



Industrial Automation

Products for Energy-Efficient Applications



Industrial Automation

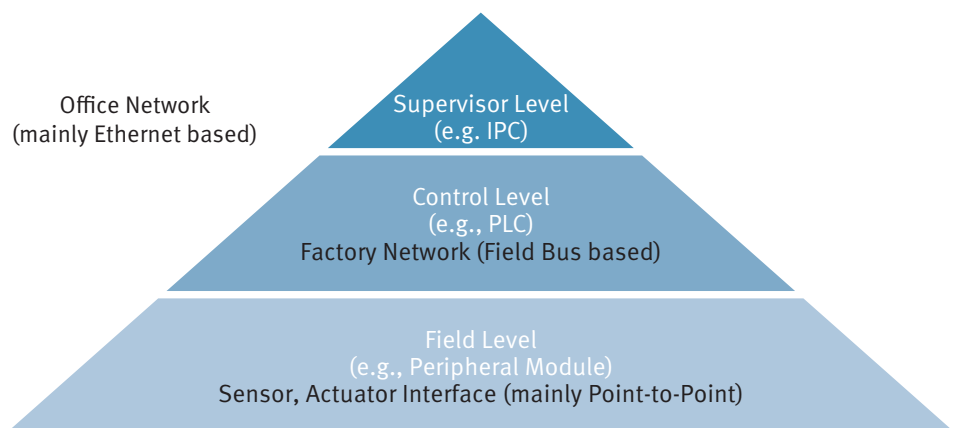
These days, it's hard to imagine the production landscape without industrial automation systems. Growing requirements of high product quality, paired with expectations of equally high reliability in high-volume production, mean that the scale of industrial automation will continue to grow. Much of what was previously produced by human hand can no longer be achieved in terms of cost and quality.

Computer-controlled robots, which complete the same process in continuously high quality and controllable speeds, are used in many points of industrial production as the basis for successful sales of high-quality products on world markets.

The growing demand for automated systems has increasingly shifted focus to optimization in the areas of security features, efficiency and low power consumption.

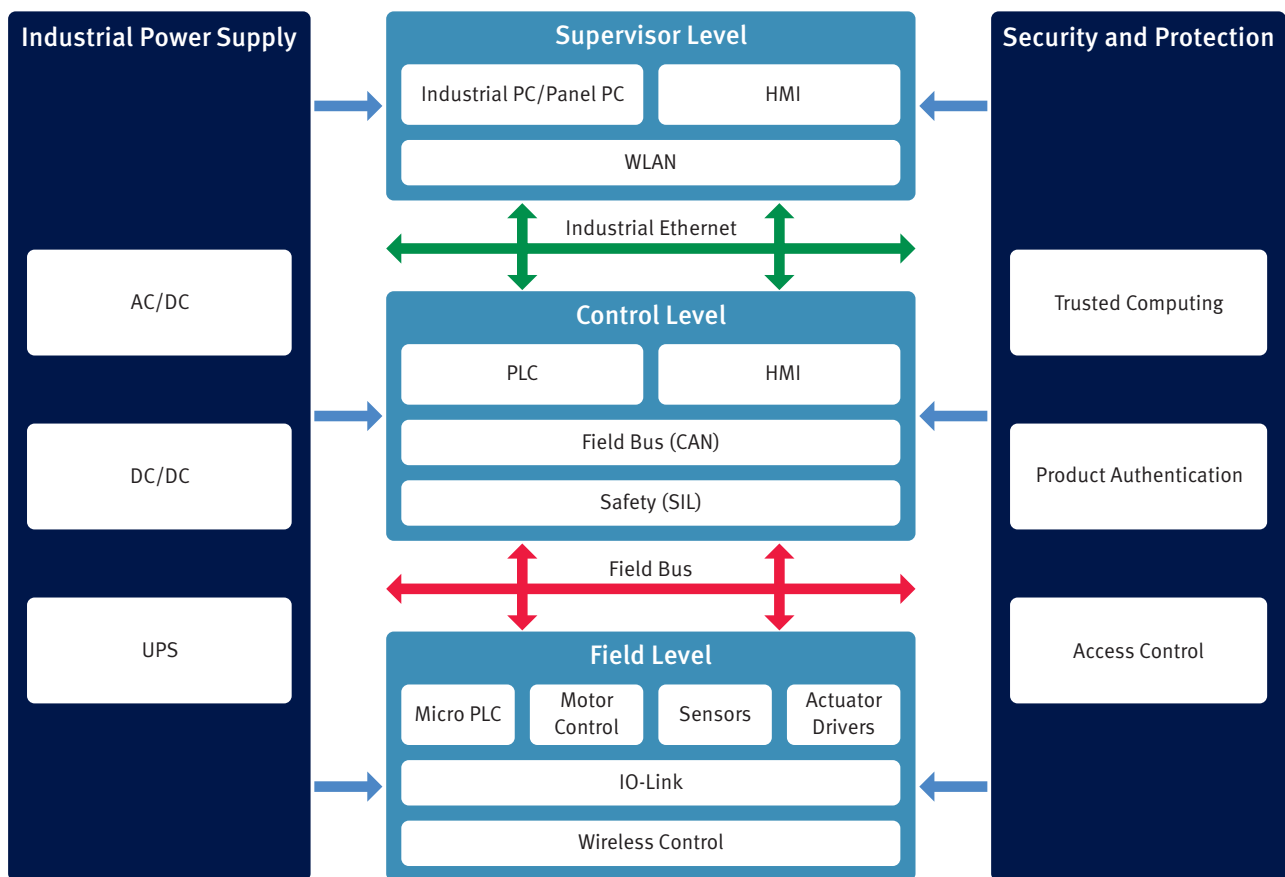
To meet these demands, Infineon Technologies offers a diverse range of products and solutions. We would like to present an overview of these in this brochure. The industrial automation application as we see it is presented in the following diagram:

The automation pyramid illustrates the three main levels as well as the intercommunication between them.





Industrial Automation Overview





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Automation Hierarchy and Applications

Supervisor Level

Within this level there are mainly PC-based systems used (so-called industrial PC, available as desktop, rack-mounted and panel PCs), equipped with standard OS (e.g., Windows-embedded) and supplier-specific industrial process-control software for process parameterization and visualization. These systems in general intercommunicate within an office network based on a Gbit LAN or higher bandwidth backbone. Also wireless topologies (WLAN) are implemented with industrial enhancement (e.g. protection class of IP65 and higher). There are less real-time requirements on communication since time-critical control processes are usually running on a PLC architecture (see control level).

The supervisory level usually doesn't contain any control architecture such as PLCs as well as field bus communication devices (e.g. Interbus, Profibus).

For data-safety reasons (avoiding data loss) there are usually redundant uninterruptable power supplies (UPS) installed, which communicate with the main system (e.g. Ethernet-based) and take over the emergency power supply to avoid data corruption and loss.

Core Applications for Supervisor Level

Industrial PC

HMI

WLAN

Industrial PC

Industrial PCs (IPC) are mainly used for process control (software-based applications) and meshed via standard Ethernet using industrial Ethernet switches.

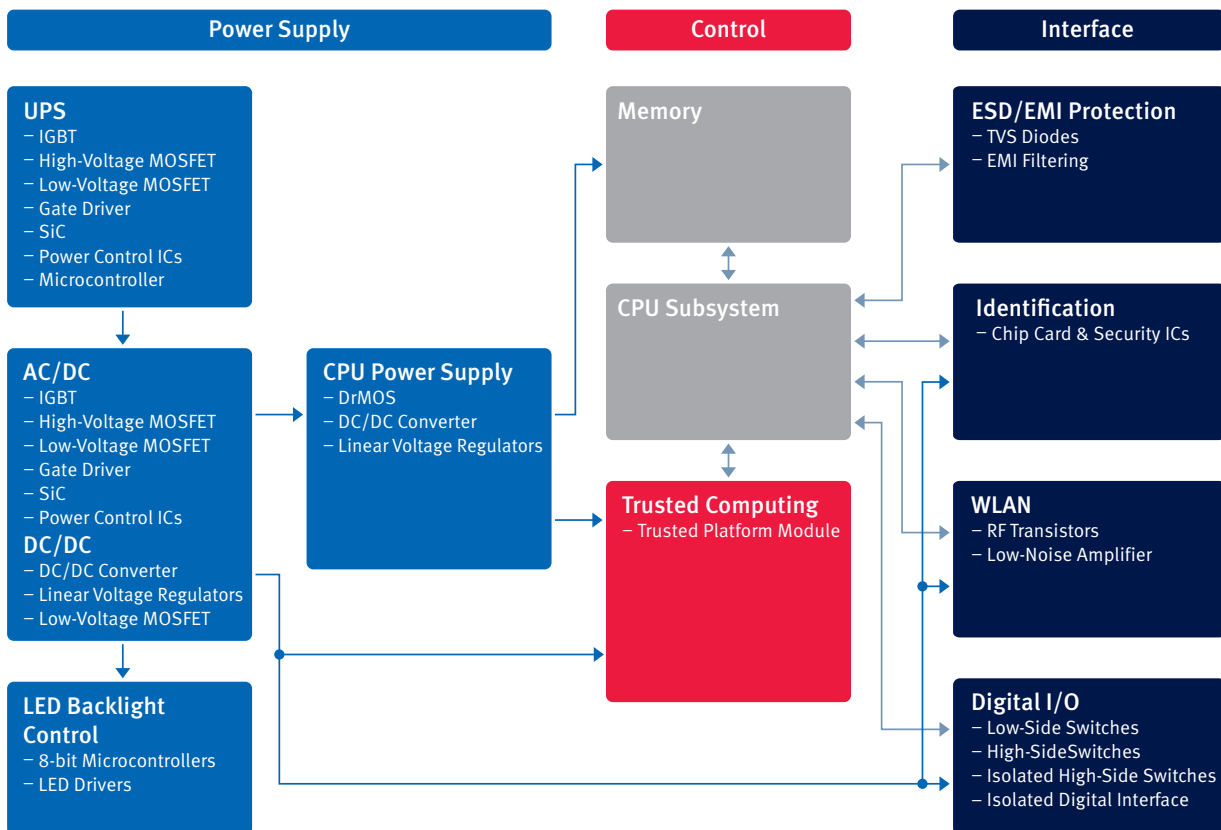
Mobile PC applications in industrial environments are used as programming units or for diagnostic purposes.

The main criteria for IPCs are:

- Meet industrial requirements (e.g. protection class, ambient temperature)
- Customized enclosure (e.g. 19" rack-mountable, boxed PC, panel PC, mobile)
- Compatibility to standard PC architecture (e.g. OS, applications)
- Continuous operation (24 h)
- Low power dissipation by CPU and power supply (operation without fan mandatory)
- Hardware access protection (e.g. ID card)
- Industrial field bus interfaces (e.g. RS-485-based, Ethernet-based)

Infineon offers a wide portfolio of energy-efficient power semiconductors (CoolMOS™, OptiMOS™), which meet enhanced low-power design requirements. Also dedicated CPU and memory power supply devices are available (compliant to Intel DrMOS specification).

Due to its market-leading position in the security and identification areas, Infineon also provides tailored solutions for trusted computing (TPM) as well as identification systems (contact-based and contactless chip card ICs). For interface protection there is a wide range of RF and protection devices as well as components for wireless applications available (LNA, RF transistors).

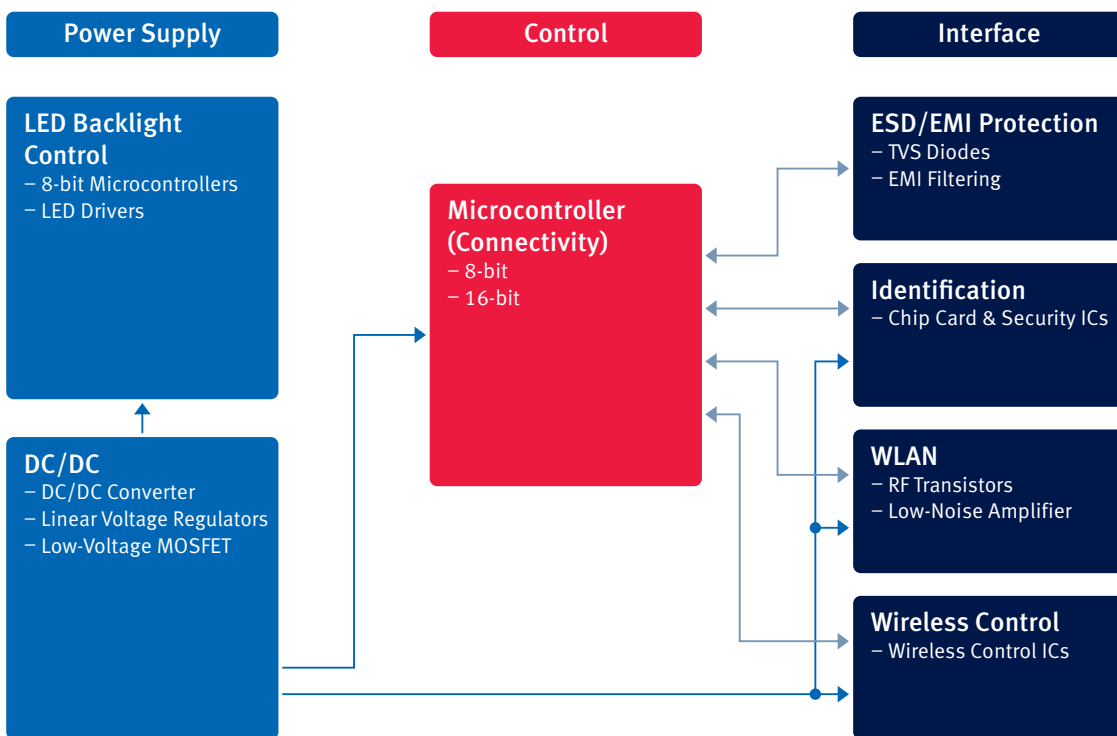


Human Machine Interface (HMI)

HMI products and systems like Text Displays, Graphic Panels, and Panel PCs are demanding various requirements to core semiconductor products such as, for example, Microcontrollers, Sensors, and power and protection devices.

The goal of Human-Machine-Interaction engineering is to generate a user interface that makes it easy, efficient, and enjoyable to operate equipment in order to produce optimum results.

The following block diagram shows our best-in-class solutions for HMI applications.

