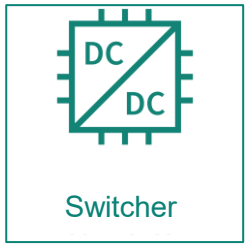


OPTIREG™ switcher

Product presentation

Infineon Automotive Division

Q3 2026





Find it online !

Public

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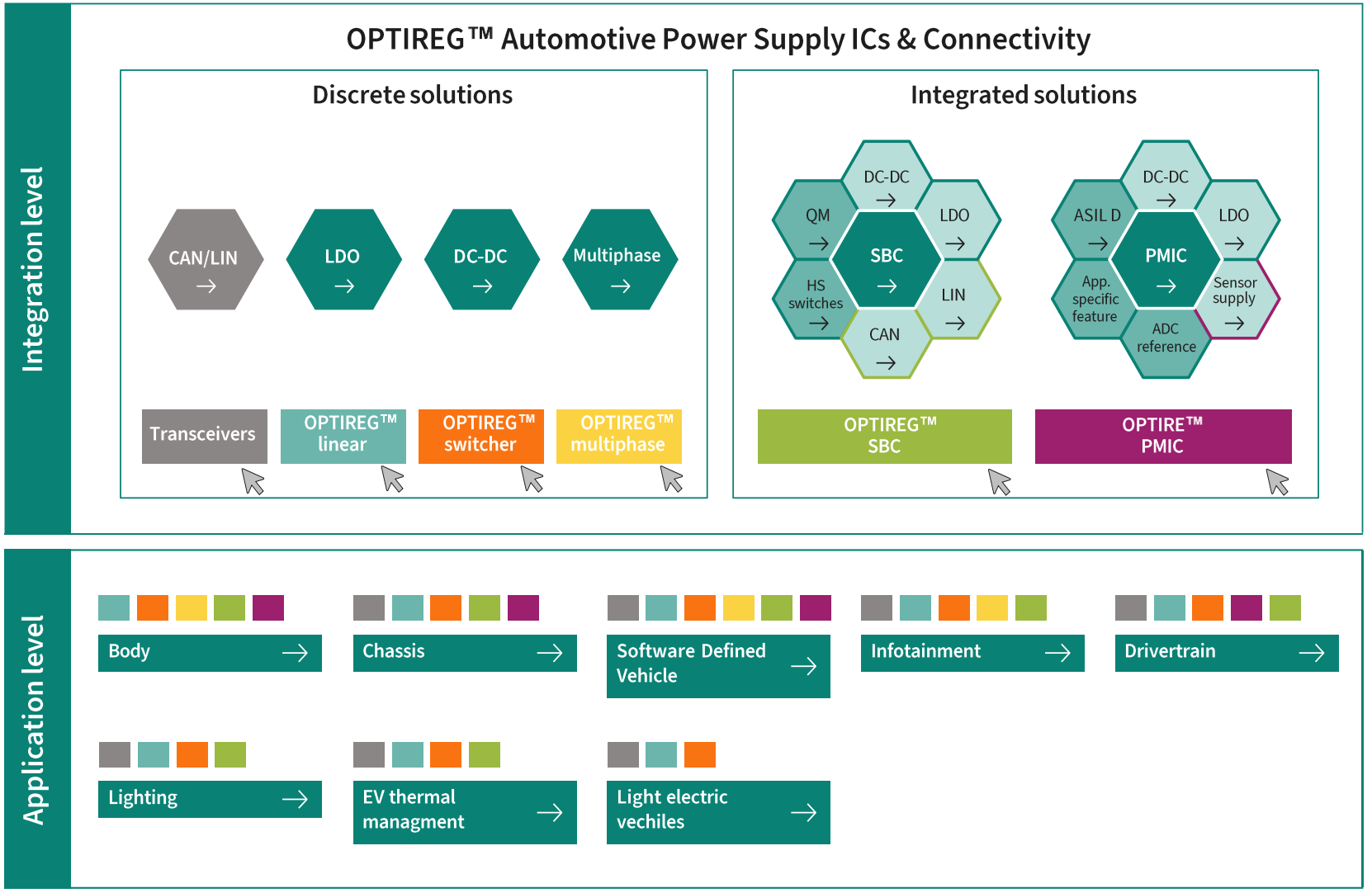
OPTIREG™

