OPTIREG™ System Basis Chips
Product presentation

Infineon Automotive Division
Q4 2025

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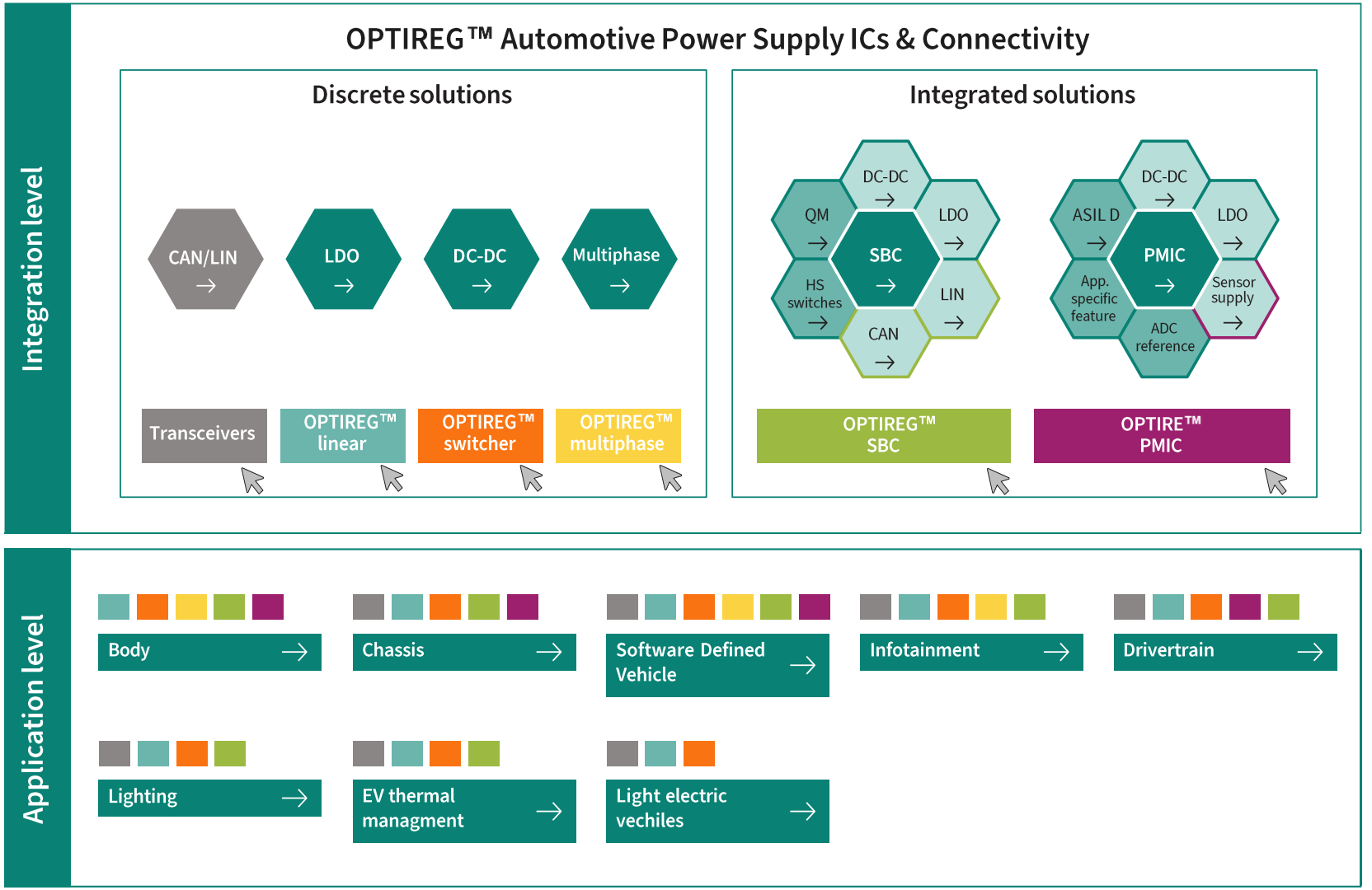
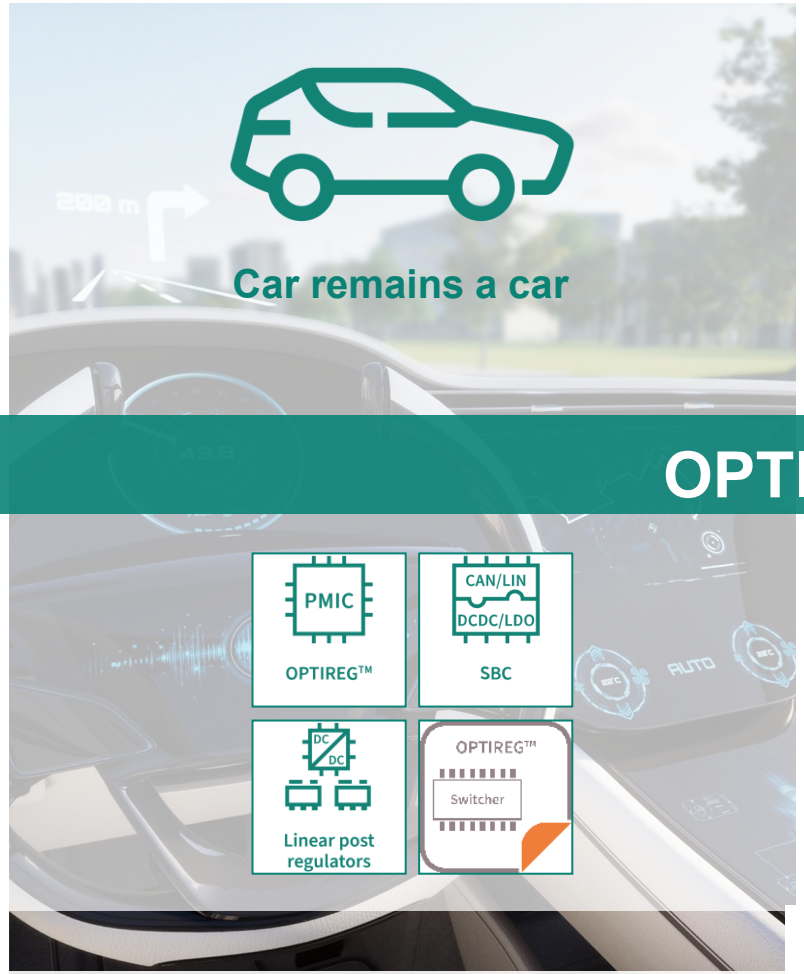
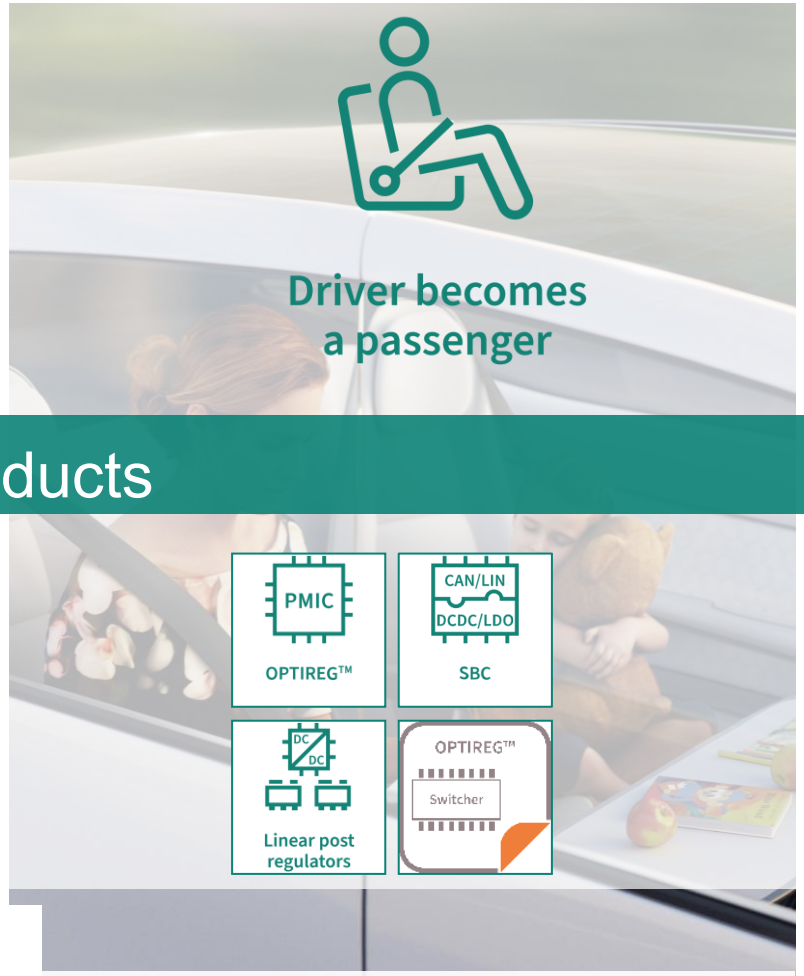
OPTIREG™