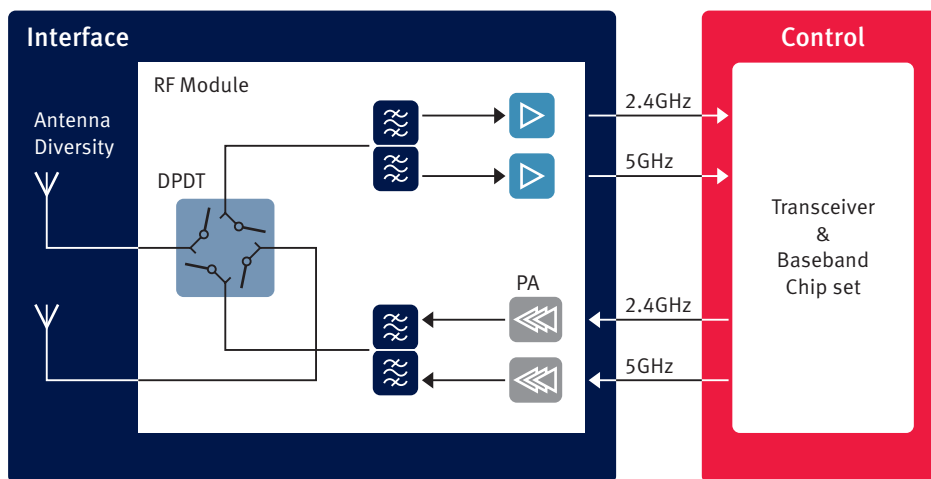


For detailed product information please see the chapter Products and Solutions.

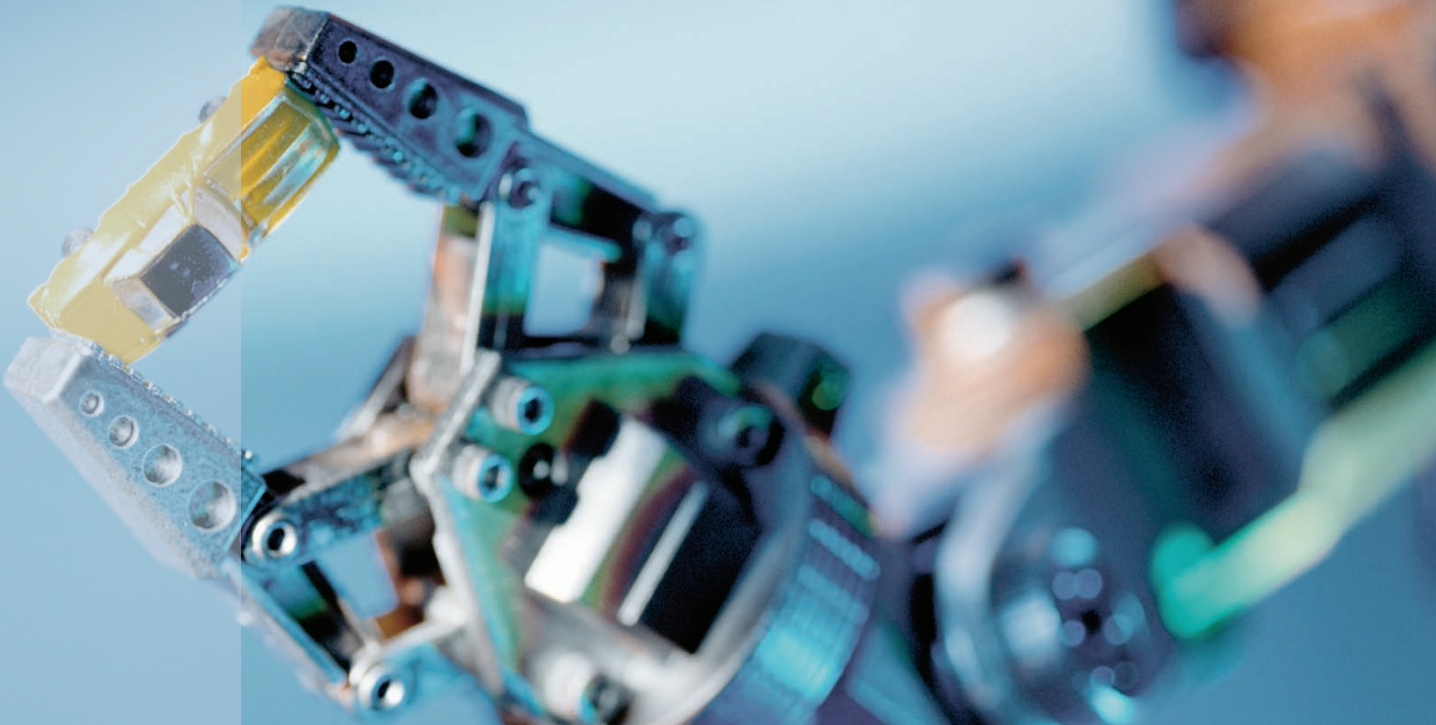
WLAN Application

Infineon offers a broad portfolio of RF discrete components like transistors, diodes, MMICs, and switches, as well as ESD protection devices for RF and digital interfaces. With our strong RF product portfolio we address many wireless, consumer, and ISM applications requiring best performance.

Our low-noise amplifiers for WLAN applications are the best choice for improving your system sensitivity and extend the range of coverage of your system. In addition to our LNAs, our high-speed ESD low-capacitance protection devices offer the best protection of your RF front-end systems against ESD hazards with no degradation of system performance.



- ▶ **LNA 2.4GHz:** MMIC: BGA 622L7, RF Transistor: BFP 640/640F/620/620F, BFP 700 series
- ▶ **5GHz:** RF Transistor: BFP 640/640F/620/620F, BFP 700 series
- ▶ **2.4 & 5GHz:** MMIC: T1515 & BGA 700L16



Control Level

This level describes the automation systems (programmable logic controller – PLC) where automation programs are executed. Systems related to this level require high real-time capability (isochronous real-time Ethernet) and are based on a special controller architecture with its own proprietary OS running on it. Since there are high real-time requirements on intercommunication, there are real-time compliant field bus protocols implemented. PLC systems are mainly modular populated to allow customized and automation process-optimized configurations (modular I/O-interface boxes, communication interfaces, function modules, etc.). For enlargement of the operation range there are so-called peripheral controllers installed, which communicate to the (main) PLC via field bus ; these systems also take over some pre-processing of I/O data to reduce the working load of the main PLC.

PLC systems are mainly supplied by a 24V DC industrial power-supply network or directly from a mains power line using an industrial power supply (modular or integrated).

Core Applications of Control Level

PLC

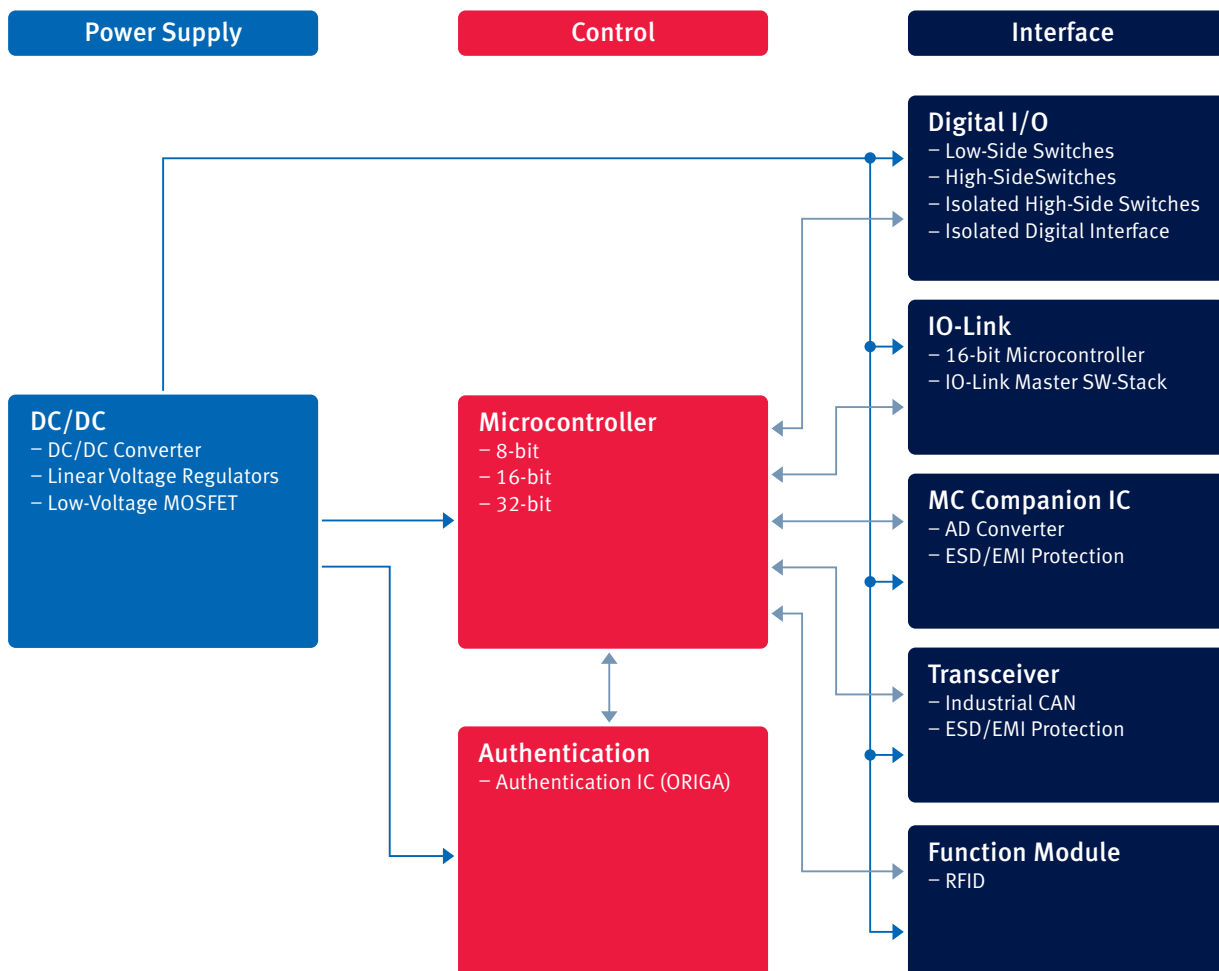
HMI

Field Bus (CAN)

Programmable Logic Controller (PLC)

Industrial programmable logic controllers (PLC) describe the computing unit of any industrial automation system and therefore need to meet several challenging requirements such as high reliability, environmental noise and influence immunity, and also enhanced protection classes (e.g. water-resistant and dust-sealed). Further needs are continuous operation and availability over a wide environmental temperature range as well as real-time operation capability, and security and safety enhancements. Due to lengthy experience in several application fields, Infineon products are predestinated to meet several of these challenging requirements. Your PLC application will benefit from these outstanding product features:

- 8/16/32-bit microcontroller portfolio offering enhanced real-time and safety features
- Best-in-class protected high- and low-side switches with optional isolation and enhanced diagnostics
- Leading experience in security products and brand protection
- Power-supply solutions meeting even automotive requirements
- Comprehensive protection solutions for interfacing units in harsh industrial environments

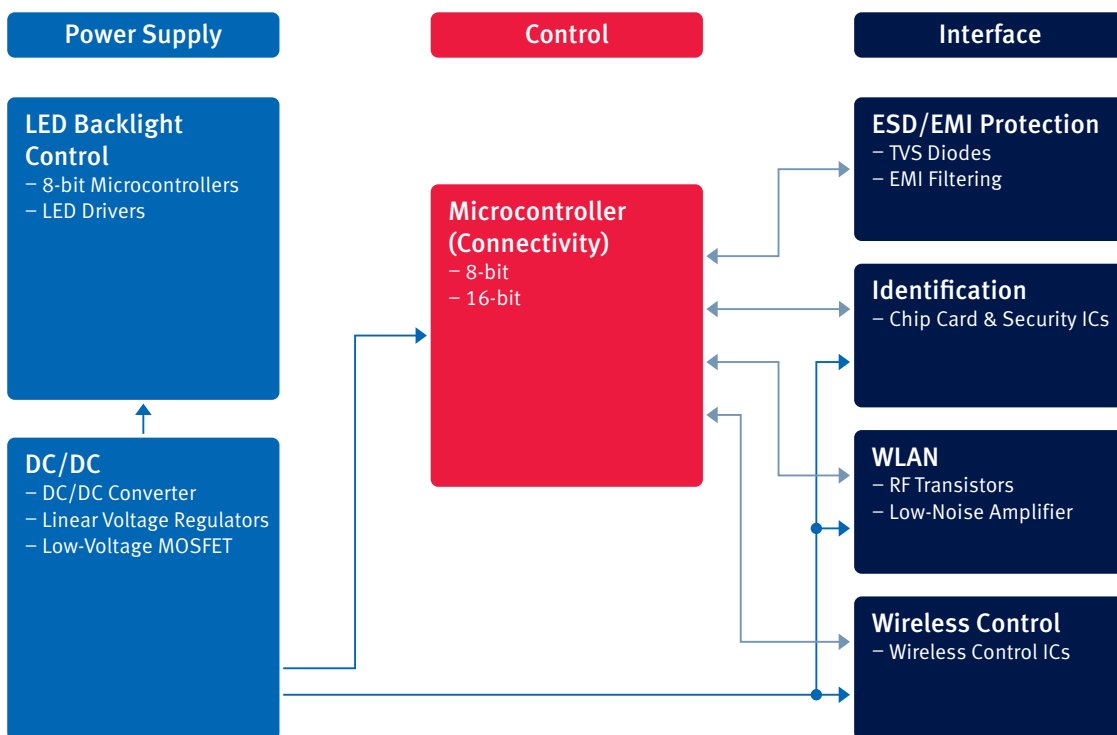


Human Machine Interface (HMI)

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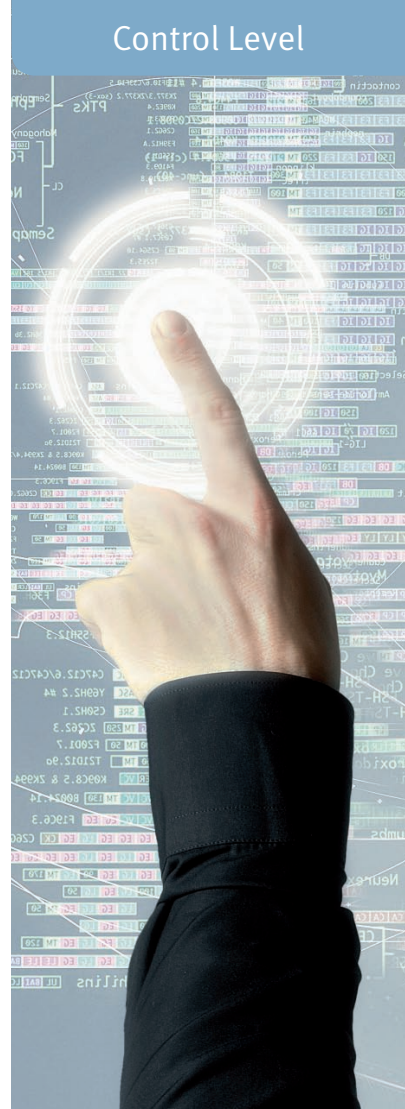
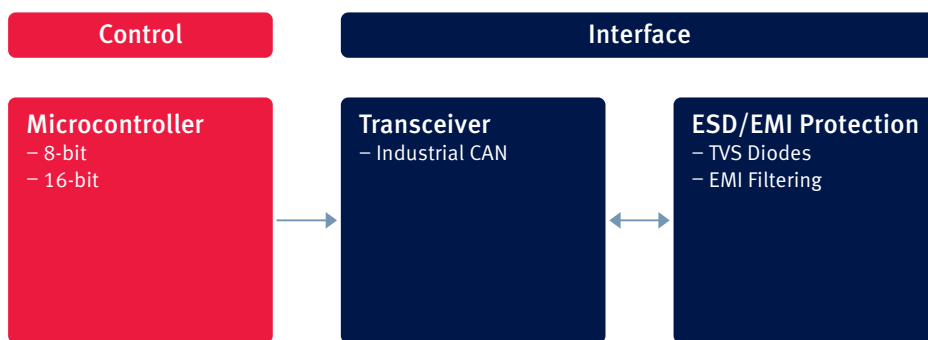
The following block diagram shows our best-in-class solutions for HMI applications.



