

Automotive Power Supply Solutions OPTIREG™ & Transceivers

ATV SP APS

Q3 2026

Public

Infineon at a glance



Public

Infineon at a glance

Growth areas



Energy
green and efficient

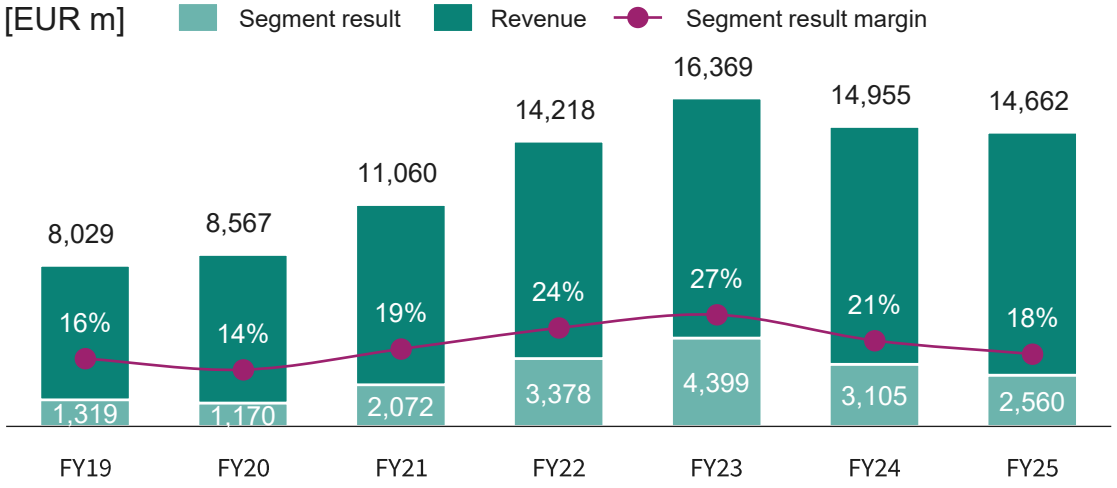


Mobility
clean and safe

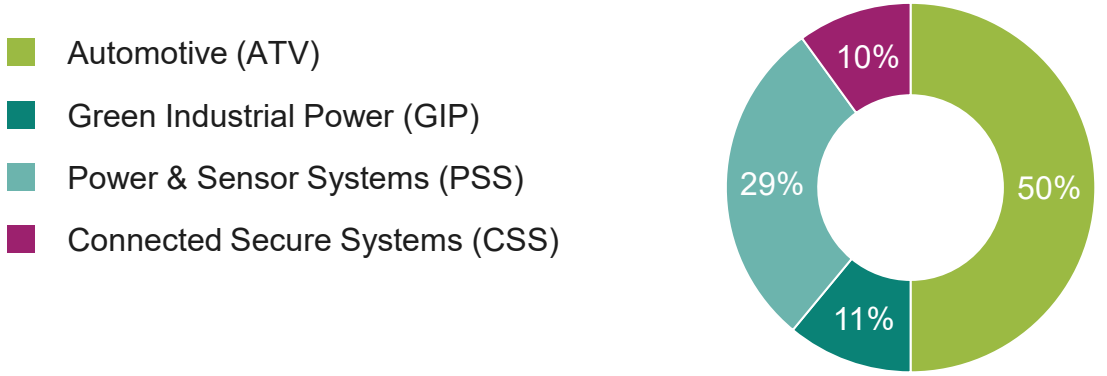


IoT
smart and secure

Financials



FY25 revenue by segment[1]

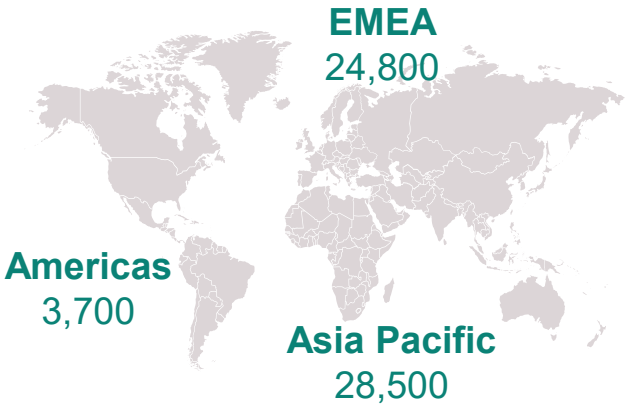


Employees[1]

57,000
employees worldwide

75
R&D and

14
manufacturing locations[2]



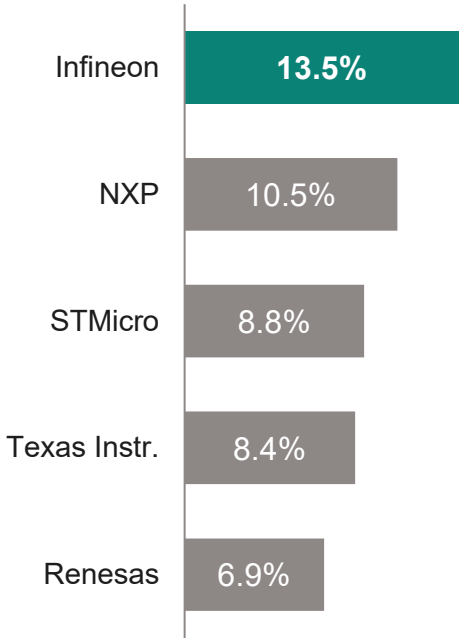
For further information: Infineon Annual Report.
1 2025 Fiscal year (as of 30 September 2025) | **2** As of 30 September 2025

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Infineon is clear #1 in Automotive and power semiconductors, and also #1 in the overall microcontroller market

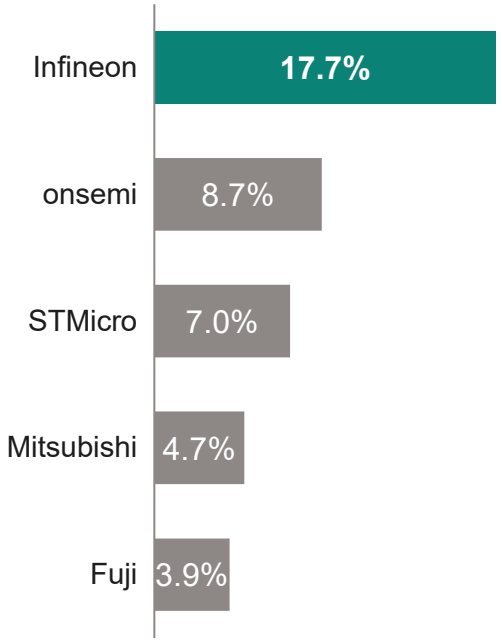
Automotive semiconductors

2024 total global market: USD 68.4bn[1]



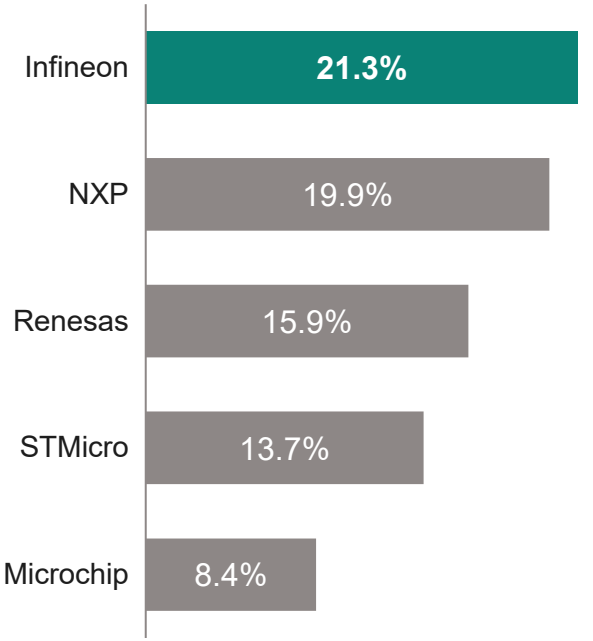
Power discretes and modules

2024 total global market: USD 32.3bn[2]



Microcontroller suppliers

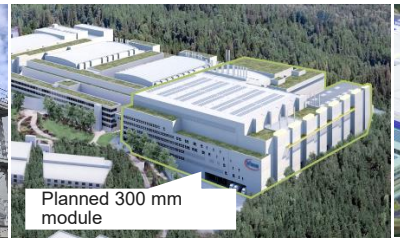
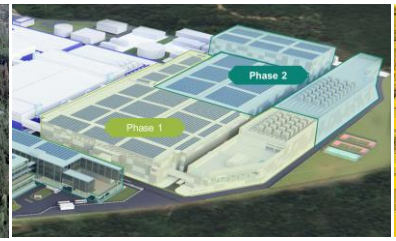
2024 total global market: USD 22.4bn[3]



1 TechInsights: Automotive Semiconductor Vendor 2024 Market Shares. March 2025. | **2** Based on or includes research from Omdia: Power Semiconductor Market Share Database – H125 (2024 Base Year). April 2025. | **3** Based on or includes research from Omdia: Annual 2001-2024 Semiconductor Market Share Competitive Landscaping Tool – 4Q24. March 2025. | Results are not an endorsement of Infineon Technologies AG. Any reliance on these results is at the third party's own risk.

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We follow a ambitious growth plan: Latest investments into Infineon's capacity

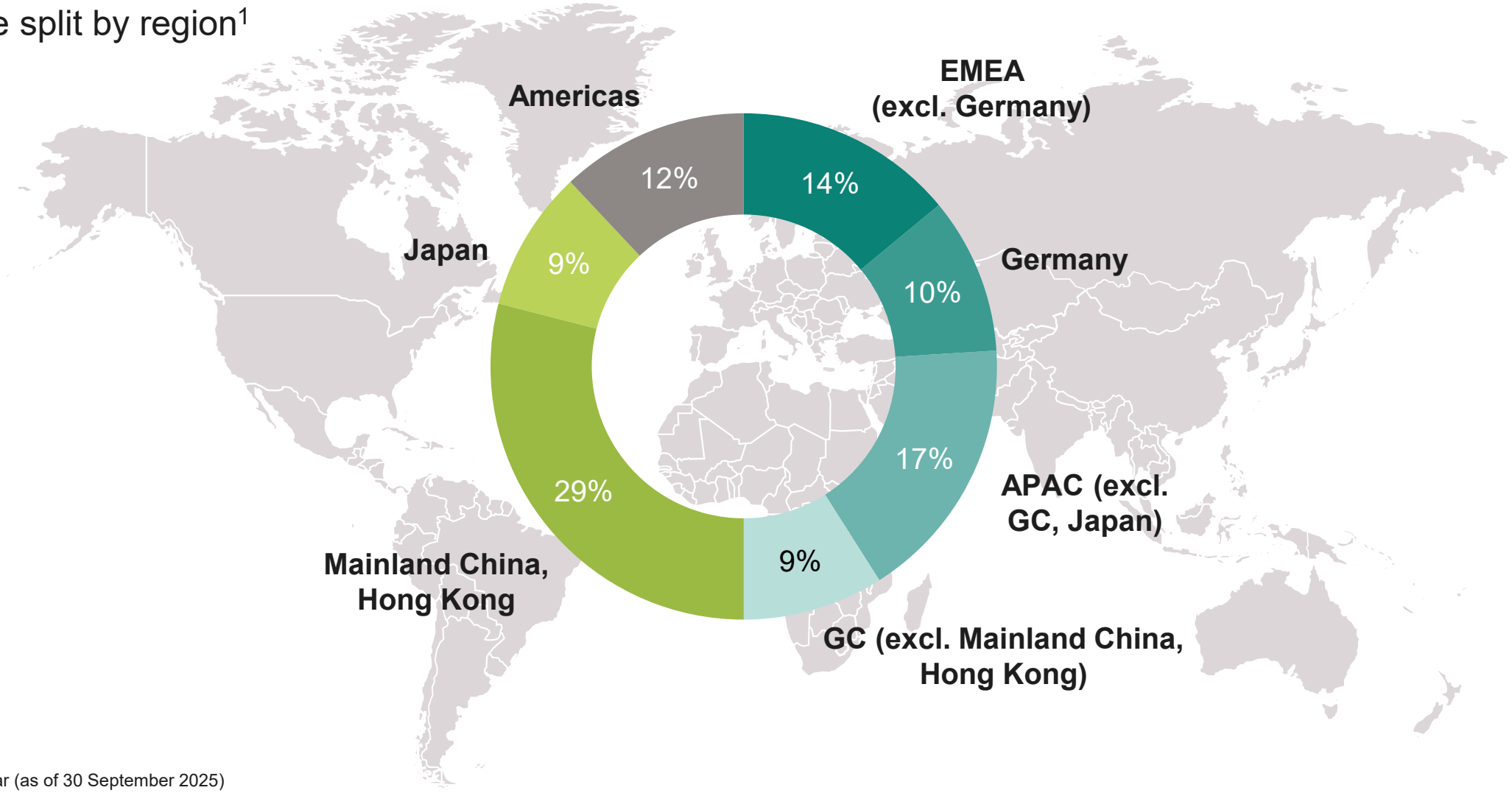
Kulim, Malaysia	Batam, Indonesia	Cegléd, Hungary	Dresden, Germany	Kulim, Malaysia	Dresden, Germany
					
Expansion of SiC and GaN capacity in a 3rd module benefitting from the economies of scale for 200mm manufacturing in Kulim **Announced in Feb. 2022**	Extension of Backend manufacturing capacities, doubling the production **Announced in Apr. 2022**	Expansion of assembly and testing capacity, opened with focus on high-power semiconductor modules for electro mobility vehicles & green energy **Opened Oct. 2022**	Largest investment in company history, expanding with a "Smart Power Fab" for analog/mixed signal technologies and power semis **Announced in Nov. 2022**	Building the world's largest 200-millimeter SiC Power Fab with a second construction phase for Module Three at the Kulim site **Announced in Aug. 2023**	Joint investment with TSMC, Bosch, and NXP to provide advanced semiconductor manufacturing services **Announced in Aug. 2023**
Frontend	Backend	Backend	Frontend	Frontend	Frontend
Revenue potential[1]	~€7 bn per year[2]	–	-	~€5 bn per year	~€7 bn per year[2]	–
Ready for production	2024	2024	February 2022	Fall 2026	Summer 2027	End of 2027

Note: 1) once fully equipped | 2) Total SiC revenue potential end of decade: Total revenue potential comprises Villach, Kulim 3 phase 1 and phase 2 incl. 200-millimeter conversion

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Infineon is operating in all major regions of the world

Revenue split by region[1]

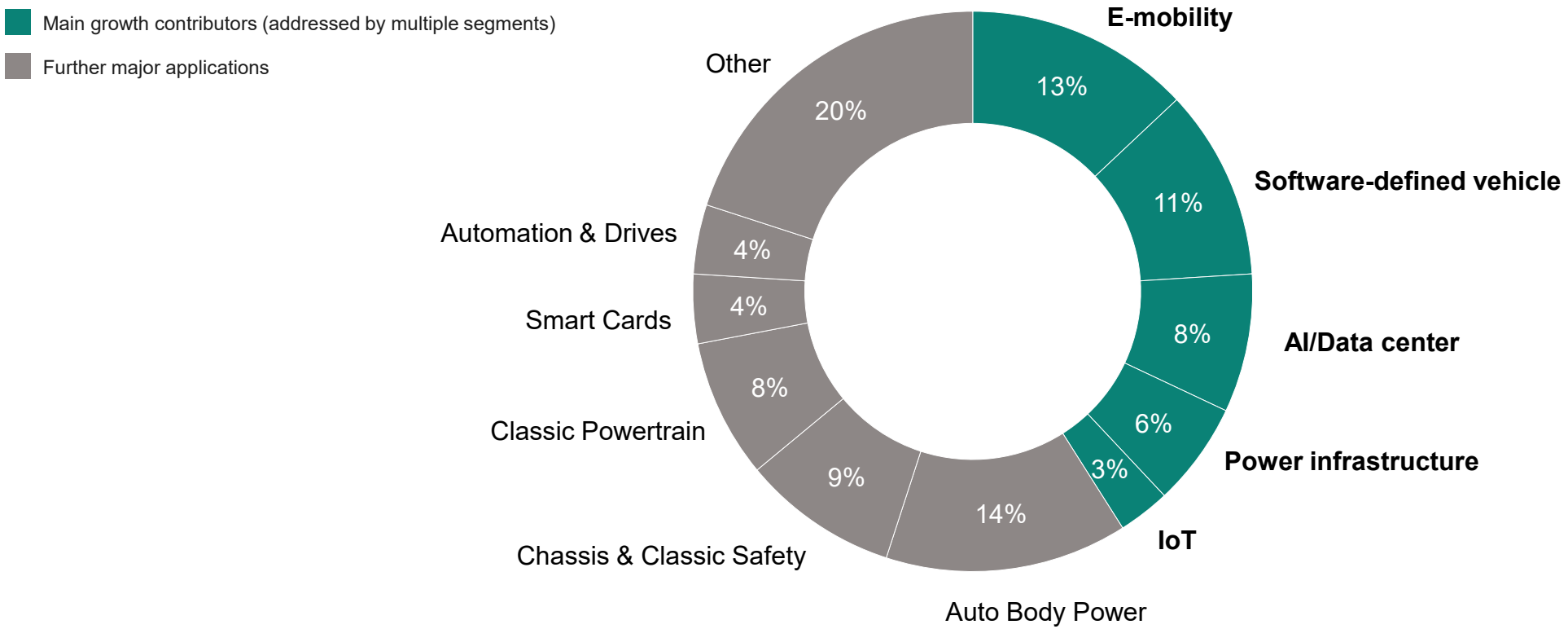


[1] 2025 Fiscal year (as of 30 September 2025)

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Well-balanced portfolio among key applications

Revenue split by key application[1]

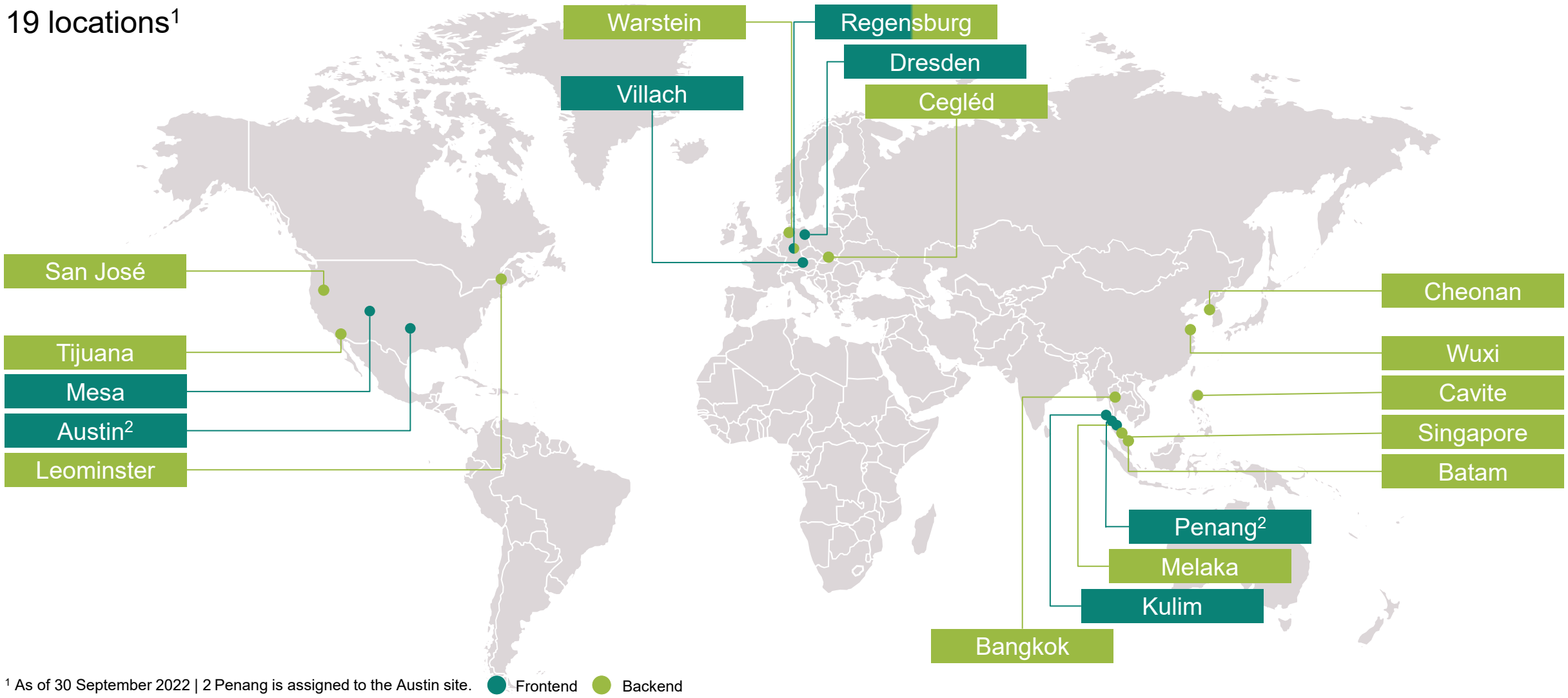


[1] 2025 Fiscal year (as of 30 September 2025)

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Infineon is globally positioned with its network of Frontend and Backend manufacturing facilities

19 locations[1]



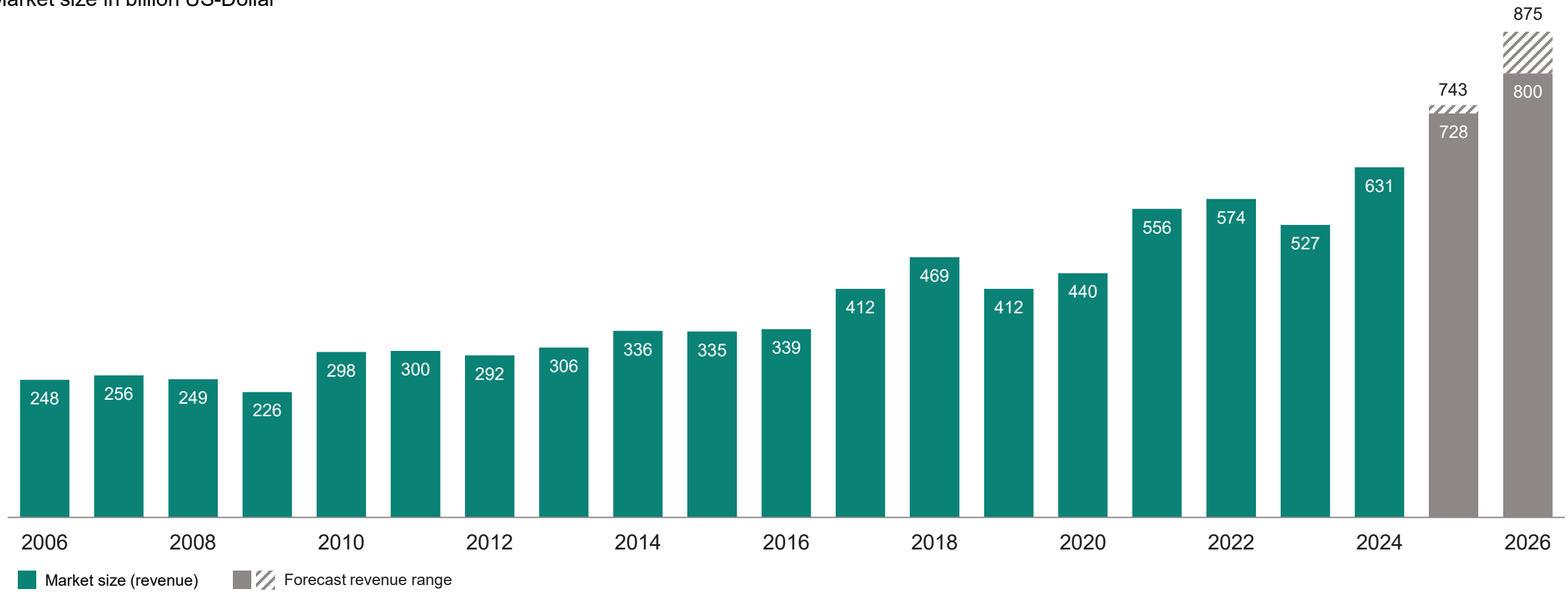
[1] As of 30 September 2022 | 2 Penang is assigned to the Austin site.

