

# Solutions for Smarter Mobility Automotive Applications Overview



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# Smart Mobility

It is estimated that 80% of all innovations in the automotive industry today are directly or indirectly enabled by electronics. With vehicle functionality improving with every new model this means a continuous increase in the semiconductor content per car.

With over 30 years' experience in automotive electronics, ST is a solid, innovative, and reliable partner with whom to build the future of transportation.

ST's Smart Mobility products and solutions are making driving safer, greener and more connected through the combination of several of our technologies.

**80%**  
of all innovations  
in the automotive  
industry today  
are enabled by  
electronics



## SAFER

Driving is safer thanks to our Advanced Driver Assistance Systems (ADAS) – vision processing, radar, imaging and sensors, as well as our adaptive lighting systems, user display and monitoring technologies.

## GREENER

Driving is greener with our automotive processors for engine management units, engine management systems, high-efficiency smart power electronics at the heart of all automotive sub-systems and devices for hybrid and electric vehicle applications.

## MORE CONNECTED

And vehicles are more connected using our infotainment-system and telematics processors and sensors, as well as our radio tuners and amplifiers, positioning technologies, and secure car-to-car and car-to-infrastructure (V2X) connectivity solutions.

ST supports a wide range of automotive applications, from Powertrain for ICE, Chassis and Safety, Body and Convenience to Telematics and Infotainment, paving the way to the new era of car electrification, advanced driving systems and secure car connectivity.

# ADAS



**ADAS**  
systems constantly  
monitor the vehicle  
surroundings,  
alert the driver of  
hazardous road  
conditions,  
and take corrective  
actions

Advanced Driver Assistance Systems (ADAS) aim to drastically reduce road accidents and the associated casualties by helping drivers avoid collisions altogether. These systems react faster than any human, are constantly vigilant, and are already being adopted and deployed across various car segments, from premium to economy models.

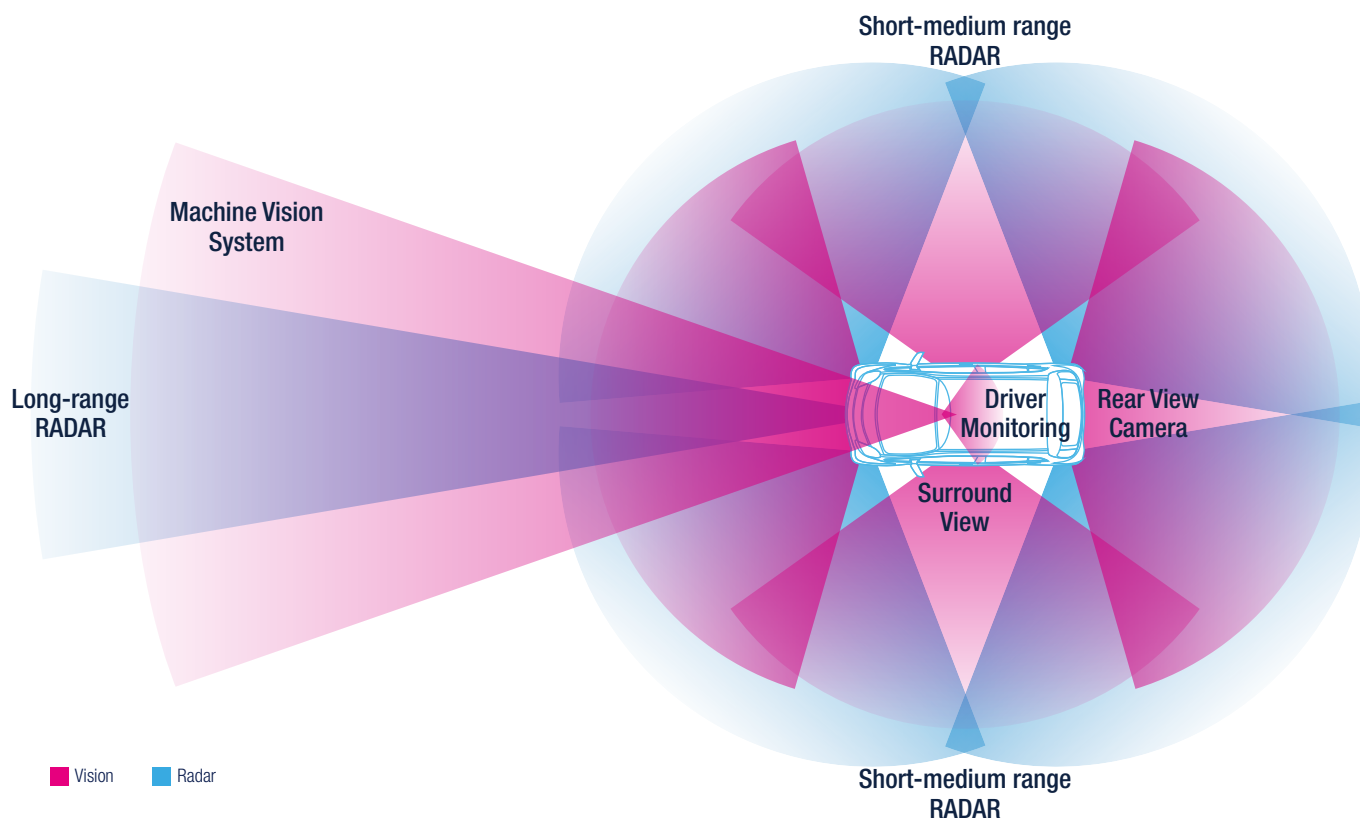
ADAS systems constantly monitor the vehicle surroundings, alert the driver of hazardous road conditions, and take corrective actions, such as slowing or stopping the vehicle. These systems use inputs from multiple sensors, such as cameras and radars. The fusion of these inputs is processed and the information is delivered to the driver and other parts of the system. The same sensor technologies can be used both in the current ADAS systems and in the upcoming fully autonomous driving systems (level 4 and 5).