For detailed product information please see the chapter Products and Solutions.

Field Bus (CAN)

Infinion offers a variety of microcontrollers from low-cost to high-end and transceiver devices featuring CAN as field bus. Their portfolio covers a wide range of microcontroller solutions for several automation applications. Our highly energy-efficient transceivers are preparing for the future and are the right fit to our microcontrollers. In addition, we offer a CANopen implementation from one of our partners, which will ease your start to implement CANopen-based applications.





Field Level

The field level describes all terminal equipment such as sensors (optical, magnetic, thermal, etc.) and actuators (magnetic valves, power switches, motor starts, etc.) collaborating with a peripheral PLC or remote I/O system, which offers a kind of pre-processing of collected data, connected to the main PLC via field bus . Communication between a peripheral PLC and the end device is usually a point-to-point connection. There are also “intelligent” communication standards (e.g. IO-Link) established, which provide, in addition, remote parameterization and diagnostics of the end device. Also wireless solutions (RFID, wireless sensor networks using IEEE 802.15.4 topology) are used for special cases.

Some field-level devices (e.g. vision sensors) still require interfacing with higher bandwidth; for this purpose also fieldbus-based sensors are used.

All items within this level are usually fed by a 24V DC industrial power supply or battery-powered (wireless sensors).

So-called Micro PLCs complete this level mainly used for isolated applications without networked communication channels (e.g. house installation, vendor machine).

Core Applications of Field Level

Micro PLC

Motor Control

Sensors

Actuator Drivers

IO-Link

Micro PLC

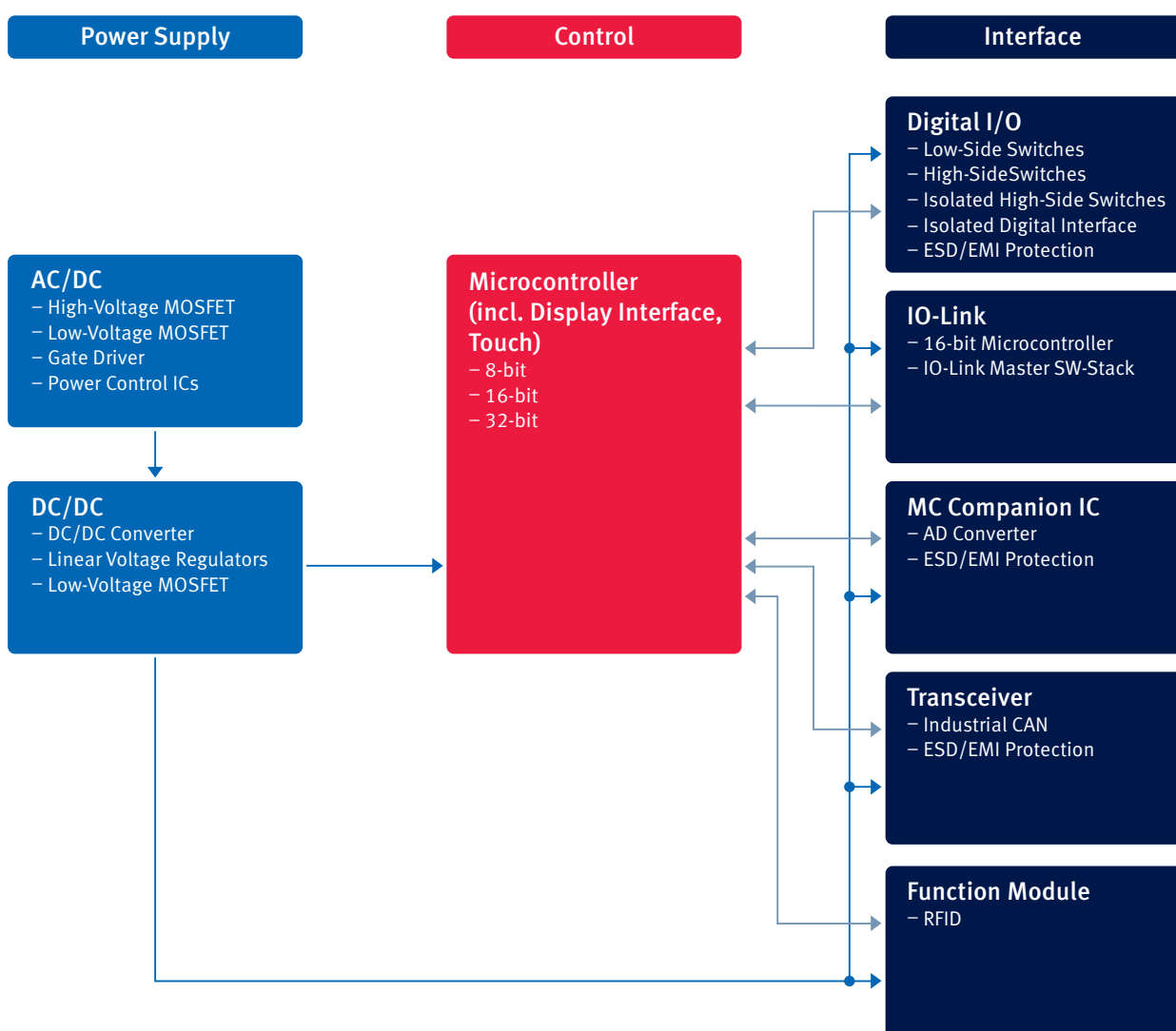
There are several aspects to deviate from the standard PLC concept for low-end applications, such as simple house-automation control units or electronic points of sale (ePOS).

In this area, the main requirements are reductions in size, low-cost, ease of use, compactness and even more power efficiency. High availability, networking, integrated isolation, and safety aspects are less required.

Usually these systems are less modular but power dissipation and power loss will become more of an issue. Due to Infineon's long experience in the OptiMOS™ product family, there are MOSFET solutions with lowest $R_{DS(on)}$ and best-in-class FOM values available.

The Infineon 8-bit FLASH-microcontroller portfolio is designed to meet additional requirements, such as interfacing to a touchscreen or driving LEDs by integrated high-current ports.

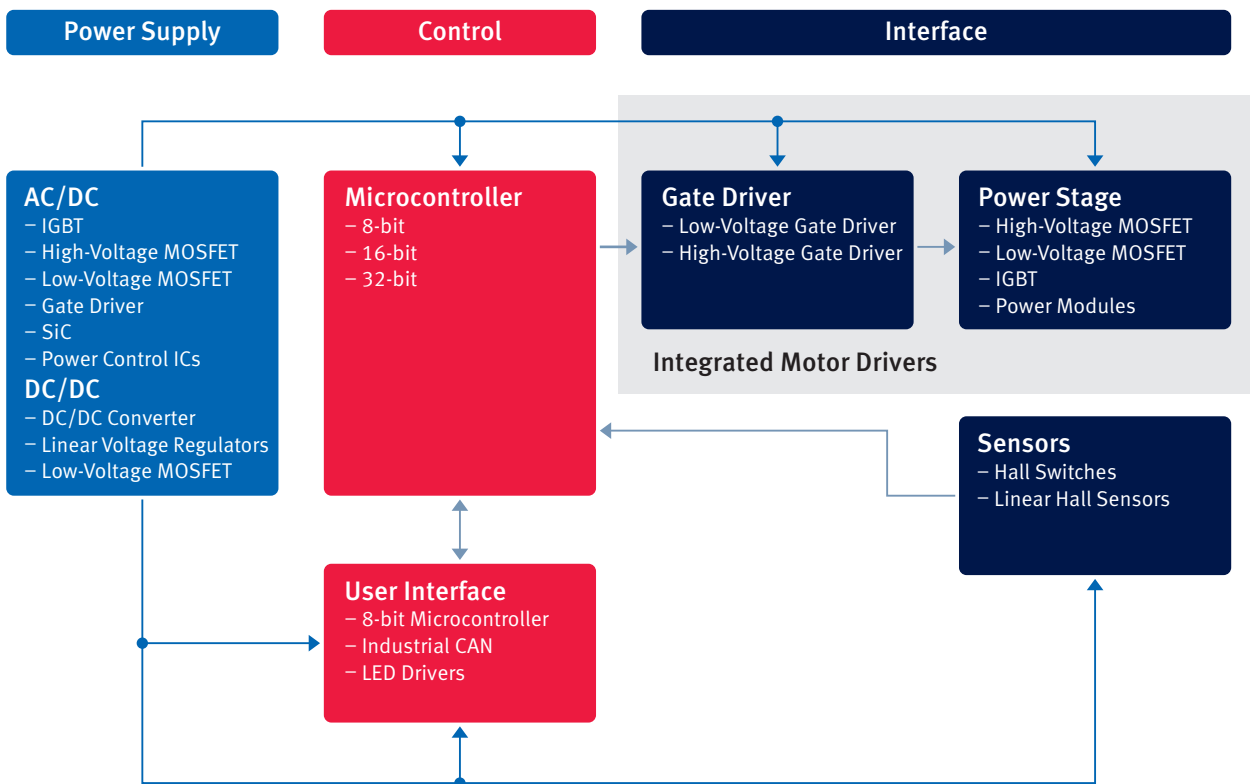
For standard output interfaces, Infineon offers a wide portfolio of low- and high-side switches covering several output-current requirements.



Motor Control and Drives

Infineon offers the industry's most cost-competitive semiconductor system solutions and the highest-quality semiconductor components for motor control and drive applications. Our portfolio covers a wide range of voltage and power classes, supporting a broad application spectrum across the industrial market.

With our power products and microcontrollers you can design efficient, robust, and cost-effective control units for virtually all types of motors, from brushless DC and permanent magnet synchronous motors, through induction and stepper motors, to switched reluctance motors.



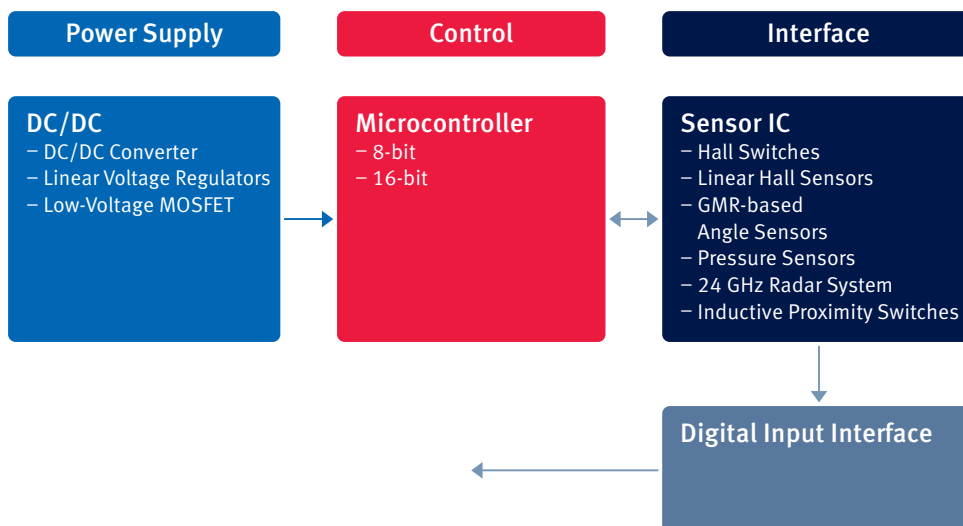
For detailed product information please see the chapter Products and Solutions.

Sensors

Automation equipment is becoming increasingly powerful and specifications are getting even more complex for industrial and consumer applications. This calls for more intelligent sensors with high accuracy and fast data transfer, e.g. for contactless control systems.

