



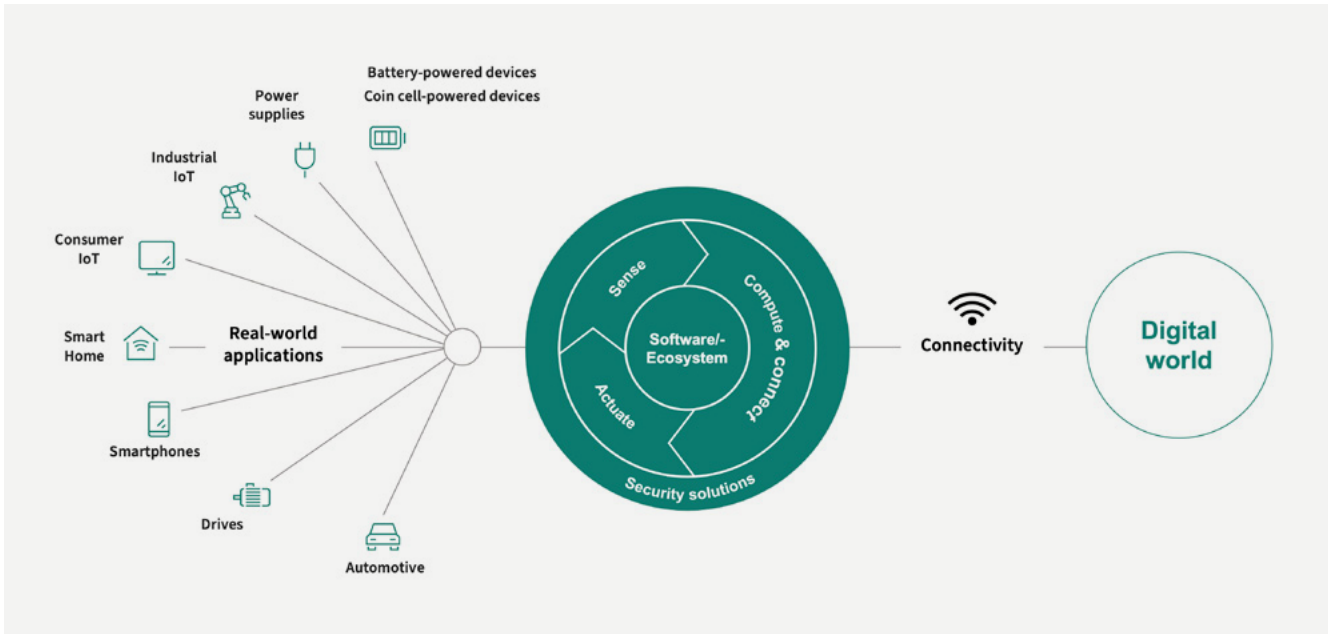
# Making IoT Easy

Connected Secure System Solutions



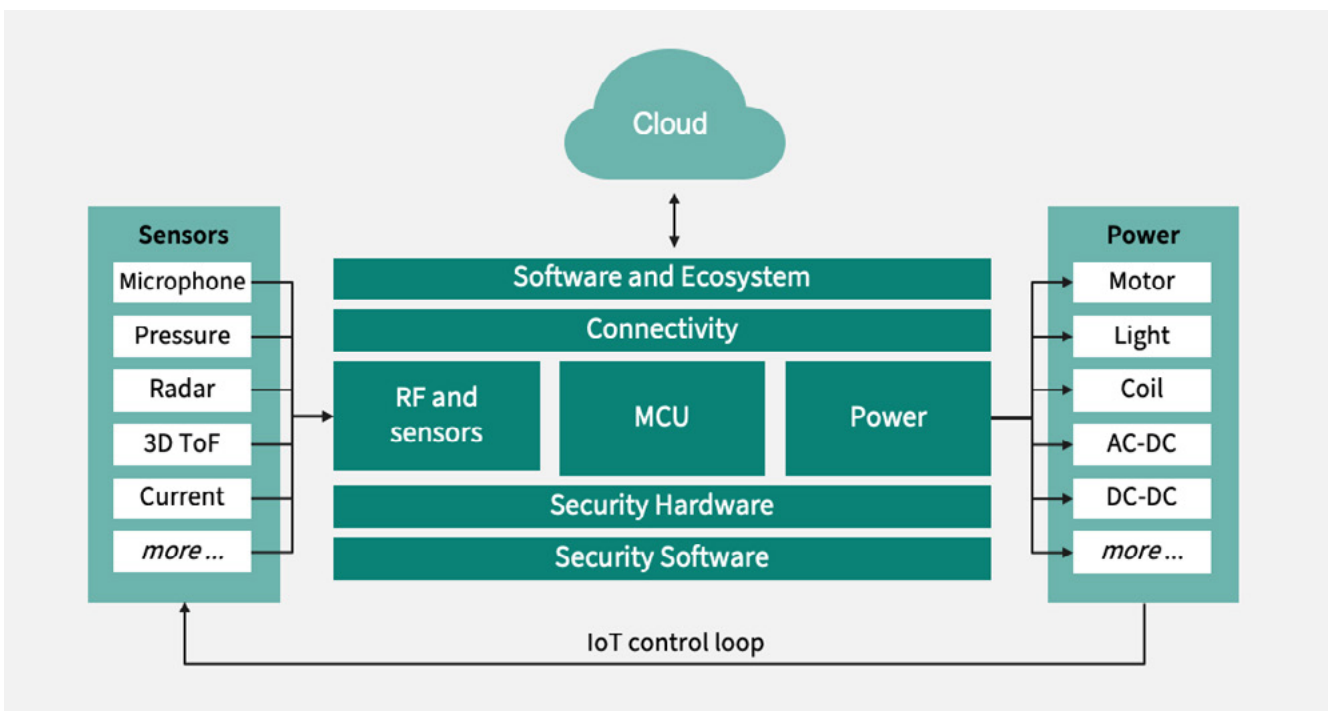
## Linking the real and the digital world

Infineon powers the digitalization for IoT with an extensive portfolio of products including sensors, microcontrollers, actuators, wireless connectivity, and security to link the real and digital world. With robust software development tools and an extensive partner ecosystem, you can easily bring your IoT products to market.



