Vehicle electrification solutions

System solutions for the next generation of electric vehicles

Efficiency across every vehicle system

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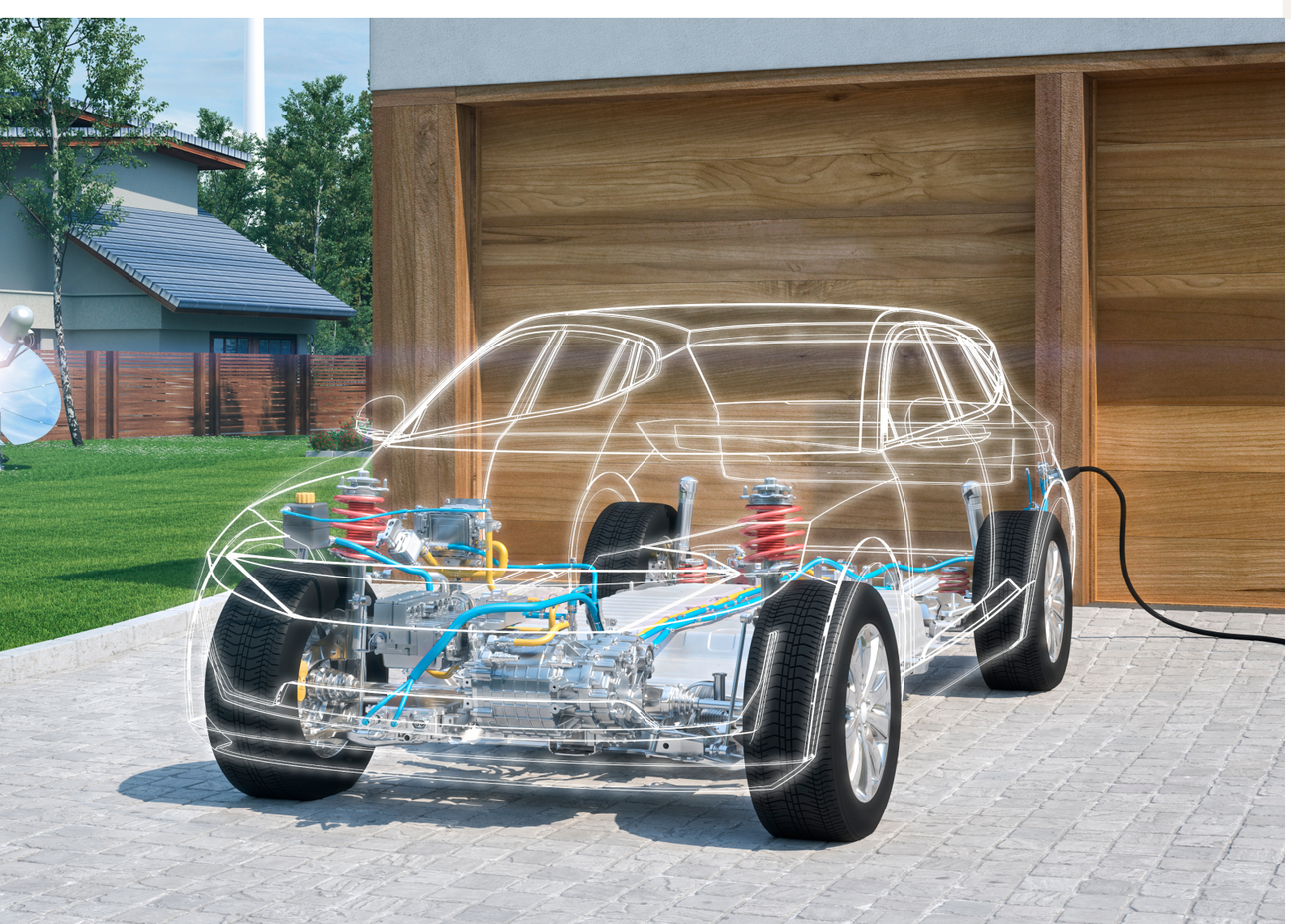
End-to-end energy optimization

The network of electrified endpoints – from EVs, to charging stations, to smarter city grids – is constantly expanding. For the network to work reliably, millions of electrified endpoints must stay in constant balance – providing the right information to the right place at the right time.

NXP Electrification solutions' robust, open architecture enables safer, more secure two-way communication from electrified endpoints to the cloud. Our integrated and embedded technologies give product designers and service providers confidence to build systems with the highest security and safety standards; with insights to improve the performance for the whole product lifecycle. NXP Electrification solutions offer control throughout the whole ecosystem, not just one part—handling battery management, fast charging and load balancing across entire grids. NXP powers electrified ecosystems with smart insights that securely drive safe, optimized performance.



Which energy to use?

In the past, energy management meant turning off the lights when leaving a room and ensuring the fridge was closed. Today, the variety of home energy sources — such as traditional grid power, solar panels, energy storage systems, and even electric vehicles — requires smart systems to efficiently manage and optimize energy usage. These smart systems must handle the power and data across these different systems. They need to have insights into the cost of the public energy, the amount of energy left in your vehicle, how much power is required to keep your home's temperature based on the weather or how much energy is needed to run your smart appliances.

All these data points are securely considered in a management system in order to make homes and buildings more efficient.

Charging infrastructure

The scale of the electric charging infrastructure is a sensitive area that hasn't been favorable for EV adoption. Critical aspect for mass adoption is the widespread availability of public charge points. To make that possible, several factors must align — such as standardizing EV charging protocols, ensuring charger reliability, and safeguarding user data. While in home-based charging, level 2 chargers, which could fully charge the EV overnight, are gaining in popularity in large part due to incentives from states.

nxp.com/electrification

NXP optimizes energy usage by managing the power and data across the different systems.

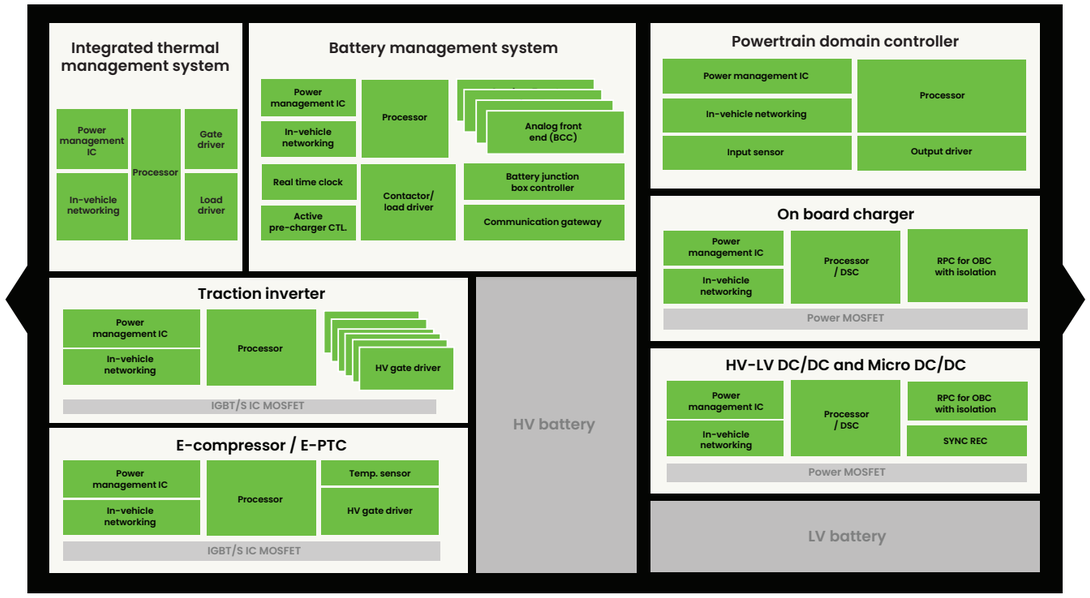
Electric vehicle system solutions

Accelerate to zero emissions with NXP's electrification solutions. From battery management to propulsion domain control, our aim is to simplify the electrification transition. NXP delivers an electrified system solution, incorporating optimal performance, robust functional safety and power management features that automakers and developers require for their next generation of vehicles.