OPTIREG™ Portfolio



OPTIREG™ Power Supply fits in all automotive relevant trends





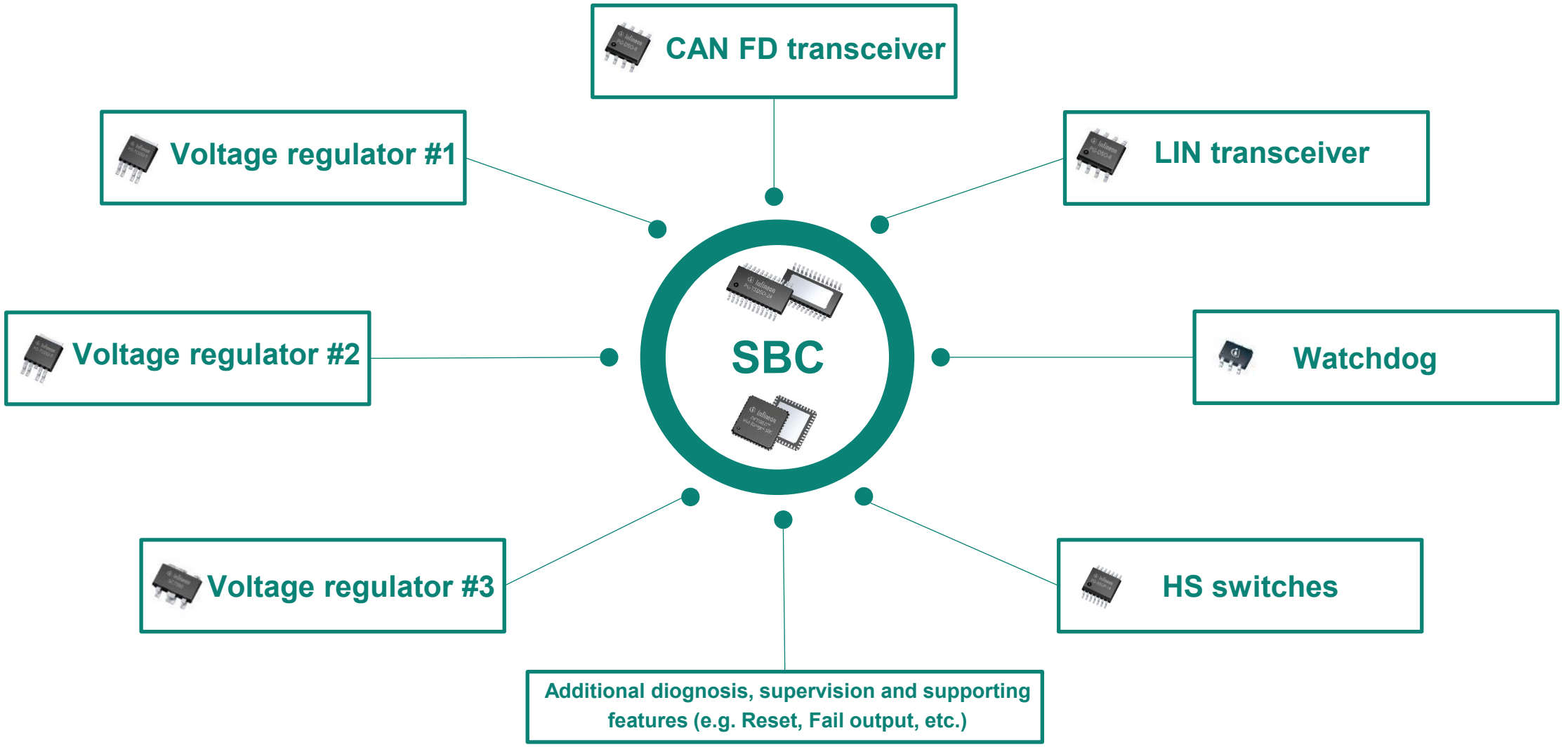
OPTIREG™ provides the right products

to support all these trends

Traditional applications ***Efficient supply concepts*** ***Emerging business models***

OPTIREG™ SBC

OPTIREG™ SBCs combine multiple features into one single chip



Why should I use an OPTIREG™ SBC instead of a discrete solution?

Space saving

– Power, communication, safety and support features are **integrated into one solution with reduced PCB space** by up to ~90% (e.g. 300mm² vs. 34mm² for Lite SBC)

Energy saving

– **Extended battery life** with very low quiescent current modes and CAN Partial Networking
– Lowest I_q to achieve limitation of <100µA per ECU

High system reliability

– Extensive **diagnostics and protections are embedded** within the SBC to support ISO26262 requirements, reduce external component count, improve system reliability in comparison to discrete solutions

Reduced system cost

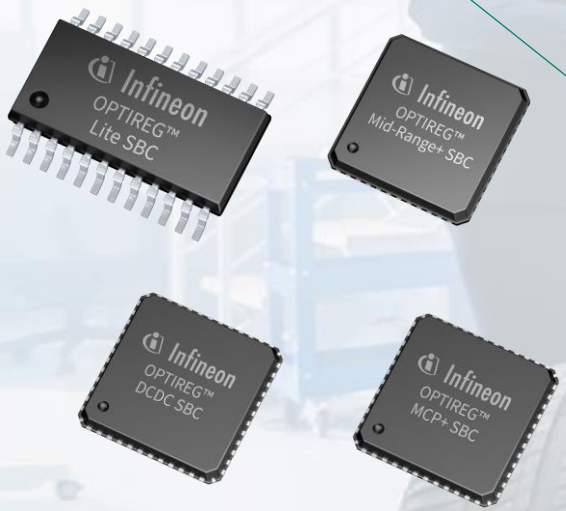
– Minimum number of components to **reduce system and BoM cost**
– **Reduction of Total Cost of Ownership by ~0.1 USD per ECU, due to fewer active components** (~0.014 USD per active component for assembly, qualification, purchasing, optical insception, logistics, etc.)

Multiple and flexible designs

– Compatibility **reduces development time and effort** for SBC by 1-2 man-months for electronic design and software development. Scalability (transceiver) nodes reduce customer effort in platform approach.

OPTIREG™ SBC in a nutshell

Product families

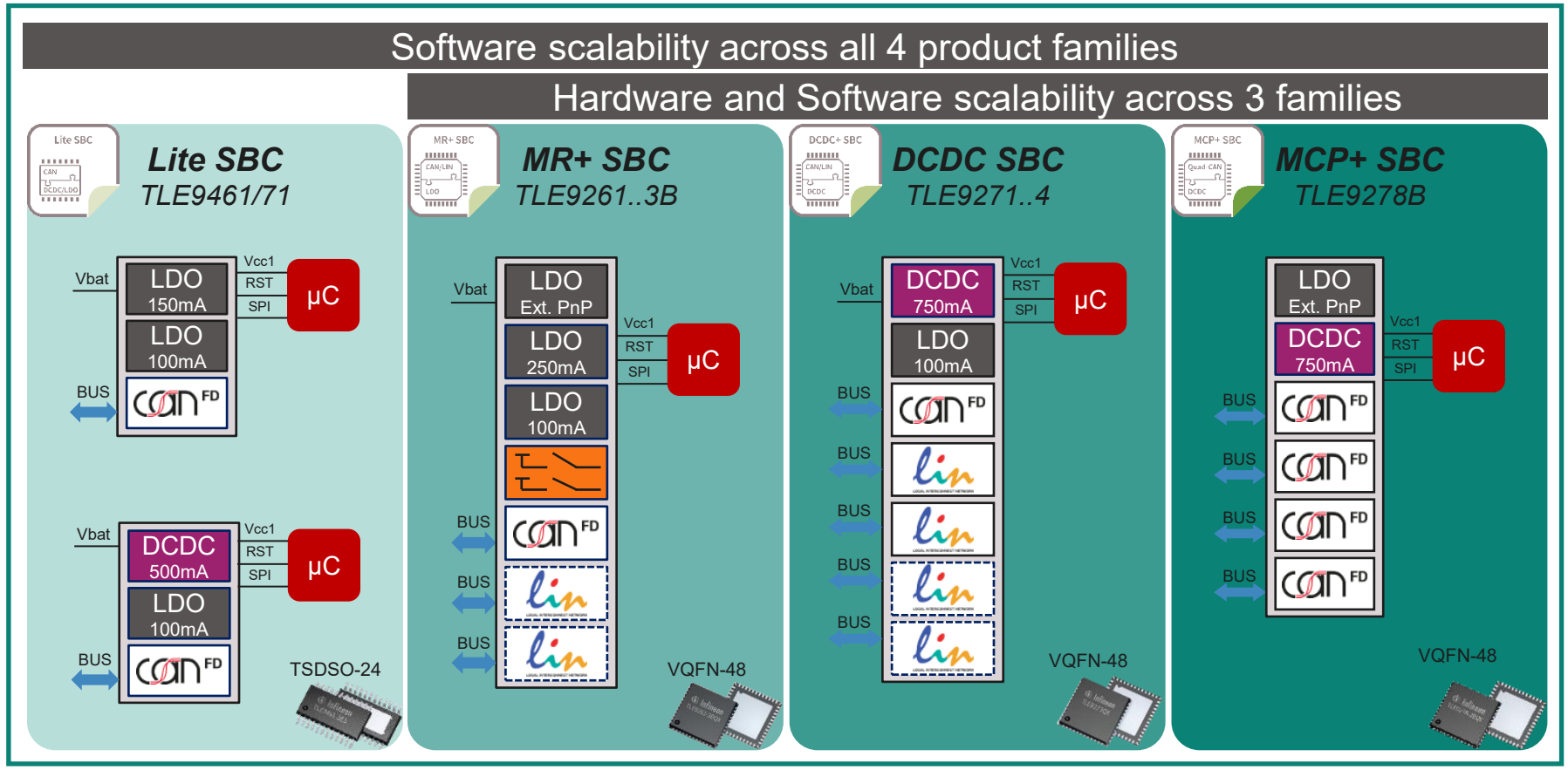


Small, Efficient and Reliable

Key Feature	Customer Benefit
Hardware scalability	Wide portfolio in terms of power range and number of integrated transceivers
Integration of multiple features in one chip	Reduces system cost due to fewer components
Very low quiescent current	Extended battery life
Small and compact packages	Saves board space in compact designs
Integrated diagnostics and protection features	Boosts safety and increases system reliability compared to discretes