## Build any IoT application with Infineon's extensive portfolio

With over 15,000 products, Infineon's product portfolio gives you one place to get all the products you need for your IoT application. Products are supported with development boards, evaluation kits, software, and design tools to make IoT work!



# Accelerating IoT development with system solutions

By combining a comprehensive IoT portfolio with deep system expertise, Infineon delivers solutions that let you build IoT systems faster, with less effort, and better results. As a trusted partner for 8 of the top 10 IoT companies, Infineon leverages over 20 years of IoT leadership, with over 3 billion IoT chips shipped to help you bring your IoT application to market.

With products for key IoT technologies like HMI, wireless connectivity, and security, Infineon delivers solutions that let you focus on your business model, product design, and go-to-market instead of struggling to incorporate multiple technology systems. Our design resources, tools, reference designs, and partners let you jump-start your project and get to production faster.

Below is an example of a system solution for a smart lock application that incorporates multiple Infineon technologies and services into a reference platform.



The image shows a smart lock system mounted on a white base. A smartphone is placed in front of the lock, and a small card is visible to the right. The lock has a keypad and a handle. The entire setup is presented as a reference platform for an IoT smart lock application.

- Wireless connectivity**  
Infineon AIROC™ Wi-Fi/  
Bluetooth®/802.15.4
- Cloud/Analytics**  
Public Cloud support  
Infineon IoT Cirrent™ IoT Network  
Intelligence  
Infineon Cirrent™ Cloud ID
- Compute**  
Infineon PSoC™ 6 ultra-low power  
Microcontroller
- Actuation**  
Infineon H Bridge Motor Driver
- Sensors**  
Infineon 3D Time-of-Flight face ID  
Infineon CAPSENSE™ Proximity  
Detection
- Touch**  
Infineon CAPSENSE™ Touch
- NFC**  
Infineon NFC Connected Tags or Reader  
Infineon NFC Battery authentication
- Security**  
Infineon OPTIGA™ Trust-M
- NFC Smart Cards**  
Infineon CIPURSE™
- Mobile Application Analytics**  
Infineon Cirrent™ Mobile Application  
Intelligence

Learn more:

[Smart lock webpage](#)

# Solving major IoT technology pain points

IoT requires key technical building blocks to create any application including HMI, intelligent sensors, wireless connectivity, security and privacy, edge machine learning, cloud, actuation, and power. With IoT applications using multiple technology areas, the time and expertise required to implement and integrate these areas together only increases. By providing reference examples that combine multiple technical building blocks, Infineon products and expertise simplify development complexity and get you to market faster.



# Human Machine Interfaces (HMI)

The smooth, intuitive experience of a smartphone interface has become the standard that every IoT application is expected to deliver for HMI. With the addition of voice as an HMI, the knowledge and expertise needed to quickly integrate these seamless interfaces into your device only increases. Infineon's deep expertise lets you create HMI solutions like touch control built with [CAPSENSE™](#), which has been used to replace over 6 billion mechanical buttons.

## Consumer touch control

Creating a smooth touch interface requires accurate touch detection along with a responsive interface. To prevent false touch detections from ruining the experience, you have to manage noise and electromagnetic interference from other components like the power supply. Infineon's [CAPSENSE™](#) with industry leading signal to noise ratio performance lets you overcome these challenges. Choose from a variety of [CAPSENSE™](#) based kits to quickly prototype your touch solution.



### Featured product:

[PSoC™ 6 MCU](#) | [PsoC™ 4 MCU](#)

### Learn more:

[Smart home display demo video](#) | [Capacitive sensing video](#)

## Industrial touchscreen

Industrial environments require a touch interface that can perform under extreme conditions created by water and dust, while also accurately detecting touches from operators wearing gloves. Infineon along with partner [UICO](#) has created a solution that shows how Infineon's [CAPSENSE™](#) and the technology from UICO can meet industrial touch screen requirements.

### Featured product:

[PSoC™ 4100S Max MCU](#)

### Learn more:

[Industrial touchscreen demo video](#)





# Human Machine Interfaces (HMI)

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## Proximity detection and gesture control

Touchless control solutions let you keep control surfaces clean while also reducing wear and tear. The challenge is to build a realistic solution for touchless controls that is both cost effective and energy efficient. Infineon's CAPSENSE™ lets you build low-cost and low-power solutions for proximity detection and gesture control that other technologies can't.

**Featured product:**

[PSoC™ 4100S Max MCU](#)

**Learn more:**

[Gesture control demo video](#)

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## Local voice commands

Modern voice controlled interfaces require high performance microphones along with machine learning for audio processing so that you can do things like detect wake words or process voice command locally. Infineon provides local voice control solutions for low power and constrained edge devices using XENSIV™ MEMS microphones and PSoC™ 6 Arm® Cortex® M4 microcontrollers for audio processing. Infineon also partners with Cyberon to simplify machine learning for wake word and intent recognition.

**Featured product:**

[PSoC™ 6 MCU](#) | [XENSIV™ MEMS mic](#)

**Learn more:**

[Cyberon](#)

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## Graphic display

IoT applications require all types of graphics from simple displays to rich, full graphics. With a broad family of microcontrollers, Infineon supports many of the IoT displays that you need to build. Combined with the knowledge from partnerships with graphics experts like Embedded Wizard, Segger emWin, and Altia, Infineon has the solutions for all your graphics needs.

**Featured product:**

[PSoC™ 6 Wi-Fi BT Pioneer Kit](#)

**Learn more:**

[Segger](#) | [Embedded Wizard](#) | [Altia](#)



# Intelligent Sensors

Infineon's broad portfolio includes ready-to-use sensor solutions that enable fast time-to-market and reliable functionality. Based on 40 years of experience developing sensor products and a world-leading sensing technology portfolio, Infineon's XENSIV™ delivers exceptional accuracy, best-in-class measurement performance, reliability, field proven quality, system stability, durability, and integrity.

## Connected sensors

Infineon's XENSIV™ Connected Sensor Kit (CSK) lets you connect to the cloud with AIROC™ Wi-Fi to quickly visualize sensor data on a cloud dashboard. Connect different sensors to the cloud using adapter boards that come with the CSK like the PAS CO2 and 60GHz RADAR sensor boards.