Our automotive electrification portfolio features:

1. High-performance real-time processors and microcontrollers (MCUs)
2. Power management ICs (PMICs) and system basis chips (SBCs)
3. Battery management solutions with battery junction box, battery cell controllers and gateway
4. Electric motor driver solutions, based on advanced functional safety IGBT/SiC gate drivers
5. In-vehicle networking components for CAN, LIN, FlexRay™ and Ethernet
6. Enablement platforms, reference designs and evaluation boards

Automotive applications



Automotive electrification solutions from NXP

X-in-1 modular platform concept offer

In the electric vehicle market, the X-in-1 system is an integration concept aiming to combine multiple powertrain functions, rationalizing space, weight and cost of the system as well as the efficiency. They pave the way for faster development cycles and scalable platforms across various vehicle segments.

With S32K39 and S32K5 microcontrollers (MCUs), NXP ensures safe isolation and Freedom from Interference (FFI) to allow multiple application-software integrations on the same microcontroller. With its extensive analog portfolio, NXP is enabling an optimized system solution with associated collaterals.

Hardware	Software	Extended documentation	Functional safety documentation	Ecosystem
• **Control mother board** with S32K EVB Kit • **Analog application actuation board** (Inverter, BMS, DC-DC..)	• **Production ready system real-time drivers (RTD)** • **FlexFoundation software** responsible for orchestration between applications (light version for S32K39 MCU) • **Application software:** dedicated functions for each application running on specific cores/ tasks with their own operating system • **FlexFoundation tool** (S32K5 MCU) A GUI-based configuration tool designed to simplify the use of S32 devices for multi-application setups*	**Full system documentation** • **System application note:** concept overview to simplify system understanding • **Hardware and software function overview application note:** covering inverter, DC-DC, BMS application from hardware and software standpoint • **Hardware mother board overview application note** • **User manual by use case** to ease and guide customer on proof of concept setup	**Functional safety concepts** • 3-in-1 ASIL D EV traction inverter + ASIL B on-board charger + ASIL C DC-DC • 3-in-1 ASIL D battery management system + ASIL B on-board charger +ASIL C DC-DC* **X-in-1 integration safety concept application note** • Application note covering safe processing and isolation of multiple applications concept for S32K39 MCU • High-level functional safety concept + light TSC • Mixed integrity partitioning for X-in-1 (XRDC, MPU, IO & isolation for S32K396 example)	• **S32K partner ecosystem:** debugger, simulation , AUTOSAR, safety and more • **X-in-1 partner** Once the X-in-1 use cases are frozen and multi-application software integration is pre-validated; the customer will move to prototype-A design in a high-voltage environment

X-in-1 modular platform concept complete offering

* Under development

Latest development platforms

X-in-1 Modular Platform

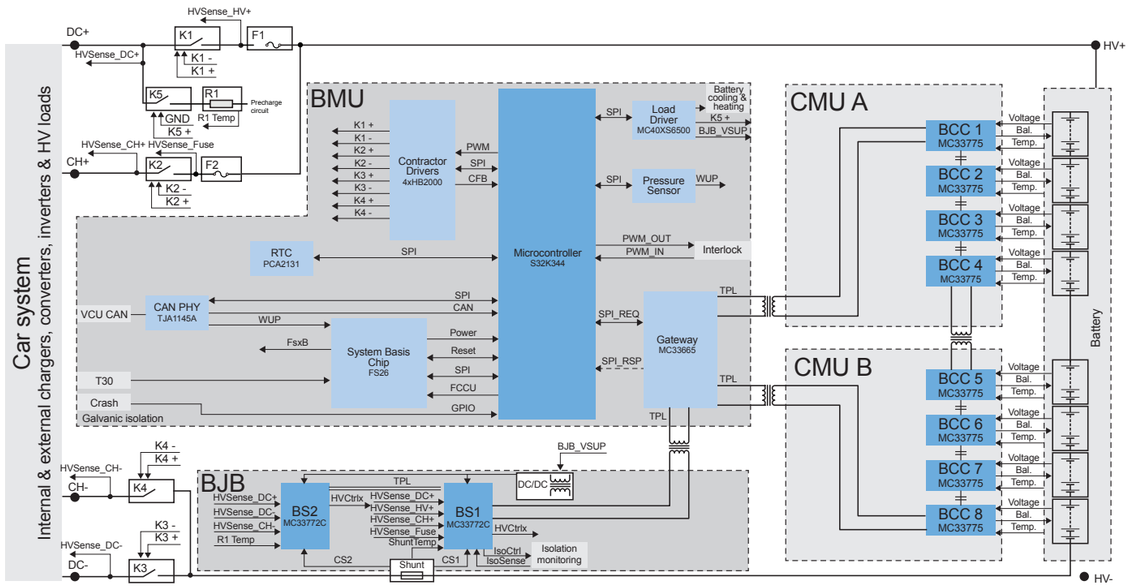
The platform delivers a scalable and evolutive hardware and software foundation that adapts to various electrification system configurations and supports a broad range of NXP components.

Battery management systems (BMS)

NXP's BMS enables leading measurement accuracy, fast and robust wired and wireless communications, highest BOM integration and scalability and enables ASIL D functional safety. It is composed of three modules: the battery management unit (BMU), the cell management unit (CMU) and the battery junction box (BJB). At NXP we offer solutions for each module.

Learn more about NXP's BMS

High-voltage battery management system



Latest development platforms

BMS chipset with electrochemical impedance spectroscopy (EIS)

NXP's BMS chipset with EIS provides insights into electrochemical processes at cell level by analyzing the cell's response to small AC perturbations across frequencies. It offers a highly informative method to add robust control mechanisms to BMS enhancing battery health insights and advanced monitoring capabilities.

Features

Scalability	Safety	Precision
BMS chipset solutions for wired and wireless range of applications to reduce development cost and enable faster time to market.	High system-level safety level ensures proper operation of the battery at all times, protecting the passengers.	Precise and synchronized measurement increases battery potential and maximizes range.

Battery management unit	
S32K3	ASIL D compliant microcontroller
FS26	Safety system basis chip (SBC) for ASIL D systems
BMA6402	General-purpose BMS communication gateway and EIS synchronization controller
BMA606x	Wireless gateway
MC33665	Gateway
PCA2131	Real time clock
Cell management unit	
BMA742x	24/26-ch ASIL D battery cell controller with EIS
BMA7418	18-ch ASIL D battery cell controller with EIS
BMA7318	18-ch ASIL C battery cell controller
BMA606x	Wireless gateway
MC33774	18-ch ASIL D battery cell controller
Battery junction box	
BMA8420	Battery junction box monitor with EIS capability
MC33777	Battery junction box monitor

Latest development platforms

RD-HVBMSCTBUN

Reference design bundle for high-voltage battery management systems providing a complete hardware solution including a BMU, CMU, BJB, software drivers and a scalable Functional Safety documentation set

RD-HVBMSCT800BUN

Reference design bundle for 800 V high-voltage battery management systems (HVBMS). It provides a complete hardware solution, software drivers and a scalable functional safety documentation set

View development platform table

High measurement accuracy enhances performance and safety

Traction inverter system

NXP's enablement helps to accelerate time to market by providing system solution collaterals. Also enables our customers to extend vehicle range. Offers extensive safety documentation including an ASIL D in-context safety application that leverages the extensive NXP know-how.