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Semiconductor market forecasts predict growth for 2025 & 2026

Global Semiconductor Market

Market size in billion US-Dollar



Source: WSTS for historical data.| **Forecast:** of WSTS, Omdia, Gartner, TechInsights; last update 4 November 2025.

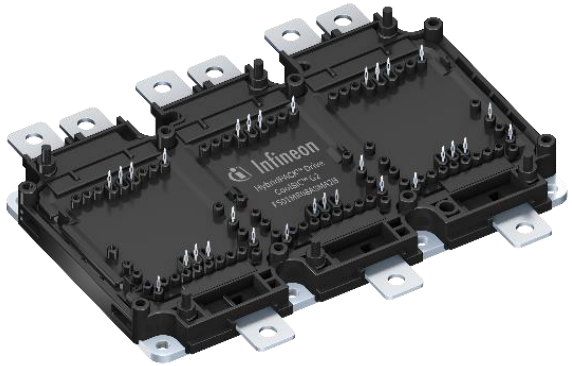
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Xiaomi SU7 Max: Infineon contributes > 60 different components, incl. 2x HybridPACK™ Drive G2 CoolSiC™ 1200V power modules

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
- **MOSFET**s, system basis chips, others







Courtesy of Xiaomi

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Automotive Division (ATV)

We shape the future of mobility
with microelectronics
enabling clean, safe, smart cars.



Semiconductors are essential to realize the automotive megatrends

Infineon enables clean, safe, smart cars



Green Mobility



Automated Driving



Connectivity

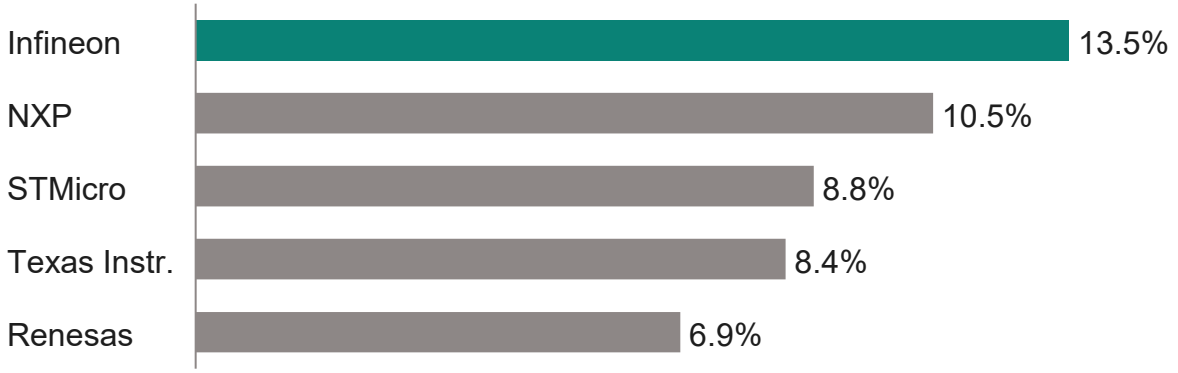


Advanced Security

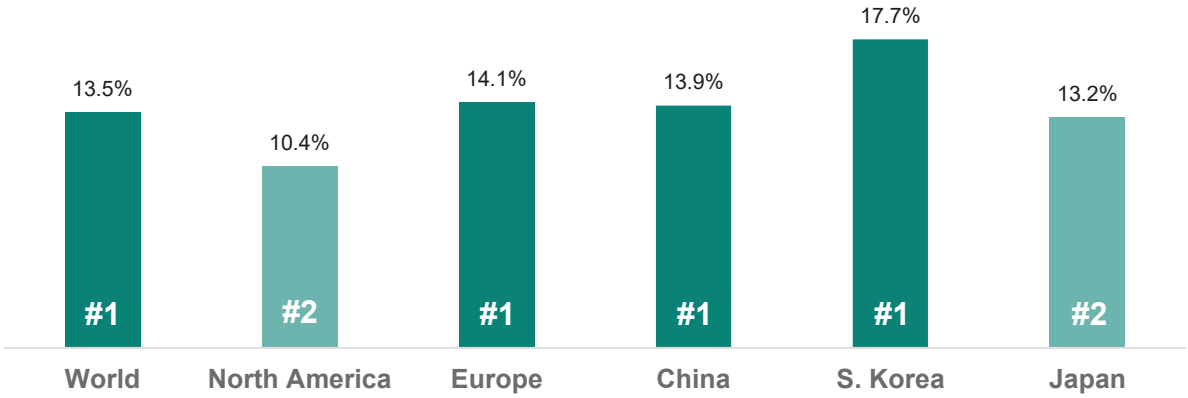
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Infineon's top market position is built on system competence based on an industry-leading product portfolio

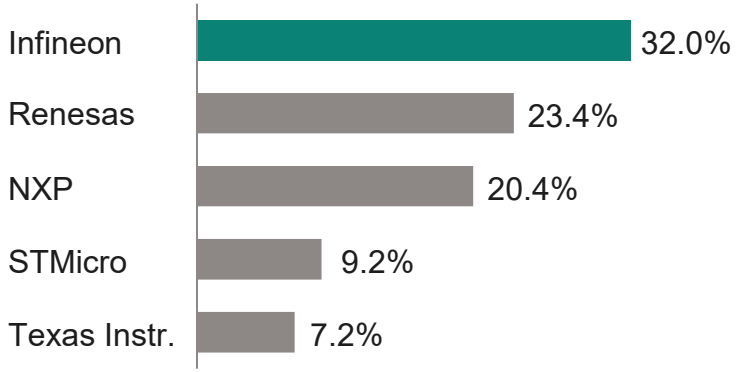
Automotive semiconductors (2024 total market: $68,382m; -1.2% y-y)



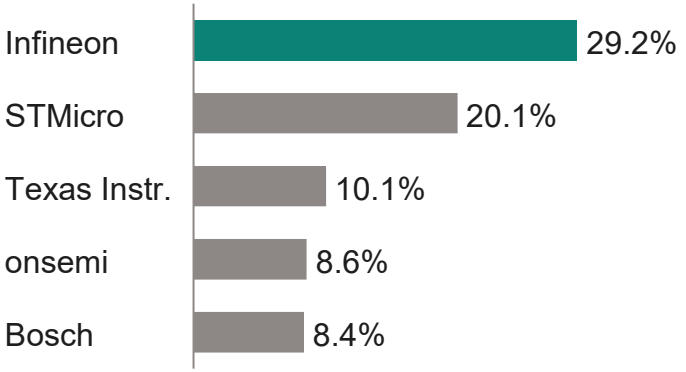
Infineon's 2024 market share and position by region



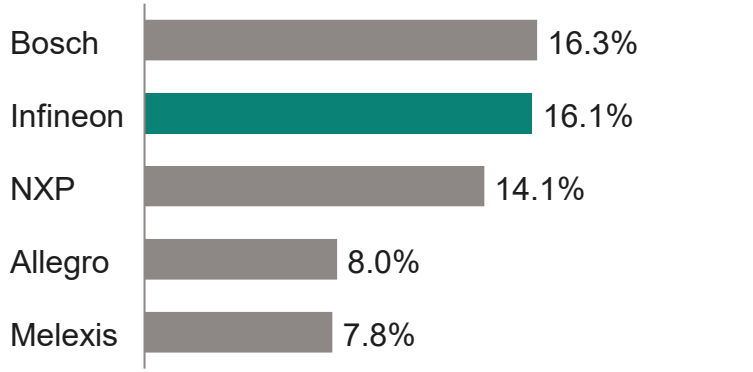
MCUs



Power semiconductors



Sensors

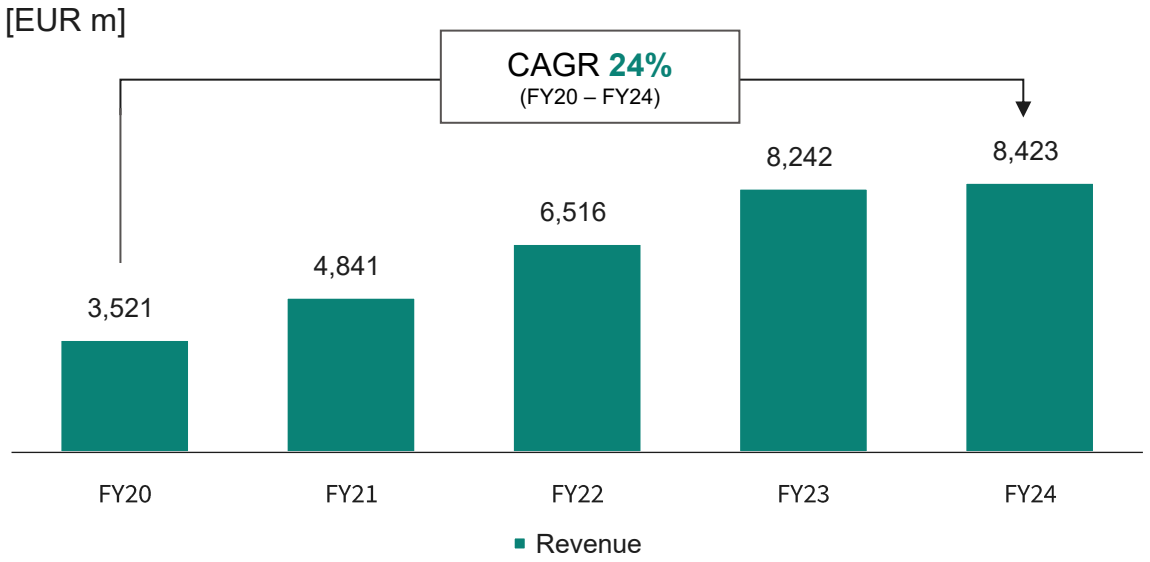


TechInsights: *Automotive Semiconductor Vendor Market Shares*. March 2025. Sensors: S&P Global: *Automotive Semiconductor Market Shares 2023*. May 2024.

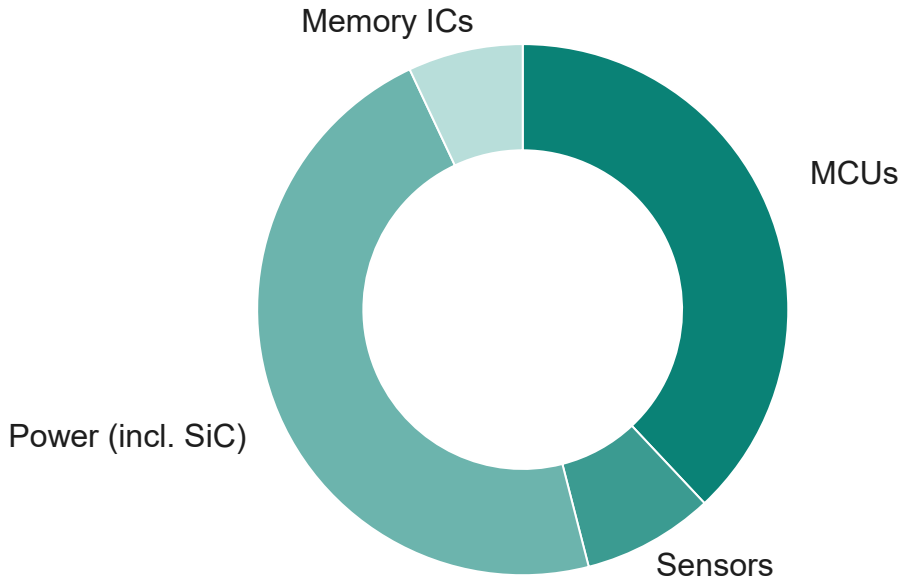
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ATV at a glance

ATV revenue and Segment Result Margin



FY24 revenue split by product group



Key customers

APTIV · Astemo · BorgWarner · BOSCH · BYD · Continental · DENSO · FORVIA
HYUNDAI MOTOR GROUP · KEBODA · Mando · MAGNA · SCHAEFFLER · Valeo · veoneer · ZF

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Comprehensive product offering of automotive semiconductors based on dedicated technologies

Software, Tools and Services

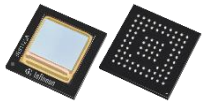
Secured

Sense

Radar (24 GHz, 60 GHz, 77 GHz)



3D Image/
ToF Camera REAL3™



Magnetic



Pressure



Current

Compute and Store



SEMPER™
NOR Flash

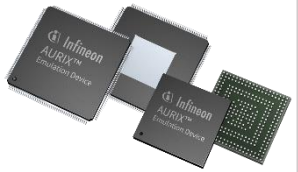
HYPERRAM™ 2.0



TRAVEO™ T2G



AURIX™

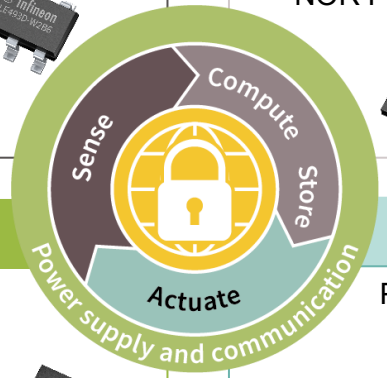




EXCELON™
F-RAM

PSoC™
Automotive

TriCore™



Connectivity ICs

Transceivers





System Basis
Chips





XENSIV™
MEMS microphone







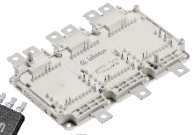
MERUS™
audio amplifier

Automotive Power ICs

Power Semiconductors, MOSFETs,
Intelligent Power Devices
PROFET™, SPOC™







Power
Supply ICs





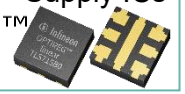


MOTIX™ Motor Control

LITIX™ LED



BMS IC



OPTIREG™



AURIX™
2nd generation



TRAVEO™ T2G



SLI37
SLS37 V2X



OPTIGA™ TPM

SEMPER™ Secure
NOR Flash



Sense
Compute
Store
Connect
Power
Secured
Software

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Introduction to Infineon OPTIREG™ Automotive Powersupply Solutions

Smart Power is THE broad liner in the market with 1300 active products addressing a multitude of fast-growing applications

SP – Smart Power

APS
ATV Power Supply Solutions



- **OPTIREG™**
  - OPTIREG™ SBC
  - OPTIREG™ PMIC
  - OPTIREG™ linear
  - OPTIREG™ switcher
- **Transceiver (LIN/ CAN)**

MCS
Motor Control Solutions



- **MOTIX™**
  - Bridge – integr.half bridges
  - Driver – MOSFET driver
  - SBC – Motor system ICs
  - MCU – Embedded Power ICs
  - Software & Tools
- **EiceDRIVER™ AMC**
  High Voltage Gate Driver - Automotive Motor Control

IPD
Intelligent Power Distribution



- **PROFET™**
  Intelligent High-Side Switch
- **SPOC™**
  Intelligent High-Side Switch w/ SPI
- **HITFET™**
  Intelligent Low-Side Switch
- **EiceDRIVER™ APD**
  Intelligent Gate Driver

LDS
LED & Drivetrain Solutions



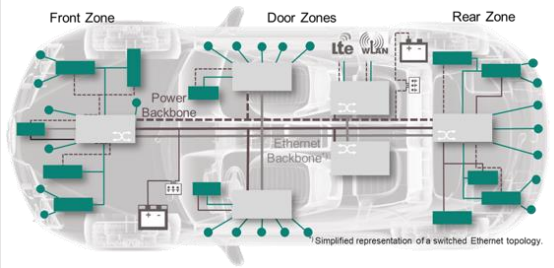
- **LITIX™:** Linear, Basic/Basic+, Power/ Power Flex
- **SPIDER, SPIDER+**
  Relais and LED driver w/SPI
- **Battery Management IC**
- **Conventional Drivetrain Solutions**
  (Alternator, Transmission, Engine Mgt 2/4wheeler, …)

Product Portfolio

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Major automotive market & architecture trends are addressed by Automotive Power Supply & In-Vehicle-Network Product Line

SDV & zonal endpoints



Central compute / zones and 10BASE-T1S enable secure, software-less & smart endpoints architectures

- **RCP-based products with high analog & digital integration, MACsec and direct 12V/48V power supply connection**

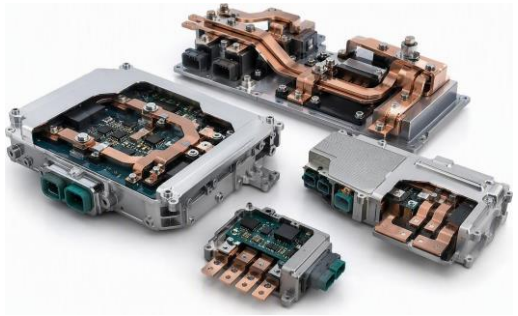
ADAS/AD & X-by-Wire



L2+/ADAS becomes mainstream and drives safety requirements for sensors, X-by-Wire and fail-operational-systems

- **ASIL D multi-rail PMICs**
- **LV PMIC**
- **ADAS endpoint PMICs**
- **SoC PMICs**

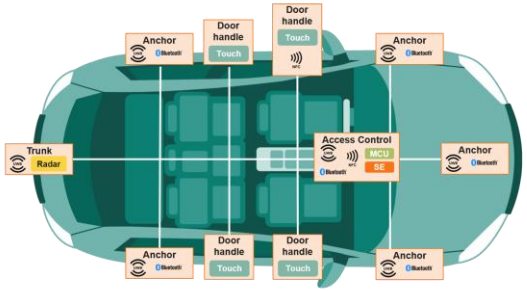
48V & GaN Power



12V is reaching its limits, accelerating the transition to 48V and GaN-based power systems for higher efficiency