OPTIREG™ Portfolio



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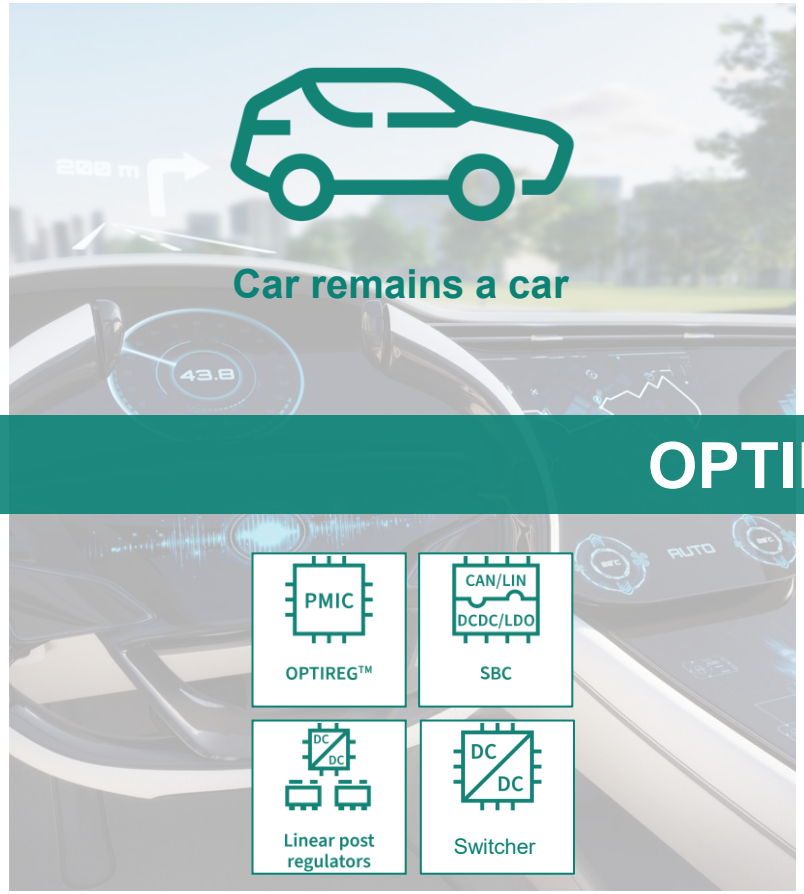
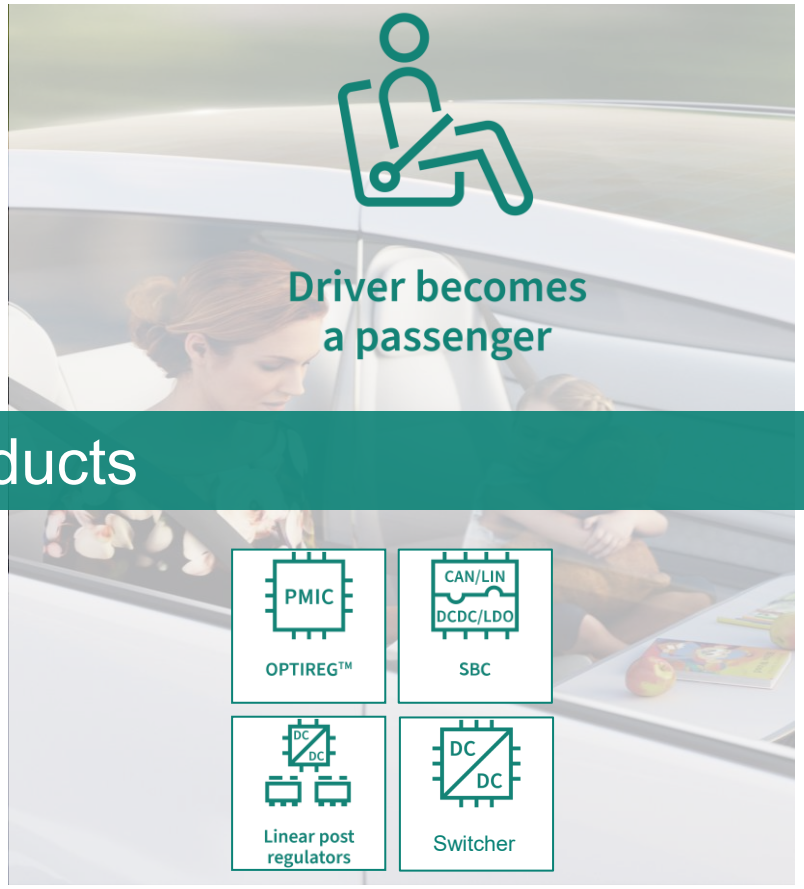
OPTIREG™ Power Supply fits in all automotive relevant trends