### Featured product:

[PSoC™ 6 MCU](#) | [AIROC™ CYW43012](#) | [XENSIV™ 60GHz radar](#) | [XENSIV™ PAS CO2 sensor](#)

### Learn more:

[Connected Sensor Kit](#) | [Connected sensor kit demo video](#)



## Intelligent environmental control

Environmental controls rely on static and preset programs that can quickly get out of touch with how people actually use a physical space. Intelligent sensors provide the crucial feedback loop to ensure that environmental systems like air conditioners are used efficiently and for maximum comfort. The Smart Aircon demo showcases connected air conditioning using [AIROC™ Wi-Fi and Bluetooth®](#), [iMotion™ motor control](#), and [PSoC™ 6 microcontroller](#). Using [XENSIV™ PAS CO2 sensor data](#) and occupancy sensing with [XENSIV™ 60GHz radar](#), the demo shows intelligent automation that responds to people.

### Featured product:

[PSoC™ 6 MCU](#)

### Learn more:

[Smart air conditioner demo video](#)



# Intelligent Sensors

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## Eliminating false alarms with sensor fusion

Alarm systems have to tell the difference between an intruder breaking a window and common household sounds. Infineon's sensor fusion-based smart alarm system (SAS) combines Infineon microphones, barometric pressure sensors, and ML powered sensor fusion algorithms running on the PSoC™ microcontroller to eliminate false alarms. By detecting changes in the room pressure level, the SAS can increase glass break detection accuracy.

### Featured product:

[PSoC™ 6 MCU](#) | [XENSIV™ MEMS mic](#) | [XENSIV™ barometric pressure](#)

### Learn more:

[Smart alarm system website](#)

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## Crowd control using high accuracy sensing

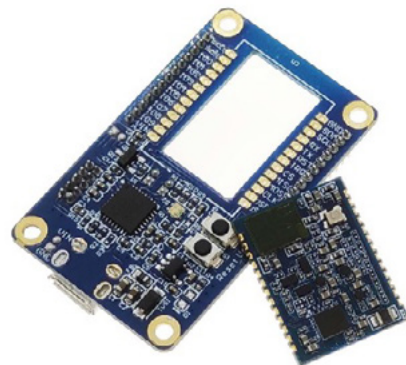
Presence detection and people counting applications are used to limit overcrowding in public space to maintain health and safety. Infineon's XENSIV™ 60GHz radar combined with software algorithms running on the PSoC™ microcontroller let you track room occupancy, while maintaining user privacy.

### Featured product:

[PSoC™ 6 MCU](#) | [XENSIV™ 60 GHz radar](#)

### Learn more:

[People counting website](#)





# Security and Privacy

In an increasingly digital world filled with connected devices, device security is key to protecting user privacy and preventing attacks. To address this growing need for secure devices, Infineon delivers hardware-based security to protect data from the end device to the cloud.

## Secured microcontrollers

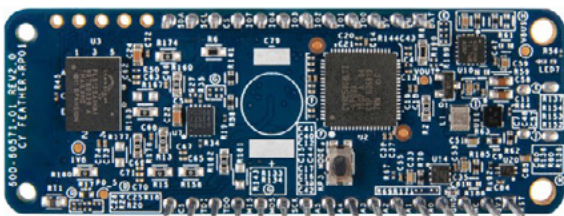
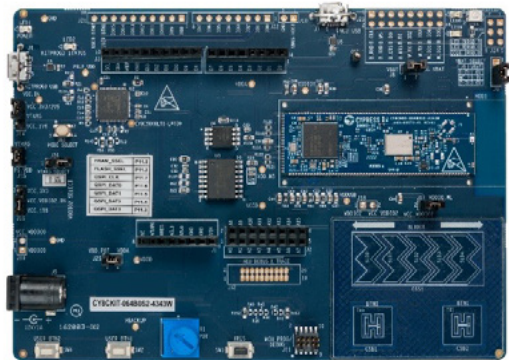
With a growing number of devices connecting to the internet, security must be established between hardware, cloud applications and servers, and finally users and services. PSoC™ 64 Secure microcontrollers protect device integrity with preconfigured security and connectivity software to support secure onboarding, secure boot, secure firmware updates and secure runtime services based on Trusted Firmware-M to deliver a secure solution that works.

### Featured product:

[PSoC™ 64](#)

### Learn more:

[PSoC™ 64 Secure Boot Kit](#)



## Secure elements

Authentication plays a key role for IoT security, but it can be a challenge to develop and evaluate end-to-end authentication for all your IoT devices. OPTIGA™ Trust M is a standalone secure element that simplifies the integration of security in IoT devices at scale. It can be used with any MCU/MPU or application processor. OPTIGA™ Trust M can handle security-related tasks such as secured authentication, secured communication, secured updates, and access management. This highly modular solution can enhance the security of existing designs without extensive resource allocation and with a faster time to market. OPTIGA™ Trust M is available with multiple provisioning options – from pre-provisioned to custom provisioning.

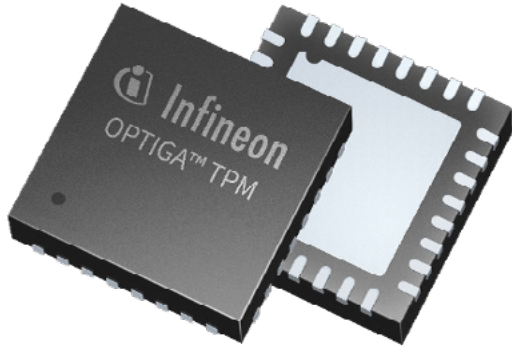
### Featured product:

[OPTIGA™ Trust M](#)

### Learn more:

[OPTIGA™ Trust M IoT Security Development Kit](#)

# Security and Privacy



## Trusted platform modules

OPTIGA™ TPMs protect the integrity and authenticity of IoT devices. With a secured key store and support for a variety of encryption algorithms, OPTIGA™ TPM security chips let you create individual and secured IDs to protect the integrity and authenticity of devices like surveillance cameras and EV charging stations.