- **48V pre-regulators**
- **Native 48V PMICs**
- **48V GaN based switchers**

Digital Key & UWB



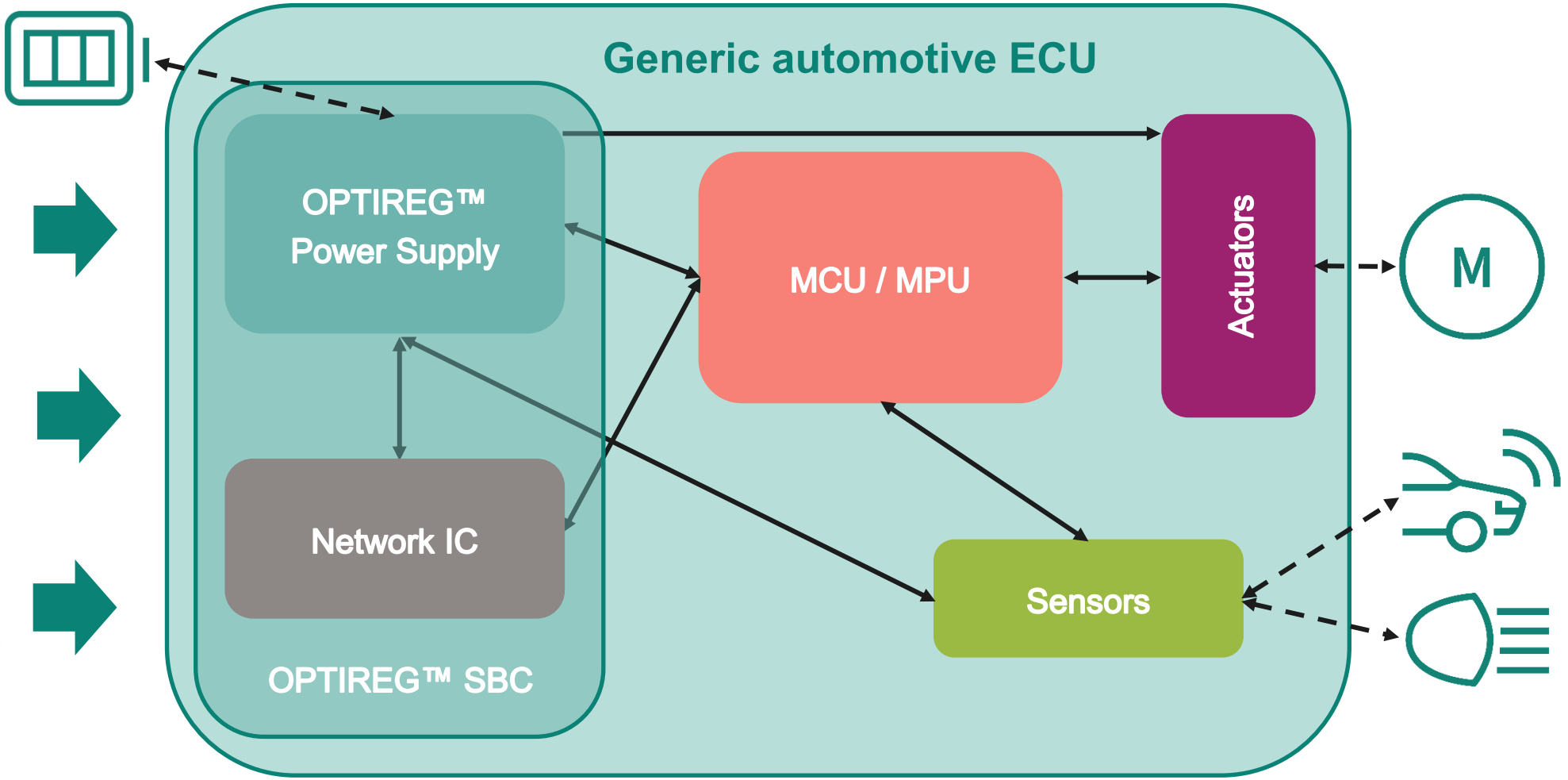
Digital Key and UWB are enabling secure, convenient, smart-phone-based vehicle access with precise user localization

- **Dedicated Car Access SBC**
- **ASIL B SBC**
- **CAN SIC Transceiver**

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OPTIREG™ automotive power supply ICs are the right fit for supplying any automotive ECU

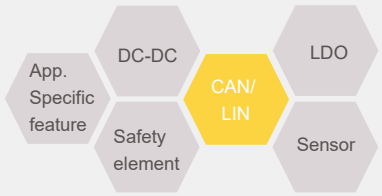
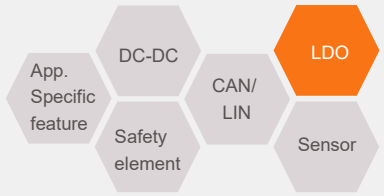
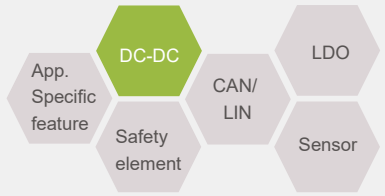
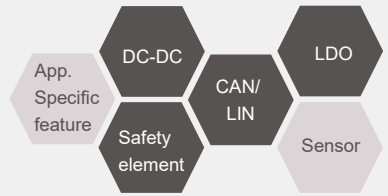
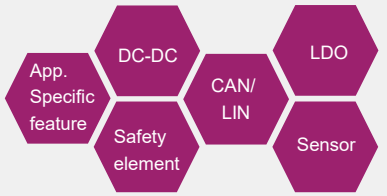




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We offer you a one-stop-shop portfolio for automotive & robotics power supply and communication solutions (incl. RCP)

One-stop-shop portfolio for automotive & robotics power supply and communication

Transceivers	Linear Voltage Regulators	DC-DC Converters	System Basis Chips	Power Management ICs
Automotive Transceivers	OPTIREG™ linear	OPTIREG™ switcher	OPTIREG™ SBC	OPTIREG™ PMIC:
				

Powering Microcontrollers, Radar MMICs, Ethernet and UWB/BLE solutions

Microcontroller AURIX™ TRAVEO™ PSOC™ and competition MCUs

BRIGHTLANE™ Ethernet solutions

XENSIV™ CTRX

AIROC™ BLE / UWB solutions

Target applications



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Infineon OPTIREG™ Automotive Power-supply Solutions
Your partner for success



We are your #1 partner in automotive power supply solutions!

> 1,000,000,000 (Billion) parts to date OPTIREG™ SBC & PMIC sold in Automotive Quality!

Dedication to Safety applications

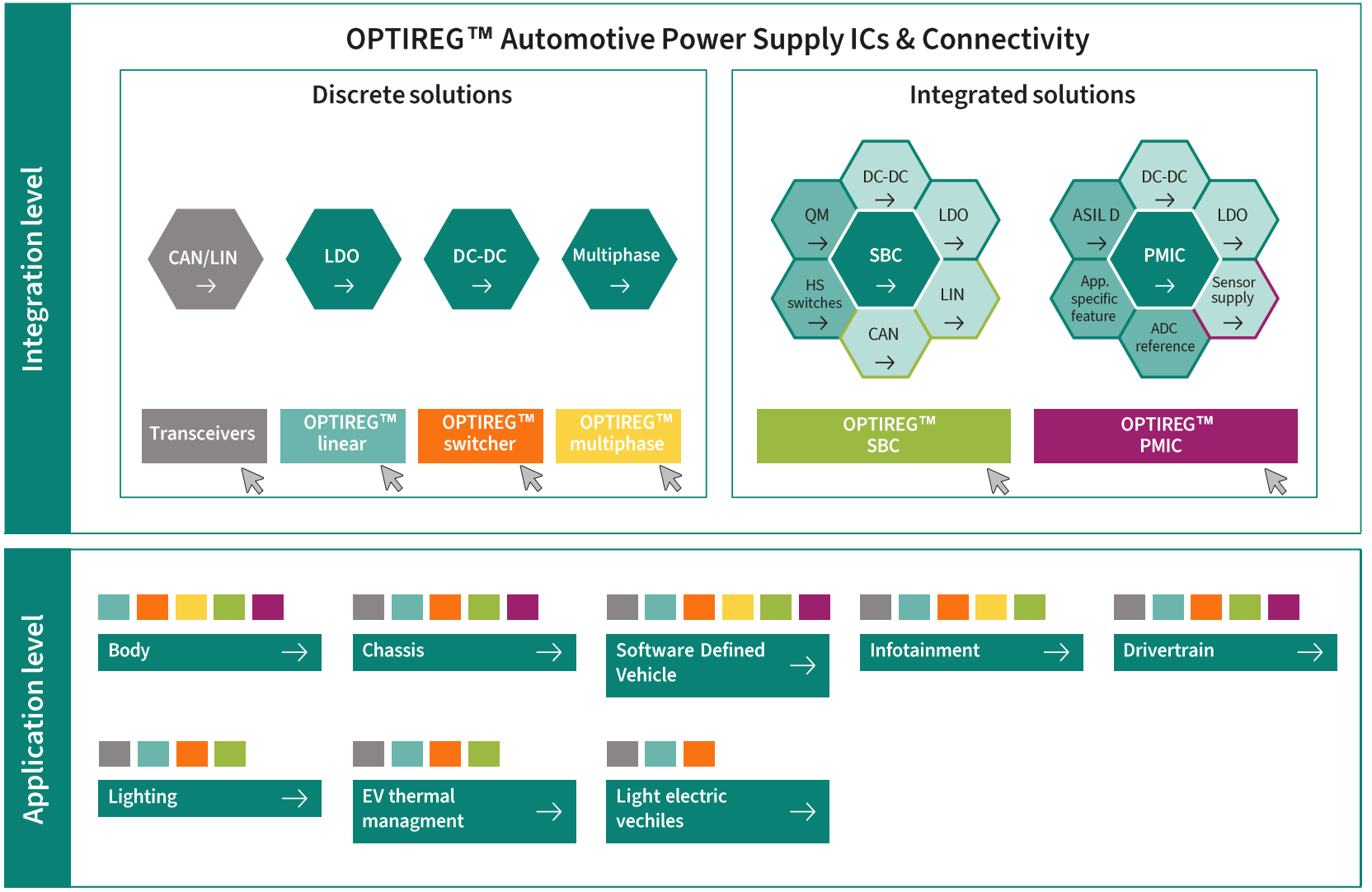
Strongly committed to long term business with strong invest in R&D

Manufacturing roadmap to meet automotive market requirements wrt. quality, cost, secure supply and long-term availability

Long-term partnerships with major customers, suppliers and partners worldwide

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OPTIREG™ Automotive Power Supply ICs



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OPTIREG™ Integrated Solutions

OPTIREG™ SBC

≤ 0,75W
AURIX™ TC2 / TC3
TRAVEO™ I / II
PSOC™ 4

1x CAN FD

TLE9461ES
TLE9461-3ES

≤ 1,25W
AURIX™ TC2 / TC3
TRAVEO™ I / II
PSOC™ 4

1x CAN FD

w/o LIN	1x-2x LIN
TLE9261BQX TLE9261-3BQX	TLE9262BQX TLE9262-3BQX TLE9263BQX TLE9263-3BQX

≤ 2,5W
AURIX™ TC26
TRAVEO™ I / II (Body & Cluster)

1x CAN FD

w/o LIN	1x-2x LIN
TLE9471ES TLE9471-3ES	TLE9271QX TLE9272QX TLE9273QX TLE9274QX

4x CAN FD

TLE9278BQX
TLE9278-3BQX

OPTIREG™ PMIC

<3W
AURIX™ TC2x , TC3x

Gen. Purpose

ASIL B-D

TLF35584/5
ASIL D

TLE7368
ASIL B

>3W
AURIX™ TC4x

Gen. Purpose

ASIL D

TLF4D985

App Specific

ASIL B-D

TLF30682
Radar
ASIL B

TLE9243QK
Transmission
ASIL D

TLE9744
Inverter
ASIL D

≤ 3 power supply rails

QM

Communication (CAN/LIN)

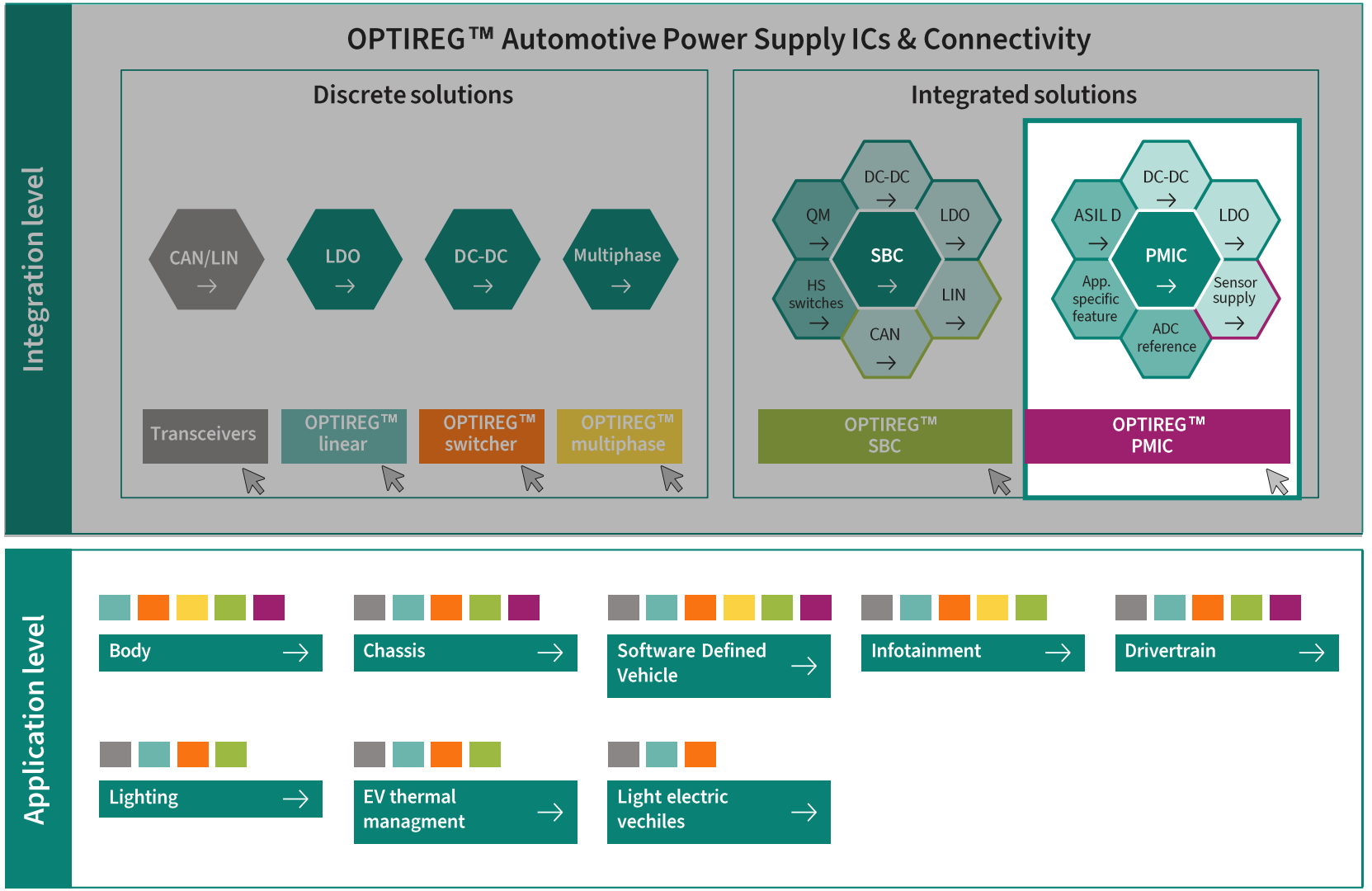
≥ 3 power supply rails

ISO26262 ASIL B to D

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OPTIREG™ PMIC

OPTIREG™ PMIC



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AURIX™ & TRAVEO ™ microcontroller & OPTIREG™ teaming up for functional safety in automotive applications



Safety/ ADAS

PMIC SBC

Sensor fusion · Radar · Camera · Lidar

Conventional Powertrain

PMIC

Engine management · Double clutch transmission · Transfer case · Belt starter generator

Electric drive train

PMIC

48 V · BMS · Traction inverter · On-board charger

Body

PMIC SBC

Body control module · Telematics gateway

Chassis

PMIC

Electric power steering · ESP · Suspension · Brake booster · Electric parking brake

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OPTIREG™ PMIC :
The #1 power supply solution for AURIX™ microcontroller family

OPTIREG™ PMIC : THE AURIX™ supply

- **#1 Functional Safety supply** for **AURIX™**
- **>300 projects** secured at all major OEMs and **>30 different applications** in safe compute and control e.g., Zones xEV, Chassis, Safety, ADAS, Body)
- High scalability over the entire AURIX™ portfolio with **high hardware & software re-use**
- Product-to-System **full interoperability** between OPTIREG™ PMIC & AURIX™

AURIX™ TC2x/3x PMICs **TLF35584 & TLF35585**

In Production

- **Scalable** general purpose PMIC for **AURIX™ TC2x/3x**
- **ISO26262 compliant**, supporting ASIL-D classified systems
- Extended performance by using TLF11251, improving supply efficiency by up to 25%

Transmission PMIC **TLE9243QK**

In Production

- Safety Switch Control
- Reverse Polarity Protection
- Wheel Speed Sensor Interface

Inverter PMIC **TLE9744QK**

In Production

- Inverter-dedicated power supply solution with an integrated safety logic (ISL).
- Significant savings in PCB space and BOM cost

AURIX™ TC4x PMICs **TLF4xx85**

In Production

- **Scalable** general purpose PMIC family for **AURIX™ TC4x**
- **ISO26262 compliant**, supporting ASIL-D classified systems
- Dedicated features for compute & control segments
- Extended power range 11-55W with integrated buck core supply
- Integrated cutoff switches



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OPTIREG™ PMIC Portfolio Overview

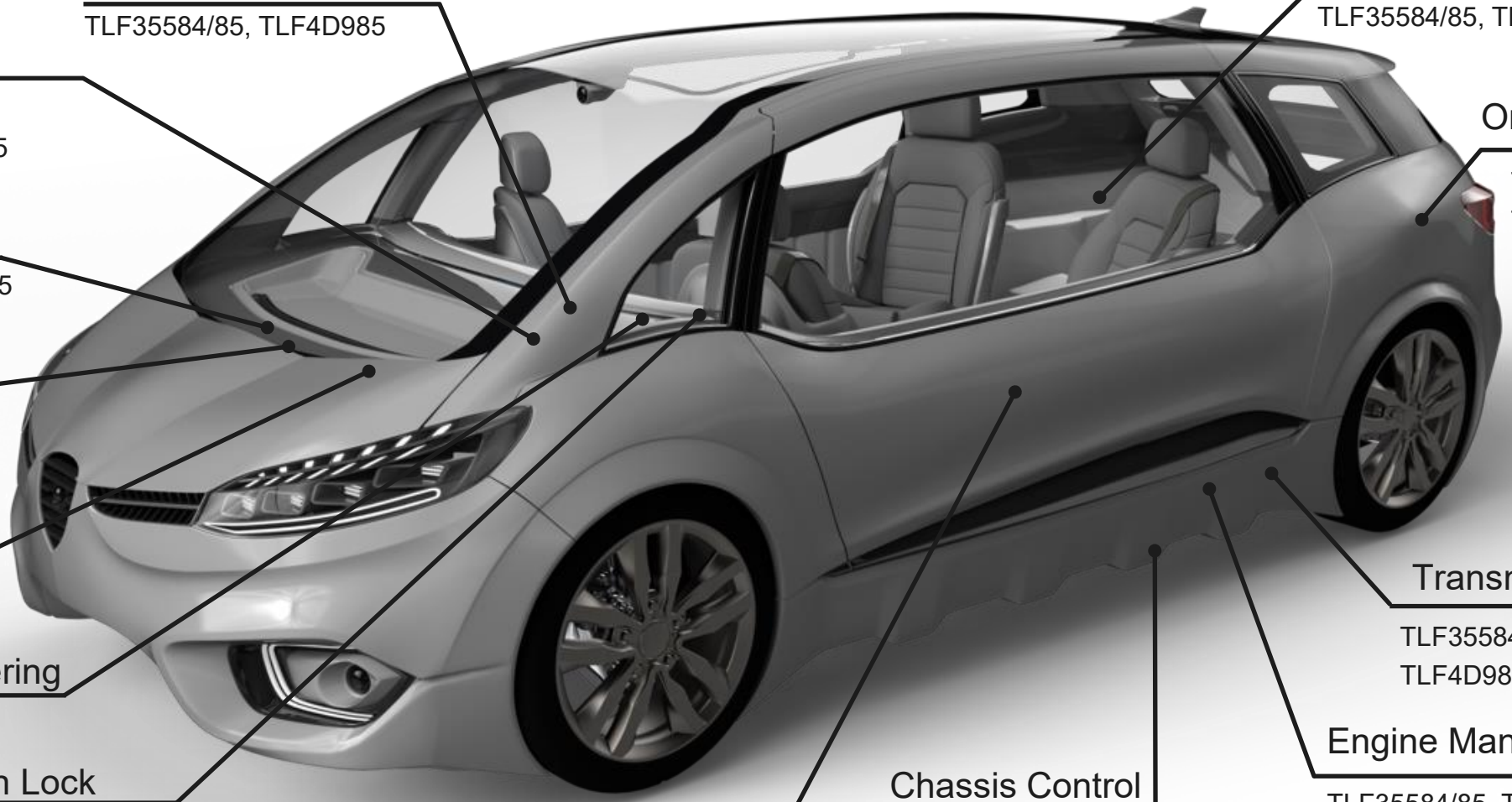


General Purpose PMICs	Application Specific PMIC	SOP
	TLF30682QV	2019
ISO26262 TLF35584QVVSx / ISO26262 TLF35584QKVSx	ISO26262 TLE9243QK	2020
ISO26262 TLF35584QVHSx		2021
ISO26262 TLF35585QVSx / ISO26262 TLF35585QUSx		2024
ISO26262 New! TLF4D985QV/QK	ISO26262 TLE9744QK	2026
ISO26262 TLF4A985QV/QU		2027

In Production

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OPTIREG™ PMIC application examples



Electric Parking Brake
TLF35584/85, TLF4D985

Sensor Fusion
TLF35584/85,
TLF30682, TLF4D985

Chassis Domain
TLF35584/85, TLF4D985

Traction Inverter
TLF35584/85,
TLF4D985,
TLE9744QK

Transfer Case
TLF35584/85, TLF4D985

Electric Power Steering
TLF35584/85, TLF4D985

Steering Column Lock
TLF35584/85, TLF4D985

ADAS Domain Control
TLF35584/85, TLF4D985

Chassis Control
TLF35584/85, TLF4D985

Engine Management
TLF35584/85, TLF4D985

Transmission
TLF35584/85, TLE9243,
TLF4D985

On-board Charger
TLF35584/85,
TLF4D985

Battery Management
TLF35584/85, TLF4D985

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OPTIREG™ PMIC TLF35585QUS0x/QVS0x

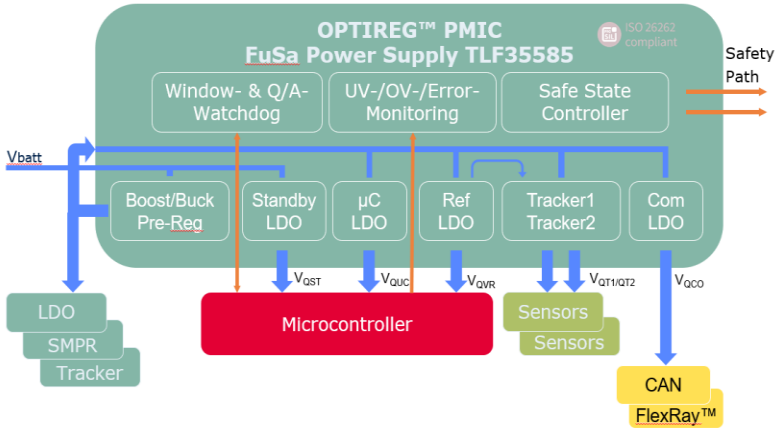
Main Features

- Adjustable switching speed of the step-down regulator.
- **Grade 0 and ASIL-D** enabled by default.
- **Functional Safety**: ISO 26262 compliance (safety goal target ASIL-D).
- Increased buck converter current capability.
- **Lower Quiescent current** in STANDBY with Standby-LDO active.
- Microcontroller Programming Support (MPS) control via **SPI.**

Key Benefits

- Flexibility in the **optimization of efficiency and EMC** performance.
- Address applications requiring **tj >150°C**, extended lifetime and highest degree of **FuSa.**
- Support **high end AURIX™ 2G (TC38/39)** covering more applications.
- Support tighter stand-by currents.
- Easier debugging.