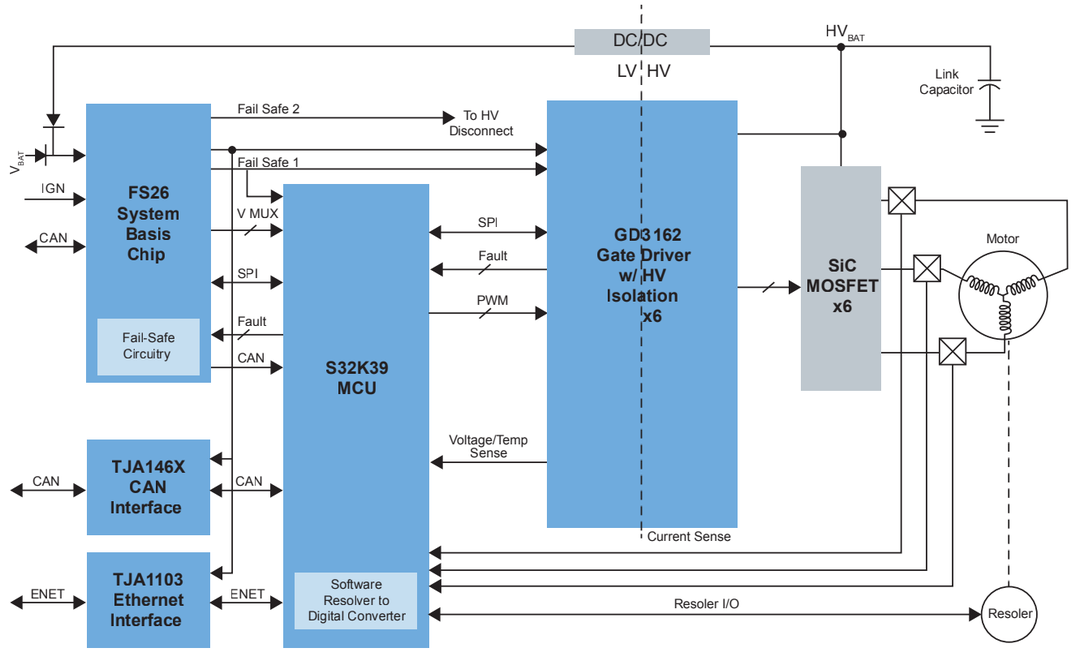
By using NXP's portfolio of devices, customers can reduce costs at system level with system-wide feature integrations such as DC link discharge, several analog optimizations and an extensive software for application development.

Our systems can ease predictive system maintenance by supporting device health monitoring and the MCU core that can be utilized to run a simulation model for analysis. And anticipates future trends such as dual inverter use, a 6-phase motor and zonal architecture is critical.

Features

- SiC MOSFET agnostic hardware: one with MCU+SBC and communication devices and one with our 6 advanced gate drivers.
- AUTOSAR®/Non-AUTOSAR software availability
- ASIL D software resolver
- System real-time drivers (RTD)
- Optimized motor control library
- System safety concept
- System application note

Traction inverter system



Explore NXP's EV power inverters

Recommended products	
S32K39-37-36	ASIL D compliant microcontrollers
FS26	Safety SBC for ASIL D systems
GD3162	Advanced high-voltage isolated gate driver
TJA1103	ASIL B Ethernet 100BASE-T1 PHY transceiver
TJA1465-6	CAN SIC transceivers with partial networking
TJA1463	CAN SIC transceiver with sleep mode
TJA1462	CAN SIC transceiver with standby mode

Latest development platforms

EV-INVERTERGEN3
Third gen automotive-grade EV power inverter control reference design based on GD3162 gate driver IC with an ASIL D architecture for 800 V Silicon Carbide (SiC)-based traction inverter

View platform table

Powertrain domain control

The powertrain domain control is the brain for hybrid or electric vehicles. It controls the power distribution, energy storage, engine and motor. NXP is a market leader for propulsion domain controllers with automotive ASIL D real-time compute performance, key for enhancing the efficiency of the xEV powertrain.

Features

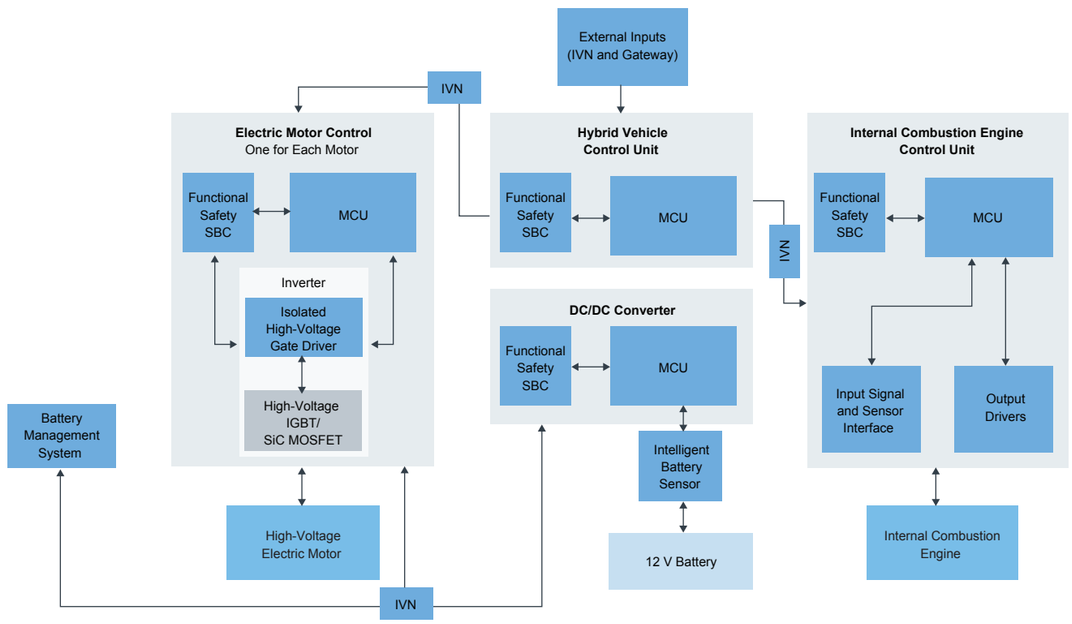
- Executes multiple applications, including hybrid electric control with advanced algorithms, all under hypervisor
- Energy and thermal management
- Regenerative braking
- Battery states (charge, health, function) management
  - Advanced algorithms (torque vectoring, A-ECMS, etc.)
  - Inter-domain communication, acts on ADAS main messages

Latest development platforms

GreenBox-3
Development platform for S32Z2/E2 high-performance real-time processors

View development platform table

EV powertrain control



Explore our HEV portfolio

Recommended products	
FS86 + PF5030	Functionally-safe multi-output SBC
FS6600	Safety SBC for S32S2 microcontroller, fit for ASIL D
FS45-65	Grade 1 and grade 0 safety SBC with CAN transceiver
FS26	Safety SBC with low power for ASIL D systems
S32Z and S32E	Real-time processors based on Arm Cortex-R52 core,
S32K39-37-36	ASIL D compliant microcontroller

Two-wheelers

Electric two-wheelers, such as eScooters, eMotorcycles and eBikes, enhance mobility by offering features like automated locking, collision detection and advanced HMI instrumentation. These vehicles are becoming increasingly safer, more affordable and environmentally friendly due to their connectivity, which ensures driver safety and monitors battery health.

Features

Display and connectivity controller

- Seamlessly connect two-wheeler to outside world
- Smartphone/two-wheeler connection and digital key sharing

Battery management system

- Secure two-way communication from electrified endpoints to the cloud

Low-voltage traction inverter

- Optimized energy usage to go from point A to point B

On-board charger

- Personalized driving settings to ensure the driver arrives safely
- Fewer and faster charges

Recommended products

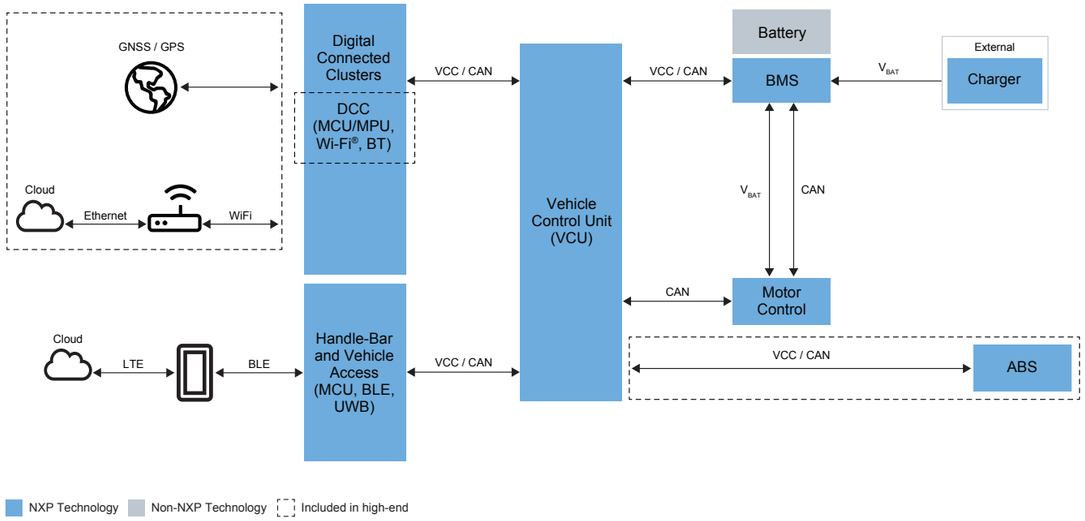
BMS	
BMA7518	18-ch ASIL C battery cell controller for 48 V battery management systems
MC33771	4-ch battery cell controller
MC33774	18-ch ASIL D battery cell controller
S32K1 and S32K3	S32Kx microcontrollers for automotive general purpose
FS6500 and FS4500	Grade 1 and grade 0 safety SBC with CAN transceiver
FS26	Safety SBC for ASIL D systems
FS23	Safety SBC with CAN and LIN transceiver
TJA1042	High-speed CAN transceiver with standby mode
On-board charger	
S32K39-37-36	ASIL D compliant microcontroller
TJA1052IT	Galvanically-isolated high-speed CAN transceiver
Motor control	
GD3160 and GD3162	Advanced high-voltage isolated gate driver