### Featured product:

[OPTIGA™ TPM](#)

### Learn more:

[OPTIGA™ TPM video](#) | [OPTIGA™ TPM Github repository](#)

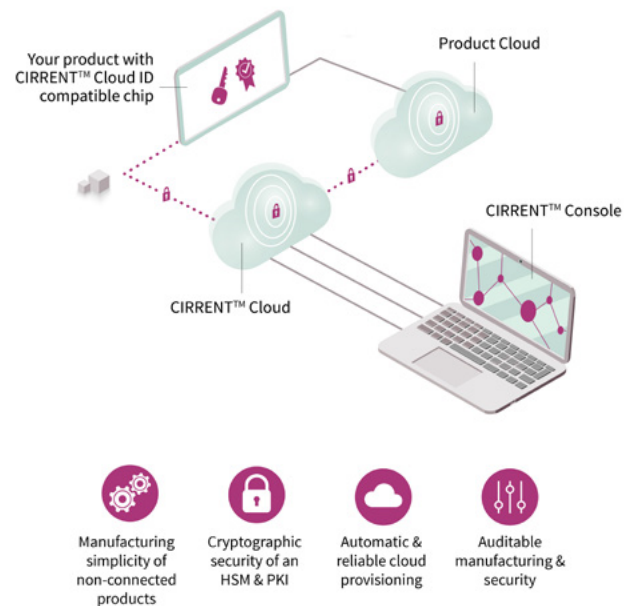
## Automatic device-to-cloud provisioning

For the best security, IoT devices require a unique identifier assigned at the time of manufacturing. Simple approaches like using a list of device IDs or a generic certificate to assign the identity in the factory create a security risk if the list or certificate is compromised. More sophisticated processes like hardware security modules and public-key infrastructure require security expertise and expensive setup at each manufacturing facility.

CIRRENT™ Cloud ID is a unique approach to device-to-cloud authentication making it easier, cost effective, and secure by automating cloud provisioning of device certificates.

### Featured product:

[CIRRENT™ Cloud ID](#)



# Security and Privacy

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## Active payments: smart wearables and IoT devices

By adding NFC capabilities to wearables, they can be used for payment or to gain access to public transportation and office buildings. SECORA™ Connect X, an all-in-one turnkey NFC solution, supports this trend. The ultra-low-power, boosted NFC solution provides an easy path to EMVCo-based payments and can be combined with NFC wireless charging for smart wearables such as smart rings, wristbands, smartwatches and more making them more user-friendly and convenient.

**Featured product:**

[SECORA™ Connect NFC wearable solutions](#)

**Learn more:**

[Payments in Motion web page](#)



## Brand protection

Counterfeit trade significantly impacts the revenue of luxury brands and fake medical products threaten patient health and safety. By integrating secured NFC tags into these products, you can easily verify the authenticity of the products using your NFC-enabled mobile device. Infineon's secured NFC tags are designed with advanced cryptography features to reliably establish the authenticity of your products while offering resistance against cloning.

**Featured product:**

[OPTIGA™ Authenticate NFC secured tag](#)

**Learn more:**

[NFC 2 Go starter kit](#)



# Security and Privacy

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## Contactless accessory authentication

Counterfeit accessories and consumables, such as fake water filter cartridges and electric toothbrush heads result in consumer dissatisfaction, revenue loss, and potential health risks. With the combination of an inbuilt NFC reader and Infineon secured NFC tag, you can easily authenticate your purchases, ensuring that you use genuine accessories every time. The contactless NFC technology is best suited for challenging environments prone to water spills, motor vibration, and wear and tear, maximizing the performance and longevity of your products.

**Featured product:**

[Secured NFC tags](#)

**Learn more:**

[Accessory authentication video](#)

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## Secured product activation and device configuration

Secure product configuration and activation keeps your devices safe by making sure only authorized users access a device. For industrial and medical application secured product configuration using an NFC enabled smart phone or reader prevents unauthorized access and data tampering. For shared mobility vehicles like e-bikes, secured activation protects revenue by making sure only paid users ride the bike. With Infineon's NFC-I2C bridge tag you can easily pair, activate, and configure devices with a single tap for secured and contactless connectivity for your IoT devices.

**Featured product:**

[OPTIGA™ Authenticate NFC-NBT 2000](#)

**Learn more:**

[NFC bridge tag demo video](#)

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# Security and Privacy

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## Accessory authentication

Consumer devices, home appliances and industrial machines are constantly exposed to the risk of counterfeit spares and accessories. Fakes can compromise functionality, user safety and – as a result – brand value. Infineon's OPTIGA™ Authenticate S is a fully fledged, turnkey hardware-based security solution for any device authentication challenge offering unprecedented levels of configuration flexibility and a range of hardened security features.

**Featured product:**

[OPTIGA™ Authenticate S](#)

**Learn more:**

[OPTIGA™ Authenticate S Eval Kit](#) | [Accessory authentication demo](#)



## eSIM for cellular IoT devices

OPTIGA™ Connect IoT is a ready-to-connect embedded SIM (eSIM) solution for cellular IoT devices. It comes with a pre-installed GSMA-compliant operating system and pre-integrated connectivity capabilities and offers global cellular network coverage (2G, 3G, 4G, CAT-M and other LTE services) with a choice of 640+ networks across 200 countries and territories. In addition, it comes with a high level of tamper resistance which is especially important for devices that remain in the field for long periods of time.

**Featured product:**

[OPTIGA™ Connect IoT](#)

**Learn more:**

[OPTIGA™ Connect IoT video](#)

# Edge Machine Learning



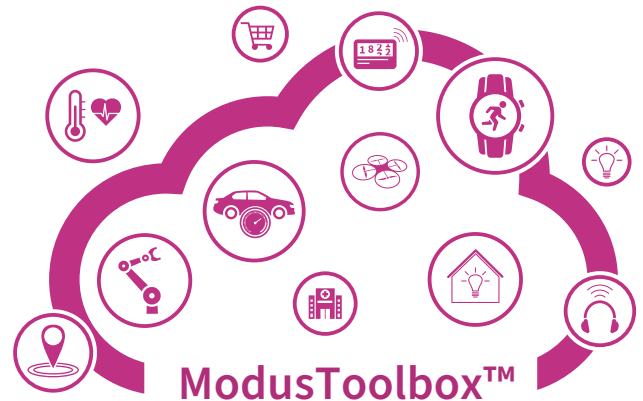
TinyML brings machine learning to low-power IoT devices and lets them transform raw sensor data into meaningful insights in real time. With TinyML, running ML on the edge lets you process sensor data on the device and put intelligence at the IoT edge while avoiding privacy and latency issues caused by sending data to the cloud. With key ML partnerships, Infineon makes tool flow and inference model development easy for anyone, even people just getting started.

