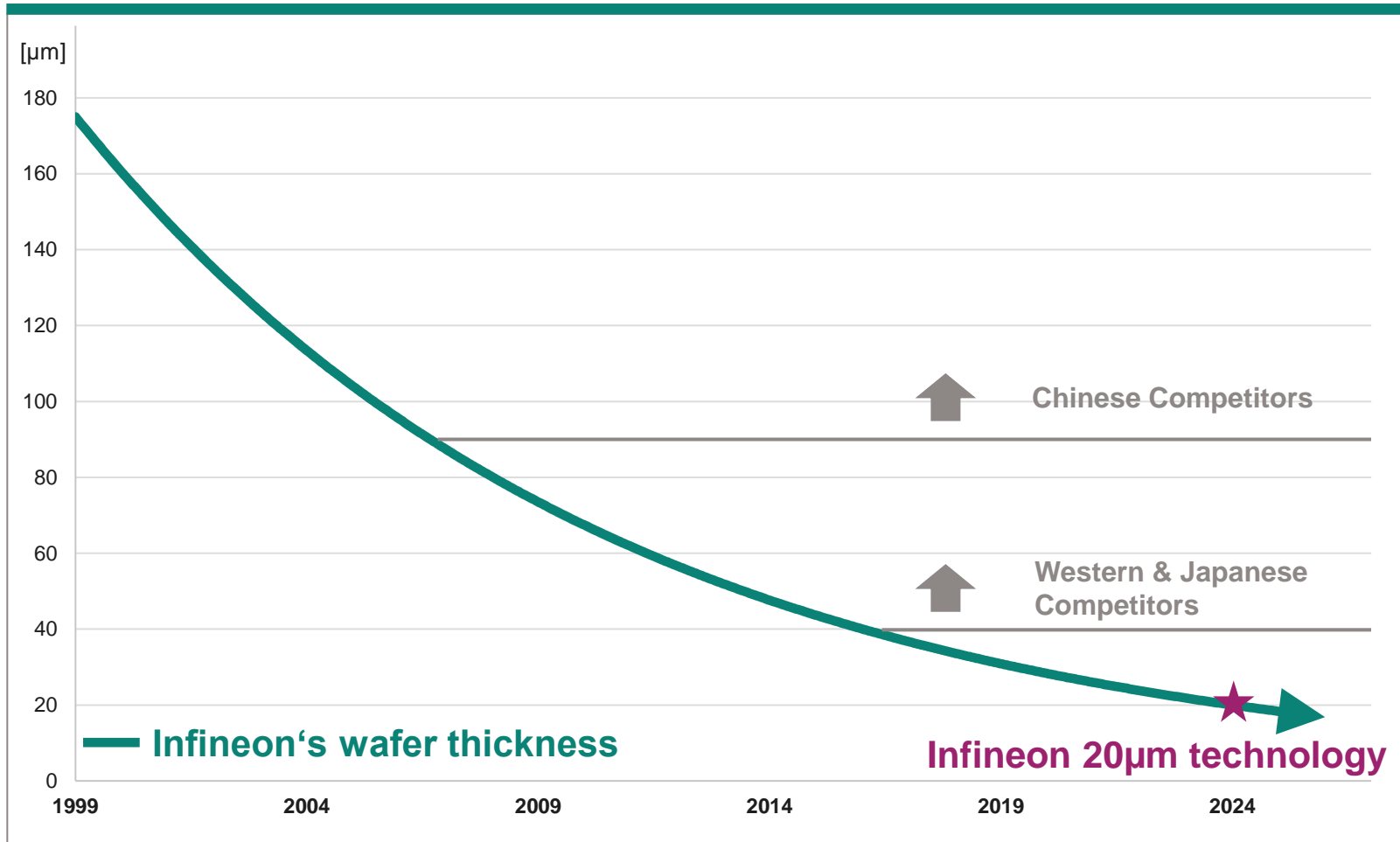
- Enabling cost parity with silicon
- Highest efficiency at the highest frequency enabling smallest system size
- Allow functional integration



**Infiniteon is strengthening its position as the industry's innovation leader  
leading the way in all three power semiconductor materials**

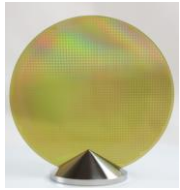
# Infiniteon presents the world's thinnest silicon power wafer paving the way for more energy efficient power systems

## Infiniteon reduces wafer thickness from 40μm to 20μm



- Infineon pioneers 20μm process at high-scale production
- Halving thickness also halves resistance, reducing power loss by >15%
- Enables easy and robust signal routing from front to backside
- Technology qualified by customers and applied in Infineon's Integrated Smart Power Stages for DC-DC converter in AI servers

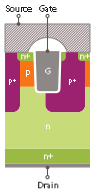
# With opening Kulim 3, Infineon is on track to becoming the industry's most competitive provider of SiC technology



## SiC raw material supplier network



- More than 6 qualified SiC wafer and boule suppliers
- Globally diversified and resilient



## Superior trench technology



- 30% more chips per wafer than planar
- Unmatched reliability with zero field returns



## Packaging portfolio



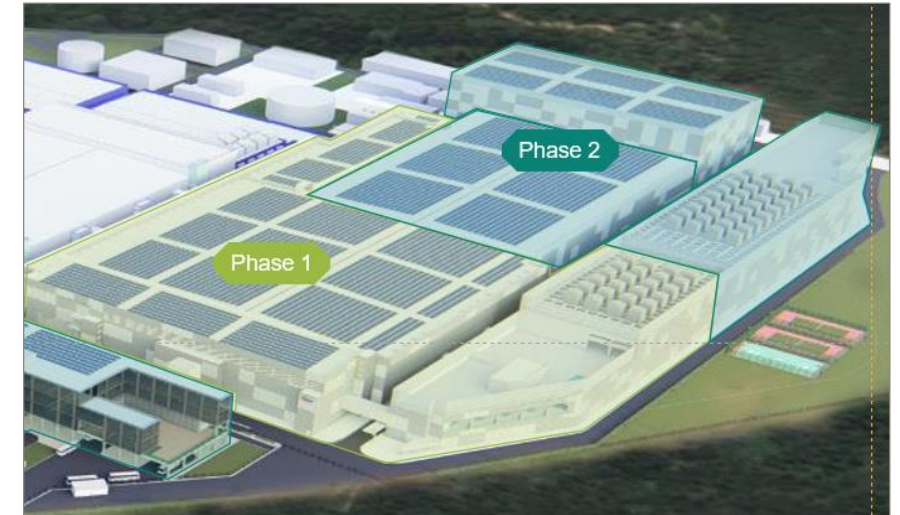
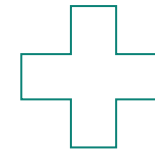
- Best-in-class in-house packaging solutions
- .XT technology for highest power density



## Deep system understanding



- Decades of experience
- Broadest portfolio: off-the-shelf plus customized solutions



**Most competitive 200mm fab with industry-leading cost position.**  
Resilient setup together with Villach plant

# Smart phase-over and ramp-up of 200mm volume production to enable next level of innovation for customer value with SiC

Villach

Kulim



CoolSiC™  
200 mm

## Pilot projects on track



- Qualification on selected high-volume technologies nearly finished
- SiC multi-sourcing strategy for raw materials in place
- Wafer yield equal or better to 150mm

## Smart 200mm phase-over



- Volume production in Villach and Kulim
- Cleanroom and tools already available
- Full transition to 200mm planned within 3 years after qualification

## Timeline



- Product roll-out based on 200mm starting Q1 CY25
- Major new chip developments on 200mm



# Infiniteon pioneers world's first 300mm power gallium nitride (GaN) technology – an industry game-changer



GaN



**Higher system performance & increased cost-effectiveness**  
through GaN technology



Contribute to **achieving cost parity with silicon** over time



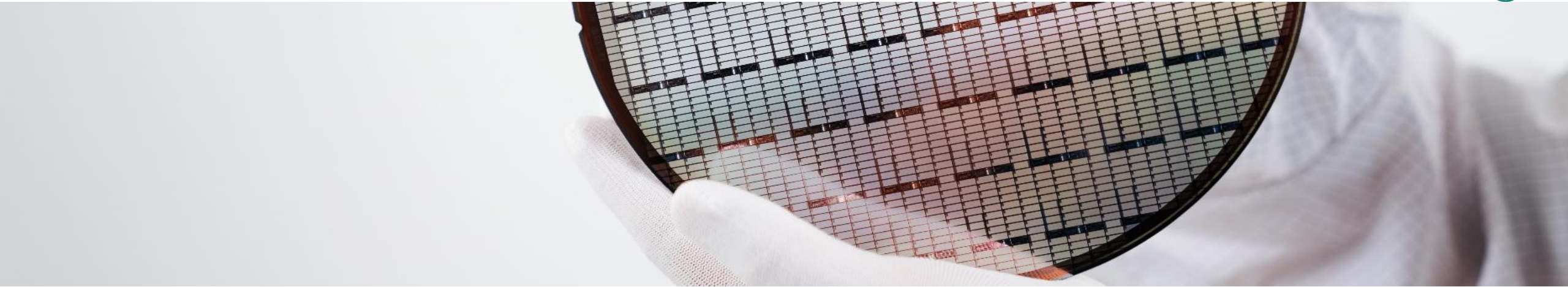
**Supply stability**  
for business continuity

**Superior Value Proposition**

# Continuing our leadership in Power Systems with the most comprehensive GaN portfolio



GaN



## Key differentiators

**Broadest IP portfolio in the market** for GaN – >350 patent families

**Proven application expertise** with >400 GaN experts and system know-how

**Highest quality and reliability**

**Superior customer supply stability** through scalability

**Capability to invest** in leading edge GaN technology and system solutions

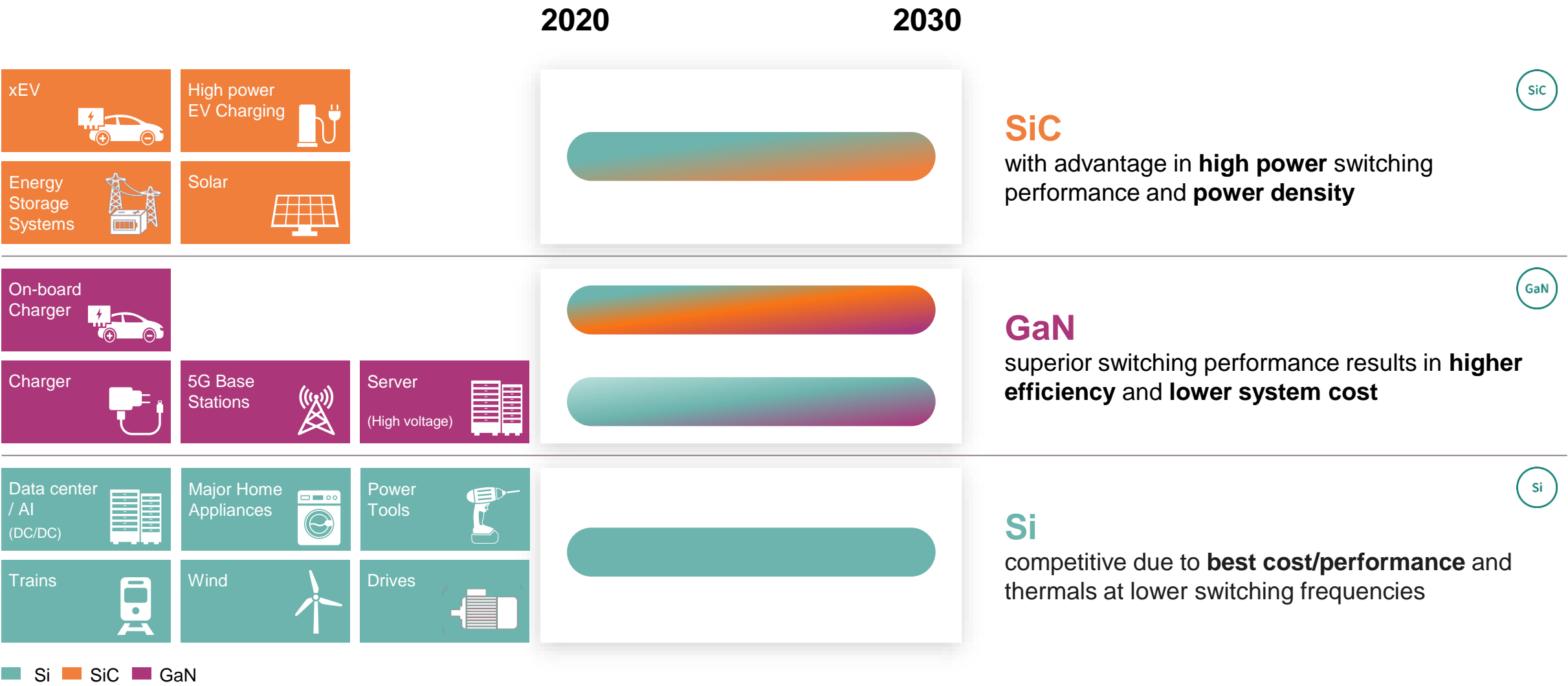
**Leading GaN product portfolio** for MV and HV applications

**Pioneering world's first 300mm power GaN**

Infineon's design opportunity pipeline for GaN power in focus applications amounts to **more than €3bn**



# Transition to WBG vastly differs by application with Si expected to remain technology of choice for many of them



■ Si ■ SiC ■ GaN

# Infiniteon at the core of IoT – driving digitalization by serving strongly growing multi-application markets



## Consumer IoT



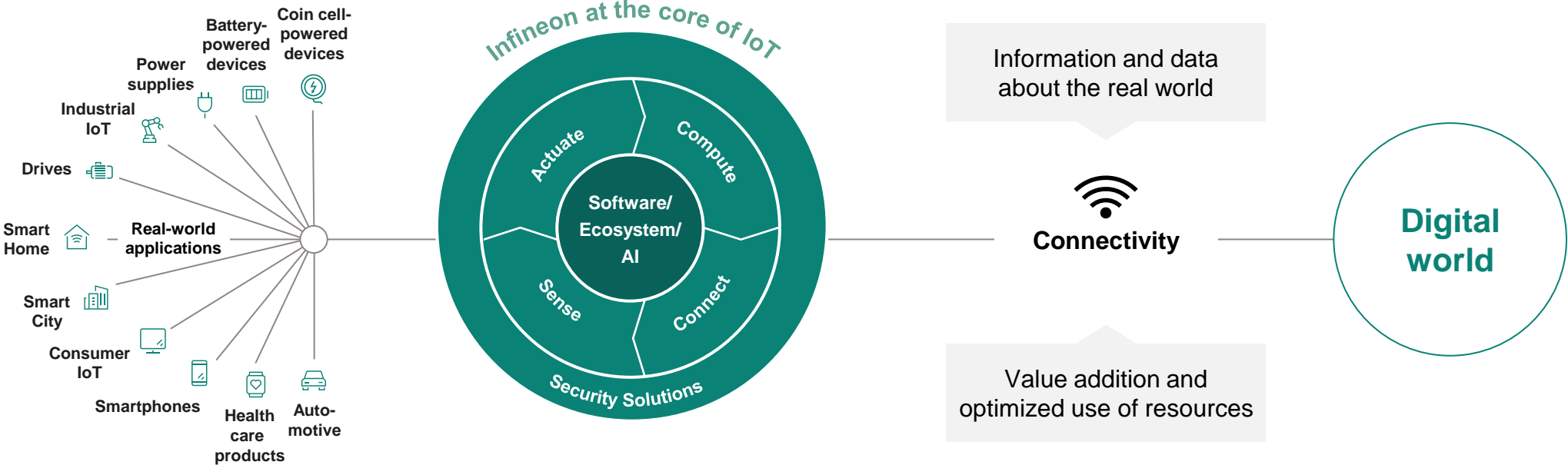
## Industrial IoT



## Automotive IoT



**Products:** MCU – Connectivity (Wi-Fi, BLE, NFC) – Sensors – Security – Power supply & switches



# ESG: Targets and achievements





# Our 2030 carbon neutrality goal is aligned with the Paris Climate Agreement's 1.5°C target



## CO<sub>2</sub> burden<sup>1</sup>

2.9 million tons of CO<sub>2</sub> equivalents



Ratio  
~1:45

## CO<sub>2</sub> savings<sup>2</sup>

130 million tons of CO<sub>2</sub> equivalents

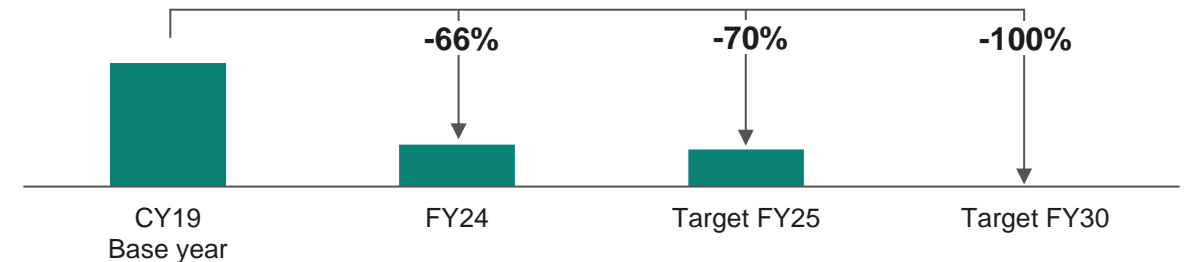


## On the road to carbon neutrality<sup>3</sup> we achieved significant milestones by

- Using green electricity in Europe and North America and our main sites Kulim and Melaka in Malaysia
- Installation start of PFC abatement system in Austin

## Infineon's CO<sub>2</sub> target<sup>3</sup> by 2025 and 2030

Net CO<sub>2</sub> emissions in million tons of CO<sub>2</sub> equivalents










» Net ecological benefit: CO<sub>2</sub> emissions reduction of more than 127 million tons

<sup>1, 2, 3</sup> For further explanation see "ESG footnotes" in the appendix

# External recognitions confirm our engagement in contributing to a sustainable society



	Rating/Score	Scale	Date
<div>  <div>MSCI ESG</div> </div>	AAA	CCC to AAA	05/2024
<div>  <div>CDP</div> </div>	B climate scoring B water scoring	F to A	02/2024
<div>  <div>Ecovadis</div> </div>	99th percentile “Platinum” award	0 to 100	06/2024
<div>  <div>Dow Jones Sustainability™ Index</div> </div>	77 Dow Jones Sustainability™ World Index listing	0 to 100	12/2023
<div>  <div>ISS ESG Corporate Rating</div> </div>	Prime Status	D- to A+	03/2023
<div>  <div>FTSE4Good Index</div> </div>	Index member	–	06/2024
<div>  <div>Sustainalytics</div> </div>	ESG industry top performer	–	01/2024

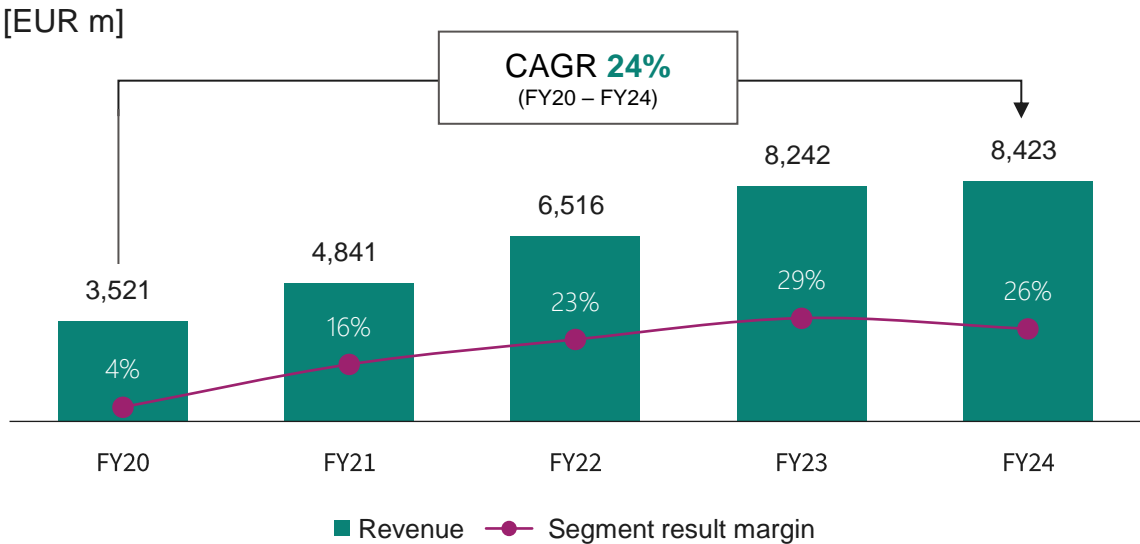
# Automotive



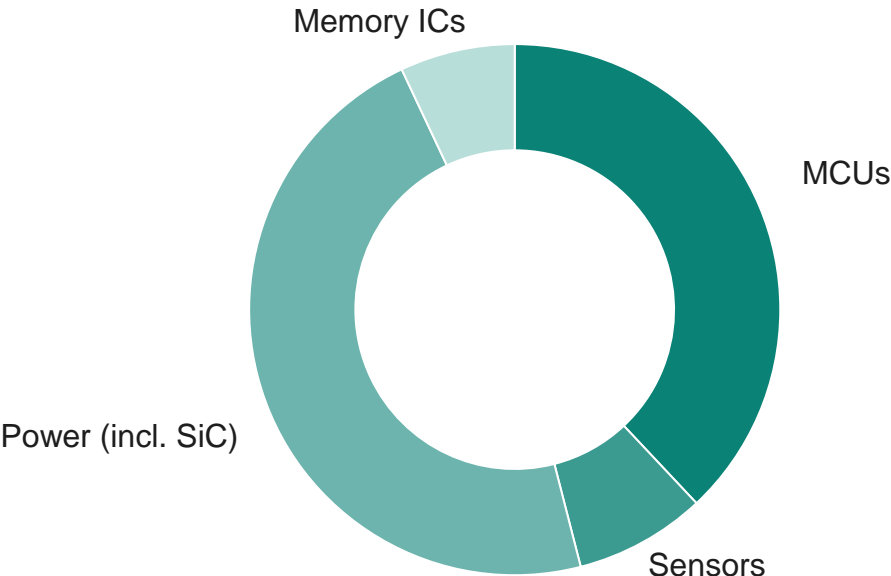


# ATV at a glance

## ATV revenue and Segment Result Margin



## FY24 revenue split by product group



## Key customers


# Shift of EV growth and lower momentum of car production

## Applications

## Market outlook for CY25



Automotive



- Car demand to gradually improve supported by macroeconomic changes. However, further dealer inventory adjustments and hesitant consumer demand to be expected
- EU light vehicle production to remain weak across many OEMs
- US sales under pressure, significantly higher rebates only partially stimulate sales; high inventories for US OEMs affect production output
- Japanese OEMs have reduced production forecast
- Shift in China to local OEMs