Camera-based technologies provide high-reliability and adaptability for a wide-range of driver assistance applications, for example lane keeping, pedestrian detection, traffic sign recognition, rear view camera, driver monitoring, electronic mirror. Radar-based ADAS uses two different carrier frequencies, 24 GHz for narrow band and 77 GHz for wide band applications, to support features such as blind-spot detection, automatic emergency braking and adaptive cruise control.

ST has a leading-edge product portfolio including Monolithic Microwave Integrated Circuits (MMIC), CMOS High Dynamic Range (HDR) image sensors and advanced Image Signal Processors (ISP) with dedicated HW engines for video analytics and lens correction. ST also has a wide range of Automotive Microcontrollers, Security ICs and Power Management ICs to ensure the reliability of the mission-critical ADAS systems.



## KEY APPLICATIONS



## SOLUTIONS

ST's key products and solutions for ADAS applications include:



### FIND OUT MORE

[www.st.com/adas](http://www.st.com/adas)  
 24GHz RADAR  
 Rear View Camera  
 High Resolution Thermal Camera

Driver Monitoring System (DMS)  
 Machine Vision Systems  
 In-Vehicle High Speed Network

# Body and Convenience



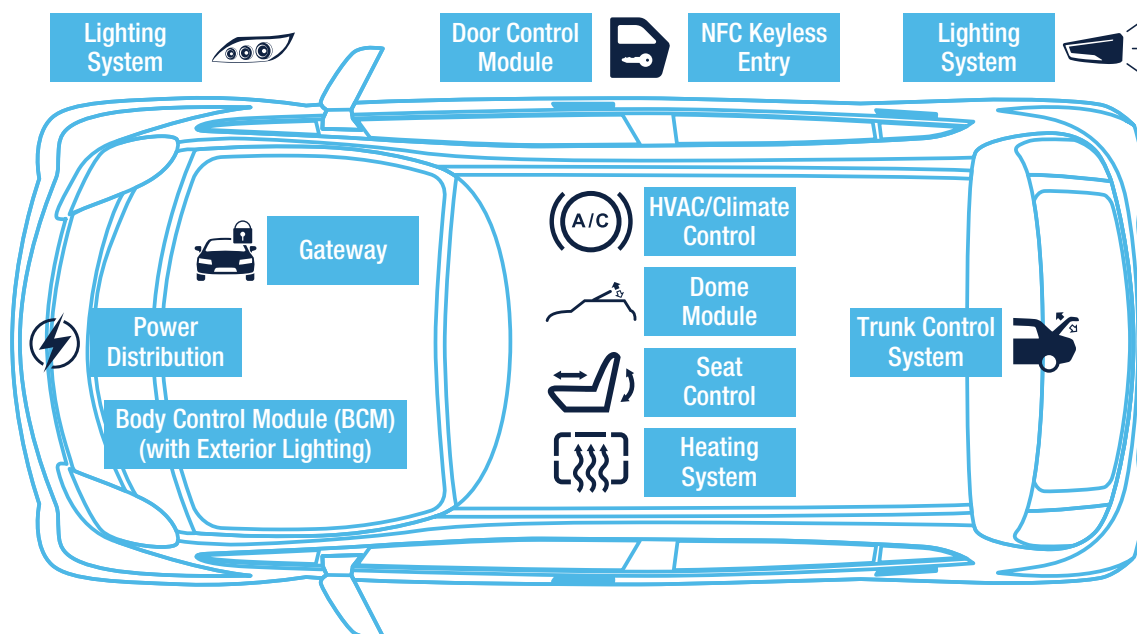
Car body and convenience applications are evolving to increase the comfort of both drivers and passengers. Vehicle manufacturers need solutions that have the flexibility to cover a wide range of car models and a broad range of options. These solutions need to communicate increasing amounts of data to enable decentralized control, enhanced functional safety levels, as well as efficient diagnostic and maintenance capabilities.

Body control modules (BCM) are increasingly being used to control multiple vehicle functions, with integration becoming a key discriminator. Cost-effective flexible semiconductor solutions for BCMs depend upon having the right technology for the application needs.

ST has the broadest product portfolio dedicated to body and convenience solutions, covering interior and exterior lighting systems for bulbs, xenon HID and LEDs and drive controllers for stepper, brushed and brushless DC motors. We provide complete solutions for seat positioning and trunk, mirror, window, wiper and lock control as well as everything required for automatic climate control systems. In addition, we supply connectivity solutions to link all the sub-systems together.

Our proven automotive-grade Smart Power technologies, Bipolar-CMOS-DMOS (BCD) and VIPower™ can combine multiple functions on a single chip to provide unprecedented levels of integration. Our CMOS and discrete power technologies complement the Smart Power technologies and our wide range of automotive packages completes the offer.

## KEY APPLICATIONS



## SOLUTIONS

ST's key products and solutions for body and convenience applications include:

VIPower™ and BCD Actuators, Motor Control and LED drivers	Sensors	EEPROM	Power Management	EOS and ESD Protection	32-bit Automotive Microcontrollers
	NFC	Connectivity	Power Diode, MOSFET & IGBT	Dedicated Door Module ICs	

HW & SW Development Tools – Sample Kits, Evaluation Kits, Product Selectors



### FIND OUT MORE

[www.st.com/body-and-convenience](http://www.st.com/body-and-convenience)

Body Control Module  
USB Type-C Power Delivery  
Dome Module  
Door Lock  
Door Module

Exterior Lighting  
Gateway  
Head-up Display  
Heating System  
HVAC / Climate Control

LED Lighting System  
Keyless entry  
Power Distribution  
Seat Control  
Trunk Control System

# Chassis and Safety



## ST

offers a range  
of both standard  
and dedicated  
devices to enable  
all chassis and  
safety applications