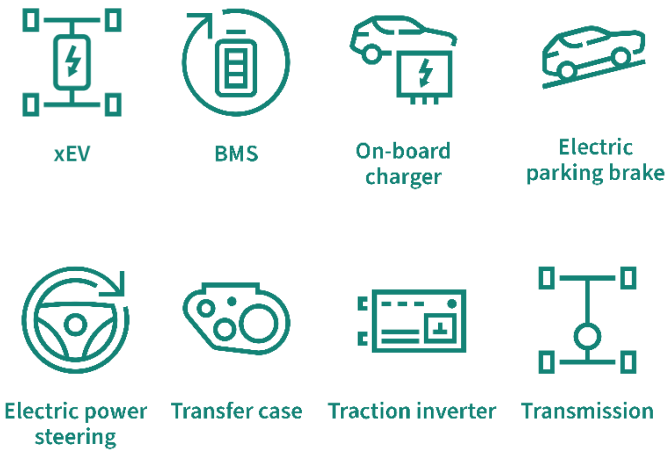
Block Diagram



New



Applications



Timeline

Part is available.

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OPTIREG™ PMIC TLF4D985QV/QK

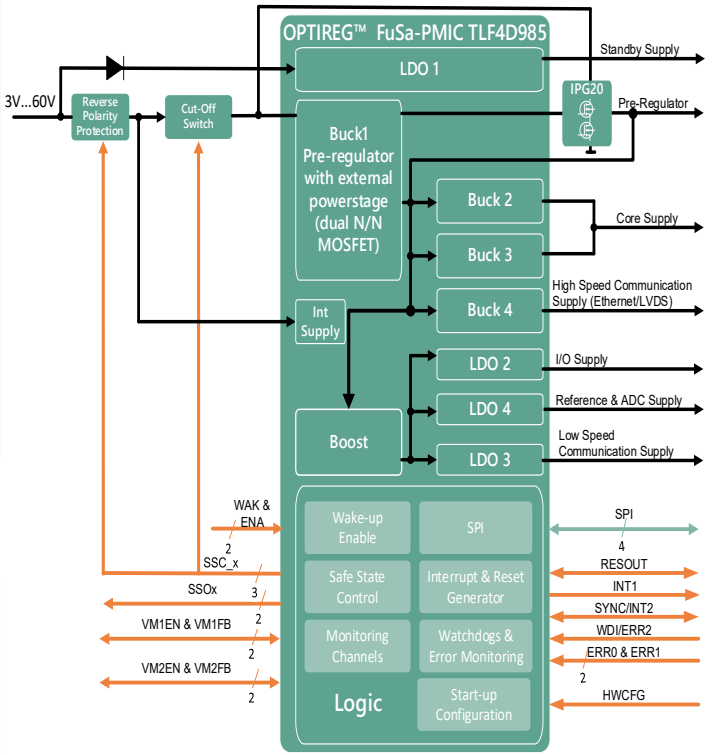
Main Features

- Optimized supply solution for AURIX™ TC4Dx/49x/4Zx.
- **Grade 0 and ASIL-D** enabled by default.
- **Functional Safety**: ISO 26262 compliance (safety goal target ASIL-D).
- Increased buck converter current capability.
- **Lower Quiescent current** in STANDBY with Standby-LDO active.
- Microcontroller Programming Support (MPS) control via **SPI.**

Key Benefits

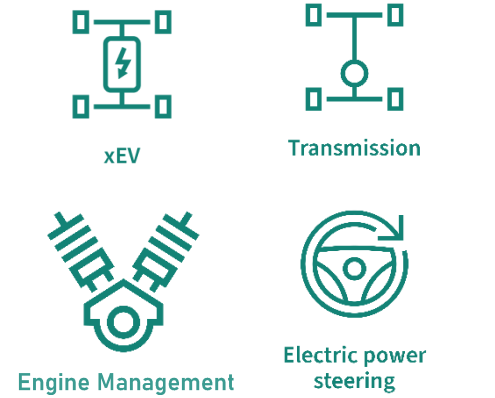
- Support **high-end AURIX™ TC4Dx/49x/4Zx** covering more applications
- Address applications requiring **Tj >150°C**, extended lifetime and highest degree of **FuSa.**
- Flexibility in the **optimization of efficiency and EMC** performance.
- Support tighter stand-by currents.
- Easier debugging.

Block Diagram





Applications



Timeline

Part is available.

New!

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OPTIREG™ PMIC TLE9744QK (XEV PMIC)

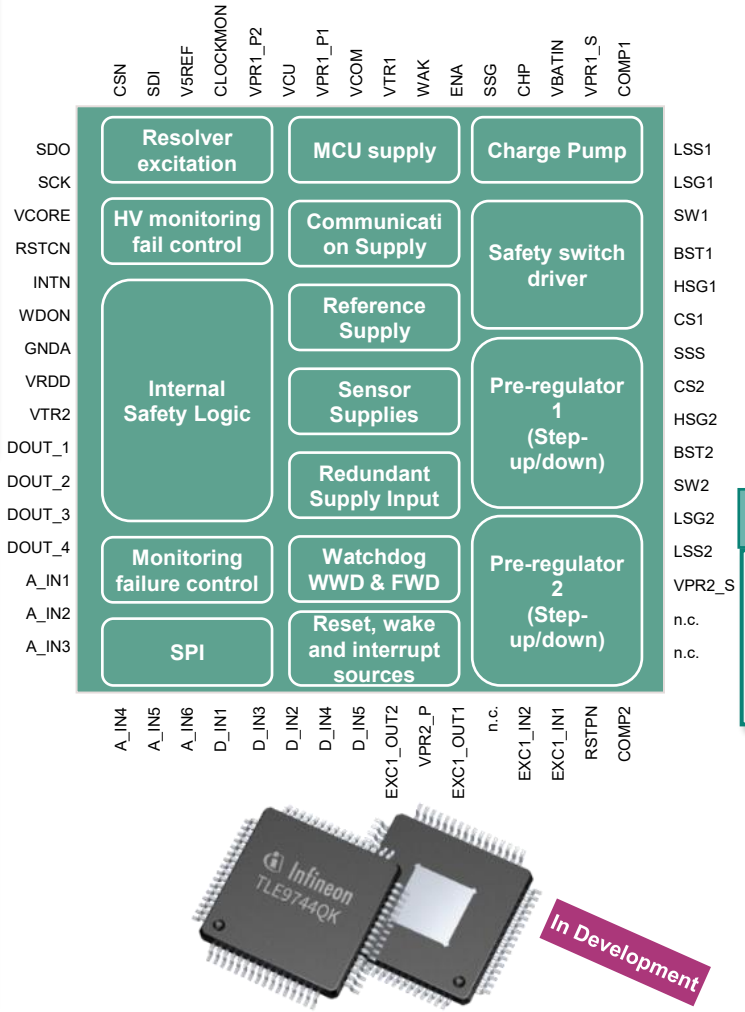
Main Features

- Optimized solution for traction inverter application
- **ASIL-D** enabled by default.
- **Functional Safety**: ISO 26262 compliance (safety goal target ASIL-D).
- **Integrated Resolver Excitation** Circuit and monitoring.
- **Pre-regulator 1** (for internal and external post regulators) and **Pre-regulator 2** (for resolver excitation circuit and gate driver).
- Microcontroller Programming Support (MPS) control via **SPI.**
- **Watchdog (WWD** and **FWD).**

Key Benefits

- Prevent destructive over-voltage propagation to low-voltage domains (e.g. MCU, Transceivers, Sensors)
- Achieve low system level failure rates
- Address applications requiring **Tj >150°C**, extended lifetime and highest degree of **FuSa.**
- Scalability of supply current and flexibility between buck and buck-boost topologies is a key value of the DCDC pre-regulators in OPTIREG™ XEV PMIC.
- Enhanced safety and system monitoring.

Block Diagram



In Development

Application



Traction inverter

Timeline

Part is available

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OPTIREG™ PMIC – Summary

- **#1** Functional Safety **supply for AURIX™**
- **>230Mpcs** already shipped worldwide
- **>300 projects** secured at all major OEMs
- **>30 different applications**

  (xEV, Chassis, Safety, ADAS, Body)
- **High scalability** over the entire **AURIX™**

  portfolio
- Product-to-System : **full interoperability**

  between OPTIREG™ PMIC & AURIX™
- Functional Safety: **ISO 26262 compliance**

  (safety goal target ASIL-D).
- AEC-Q100 - **Grade 0** (Tj > 150°C)

	General Purpose PMIC	Application Specific PMIC
In Production	TLF35584	TLF30682QV
In Production	TLF35585	TLE9243QK
In Production		TLE9744QK
In Production	TLF4D985	

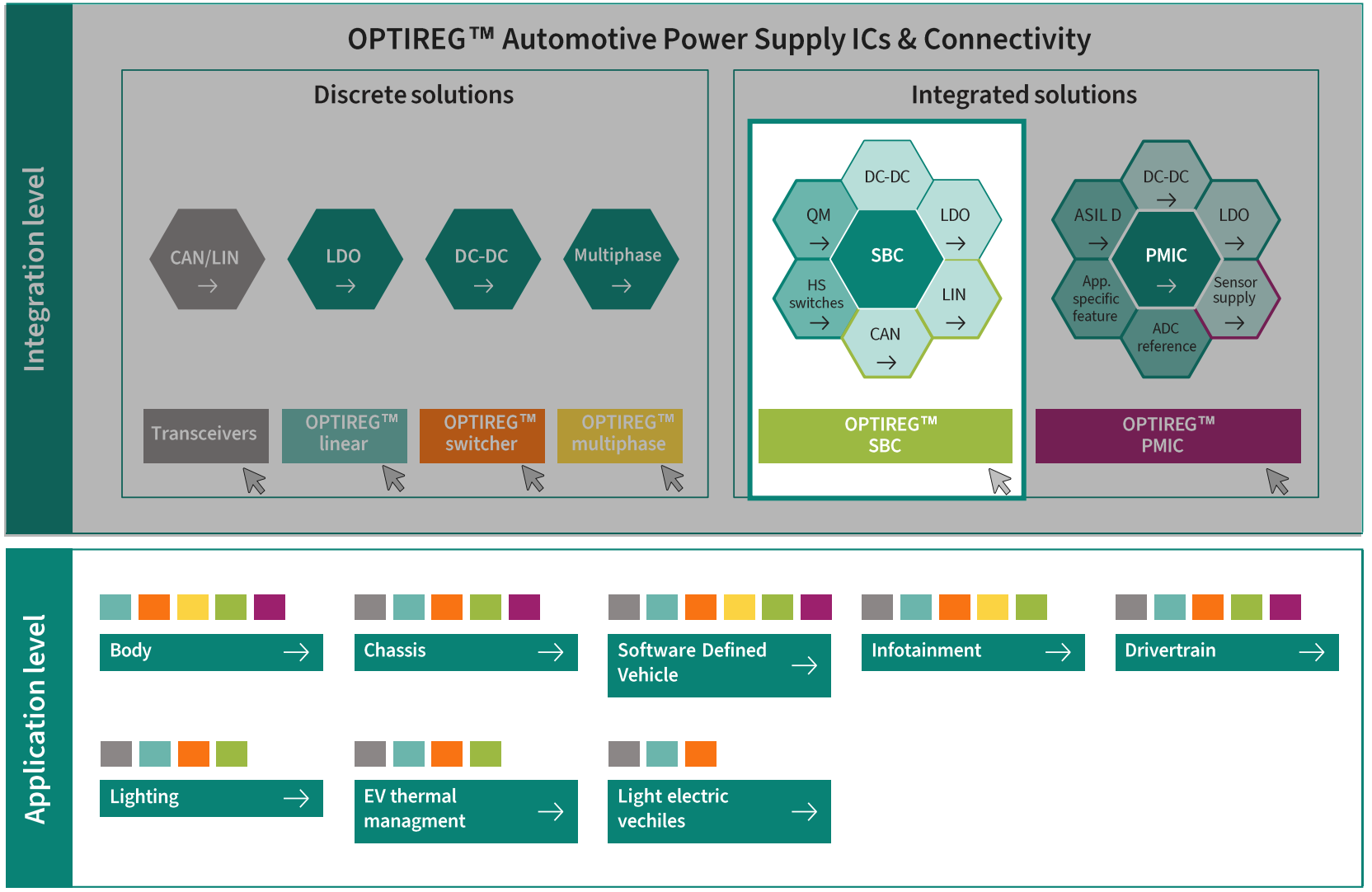
Customer Advantages

- Optimized Bill of Material
- Smaller PCB size
- Centralized power management
- Hardware reuse
- System protection against critical voltage surges and misbehavior
- Extended Lifetime in harsh environment
- Long term availability and Business Continuity Plan

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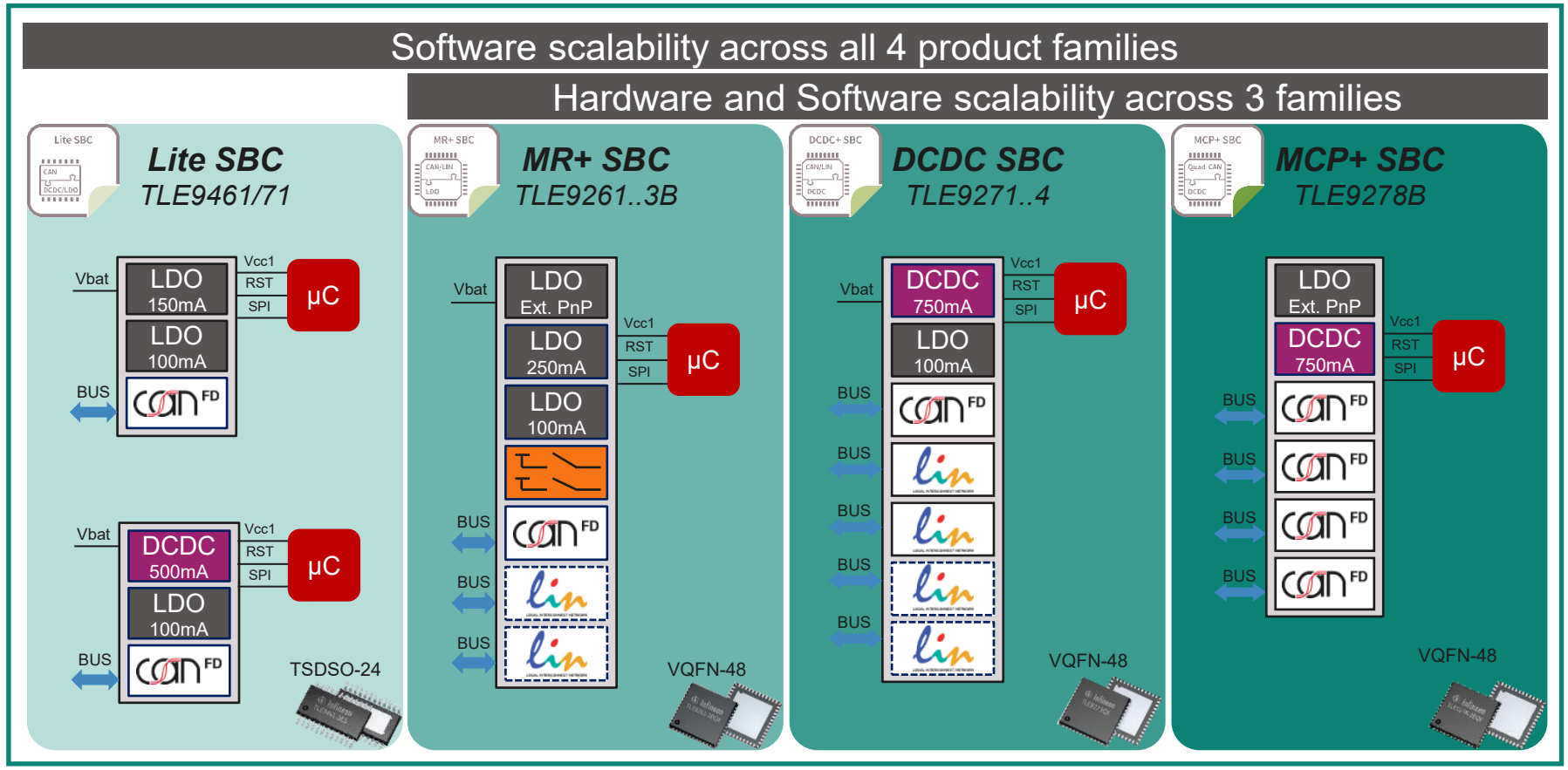
OPTIREG™ SBC

OPTIREG™ SBC



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Infineon OPTIREG™ SBCs offer most complete portfolio and key differentiated USPs



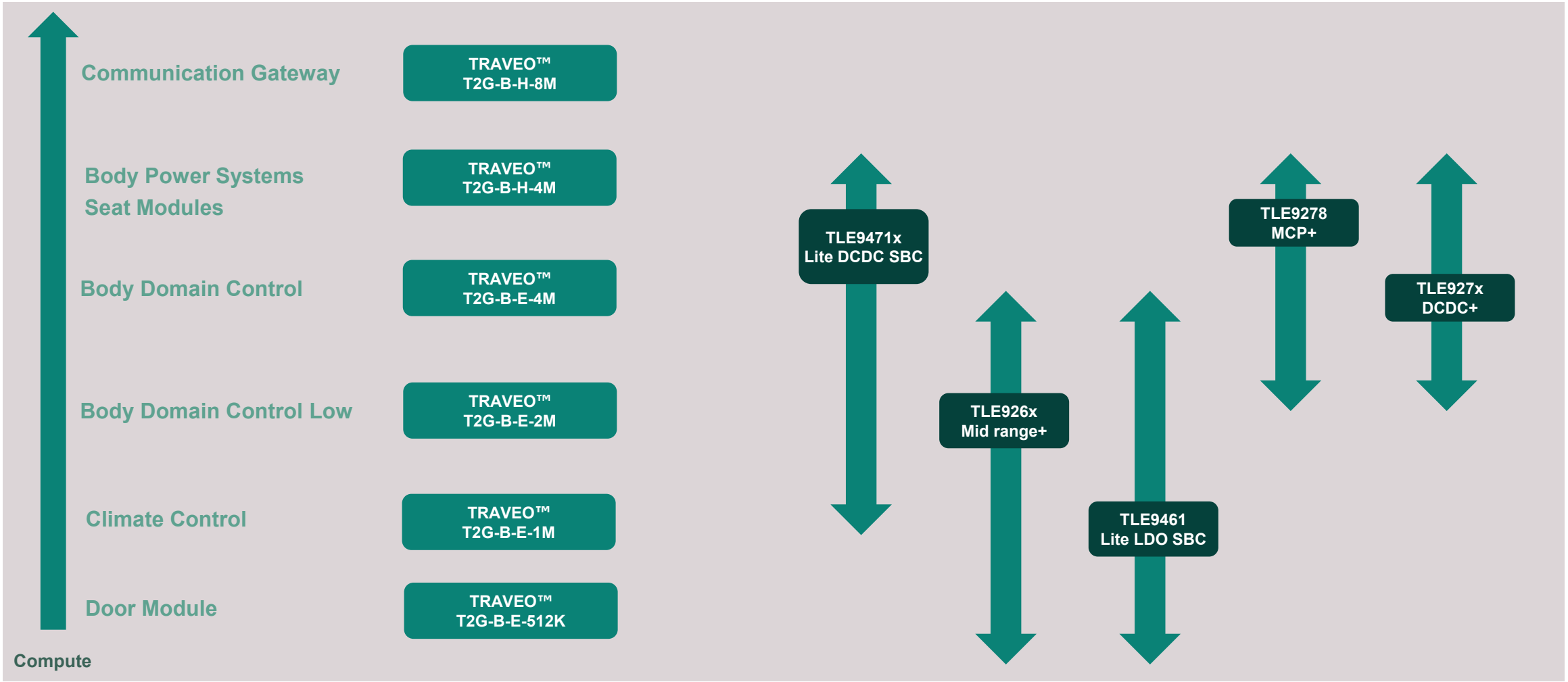
Unparalleled scalability across Product Families for fast time-to-market