E-mobility



- Weaker consumer demand and platform delays are assumed to also impact CY25
- NEV growth in China will further continue
- Broader availability of more affordable BEVs
- Potential for growth upside due to -15% CO2 reduction target for 2025



Software-defined vehicle



- Further growth of higher ADAS/AD levels supported by xEV growth and more advanced E/E architecture platforms especially in China

# Several strong content growth drivers for Infineon, even at flat LV production

## Several structural trends fueling our growth

### xEV

- Strong volume growth of BEVs and PHEVs
- Increasing share of SiC in traction inverters
- Larger batteries lead to higher BoM in BMS

### ADAS/AD

- Need for functional safety, redundancy
- More sensors, more computing performance

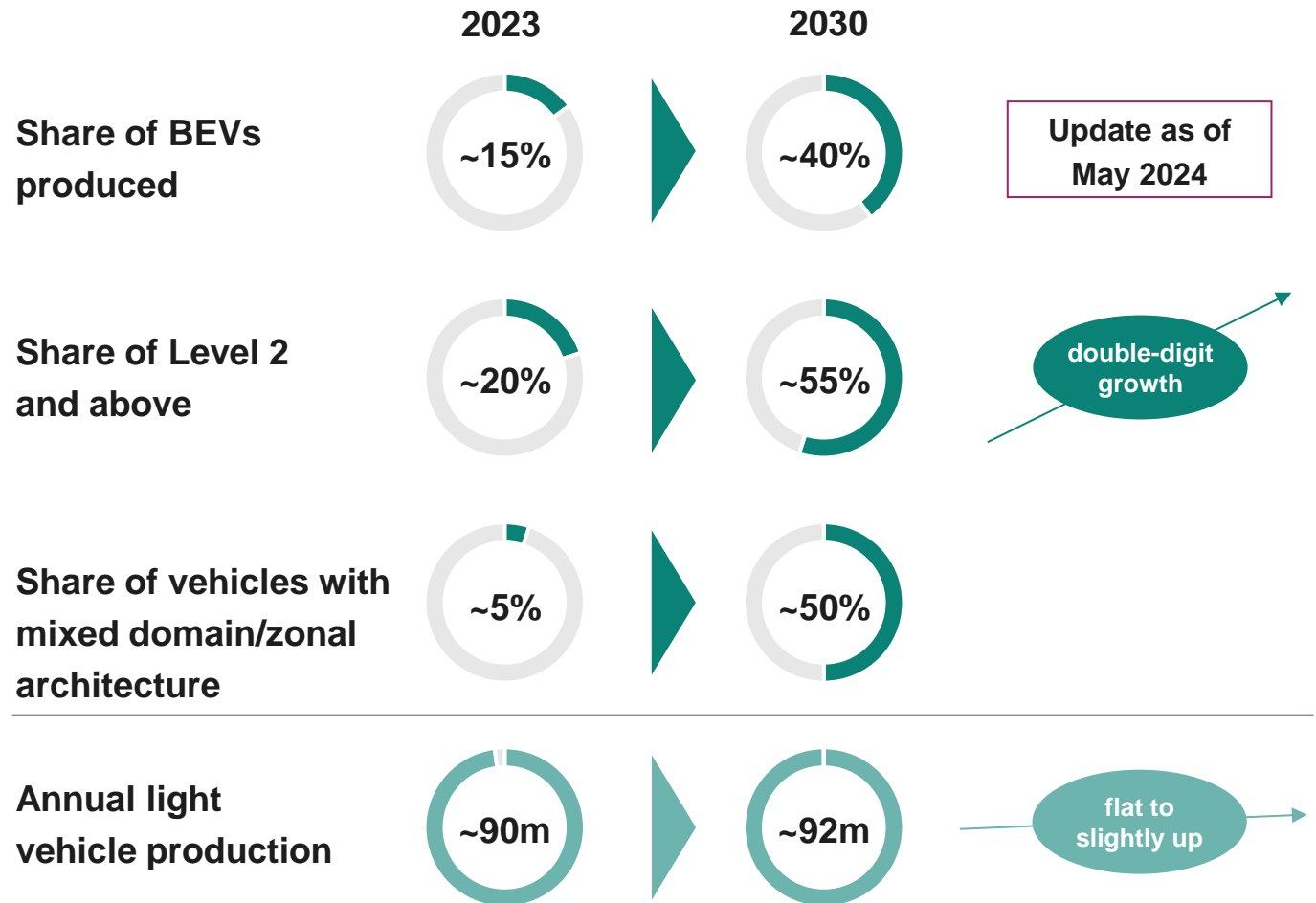
### E/E architecture

- SW-defined cars with higher need for connectivity
- Centralized signal processing by zone computers
- Smart switches for decentralized power distribution

### Comfort and premium features

- More loads (motors, heating, cooling etc.)
- Elaborate interior and exterior lighting

## Overview of growth vectors until 2030



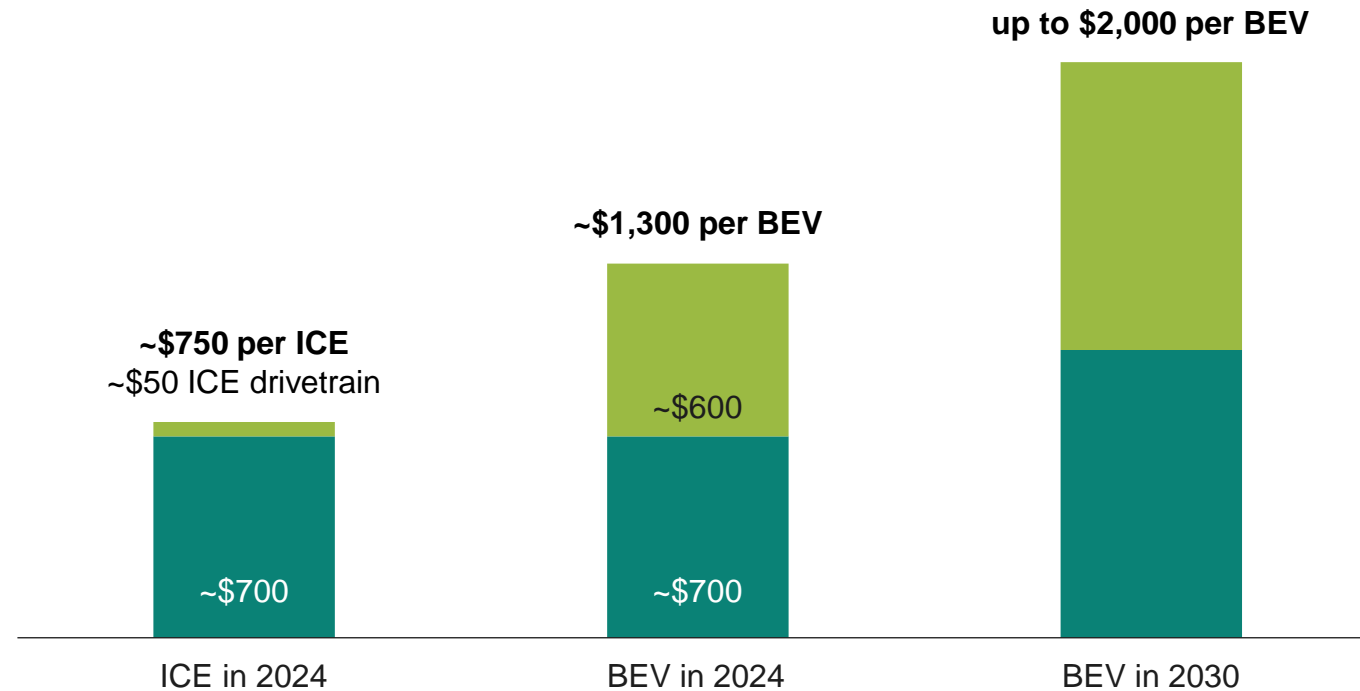
Infineon estimates

# Infineon is the world leader in automotive semis, serving all key applications and benefiting strongly from content growth



## Semiconductor bill-of-material in a car in 2024 and 2030

[USD]



### Key applications for drivetrain semis:

- Inverter
- On-board charger (OBC)
- DC-DC converter
- Battery management system (BMS)
- Auxiliaries

### Key applications for non-drivetrain semis:

- Autonomous and automated driving (ADAS/AD)
- Safety and advanced security
- Comfort and premium
- Connectivity
- Infotainment

■ Semis for drivetrain function (e.g. Inverters, on-board chargers, BMS, etc.)

■ Semis for non-drivetrain functions

Based on TechInsights: *Global xEV System Semiconductor and Sensor Demand Forecast 2022-2031*. May 2024; Infineon

# A very broad portfolio with >300 product families is backing the market leadership of Infineon in Automotive



Infineon ATV division revenue by product families:



Major categories<sup>1</sup>: AURIX™ families, CoolSiC™, IGBT 750V, IGBT 1200V, MOSFETs, PROFET™, Radar, TRAVEO™ – none more than ~10%

## Unmatched customer value creation and portfolio resilience

Leading technologies

System competence (P2S)

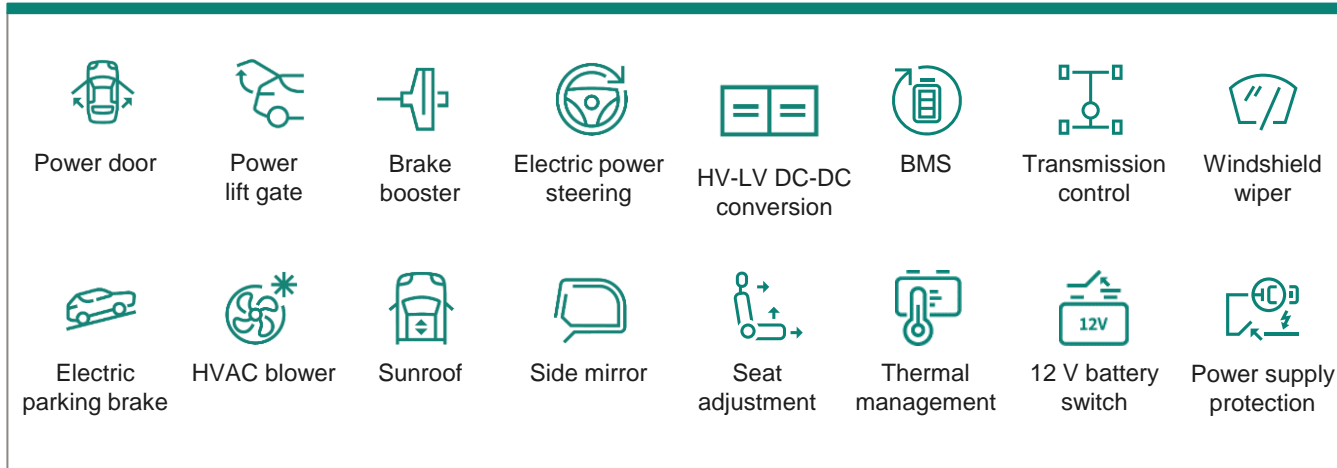
Broadest portfolio

<sup>1</sup> In alphabetical order

# Number of power MOSFETs per car continues to increase, and drives accelerated growth for the leading portfolio

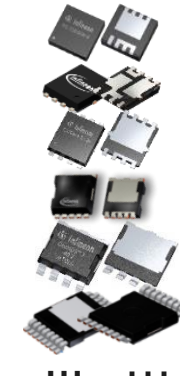
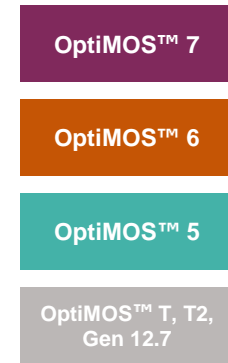


## Examples of MOSFET applications



## Latest portfolio with constant innovation

### Technologies, packages and voltages



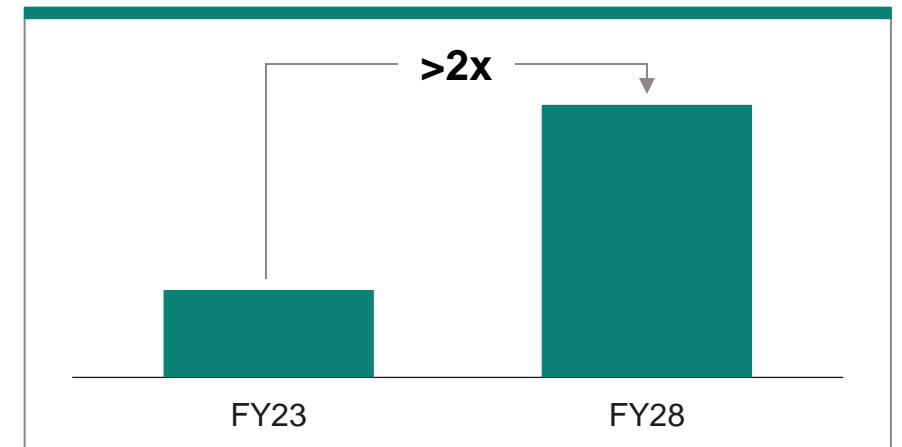
40V  
60V  
80V  
100V  
120V



New **OptiMOS™ 7** family with outstanding technical performance

- 100 to 180 MOSFETs are used per vehicle in ~90 different applications in all segments: body, chassis, safety, ADAS/AD, powertrain
- Infineon offers broadest portfolio (>600 products) and eco-system to address specific and high-margin applications:
  - embedded control, gate driver, MOSFETs, software, P2S
  - entire eco-system with digital twins
  - simulation environment (esp. for motor control)

## Infineon's revenue growth





# Electromobility





# Stellantis and Infineon are teaming up to advance innovation in power conversion/distribution for next-gen vehicle architectures

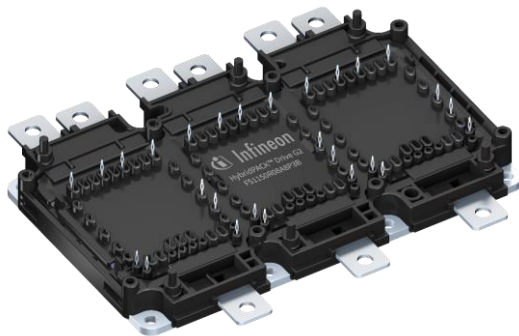


The two companies have signed major supply and capacity agreements as the foundation to develop the next-generation of power architecture, including:

- (1) CoolSiC™ power devices for high-efficient drivetrain solutions
- (2) AURIX™ MCUs targeting the 1<sup>st</sup> gen of the “STLA Brain” zonal architecture
- (3) PROFET™ smart power switches with sensing and diagnosis functionality

Stellantis and Infineon are also implementing a Joint Power Lab to define the next-generation scalable power architecture enabling Stellantis’ software-defined vehicle

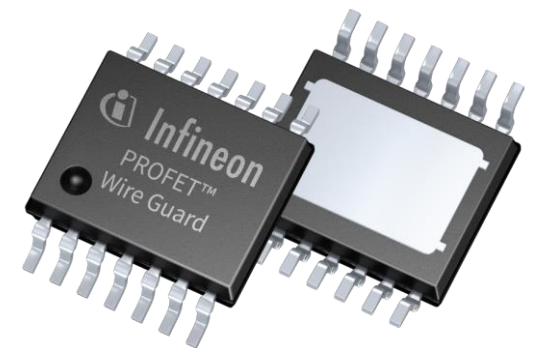
## CoolSiC™ power devices



## AURIX™ MCUs



## PROFET™ smart power switches

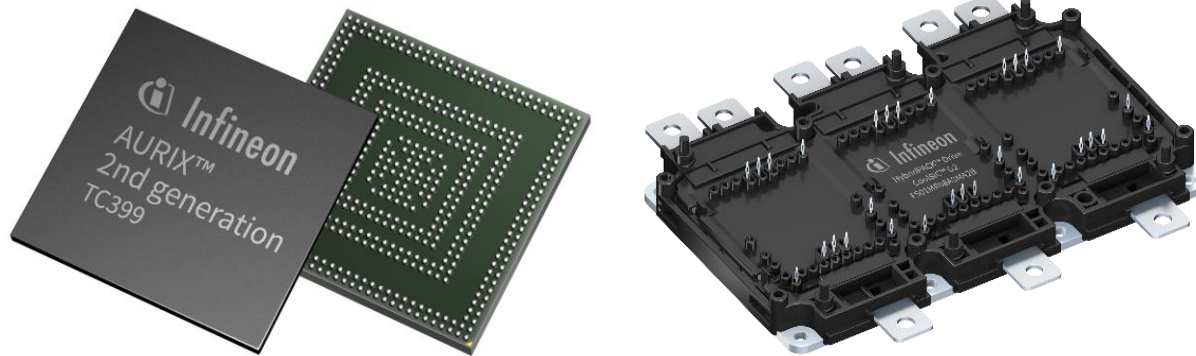


# Xiaomi SU7 Max: Infineon contributes > 60 different components, incl. 2x HybridPACK™ Drive G2 CoolSiC™ 1200V power modules



Infineon provides system solutions with > 60 different components for more than 10 applications

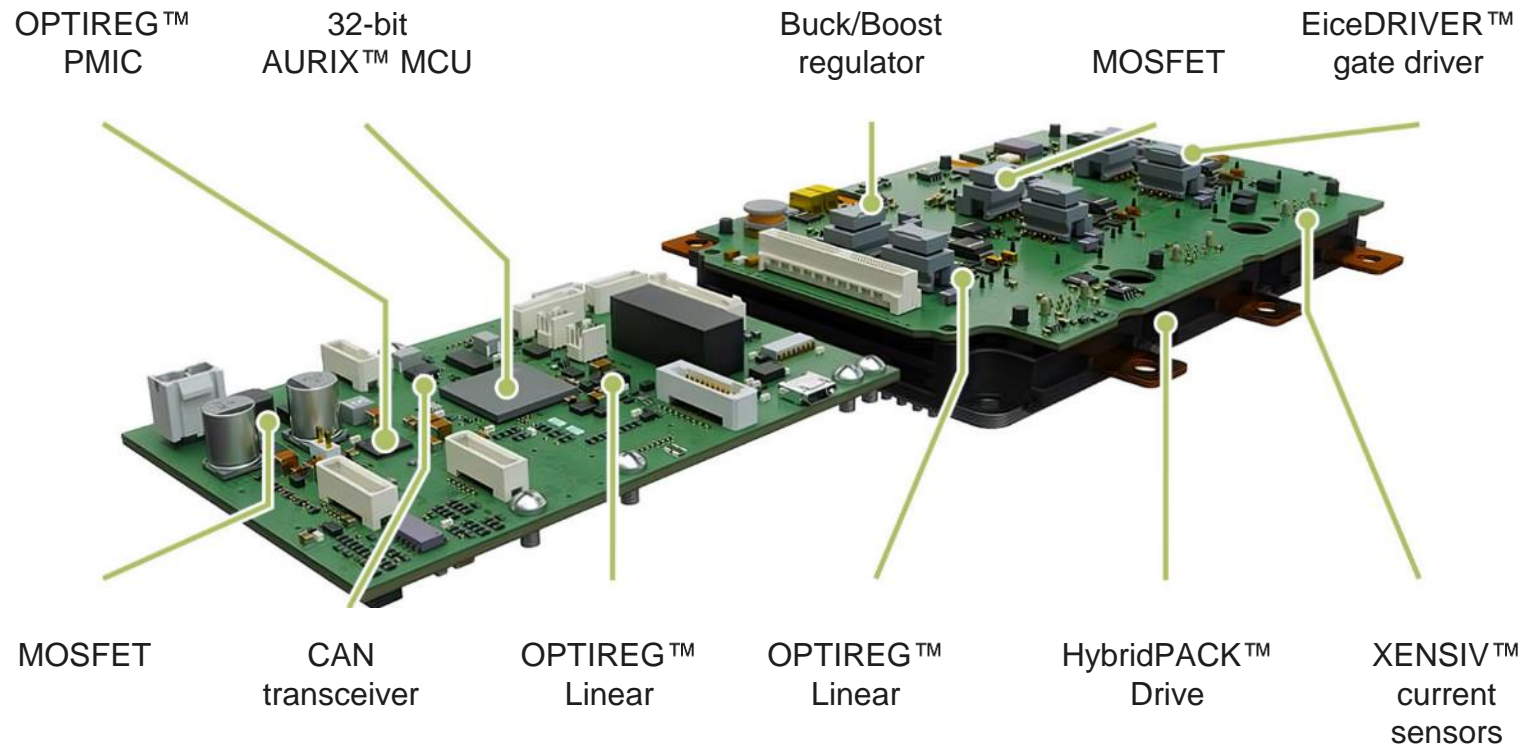
- › **MCUs, PMICs:** AURIX™ TC3, TRAVEO™ T2G, and PSoC™ for zone controller, ADAS, xEV drivetrain, and suspension
- › **2x HybridPACK™ Drive G2 CoolSiC™ 1200V** power modules or bare dies and gate drivers for traction inverter in Xiaomi SU7 Max
- › **PROFET™** for E/E architecture
- › **MOSFETs**, system basis chips, others



# Infiniteon's broad product portfolio and system understanding enable higher BoM and allows for compact designs and fast T2M



## Infineon inverter reference design, covering up to 95% of value



## P2S (product-to-system approach)

- Reference design for up to 300kW, further customization possible
- System solution for easy implementation
- Fast time-to-market (T2M)

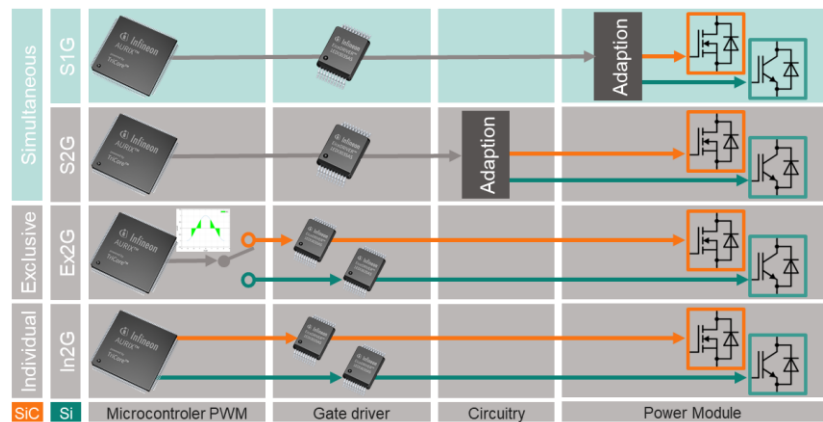
## Freedom of choice

- IGBT and SiC in 750/1,200V scale up to preferred power class
- HybridPACK™ Drive CoolSiC™ Gen2 continuous operation at 175°C
- EiceDRIVER™ gate driver Gen3 optimized for CoolSiC™
- Optimized 32-bit AURIX™ MCU

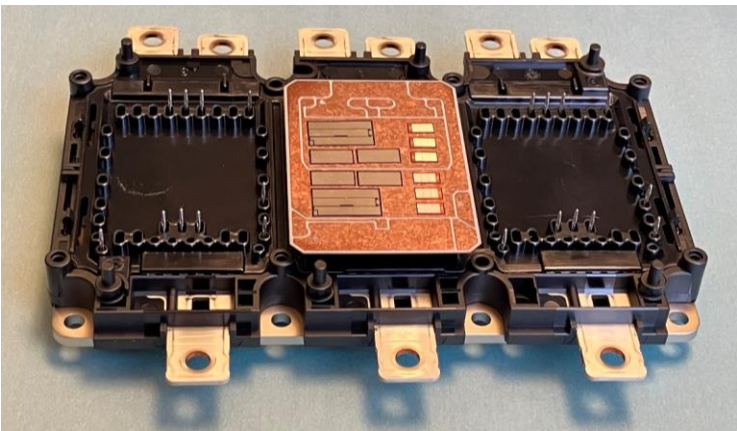
# First Si/SiC fusion module concept (Si<sup>2</sup>C) significantly exceeding performance expectations without adding system complexity



Example: 400 V BEV 175 kW 2WD



← Infineon solution offers compelling cost-performance ratio without adding system complexity for customers



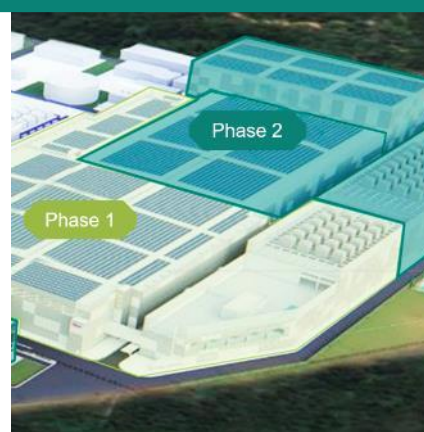


# Competitive setup, unmatched portfolio breadth and our worldwide customer base lead to accelerated growth in SiC



## Leading SiC technology and production efficiency

- Unrivaled productivity with most competitive fab and most diversified supplier network
- Superior trench technology and highest reliability
- Extensive packaging portfolio and complete system competence

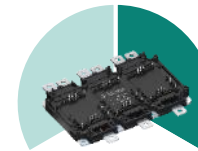


## Most scalable SiC auto portfolio

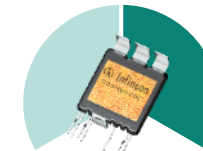
650 V

750 V

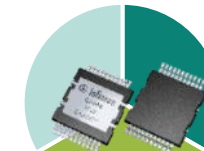
1,200 V



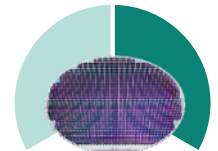
Module



DSC/SSC module



Discrete



Bare die

## Continued strong SiC design-win momentum





# Infineon AURIX™ TC4x with integrated PPU brings AI-on-the-edge to the battery



**Battery cost**

**Battery health**

**Charging speed**

**Safety concerns**

**Range anxiety**

**Resale value,  
residual value**

**Cloud dependencies  
(latency, cost, stability)**

AURIX™ TC4x

**PPU**

(parallel processing unit)



High computing performance with complex and accurate BMS algorithms

- AI-based battery diagnostic on-the-edge
- temperature model, electro-chemical model
- lithium plating detection
- remaining useful life prediction
- with and without cloud-based updates
- Product-to-System!