Applications

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

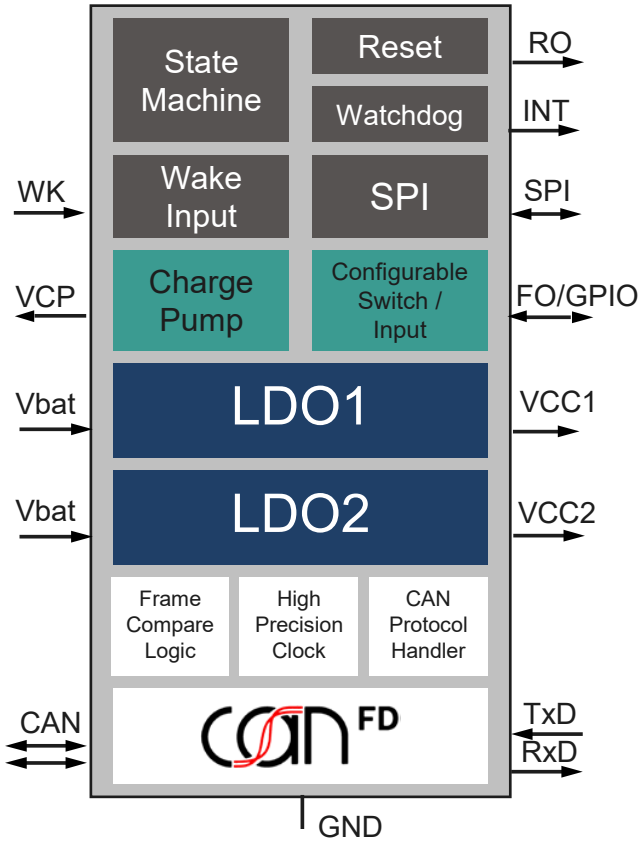
Lite SBC

Lite LDO SBC – Overview
TLE9461(-3)ES (V33)

Key Features

- 5V/3.3V Linear Regulator up to 150mA (Vcc1)
- 5V Linear Regulator (off-board protected) up to 100mA (Vcc2)
- CAN FD up to 5Mbps, CAN PN FD Tolerant (“-3” variants)
- 1x HV Wake input, Watchdog, Reset, Interrupt, Fail Output
- Charge Pump Output for Reverse Polarity Control
- Spread Spectrum for EMI mitigation
- Alternative Functions to Fail Output:
  Configurable as Wake, Low-Side or High-Side Switch (up to 45mA) Low Power and Fail-Safe Operating Modes
- Package: 8.65x6mm TSDSO-24
- Software Compatibility w/in TLE9x6y & TLE9x7y

Application Examples



Lite DCDC SBC – Overview
TLE9471(-3)ES (V33)

Key Features

- 5V/3.3V Buck converter up to 500mA
  - Programmable switching f up to 2.4MHz
  - Spread Spectrum for EMI mitigation
- 5V Linear Regulator (off-board protected) up to 100mA (Vcc2)
- CAN FD up to 5Mbps, CAN PN FD Tolerant (“-3” variants)
- 1x HV Wake input, Watchdog, Reset, Interrupt, Fail Output
- Charge Pump Output for Reverse Polarity Control
- Alternative Functions to Fail Output:
  Configurable as Wake, Low-Side or High-Side Switch (up to 45mA)
- Low Power and Fail-Safe Operating Modes
- Package: 8.65x6mm TSDSO-24
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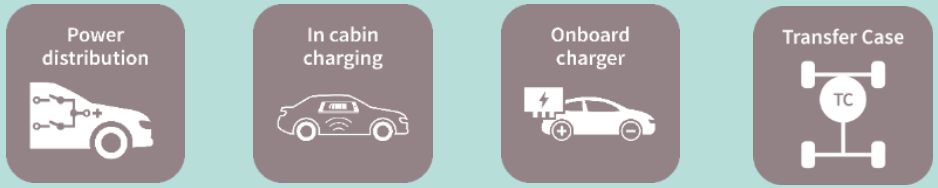
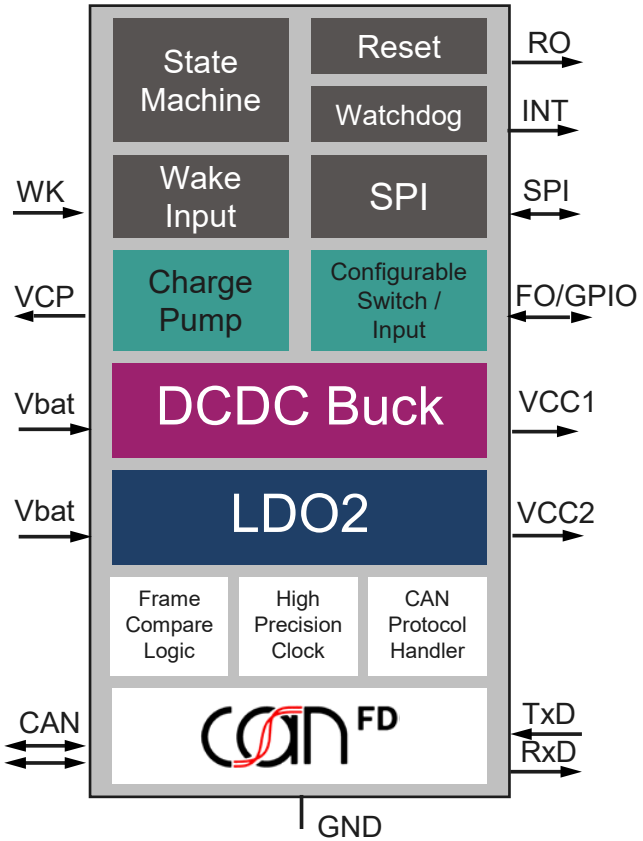
Application Examples





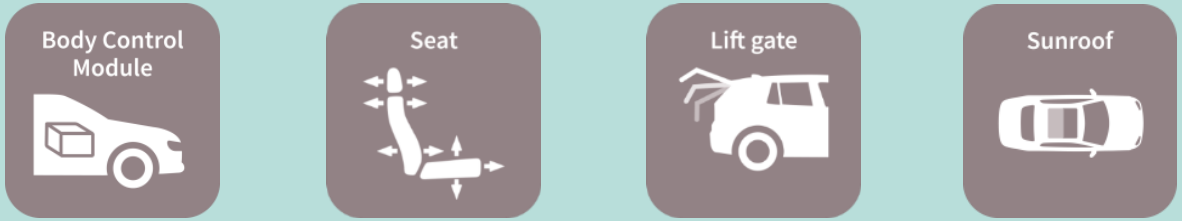
Mid-Range+ SBC

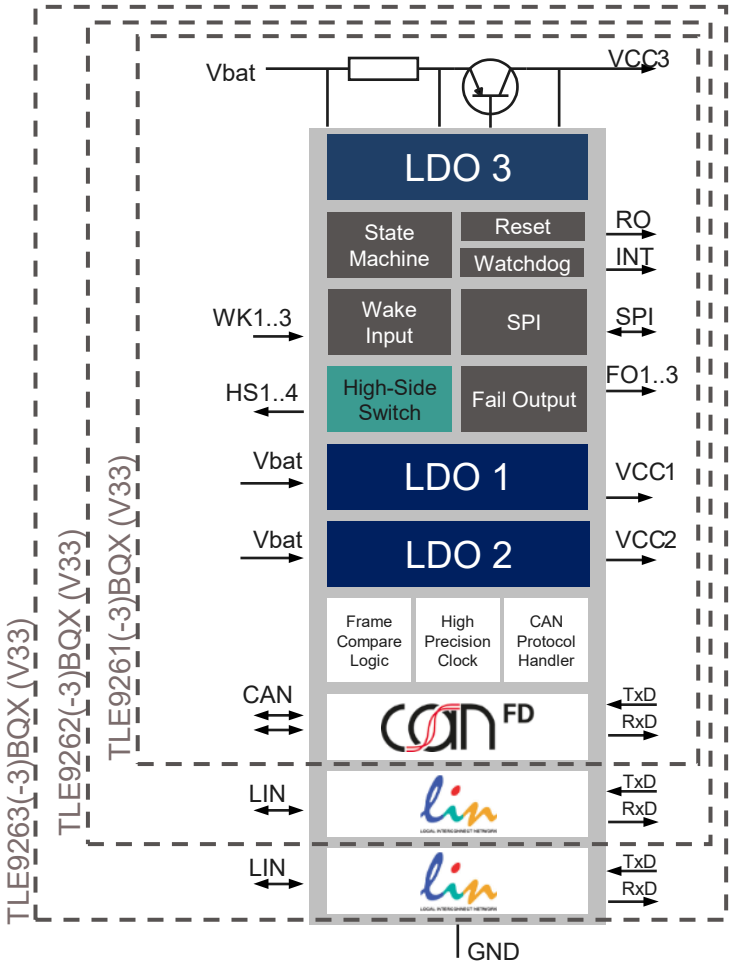
Mid-Range+ SBC Overview
TLE9261/2/3(-3)BQX (V33)