OPTIREG™ provides the right products

to support all these trends

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

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OPTIREG™ switcher

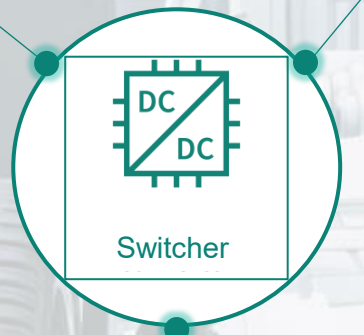
OPTIREG™ switcher in a Nutshell

Product families









Small, Efficient and Reliable

Key Feature	Customer Benefit
Robust & highly efficient design	Design flexibility across a wide range of applications e.g. for harsher climates
Low quiescent current	Efficient operation during ECU low power modes
Low energy consumption	Longer battery life in low-power modes
Wide input voltage range	Works reliable in harsh bord-net environments
Integrated protection features, OV and UV	Boosts safety and reduces external components
Flexible switching range	Optimization of design in terms of efficiency, space and EMI

Applications


BMS


Body Comfort


Transmission



Telematics


Car antenna


Truck


Infotainment


Autonomous driving


xEV


CAV

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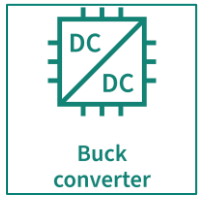
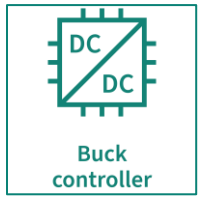
OPTIREG™ switcher



Step down IC with integrated power stage (Buck Converter / Regulator)



Step Down IC (Buck Controller)



Step up IC (Boost Controller)

Features:

- Robust & highly efficient design for harsher climates
- Low quiescent current
- Low energy consumption
- 12 V, 5 V, 3.3 V and adjustable output voltages
- Wide-input voltage range
- Current and voltage regulation
- Flexible switching range
- Overvoltage/undervoltage protection
- Green products are RoHS compliant



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Buck Converter (Step-down pre-regulator with integrated switches)

Features:
- Converts an unregulated high input voltage into a stabilized low output voltage of the same polarity.
- Uses a transistor as a switch, which alternately connects and disconnects the direct input current to low pass filter consisting of an inductor and a capacitor.
- The duty cycle (on-time of the (upper) transistor by cycle time determines the ration between input and output voltage.
- The result is smoothened output voltage of desired value.
- Depending on the output filter edge frequency a minor voltage ripple might be seen.