Latest development platforms

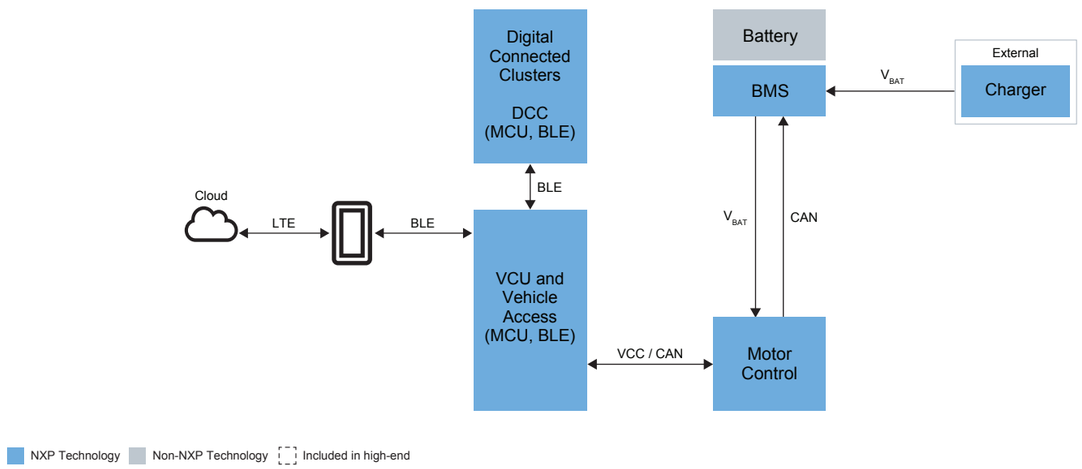
Two-wheeler Digital Connected Cluster (DCC)

Reference platform offers high performance graphics and a rich connectivity experience for an advanced two-wheeler driving experience

eScooter and eMotorbike high/mid-range



eBike low-end



Visit electric two-wheeler for more details

Power management: Functionally safe system basis chips

High-performance power management solutions for automotive applications. They deliver safety and power for electric vehicles.

Recommended products

FS45 and FS65

Grade 1 and grade 0 safety power SBCs

Optimization of energy consumption through DC-DC switching regulators, linear regulators and ultra-low-power saving modes.

Features

- Physical and electrical independence to target ASIL B or D applications
- Power management monitoring unit (UV/OV/OC)
- Analog and digital built-in self-test to minimize latent faults
- Redundant reference and supply to reduce common cause failure
- V_{CORE} external monitoring
- FCCU: Fault collection control unit
- Monitor lock-step MCUs

Recommended productss

FS26

ASIL B and ASIL D safety SBC with low power modes

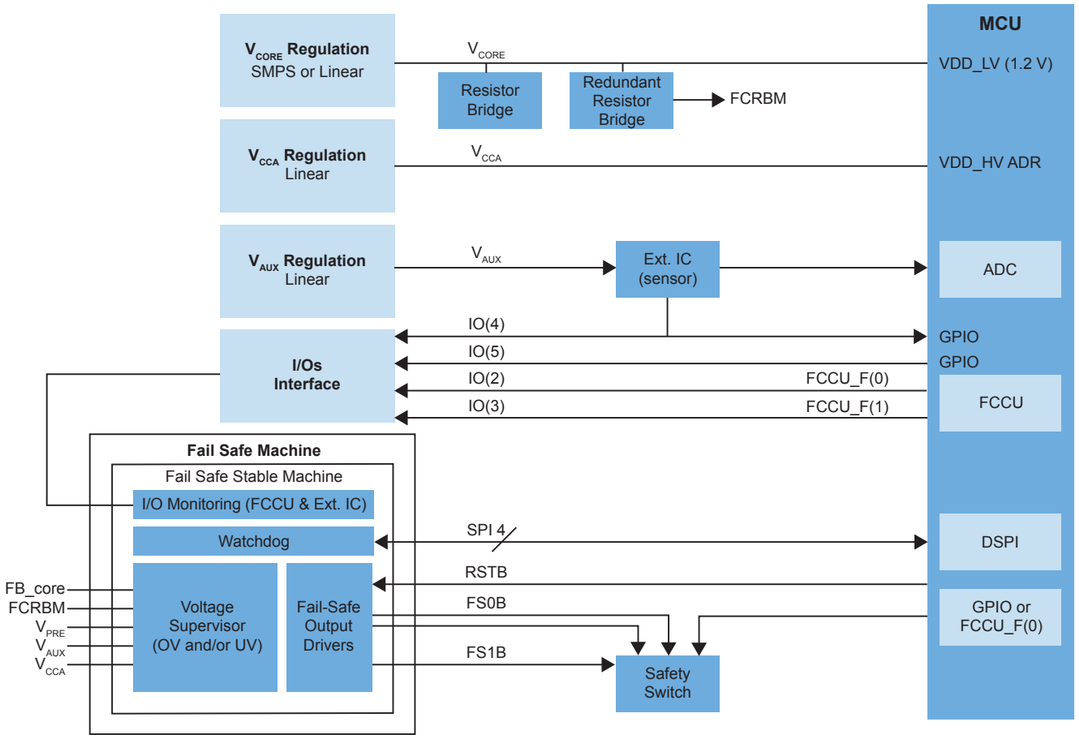
Offering multiple power supply options to support entry and mid-range safety microcontrollers like the S32K3 series and other automotive electrification microcontrollers for powertrain, chassis, safety, and low-end gateway applications.

Features

- 40 V DC maximum input voltage
- Boost controller to handle severe cranking operation (Battery voltage down to 3.2 V)
- Low power off mode with very low sleep current (30 µA typical)
- Low power standby mode with Vpre Active and LDO1/LDO2 active selectable via OTP
- Multiple switch mode regulators, LDOs, and tracker regulators (short to battery protection) to supply microcontroller, sensors, peripheral ICs and communications interface
- Programmable long duration timer (LDT) for system turn-off/ wake-up control
- Selectable wake-up sources from: WAKE/GPIO pins, LDT or SPI activity
- Scalable from automotive safety integrity levels ASIL B to ASIL D with extended voltage monitoring
- Latent fault monitoring when system is running: ABIST on-demand

SAFE ASSURE by NXP

FS65 functionally safe system basis chip



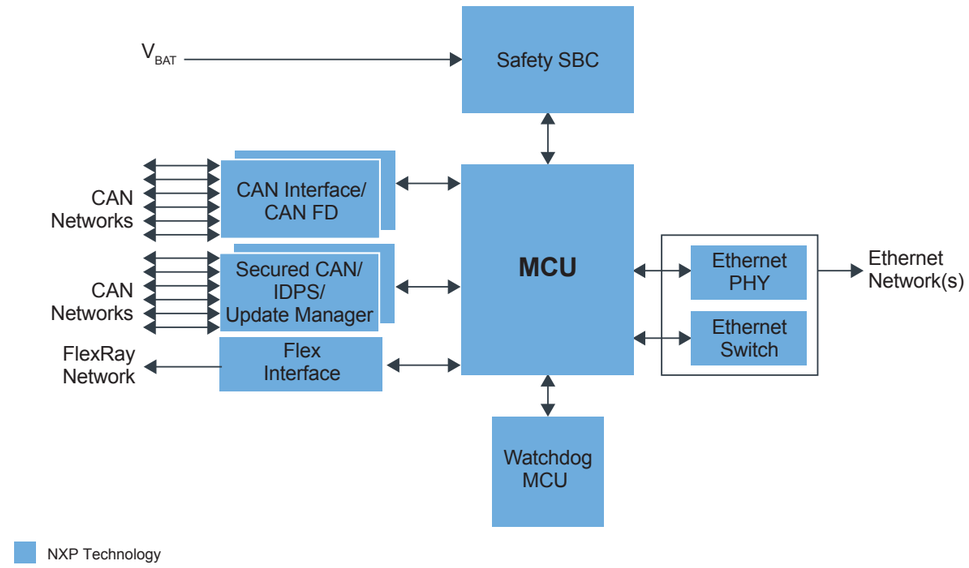
Explore NXP's power management portfolio

Vehicle networking

As vehicles become more connected, the need for reliable and secure communication within the car is clear. NXP's offering for isolated CAN for full electric vehicles, hybrids and 48 V networks use unique wake-up functions to maximize efficiency and bridge voltage domains.