Key Features

- 1-to-1 Drop-In with existing Mid-Range SBC family
- 5V or 3.3V integrated LDO voltage regulators
- 5V/3.3V/1.8V voltage reg. with external PNP
- Support CAN FD communication up to 5Mbps, compliant to ISO11898-2:2016
- CAN PN FD tolerant (-3BQX variants)
- Very low quiescent current
- Low-Power and Fail-Safe Operating Modes
- 7x7mm VQFN-48 supporting AOI
- Software Compatibility w/in TLE926x/927x/946x/947x

Application Examples





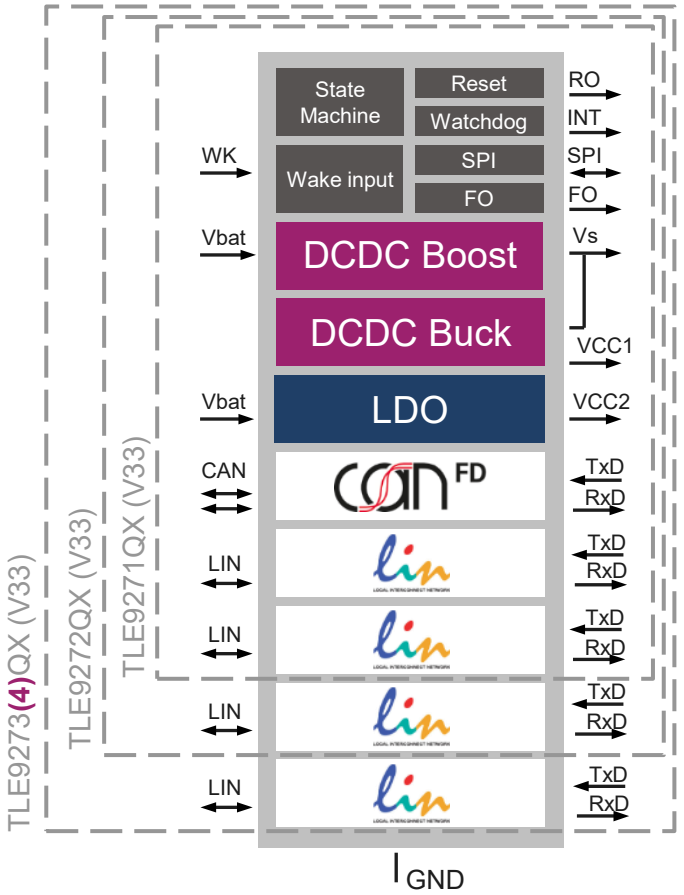
DCDC SBC

DCDC SBC Overview
TLE9271/2/3/4QX (V33)

Key Features

- 5V(3.3V) BUCK converter up to **750mA**
- 6.5V/8V BOOST controller (Vs) → **Additional 10V BOOST option for TLE9274QX (V33)**
  Switch f = 450kHz w/ edge shaping for low EMI
- LDO voltage regulator @ 5V up to 100mA
- CAN FD communication up to 5Mbps
- Very low quiescent current in PFM mode
- Low power and Fail-Safe Operating Mode
- 7x7mm VQFN-48 w/ exposed pad supporting AOI
- Software Compatibility w/in TLE926x/927x/946x/947x

Application Examples



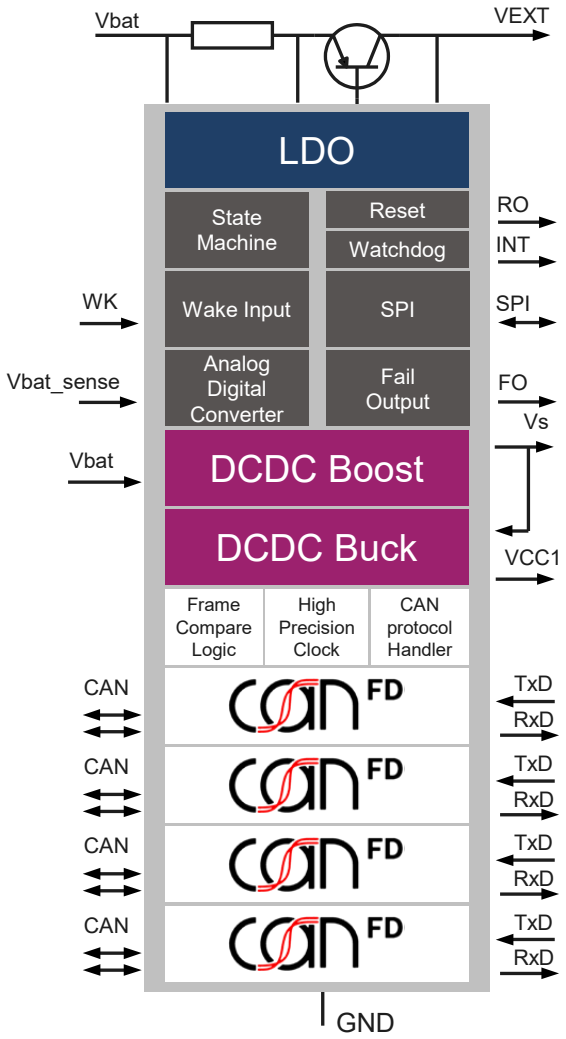
Multi-CAN Power+ SBC

Multi-CAN Power+ SBC Overview
TLE9278(-3)BQX (V33)

Key Features

- 5V/3.3V BUCK converter up to 750mA
- 6.5V/8V/10V/12V BOOST converter
- Switch f = 450kHz w/ edge shaping for low EMI
- 5V/3.3V/1.8V/1.2V LDO with external PNP
- Four ports CAN FD up to 5Mbps
- CAN PN FD Tolerant (“-3” variants)
- Battery Voltage Measurement interface w/ ADC
- Low Power and Fail-Safe Operating Mode
- 7x7mm VQFN-48 w/ exposed pad supporting AOI
- Software Compatibility w/in TLE926x/927x/946x/947x

Application Example

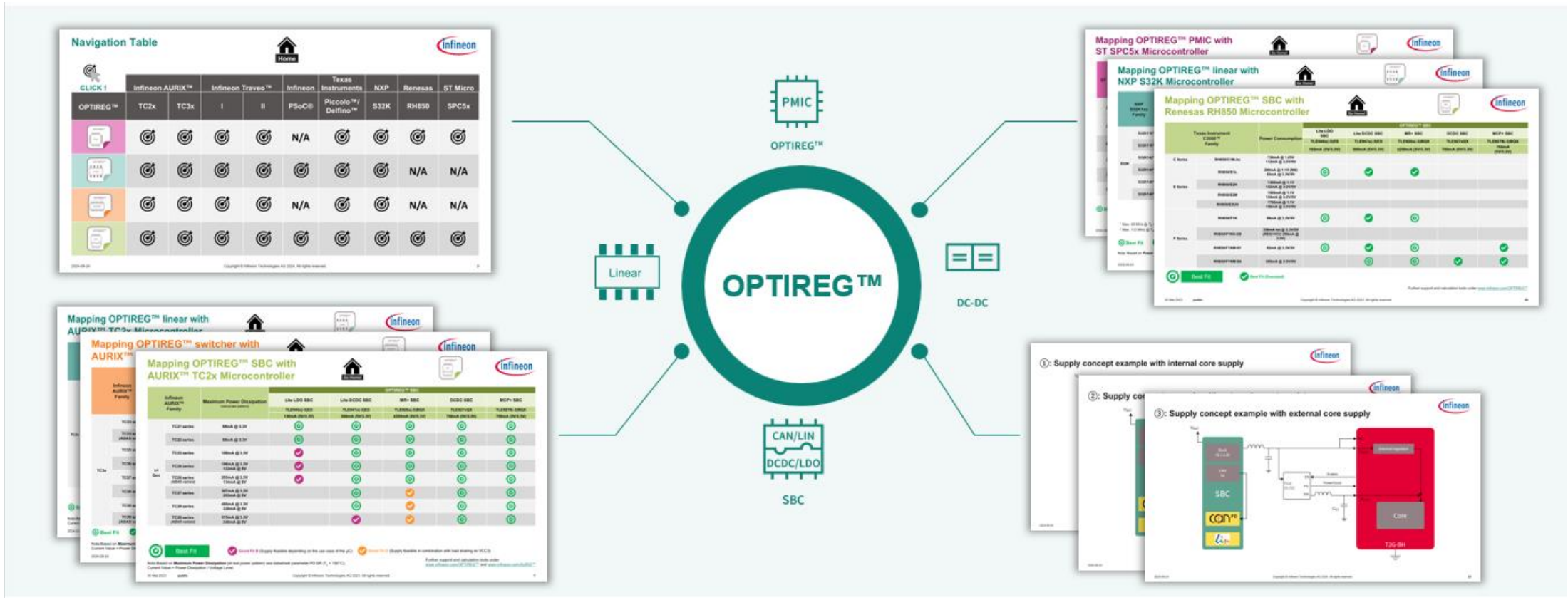


Cross-selling

Mapping of OPTIREG™ with various microcontrollers
Find the right OPTIREG™ for your microcontroller in just a few clicks!