**Efficient battery cell utilization**

- Higher capacity
- Less cells
- Lower battery cost

**Faster charging**

- Higher user experience

**Assure longevity, extended guarantee**

- Longer lifetime (in years, in km)
- More charging cycles

**Detect and prevent thermal runaway**

**Accurate battery, health prediction**

» **Trust in resale market**

- Higher economic value  
(impacting insurances, fleets, OEMs, Tier1s, 2nd life market)

**Open to partner up with further OEMs, Tier1s, insurance companies**

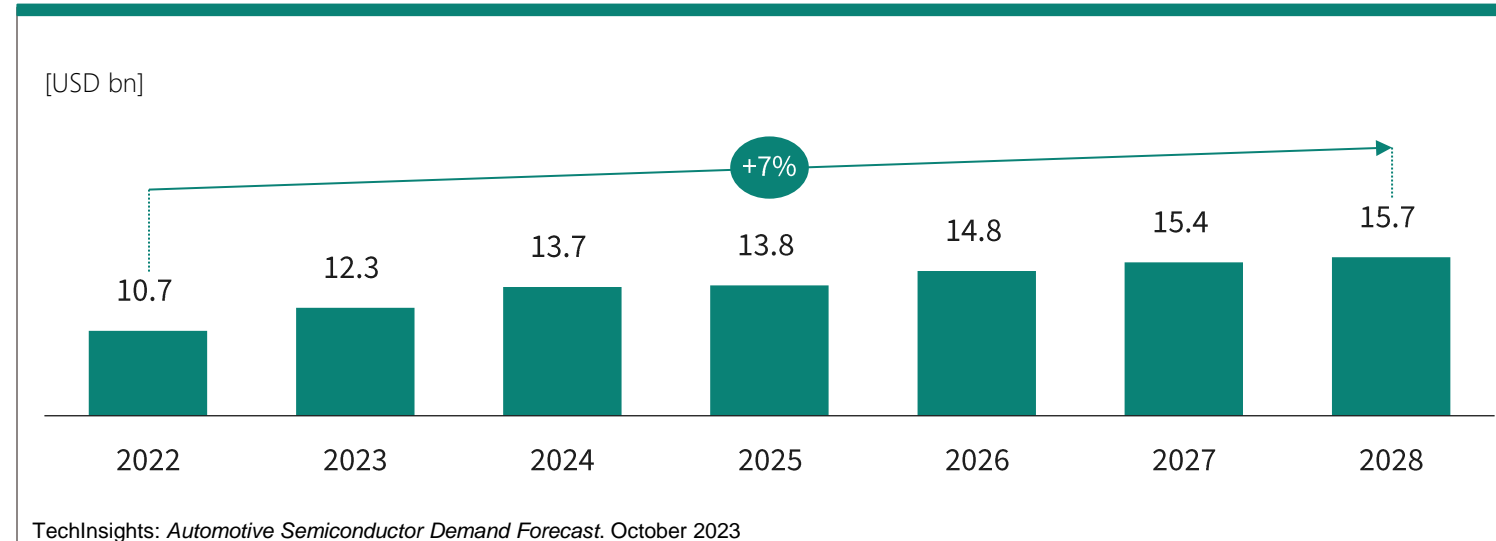
# Software-defined vehicle



# AURIX™ MCU is the gold standard for ADAS/AD, control, safety, and high-speed in-vehicle network



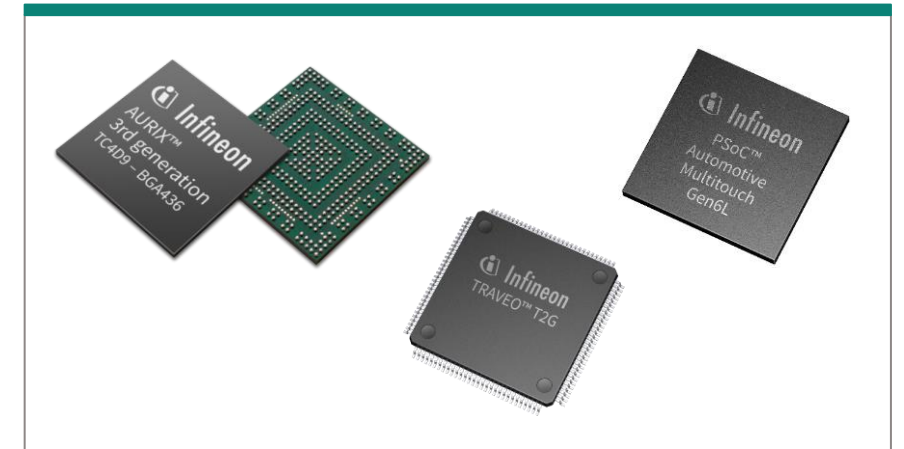
## Total automotive MCU market development, excl. MPUs and SoCs



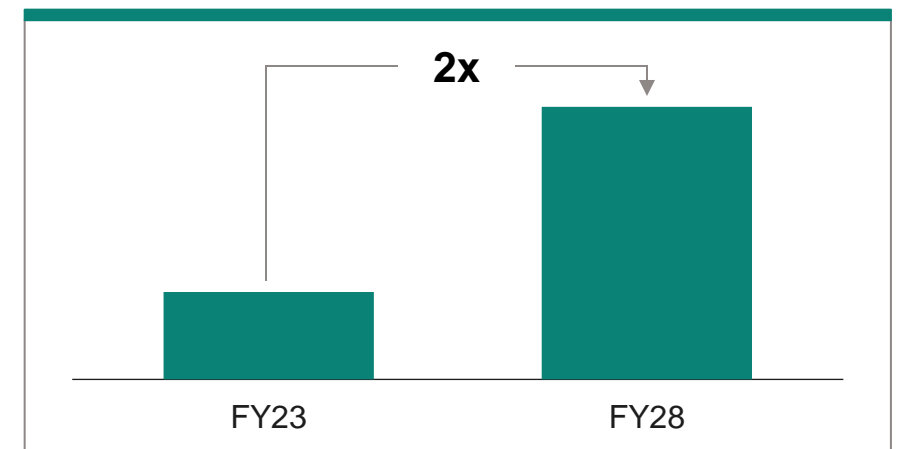
## €19bn MCU design-win volume secured

- Total automotive MCU design-win volume in the last four years exceeded €19bn
- Design-wins covering current and next decade ensuring robust and long-lasting growth
- Up to 40 MCUs per vehicle awarded to Infineon
- Strongest momentum in essential MCUs for E/E architecture, ADAS/AD, and xEV
- Around €3bn of revenues already in 2023

## AURIX™, TRAVEO™, and PSoC™ families

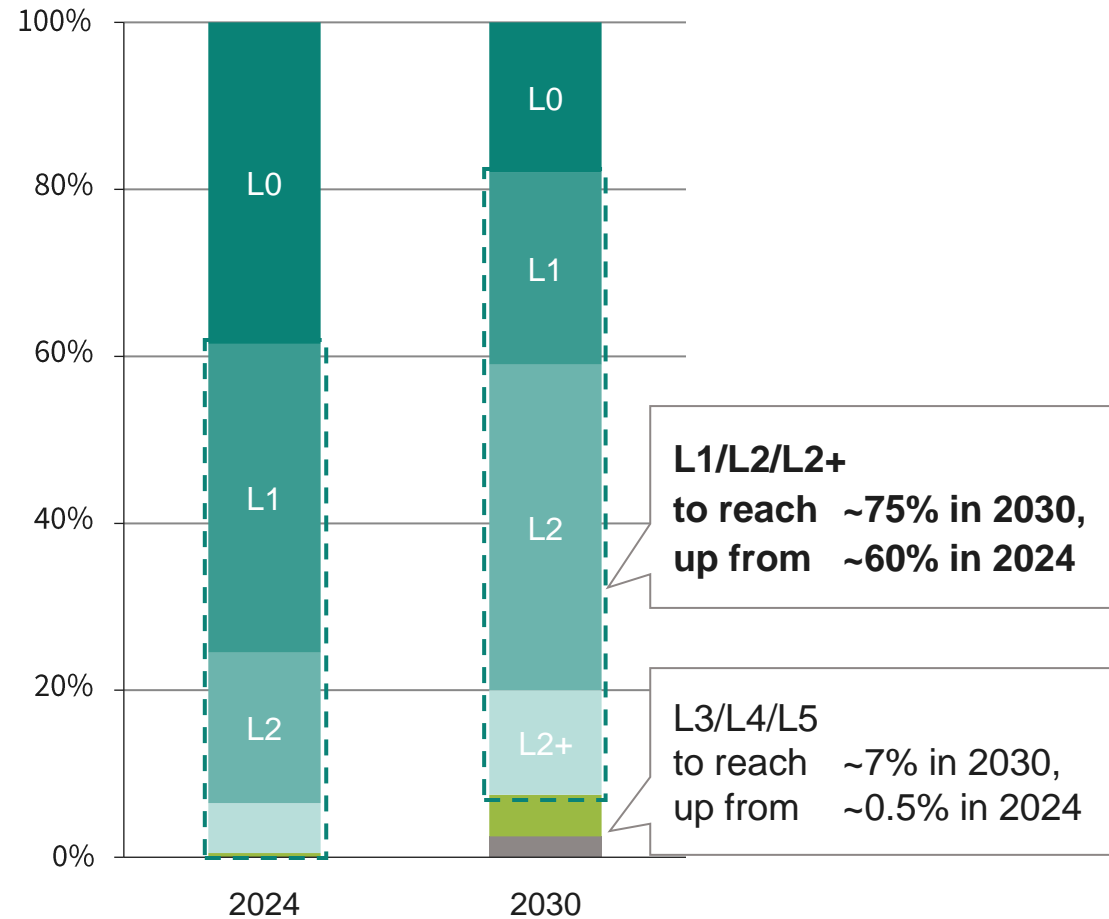


## Infineon's revenue growth



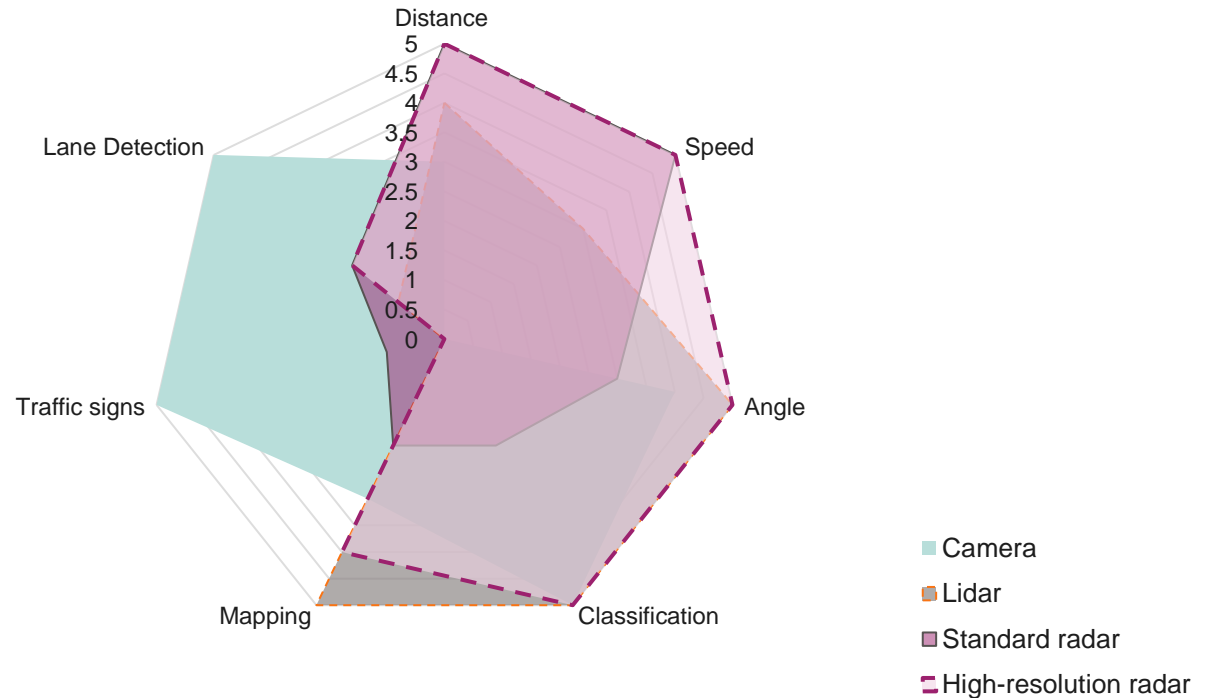
# Growth of L1/L2/L2+ is the main driver of ADAS semiconductor content until 2030

## Car production by degree of automation (SAE level)



Market research companies; Infineon

## Radar is essential to meet decisive requirements of ADAS/AD

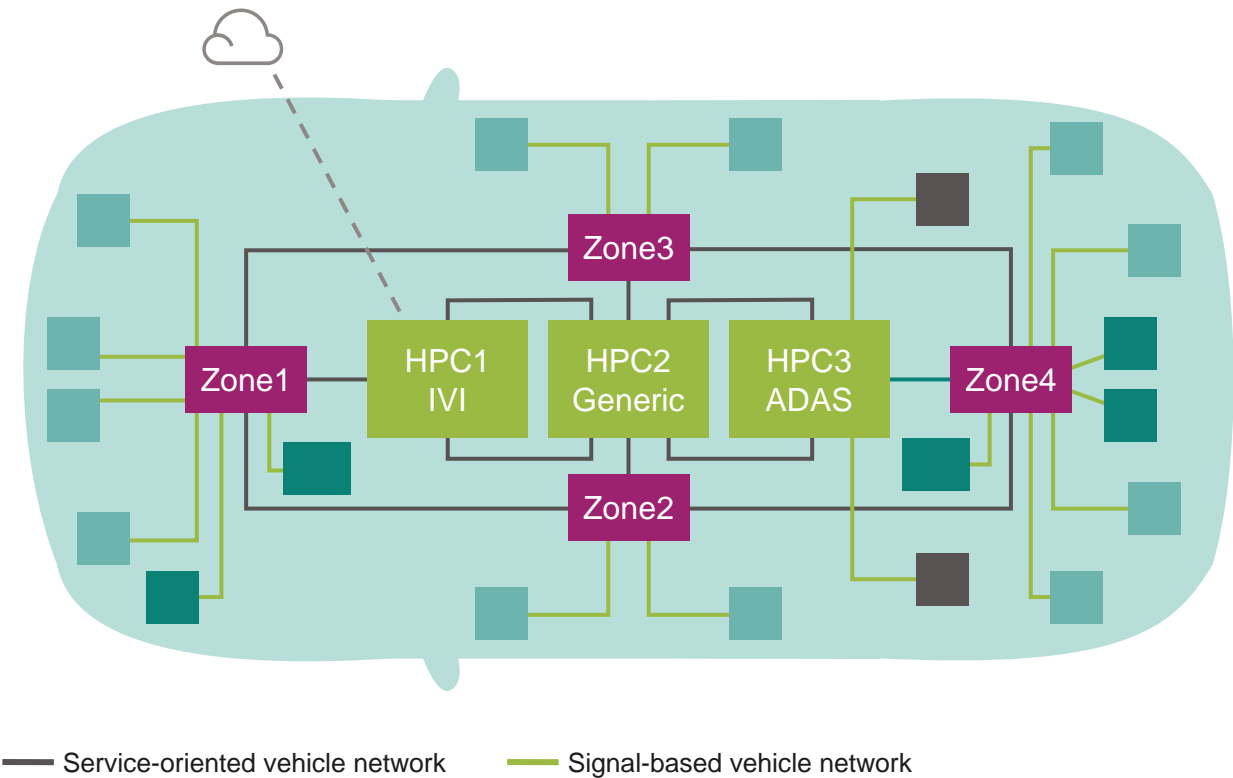


- Standard radar is **the** technology to detect distance and speed
- High-resolution radar significantly improves angle and classification

# Infiniteon strongly benefits from new E/E architectures that drive centralization of data and decentralization of power distribution



## E/E architecture in a software-defined vehicle



**New E/E architectures lead to more centralized processing of data and signal while more decentralized power distribution.**

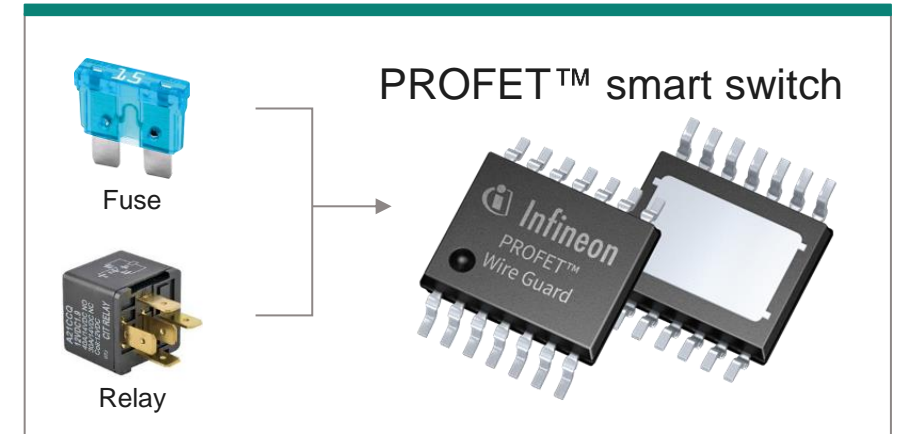
Components of E/E architecture and corresponding applications addressed by Infineon	
High Performance Computing (HPC)	Safety companion MCU for service-oriented SoCs, secure trust anchor, fail-safe power supply
Zone	Zone controller, gateway controller, incl. protocol translation, smart power distribution
Control	Smart real-time mechatronics (e.g. transmission, motor control, power steering, braking), BMS
Complex sensors and actuators	Radar, incl. signal pre-processing, bus connections, dedicated AI accelerators, camera
Simple sensors and actuators	Smart functional ECU (e.g. seat adjustment, power window, central lock, wiper), touch pad

# Power distribution becomes a critical aspect of the E/E architecture and the SW-defined vehicle

## New applications for intelligent power distribution ...



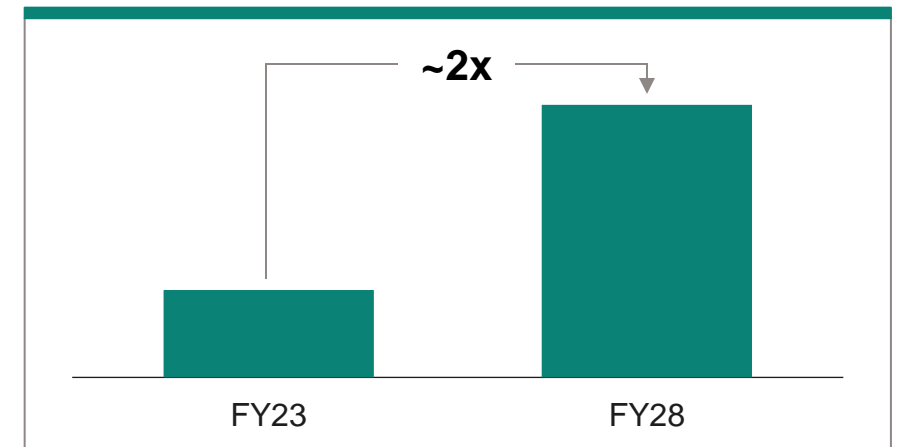
## ... are driving replacement of fuses/relays



## Smart switches are mandatory for SAE L3 and above

- Superiority of semiconductors over fuses and relays:
  - Fast failure isolation (< 500µs) and activation of an alternative supply
  - Configurable wire protection
  - Diagnosis and non-destructive recovery
- Mandatory for SAE levels L3, L4 and L5
- Growth of smart switches per car:
  - Volume OEMs: from today's ~50 pieces/car towards ~200 pieces/car by 2028+
  - Innovator OEMs: already ~200 pieces/car today