## Build your own models

Building and deploying ML for embedded devices has many challenges including optimizing trained ML models for embedded devices, validating model performance, and generating model code and libraries. [ModusToolbox™ Machine Learning](#) lets you rapidly evaluate and deploy ML applications on low-power edge devices. With configurators, tools, code examples, and supporting libraries ModusToolbox™ ML lets you evaluate and benchmark pre-trained ML models created from frameworks like TensorFlow, Keras, and PyTorch.

### Featured product:

[ModusToolbox™ Machine Learning](#)



## End to end ML workflow

Creating a ML workflow end to end can be a difficult and time-consuming process for even experienced engineers. Up to 80% of the development time can be spent on collecting, annotating, cleaning, processing and experimenting with different data sets. Even the most experienced machine learning engineers make costly mistakes during the preparation of data for model building. These errors includes mislabeled data, inconsistent data frequency, or mixing data of different dimensionality. To address these challenges Imagimob lets you annotate at a glance, avoid costly data mistakes, build and train great models, and evaluate and find the best model before deploying.

### Learn more:

[Imagimob](#)





# Edge Machine Learning

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## Train your own model

Building your own AI models can be a complex and expensive effort that can be difficult for anyone to take on. Infineon has worked with key ML partners to provide developers a seamless process for things like recognizing patterns in sensor data, wake word detection, training ML models, and deploying realtime inferencing models. Each of these partners let you quickly deploy models with seamless integration with ModusToolbox™.

**Learn more:**

[Cyberon](#) | [Edge Impulse](#) | [SensiML](#)

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## Predictive maintenance

ML presents the promise of detecting upcoming system failures for crucial HVAC elements such as filters, compressors, motors, and fans. With the XENSIV™ predictive maintenance evaluation kit you can start evaluating sensor-based condition monitoring and predictive maintenance use cases for HVAC equipment. Working with partner Micro.AI, Infineon demonstrates anomaly detection at the edge that can be used for predictive maintenance. The demo deploys ML on the XMC4700 to show unsupervised AI algorithms running locally to predict failures that could lead to expensive repairs and down time. The demo shows XENSIV™ sensors measuring vibration, current consumption and patterns, temperature, and acoustic noise levels with all the data shown on the MicroAI Launchpad dashboard along with a health score.

**Featured product:**

[XMC4700](#) | [AIROC™ Wi-Fi](#) | [XENSIV™ sensors](#)

**Learn more:**

[XENSIV™ predictive maintenance evaluation kit](#) | [Anomaly detection demo video](#) | [MicroAI](#)

# Wireless Connectivity



Wireless technologies like Wi-Fi, Bluetooth®LE, and NFC make up the backbone of everyday IoT applications. As a wireless pioneer and market leader with over 1 billion units shipped, Infineon has solved the technical challenges of wireless connectivity including wireless co-existence and low-power wireless. Infineon also drives the future direction of Wi-Fi, Bluetooth®, and Matter through their standards bodies.

## Infineon's AIROC™ Wi-Fi 6E

Wi-Fi 6E promises to bring improved reliability and bandwidth for congested wireless environments by opening up the 6 GHz band. With lower latency and power consumption, communication is more efficient compared to the 2.4 GHz and 5 GHz bands. Infineon has combined AIROC™ Wi-Fi 6 connectivity with NVIDIA's processors to demonstrate low-latency and improved user experience for AI applications.

### Featured product:

[AIROC™ Wi-Fi 6/6E Bluetooth® 5.x combo](#)

### Learn more:

[Infineon Wi-Fi 6E and NVIDIA AI demo video](#)



## AIROC™ Wi-Fi & Bluetooth® Partner Modules

Adding Wi-Fi and Bluetooth® connectivity to your IoT product requires careful design to ensure proper performance and regulatory compliance. Infineon's partner modules accelerate time-to-market by providing optimized RF design in a small package. Partner module lineups include pre-certified modules with integrated antennas, as well as modules combining MCU and connectivity in one. Get your IoT products to market faster, easier, and with less risk!

### Featured product:

[AIROC™ Wi-Fi and Bluetooth® Combo](#)

### Learn more:

[Partner module selection guide](#)



## Wireless Connectivity

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### AIROC™ Bluetooth® modules

Infineon's fully integrated, certified, and programmable AIROC™ Bluetooth® modules let you easily build products faster and with minimized risk by giving you pre-built modules that are certified for multiple global regulatory bodies. These modules get you to production faster with pre-configured software along with partner support and services

**Featured product:**

[AIROC™ Bluetooth® and Multiprotocol](#)

**Learn more:**

[Bluetooth® module selection guide](#)

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### AIROC™ Wireless Coexistence

Different wireless technologies like Wi-Fi, Bluetooth®, and ZigBee/Thread on the same device can interfere with each other causing dropped connections, degraded performance, and overall poor user experience. Infineon's advanced coexistence algorithms ensure optimal performance and reliability even during the most challenging concurrent use cases. Parameters are configurable to meet developers' design targets.

**Featured product:**

[AIROC™ Wi-Fi Bluetooth® Combo](#)

**Learn more:**

[Wireless Collaborative Coexistence Application Note](#)

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### Low power Wi-Fi

Wi-Fi was once limited to equipment with AC power or large batteries such as notebook PCs. Infineon's low-power silicon architecture, combined with advancements in Wi-Fi designs optimize power consumption for both active and standby modes. This enables long battery life in a small form factor with less thermal heating issues.

**Featured product:**

[AIROC™ CYW43022](#)

**Learn more:**

[Low-Power System Design Application Note](#)





## Wireless Connectivity

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### Multi OS support and compatibility

For flexible and rapid development of your connected product, Infineon provides AIROC™ wireless support for RTOS, Linux, and Android based operating systems. For RTOS designs, Infineon delivers a complete wireless design environment with ModusToolbox™. For Linux and Android designs, Infineon partners with the open-source community to provide quality and secure connectivity.

**Featured product:**

[AIROC™ wireless](#)

**Learn more:**

[ModusToolbox™](#) | [AIROC™ Linux and Android drivers](#)



### Wireless support for Matter

Emerging protocol standards like Matter facilitate the interoperability and adoption of smart home products. As a member of the Connectivity Standards Alliance board, Infineon shapes the Matter specification and also supports Matter over Wi-Fi and Thread with its AIROC™ wireless connectivity portfolio.