Scan

Click



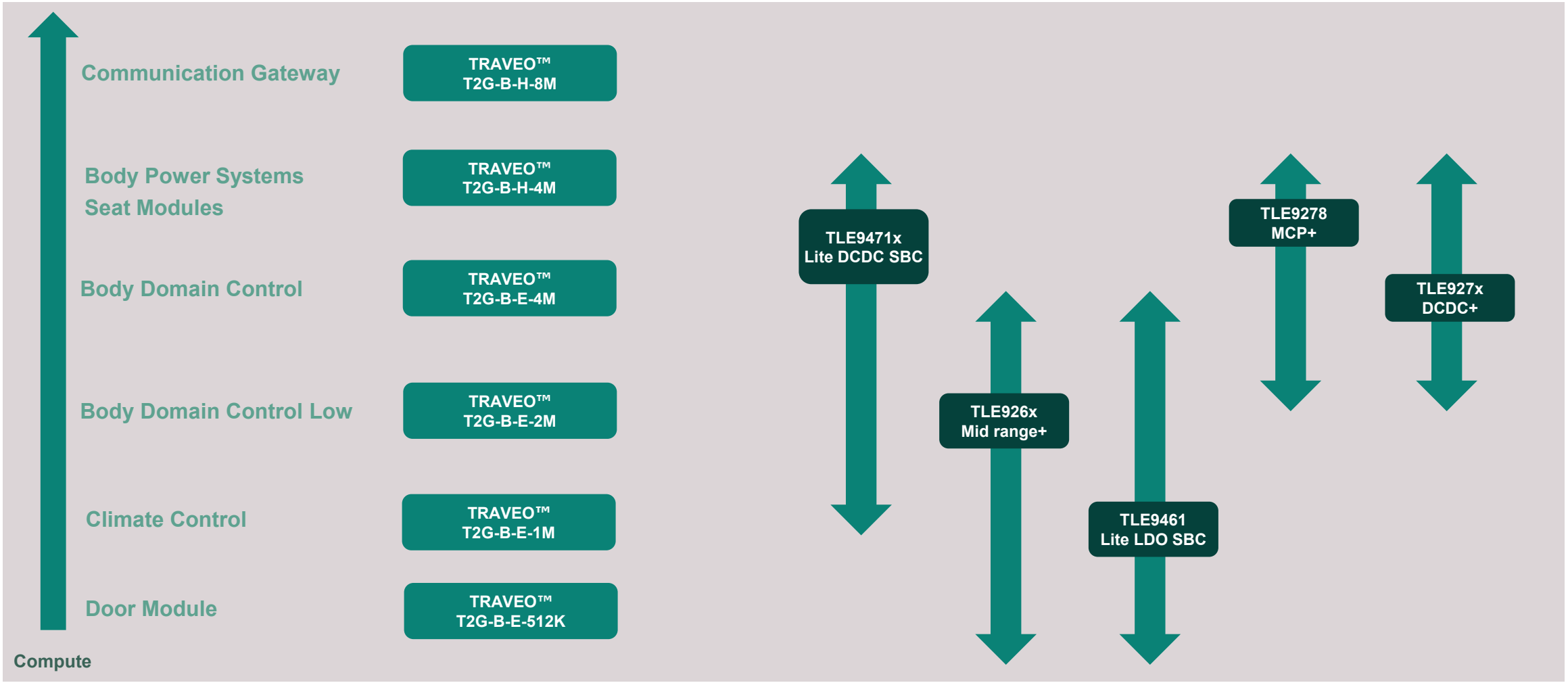
Mapping of OPTIREG™ with various microcontrollers
Find the right OPTIREG™ for your microcontroller in just a few clicks!

Scan

Click

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

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



Trainings

OPTIREG™ SBC trainings

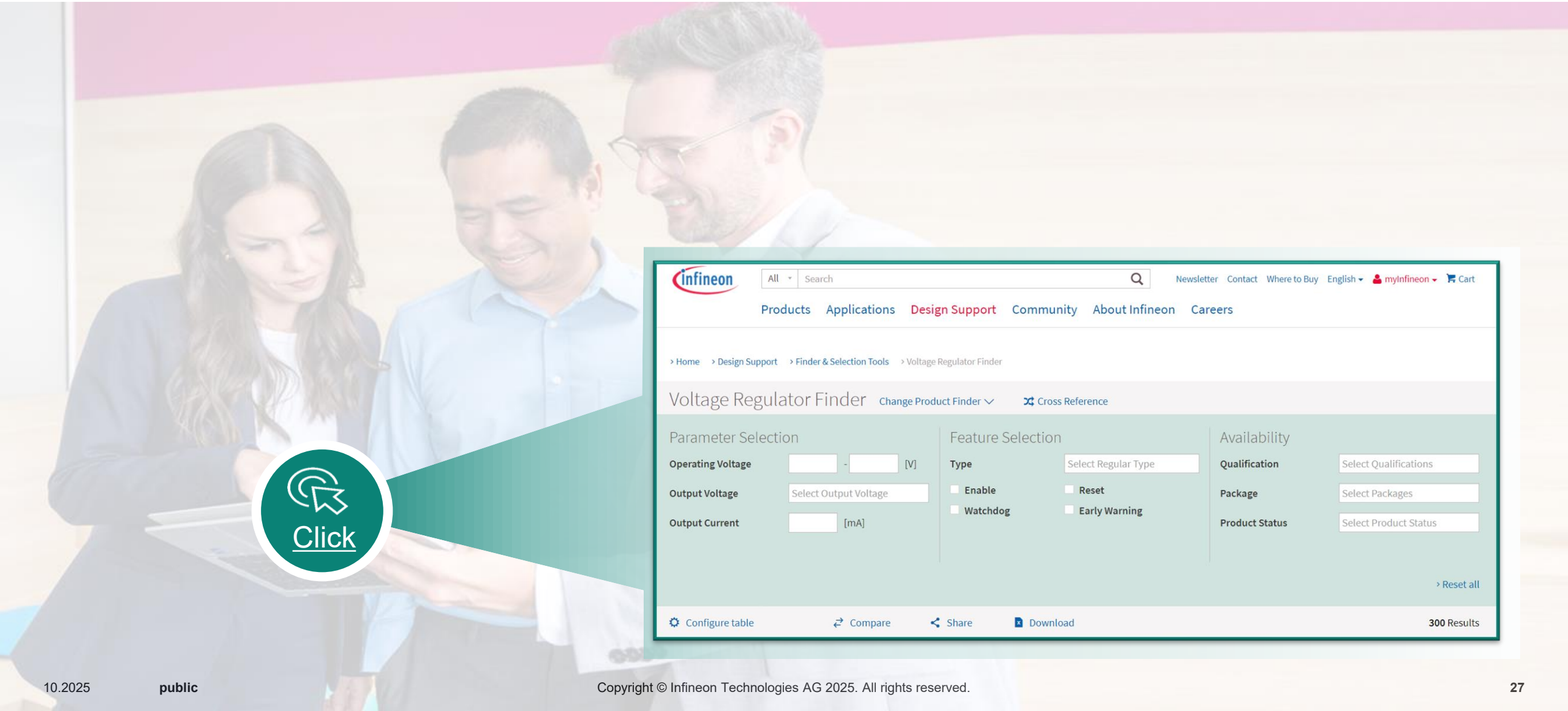
Training name	Content
Why are OPTIREG™ devices the perfect supply partners for Traveo™ II Body microcontroller?	OPTIREG™ SBCs are a perfect match to the Traveo™ II Body microcontroller family. Want to know why and how? Then come along and find out!
General SBC	Get a high-level overview of OPTIREG™ SBC in this video.
Understanding OPTIREG™ System Basis Chips (SBC)	In this training you will get application-independent explanations of the functional blocks, description of each part of the State Machine, and entry points when generating a schematic with an OPTIREG™ SBC .
Mid-Range Plus (MR+) SBC	In this training you will get a general overview of OPTIREG™ Mid-Range+ System Basis Chips. For a general overview of OPTIREG™ SBCs please watch first “General SBC ”.
Lite SBC	In this training you will get a general overview of OPTIREG™ Lite System Basis Chips. For a general overview of OPTIREG™ SBCs please watch first “General SBC ”.

Click on the training title to access it

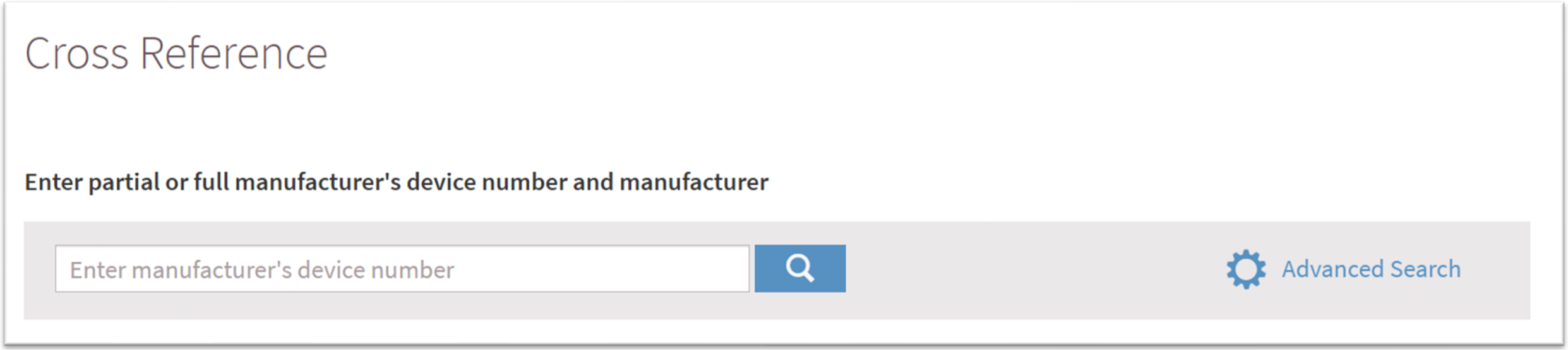
Supporting Tools & Documents

OPTIREG™ SBC
To ensure optimal selection, we provide a detailed selection tool

Find the right SBC for your specifications in just a few clicks!