## Infineon's revenue growth



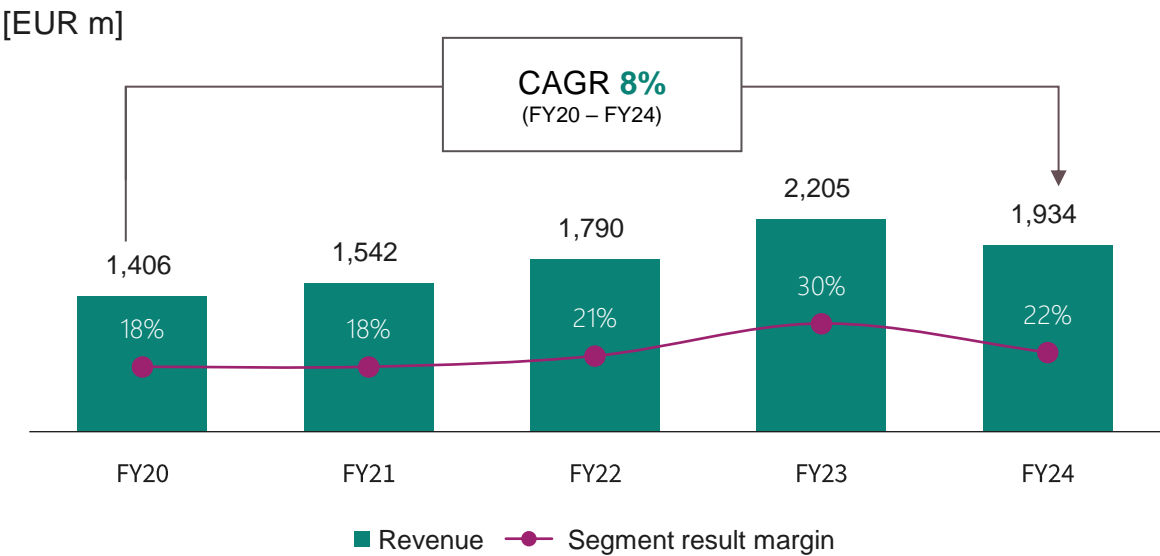


# Green Industrial Power

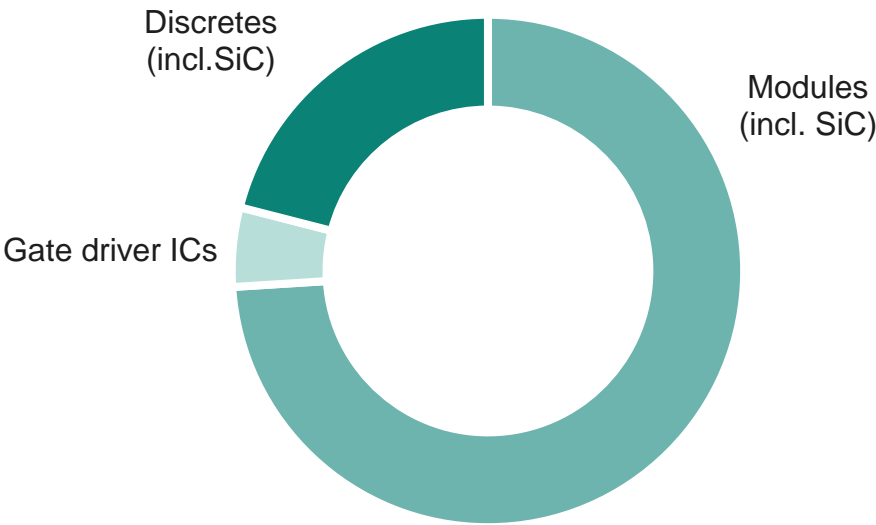


# GIP at a glance

## GIP revenue and Segment Result Margin



## FY24 revenue split by product group



## Key customers


# PV and Drives inventory correction continues into 2025, growth in infrastructure and transportation



## Applications

% of FY24 segment revenue



**~30%**  
Renewable  
Energy  
Generation



**~10%**  
Power  
Infrastructure



**~10%**  
Transportation



**~30%**  
Automation  
& Drives



**~10%**  
Heating,  
Ventilation,  
Air condition



**~10%**  
Home  
Appliance

## Market outlook for CY25



- Demand expected to only gradually pick up after inventory correction with persisting competitive pressure
- Wind installations growth supported by government efforts



- Growth in EV Charging and Energy Storage is supported by continuous strong demand in Greater China
- Transportation & Distribution demand to remain strong to accelerate renewable energy transmission



- Analysts have increased unit shipments forecast for rail transportation
- Drivers for CAV vehicle growth intact and supported by decarbonization target (e.g. in mining industry)



- Return to long-term growth trend in Drives expected after inventory correction will have ended. Improvement for semi demand to follow gradually



- Recovery expectations vary across regions: growth in Greater China/EMEA impaired by inventory situation. Americas with positive momentum in residential and commercial HVAC segment





- Sentiment improvement expected with Greater China government incentive program pushing replacements. There are no clear indications on timing and level of recovery available yet







# Huge potential along entire green energy chain until 2030 according to IEA Net Zero scenario






## Generation

	Photovoltaic	+4,600GW
	Wind power	+1,900GW

## Infrastructure

	Grid network	\$600bn annual investments
	Grid storage	+900GW
	EV charging	+185m chargers (public and private )
	Electrolysis	+560GW

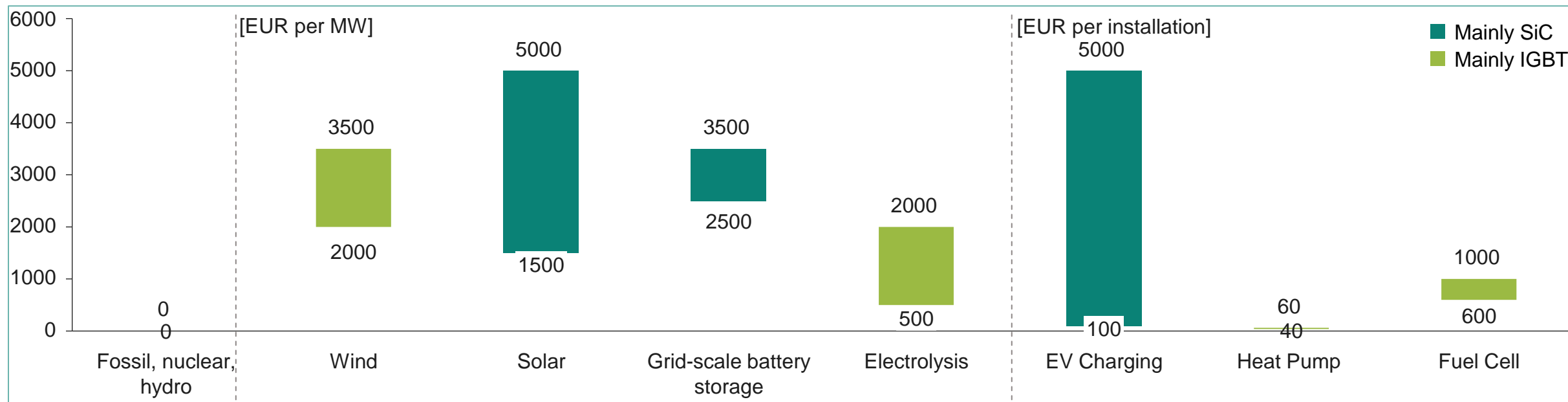
## Consumption

	Heat pump	+420m units
	H <sub>2</sub> Fuel cell <sup>1</sup>	+200k FC EV +200k FC Trucks
	eAviation   eMarine	

Note: Based on Net Zero Scenario (IEA) | Source: IEA - World Energy Outlook, October 2023, 1 Internal Analysis

# Green energy generation provides large business opportunities

## Power semiconductor content by application



Additions in 2022 <sup>1)</sup>	74 <sup>[GW]</sup>	220 <sup>[GW]</sup>	12 <sup>[GW]</sup>	<1 <sup>[GW]</sup>	~6m <sup>[inst.]</sup>	22m <sup>[inst.]</sup>	5k <sup>[inst.]</sup>
CAGR 2023 – 30	16%	23%	56%	92% <sup>2)</sup>	31%	16%	42%

<sup>1</sup> IEA: World Energy Outlook, October 2023; Sector Tracking reports October 2023; internal Analysis

<sup>2</sup> Based on 270 GW pipeline (midpoint), >100% based on NZE requirements of 560GW

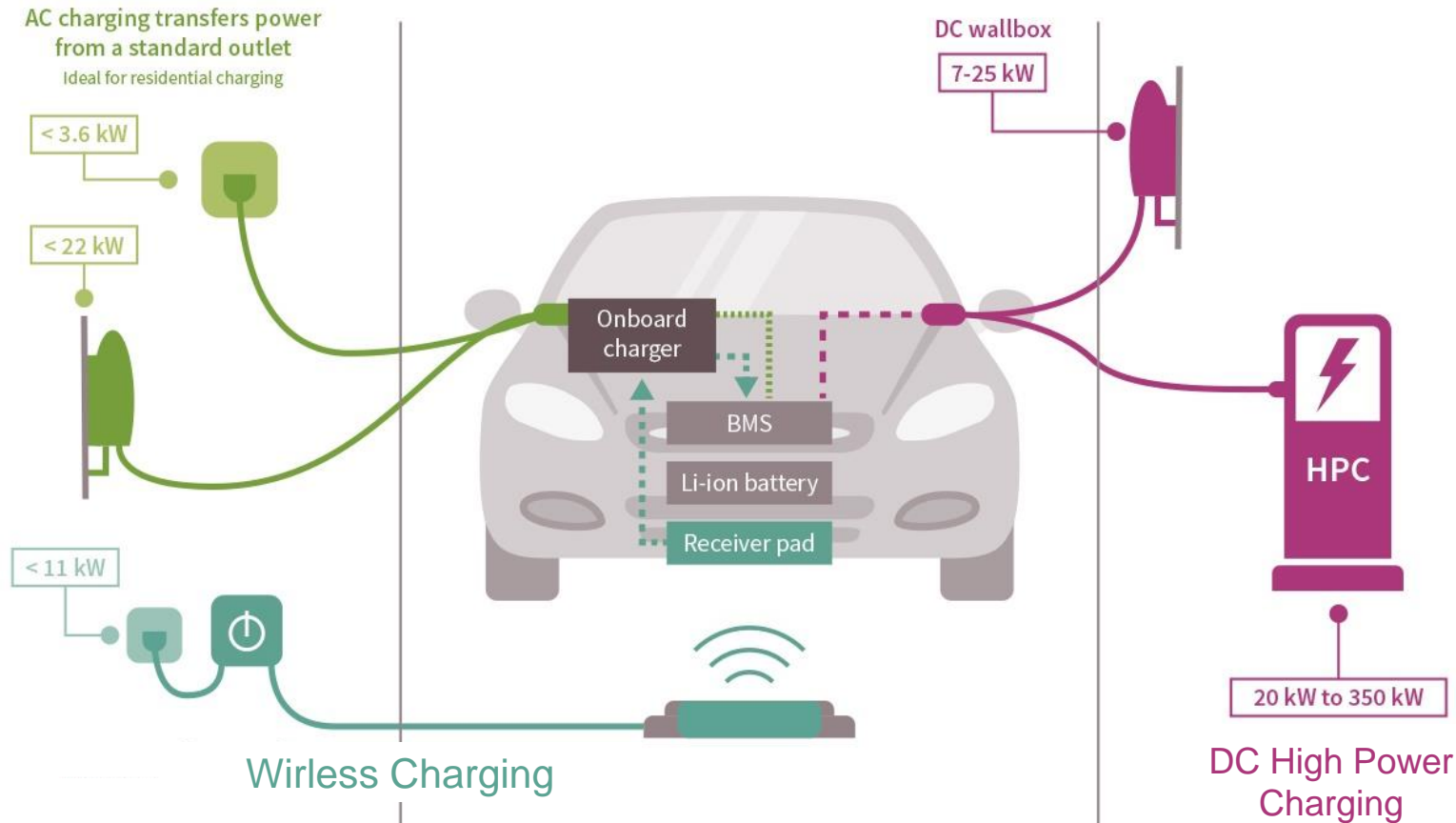
# EV charging is a key strategic application for Infineon

## We cover the full ecosystem from AC to high power DC charging

### Connectivity solutions

### Automotive systems

### High power industrial systems



Infineon targets the complete EV charging ecosystem from AC to high-power DC

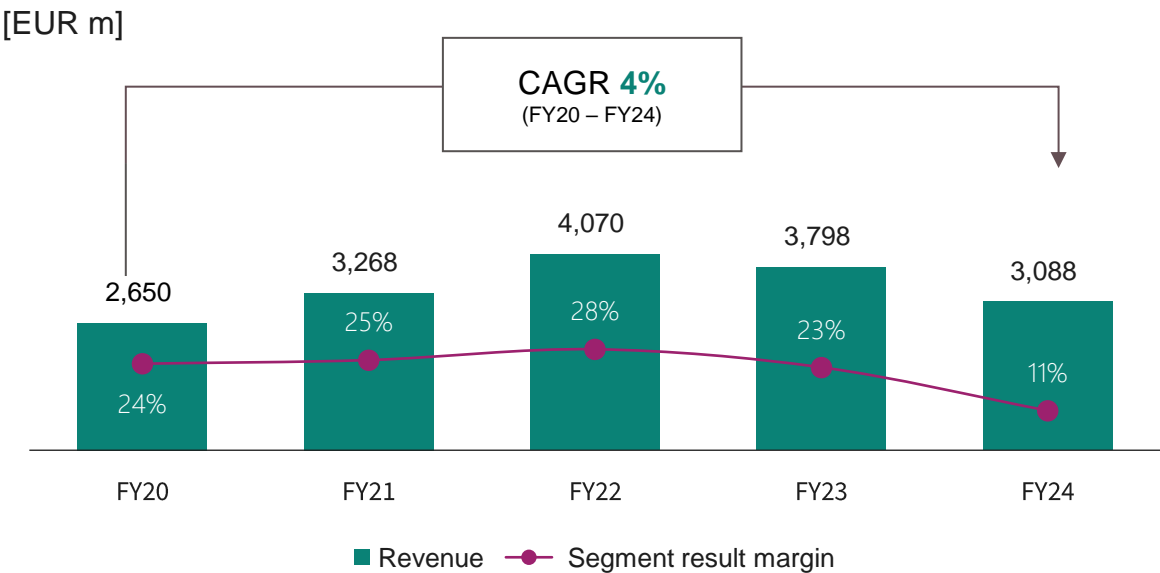


# Power & Sensor Systems

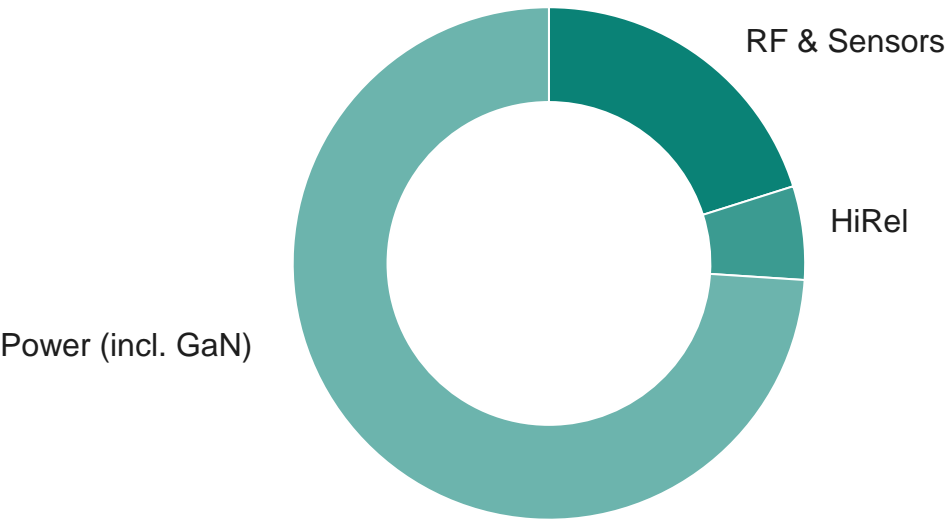


# PSS at a glance

## PSS revenue and Segment Result Margin



## FY24 revenue split by product group



## Key customers


# CY25 end-market uncertain with limited visibility; upside potential driven by improving macro conditions and AI



## Applications

% of FY24 segment revenue<sup>1</sup>



~**20%**

Computing



~**5%**

Communications



~**10%**

Smartphones



~**25%**


Consumer





~**30%**


Industrial


## Market outlook for CY25

- 

- Server AI strength to continue in CY25 and will be complemented by cloud computing growth
  - PC market is expected to see traction from (AI) refreshment cycle during CY25, especially during H2
- 

- Flattish year-over-year telco capex development expected during CY25
- 

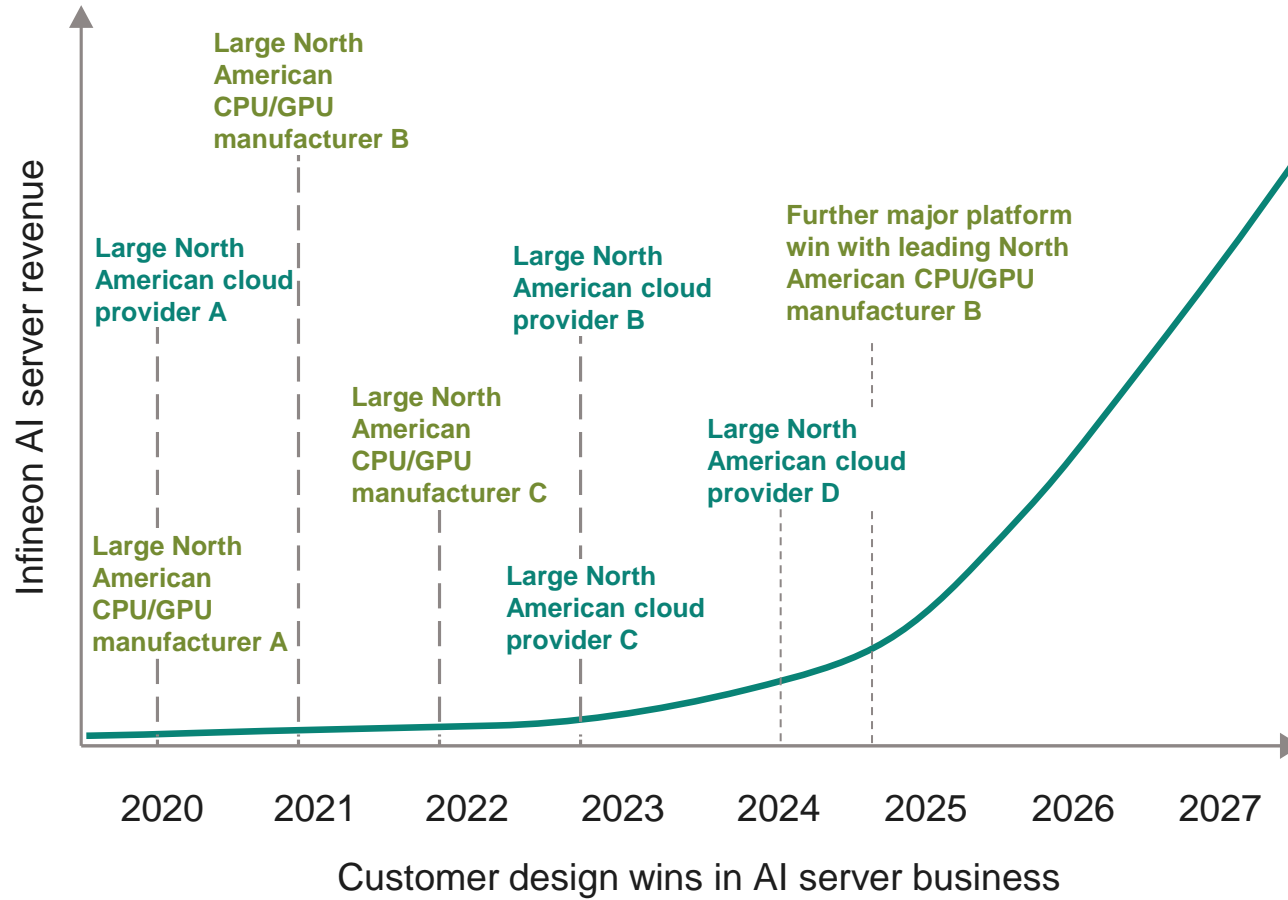
- A year-over-year increase in smartphone unit shipments is forecasted for CY25
- 

- While some consumer markets are expected to pick up in CY25, uncertainty and lower consumer confidence still persist, tempering overall growth expectations
- 

- The industrial market is expected to benefit from potential lower interest rates, the conclusion of inventory digestion phase, and growth in the Chinese EV market

<sup>1</sup> Does not sum up to 100% due to other applications not shown here

# AI will be a strong driver of revenue increase for Infineon's server business



In FY25 AI revenue in our server business is expected to be north of €500m

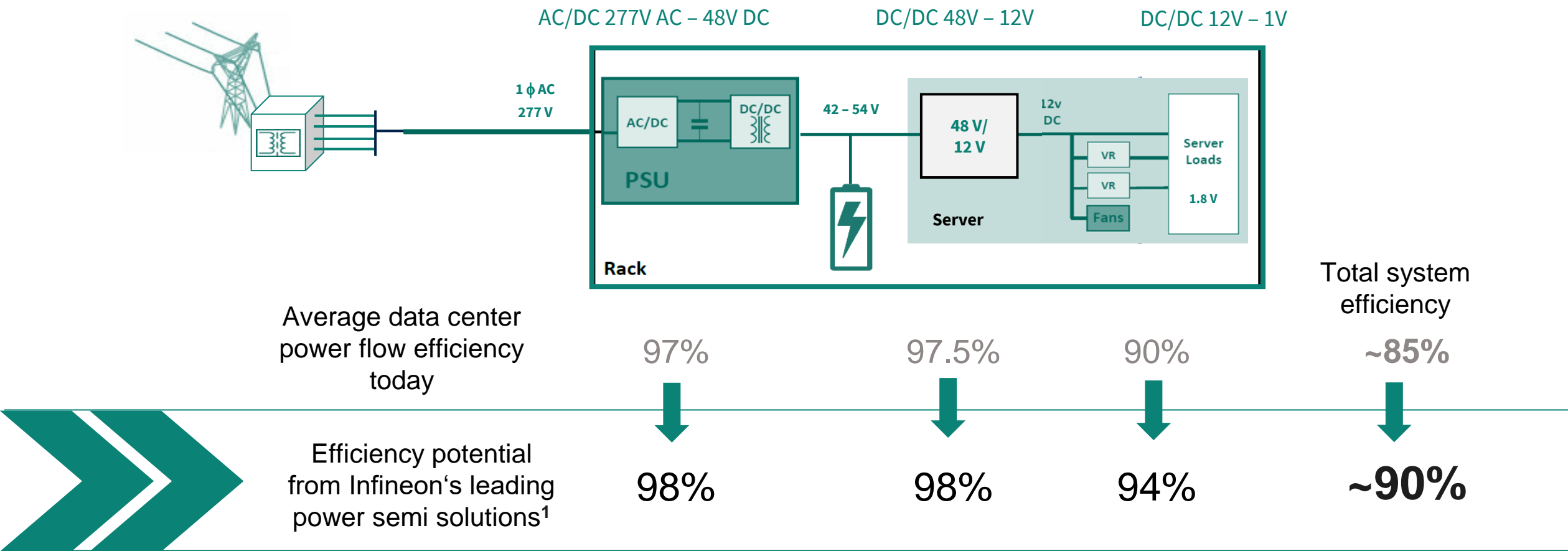
We expect to reach €1bn within the next 2 years