Supports **latest networking standards** CAN FD up to 5Mbps (soon: CAN FD SIC) & CAN PN

Component releases at all major OEMs

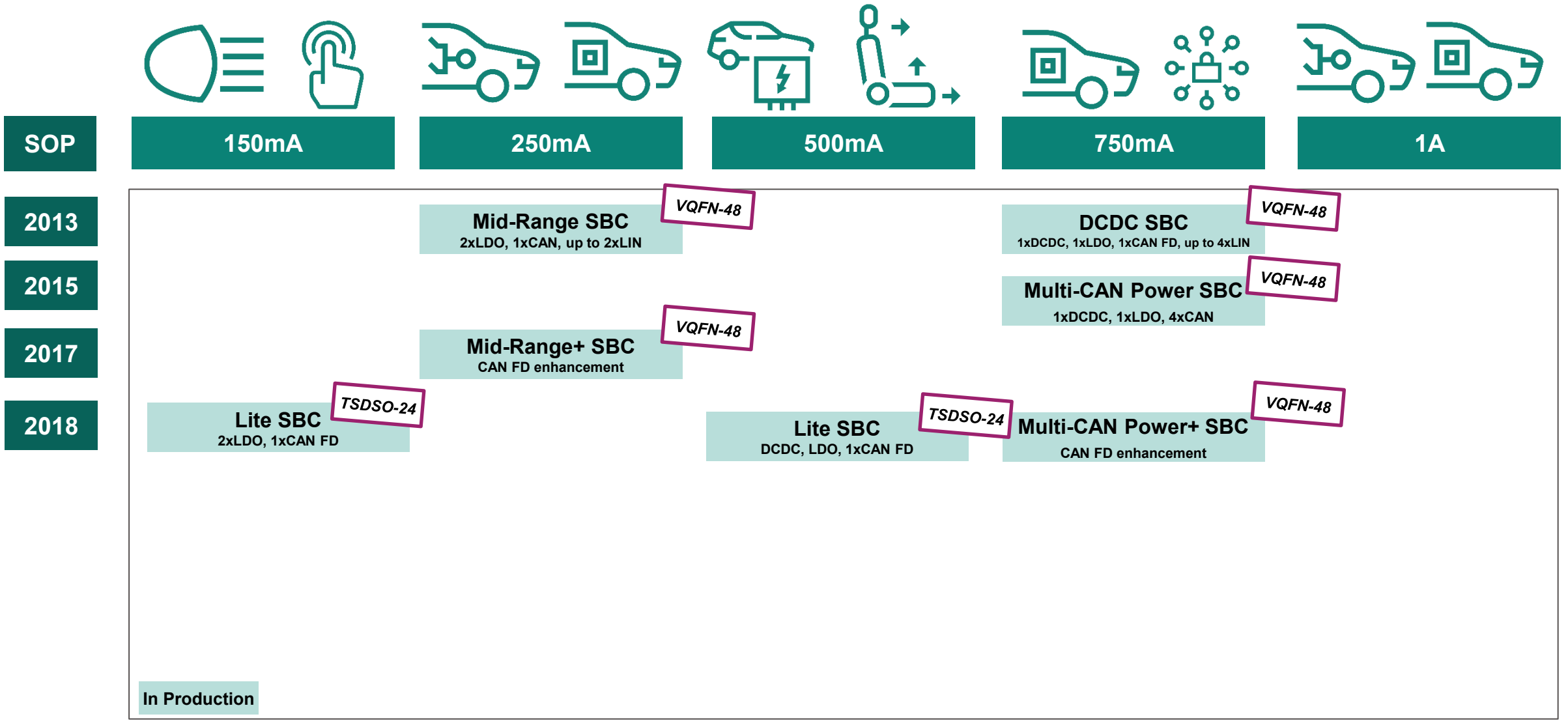
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Fully scalable & flexible OPTIREG™ SBC solution for TRAVEO™ T2Gx family



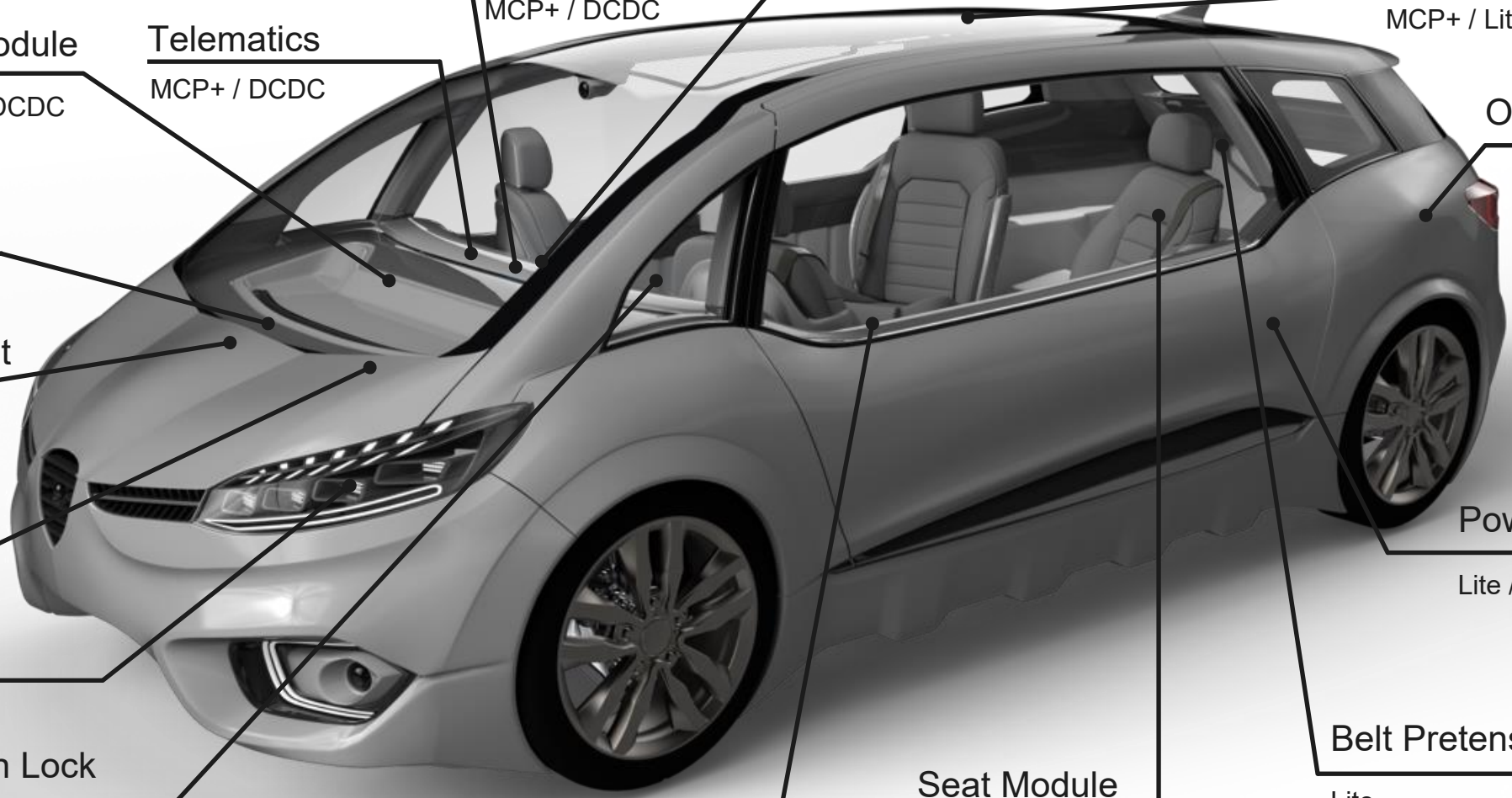
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OPTIREG™ System Basis Chip (SBC) portfolio overview



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OPTIREG™ SBC application examples



Gateway
MCP+ / DCDC

Gear Shifter
MCP+ / Lite

Sunroof Module
MCP+ / Lite

Body Control Module
Lite / MR+ / MCP+ / DCDC

Telematics
MCP+ / DCDC

On-board Charger
Lite / MR+

Chassis Domain
MCP+

HVAC Unit
Lite / MR+

Power Door
Lite / MR+

Transfer Case
Lite / MR+

Light Control Unit
Lite / MR+

Belt Pretensionioner
Lite

Steering Column Lock
Lite / MR+

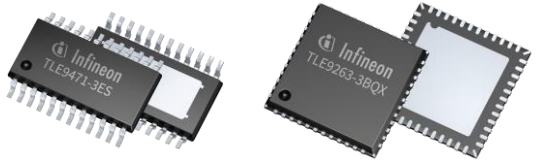
Seat Module
MR+

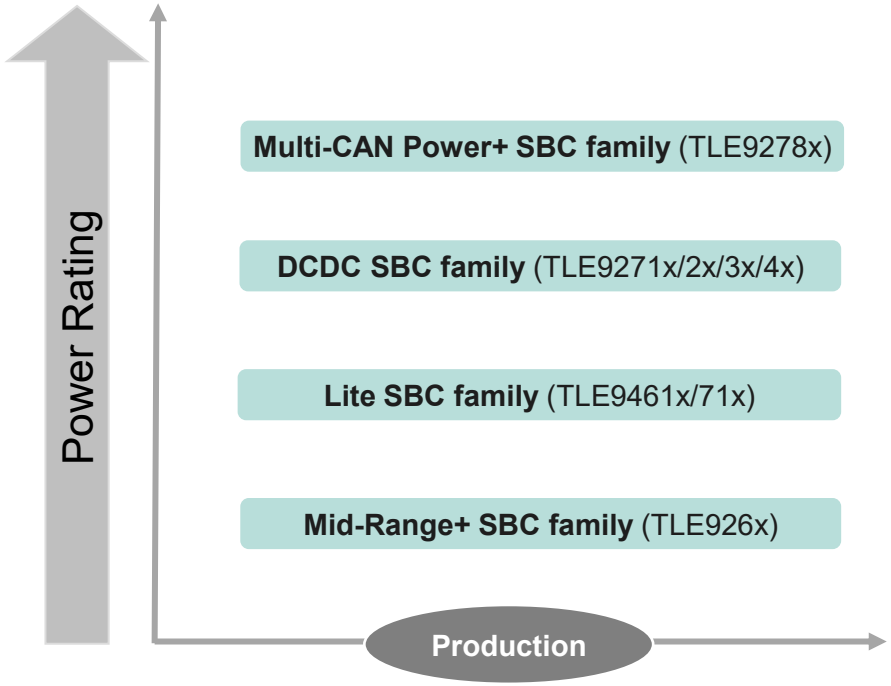
Wireless In-cabin Charger
Lite

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OPTIREG™ System Basis Chip – Summary

- **OPTIREG™ SBC** shipped **>800 M units**
- Components **released** @ all major **OEMs**
- SBC **portfolio > 30 product variants**
- High level of **compatibility** and **re-usability**
- **Power Efficiency** over **entire load range**
- **CAN FD** transceiver w/ **Signal Improvement Capability (SIC)** up to **8 Mbit/s**
- **Functional Safety** ISO 26262:2018 up to **ASIL B**
- **AEC-Q100 Grade 1** (Ta ≤ 125 °C)





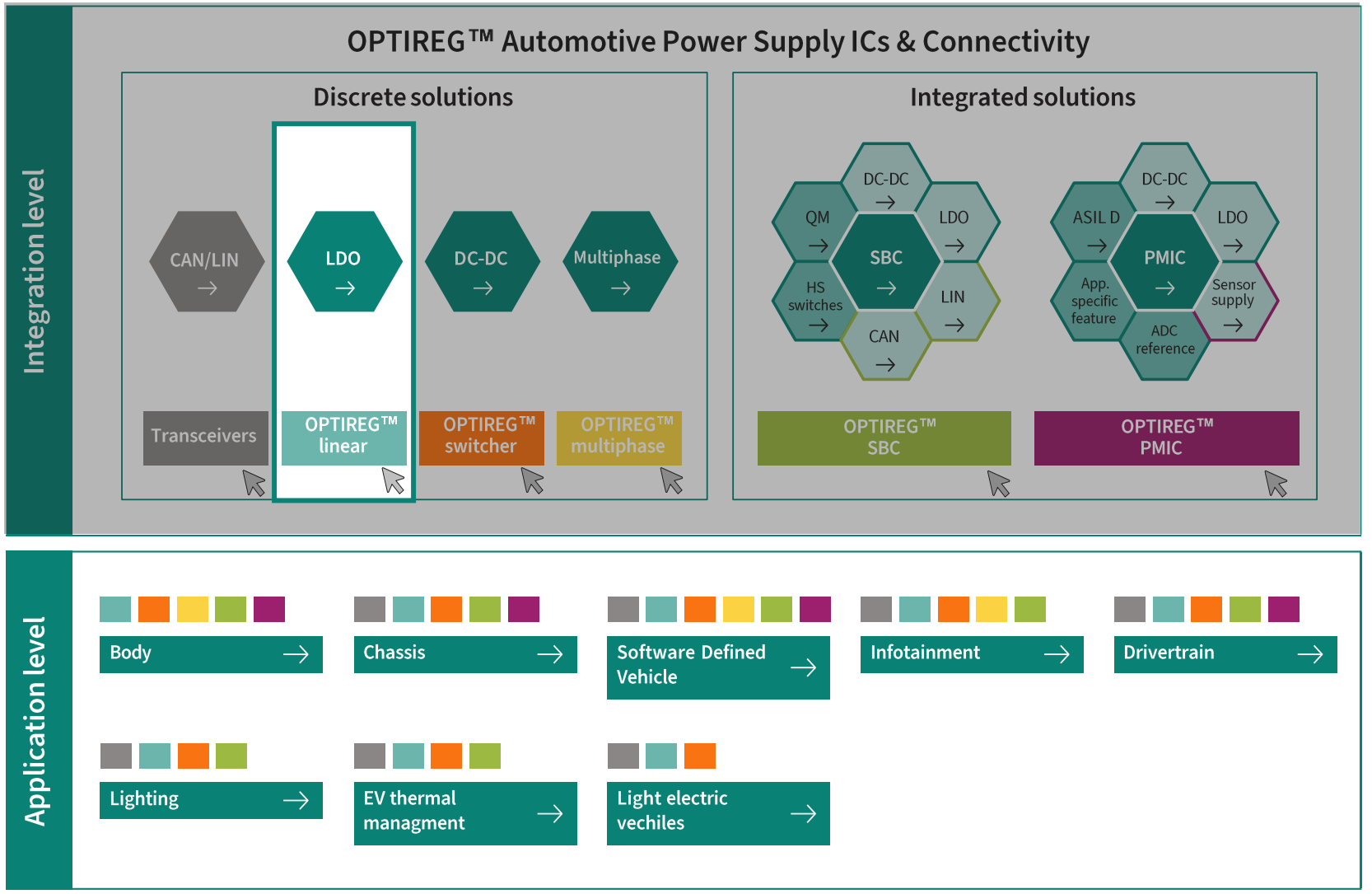
OPTIREG™ TLE926x/TLE927x/TLE946/71 families

- ✓ Power efficiency
- ✓ CAN FD
- ✓ QM

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OPTIREG™ linear
Linear Voltage Regulators (LDO)

OPTIREG™ linear



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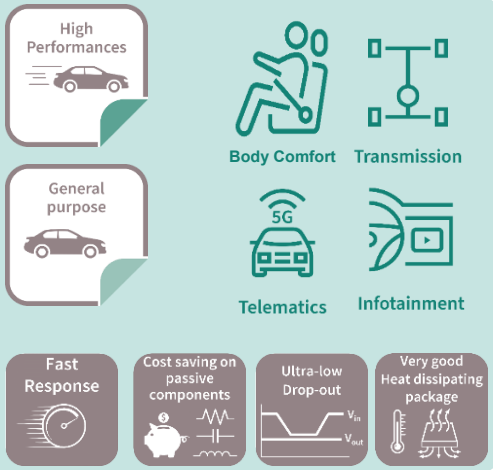
OPTIREG™ linear: Suitable linear voltage regulator (LDO) for every application

LDO

High Performance General Purpose

Best suited for supplying :

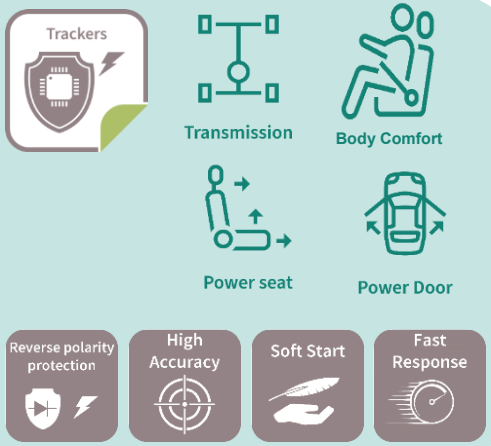
- Microcontrollers
- Transceivers (CAN,LIN,…)
- Sensors (on-board)
- Actuator ICs
- Stand-by supply
- Low-load LEDs
- Microphones

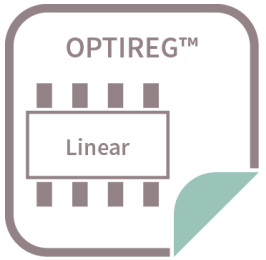


Trackers

Best suited for supplying :

- Sensors
- Microphones
- Satellite ECUs (off-board)
- Small lamps (LED)
- Protected loads

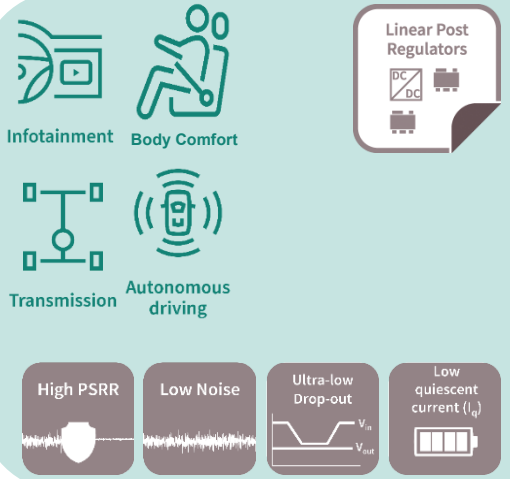




Post Regulators

Best suited for supplying :

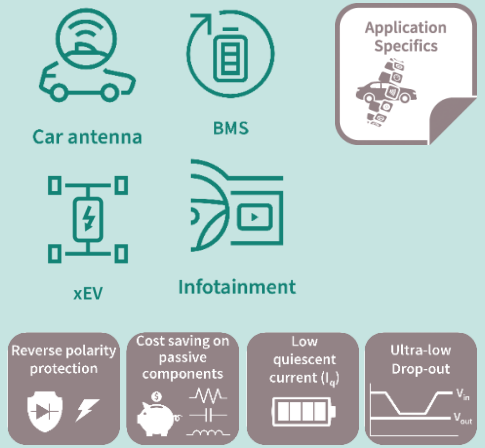
- Radar (MMIC)
- Flash Memory
- RAM Memory
- Camera
- SoC core supply
- I/O supply
- Ethernet PHY
- Cluster supply
- Low noise supply



Application Specific

Best suited for supplying :

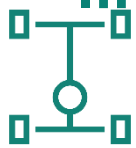
- Antenna (with current Sense)
- Surround-view Camera
- Battery Monitoring/Management
- 24V Standby supply
- Monitoring IC



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OPTIREG™ linear Portfolio Overview

LDO


Transmission



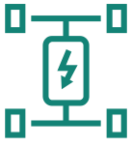
Telematics


Body Comfort


Infotainment


Car antenna


Truck


xEV


BMS


Autonomous driving

SOP	General Purpose	High Performance	Application Specific	Trackers	Post Regulators
< 2012	TLE7xx		WD TLE44xx RS EN; WD TLE42xx RS	ADJ EN TLE425xx PG FB	
2012	TLF49xx	TLS8xx WD Iq			TLF19x ADJ
2014					TLS2xx AO EN
2015		TLS8xxBxx Iq			
2016	TLE427xx; TLE428xx				
2017			TLT8xx EN		
2018	TLE429xx				
2019	TLS7xx			TLS1xxx Iq	
2020		TLS850C2 AO Iq	TLF1125xx	TLT1xx	
			TLF4277xx ADJ		
2021	TLE426xx				
2023		TLS8xxF3xx WD Iq	TLF4477-3LA Iq		
2024		TLS8x0A4xx Iq			
2025	TLE4263-2GS/2GM				

In Production

ADJ: Reference Voltage **AO**: Always On **Iq**: low quiescent current **EN**: Enable **WD**: Watchdog **PG**: Power Good **FB**: Feedback **RS**: Reset

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OPTIREG™ linear voltage regulator with Reset and Watchdog TLS820F3ELVxx, TLS850F3TUVxx