In a distributed car network, central ECUs need to exchange data or configuration with each other within a critical time frame. NXP's Automotive Ethernet can be used to build a time-sensitive network (TSN) that connects microcontrollers directly in an Ethernet backbone.

In-vehicle networking for HEV and EV architectures



Review NXP's in-vehicle network technology

Recommended products	
TJA1103	ASIL B Ethernet 100BASE-T1 PHY transceiver
TJA1465-6	CAN SIC transceivers with partial networking
TJA1463	CAN SIC transceiver with sleep mode
TJA1462	CAN SIC transceiver with standby mode

Enabling faster, safer, and secure communication for the software-defined vehicles of tomorrow.

EV charging system solutions

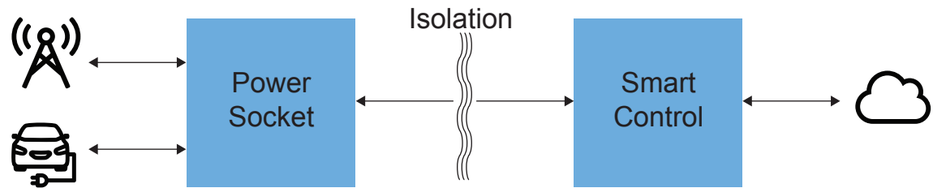
An Electric Vehicle (EV) charging station supplies power for recharging electric vehicles. Typical EV charging stations are made up of at least one smart controller board and one power socket board. The smart controller manages security, services and connectivity to a remote server and the power socket board distributes and measures energy.

Features

- Accurate measurement and efficient power delivery
- Increasing security and safety at the edge
- Cloud onboarding
- Future proofing and scalability
- Artificial Intelligence (AI) and Machine Learning (ML)
- Availability and reliability

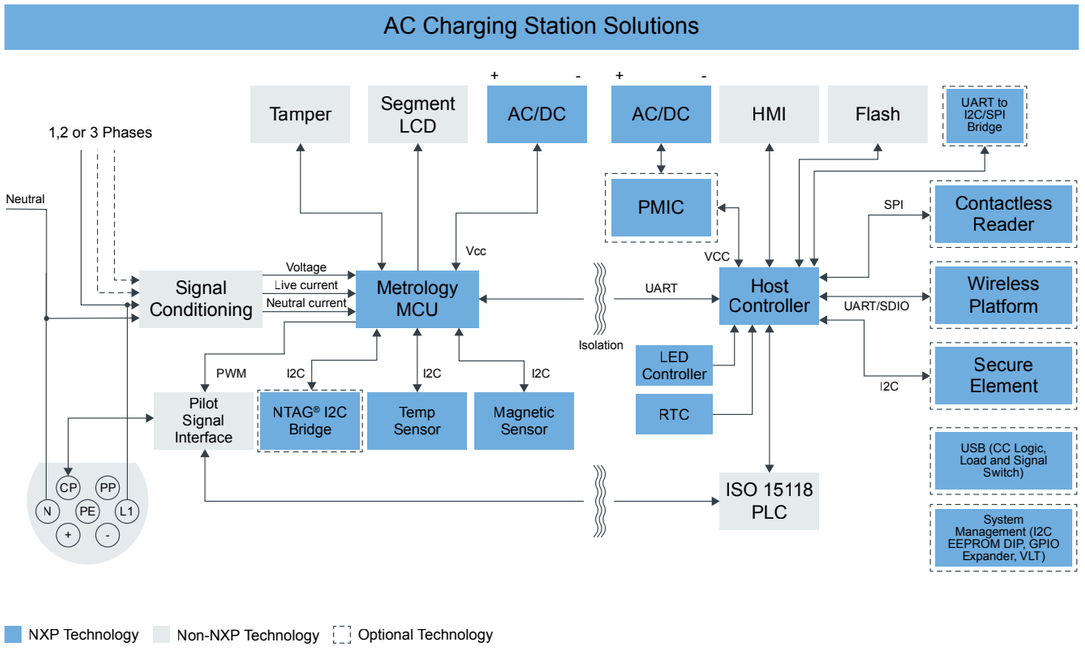
Electric vehicle supply equipment (EVSE) power socket and smart controller overview

In order to support the developing world of EV types, we need a flexible and scalable approach not only in the choice of AC or DC, but also in the following key areas:



Recommended products	
Host controller	
i.MX RT106x	Crossover MCU with Arm® Cortex®-M7 core operating up to 600 MHz
i.MX 93	Application processor with Arm Cortex -A55 with ML acceleration
Security	
EdgeLock® SE050	Secure element
Metrology	
Kinetis KM34-5	Metrology MCUs
NFC	
CLRC663	Plus family: High-Performance NFC Frontends
MIFARE DUOX®	High security contactless smartcard IC
External communication	
NXP IW416	Dual-band Wi-Fi 4, Bluetooth® 5.1
EVSE-SIG-BRD2X	EasyEVSE EV Charging Signal Board-HomePlug Green PHY for ISO 15118 communications

AC residential charging station (Level 1, 2 or 3)



Latest development platforms

EV-CHRG-STN-MPU

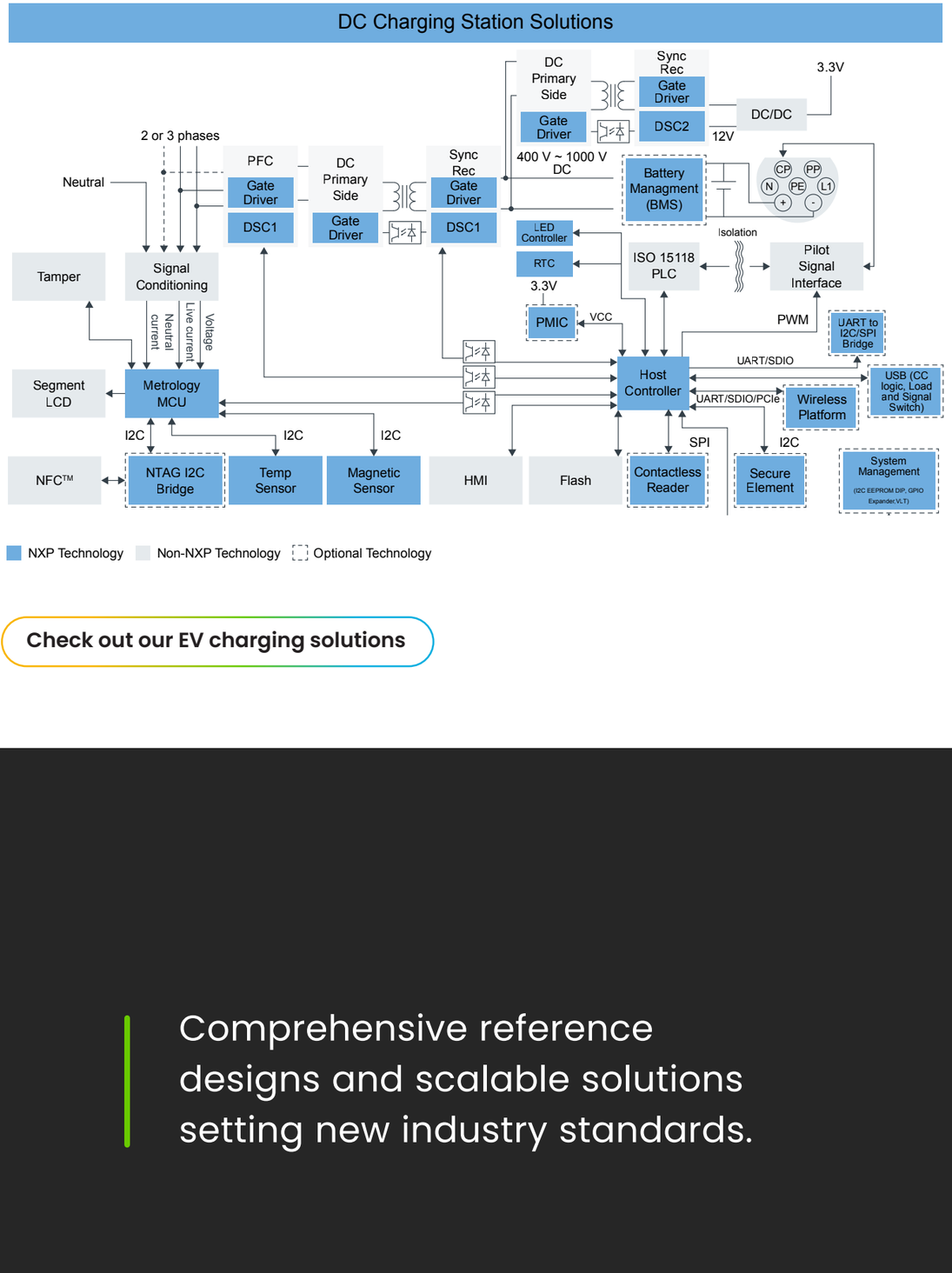
NXP's EasyEVSE EV charging station development platform (Linux OS, Wi-Fi 6)