Any Matter device requires a unique device identity to be provisioned by the OEM. Here an OPTIGA™ Trust M Secure Element (SE) can support OEMs as it comes pre-provisioned with all credentials required for Matter. During the onboarding process, there is typically a mobile phone involved. Matter requires a secured channel established between the phone and the IoT device. Once established, the communication is authenticated and encrypted. In this scenario, the OPTIGA™ Trust M SE helps via crypto offloading to accelerate the advanced cryptography and improve user experience.

**Featured product:**

[AIROC™ CYW43022](#) | [PSoC™ 6 MCU](#) | [OPTIGA™ Trust-M](#)

**Learn more:**

[Matter demo video](#) | [Matter web page](#)

# Wireless Connectivity

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## NFC for smart wearables

Smart wearables equipped with NFC can let you pay at a store, ride public transportation, and even enter your office building. With Infineon's [SECORA™ Connect](#) you can easily add secure payments and biometric authentication within the size and power limitations for wearables.

**Featured product:**  
[SECORA™ Connect](#)

**Learn more:**  
[SECORA™ Connect Smart Wearables video](#)

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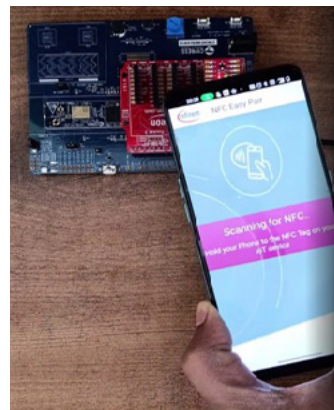
## NFC for Wi-Fi commissioning

Quick, easy, and secure onboarding remains a challenge for any IoT device using Wi-Fi, especially the devices without a keyboard or screen. Infineon's NFC for Wi-Fi onboarding demo shows how quick and secure Wi-Fi onboarding can be done for applications like appliances, lighting, speakers, TVs, and thermostats.

**Featured product:**  
[Secured NFC tags](#)

**Learn more:**  
[NFC for Wi-Fi commissioning demo video](#)

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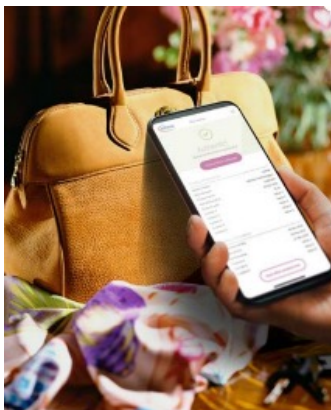


## NFC powered digital experience

Enhancing your brand's physical offering with a captivating digital customer experience significantly increases the likelihood of success in a competitive landscape. Moreover, a personalized experience serves as a powerful catalyst for driving repeat sales. The rising popularity of blending the physical and digital realms has a notable influence across consumer segments, including the emerging metaverse. Infineon NFC tags enable a seamless and immersive interaction for your customers. This could be invites to special events, or reminders about upcoming service appointments or connecting to the brand store in metaverse.

**Featured product:**  
[Secured NFC tags](#)

**Learn more:**  
[NFC 2 Go starter kit](#)



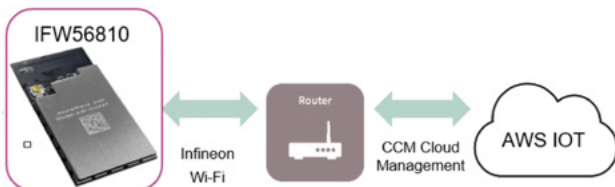
# Cloud



Connecting to the cloud has become a central part of an IoT solution as it unlocks the potential for greater analytics, insights, and accessibility for connected devices. With the advent of hybrid cloud and deployments using multiple cloud providers, you need to know that your device can work with any cloud.

## Support for major cloud providers

As IoT deployments increase in size and complexity, the cloud vendor you choose today may not be the one you use tomorrow. This uncertainty requires the flexibility to work with any cloud provider. With support for major public clouds, Infineon makes it easy for you to work with the cloud you need.



## Secure provisioning and deployment

The AIROC™ Cloud Connectivity Manager (CCM), supporting AWS IoT ExpressLink lets IoT devices connect easily and securely to AWS over Wi-Fi. The CCM eliminates the need to manage connectivity, cloud networking, and security for IoT products, enabling faster time to market.

**Featured product:**

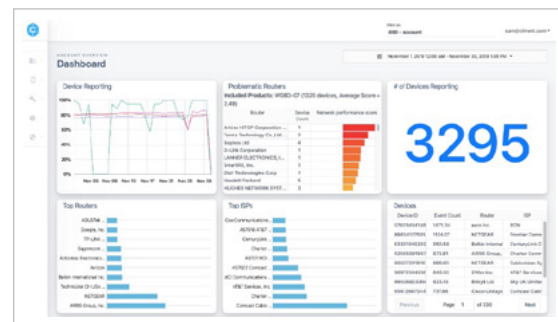
[AIROC™ Cloud Connectivity Manager](#)

**Learn more:**

[AIROC™ CCM Kit](#)

## Product analytics

CIRRENT™ Product Analytics is a portfolio of cloud software solutions that give you actionable data for your IoT products in the field to improve performance, reliability, and connectivity. The portfolio includes the CIRRENT™ IoT Network Intelligence (INI) and CIRRENT™ Mobile App Intelligence (MAI), which provide data insights via a web portal that lets your product and engineering teams monitor and solve customer and product problems faster.



**Featured product:**

[CIRRENT™ IoT Network Intelligence](#) |

[CIRRENT™ Mobile App Intelligence](#)

**Learn more:**

[CIRRENT™ IoT Network Intelligence video](#)

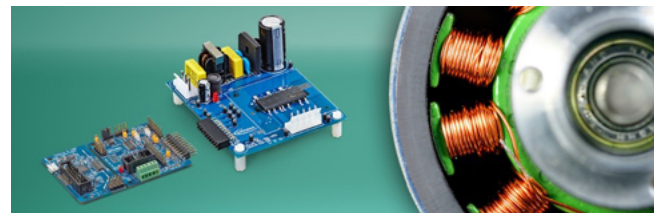


# Actuation

When your IoT device sets things in motion, you need the right combination of hardware and software to implement embedded motor control. The challenge is to find the right expertise to develop the software correctly, especially for things like motor control. Infineon's powerful combination of microcontrollers and motor control software lets you quickly customize your motor control solution.