LDO

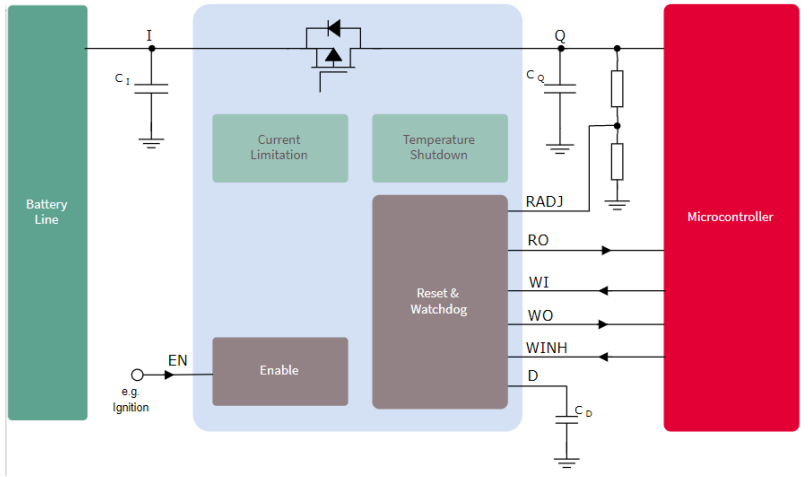
Main Features

- 2 current levels: 200 mA (TLS820) and 500 mA (TLS850)
- 2 voltage options : 3.3V (V33 version) and 5V (V50 version)
- Flexible **Reset** function to supervise the output voltage
- **Watchdog** function with adjustable timing and dedicated on/off pin
- Low current consumption (typ. **33 µA** @500 mA)
- Enable function in 200 mA version
- Minimum operation voltage: **3V**

Key Benefits

- Extended longevity of the connected devices (e.g. microcontroller) due to stable and monitored supply (through **Reset** and **Watchdog**)
- Battery life extensions and system efficiency improvement (low current consumption)
- Extended functionality and more reliable engine start; suitable for cold cranking (functionality starts at **3V**)
- BOM optimization (integrated resistor at Reset output RO and small – min 1 µF – output capacitor)

Block Diagram



Applications

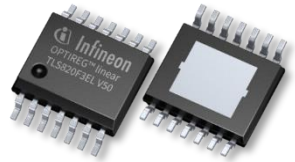


In production

Family overview



TLS850F3TUV50



TLS820F3ELV50



TLS850F3TUV33



TLS820F3ELV33

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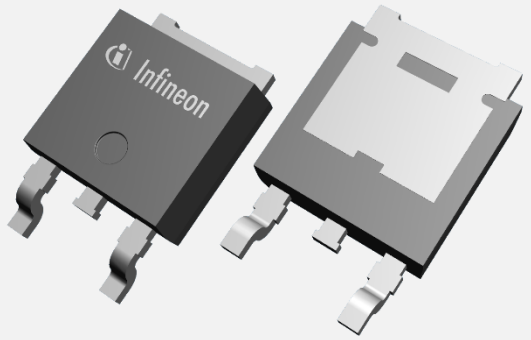
Newest OPTIREG™ linear voltage regulators with ultra-low quiescent current

LDO

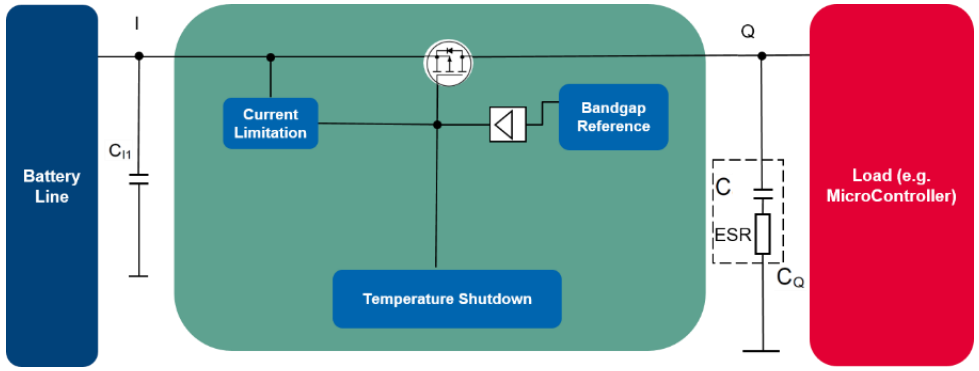
Main Features

TLS850A4TEV50

- **Ultra low quiescent current**, typically **4.3 µA** at light loads
- Wide input voltage range from 3.7 V to 40 V
- Output voltage 5 V
- Output voltage accuracy ±2%
- Output current capability up to 500 mA
- **Low dropout voltage**, typically 190 mV at output current <100 mA
- **Stable with a ceramic output capacitor of 4.7 µF**
- Overtemperature shutdown
- Output **current limitation**
- Wide temperature range
- Green Product (RoHS compliant)



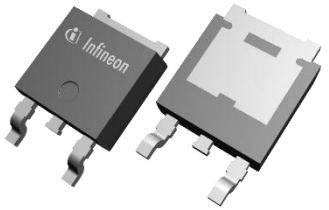
Block Diagram



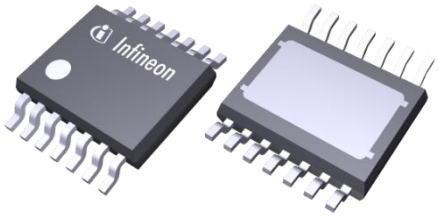
Applications



Family overview



TLS850A4TEV50



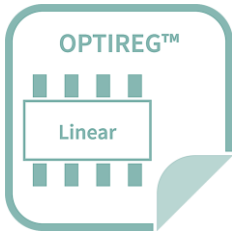
TLS830A4EPV50

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OPTIREG™ linear voltage regulator - TLE4263-2GS

A monolithic integrated very low dropout voltage regulator with watchdog.

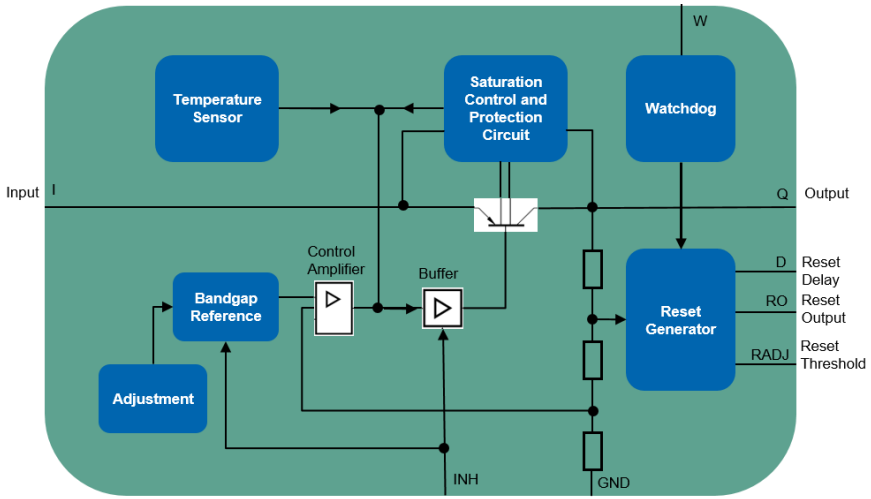
Successor for TLE4263GS (lower current consumption)



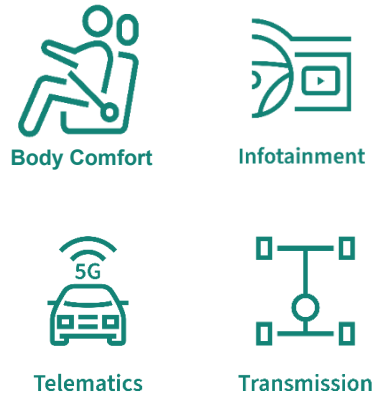
Main Features

- Inhibit input: can be switched off, reducing the current consumption to typically **0 mA**.
- Wide input voltage range up to 45 V
- Output voltage 5V
- Output voltage tolerance ≤ ±2%
- 180 mA output current capability
- **Low-drop voltage**
- Very low standby current consumption
- Overtemperature **protection**
- Reverse polarity **protection**
- Short-circuit proof
- Adjustable reset threshold
- **Watchdog** for monitoring microprocessor
- Power-on and undervoltage reset with programmable delay time
- Reset low down to VQ = 1V

Block Diagram



Applications



Key Benefits

- Robust Protection Features
- Wide Input Operation and Temperature Range



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OPTIREG™ linear voltage regulator - TLE4263-2GM

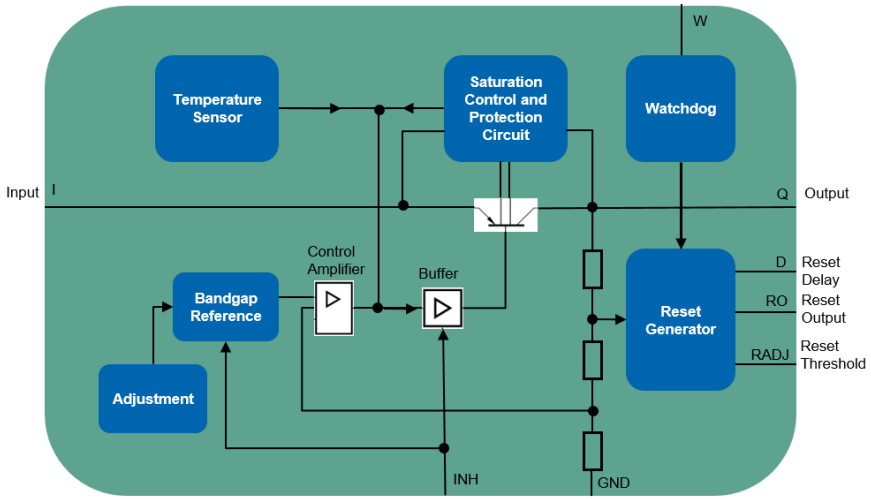
A monolithic integrated very low dropout voltage regulator with watchdog.

Successor for TLE4263GM (lower current consumption)

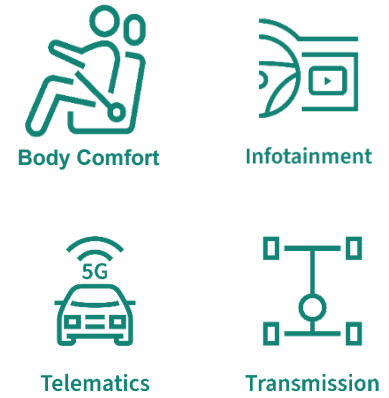
Main Features

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- Output voltage 5V
- Output voltage tolerance ≤ ±2%
- 180 mA output current capability
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- Reverse polarity **protection**
- Short-circuit proof
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- **Watchdog** for monitoring microprocessor
- Power-on and undervoltage reset with programmable delay time
- Reset low down to VQ = 1V

Block Diagram



Applications



Key Benefits

- Robust Protection Features
- Wide Input Operation and Temperature Range



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OPTIREG™ linear – Summary

- More than **75k IFX LDO** are shipped **every hour!**
- IFX LDOs are **released** @ all major **OEMs**
- **OPTIREG™ linear** portfolio has over **200 product variants** to suit all **your specific needs**
- **OPTIREG™ linear** portfolio offers a wide spectrum of features such as:
  - Watchdog
  - Enable
  - Reset
  - Reverse polarity protection
- **OPTIREG™ linear** portfolio serves your needs to supply among others:
  - MCU along Transceiver
  - MCU along Sensor (Analog/Digital, On-board/Off-board)
  - Voltage rail in post-regulator topology
  - Antennas

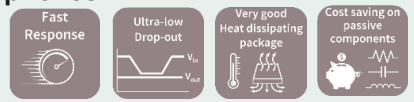
High Performance General Purpose





Best suited for supplying :

- **Microcontrollers**
- **Transceivers (CAN,LIN,…)**
- **Sensors (on-board)**
- **Actuator ICs**
- **Stand-by supply**
- **Low-load LEDs**
- **Microphones**

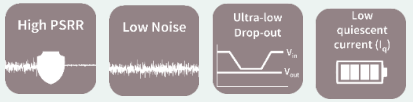


Post Regulators



Best suited for supplying :

- **Radar (MMIC)**
- **Flash Memory**
- **RAM Memory**
- **Camera**
- **SoC core supply**
- **I/O supply**
- **Ethernet PHY**
- **Cluster supply**
- **Low noise supply**



Trackers



Best suited for supplying :

- **Sensors**
- **Microphones**
- **Satellite ECUs (off-board)**
- **Small lamps (LED)**
- **Protected loads**



Application Specific



Best suited for supplying :

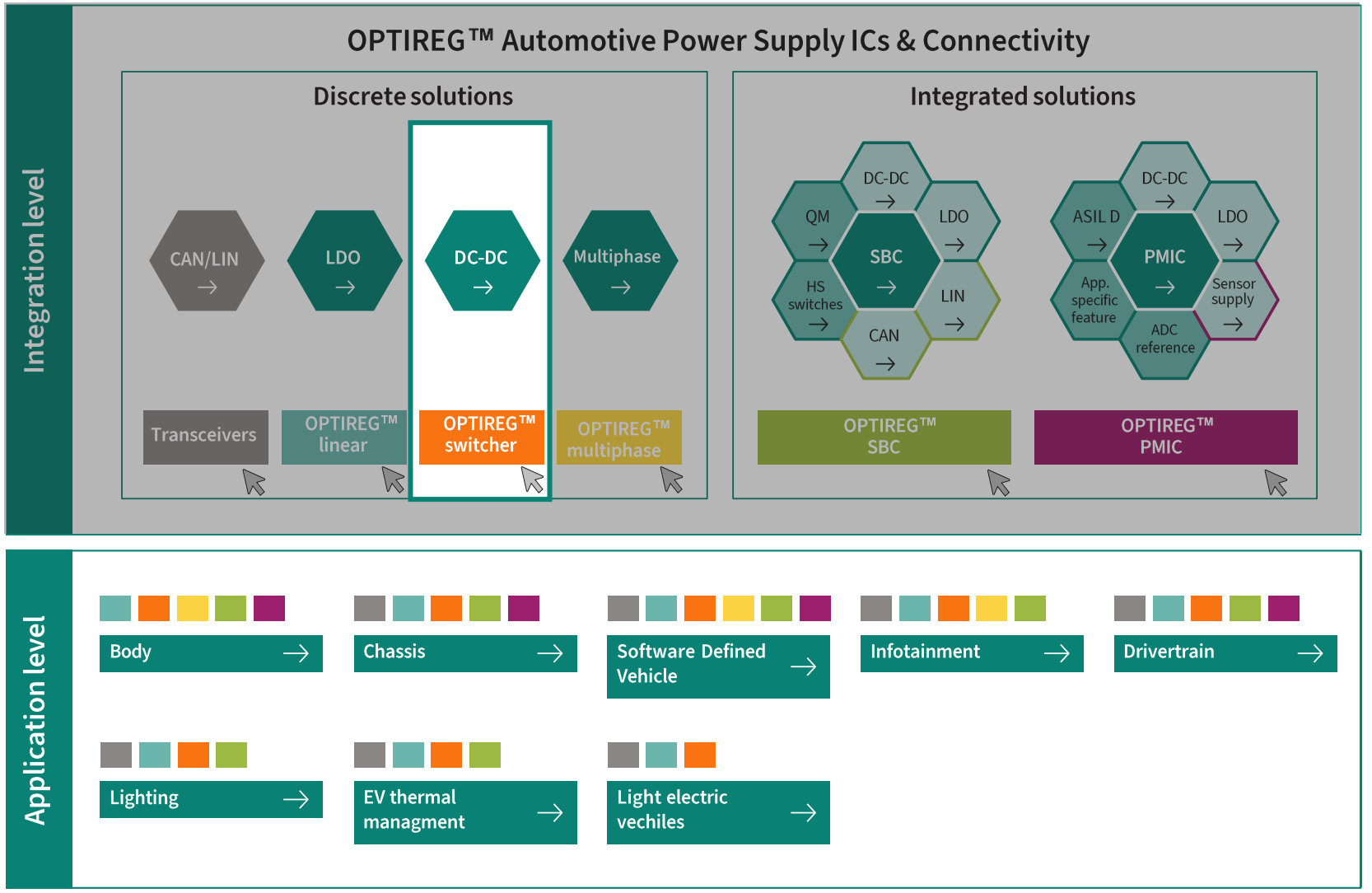
- **Antenna (with current Sense)**
- **Surround-view Camera**
- **Battery Monitoring/Management**
- **24V Standby supply**
- **Monitoring IC**



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OPTIREG™ switcher (DC-DC)

OPTIREG™ switcher



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OPTIREG™ switcher Portfolio Overview

DC-DC

Transmission | Telematics | Body Comfort | Infotainment | Autonomous driving | xEV | BMS | Truck

SOP	Buck Converter	Boost Controller	Buck Controller
2009	TLE8366E V50 TLE8366EV TLE8366E V33		
2010		TLE8386-2EL	
2013	TLF50251EL TLF50241EL TLF50201EL TLF50211EL TLF50281EL		TLF51801ELV
2020	TLS4120D0EP V33 TLS4125D0EP V50		

In Production

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OPTIREG™ switcher: Suitable power supply for every application

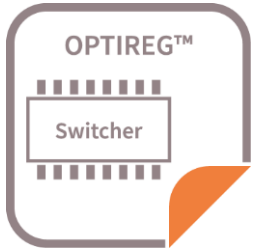
DC-DC

OPTIREG™ Switcher

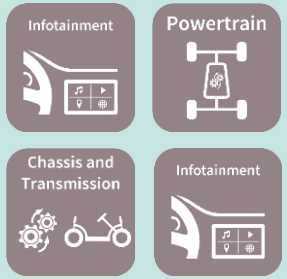
Advantages and Key Features:

- Includes Buck Converter, Boost Controller, and Buck Controller options
- Wide supply voltage operation range
- Low current consumption
- Current limitation and overtemperature protection
- Integrated soft start, sync features
- Green products are RoHS compliant
- Robust design for long-term performance





Boost Controller



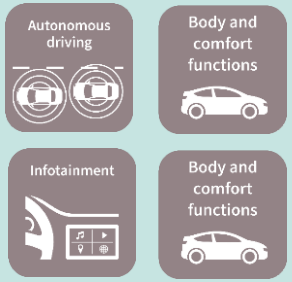
Best suited for supplying:

- Cold-cranking
- Powertrain: GDI, piezo injection
- LED driver
- PTC-heater
- E-compressor
- Remote Camera systems power (power over LVDS)
- Infotainment

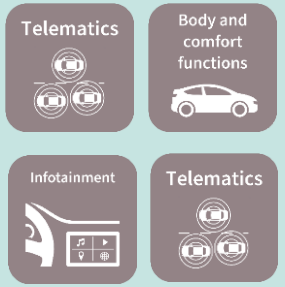
Buck Converter

Best suited for supplying:

- Body
- Cluster
- Infotainment
- Automotive general ECUs
- BCM,
- Gateway
- Camera, Radar,
- Telematics
- Infotainment
- ADAS, radar
- Telematics,
- EMS



Buck Controller

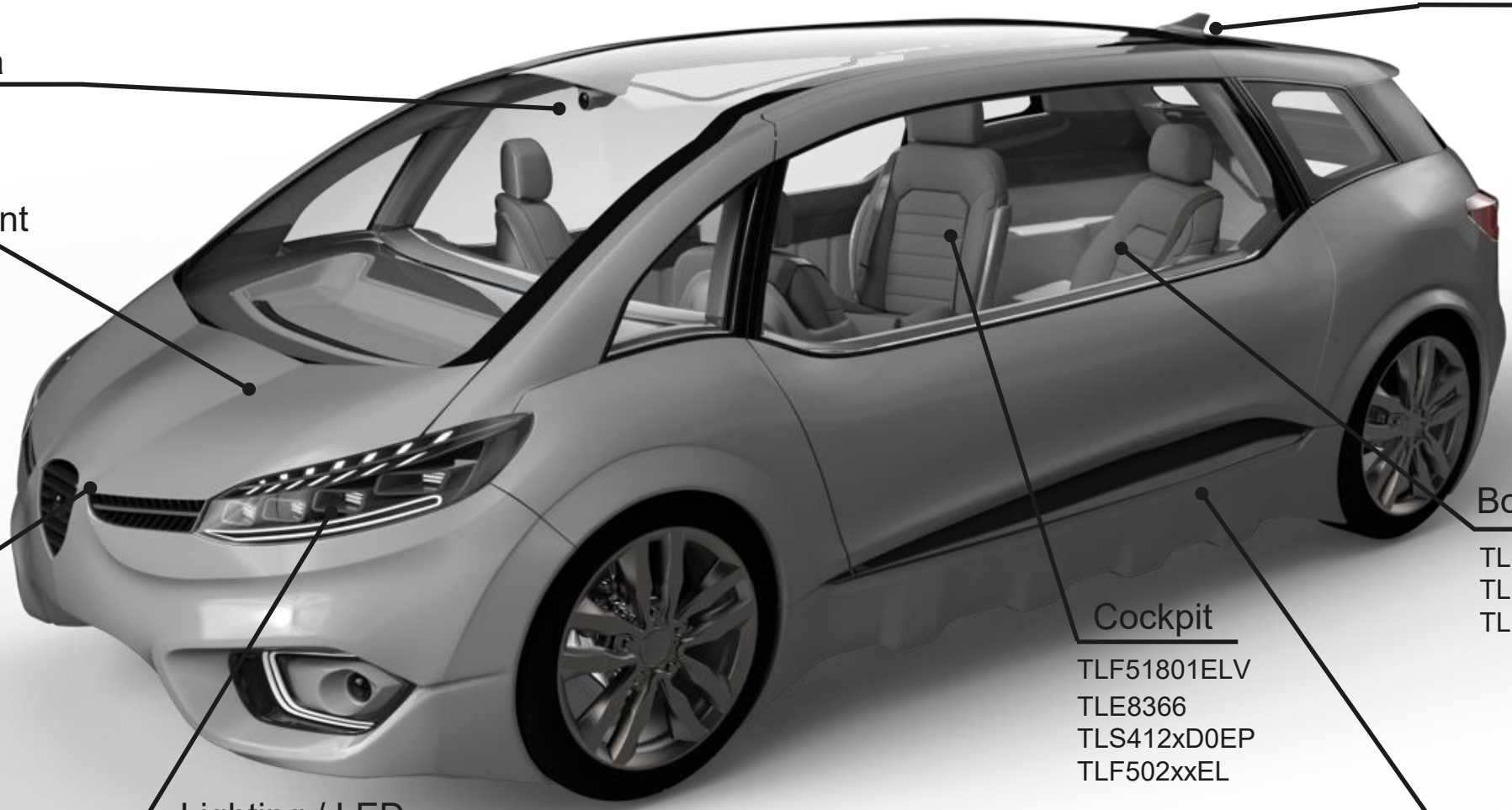


Best suited for supplying:

- Display
- USB Charger
- Camera pre-regulator
- Infotainment
- Telematics
- Rear-Lighting
- Fog lighting module
- Mobile wireless charger
- High End Cluster, or Dashboard

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OPTIREG™ switcher application examples



Telematics
TLF51801ELV
TLE8366
TLS412xD0EP
TLF502xxEL

Remote Camera
TLE8386-2EL

Engine Management
TLE8366
TLS412xD0EP
TLF502xxEL

Body Control
TLE8366
TLS412xD0EP
TLF502xxEL

Radar
TLE8366
TLS412xD0EP
TLF502xxEL

Cockpit
TLF51801ELV
TLE8366
TLS412xD0EP
TLF502xxEL

Lighting / LED
TLE8386-2EL

Transmission
TLE8386-2EL

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Newest OPTIREG™ switcher TLS412xD0EP – Now Available!