OPTIREG™
find compatible devices to many competitor's devices for your design



Infineon's cross reference search: LINK

OPTIREG™ System Basis Chip (SBC) Collaterals & Support Material

Collaterals and Brochures	– Product Briefs – Selection Guides – Application Brochures – Presentations – Fighting Guides	– Link to SBC family page – Automotive Power Selection Guide – Automotive Application Guide – Automotive In-Vehicle Networking

Technical Material	– Application Notes
	– User Manual
	– Datasheets
	– PCB Design Data
		– Link to SBC family page
		  – Lite SBC family page
		  – Mid-Range+ SBC family page
		  – DCDC+ SBC family page
		  – Multi-CAN Power+ SBC family page

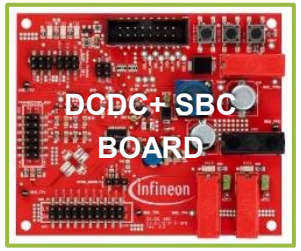
Evaluation Boards & Software	– Evaluation Boards Software: – SBC Config Wizard – Power Dissipation Tool – Bode Plot – CAN PN Wizard – SBC Microcontroller Library – Current Consumption Tool	– Link to board pages – Link to software
Videos / Distribution Trainings	– Technical Videos – eLearnings	– Link to Videos – Link to eLearning

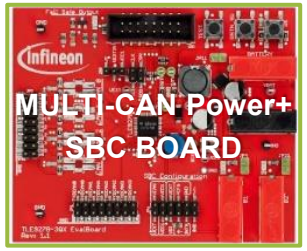
FAQ	– FAQ General SBC
	– FAQ Lite SBC
	– FAQ MR+ SBC
		– Link to SBC FAQ
		  – Link to Lite SBC FAQ
		  – Link to MR+ SBC FAQ

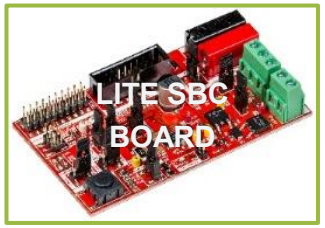
OPTIREG™ SBC Design Support Tools

SBC Evaluation Boards

Sales Name of Demoboard	Description
"MID-RANGE+ SBC (V33) BOARD"	*Available. Connect thru µIO.*
"DCDC+ SBC (V33) BOARD"	*Available. Connect thru µIO.*
"MULTI-CAN Power+ SBC (V33) BOARD"	*Available. Connect thru µIO.*
"LITE LDO/DCDC SBC (V33) BOARD"	*Available. Connect thru µIO.*
"SBC-SHIELD_TLE9471"	*Available. Connect thru Arduino.*
"UIO STICK"	*Available. USB dongle between computer & demoboard*

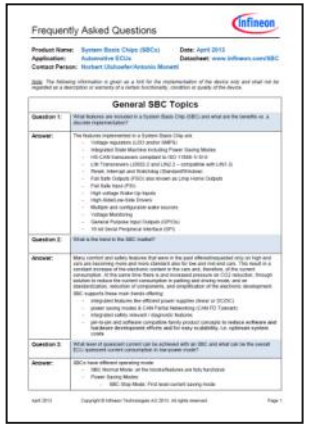






Other design in support material

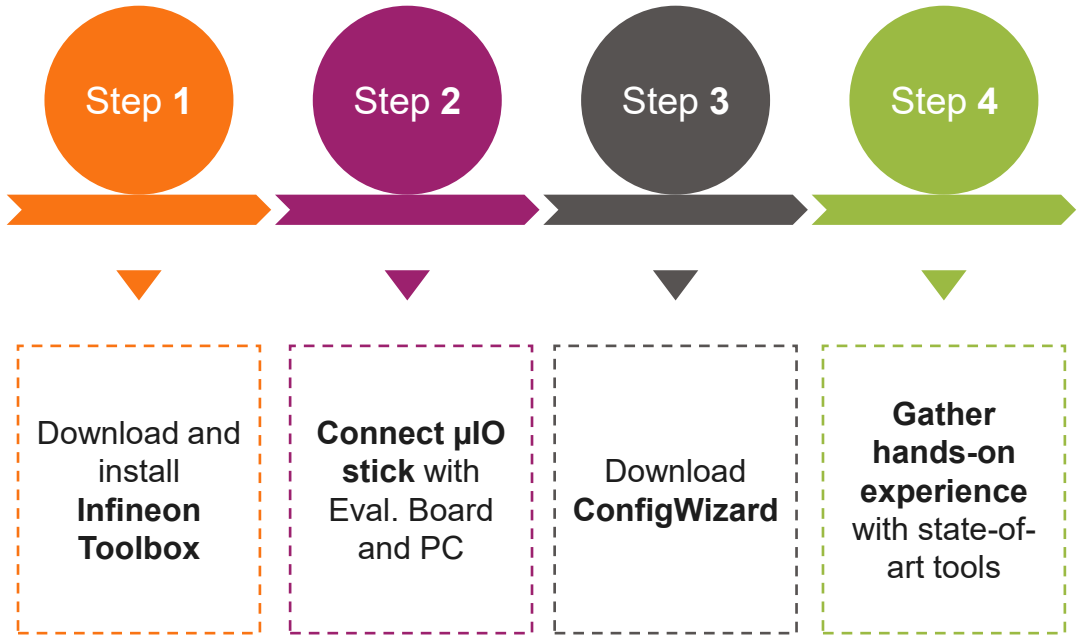
- Data Sheets (on request before M9)
- EMC Test Reports (on request)
- FIT Rates & Module breakdown (on request)
- eLearning for SBC, Lite SBC and MR+ SBC
- Config Wizard (Toolbox)
- Power Dissipation Tool, CAN PN Wizard, Bode Plot and SBC Microcontroller Library, Current Consumption Tool (Toolbox)



OPTIREG™ SBC Design in Support & Tool Chain

Various support materials are offered by the Infineon:

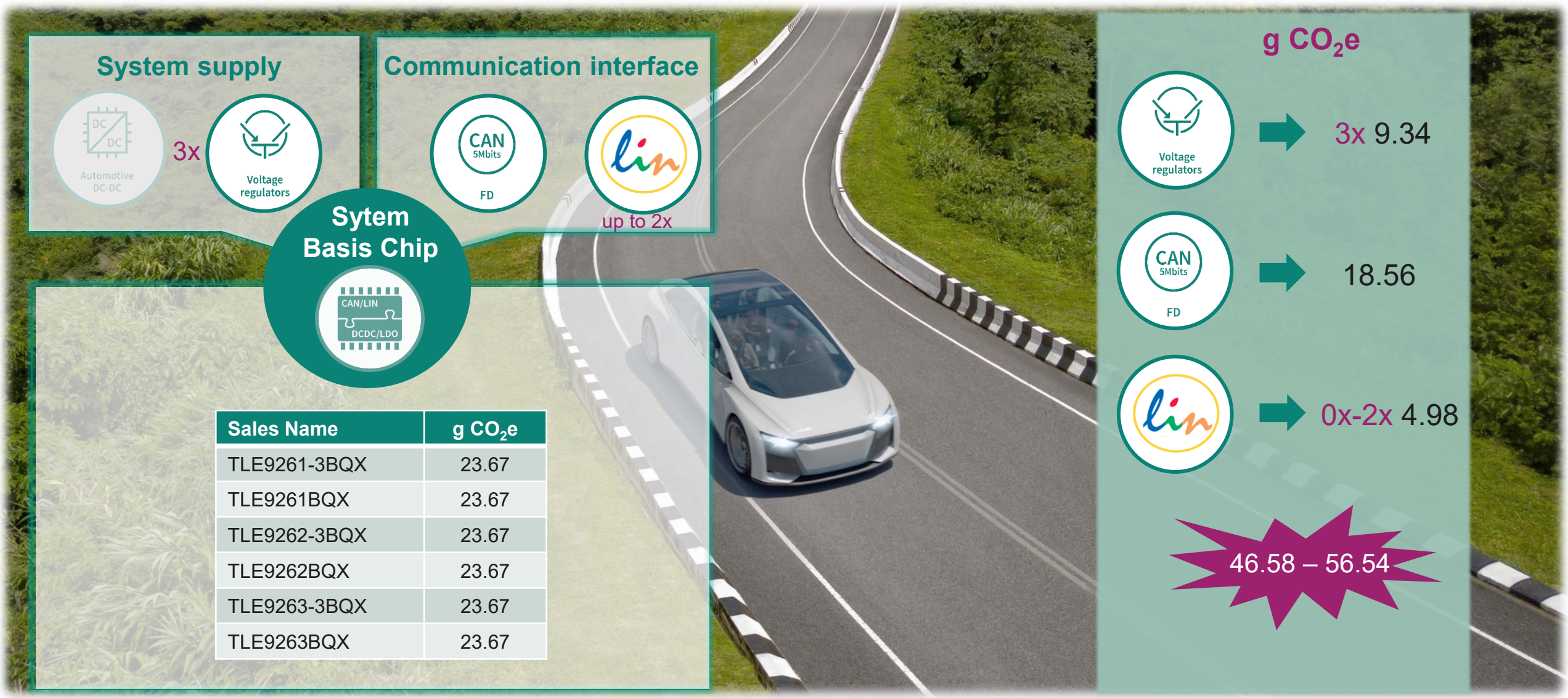
- Evaluation Boards
- Shield for Arduino
- SBC Config Wizard (Configuration Tool)
- SBC Microcontroller Library
- Bode Plot
- Power Dissipation Tool
- CAN PN Wizard
- Current Consumption Tool
- Application Notes
- User Manual
- Data Sheets
- eLearnings for SBC, Lite and MR+
- FIT Rates & Module/Area breakdown