# With its energy efficient power semiconductors Infineon is serving all AI-related power conversion from grid-to-core

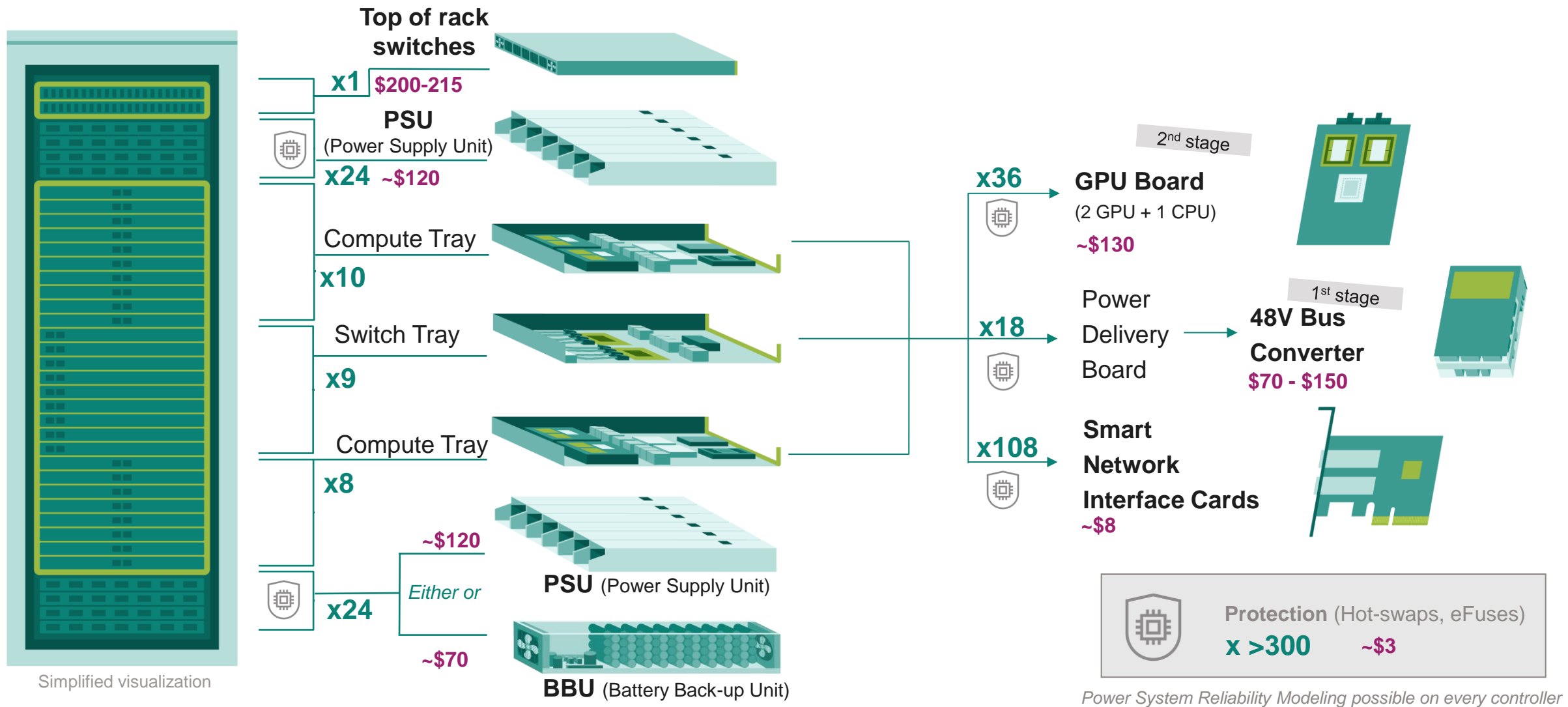


## Power delivery network losses in an average AI data center



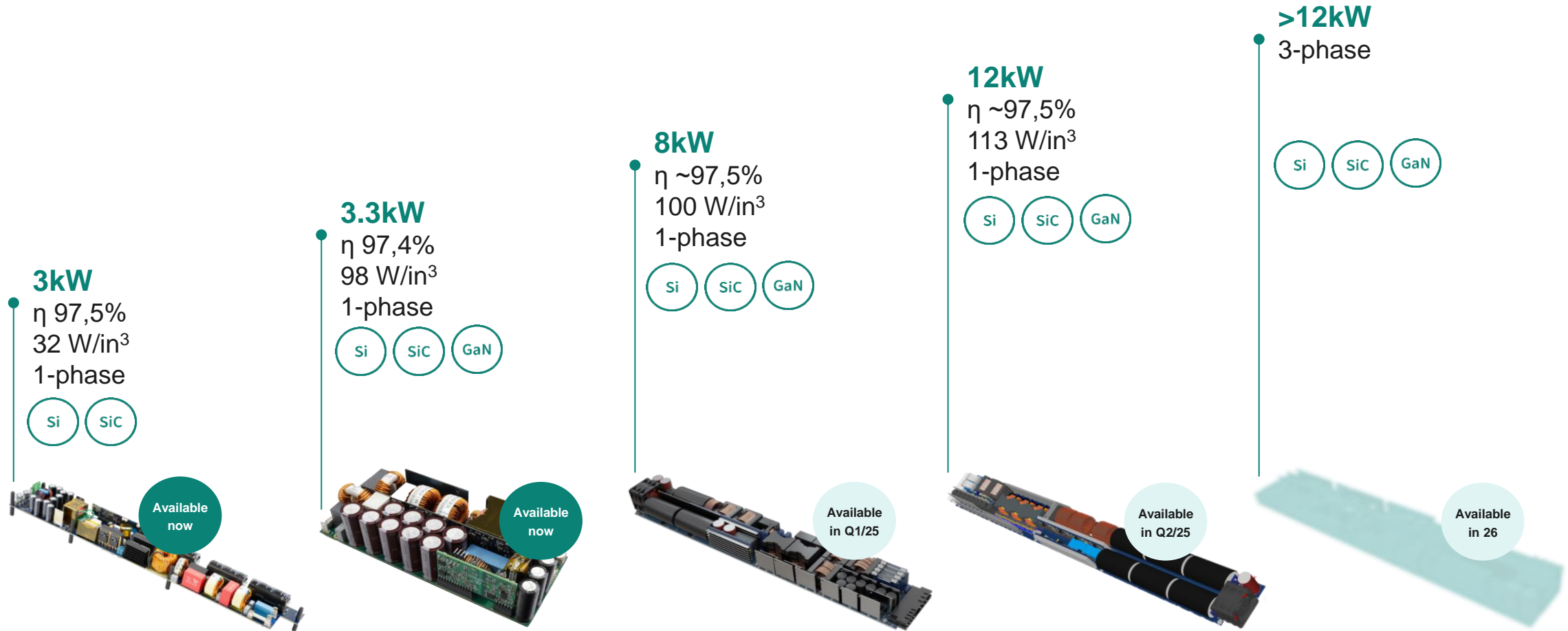
<sup>1</sup> Using GaN, SiC & vertical power modules

# Leading performance high density AI Server for accelerated compute – Infineon BOM per AI server rack up to between \$12k and \$15k



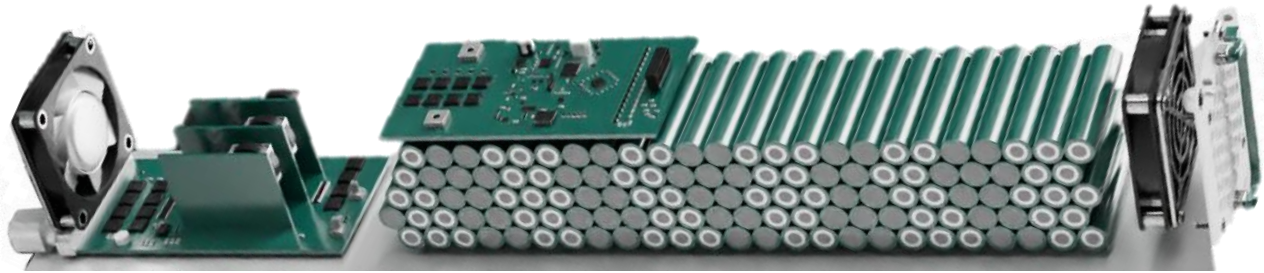
# Infiniteon is tackling the rising power requirements of AI systems with its state-of-the-art PSU solutions for AC/DC

Power Supply Unit (PSU) solutions ranging from 3kW to 12kW and beyond



# 12kW partial Battery Backup Unit (BBU) – Meeting increasing power demands and strict space constraints for AI server

## BBU Module Functions



- Higher **power density**  $\times 4\text{W}/\text{cm}^3$
- **Efficiency** increase **+1 - 1.5%**
- **Flat efficiency curve**
- **BOM optimization** thanks to the down-sizing of component rating
- **Unparalleled power density and efficiency** by harnessing the potential of **GaN technology**

<sup>1</sup> TCO – total cost of ownership

1. **Converter Power Density** to enable more battery cells per BBU
2. **Protect AI servers** from power fluctuations (peak power shaving)
3. **Prevents data loss** and **system downtime**
4. **Efficiency for TCO<sup>1</sup>** in peak shaving
5. **Thermal Management** in air cooled solutions
6. **Quicker recharge**
7. **Full system** product portfolio based on Infineon's **patented topology**

Outperforming existing solutions in terms of efficiency, power density and cost-effectiveness

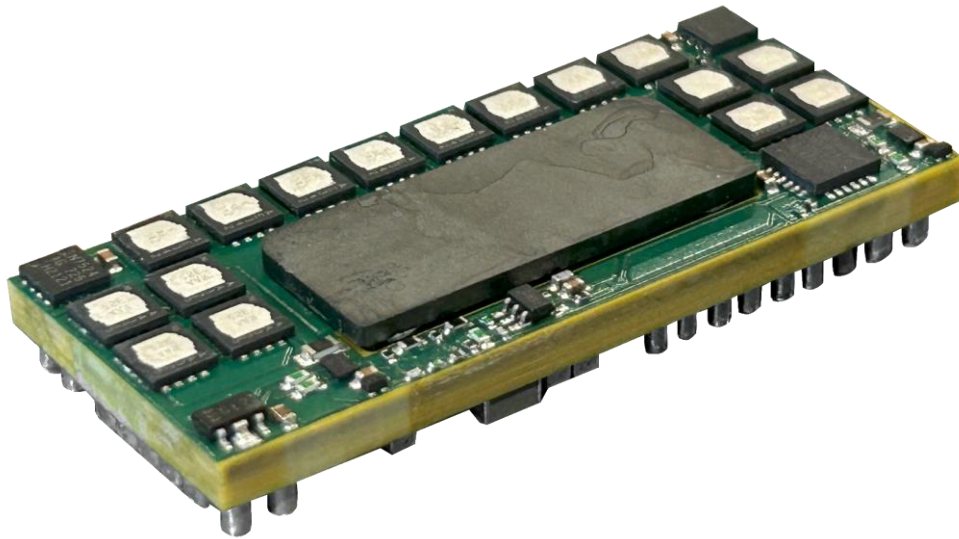


# 48V Intermediate bus converter Bus Converters (IBCs) – Meeting AI Demands for power density, duality, reliability, and efficiency

Up to **5,000 defects per million (dpm)** are linked to IBC failure (target is **<500dpm**)

Cost of unplanned system downtime and rework due to component failure is very high

Our solution: Infineon's first IBC Module for AI



<sup>1</sup> MTBF – mean time between failures

<sup>2</sup> TCO – total cost of ownership

1. With a wide range of **IBC topologies**, IFX is serving a multitude of different server rack configurations while ensuring cost-effectiveness
2. **Quality and Reliability** to improve MTBF<sup>1</sup> in complex systems
3. **Power Density** as GPU power increases
4. **Efficiency for TCO<sup>2</sup>**
5. **Thermal Management** in air / liquid cooled solutions
6. **Supply security** with 2<sup>nd</sup> source and fast time to market

# Dual-phase power modules enabling vertical power delivery matching increasing AI demands for power density and smaller form factor

## Two Chip Embedded Power Stages

mounted on PCB [1A/mm<sup>2</sup>]

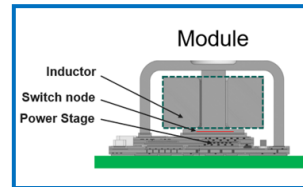
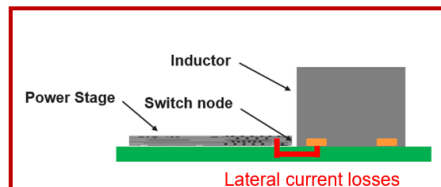


TDM2254X

3x die  
embedded

10 x 9 x 8/5  
mm<sup>3</sup>

80A TDC /  
160A pk



## Two Embedded Power Stages

in Single Substrate [1.5A/mm<sup>2</sup>]

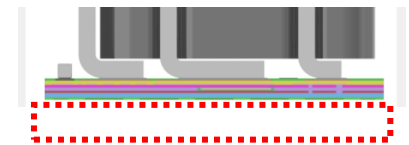
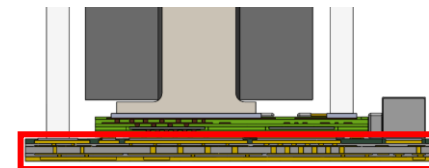


TDM2354X

6x die  
embedded

8 x 8 x 4  
mm<sup>3</sup>

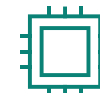
80A TDC /  
160A pk



## Pushing Power Density Envelope



- 0.5% lower module power losses
- Enhanced thermals enabled through Chip Embedding



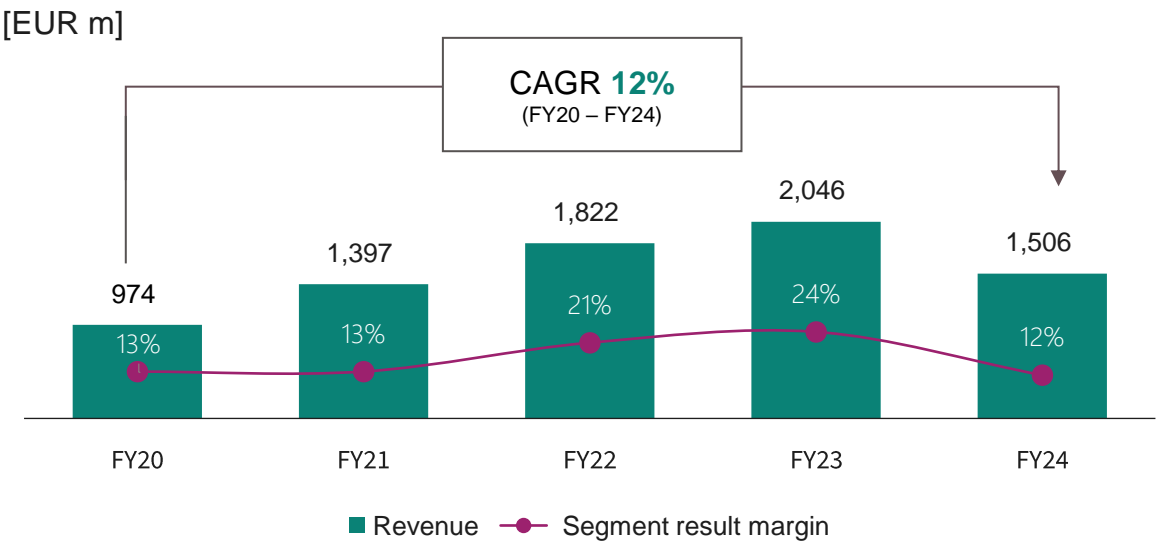
- 20% reduction in height
- 30% reduction in area

# Connected Secure Systems

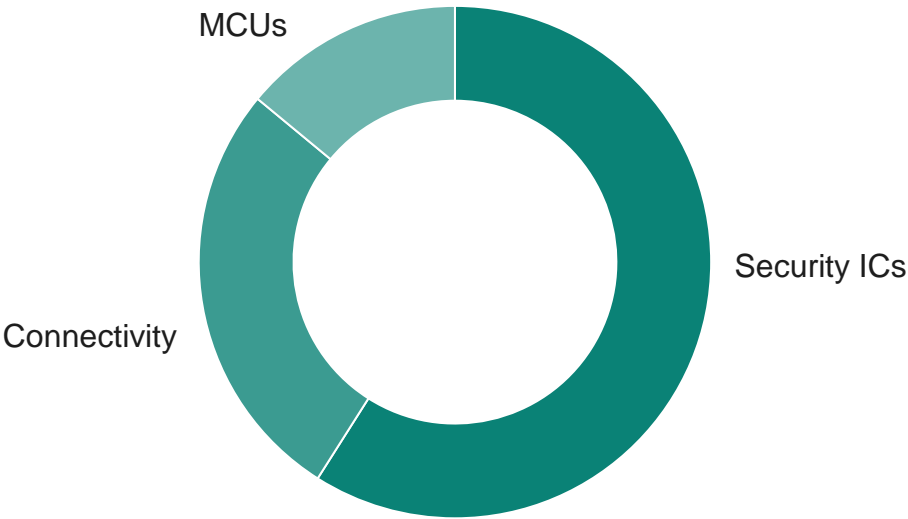


# CSS at a glance

## CSS revenue and Segment Result Margin



## FY24 revenue split by product group



## Key customers





# Outlook for CY25 influenced by continuing macro uncertainties and low consumer sentiment

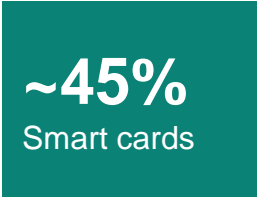


## Applications

% of FY24 segment revenue



- Industrial IoT
- Home Appliances
- Smart Home
- Health & Lifestyle
- Media, Game & Compute
- Automotive



- Payment
- Identification

## Market outlook for CY25

- Risks persist, yet potential moderate growth is possible in second half of CY25 as macro situation stabilizes driving investments
- Gradual improvement during CY25 with higher expected connectivity penetration and new product launches
- Market might accelerate driven by new product introductions and standards (e.g. Matter), however growth prospects are affected by uncertainty and low consumer confidence
- Wearable devices might show growth driven by new product introductions, however growth prospects are affected by uncertainty and low consumer confidence
- Traction in PC market driven by (AI) refreshment cycle. Slight growth expected for Gaming due to new product launches. Smartphone unit shipment increase forecasted
- Growth of automotive market is in decelerate mode after disruptions and recovery in previous years
- While card issuing is assumed to be stable, inventories in the value chain might still limit growth potential
- FY25 demand might be affected by stock overbuild at the customers

# CSS offers a compelling product portfolio and roadmap for IoT

## Microcontrollers (PSoC™ and XMC™)



- PSoC™ family for general purpose, XMC™ family for industrial
- Strength in low power, high performance, and capacitive touch sensing
- Compelling roadmap focused on AI, security, and integrated connectivity



## AIROC™ Wi-Fi and Combos



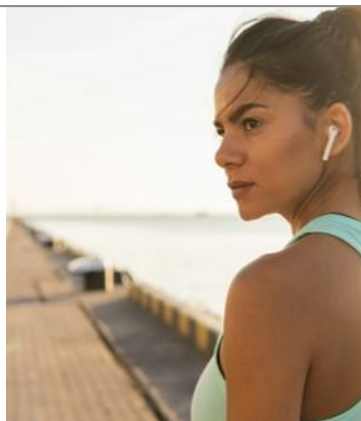
- Wi-Fi standalone and Wi-Fi & Bluetooth® Combo chips for end devices
- Focus on innovation for IoT applications: reliability and power
- Strong leader for battery-operated Wi-Fi
- Recent new product introduced Wi-Fi 6 & 6E – the first IoT-focused product in the brand new 6 GHz band



## AIROC™ Bluetooth®



- Portfolio of standalone and PSoC™-integrated Bluetooth® and Bluetooth® Low Energy products
- Strong position in wearables, gaming, remote controls, HID, and automotive
- Introducing new products to support the newest smart-home industry standard: Matter



## ModusToolbox™ and Software



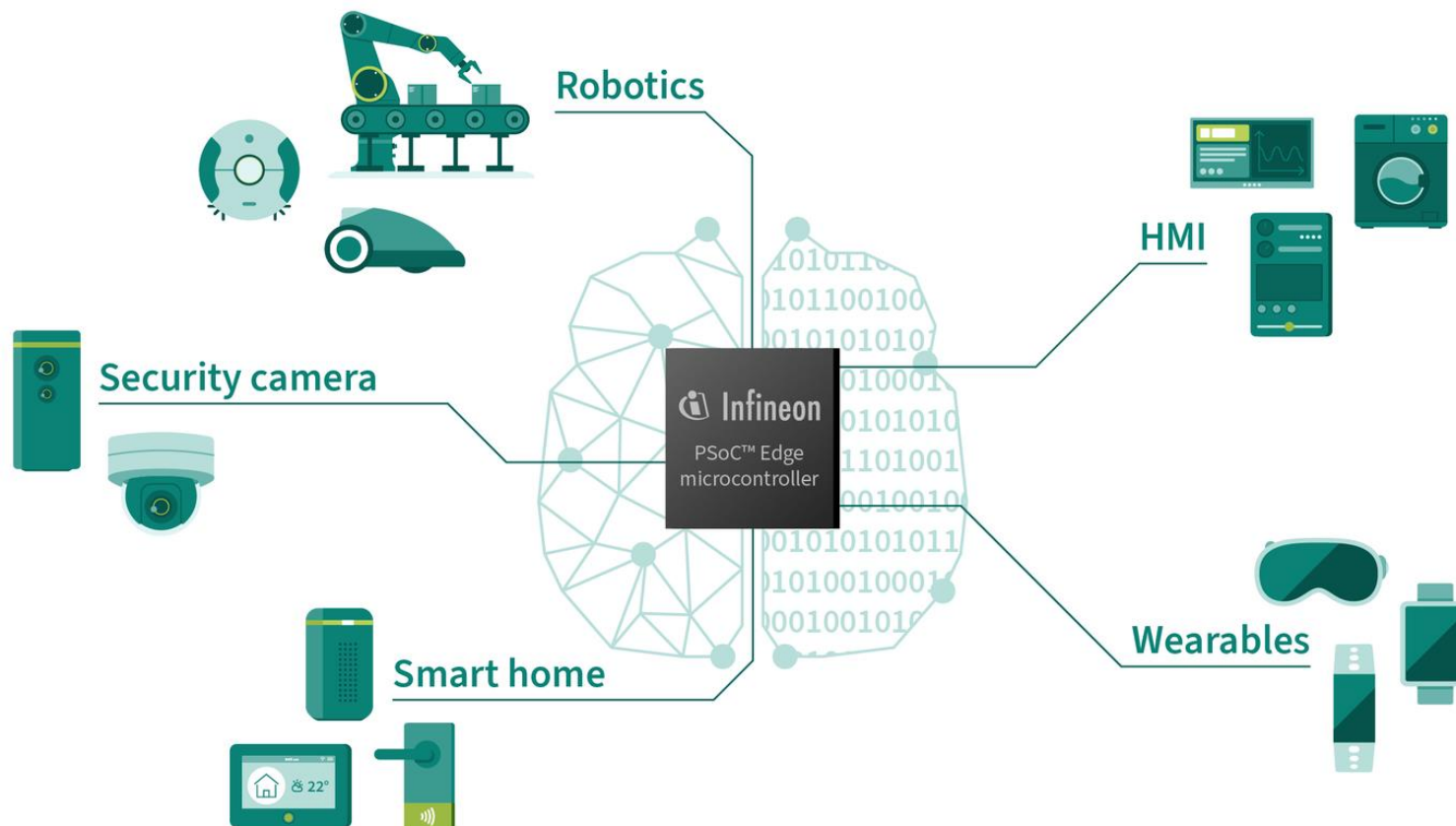
- ModusToolbox™ is a rich embedded software development toolset to accelerate and simplify development for Infineon MCUs, and the core development platform for Infineon software
- Strong set of SW features in MCU and connectivity SDK's
- CIRRENT™ is a cloud services platform for data-driven improvement of connectivity and delivery of innovative IoT services



# Next-generation PSoC™ Edge portfolio: Infineon PSoC™ Edge E81, E83 and E84 microcontroller families



## PSoC™ Edge – Enables a new generation of responsive machine learning devices



Fully integrated system-on-chip (SoC) devices supported with **comprehensive system design tools and software.**

Based on the **high-performance** Arm® **Cortex®-M55** with an embedded **ultra low power technology.**

Robust **security with on-chip, hardware-isolated secured enclave**

Out-of-the-box **Machine learning enablement**

Quickly move from concept to product enabling **fast time-to-market** for IoT and consumer applications.