Applications:
- Body
- Cluster
- Infotainment
- General purpose replacement of LDO
- Pre-regulator
- Automotive general ECUs
- BCM, Gateway, Cluster
- Camera, Radar, Telematics
- Infotainment, Car-Media, Display, Dashboard

Products:
- TLE8366E V50
- TLE8366EV
- TLS4120D0EP V33
- TLS4125D0EP V50
- TLF50251EL
- TLF50281EL

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Boost Controller (Step-up pre-regulator, with external switches)

Features:

- Converts an unregulated low input voltage into a stabilized high output voltage of the same polarity.
- When the switch is turned on, a current is driven through the inductor. Thus the inductor is energized.
- Opening the switch makes the current driven by the inductor flowing into the output capacitor increasing the output voltage.
- Maybe used as a voltage or current source, a shunt resistor protects the switch from over current.
- Operated in variations: e.g. Fly-Back for a potential separation (buck or boost in SEPIC configuration).
- Potential separation from converter. e.g. Pot separation on IGBT driver
- Start-stop function
- 48V Flyback for 12V-12V

Applications:

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

Products:

- TLE8386-2EL

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Buck Controller (Step-down pre-regulator, with external switches)

Features:

- PWM step-down DC/DC controller with external power switches
- Controller for loads up to 10A
- Similar to Boost Controller but step down.
- Synchronous controller with EN, ADJ
- Adjustable switching frequency can be synchronized to an external clock
- Very low shut-down current
- Protection functions
- Flexibility in current limitation to reduce external components
- Integrated soft-start limits the current peak as well as voltage overshoot at startup

Applications:

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

Products:

- TLF51801ELV

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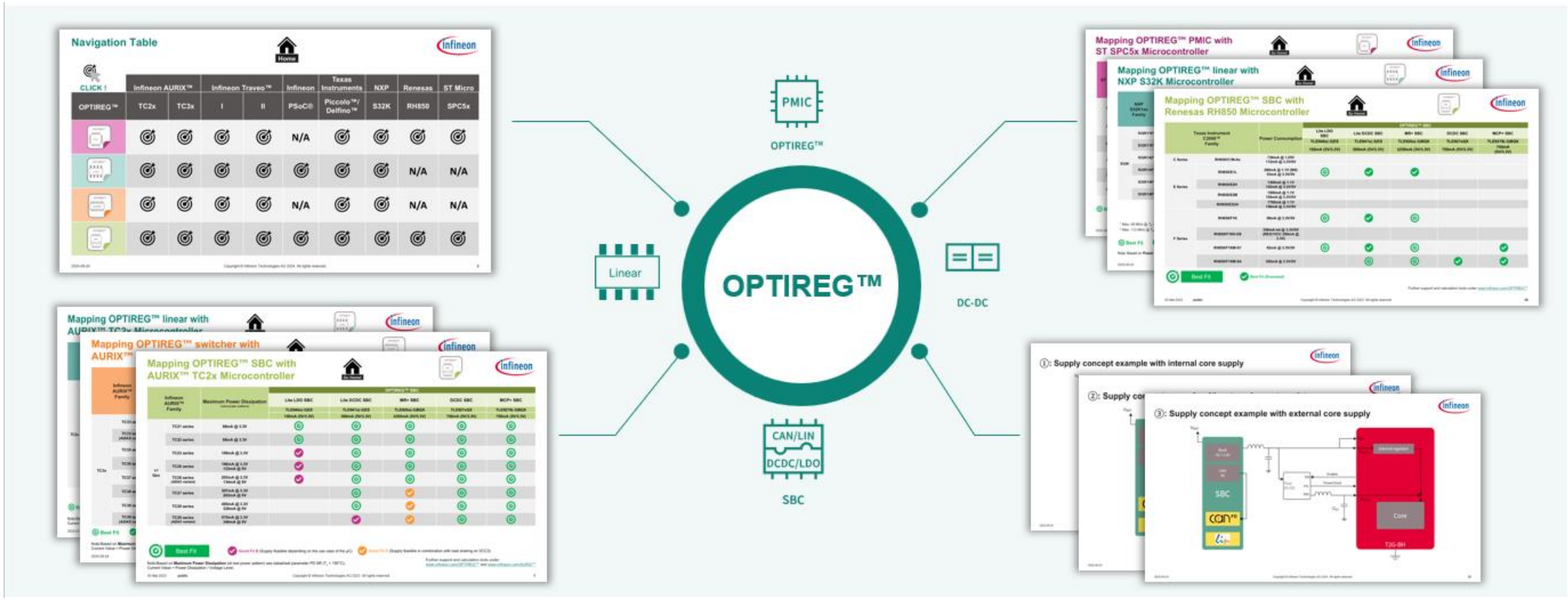
Cross-selling