Toolchain Installation Steps

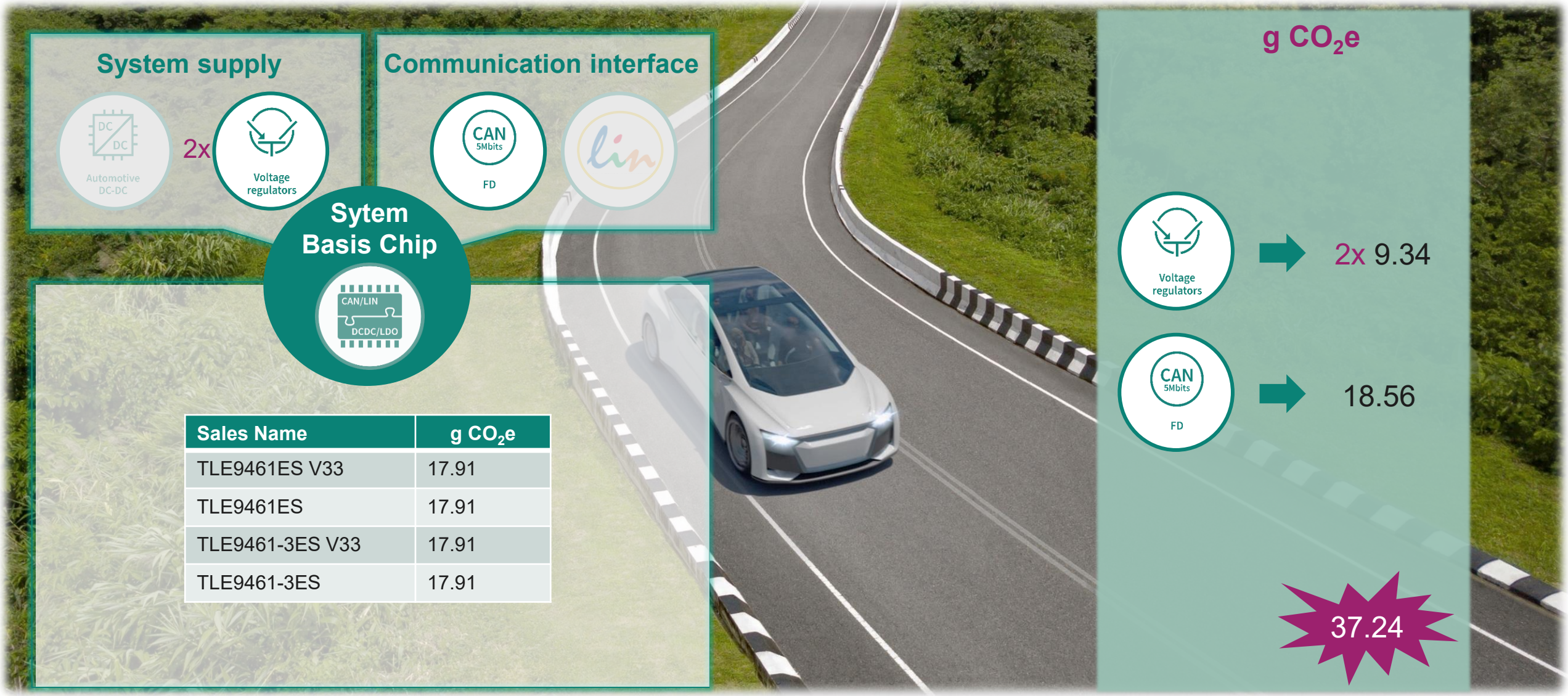
OPTIREG™ SBC CO_2 footprint vs. discrete solutions

OPTIREG™ Mid-Range+ SBC family product CO_2 footprint vs. discrete solution



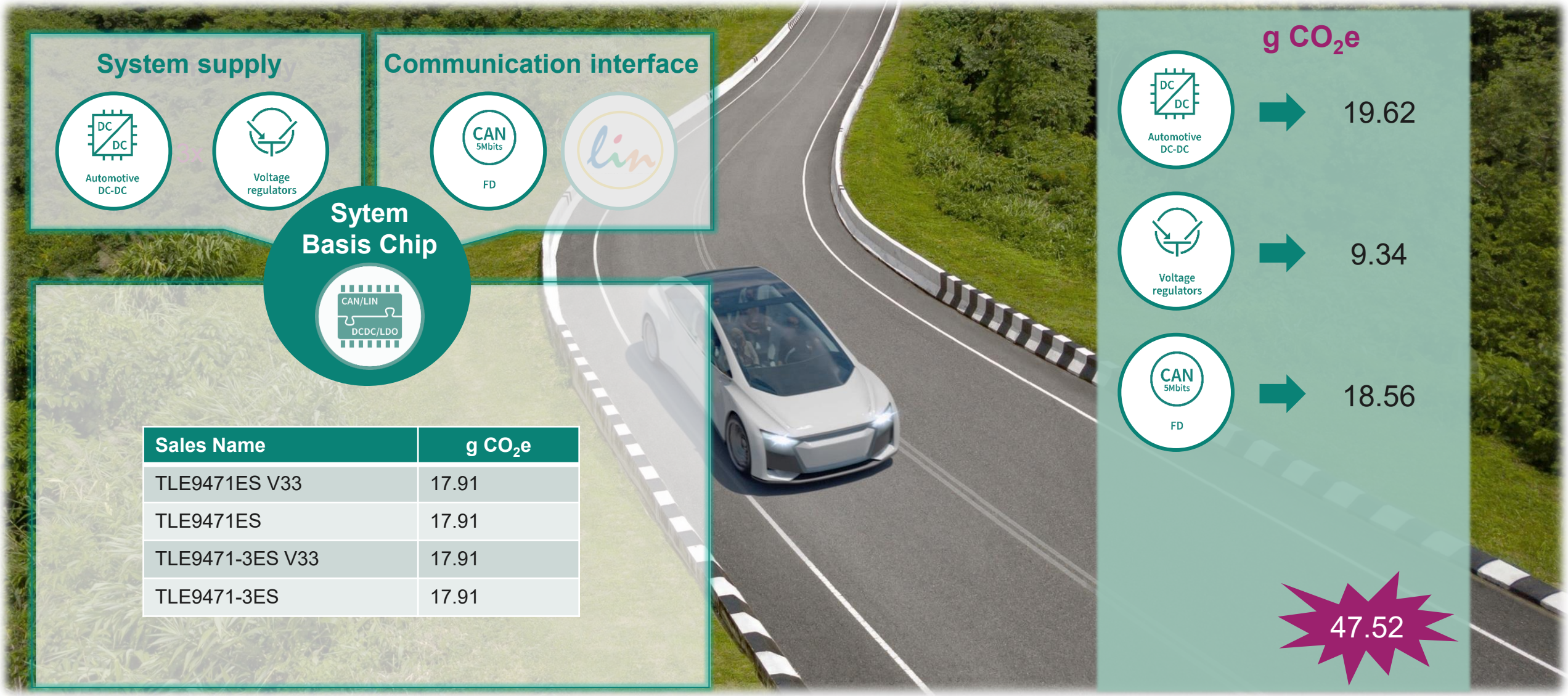
Sales Name	g CO_2e
TLE9261-3BQX	23.67
TLE9261BQX	23.67
TLE9262-3BQX	23.67
TLE9262BQX	23.67
TLE9263-3BQX	23.67
TLE9263BQX	23.67

OPTIREG™ Lite (LDO) SBC family product CO_2 footprint vs. discrete solution



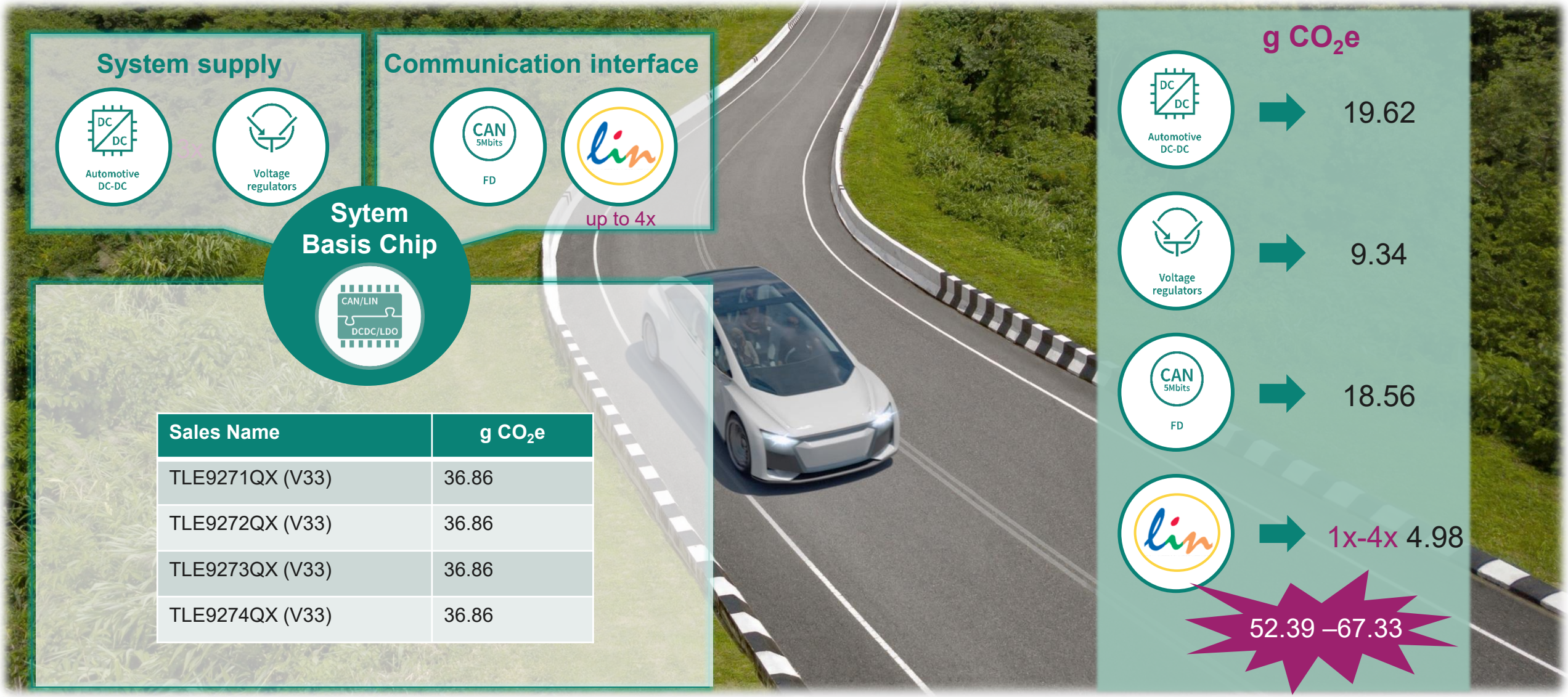
Sales Name	g CO_2e
TLE9461ES V33	17.91
TLE9461ES	17.91
TLE9461-3ES V33	17.91
TLE9461-3ES	17.91