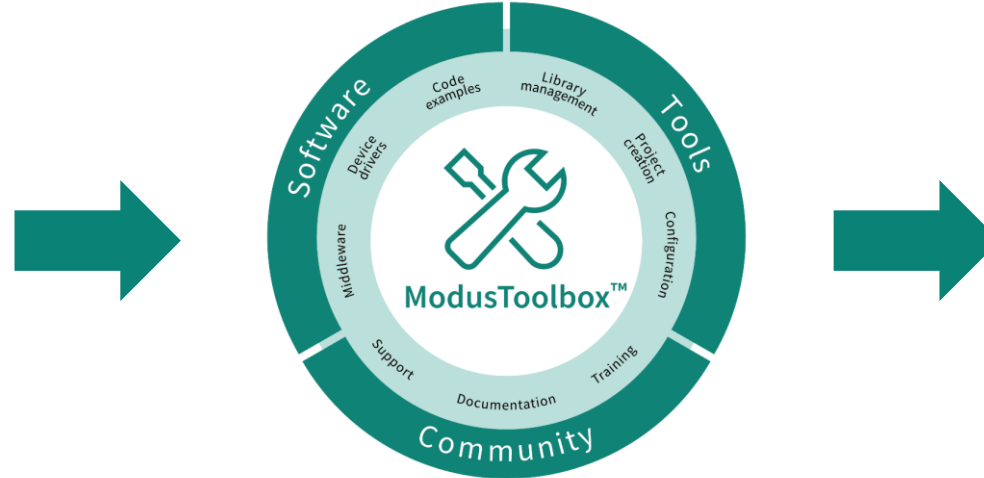
# Customized Machine Learning on PSoC™ Edge with Imagimob Studio and ModusToolbox™



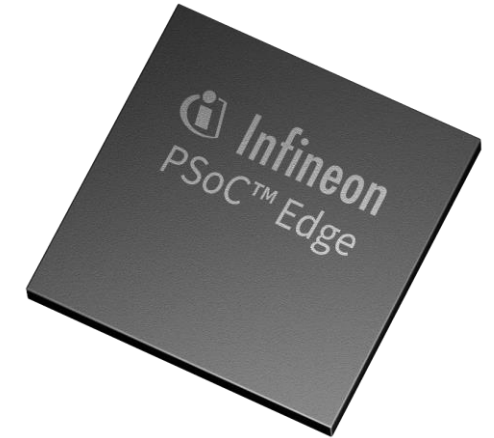
With the seamless integration of **Imagimob Studio** and **ModusToolbox™** companies can build and deploy robust machine learning models. When paired with **PSoC™ Edge**, companies can optimize power consumption and improve efficiency while adding intelligence to products.



**Imagimob Studio**, Infineon's platform for machine learning development, makes it easier to create Edge AI models



**ModusToolbox™ Software** is a modern, extensible development ecosystem



**PSoC™ Edge** is the next generation Machine Learning-enhanced sensing, low power, secured, and advanced HMI high-performance microcontroller



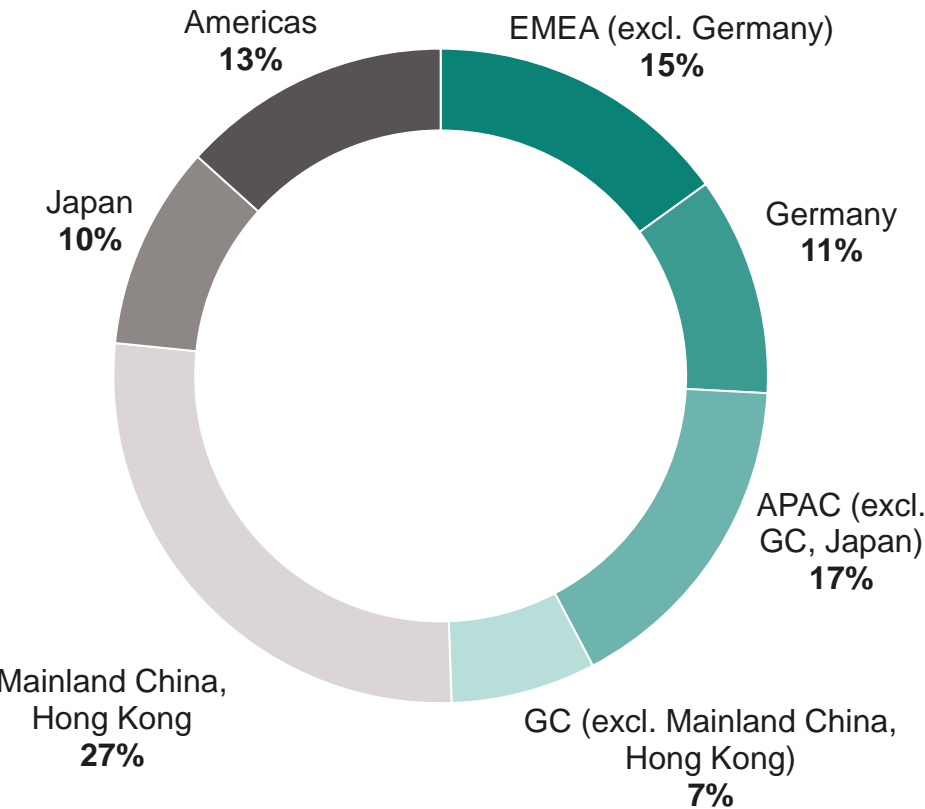
# Selected financial figures



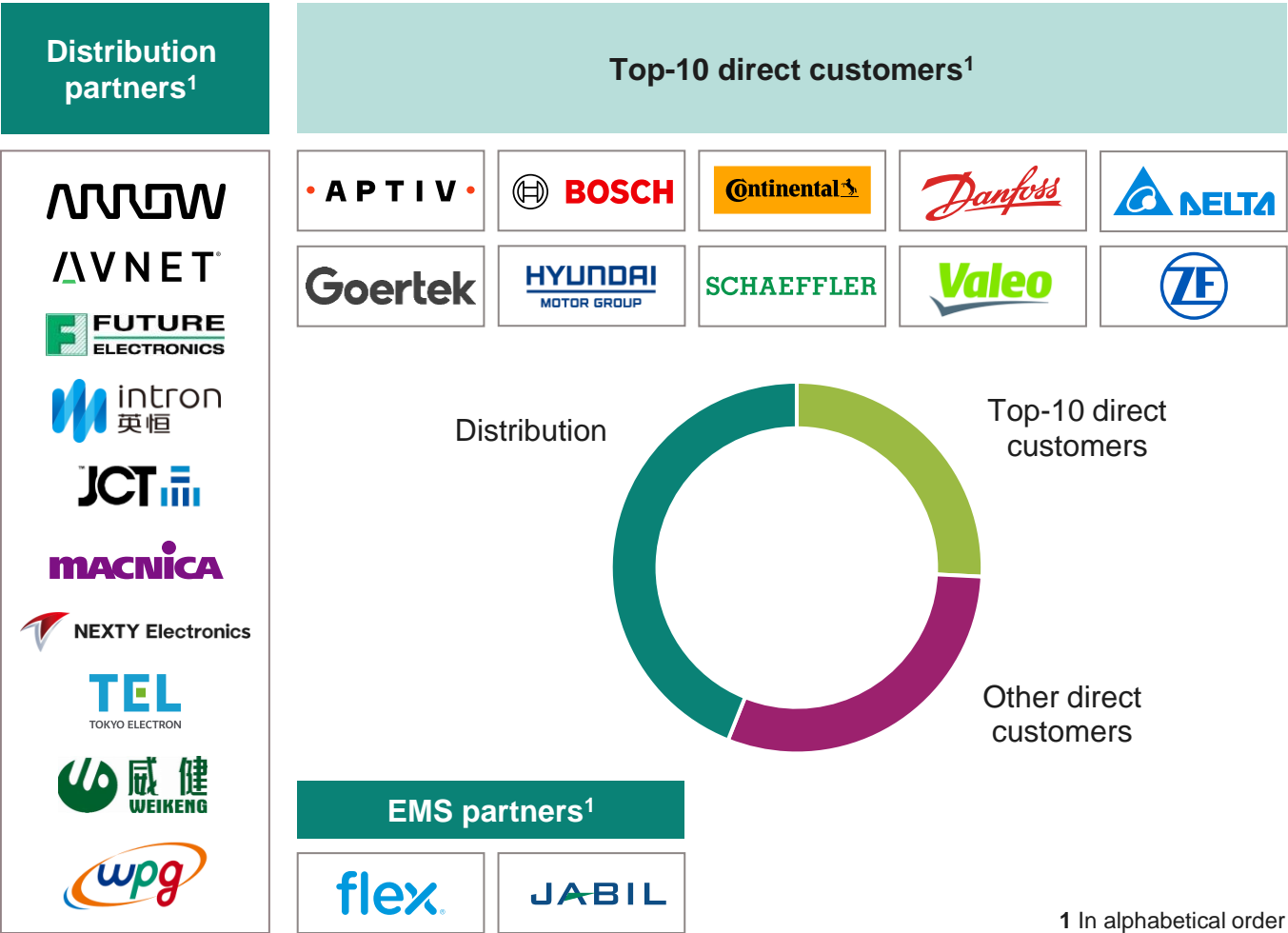
Strong presence in all regions; well-balanced customer portfolio;  
no customer represents more than 10% of total sales



FY24 revenue by region



Revenue by sales channel



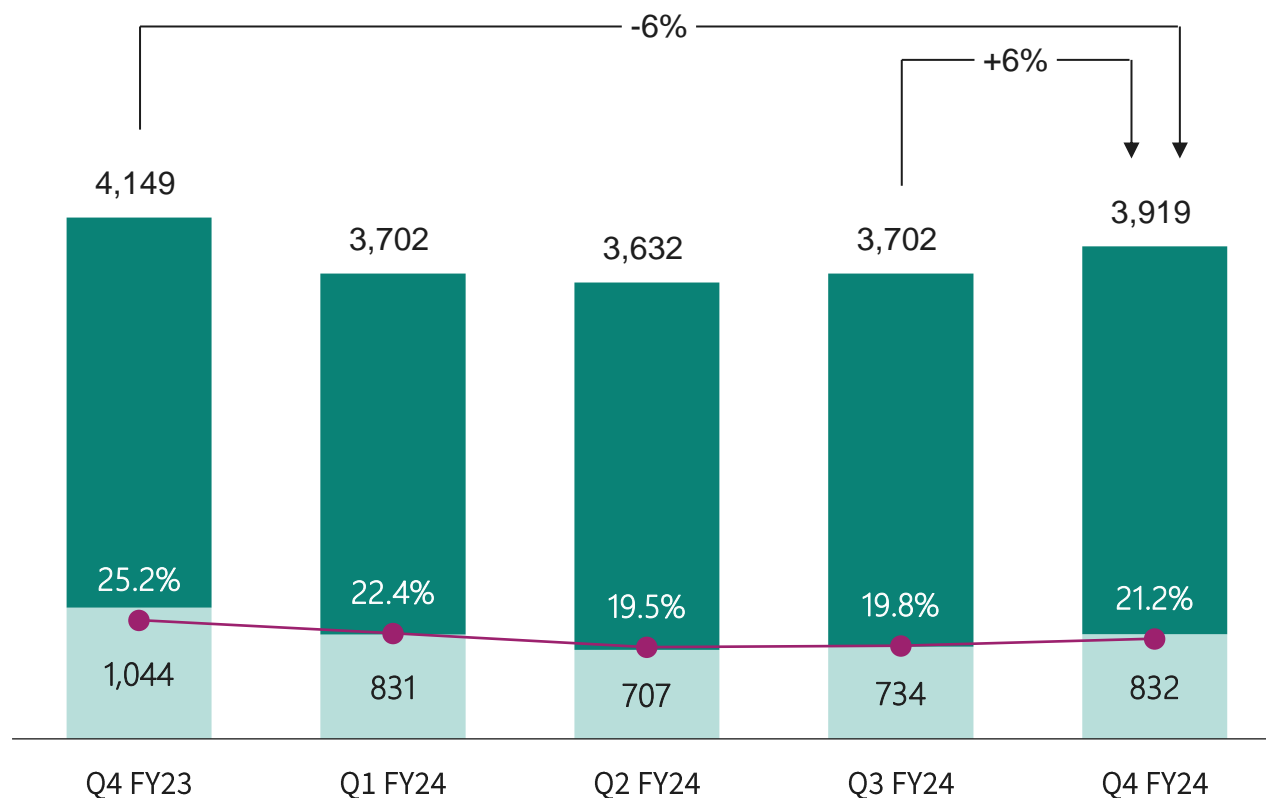
1 In alphabetical order

# Group financial performance

## Revenues and Segment Result

[EUR m]

■ Segment Result ■ Revenues — Segment Result Margin



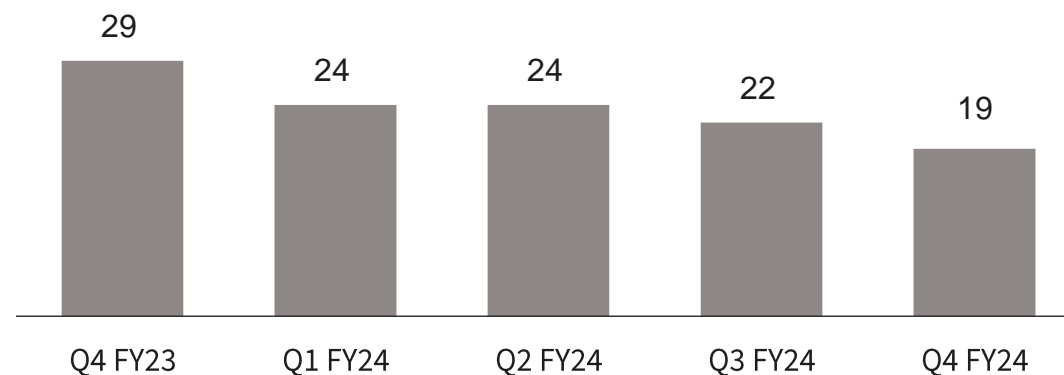
## USD exchange rate

Average revenue exchange rate

	Q4 FY23	Q3 FY24	Q4 FY24
Ø USD/EUR	1.09	1.08	1.10

## Order backlog<sup>1</sup>

[EUR bn]



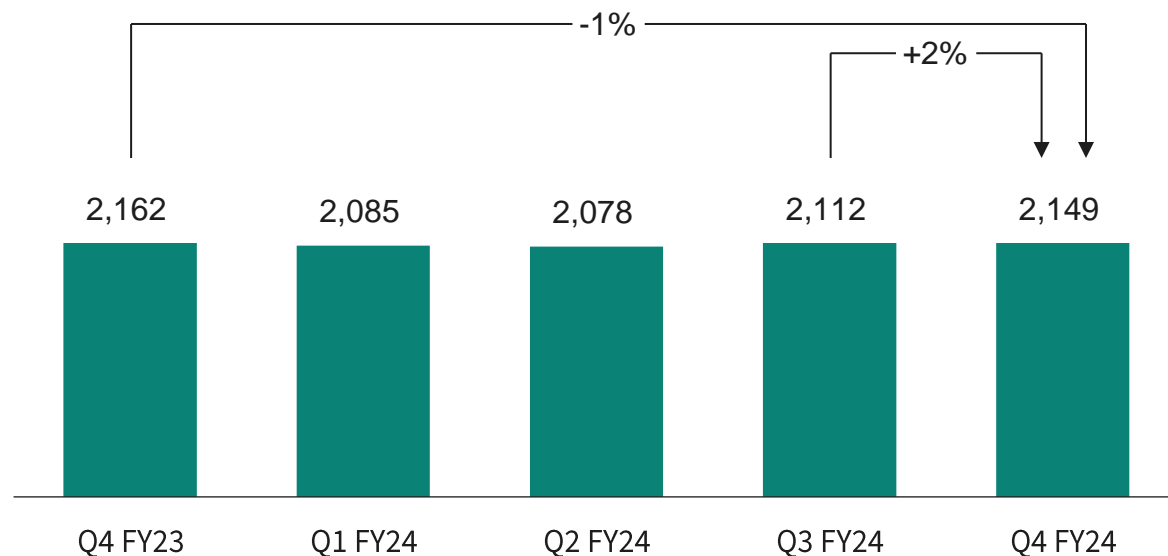
<sup>1</sup> See notes for definition

# Automotive (ATV)

## Revenues

[EUR m]

■ Revenues

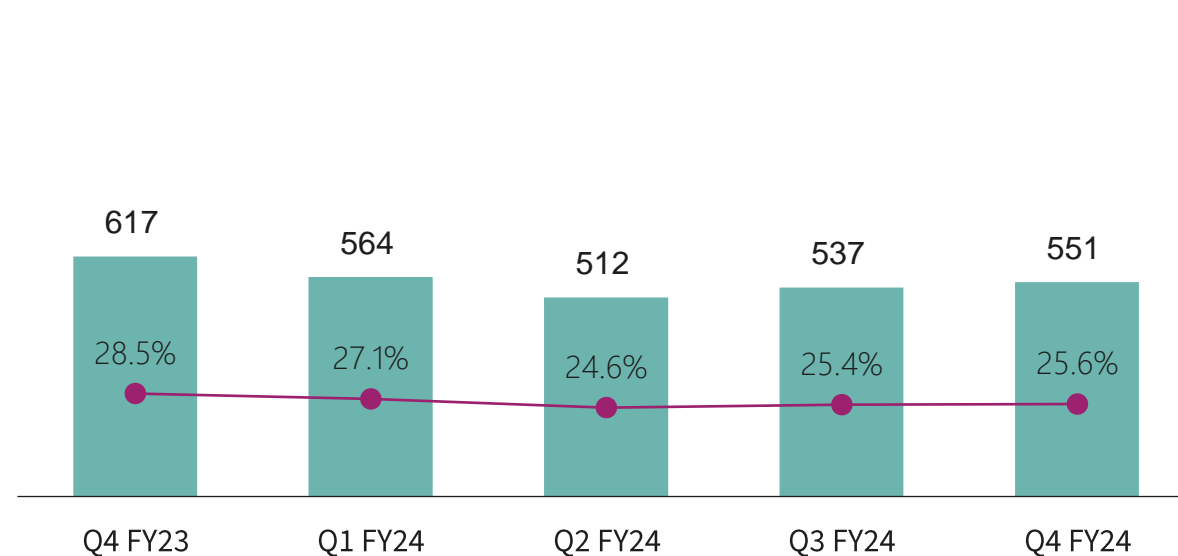


## Segment Result

[EUR m]

■ Segment Result

● Segment Result Margin

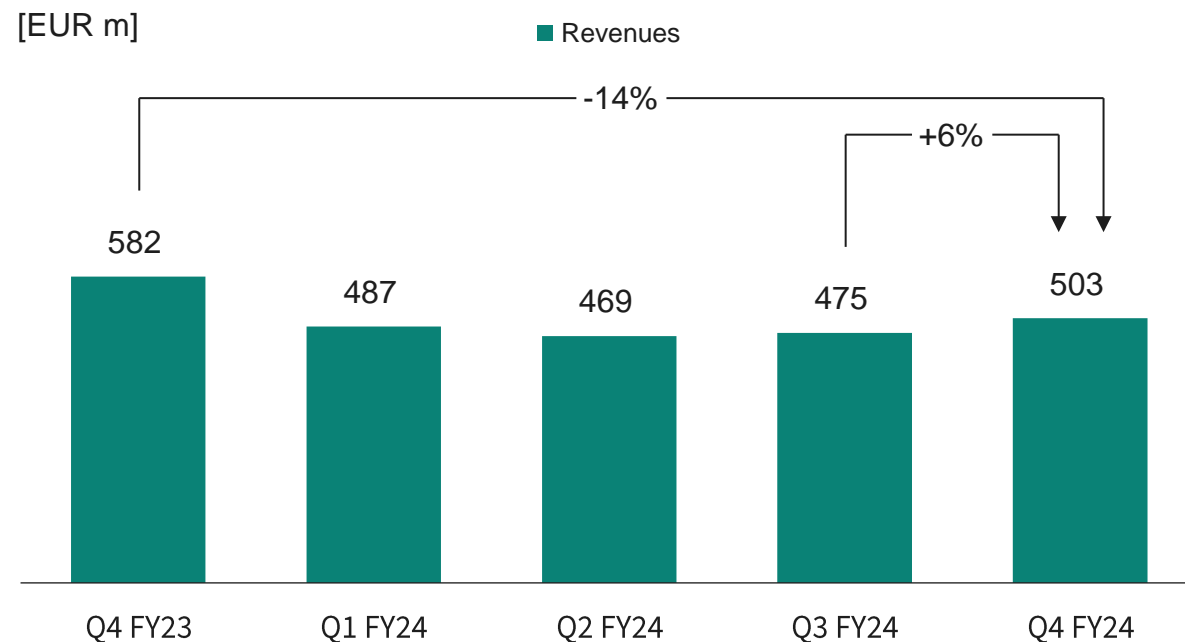


- Slight revenue increase driven by higher volumes, particularly in xEV and MCU.
- In FY24, Infineon grew the automotive business by 2 percent y-o-y, due to a broad portfolio, balanced regional presence and market share gains.
- Intensified inventory reduction efforts across the value chain driven by macroeconomic uncertainty and challenging market environment.