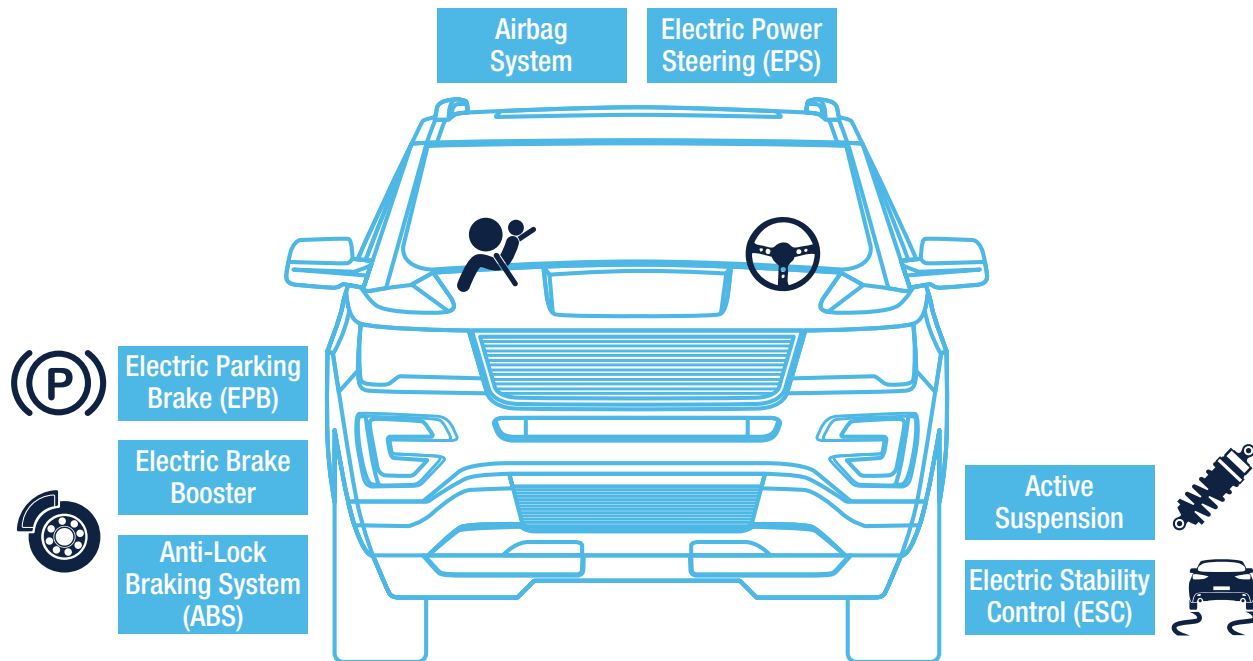
Active and passive safety systems that reduce the risk of accidents, as well as their consequences, are becoming more sophisticated with an increasing electronic component count.

Active safety applications such as electric power steering, electric parking brakes, increasingly rely on sensors, brushed and brushless motors and microcontrollers to improve performance and reliability. Passive applications like seat-belt tensioners and airbags also benefit from the latest.

ST offers a range of both standard and dedicated devices to enable all these chassis and safety applications. In addition to standard low-side, high-side, bridge and pre-drivers, ST offers Smart Power devices for driving solenoids, brushed, brushless and stepper motors; dedicated ICs for actuator driving and one of the industry's broadest ranges of Power MOSFETs. We also supply System Basis Chips (SBC) for fully integrated smart-power solutions, MEMS accelerometers and gyroscopes, and powerful 32-bit automotive microcontrollers to provide reliable control.