OPTIREG™ Lite (DCDC) SBC family product CO_2 footprint vs. discrete solution



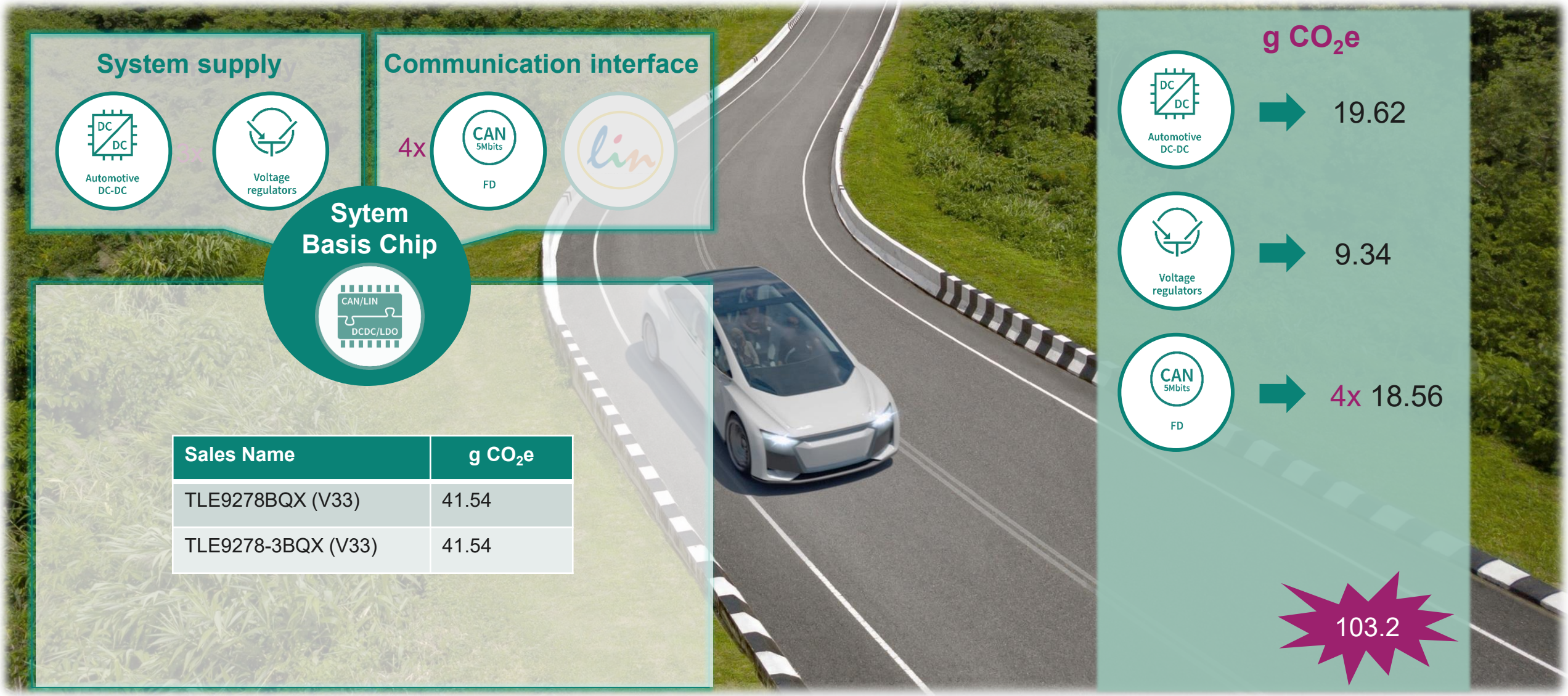
Sales Name	g CO_2e
TLE9471ES V33	17.91
TLE9471ES	17.91
TLE9471-3ES V33	17.91
TLE9471-3ES	17.91

OPTIREG™ DCDC SBC family product CO_2 footprint vs. discrete solution



Sales Name	g CO_2e
TLE9271QX (V33)	36.86
TLE9272QX (V33)	36.86
TLE9273QX (V33)	36.86
TLE9274QX (V33)	36.86

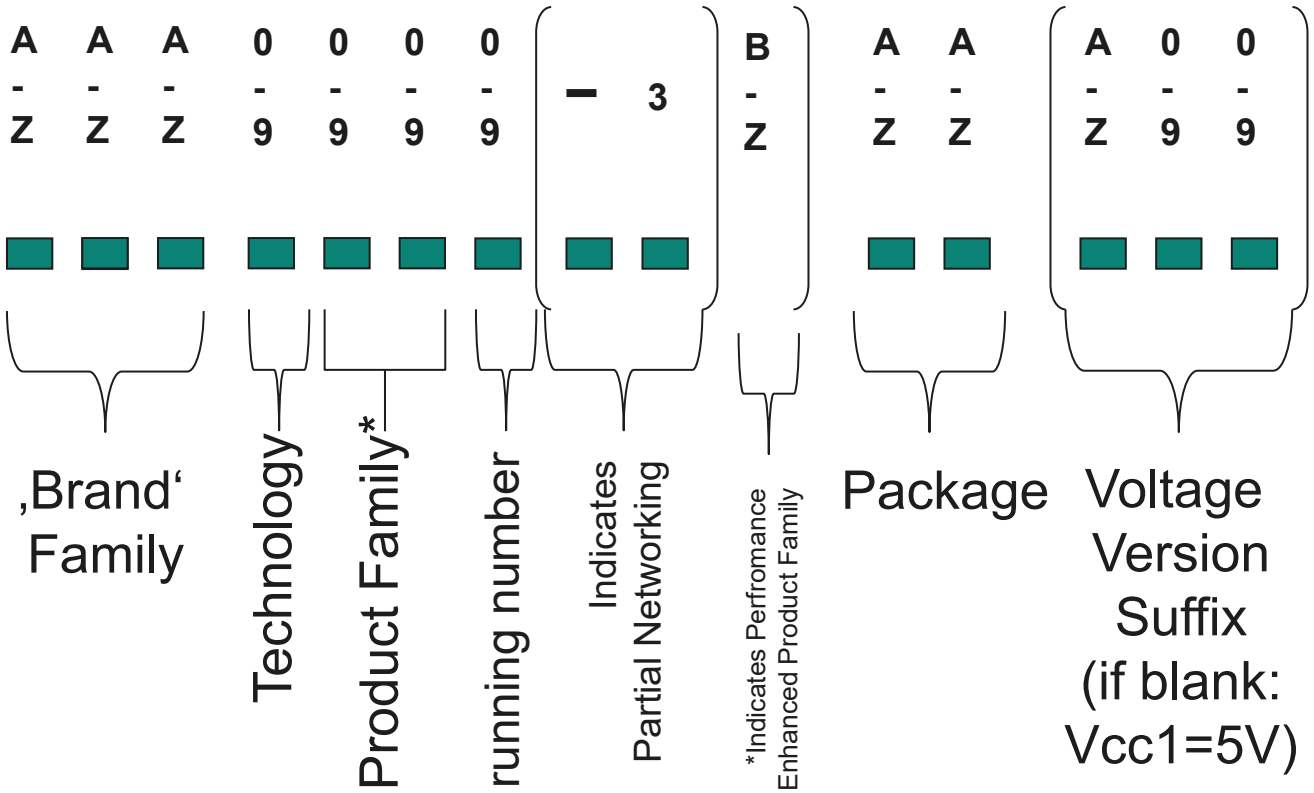
OPTIREG™ Multi-CAN Power+ SBC family product CO_2 footprint vs. discrete solution



Sales Name	g CO_2e
TLE9278BQX (V33)	41.54
TLE9278-3BQX (V33)	41.54

Device Naming Nomenclature

OPTIREG™ SBC nomenclature



Example:

T L E 9 2 6 3 (-3) B QX V33

9 – STP9 process technology

26 – Mid-Range

3 – running number; here: variant w/ 1x CAN, 2x LIN

(-3) – with Partial Networking support

B – Mid-Range+ product family

QX – VQFN-48 package

V33 – Vcc1 output is @ 3.3V


Infineon