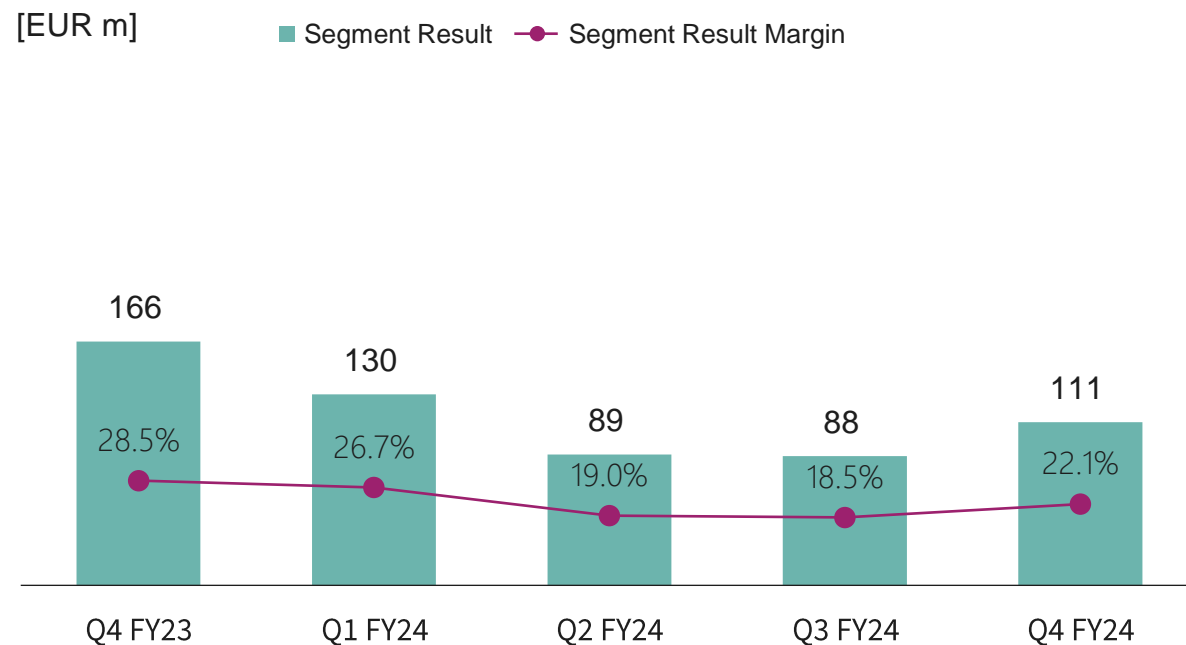


# Green Industrial Power (GIP)

## Revenues



## Segment Result



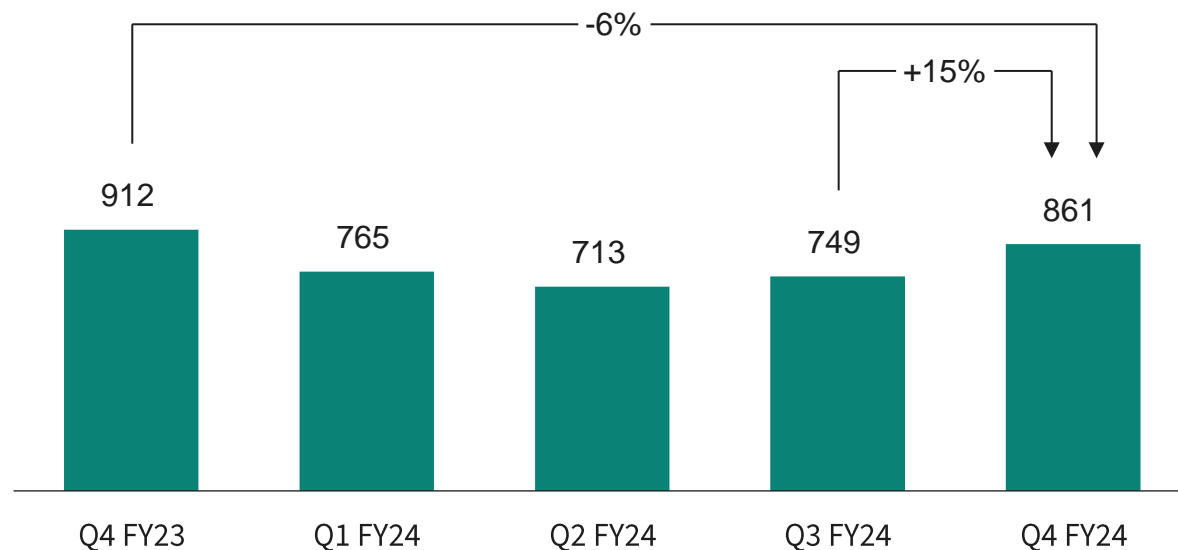
- Seasonal revenue uptick due to renewable energy generation and transportation.
- Demand for decarbonization-related applications remains strong but is dampened by high inventory levels.
- Prolonged phase of muted development expected for core industrial applications.

# Power & Sensor Systems (PSS)

## Revenues

[EUR m]

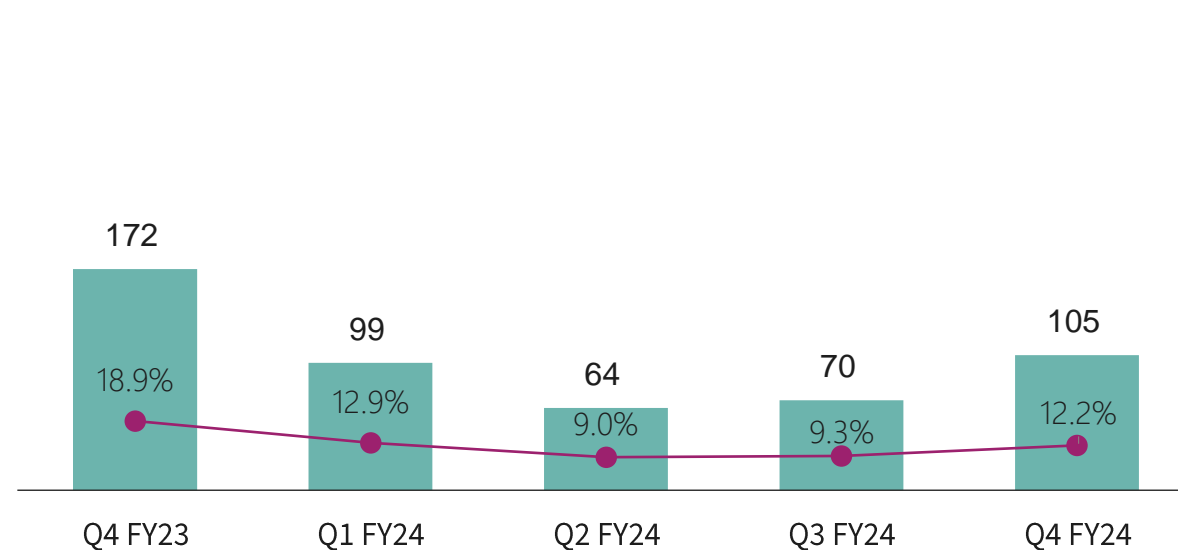
■ Revenues



## Segment Result

[EUR m]

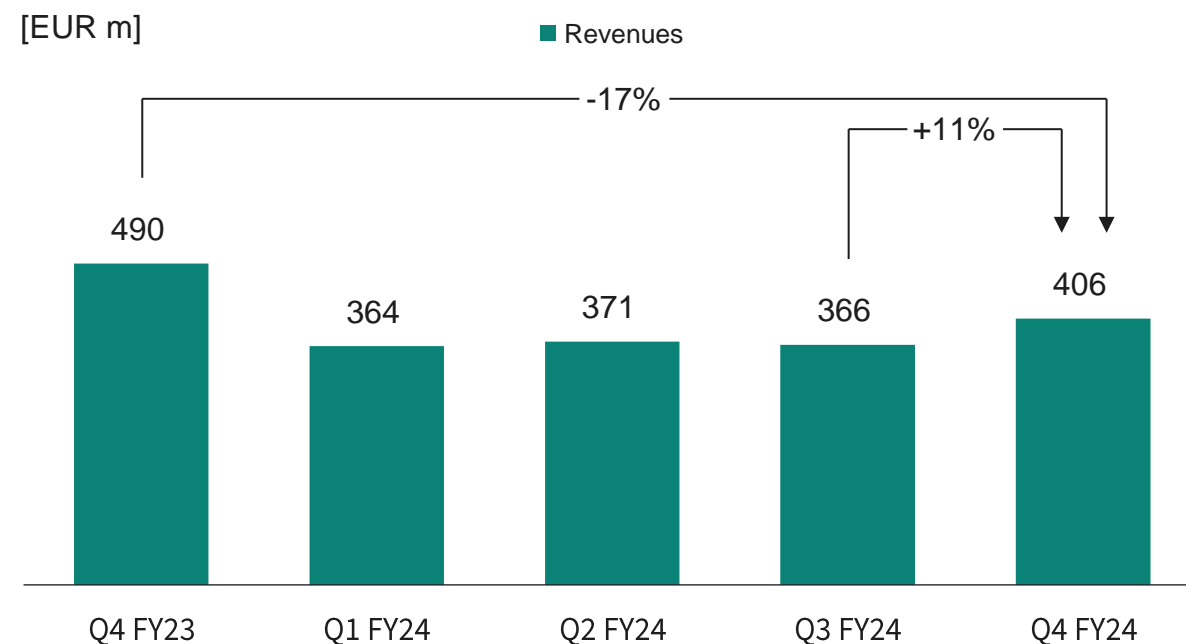
■ Segment Result ● Segment Result Margin



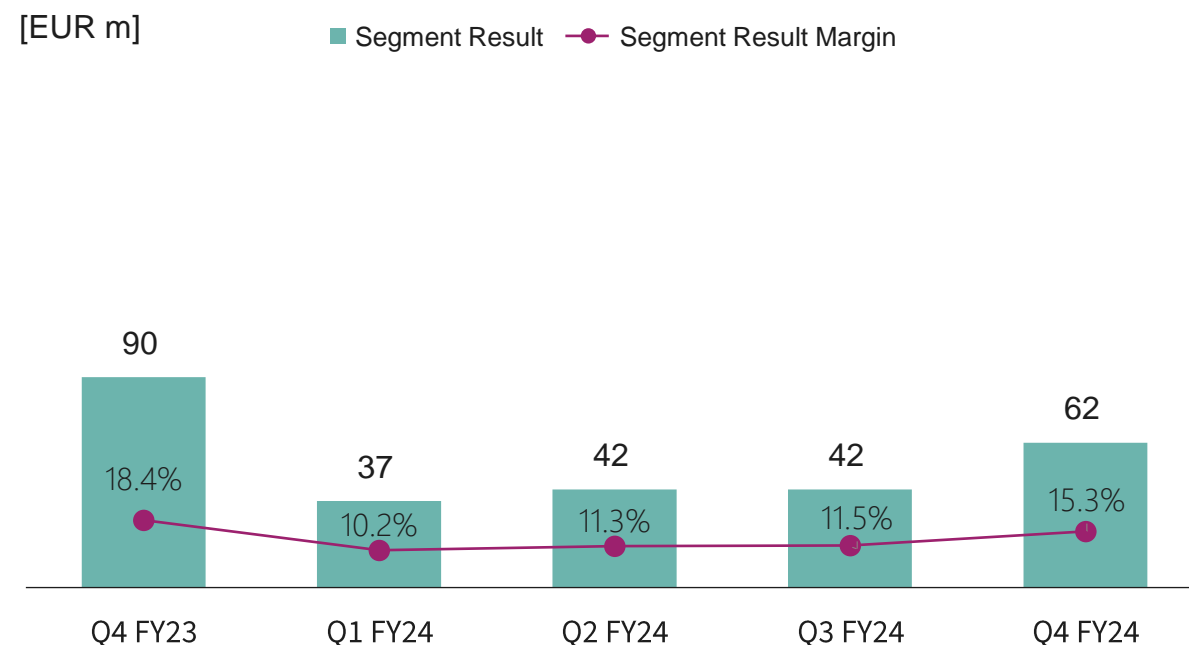
- Growth across all business lines – AI power solutions up 50% q-o-q.
- Consumer, compute, communications have bottomed out. Cyclical market recovery slower than anticipated. Working down of inventories continuing.
- Power solutions for AI servers are booming – Infineon is uniquely positioned addressing the entire power flow from grid to core.

# Connected Secure Systems (CSS)

## Revenues



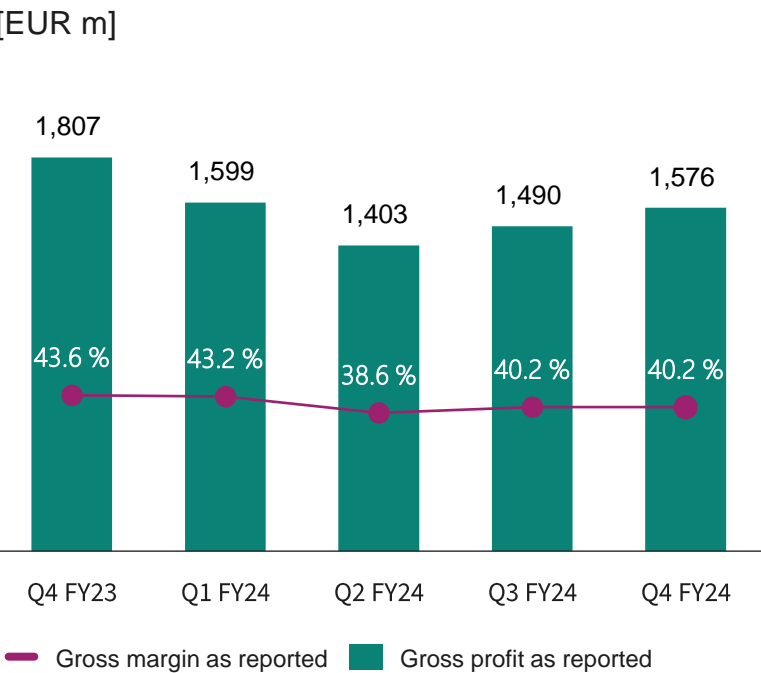
## Segment Result



- Revenue increase driven by connectivity, authentication, and identity solutions, as well as general-purpose microcontrollers.
- Most IoT and security markets have bottomed out, yet recovery remains sluggish due to macroeconomic uncertainties.
- Structural growth driven by advancements in Edge AI, including the introduction of DEEPCRAFT™ and the launch of new ready models.

# Gross margin and Opex

## Gross profit



### Therein Non-Segment Result charges

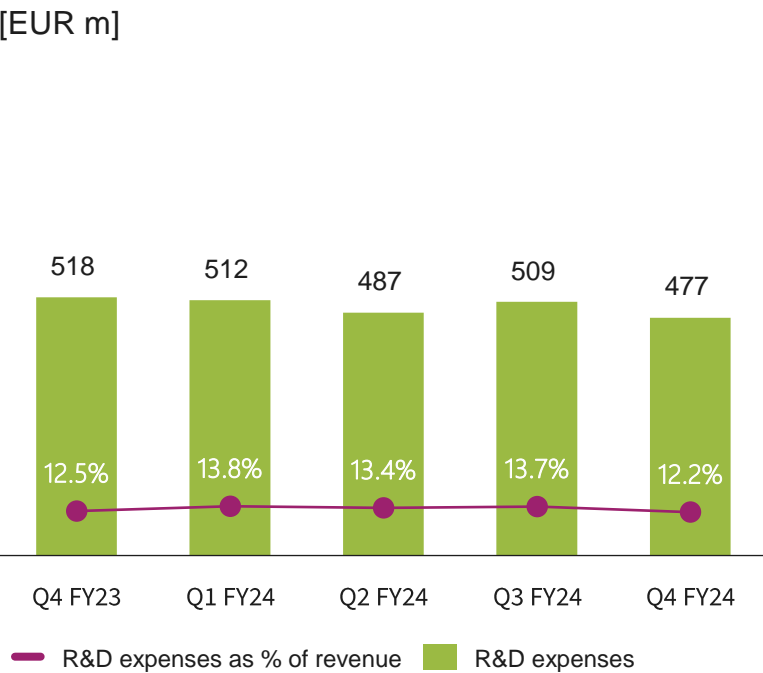
[EUR m]

79	65	91	71	77
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### Adjusted gross margin

45.5%	44.9%	41.1%	42.2%	42.2%
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## R&D

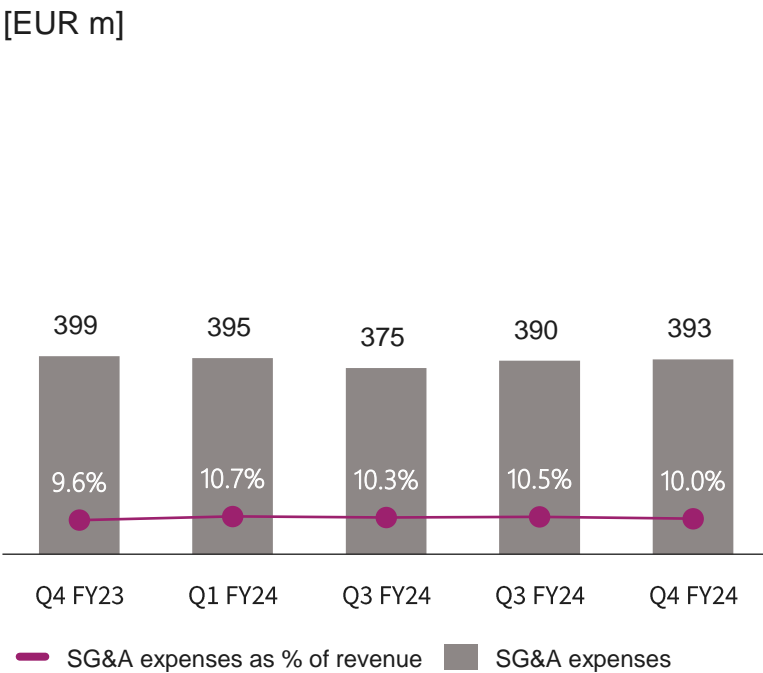


### Therein Non-Segment Result charges

[EUR m]

12	16	18	15	14
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## SG&A



### Therein Non-Segment Result charges

[EUR m]

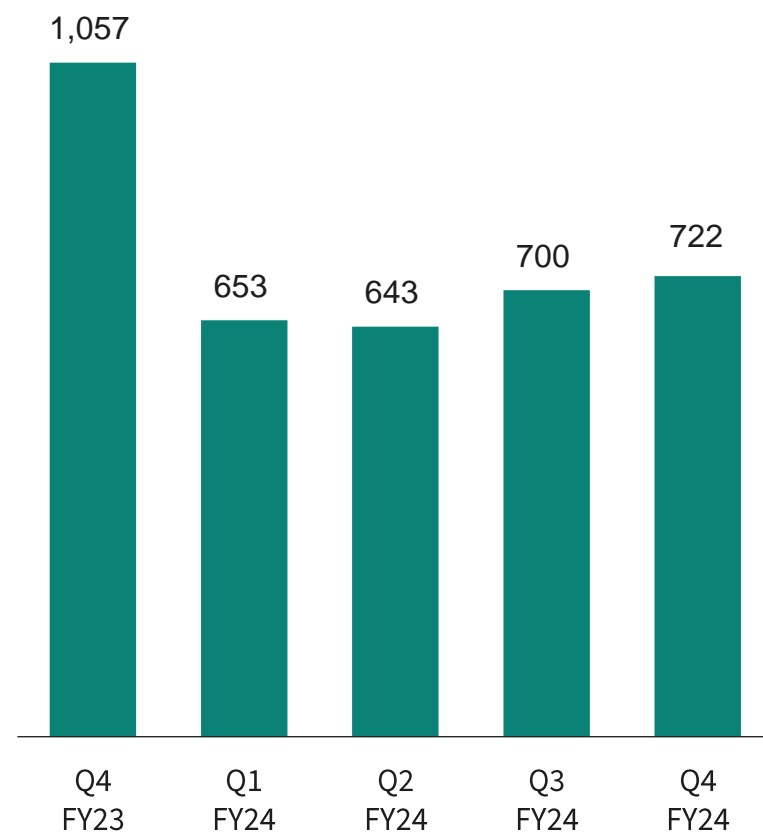
57	54	54	54	48
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# Investments, Depreciation & Amortization and Free Cash Flow

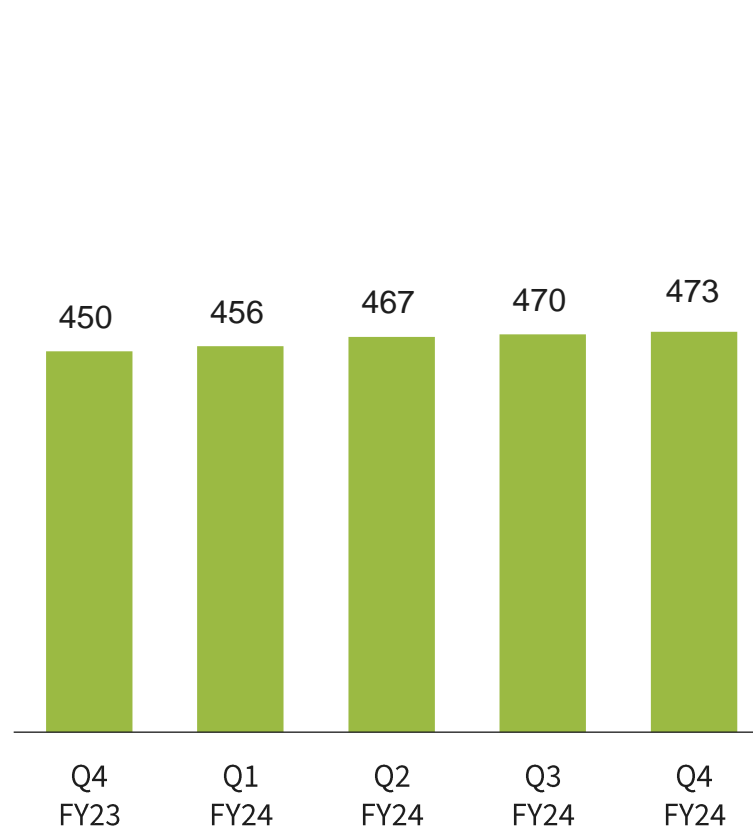
## Investments

[EUR m]