## Easy motor control development

Developing motor control can be difficult with all the different varieties of motors. You can often find yourself struggling to find the right combination of motor control drivers along with support for different power levels. The Infineon iMOTION™ evaluation kit lets you get a motor running in less than 1 hour. The kit's modular approach gives you maximum flexibility and scalability during the evaluation and development phases, letting you easily set up a complete motor drive evaluation system.



**Featured product:**

[iMotion™ motor control](#)

**Learn more:**

[iMOTION™ design kit](#)

## Customized motor control

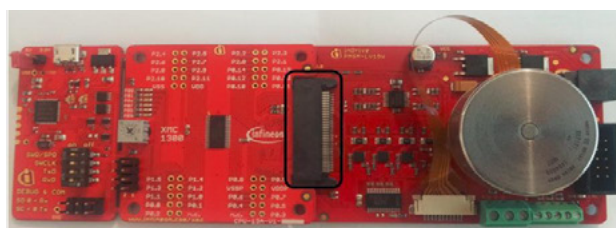
Developing the right control scheme can be difficult given the wide variety of motor control applications. The XMC1000 Motor Control Application Kit lets you quickly prototype PMSM and BLDC motor control schemes with various position and current feedback sensors to balance cost and performance. This modular system allows users to evaluate the XMC1302 or XMC1404 microcontrollers with respect to motor control feature set and performance.

**Featured product:**

[XMC1000](#)

**XMC1000 Learn more:**

[XMC1000 Motor Control Application Kit](#)





# Actuation

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## Advanced motor control

For advanced motor control applications that need high performance for real time control the [XMC7200 Evaluation Kit](#) delivers best-in-class compute performance along with real time, reliable connectivity. With low power modes and the ability to operate in harsh environments, the kit lets you build applications for the most demanding industrial use cases. The large number of peripherals support a wide range of industrial applications and requirements including complex motor control.

**Featured product:**

[XMC7000](#)

**Learn more:**

[XMC7000 robotic arm demo video](#)



# Power



As more devices get connected and smarter, a reliable and efficient power source remains a key requirement. From high voltage to battery power, devices need to effectively manage the power limits and requirements to ensure reliability, performance, and fast time to market. To meet these wide ranging needs, Infineon provides a full spectrum of power solutions from USB-C to Qi wireless charging to battery management systems.

## USB-C power

The world has started moving to USB-C which is becoming the most common power source for portable electronics. To correctly design a USB-C power source requires in-depth knowledge to handle the software and hardware requirements. With a rich portfolio of USB-C and power delivery products, Infineon provides end-to-end solutions for USB-C Power Delivery.

The EZ-PD™ Barrel Connector Replacement (BCR) is an easy to use, cost effective solution to replace old, incompatible barrel jacks or custom connectors with Infineon's highly integrated USB Type-C port controller -all with no firmware development and few external components.

**Featured product:**

[EZ-PD™ Barrel Connector Replacement-Lite](#)

**Learn more:**

[Barrel connector replacement kit](#) |

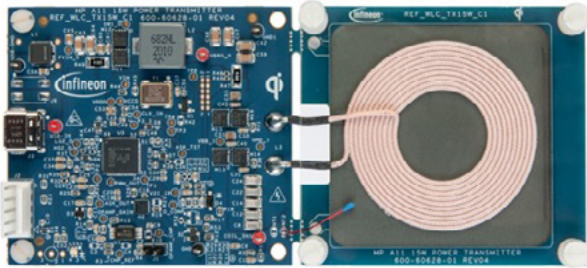
[Barrel connector replacement tech talk video](#)





# Power

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## Wireless charging

With the widespread adoption of the Qi wireless charging standard, there is a growing risk of using unauthorized wireless chargers. Infineon lets you easily build authorized Qi compliant wireless chargers with secured authentication using OPTIGA™ Trust Charge. OPTIGA™ Trust Charge supports device authentication for inductive wireless charging according to the Qi 1.3 wireless charging standard. As your partner for secured authentication according to the Qi wireless charging standard, Infineon makes the Qi certification process easy by handling the entire provisioning process, including the WPC-compliant certificate chain. In addition, the Wireless Charging kit makes development easy by offering a highly efficient and secure wireless charging platform.

**Featured product:**

[OPTIGA™ Trust Charge | WLC1115 wireless charging transmitter IC](#)

**Learn more:**

[Wireless charging kit](#)

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## Industrial switch-mode power supplies

Industrial switch-mode power supplies (SMPS) operate in outdoor environments without cooling and require reliability and robustness since they must deal with high-temperatures, outdoor use, line surges, load jumps, and short circuits. Infineon SMPS delivers the best price to performance ratio along with the highest efficiency and reliability for the typical 10 to 20 year industrial SMPS life cycle.

**Featured product:**

[XMC4200 | 600V CoolMOS™](#)

**Learn more:**

[EVAL\\_3K3W\\_BIDI\\_PSF evaluation board](#)



# Software

Developers often have to choose between closed, proprietary flows that struggle to keep pace with modern innovations and open platforms that fail to support the unique features and value of their target device. ModusToolbox™ delivers the best of both worlds with a platform that gives you a wonderful development experience, increased productivity, and feature-rich, bullet-proof applications. ModusToolbox™ makes your life easier and more efficient by removing development barriers and allowing you to deliver quality products to market faster.

## Embedded software

ModusToolbox™ accelerates the software development lifecycle without imposing a rigid, inflexible flow on engineering and validation teams. Unlike traditional IDE-centric approaches, ModusToolbox™ provides powerful standalone tools like our ground-breaking configurators and leaves the choice of compiler, editor, debugger, and revision control system up to you.