EVSE-EVCHARGING-FREERTOS

NXP's Easy EVSE EV charging station development platform (MCU, FreeRTOS, Wi-Fi 4)

View platform table

DC charging station



Check out our EV charging solutions

Comprehensive reference designs and scalable solutions setting new industry standards.

Secure user identification and authorization with MIFARE DUOX

MIFARE DUOX is a closed-loop smartcard IC that enables secure, contactless access to EV charging services.

Features

- NFC-based secure user authentication
- Smartphone/two-wheeler connection and digital key sharing
- Combines asymmetric and symmetric cryptography on one chip
- Cost-effective offline signature validation
- Compliant with VDE-AR-E 2532-100 for interoperability across CPOs and eMSPs
- Pre-configured card structure with embedded application, keys, and certificate for EV charging

NXP simplifies NFC security for EV charging authentication with advanced features and asymmetric cryptography

Development platforms

Our development platforms, evaluation boards and tools are available to help accelerate your electrification designs.

	EVB name	Description
BMS	X-IN-1-MODULAR-PLATFORM	Modular platform for electrification system's integration into one system (DC-DC, BMS, inverter) offered with use cases, HW/SW, tools, and safety docs.
	MPC5775BE-416DS Adapter	MPC5775B MCU targets industrial and automotive battery management systems (BMS); the MPC5775E targets HEV/ EV inverter control systems that require advanced performance; eTPU-based timer system and ISO 26262/IEC 61508 functional safety support up to ASIL D
	RD33771CNTREVM	Reference design for mixed centralized-distributed architecture BMS for electric vehicle applications
	RD33771CDSTEVB	14-channel Li-Ion BCC with isolated daisy chain interface with MC33771C BCC
	FRDM33771CSPEVB	14-channel high performance Li-Ion BMS with SPI interface using MC33771C BCC
	FRDMDUAL33664EVB	Dual TPL interface between MCU and isolated network with loopback using MC33664 device
	FRDM33771BTPLEVB	14-channel Li-ion battery cell controller with isolated daisy chain interface using MC33771B BCC
	FRDM33664BEVB	TPL interface between MCU and isolated network using MC33664 device
	FRDM33772BTPLEVB	6-channel Li-Ion BCC with isolated daisy chain interface using MC33772B BCC
	FRDM33664BEVB	Transceiver physical layer (TPL) interface between MCU and isolated network using MC33664 device
	RD33771-48VEVM	48 V mild hybrid auxiliary battery management system reference design
	RD33774CNT3EVB	HVBMS centralized cell monitoring using unit ETPL with MC33774ATA
	FRDM33771CSPEVB	14-channel high performance Li-Ion BMS with SPI interface using MC33771C BCC
	FRDM33771BSPIEVB	14-channel Li-ion battery cell controller with SPI interface using MC33771B BCC
	FRDM33771BTPLEVB	14-channel Li-ion battery cell controller with isolated daisy chain interface using MC33771B BCC
	FRDM33664BEVB	Transceiver physical layer (TPL) interface between MCU and isolated network using MC33664 device
	NEWTEC-NTBMS	12 V battery management system for Li-Ion batteries supporting ASIL C safety levels
	RD9Z1-638-4LI	4-Cell Li-Ion BMS with high EMC performance and CAN interface using MM9Z1_638 sensor
	RD9Z1-638-12V-C	12 V lead-acid BMS with high EMC performance with CAN interface using MM9Z1_638 sensor
	S32K396BMSEVB	S32K376 BMS and VCU proof-of-concept design
	FRDM33772BSPIEVB	6-channel BCC for Li-Ion battery applications with SPI interface using MC33772B BCC
	GreenBox3	GreenBox3, advanced performance, peripherals and multicore Arm® environment for HEV and EV development with peripheral board for HEV and ICE applications

	EVB name	Description
HVBMS	RD33772BJBEVM	High Voltage Battery Junction Box (BJB) RD with functional safety, voltage, current, temperature and insulation measurement function
	MPC5775B-EVB	Low-cost development boards engineered for battery applications
	RDVCU5775EVM	Reference design for high-voltage BMS and vehicle control unit integration for ASIL D applications
	RD-K344BMU	Reference design for rapid prototyping of a high-voltage battery management system (HVBMS) hardware and software
	RD33775ACNTEVB	Centralized cell monitoring unit (CMU) reference design with transformer physical layer (TPL) communication that is ideal for rapid prototyping of a high-voltage battery management system (HVBMS) hardware and software
	RD772BJBTPLEVB	A battery junction box (BJB) reference design that is ideal for rapid prototyping of a high-voltage battery management system (HVBMS) hardware and software
	RD-HVBMSCTBUN	Reference design bundle for high-voltage battery management systems providing a complete hardware solution including a BMU, CMU, BJB, software drivers and a scalable Functional Safety documentation set
	RD-HVBMSCT800BUN	Reference design bundle for 800 V high-voltage battery management systems (HVBMS). It provides a complete hardware solution, software drivers and a scalable functional safety documentation set
	HWRD-HVBMSCC	Hardware for high-voltage battery management systems. It provides a complete hardware solution, BMU, CMU, and BJB
Battery pack	BATT-6EMULATOR	6-cell battery pack to supply MC33772 EVBs—emulates a multi-cell battery pack
	BATT-14CEMULATOR	14-cell battery pack to supply MC33771C EVBs—emulates a multi-cell battery pack
	BATT-14EMULATOR	14-cell battery pack emulator made to supply MC33771B BCC EVBs
	BATT-14EXTENDER NE	Allows for the connection up to four evaluation boards using only one single battery emulator
	BATT-14AAAPACK	A configurable battery pack that can be used to supply the MC33771 or MC33772 evaluation boards
Gate driver	FRDMGD3160DSBHB FRDMGD3160XM3EVM	Half-bridge evaluation kit populated with two GD3160 single channel IGBT/SiC MOSFET gate drive devices
	FRDMGD3162RPEVM	Half-bridge evaluation kit populated with two GD3162 single-channel IGBT/SiC MOSFET gate drive devices
Traction inverter	ICP2.0 EV-INVERTERHDBT	Second gen automotive grade IGBT- EV power inverter control platform (ICP2.0) system solution based on GD3160 gate driver IC offers both hardware and software enablement for electric vehicle traction inverters application targeting ISO 26262 ASIL C/D using IGBT power modules
	EV-POWEREVBHD2	Third gen automotive-grade EV power inverter control reference design based on GD3162 gate driver IC with an ASIL D architecture for 800 V Silicon Carbide (SiC)-based traction inverter
Motor control	MTRCKTDPS5643L	Dual 3-phase PMSM development kit with MPC5643L microcontroller; suitable for applications requiring 2 PMSM motors, such as active suspension or electric powertrain
	DEVKIT-MPC5744P	Offers dual e200z4 lockstep cores, motor control, safety and communication interfaces to facilitate a complete safety/ chassis solution for motor control applications
	MCSPTE1AK116	Engineered for 3-phase Brushless Direct Current (BLDC) motor control, targeting HVAC or electric pumps, and 3-phase Permanent Magnet Synchronous Motor (PMSM) control, targeting active suspension or electric powertrain
	MCSPTE1AK344	Engineered for BLDC motor control, targeting HVAC or electric pumps, and 3-phase PMSM control, targeting active suspension, electric powertrain, eTurbo or belt start generator
EV Supply Equipment	EVSE-EVCHARG-ING-FREERTOS	NXP's Easy EVSE EV charging station development platform (MCU, FreeRTOS, Wi-Fi 4)
	EV-CHRG-STN-MPU	NXP's EasyEVSE EV charging station development platform (Linux OS, Wi-Fi 6)
	EVSE-SIG-BRD2X	Add-on board for several EV charging development platforms. Uses the HomePlug Green PHY for ISO 15118 communications