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

Scan

Click



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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
	◎	◎	◎	◎	◎	◎	◎	◎	◎

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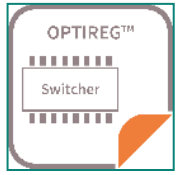
Trainings

OPTIREG™ Switcher trainings



Training name	Content
Online Course Design-in made simple with OPTIREG™ Switcher's TLS4120 and 25 (E2) (ATV Academy)	By the end of this training, you will: • Have a better understanding about the operation modes of the device. • Know the theoretical boundaries of the operation modes. • Find out how you can estimate mode behavior using tools. • Identify the easy-to-use advantages of TLS4120 and 25.
Design-in made simple with OPTIREG™ Switcher's TLS4120 and 25	By the end of this training, you will: • You will know about the automatically-controlled operation modes and simplified concept of this easy-to-use synchronous buck converter family.
OPTIREG™ Switcher - Overview and new TLS412x family	By the end of this training, you will: • You will have an inside look at the newest addition to the OPTIREG™ Switcher family: TLS412x. Stay tuned to find out more!
OPTIREG™ switcher: Intro to Infineon's automotive switcher (new)	By the end of this training, you will: • Identify the families of Infineon products covered by the OPTIREG™ trademark • Identify Infineon's portfolio of Switcher • Know the value proposition of the Infineon OPTIREG™ Switcher • Indicate the key features of the new TLS5112 48V pre-regulator