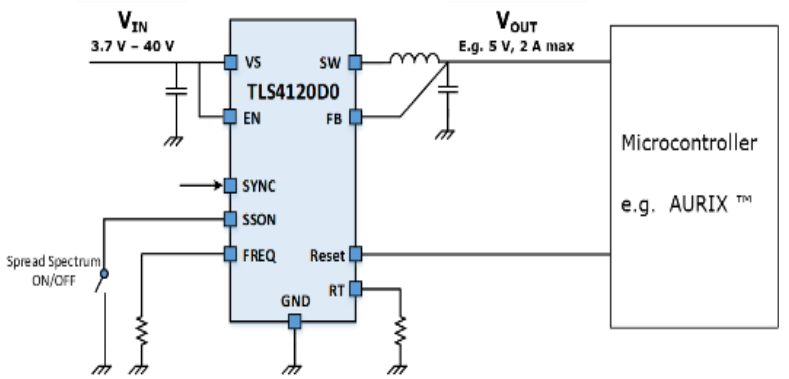
DC-DC

Main Features

- VIN : 3.7V .. 40V
- VOUT : 5V, 3.3
- Wide Switching Frequency 320kHz .. 2.8MHz
- **100% duty cycle**
- Current mode with PWM and PFM, Internal compensation
- EN, PGOOD, Spread Spectrum
- Over-Voltage / Under-voltage monitoring
- Current consumption : 33 µA (ON mode)
- Efficiency : up-to 94%
- Package: TSDSO14
- Integrated compensation, sync rectification
- Suitable for cranking application
- Low noise / EMC optimized



Block Diagram



Family overview

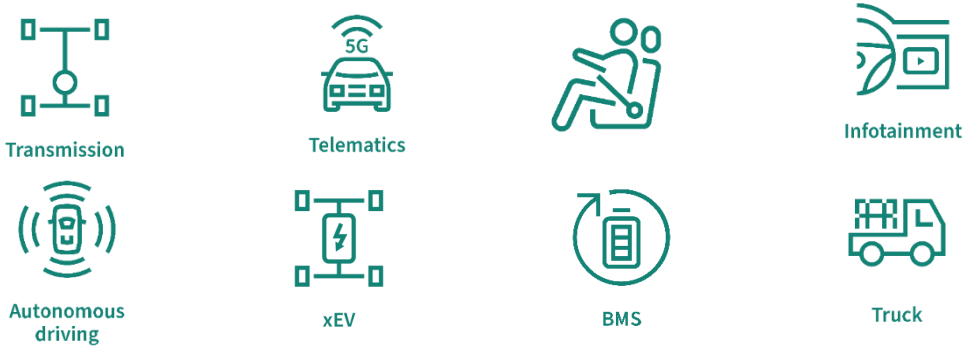


TLS4120D0EPV33



TLS4125D0EPV50

Applications



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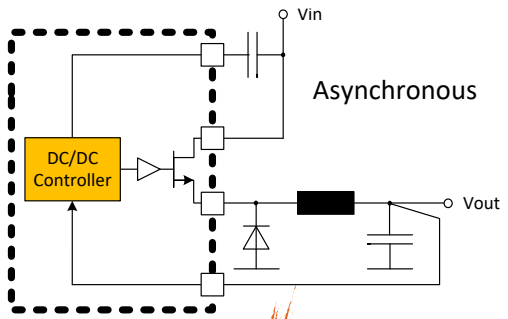
OPTIREG™ Synchronous Switcher – Summary

TLS4120D0EPV33 & TLS4125D0EPV50

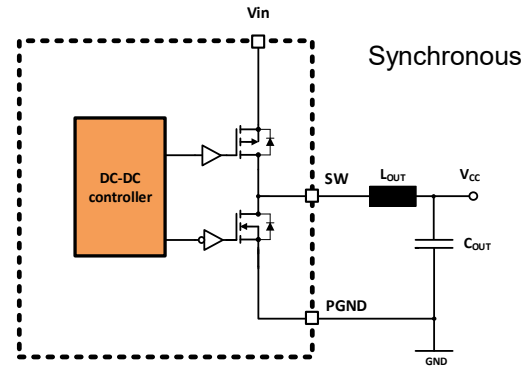
- Minimal External Components
- Integrated Compensation
- Overvoltage detection for simple ADAS applications
- Low quiescent current operation
- Low noise / EMC optimized
- Auto Spread Spectrum
- Wide Switching Range
- High Efficiency
- Zero Defect Strategy



Synchronous & integrated topology helps reduce components and increase efficiency





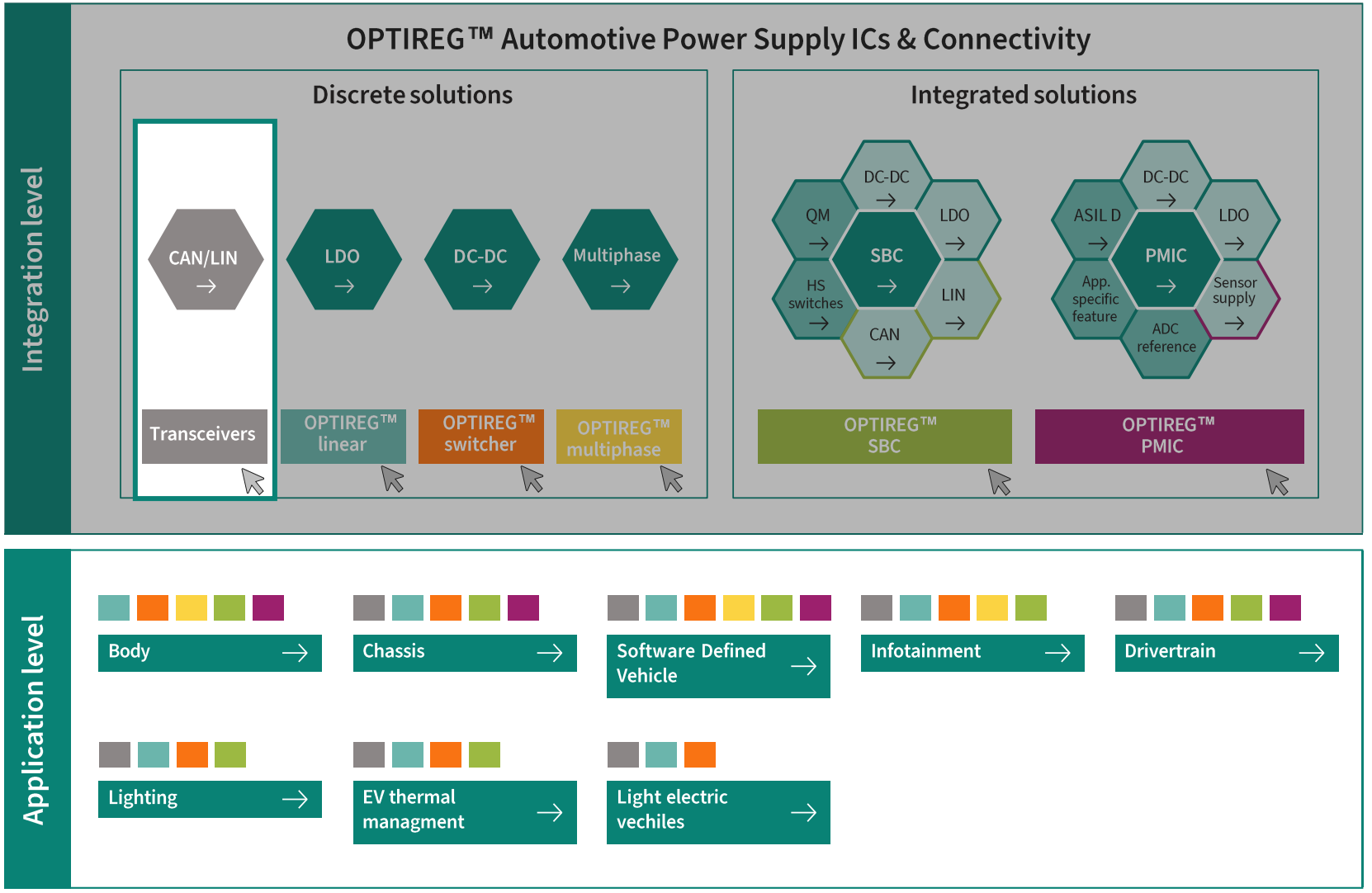


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CAN / LIN

Transceiver

Transceiver



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CAN transceivers (value steps overview)

PACKAGE OPTION		FEATURE SET									
DSO8	TSON8										
TLE9350BSJ	TLE9250LE	5MBit/s				Receive Only / Power Save					
TLE9350BXSJ	TLE9250XLE	5MBit/s	Vio Pin			Receive Only Mode					
TLE9350BVSJ	TLE9250VLE	5MBit/s	Vio Pin			Power Save Mode					
TLE9351BSJ	TLE9251LE	5MBit/s		Standby Mode	Bus Wake-Up						
TLE9371SJ	-	8MBit/s		Standby Mode	Bus Wake-Up						
TLE9351BVSJ	TLE9251VLE	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up						
TLE9371VSJ	-	8MBit/s	Vio Pin	Standby Mode	Bus Wake-Up						
-	TLT9251VLE	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up	AEC-Q100 Grade 0					
DSO14	TSON14										
TLE9252VSK	TLE9252VLC	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up		Wake-up Input	Inhibit output		Error detection	
TLE9255WSK	TLE9255WLC	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up		Wake-up Input	Inhibit output	Partial Networking		
-	TLT9252VLC	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up	AEC-Q100 Grade 0	Wake-up Input	Inhibit output		Error detection	
-	TLT9255WLC	5MBit/s	Vio Pin	Standby Mode	Bus Wake-Up	AEC-Q100 Grade 0	Wake-up Input	Inhibit output	Partial Networking		

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LIN transceivers (value steps overview)

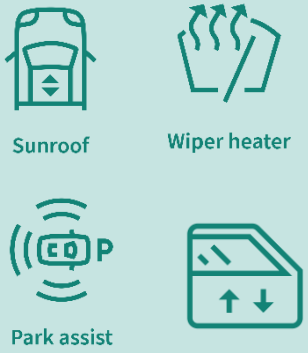
PACKAGE OPTION		FEATURE SET						
DSO8	TSON8							
TLE7257SJ	TLE7257LE	20kbit/s	Inhibit output		Bus Wake-Up		Efficient start-up	
TLE7258SJ	TLE7258LE	20kbit/s	Inhibit output		Bus Wake-Up		Fast start-up	
TLE7259-3GE	TLE7259-3LE	20kbit/s	Inhibit output	Fast Programming (assembly line)	Bus Wake-Up			Local Wake-Up
TLE8457DSJ	TLE8457DLE	20kbit/s			Bus Wake-Up		LDO 3.3V	
TLE8457CSJ	TLE8457CLE	20kbit/s			Bus Wake-Up		LDO 5V	
TLE8457BSJ discontinued	TLE8457BLE	20kbit/s			Bus Wake-Up	Time out	LDO 3.3V	
TLE8457ASJ discontinued	TLE8457ALE	20kbit/s			Bus Wake-Up	Time out	LDO 5V	
DSO14	TSON14							
TLE7268SK	TLE7268LC	20kbit/s	Inhibit output		Bus Wake-Up			Dual LIN

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Infineon Automotive Transceiver – addressing changing market needs

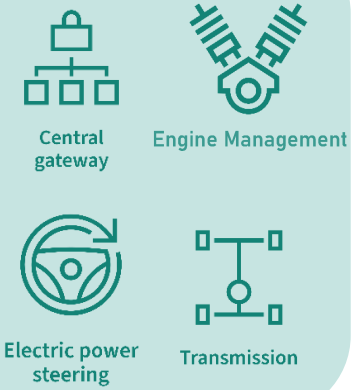
CAN / LIN

- High Performance (with fast programming mode & local wake)
- Reduced layout efforts (Compatibility between Single LIN vs Dual LIN=two LIN transceivers in one package)
- Pinout compatibility with main competitors
- OEM release w/o ESD protection diode



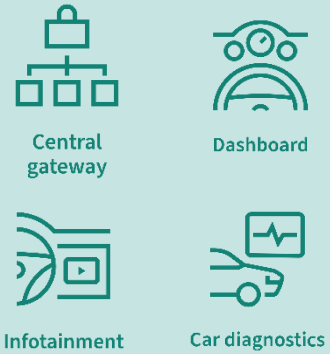
CAN 5Mbits FD — CAN PN

- CAN FD 5MB fulfill latest ISO incl. wake up filter time
- Best in Class CAN FD with Partial Networking
- First CAN FD family with Grade “0+” available
- Backward compatible with CAN 1MBit/s and CAN 2MBit/s



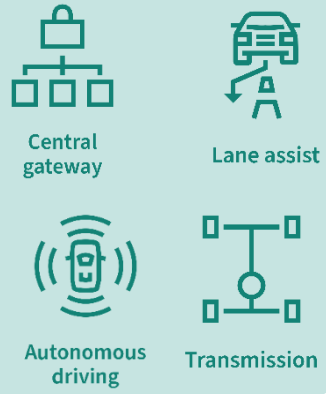
CAN 1MBit/s

- Worldwide release with OEMs
- First non – Japanese supplier to win Toyota’s highest Q-Award
- ISO 11898-2 ed. 2016 compliant
- With and without bus wake up
- Pin out compatible with main competitors



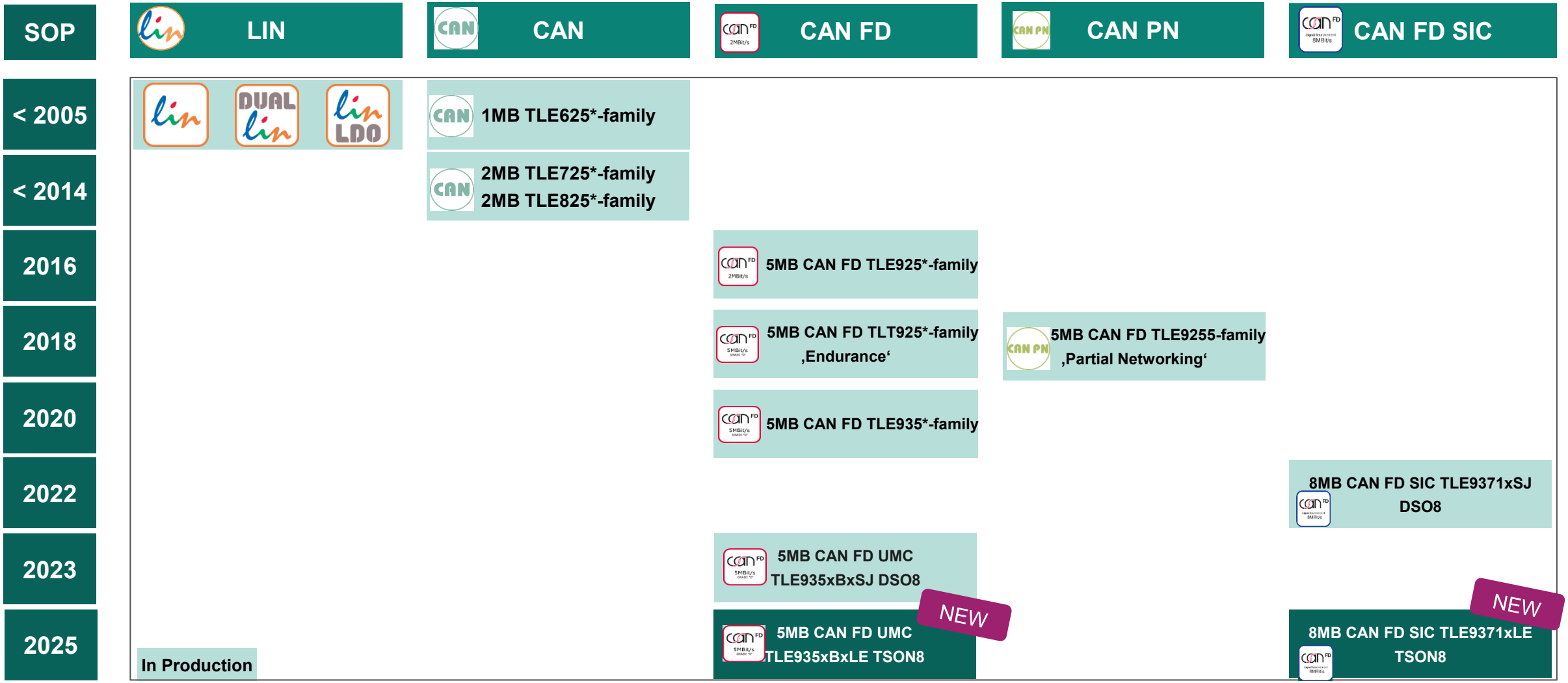
CAN FD SIC

- Next CAN Generation with Signal Improvement for stable high data transmission
- Fully pin to pin compatible with existing CAN FD devices (TLE9251x and TLE935x)
- addressing complex topologies
- Reduced wire harness



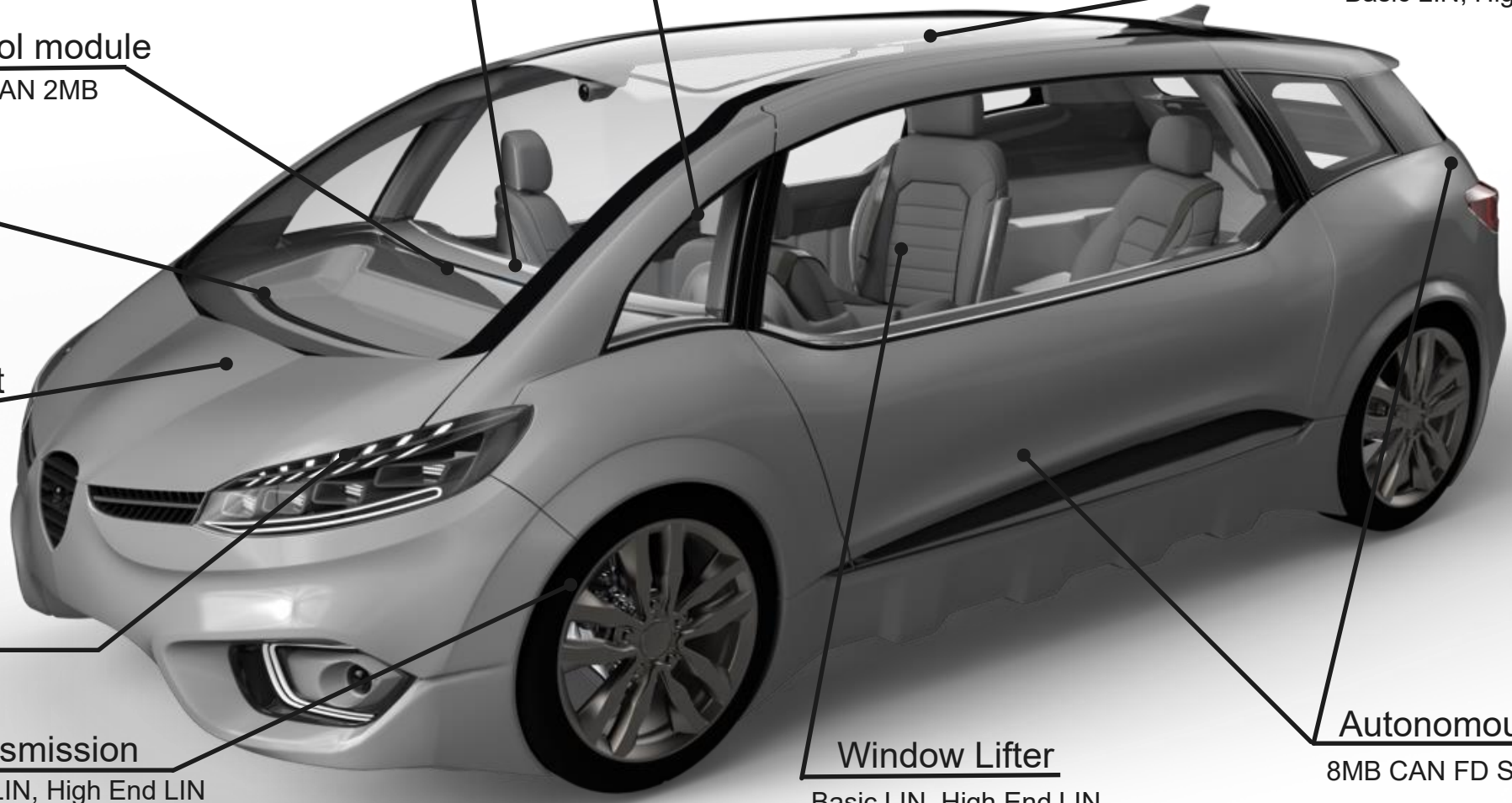
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Transceivers Portfolio (LIN and CAN) overview