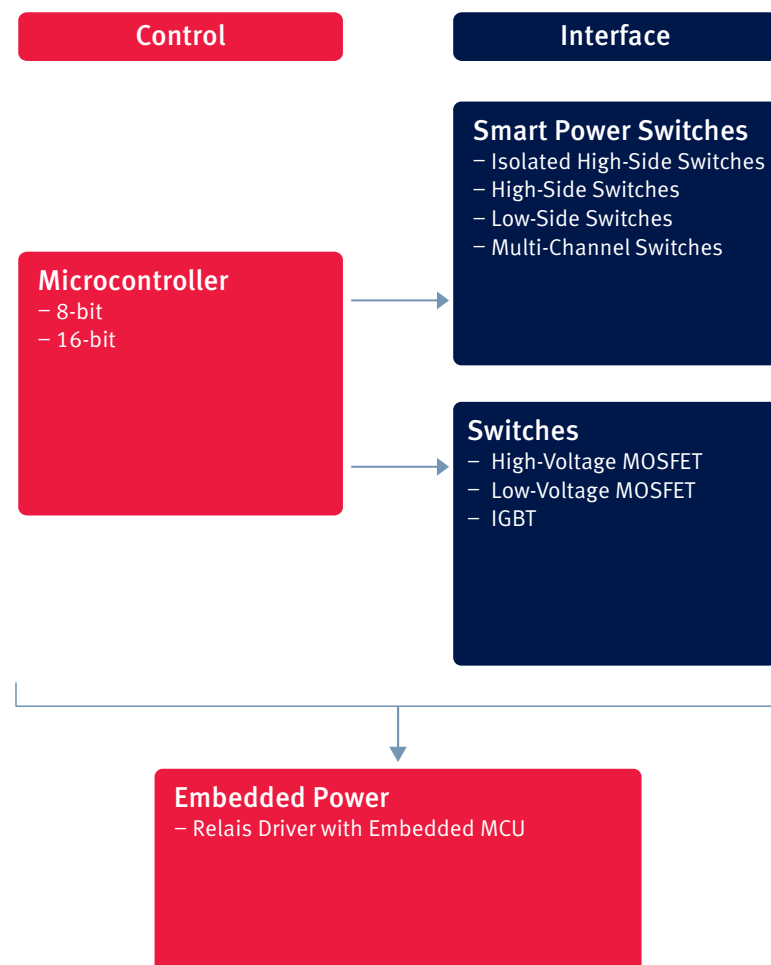
Typical application fields for semiconductor sensors are contactless switching, index counting, position detection, current measurement, or pressure detection. Thanks to Infineon's more than 30 years of worldwide electronic experience, we have a rich portfolio of smart sensors.

Today, we supply pressure and magnetic sensors for many automation systems. With our innovative solutions we support the realization of the energy-efficient solutions of our customers.



Actuator Drivers

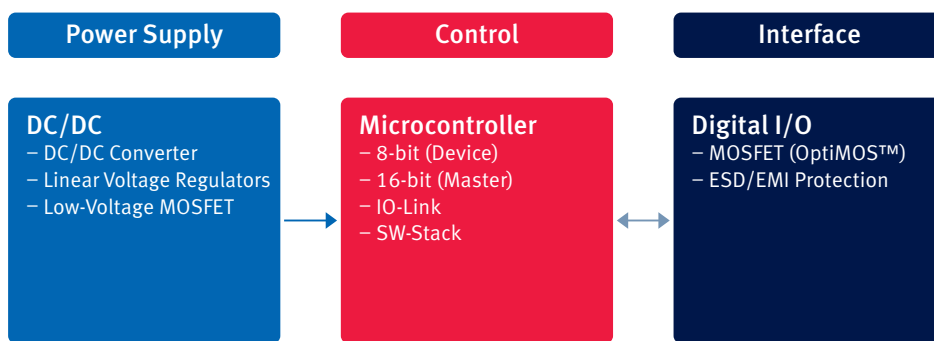
Industrial PLCs systems finally drive several kind of (inductive) loads, such as relays, magnetic valves, lamp, and resistive loads, but also more complex devices like motors or loads, which require limitation of on-state current (e.g. contactors). For this purpose an extensive portfolio of power semiconductors is required to meet all these requirements. Infineon is well fitted to meet all these requirements. For PWM generation Infineon offers an extensive product portfolio of microcontrollers with enhanced PWM functionality (Capture Compare Unit) but also the driver output stage (half-bridge, bridge motor drivers, discrete MOSFET, IGBTs, and IGBT modules).

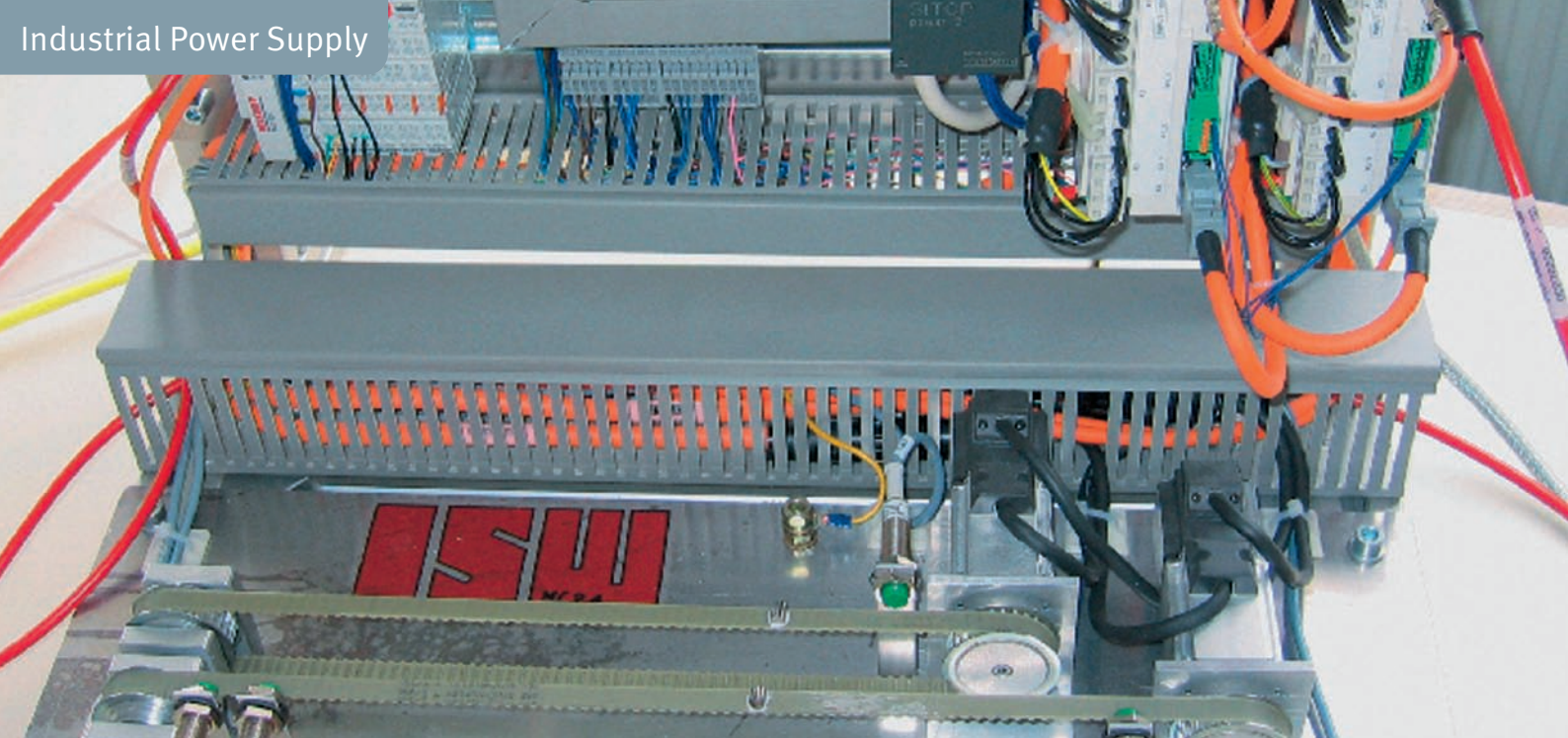


For detailed product information please see the chapter Products and Solutions.

IO-Link

IO-Link is a simple 3-wire point-to-point interconnect standard for sensors and actuators in Industrial Automation applications. The benefits of the standard are increased productivity through ease of use and installation, and higher quality with error detection and easy parameterization and calibration. Working with our partners, MESCO Engineering and Technologie Managment Gruppe, Infineon supports solutions for the IO-Link standard with the XE166 Real-Time Signal Controller as the Master node and the 8-bit XC800 for the Device.





Industrial Power Supply

Industrial power supply networks provide a highly available fixed 24V DC supply voltage within specified limits. The output voltage is generated from different supply sources (AC and DC networks, 1-phase and 3-phase supply up to 500V AC); so a wide input voltage range is mandatory to meet these requirements. On the other hand, besides outstanding reliability, high efficiency and marginal power-losses are required as well. Further environmental aspects to be taken into consideration are: a wide operating temperature range, low output voltage noise, and suppression of system perturbation of the supplying superior power grid.

Infineon's lengthy experience in power-supply solutions offers you a more than adequate product portfolio for your design requirements. There are several power semiconductor products available, ranging from low-voltage MOSFETs (OptiMOS™), with best-in-class $R_{DS(on)}$ and FOM values, to a wide high-voltage MOSFET portfolio (CoolMOS™) as well as discrete and integrated IGBT solutions. For compact power supplies, also highly integrated solutions (CoolSET™) are available, which meet especially low power SMPS requirements.

Besides dedicated power control ICs (PCF/PWM controllers) Infineon also offers a wide portfolio of 8-bit microcontrollers (XC800 family), which contains products well-suited to being used as a supervisory controller for any system-related functionality (e.g. voltage, temperature monitor, watchdog). These controllers also provide high-current ports, e.g., for direct LED drives.

Additional low-voltage DC/DC Converter-ICs as well as linear voltage regulators complete the power supply portfolio downwards to point-of-load power supply applications.

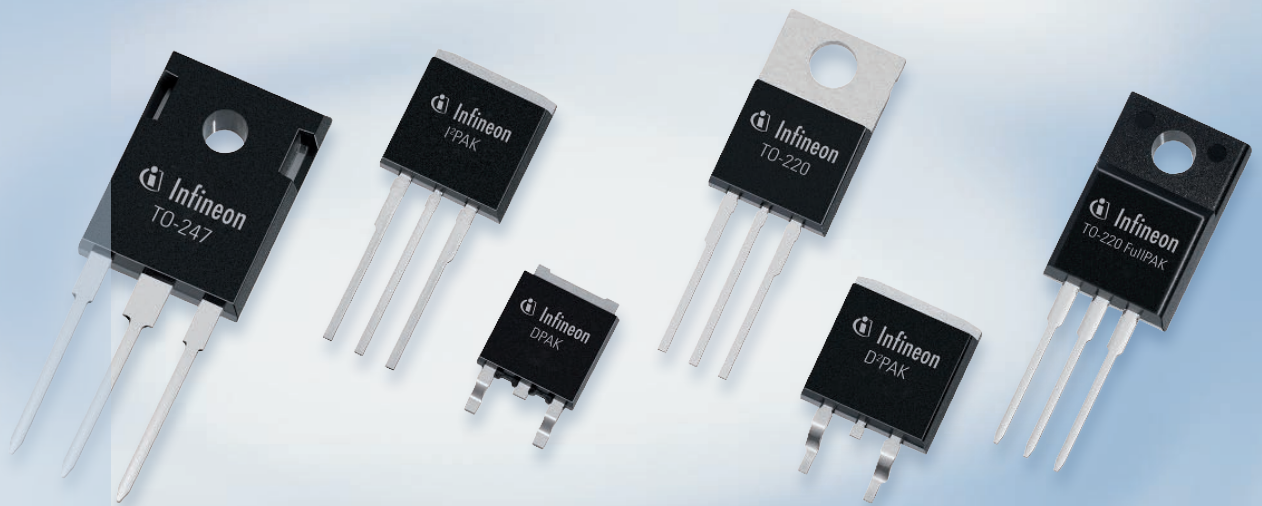


Security and Protection

As the leader for hardware-based security with a deep insight into embedded control requirements, Infineon enables customers to build security models based on best-in-class hardware in customized solutions.

Software can be easily analyzed, modified, and copied. As a result, software alone can not protect an entire platform in the same way as an embedded security concept. It does not constitute a Root-of-Trust. Embedded concepts, in contrast, balance security across software and hardware layers.

The embedded approach to security builds a comprehensive Root-of-Trust in a system. This Root-of-Trust can protect an entire platform, including software, system services, functionality, and devices. Hardware-based security at platform level allows simple and cost-effective integration of security-sensitive software code and significantly increases flexibility in development and design. It also allows you to tailor the security ratings of the product or solution to your needs.



Products and Solutions

Power Supply

High-Voltage MOSFETs

CoolMOS™

The revolutionary CoolMOS™ power family sets new standards in the field of energy efficiency. As technology leader in high-voltage MOSFETs, CoolMOS™ offers a significant reduction of conduction and switching losses and enables high power density and efficiency for superior power-conversion systems.

Especially the latest, state-of-the-art generation of high-voltage power MOSFETs have resulted in the fact that AC/DC power supplies are more efficient, more compact, lighter, and cooler than ever before. This success was achieved by offering the lowest on-state resistance per package outline, the fastest switching speed, and the lowest gate driver requirements of high-voltage MOSFETs commercially available.

[\[www.infineon.com/coolmos\]](http://www.infineon.com/coolmos)

Key Features

- Offers a significant reduction of conduction and switching losses
- Enables high power density and efficiency for superior power-conversion systems
- Best-in-class price/performance ratio

Key Benefits

- Easy control of switching behavior
- Outstanding reliability with proven CoolMOS™ quality combined with high body diode ruggedness
- More efficient, more compact, lighter, and cooler

Low-Voltage MOSFETs

OptiMOS™

Power management for telecom and information processing systems faces the challenge of growing power demands, higher efficiency, and lower SMPS cost. At the same time, the available space is constantly shrinking, leading to higher power density requirements.

The solution can be found in the OptiMOS™ low-voltage MOSFET family, demonstrating a combination of industry's lowest on-state resistance $R_{DS(on)}$ and the best switching performance in the voltage range from 25V up to 250V. Available in leadless SMD packages like CanPAK™¹⁾, SuperSO8, or S308, OptiMOS™ products reduce switching noise, improve EMI for SMPS as well as other industrial applications, and lower the volume consumption up to more than 90%.