NXP product summary for vehicle electrification

Device	Description
S32Z and S32E	The S32Z and S32E real-time processors feature Arm® Cortex®-R52 split-lock processors for multi-tenant software integration plus lockstep Arm Cortex-M33 processors for system management. The S32E processors are ideal for electric vehicle (xEV) control and smart actuation
MPC5744P MPC5777C MPC5775B/E	These microcontrollers target automotive and industrial battery management and inverter applications that require advanced performance, security and ASIL D support
S32K1	S32K is a scalable family of AEC-Q100 qualified 32-bit Arm Cortex®-M4F and Cortex-M0+ based MCUs targeted for general- purpose automotive and high-reliability industrial applications
S32K3	S32K3 is a scalable family of AEC-Q100 qualified 32-bit Arm Cortex®-M7F based MCUs targeted for ASIL D functional safety automotive and industrial applications
FS45/FS65	The FS45 and FS65 are system basis chips (SBCs) that provide power to MCUs and optimize energy consumption through DC-DC switching regulators, linear regulators and ultra-low-power saving modes
FS66	The FS66 is an automotive, functionally safe multi-output power supply integrated circuit. It includes a multiple switch mode, linear voltage regulators and enhanced safety features with fail-safe outputs
FS86	The FS86 device family is software compatible with the FS84/85 family. It expands the power capability, the safety integration and system scalability of domain controller applications to address multiple MCU requirements present in ADAS and electrification
PF5030	The PF5030 is a power management integrated circuit (PMIC) designed for S32Z2/E2 processors, ideally attached to NXP front system supply families (FS86, FS6x, other)
FS24	The FS24 is a family of automotive safety mini CAN FD SBC devices with multiple power supply designed to support secure car access applications using UWB, NFC and Bluetooth® Low Energy devices, while maintaining flexibility to fit other small applications requiring low power and CAN FD communication
FS23	The FS23 system basis chip is scalable from LDO version to DC-DC version as well as from QM to ASIL B. It includes CAN and LIN transceivers along with a number of system features commonly found in the latest generation of automotive ECUs
FS26	The FS26 is a family of automotive safety system basis chip (SBC) devices that offer multiple power supply options designed to support entry and mid-range safety microcontrollers like the S32K3 series
BMA742x	24/26-ch ASIL D battery cell controller with EIS
BMA7418	18-ch ASIL D battery cell controller with EIS
BMA7318 BMA7518 BMI7318	Li-ion battery cell controller IC for automotive HVBMS, industrial ESS and 48 V application
MC33777	Battery junction box IC with two pyrotechnic switches and extensive set of diagnostics
BMA8420	Battery junction box monitor IC with EIS capability
BMA6402	General-purpose BMS communication gateway and EIS synchronization controller
BMA606x	Wireless Battery Management System chipset based on UWB technology
MC33771/2	The MC33771/2 are battery cell controllers designed to address safety risks related to Li-ion batteries by accurately controlling critical Li-ion cell characteristics (voltages, temperatures, current) and by providing embedded balancing functions along with extensive system diagnostics
GD3160	The GD3160 is an advanced single-channel high-voltage isolated gate driver with enhanced features for driving and protecting silicon carbide (SiC) MOSFETs or IGBTs and functional safety
GD3162	The GD3162 is an advanced, galvanically-isolated, single-channel gate driver designed to drive the latest SiC and IGBT modules for xEV traction inverters
IVN	IVN is a broad NXP portfolio of in-vehicle networking solutions for LIN, CAN, FlexRay™ and Ethernet
CLRC663	NFC contactless reader
MIFARE DUOX	High security contactless smartcard IC

NXP product summary for EV charging system solutions

Device	Description
Development platform type	MPU, Linux OS
Control processor (OS)	i.MX 93 applications processor (Linux OS)
Power MCU (OS)	LPC55S36 MCU (bare metal)
EVSE to EV signaling	ISO 15118-2 (Lumissil CG5317 HomePlug Green PHY); SAE J1772 (LPC55S36); SAE J3068 LIN-CP (TJA1021)
Security	TCP/IP TLS via EdgeLock SE050 secure element or Secure Enclave on i.MX 93 processor
Wireless connectivity	Wi-Fi 6 and Bluetooth LE (IW612 on Murata module)
Wired connectivity	Ethernet, CAN, UART, USB, I^2C, SPI, SDIO
Tap to authenti-cate	NFC controller (OM27160)
Metrology	Kinetis metrology MCU (KM35Z75)
Human machine interface	12.1-inch TFT LVDS display
Graphical user interface	Qt over Wayland
Cloud service	Microsoft Azure IoT central
MIFARE DUOX	High security contactless smartcard IC

Extensive library of reference designs, evaluation and development boards to start prototyping today

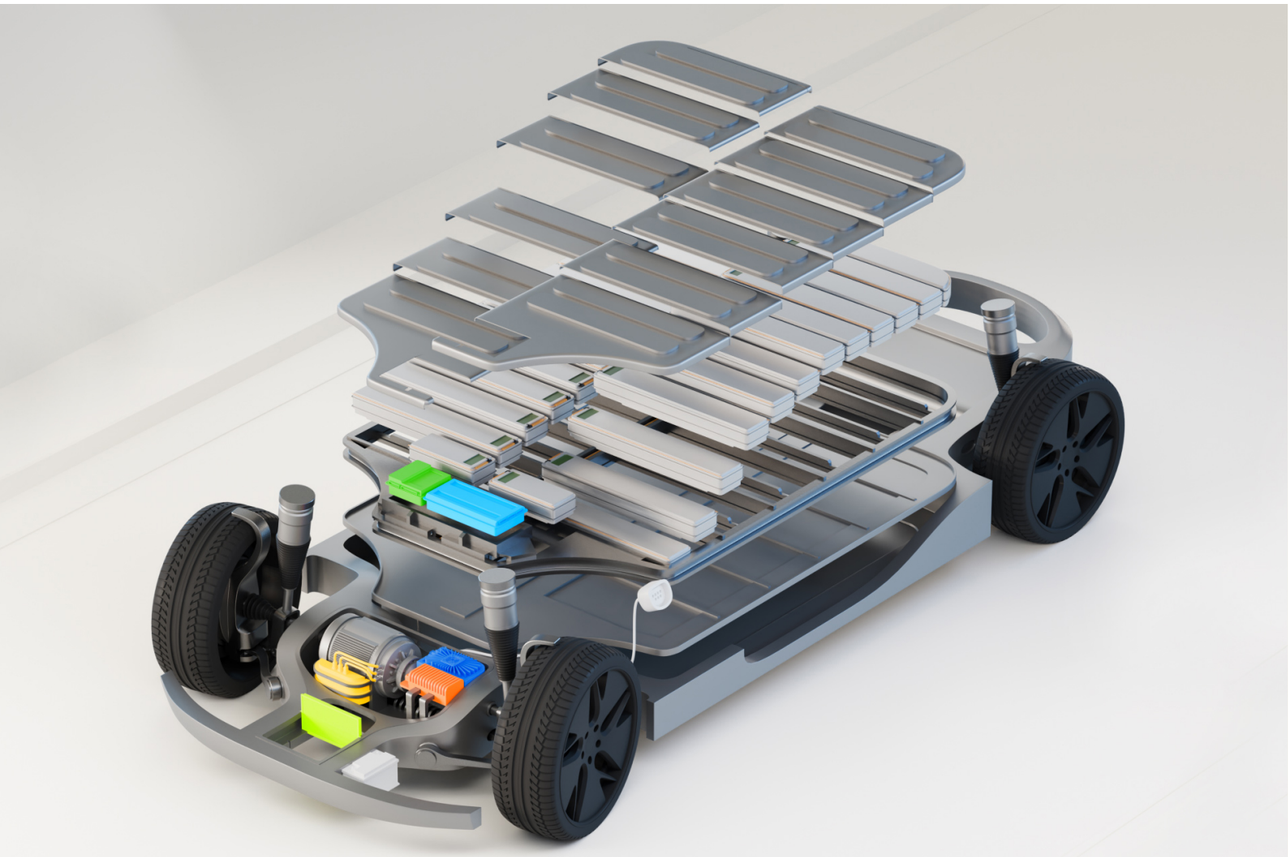
SafeAssure® functional safety program

NXP's SafeAssure program does more than align our development process to ISO 26262 across our business lines. It affirms our corporate commitment to supporting functional safety through safety-conscious culture, discipline and collaboration.