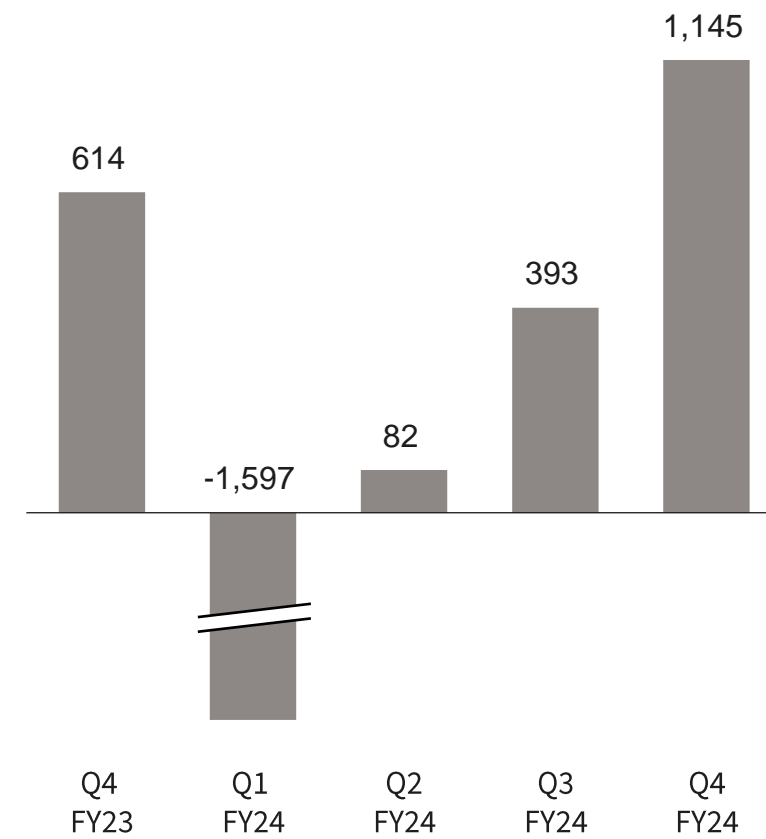
## Depreciation & Amortization

[EUR m]



## Free Cash Flow

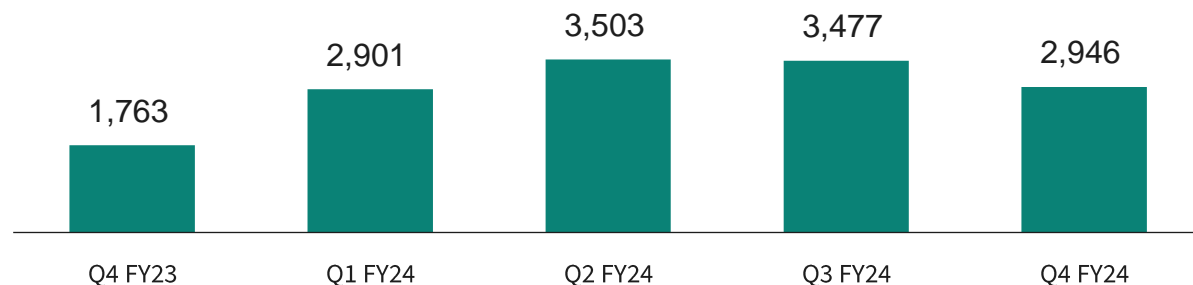
[EUR m]



# Working capital, in particular trade working capital components

## Working capital<sup>1</sup>

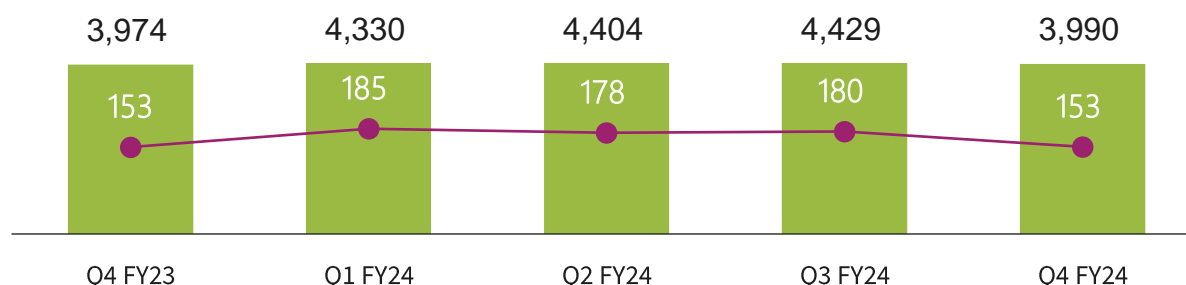
[EUR m]



## Inventories

[EUR m]

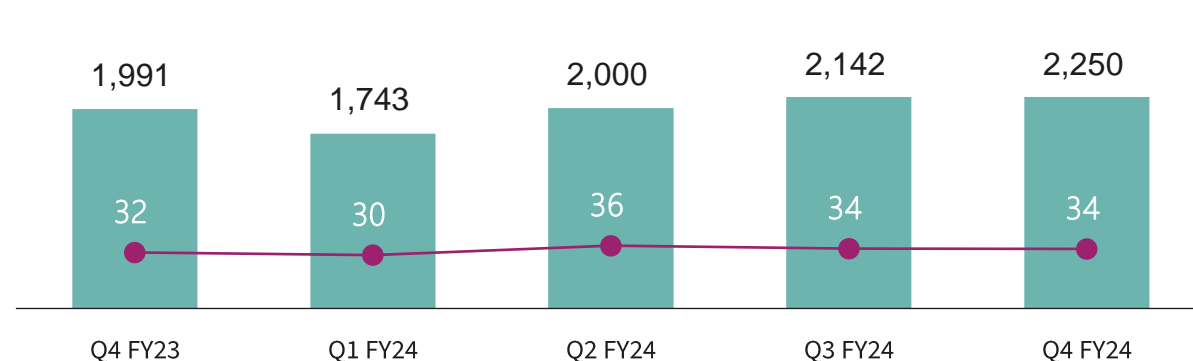
[days]



## Trade receivables

[EUR m]

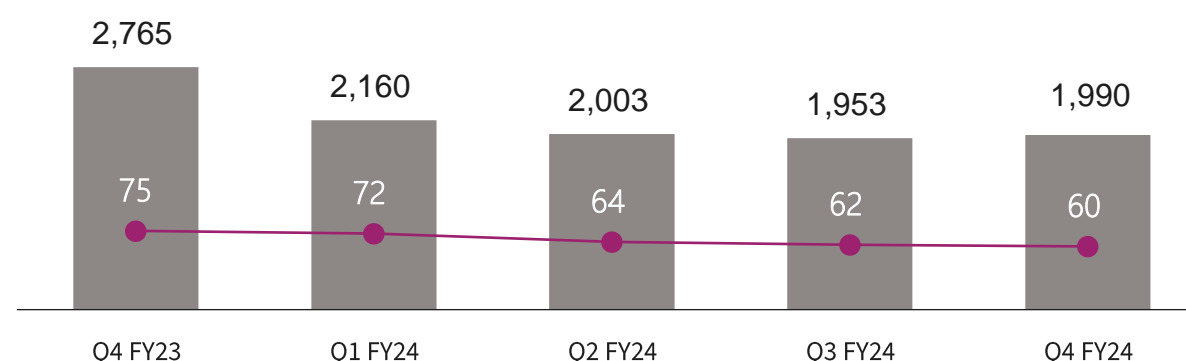
[days]



## Trade payables

[EUR m]

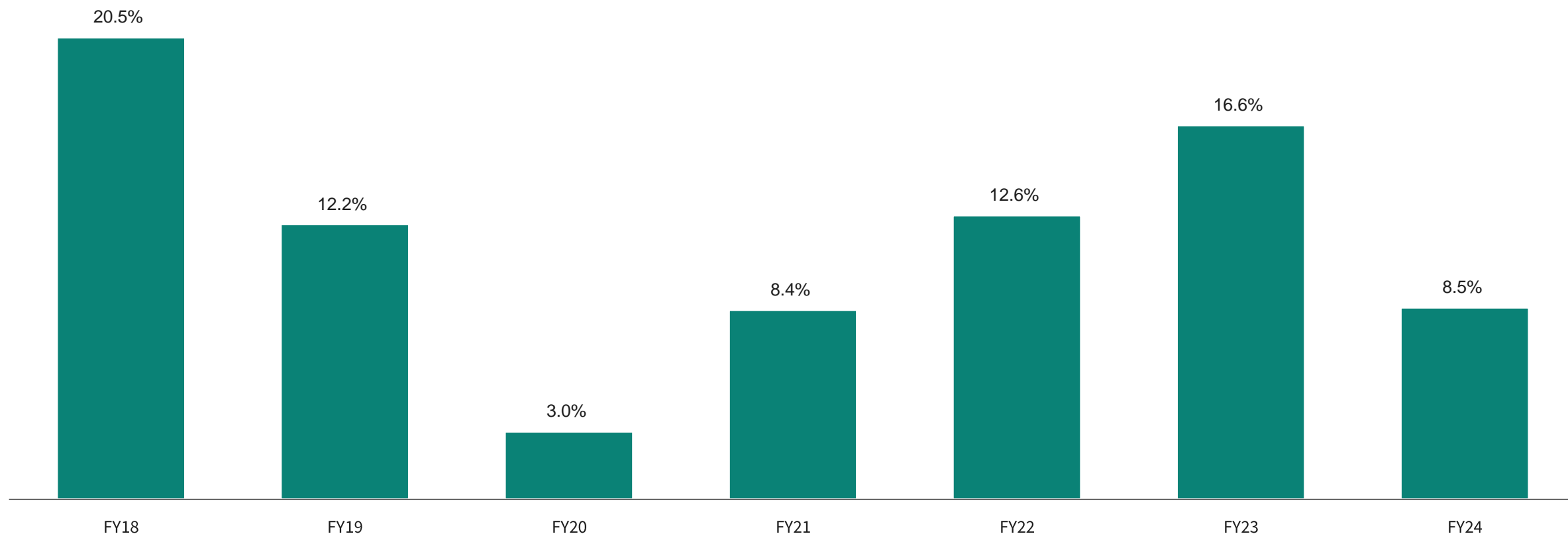
[days]



<sup>1</sup> See notes for definition

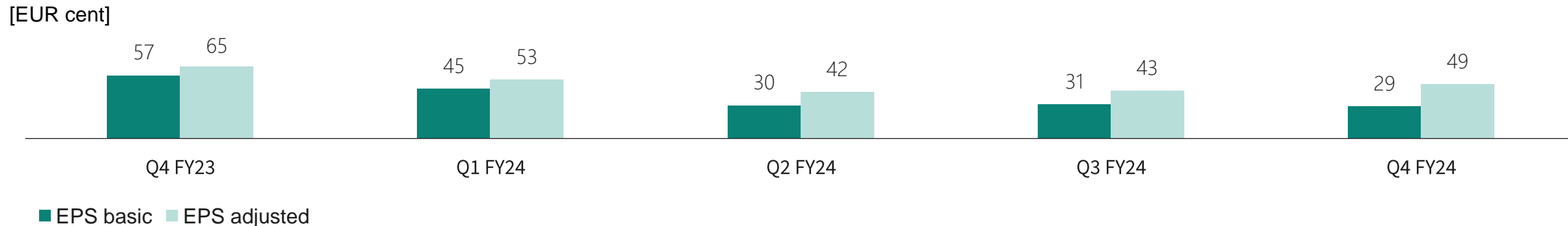
# Return on capital employed

## Historical development

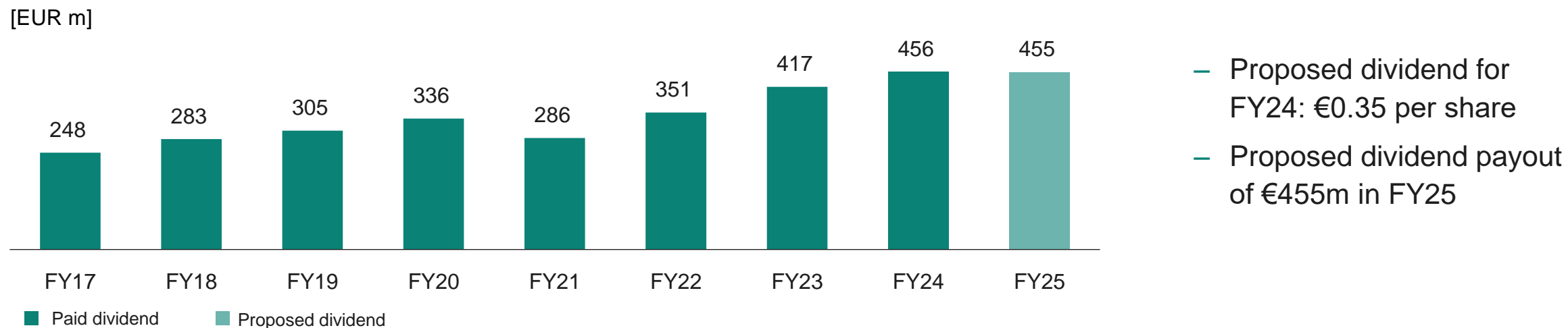


# Earnings-per-share and total cash return

## Development of earnings-per-share (EPS) from continuing operations



## Total cash return to shareholders via dividends

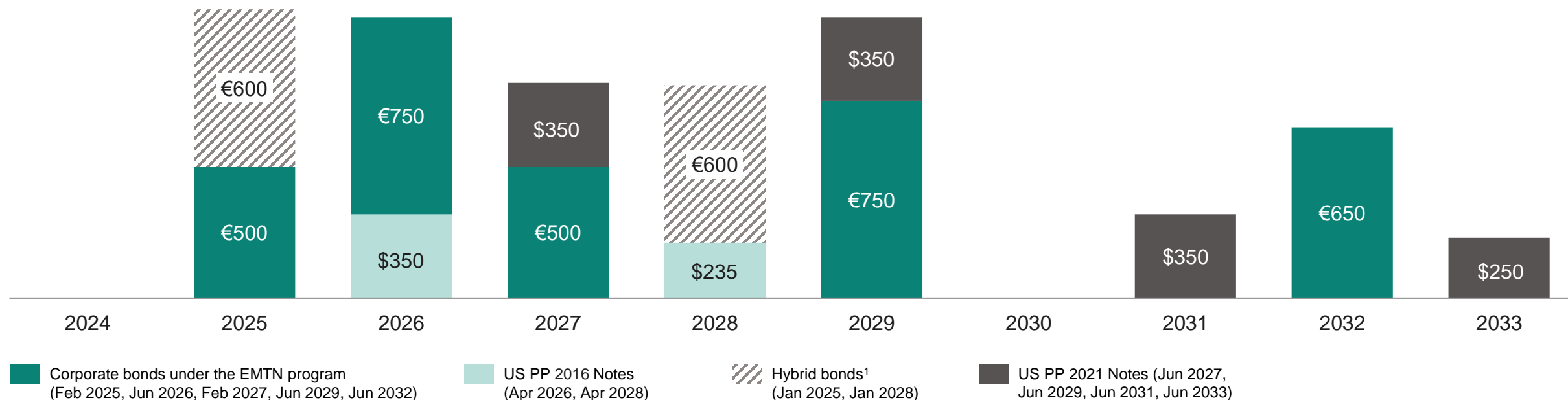




# Maturity profile

## Calendar years 2024 to 2033

[EUR m; USD m; nominal values]



<sup>1</sup> On 1 Oct 2019, Infineon issued a perpetual hybrid bond with two tranches: €600m with first call date in 2025 and €600m with first call date in 2028; both are accounted as equity under IFRS.

# Conservative financial policy and strict commitment to investment-grade rating are the basis for through-cycle flexibility



	Financial Policy Targets	Status Quo (LTM 30 September 2024)
Gross Cash <sup>1</sup>	At least <b>10%</b> of revenue <sup>3</sup>	15% of revenue → <b>€2.2bn</b>
Gross Debt <sup>2</sup>	≤ <b>2.0x</b> EBITDA	<b>1.2x</b> EBITDA
Comfortable liquidity position	— Flexibility for financing operating activities and investments through the cycle	
Balanced debt position	— Gross debt target commensurate with investment-grade rating — Successful de-leveraging offers ample headroom	
Rating	Investment grade	<b>BBB+</b> stable outlook (by S&P Global Ratings)

<sup>1</sup> Gross cash position is defined as cash and cash equivalents plus financial investments | <sup>2</sup> Gross debt is defined as short-term debt and current maturities of long-term debt plus long-term debt. EBITDA is calculated as the total of earnings from continued operations before interest and taxes plus scheduled depreciation and amortization | <sup>3</sup> Within the 2024 fiscal year we have revised our liquidity target. For the future, our gross cash target is at least 10 percent of revenue on average throughout the fiscal year (previous target: €1bn plus at least 10 percent of revenue)



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## Disclaimer

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# Glossary

AC	alternating current
ACC	adaptive cruise control
AD	automated driving
ADAS	advanced driver assistance system
AEB	autonomous emergency braking
AI	artificial intelligence
AR/VR	augmented/virtual reality
BEV	battery electric vehicle
BLE	bluetooth low energy
BMS	battery management system
BoM	bill of materials
CAV	commercial, construction and agricultural vehicles
CMOS	complementary metal-oxide-semiconductor
DC	direct current
DSC/SSC	double/single sided cooling
E/E	electrical/electronic architecture
ECU	electronic control unit
eSE	embedded secure module
eSIM	embedded subscriber identity module
EMS	electronics manufacturing service
ESS	energy storage system
EV	electric vehicle
FCEV	fuel cell electric vehicle
FHEV/MHEV	full/mild hybrid electric vehicle
FoM	figure of merit
F-RAM	ferroelectric memory
GaN	gallium nitride
HEMT	high-electron-mobility transistor
HID	human interface device
HMI	human machine interaction
HV	high voltage
HVAC	heating, ventilation, air conditioning
IC	integrated circuit
ICE	internal combustion engine

IGBT	insulated gate bipolar transistor
IoT	internet of things
IPM	intelligent power module
LED	light-emitting diode
MCU	microcontroller unit
MEMS	micro electro-mechanical system
MHA	major home appliances
MIMO	multiple input, multiple output
ML	machine learning
MNO	mobile network operator
MOSFET	metal-oxide silicon field-effect transistor
MV	medium voltage
NFC	near-field communication
OBC	on-board charger
OEM	original equipment manufacturer
P2S	Infineon's strategic product-to-system approach
PD	power delivery
PHEV	plug-in hybrid electric vehicle
PMIC	power management integrated circuits
PoL	point of load
PSoC	programmable system-on-chip
PUE	power usage effectiveness
PSU	power supply unit
PV	photovoltaic
RAM	random access memory
RF	radio frequency
SAE	Society of Automotive Engineers
SDK	software development kit
Si	silicon
SiC	silicon carbide
SNR	signal-to-noise ratio
SoC	system-on-chip / state of charge
ToF	time-of-flight
UWB	ultra-wideband
WBG	wide-band gap, specifically referring to SiC and GaN based devices



# Notes and ESG footnotes

<b>Investments =</b>	'Purchase of property, plant and equipment' + 'Purchase of intangible assets and other assets' incl. capitalization of R&D expenses
<b>Capital Employed =</b>	'Total assets' – 'Cash and cash equivalents' – 'Financial investments' – 'Assets classified as held for sale' – ('Total Current liabilities' – 'Short-term debt and current maturities of long-term debt' – 'Liabilities classified as held for sale')
<b>RoCE =</b>	Operating profit from continuing operations after tax/Capital Employed = ('Operating profit' – 'Financial result excluding interest result' – 'Share of profit (loss) of associates and joint ventures accounted for using the equity method'-'Income tax')/Capital Employed
<b>Working Capital =</b>	('Total current assets' – 'Cash and cash equivalents' – 'Financial investment' – 'Assets classified as held for sale') – ('Total current liabilities' – 'Short term debt and current maturities of long-term debt' – 'Liabilities classified as held for sale')
<b>DIO</b> (days inventory outstanding; quarter-to-date) =	('Net Inventories'/'Cost of goods sold') x 90
<b>DPO</b> (days payables outstanding; quarter-to-date) =	('Trade payables'/'[Cost of goods sold' + 'Purchase of property, plant and equipment']') x 90
<b>DSO</b> (days sales outstanding; quarter-to-date) =	('Trade receivables' - 'reimbursement obligations') <sup>1</sup> /'revenue' x 90

**Order backlog =** The total amount of orders received regardless of their current status

## ESG footnotes:

- 1) This figure takes into account manufacturing, transportation, own vehicles, travel, raw materials and consumables, chemicals, water/waste water, direct emissions, energy consumption, waste, etc. as well as direct and indirect energy-related emissions by manufacturing service providers. It is based on data collected internally and publicly available conversion factors and relates to the 2021 fiscal year.
- 2) This figure is based on internally established criteria, which are described in the explanatory notes. The figure relates to the 2020 calendar year and takes into account the following application areas: automotive, LED, induction cookers, servers, renewable energy (wind, photovoltaic) and cell phone chargers as well as drives. CO<sub>2</sub> savings are calculated based on the potential savings generated by technologies in which semiconductors are used. The CO<sub>2</sub> savings are allocated based on Infineon's market share, semiconductor share, and the lifetime of the technologies concerned, based on internal and external experts' estimations. Despite the fact that carbon footprint calculations are subject to imprecision due to the complex issues involved, the results are nevertheless clear.
- 3) Carbon neutrality is defined in terms of Scope 1 and Scope 2 emissions.

<sup>1</sup> Without debtors with credit balances

# Financial calendar

Date	Event	Location
14 Nov 2024	Stifel Roadshow	Frankfurt
19 - 22 Nov 2024	Danske Market Nordic Roadshow	Helsinki, Stockholm, Oslo, Copenhagen
21 Nov 2024	Morgan Stanley European TMT Conference	Barcelona
22 Nov 2024	Kepler Cheuvreux One-Stop-Shop Roadshow	Munich
4 Dec 2024	ATV Presentation and Roadshow	London
4 - 5 Dec 2024	UBS Global TMT Conference	Scottsdale
6 Dec 2024	Stifel Roadshow	Chicago
9 - 10 Jan 2025	ODDO BHF Forum	Lyon
4 Feb 2025 <sup>1</sup>	Earnings Release for the First Quarter of the 2025 Fiscal Year	
20 Feb 2025 <sup>1</sup>	Annual General Meeting 2025	
8 May 2025 <sup>1</sup>	Earnings Release for the Second Quarter of the 2025 Fiscal Year	

<sup>1</sup> Preliminary

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