[www.infineon.com/optimos]

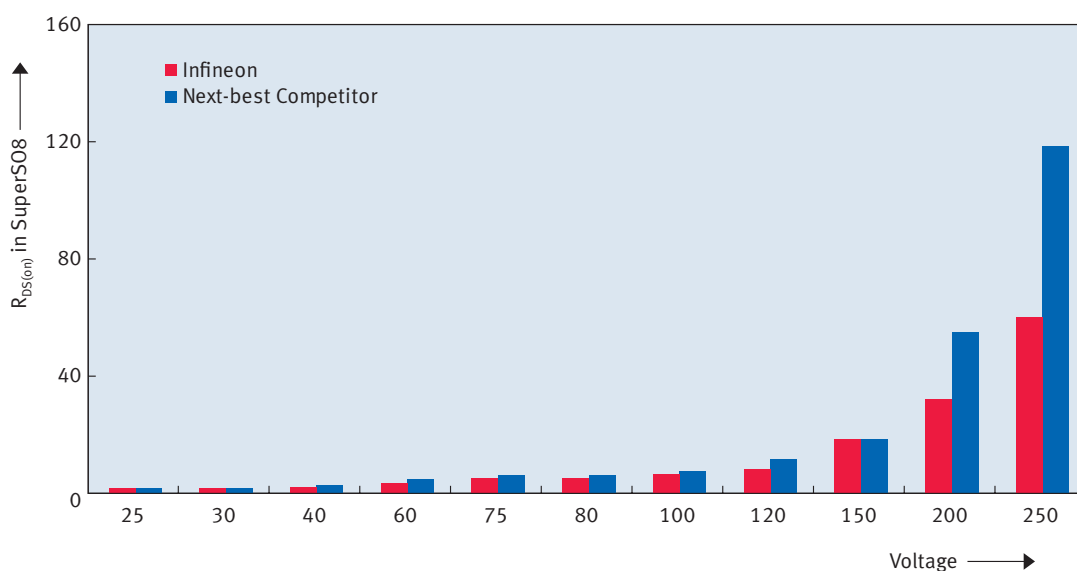
Key Features

- Industry's lowest on-state resistance and figure of merit in all voltage classes ($R_{DS(on)} \times Q_g$)
- Available in innovative space-saving packages like CanPAK™¹⁾, S308, and SuperSO8, and also in standard packages
- Highest immunity to dynamic turn-on
- RoHS compliant – halogen-free

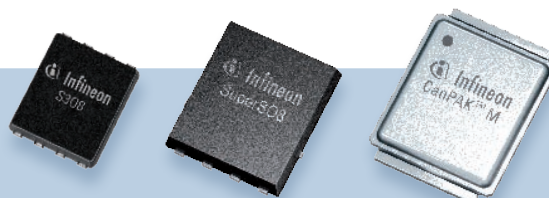
Key Benefits

- Highest efficiency and highest power density
- System cost improvement by reducing need of device paralleling and allowing smaller heatsink
- Environmentally friendly

Performance of OptiMOS™ Technology



1) CanPAK™ uses DirectFET® technology licensed from International Rectifier Corporation. DirectFET® is a registered trademark of International Rectifier Corporation.





AC/DC Integrated Power ICs

CoolSET™

Infineon's latest 800V CoolSET™ series of products support a power range up to 50W and are offered in both through-holes (DIP type) and surface-mount (DSO type). It is suitable for main-block power supply (Chargers, Adaptors, Blu-ray, DVD players) or standby-block power supply (LED/LCD TV, Home Theatre, Mini-Audio). It's the ideal solution for low-power design!

[\[www.infineon.com/coolset\]](http://www.infineon.com/coolset)

Key Features

- Quasi-resonant and fixed-frequency operation
- Active burst mode < 50mW @ no-load condition
- Digital frequency reduction
- Integrated start-up cell
- 800V avalanche rugged CoolMOS™
- Selectable entry and exit burst-mode level
- Adjustable blanking window
- Frequency jitter mode
- Adjustable brownout feature
- Protections features
- Pb-free lead plating; RoHS compliant

Key Benefits

- 800V CoolSET™ in fixed-frequency and quasi-resonant switching for fly-back topology. Both series integrate 800V CoolMOS™, which comes with start-up cell and avalanche capability for enhanced ruggedness. The series adopts active burst mode for power saving, capable of < 50mW consumption @ no-load.
- 800V CoolSET™ fixed-frequency series introduces selectable active burst-mode levels, integrating brownout protection and internal gate resistor to improve power efficiency during standby, enhance reliability, and ease EMI performance. The Infineon 800V quasi-resonant series uses digital technology implementation.
- The digital frequency reduction allows the quasi-resonant to operate in a stable zero-crossing mode. Thus, the high-efficiency performance is maintained across the entire load range.

DC/DC

DC/DC Converters

Our high-efficiency switching converters help to reduce energy consumption, extending operating time of battery powered systems and by this minimize costs of all kind of systems in operation.

[\[www.infineon.com/industrial-standard\]](http://www.infineon.com/industrial-standard)

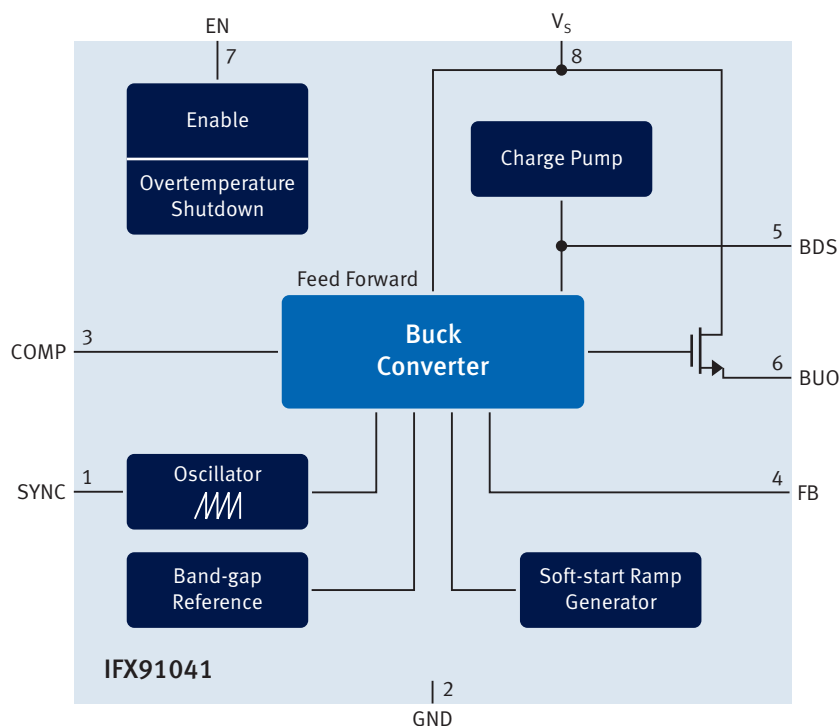
Key Features

- Input voltage up to 60V
- Output currents up to 2300mA
- Output voltage adjustable resp. fixed to dedicated values
- Shutdown quiescent current down to below 2 μ A
- Current limitation and overtemperature protection
- Enable feature

Key Benefits

- High efficiency regulation
- Only few external components needed for stable regulation
- Perfectly suited for regulation in pre-/post-regulation power-supply architectures

Block Diagram IFX91401



Voltage Regulator

Voltage Regulator and Trackers

Our linear voltage regulators and trackers help to reduce energy consumption, extending operating time and minimizing operating costs of all kinds of systems. The wide supply-voltage range, low quiescent current, comprehensive protection features, and various packages make our devices to a best fit even in beyond classical automation industries. Our trackers are best suited as additional supplies for off-board loads for minimizing system costs. [\[www.infineon.com/industrial-standard\]](http://www.infineon.com/industrial-standard)

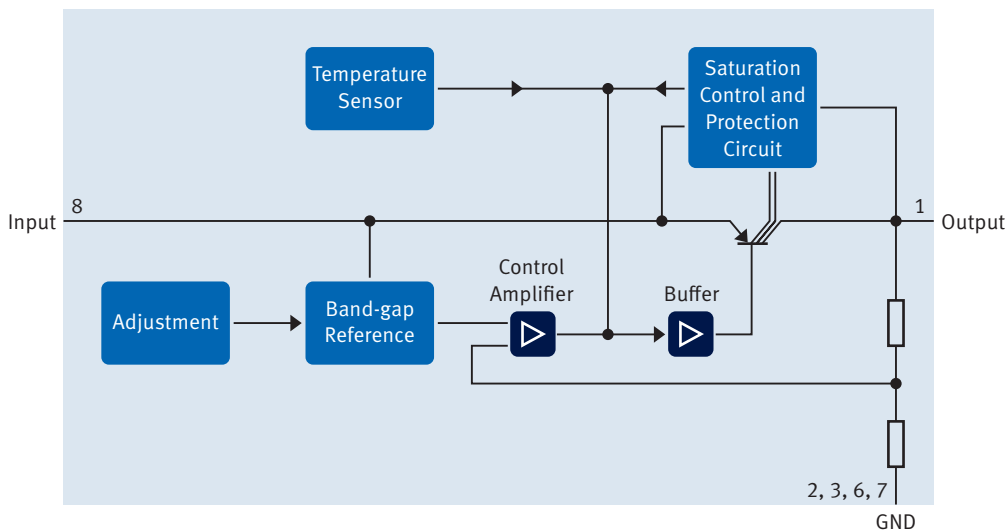
Key Features

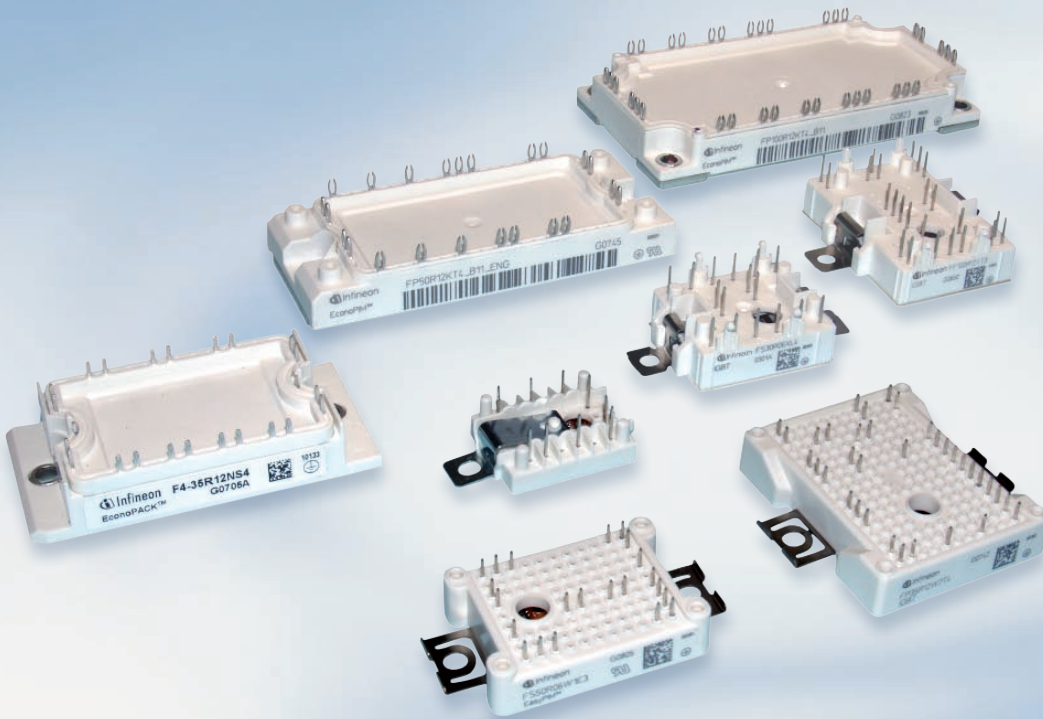
- Input voltage up to 45V
- Output current up to 1000mA
- Output voltage adjustable resp. fixed to dedicated values
- Quiescent current down to 20µA.
- Overload, overtemperature, short-circuit and reverse-polarity protection
- Low current consumption

Key Benefits

- Pin-to-pin compatibility with industry standard parts
- Very low dropout voltage
- Trackers for optimized heat distribution and external protection
- Trackers for a maximum of system cost reduction

Block Diagram IFX 2931





For further products please see the following information:

IGBTs

[www.infineon.com/igbt]

Diodes

[www.infineon.com/discretes]

LED Backlight Control

[www.infineon.com/leddriver]

Control

Microcontroller

8-bit – XC800 Family

Reliable low-cost microcontrollers with real-time control capabilities.

[www.infineon.com/microcontroller]

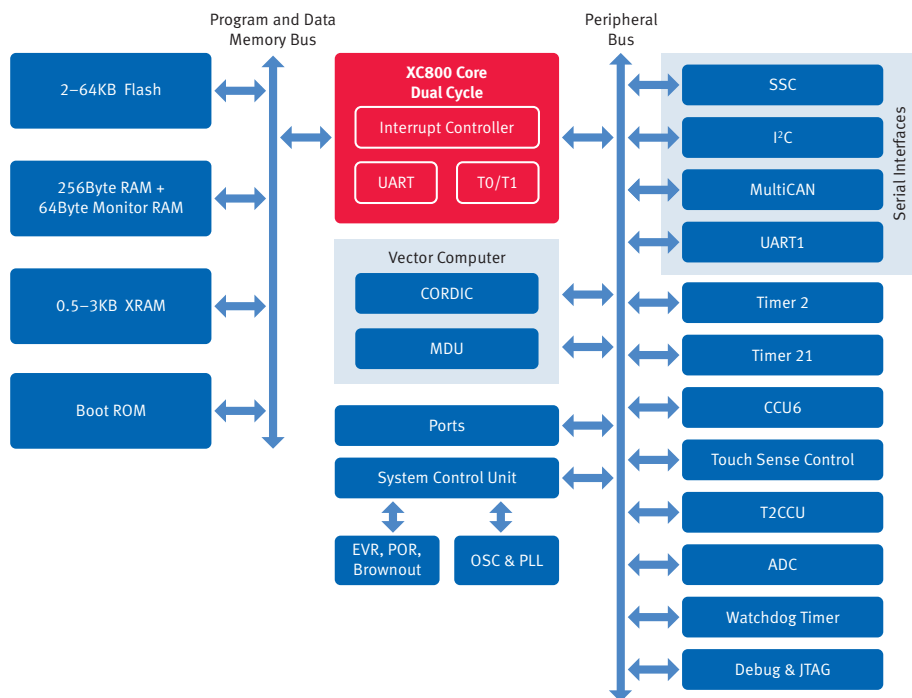
Key Features

- 16-bit co-processor for CORDIC and multiply/divide operations
- Flash sizes from 2KB to 64KB and packages from 16-pin to 64-pin
- Up to 2 independent Capture/Compare Units with ADC trigger for reliable control-loop calculation
- 16-bit timers running at up to 48MHz
- 10-bit ADC with conversion time below 1µs and ± 2LSB
- Memory protection, ECC, brown-out detection
- Real-time clock and multiple low-power modes
- MultiCAN (2 nodes and 32 message objects)

Key Benefits

- Low-cost real-time performance
- Easy connection to the automation world with IO-link evaluation kits
- DAVE™ Bench and DAVE™ Drive: Free tools for programming, loading, and debugging, as well as motor-control code generation
- Reduced CPU load and flash size with enhanced autonomous peripherals and control libraries in ROM
- Designed for harsh industrial requirements – up to 150°C or 130k hours of operation

Block Diagram XC800



16-bit – XE166 Family

With more than 500 million pieces sold C166 has set the standard for 16-bit architectures.