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Transceivers application examples



Dashboard
CAN 1MB, CAN 2MB

Electric Power Steering
CAN FD

Sunroof Module
Basic LIN, High-end LIN

Body control module
CAN 1MB, CAN 2MB

Chassis Domain
Basic LIN, High End LIN

Engine Management
5MB CAN FD/CAN PN
8MB CAN FD SIC

Light Control Unit
Dual LIN, High End LIN

Transmission
Dual LIN, High End LIN

Window Lifter
Basic LIN, High End LIN

Autonomous Driving
8MB CAN FD SIC

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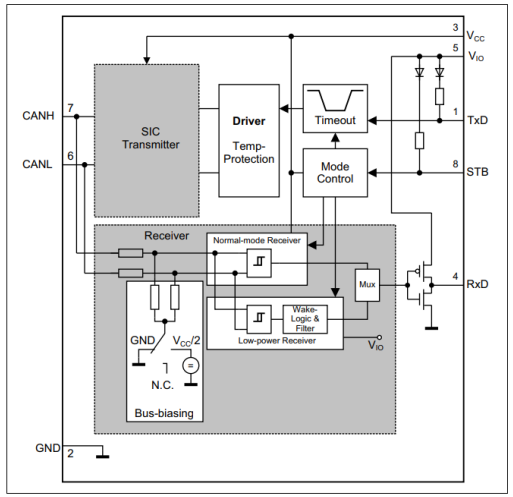
CAN FD SIC (Signal Improved Capability) TLE9371SJ/TLE9371VSJ

CAN / LIN

Main Features

- 2 modes of operation: Normal operating and stand-by mode
- Available in DSO-8
- VIO input for voltage adaption to the microcontroller interface (3.3 V or 5 V)
- Two voltage options of 3.3V and 5V
- Lowest current consumption in the stand-by mode

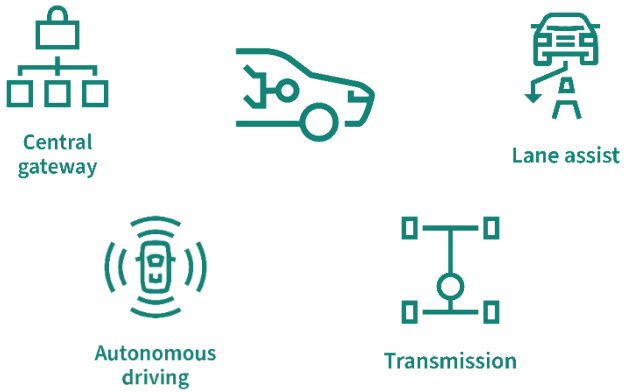
Block Diagram

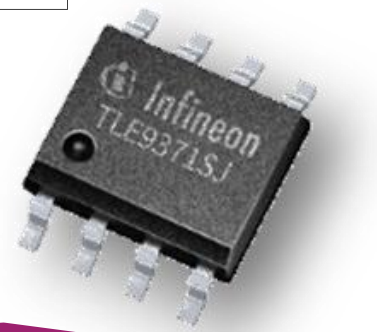


Key Benefits

- Connection of more nodes with more functions possible, high accuracy of data transmission, data rate up to 8Mbit/s, use in complex networks
- Supports new comfort features in body applications
- Dedicated low-power modes, like Stand-by Mode with very low quiescent current while the device is powered up
- Simple wire harness & costs; more positive CO2 balance

Applications





In production

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CAN FD TLE935*B-family

CAN / LIN

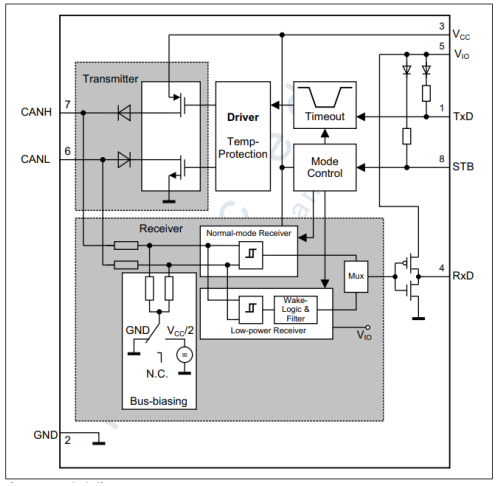
Main Features

- Loop delay symmetry for CAN FD data frames up to 5 Mbit/s
- Standby mode with minimized quiescent current
- Available in DSO-8
- VIO input for voltage adaption to the microcontroller interface (3.3 V or 5 V)
- Lowest current consumption in the stand-by mode
- Very low CAN bus leakage current in power-down state
- Bus wake-up pattern (WUP) function with optimized filter time for worldwide OEM usage

Key Benefits

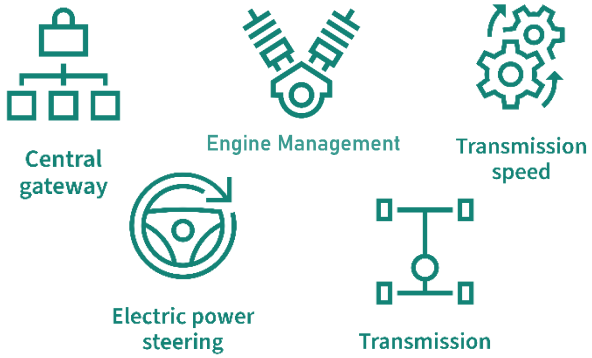
- Protection of the microcontroller against interferences generated inside the network
- Support in new comfort features in body applications
- Use in automotive applications without additional protection devices, such as suppressor diodes or common mode chokes
- very low level of electromagnetic emission (EME) within a wide frequency range

Block Diagram





Applications

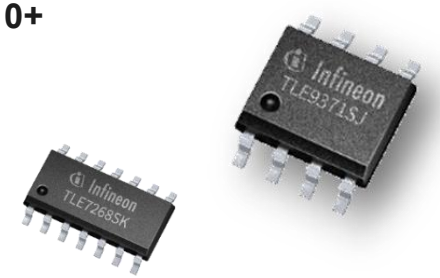


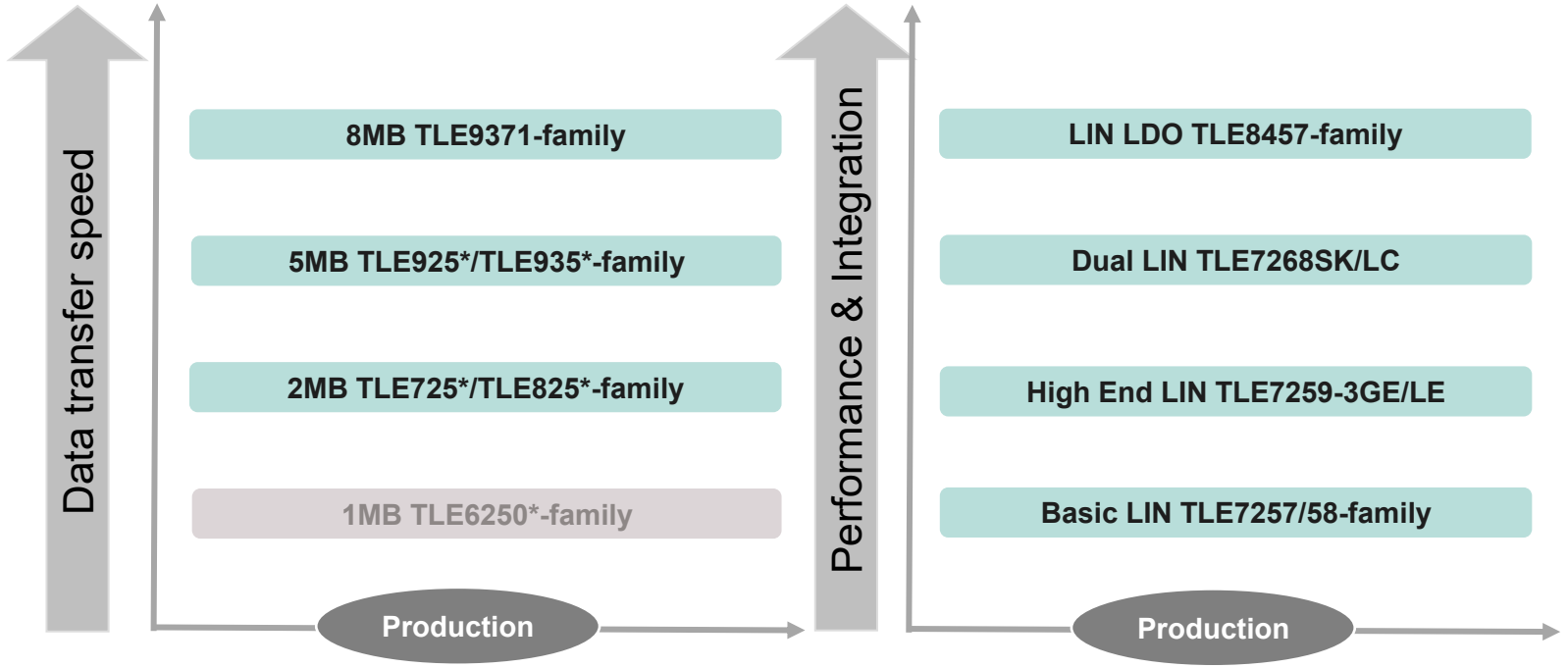
In production

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CAN and LIN transceiver – Summary

- **Total LIN** shipped **>1,2B units** & **CAN** shipped **>2,7B units**
- Components **released** @ all major **OEMs**
- LIN and CAN **portfolio with > 90 product variants**
- Successor products backward **compatible**
- **Excellent EMC** and **ESD** robustness
- **CAN FD** transceiver w/ **Signal Improvement Capability (SIC)** up to **8 Mbit/s**
- **Compliant to Toyota conformance test (VeLIO)**
- **AEC-Q100 Grade 0+** (Ta ≤ 150 °C)





CAN transceivers

- ✓ Best power efficiency
- ✓ available also as partial networking or for harsh environment
- ✓ CAN FD SIC with signal improvement for large topologies

LIN transceivers

- ✓ Power efficiency
- ✓ Pin-to-pin compatible with competitor's devices
- ✓ Ultralow quiescent current

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Power supplies combined with MCU : Selection guide

Find the right OPTIREG™ for your microcontroller in just a few clicks!

→ Click here: Link

Navigation Table

Home

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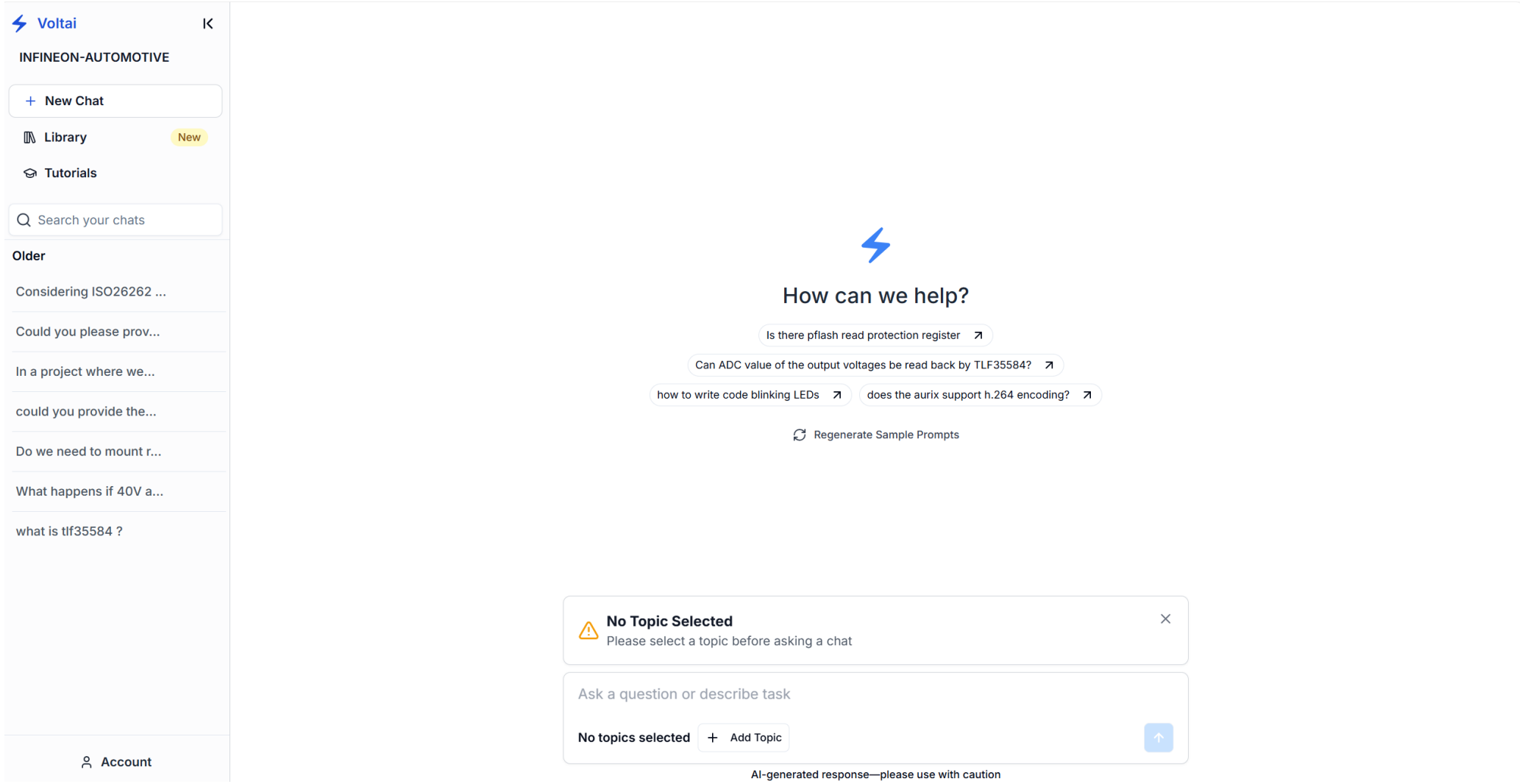
OPTIREG™	Infineon AURIX™ TC2x	Infineon AURIX™ TC3x	Infineon AURIX™ TC4x	Infineon Traveo™ I	Infineon Traveo™ II	Infineon PSoC®	Texas Instruments Piccolo™/ Delfino™	NXP S32K	Renesas RH850	ST Micro SPC5x
PMIC	◎	◎	◎	◎	◎	N/A	◎	◎	◎	◎
Linear	◎	◎	N/A	◎	◎	◎	◎	◎	N/A	N/A
Switcher	◎	◎	N/A	◎	◎	N/A	◎	◎	N/A	N/A
SBC	◎	◎	N/A	◎	◎	◎	◎	◎	◎	◎

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VOLT AI customer tool

How to access VOLT AI chatbot and ask technical questions:

→ Click here: Link

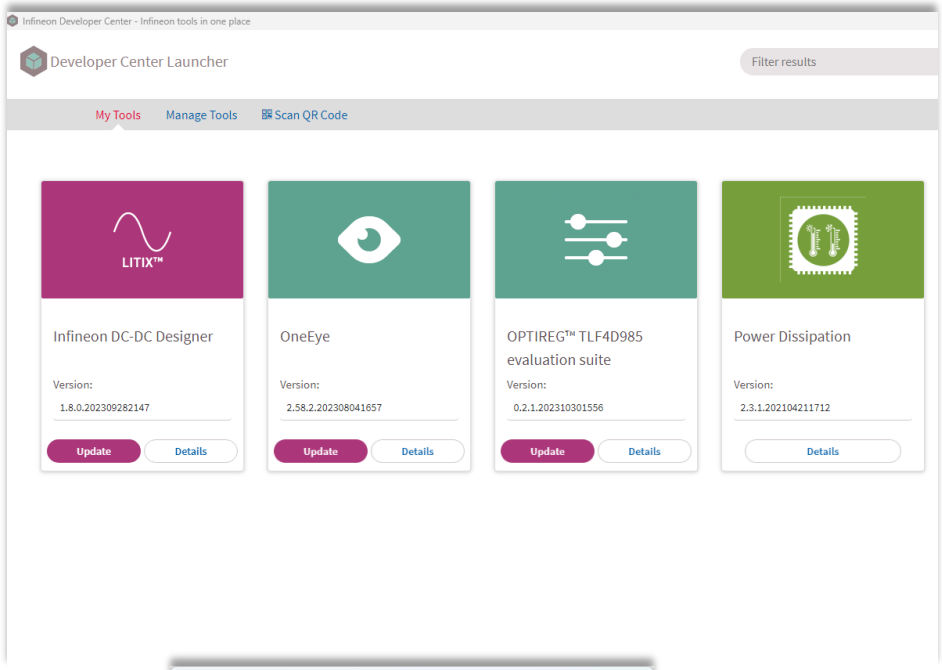


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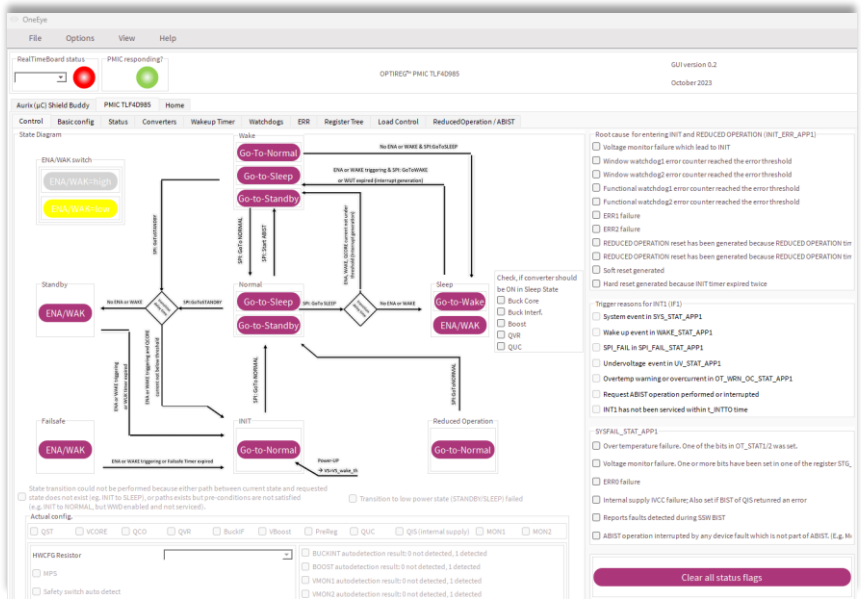
PMICs and SBCs – GUI Tools available on IDC

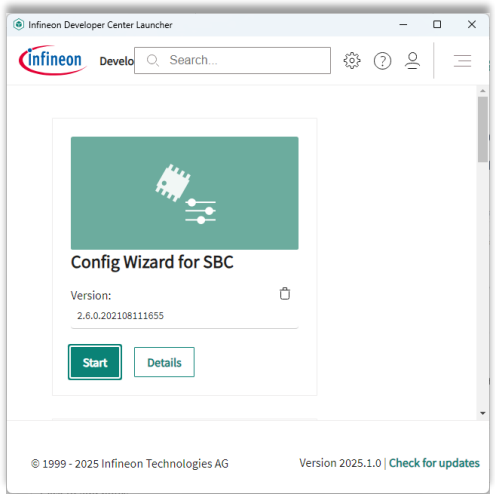
How to access GUI Tools to combine with Evaluation Board HW

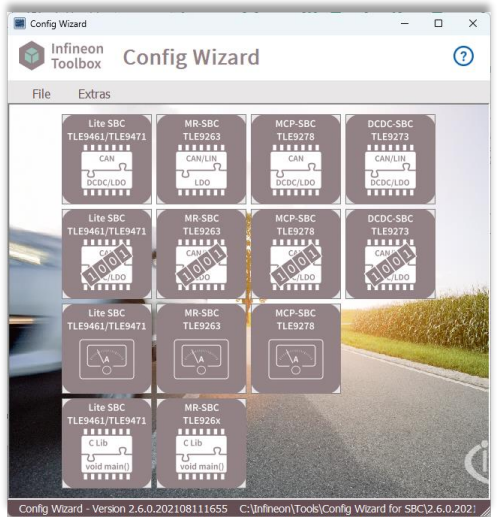
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GUI to be used with out Evaluation Board HW







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