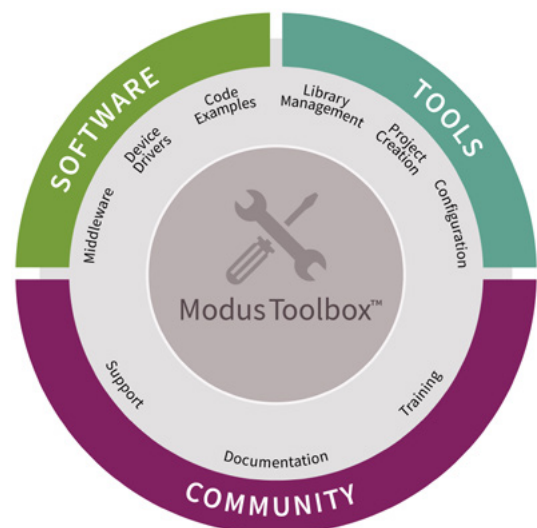
Ready-to-use software components, code, and applications let you reduce errors. Even the traditionally tedious tasks of creating a new project and keeping software up-to-date are easy with the ModusToolbox™ Project Creator and Library Manager tools.

### Featured product:

[ModusToolbox™](#)

### Learn more:

[ModusToolbox™ introduction video](#)





# Learn more about the Infineon product portfolio

To find out more about the products featured in this guide or any Infineon product, click on any of the links shown below.

## Analog /Discrete

[IGBTs](#)  
[Low-Side/High-Side Switches](#)  
[MOSFETs](#)  
[MOSFET/IGBT Drivers](#)

## Audio

[Class D Audio Amplifiers](#)  
[MEMS Microphones](#)

## I/O Interface / USB

[Alternator Regulator](#)  
[TRAVEO™ II CAN FD](#)  
[Constant Current Control IC](#)  
[Engine Management IC](#)  
[Load Switch](#)  
[Mirror IC](#)  
[Restraint System IC](#)  
[Security/Authentication](#)  
[System Basis Chips \(SBC\)](#)  
[USB Serial Hub](#)

## Memory

[NOR Flash/FRAM/HyperBus/SRAM](#)

## Microcontrollers

[AURIX™ MCU](#)  
[iMOTION™](#)  
[MOTIX™ Embedded Power ICs](#)  
[PSoC™ 6 MCU](#)  
[PSoC™ 4 MCU](#)  
[PSoC™ 5LP MCU](#)  
[TRAVEO™ Automotive MCU](#)  
[XMC™ MCU](#)

## Motor Control

[Embedded Power ICs](#)  
[BLDC Motors](#)  
[Brushed DC Motor](#)  
[H-Bridge](#)  
[Half Bridge IC](#)  
[IGBTs](#)  
[MOSFETs](#)  
[MOSFET/IGBT Modules](#)  
[MOSFET/IGBT Drivers](#)  
[Synchronous Rectifiers](#)  
[Stepper Motor Drivers](#)

## Power

[Automotive Conventional Powertrain ICs](#)  
[AC/DC Power Conversion](#)  
[Buck Converters](#)  
[Class D Audio Amplifiers](#)  
[DC/DC Switching Regulator \(PMIC\)](#)  
[Diodes & Thyristors \(Si/SiC\)](#)  
[LDOs](#)  
[Gate Driver ICs](#)  
[High Power Diodes & Thyristors](#)  
[Isolated Industrial Interface](#)  
[Intelligent Power Modules \(IPM\)](#)  
[LED Drivers](#)  
[MOSFET/IGBT Modules](#)  
[Motor Control ICs](#)  
[Power Factor Correction](#)  
[Solid State Relay](#)  
[Smart Power Switches](#)  
[USB Type-C and Power Delivery](#)  
[Wide Bandgap Semi's \(SiC/GaN\)](#)  
[Wireless Charging ICs](#)

## RF & Wireless (Wi-Fi / BLE)

[Antenna Centric Devices](#)  
[Antenna Switch Module \(ASM\)](#)  
[High Reliability Discretes](#)  
[Low Noise Amplifier LNA ICs](#)  
[mmWave-MMIC](#)  
[RF Transistors](#)  
[RF Diodes](#)  
[RF Switches \(SPxT, DPxT\)](#)  
[RF Modules \(LMM\)](#)  
[AIROC™ Wi-Fi + Bluetooth® Radios](#)  
[Wi-Fi-Only Radios](#)  
[IoT Partner Modules](#)  
[Bluetooth®/Bluetooth® LE \(SoCs/Modules\)](#)  
[Wireless Control](#)

## Safety Solutions ASIL-D

[AURIX™ Safety Concept](#)  
[Safety Products PRO-SIL™](#)

## Security / Smart Cards

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[CIRRENT™ Cloud ID](#)  
[CIPURSE™ Products](#)  
[Contactless Memories](#)  
[OPTIGA™ Authenticate](#)  
[OPTIGA™ Authenticate NFC](#)  
[OPTIGA™ Connect](#)  
[OPTIGA™ Embedded Security](#)  
[OPTIGA™ Trust](#)  
[PSoC™ 64 Secure MCU](#)  
[SECORA™ Connect](#)  
[SECORA™ Pay Security](#)  
[Smart Cards for Government ID](#)  
[Security Controllers](#)  
[Security Controllers - USB Tokens](#)  
[Smart Card Modules](#)

## Sensors

[CAPSENSE™ Capacitive Sensing](#)  
[Current Sensors](#)  
[Environmental \(Co2\) Sensors](#)  
[Magnetic Sensors](#)  
[MEMS Microphones](#)  
[Pressure Sensors](#)  
[Radar & Image Sensors](#)  
[ToF 3D Image Sensors](#)

## Transceivers

[Automotive Transceivers](#)  
[Industrial Transceivers](#)

## Transistors & Diodes

[Bipolar Transistors](#)  
[Diodes](#)  
[TVS/ESD Protection](#)



## Where to Buy

Infiniteon distribution partners and sales offices:

[www.infineon.com/WhereToBuy](http://www.infineon.com/WhereToBuy)

## Service Hotline

Infiniteon offers its toll-free **0800/4001** service hotline as one central number, available 24/7 in English, Mandarin and German.

Germany	0800 951 951 951 (German/English)
China, mainland	4001 200 951 (Mandarin/English)
India	000 800 4402 951 (English)
USA	1-866 951 9519 (English/German)
Other countries	00* 800 951 951 951 (English/German)
Direct access	+49 89 234-0 (interconnection fee, German/English)

\*Please note: Some countries may require you to dial a code other than "00" to access this international number, please visit [www.infineon.com/service](http://www.infineon.com/service) for your country!

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For further information on technologies, our products, the application of our products, delivery terms and conditions and/or prices, please contact your nearest Infineon Technologies office ([www.infineon.com](http://www.infineon.com)).

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