[www.infineon.com/microcontroller]

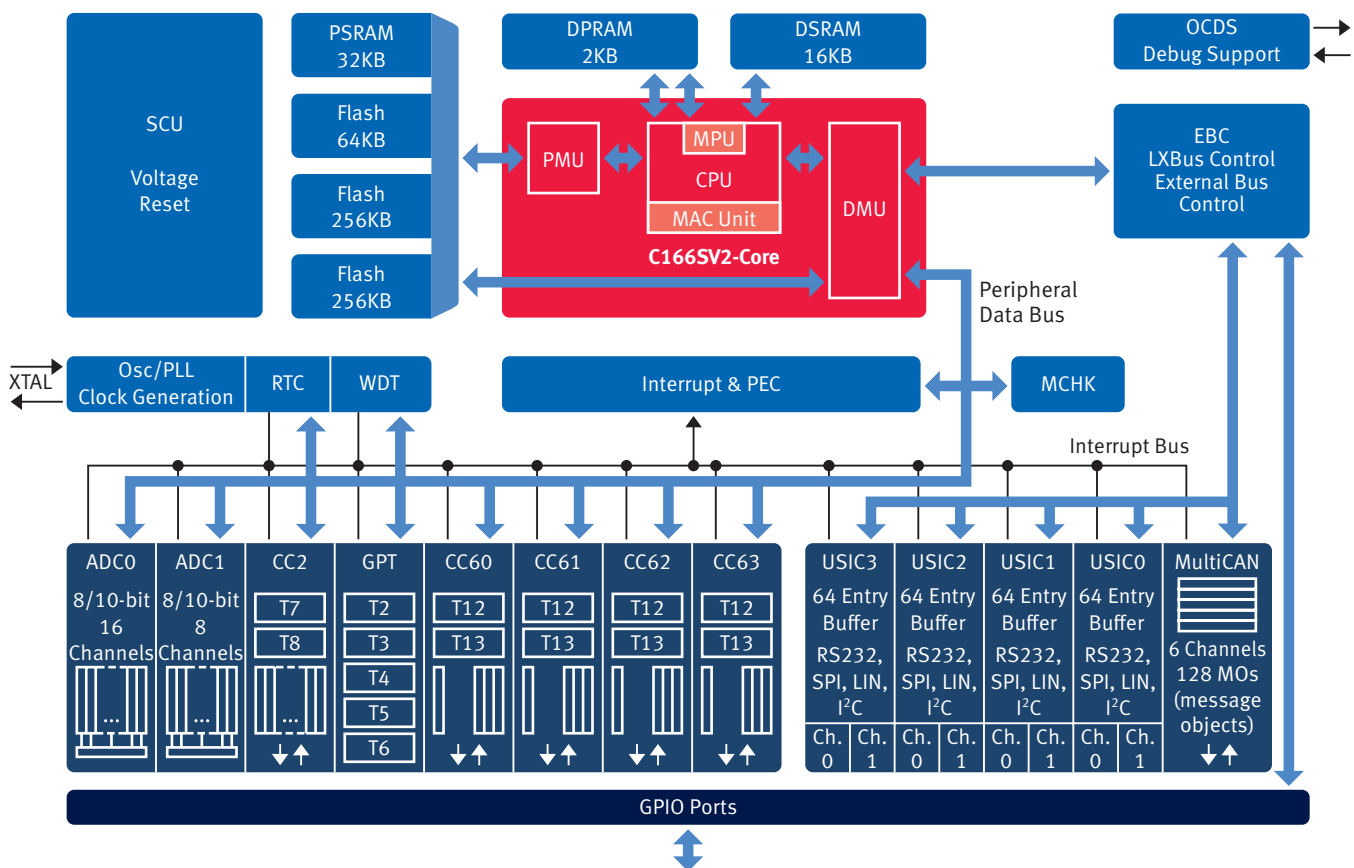
Key Features

- Up to 100 MIPS and integrated MAC unit with complete DSP library
- Flash sizes from 32KB to 1600KB and packages from 38-pin to 176-pin
- Up to 4 independent Capture/Compare Units (CCU6) and ADC with 600ns conversion time
- Memory protection unit, ECC for SRAM and flash and memory checker

Key Benefits

- Real-time performance to support automation requirements
- Fast accessible embedded RAM and flash
- Easy connection to the Automation world with IO-link and CANopen evaluation kits
- Enhanced peripherals supporting SIL
- Designed for harsh industrial requirements

Block Diagram XE166



32-bit – TriCore™ Family

Leading-edge performance for real-time control.

[\[www.infineon.com/microcontroller\]](http://www.infineon.com/microcontroller)

Key Features

- Superscalar core with integrated MCU-DSP instructions plus FPU
- Clock rate up to 300MHz
- Peripheral Control Processor (PCP) for offloading the main core
- Flash sizes from 1MB to 4MB
- Multiple timers and Capture/Compare Units with ADC trigger for complex control loops
- DMA, memory protection, ECC for SRAM and flash and memory checker
- Multiple communication interfaces including Multi-CAN

Key Benefits

- Highest real-time performance
- Multi-axis control with multiple modulation strategies
- Fast and efficient processing of multiple tasks or control loops
- Designed for harsh industrial requirements
- PRO-SIL™ tests to support SIL

For further products please see the following information:

Microcontroller

Microcontroller Companion IC's
CIC-Family

[\[www.infineon.com/microcontroller\]](http://www.infineon.com/microcontroller)

Safety Industrial SIL

[\[www.infineon.com/microcontroller\]](http://www.infineon.com/microcontroller)

IO-Link

[\[www.infineon.com/io-link\]](http://www.infineon.com/io-link)



Security Controller

[\[www.infineon.com/microcontroller\]](http://www.infineon.com/microcontroller)

Trusted Platform Module

Trusted Platform Module

[\[www.infineon.com/tpm\]](http://www.infineon.com/tpm)

Trusted Computing Management
Server

[\[www.infineon.com/tpm\]](http://www.infineon.com/tpm)

Authentication – Chip Card

SLB 78x Based Contact Based Security Controller

The SLB 78CIFX1600P is optimized for embedded security applications offering the I²C interface. It allows very fast design-in and flexible integration.

The SLB 78CIFX1600P can therefore be easily integrated as root-of-trust and security server in embedded components. The functionality of the SLB 78CIFX1600P allows secure storing of information, authentication based on strong cryptography, and supports high-end public key systems like RSA and Elliptic Curve DSA.

[\[www.infineon.com/security\]](http://www.infineon.com/security)

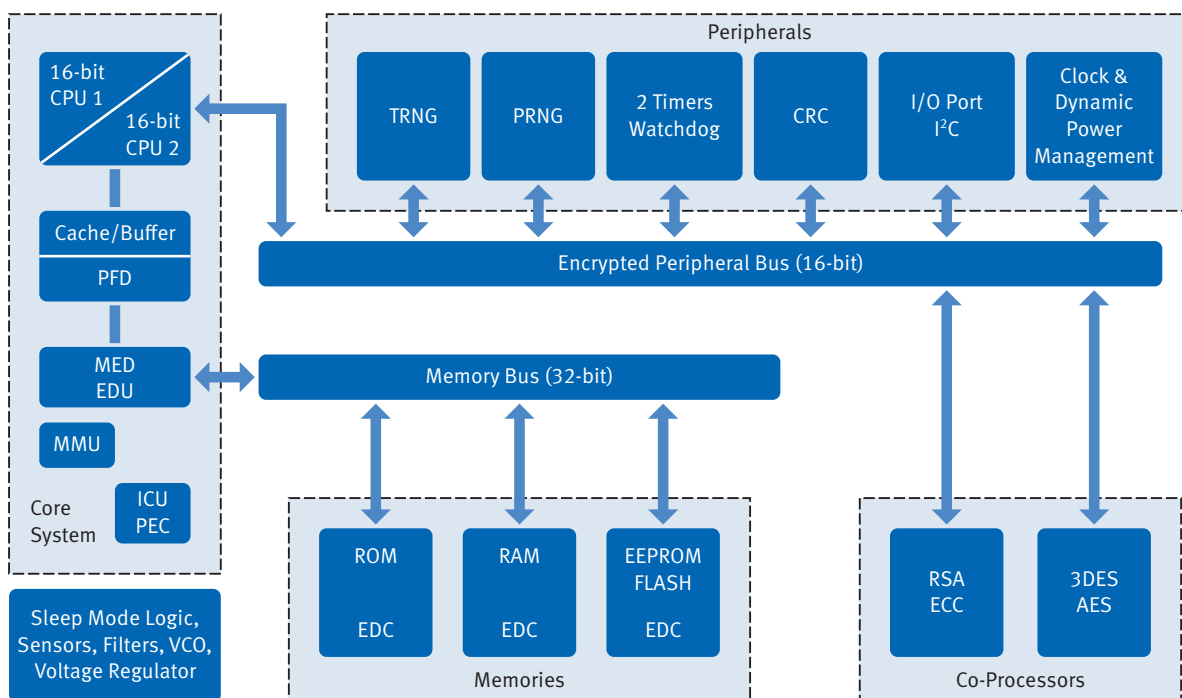
Key Security Features

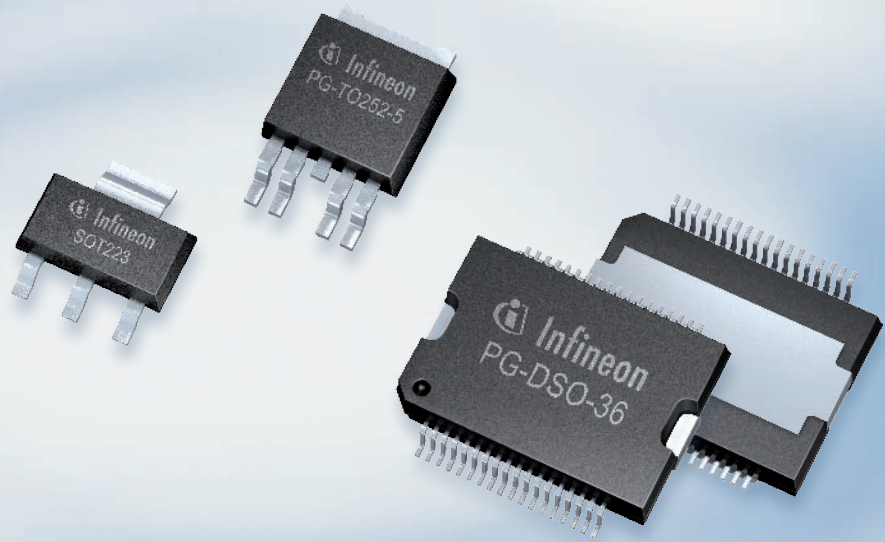
- Integrity Guard Security Concept concentrates on digital, mathematically modeled security mechanisms
- Dual CPU implementation for fault detection
- Encryption, masking, and randomization
- Comprehensive error detection over the complete data path
- Active I²-Shield

Key Benefits

- R&D efficiency for application development
- Low effort on SW for security measures
- Short time to market for end-customer products
- Robustness, quality, and long product life spans
- Package to match the application

Block Diagram SLB 78CIFX1600P





Interface

Non-Isolated High-Side/Low-Side Driver

HITFET™

Our well-know and robust HITFET™ portfolio is now extending with new 24V devices and low-ohmic Power HITFET™ devices. We introduced them recently in our Design Link Magazine: 24V HITFET™ and BTS3256D. Our family approach offers high scalability for single- and dual-channel solutions.

[\[www.infineon.com/hitfet\]](http://www.infineon.com/hitfet)

Key Features

- Wide range of $R_{DS(on)}$ values
- Logic level input
- Thermal shutdown with auto restart or latch behavior
- Logic level input
- Feedback via increased current at IN pin, for Power HITFET's also pure digital readout possible
- Current limitation (except BTS3160D)

Key Benefits

- Overload and overvoltage protection
- Protection integrated in MOSFET like package
- Easy design-in
- Perfect fit in $R_{DS(on)}$
- Package to match the application

Protected High-Side Switches – PROFET™

Our PROFET family offers protection against overload, overvoltages, short-circuits, excess temperature, and ground resp power-supply loss. For any loads, including resistive, capacitive, and inductive, our PROFETs are best suited in automation applications for replacing electromechanical relays, fuses, and discrete circuits.

[\[www.infineon.com/industrial-standard\]](http://www.infineon.com/industrial-standard) [\[www.infineon.com/profet\]](http://www.infineon.com/profet)

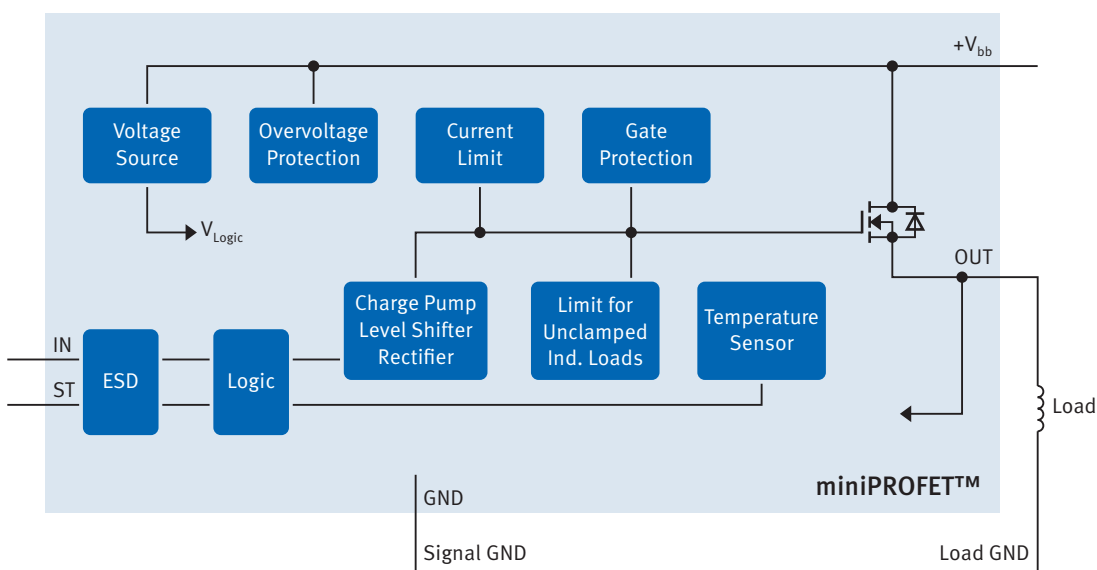
Key Features

- Operating voltage range 4.5 ... 60V
- Typical Load current 0.9 ... 45A
- I_{LSC} 0.9 ... 200A
- $R_{DS(on)}$ from 1000mΩ down to 2.5mΩ at room temperature
- Diagnostic feedback
- As single channel or multichannel switches

Key Benefits

- Overload and overvoltage protection
- Current limitation
- Short-circuit protection
- Thermal shutdown
- Loss of ground protection
- Loss of ground/V_{bb} protection
- ESD protection

Block Diagram PROFET™



ISOFACE™

ISO1H8xxG is an isolated 8-channel high-side driver family intended for driving any kind of resistive, inductive, or capacitive load – addressing the exact requirements in industrial automation systems, such as Programmable Logic Controllers (PLC), Distributed Control Systems, and Industrial PCs. With complete system integration of the digital interface, galvanically isolated interface, and power stage, the IC can be directly connected between the microcontroller and independent power loads.