Click on the training title to access it

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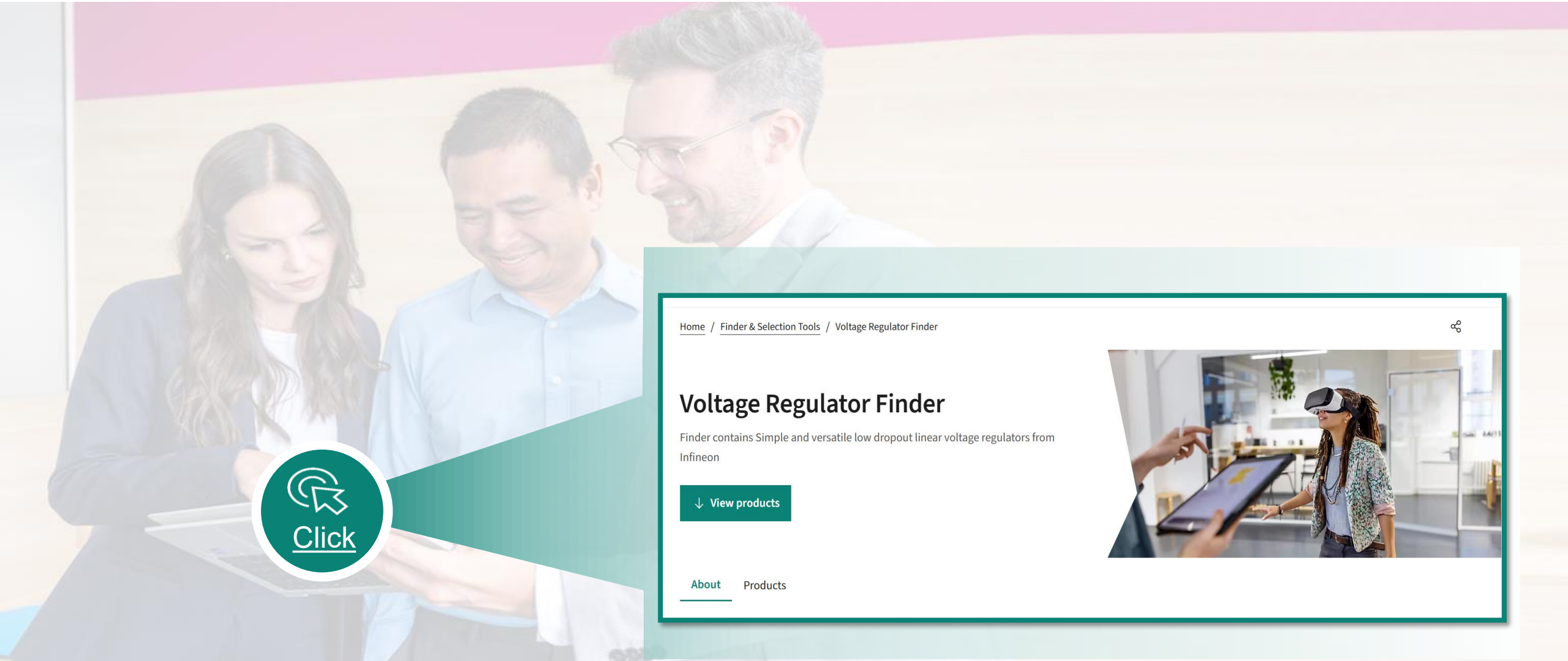
Supporting Tools & Documents

OPTIREG™ Switcher

To ensure optimal selection, we provide a detailed selection tool

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



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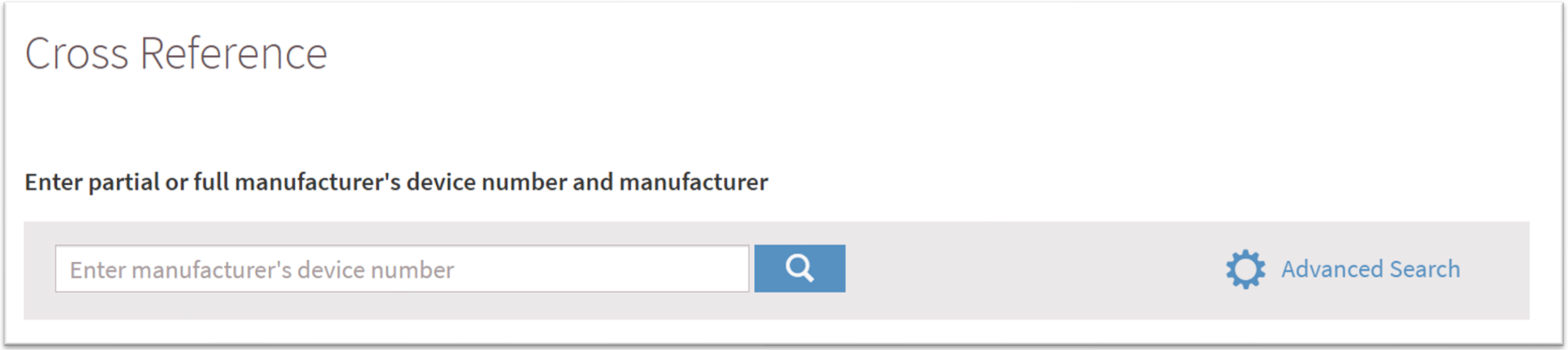
OPTIREG™

find compatible devices to many competitor's devices for your design.



Infineon's cross reference search: LINK

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