Built on four pillars:

- Simplifies the process of system compliance with solutions designed to address the requirements of automotive and industrial functional safety standards
- Reduces the time and complexity required to develop safety systems that comply with ISO 26262 and IEC 61508 standards
- Supports the most stringent safety integrity levels (SILs), enabling designers to build with confidence
- Adheres to a zero-defect methodology from design to manufacturing and helps ensure that our products meet the stringent demands of safety applications

Visit SafeAssure page to learn more details about the program



Products	Target application	ASIL
MC337711/2	Hybrid electric vehicle, electric vehicle, energy storage systems, uninterrupted power supply systems	D
FS26	Automotive, body control, zonal Control, BMS, Infotainment IO controller, E-shifter, Motor Control	D
FS45	Automotive: vision systems, electrical power steering, engine and battery management; Industrial: drone and robot automation, building control, transportation, mobile computing, power and energy; healthcare	D
FS65	Automotive: active suspension, gearbox, transmission, EV, HEV, inverter, ADAS, EPS, engine and battery management; mobile computing; building control; drones and robots; automation; medical	D
FS66	BMS, electrical traction, high-voltage DC-DC converter, HEV, internal combustion engine	D
MPC5744P	Safety domain control	D
MCPC5777C MPC5775E	BMS, traction motor control, direct injection engines, common rail diesel injection systems, electronically controlled transmissions, diesel engine management, gasoline engine management	D
S32K3	Automotive, body control, zone control, bms, infotainment io controller, e-shifter, motor control	D
GD3100	BMS, hybrid electric vehicle, electric vehicle power inverter, motor drives	D
GD3160	BMS, hybrid electric vehicle, electric vehicle power inverter, motor drives	D
GD3162	Electric vehicle power inverter, hybrid electric vehicle, motor drives	D
S32K1	Automotive, industrial, smart home	B

Security program

A holistic approach to cyber security — aligned with industry standards and best practices

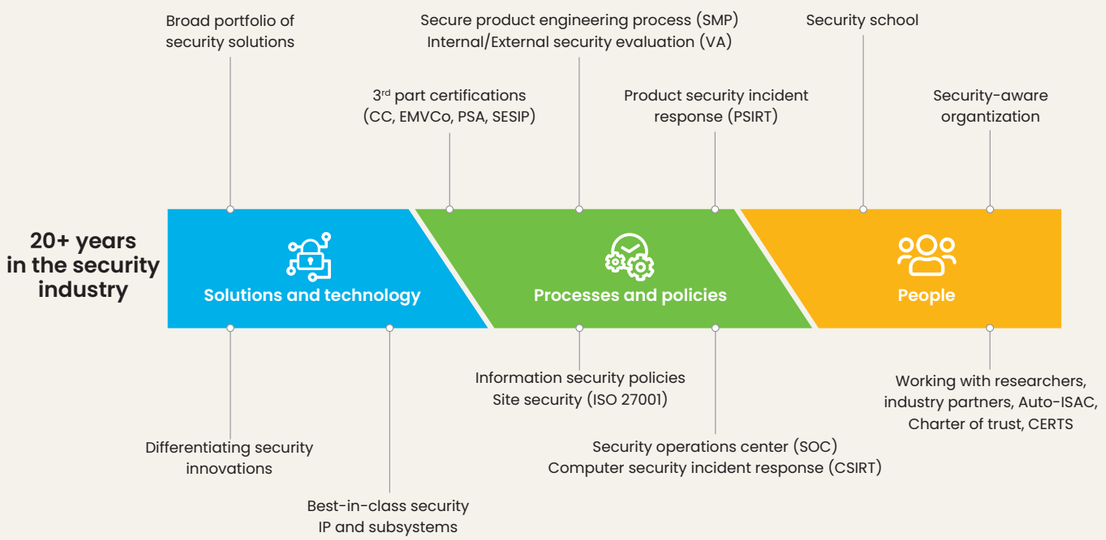
With the complexity of vehicles on the roads today, it is essential that drivers and passengers are able to trust their cars.

NXP leads the industry with the most complete portfolio of automotive semiconductor security solutions, complemented by a comprehensive automotive cybersecurity program.

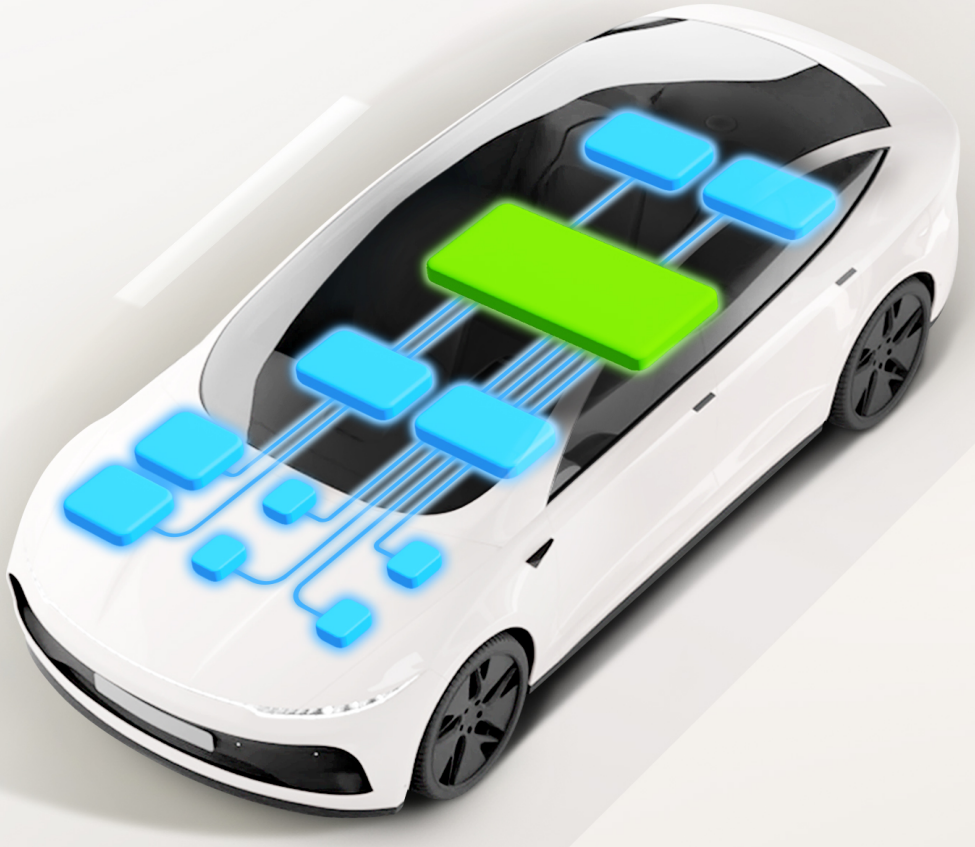
Robust cybersecurity programs for semiconductor manufacturing must go beyond technical solutions to include processes, comprehensive policies, and a security-focused organizational structure.

NXP's security program has matured over time and contains a broad portfolio of automotive security solutions that are on par with market requirements.

Mitigate risk with NXP's automotive security solutions



At the heart of automotive innovation, our solutions help make future mobility safe and secure



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