[www.infineon.com/isoface]

Isolated Switch for Automation

8-Channel Isolated High-Side Switch for Industrial Applications

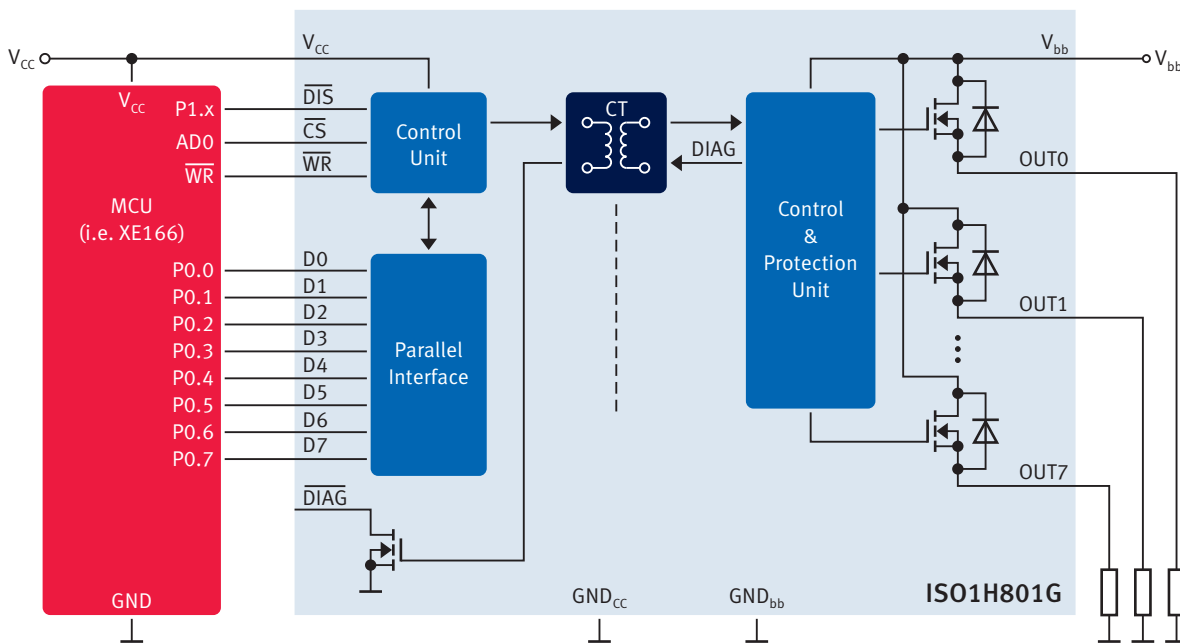
Key Features

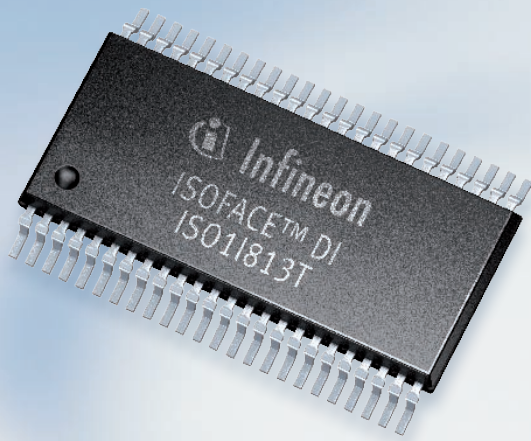
- Up to 1.2 A output current per channel
- 500V isolation (UL508, EN 60664-1)
- Short-circuit protection
- Overload protection

Key Benefits

- Fully integrated system solution for
 - Galvanic isolation between microcontroller and harsh industrial environments
 - Fail Safe
 - No need for opto-coupler
 - No need for external clamping circuitry

Block Diagram ISOFACE™





Digital Input Interface for Automation

8-Channel Isolated and Fully Integrated Digital Input

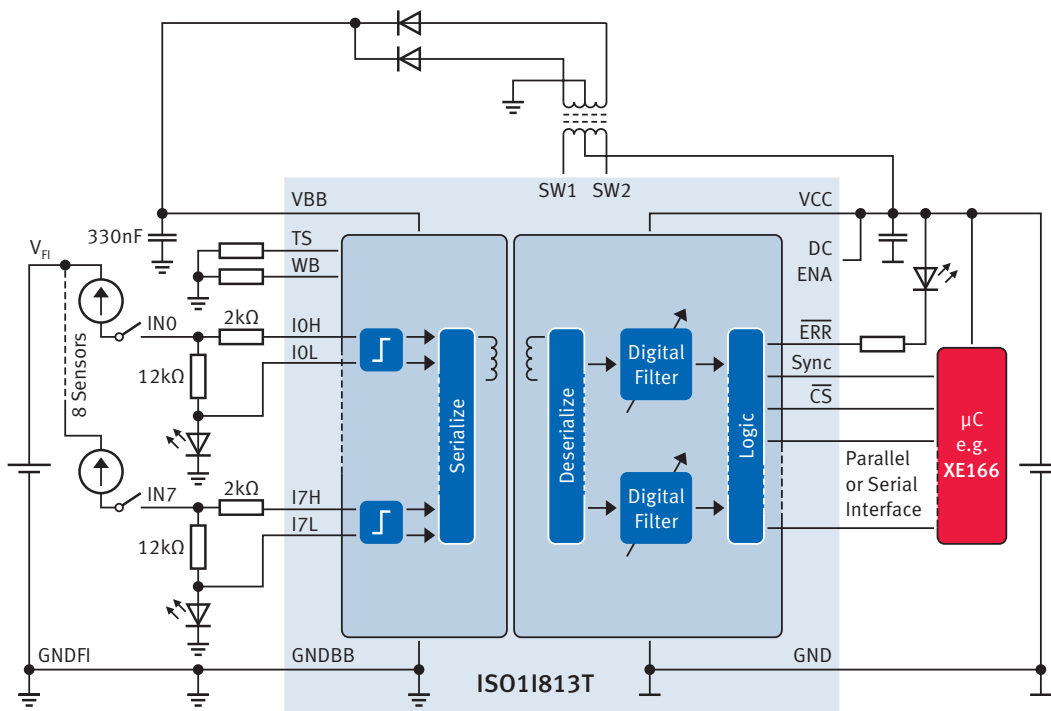
Key Features

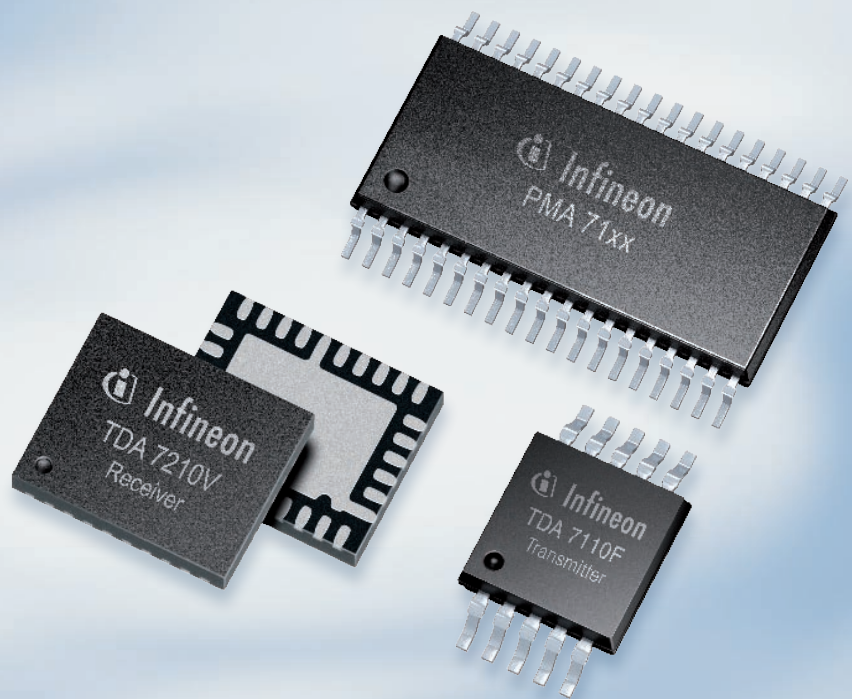
- Sensor input characteristic IEC61131-2 (Type 1/2/3)
- Deglitching filters software-programmable
- Up to 500kHz sampling frequency
- Comprehensive diagnostics

Key Benefits

- Enabling 4x higher Integration densities
- Improved EMI robustness through application- and site-specific settings
- High-precision/high-speed applications
- Strong maintenance support helps reducing costly factory-floor down-times

Block Diagram ISO11813T





Wireless Control

Standard Products

The standard products comprise the TDA 71xx transmitter and TDA 72xx receiver and transceiver product variants for ASK and FSK modulation, with a different feature set and frequencies (315, 434, 868, and 915MHz).

[www.infineon.com/transmitter]

[www.infineon.com/receiver]

[www.infineon.com/transceiver]

Key Features

- Standard Transmitter:
ASK/FSK Transmitter family for low/high power, temperature range -40 ... +85°
- Standard Receiver:
ASK/FSK Receiver family, temperature range -40 ... +105°C, TSSOP and VQFN package
- Standard Transceiver:
ASK/FSK Transceiver family, single-channel, temperature range -40 ... +85°C, VQFN package

Key Benefits

- Very low current consumption
- Low system costs: only few external components required
- Dedicated product variants for industrial and consumer applications (TDA-7 series) to meet an optimal feature-cost ratio
- Complementary product portfolio (TDA/TDK-5 series) for the highest quality standards and harsh environments such as temperature ranges up to 125°C

SmartLEWIS™ Family

Infineon offers a comprehensive and complementary product portfolio of transmitter, receiver, and transceiver products for the sub 1GHz frequency bands.

Make your application wireless by using our standard products for relatively simple application requirements or the SmartLEWIS™ product family members for more complex system or performance requirements. SmartLEWIS™ stands for Smart Low Energy Wireless Systems and its family members for the next-generation wireless control products, having the highest level of integration and functionality to reduce system complexity and current consumption in an intelligent way.

[www.infineon.com/wirelesscontrol]

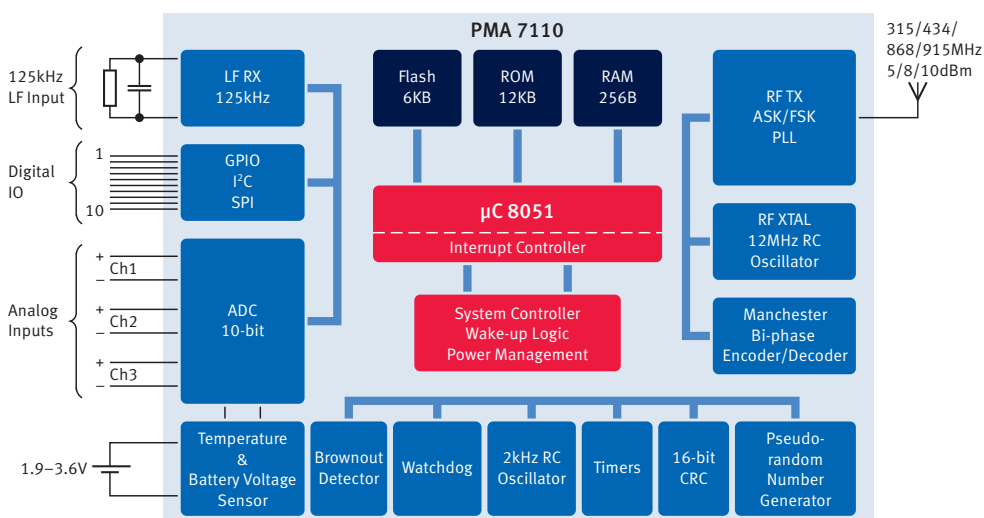
Key Features

- SmartLEWIS™ TX:
ASK/FSK Transmitter, multi-channel, multi-band, multi-power
[www.infineon.com/tda5150]
- SmartLEWIS™ MCU:
ASK/FSK Transmitter with embedded 8051 microcontroller, temperature range -40 ... +125°C
[www.infineon.com/pma]
- SmartLEWIS™ RX:
Receiver family with digital baseband processing, multi-channel, temperature range -40 ... +105°C
[www.infineon.com/tda5230]
- SmartLEWIS™ RX+:
High-Sensitivity Receiver, single-/multi-channel, temperature range -40 ... +105°C
[www.infineon.com/receiver]
- SmartLEWIS™ TRX: High-Sensitivity Transceiver with digital baseband processing, multi-channel

Key Benefits

- Highest integration and functionality
- Very low current consumption
- Low system costs: only few external components required
- Dedicated product variants for industrial and consumer applications (PMA-7 series) to meet an optimal feature-cost ratio

Block Diagram PMA 7110



CAN Transceiver

Our CAN transceivers provide proven quality, reliable track records, and high robustness regarding electromechanical noise to the communication systems within automation industries. ISO compliance is guaranteed. Our IFX1050G has been optimized for high-speed communication and the highest reliability, whereas the IFX1054G type is suited for fault tolerance at lower data rates. A separate flag supports diagnostics.

[\[www.infineon.com/can\]](http://www.infineon.com/can)

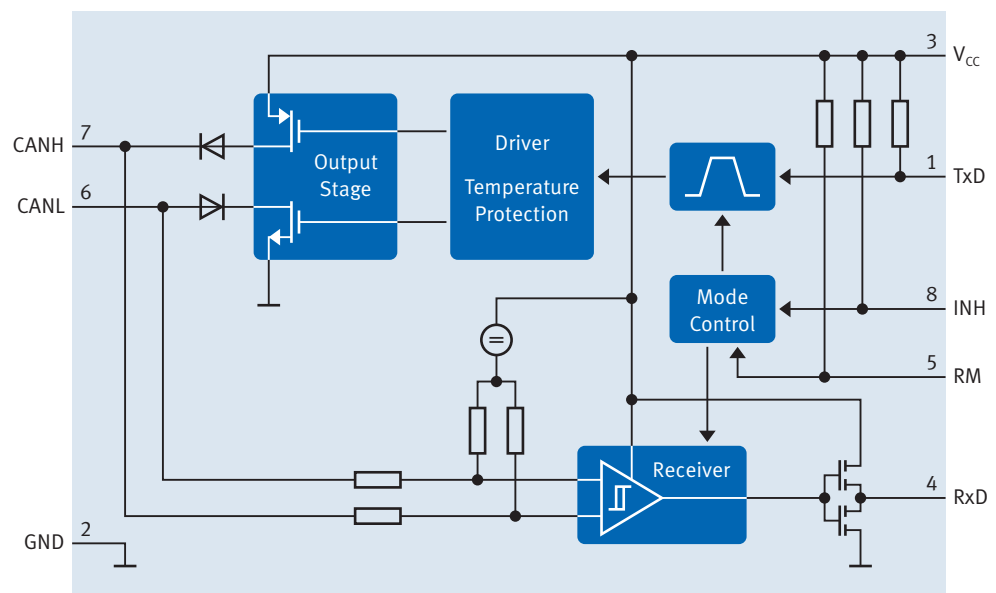
Key Features

- Transmission rates up to 1 Mbit/s
- ISO 11898 compliant
- Low power modes
- Support of failure conditions
- Bus wake-up feature

Key Benefits

- Low current consumption
- Thermal protection
- Receive-only mode
- Excellent EMC performance
- Standby/sleep mode

Block Diagram IFX 1050G



Hall-Effect Switches

The Hall Switches portfolio of Infineon comprises unipolar and omnipolar switches and bipolar latches covering a wide range of applications such as position sensing, index counting, BLDC motor control, etc. Those devices show excellent accuracy and robustness against electrical disturbances.

[www.infineon.com/magnetics]

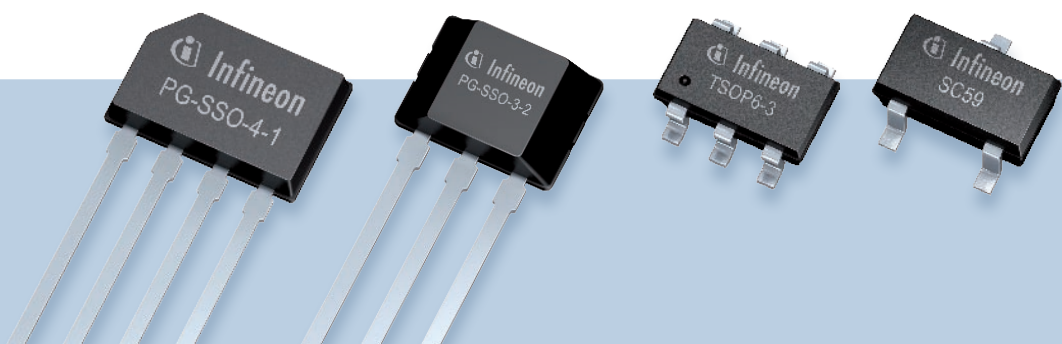
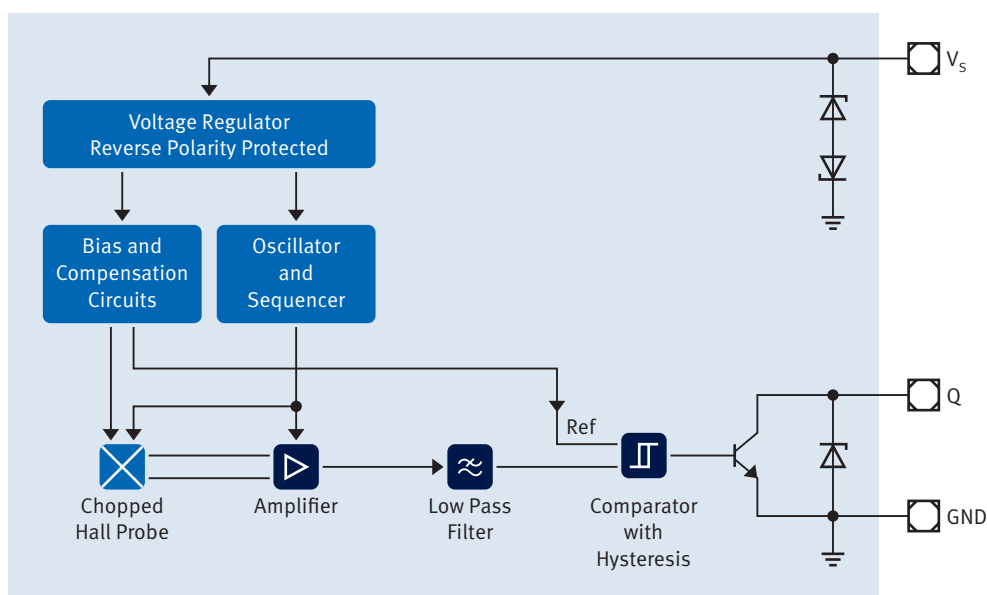
Key Features

- Supply voltage 2.7 ... 18V (24V limited time)
- Reverse battery protection (-18V)
- Operating temperature range -40 ... +150°C
- High ESD performance 4kV
- Chopped principle (active error compensation) – high stability, narrow thresholds

Key Benefits

- Low jitter (typ. 1µs)
- High sensitivity and high stability of magnetic switching points
- Available in both leaded and SMD package
- High resistance to mechanical stress by active error compensation
- Sensor module can deliver same outputs regardless of temperature
- Temperature-compensated thresholds

Block Diagram TLE 4946-2L/2K



Linear Hall Sensors

All products of our linear hall family measure the vertical component of a magnetic field. The output signal is directly proportional to the sensed magnetic field. Based on these principles, our TLE 499x family of linear Hall ICs has been designed specifically to meet the requirements of highly accurate angular and linear position measurement, as well as current-measurement applications. [\[www.infineon.com/position¤t_sensing\]](http://www.infineon.com/position¤t_sensing)

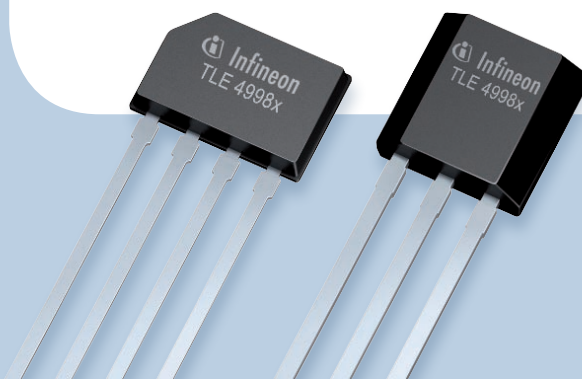
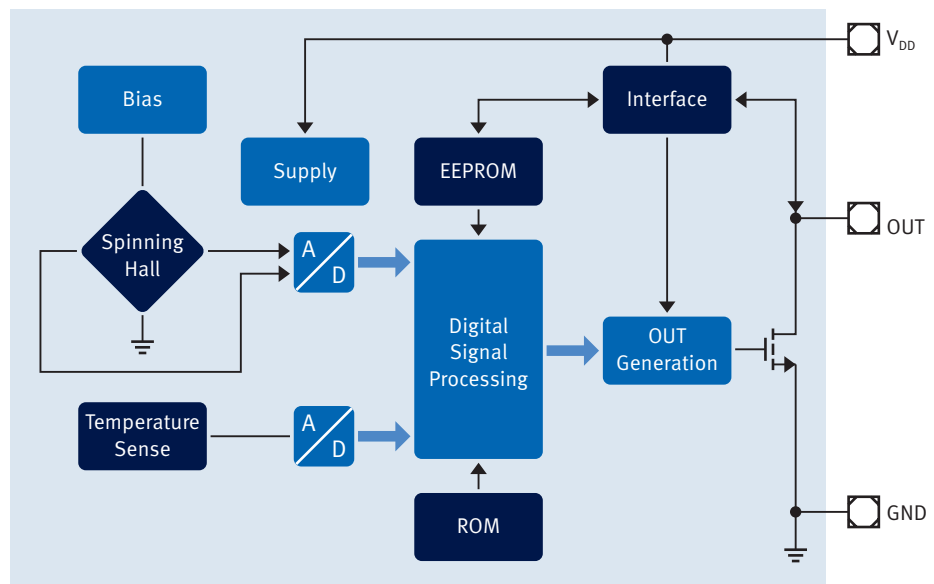
Key Features

- Single supply voltage 4.5 ... 5.5V
- Temperature range -40 ... +150°C
- Linear ratiometric output between -200mT and +200mT within three ranges
- Programmable in sensitivity offset and clamping
- Digital temperature and stress compensation
- High voltage capability and reverse polarity protection
- Low drift of output signal over temperature and lifetime
- 20-bit digital signal processing
- Analog and digital interfaces

Key Benefits

- Wear-free operation
- Highly accurate contactless position sensing
- In-system calibration
- Flexible system implementation

Block Diagram TLE 4998



iGMR Angle Sensors

Infinite offers a family of angle sensors based on integrated Giant Magneto Resistance (iGMR) technology. The sensors detect the orientation of an applied magnetic field by measuring sine and cosine angle components with monolithically integrated magneto-resistive elements. Data processing and communication interfaces are integrated on the same silicon chip as the sensing elements, allowing a compact design using small outline packages. The angle sensor family offers a broad variety of communication interfaces, as well as different levels of data processing and self-test capabilities.

[\[www.infineon.com/igmr\]](http://www.infineon.com/igmr)

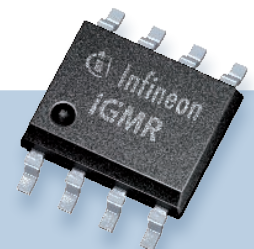
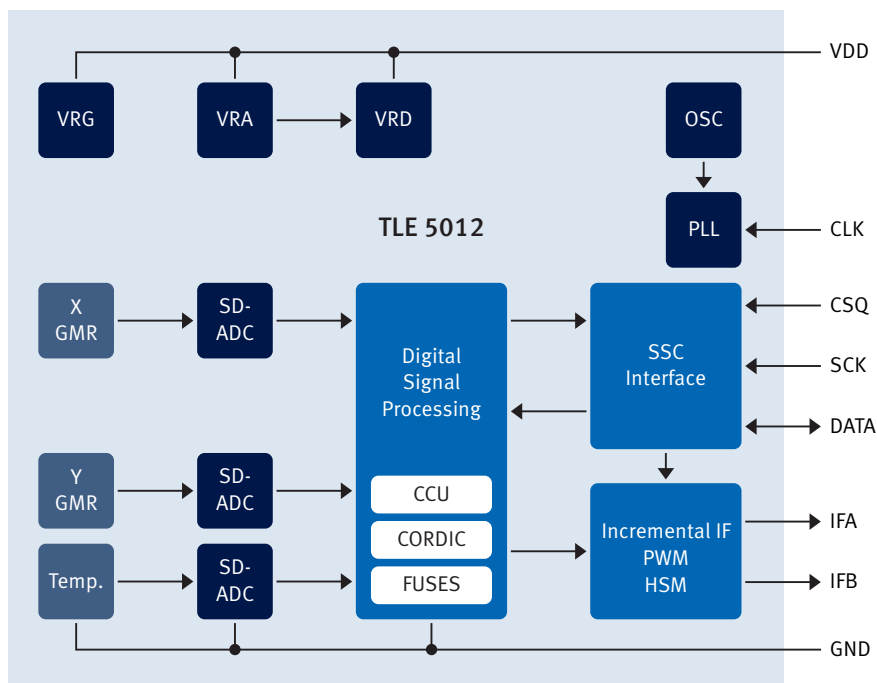
Key Features

- Integrated magnetic field direction sensing for angle measurement
- Full calibrated 0 ... 360° angle measurement with revolution counter and angle speed measurement
- 15-bit representation of absolute angle value on the output (resolution of 0.01°)
- Temperature range: -40 ... +150°C
- High accuracy and short delay times
- Green package with lead-free (Pb-free) plating
- Multiple interface (SPI, PWM, HSM, IIF)

Key Benefits

- Accurate angular position sensing
- Highly efficient motor control
- Wear-free operation
- Easy and variable system implementation

Block Diagram TLE 5012



For further products please see the following information:

ESD Protection

[www.infineon.com/esdprotection]

RF Discretes

[www.infineon.com/rf]

Identification – Chip Card

[www.infineon.com/security]

RFID

[www.infineon.com/security]

IO-Link

[www.infineon.com/io-link]



Sensors

Manifold Pressure Sensors

(MAP/Turbo MAP)

[www.infineon.com/pressure]

Barometric Air Pressure Sensor (BAP)

[www.infineon.com/pressure]

Motor Drive

Gate and Bridge Driver ICs

[www.infineon.com/powermanagementics]

MOSFETs

[www.infineon.com/mosfets]

IGBTs

[www.infineon.com/igbt]

Integrated Motor Drivers

[www.infineon.com/motorcontrol]

Power Modules

[www.infineon.com/powermodules]

Linear Current Source

[www.infineon.com/leddriver]

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Our global connection service goes way beyond standard operating and switchboard services by offering qualified support on the phone. Call us!

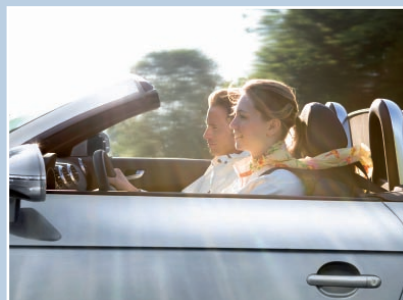
- Germany 0800 951 951 951
- USA 1866 951 9519
- International 00 800 951 951 951
- Direct access +49 89 234-0 (interconnection fee)

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