## KEY APPLICATIONS



## SOLUTIONS

ST's key products and solutions for Chassis and Safety applications include:

VIPower and BCD Actuators and Motor Control	Braking & Airbag Dedicated ICs	Power Management	EOS and ESD Protection	32-bit Automotive Microcontrollers
	Power Diode, MOSFET & IGBT	Transceivers and Signal Conditioning	Sensor Interfaces	

HW & SW Development Tools – Sample Kits, Evaluation Kits, Product Selectors



### FIND OUT MORE

[www.st.com/chassis-and-safety](http://www.st.com/chassis-and-safety)  
 Electric Power Steering  
 Electric Parking Brake  
 Electric Brake Booster

Belt Tensioner  
 Airbag System  
 Active Suspension  
 ABS and ESC

# Electro-Mobility



**ST**  
provides  
leading-edge  
solutions for  
hybrid (HEV), and  
battery electric  
vehicles (BEV)

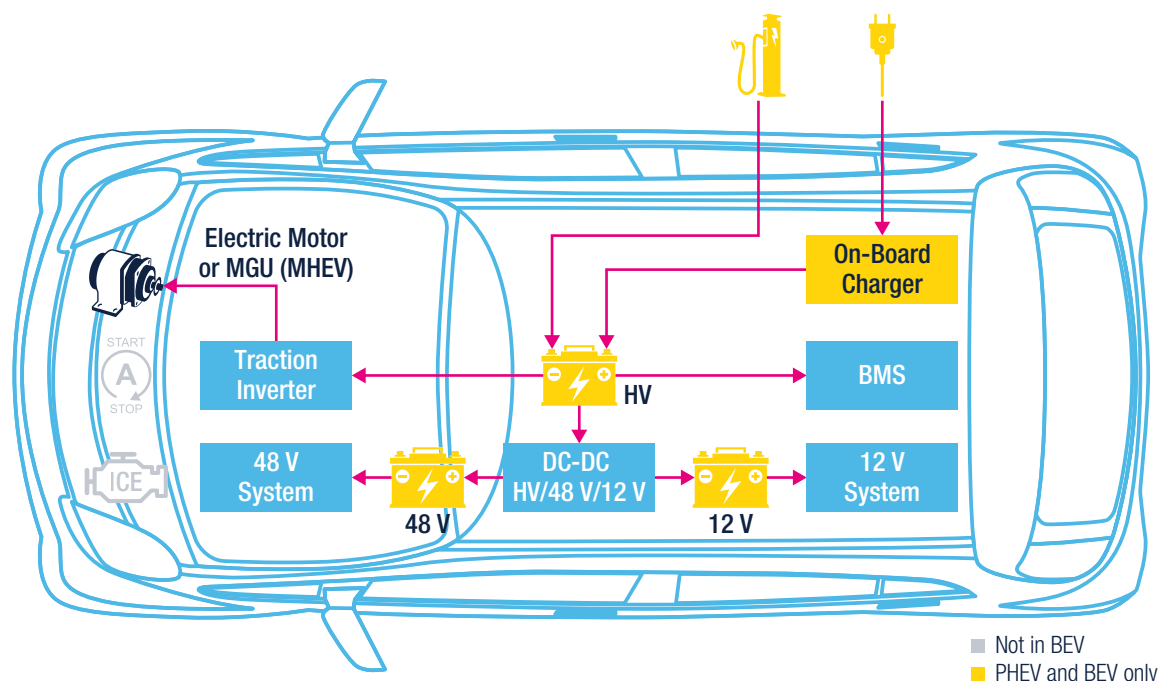
The electrification of vehicles is rapidly increasing, driven by the availability of higher performance and more cost-effective battery technologies, and improved mileage as well as ecological awareness, and government incentives and regulation.

ST provides leading-edge solutions for hybrid (HEV), and battery electric vehicles (BEV) based upon proven and innovative technologies and backed up with our extensive power management experience.

Best-in-class silicon and SiC (Silicon Carbide) MOSFETs and diodes, IGBTs, protection components, isolated gate drivers and microcontrollers make up an unrivalled offer for electric vehicle power management. They are available as discrete components, or as part of dedicated system solutions, all in compliance with the AEC-Q100 and AEC-Q101 standards.

Whether you are looking for the cost-effective, yet emission-reducing first step on the electrification ladder with solutions for 48V systems for mild hybrids, or for the traction inverter, battery management system and on-board charger for a fully electric vehicle ST has the products you need.

## KEY APPLICATIONS

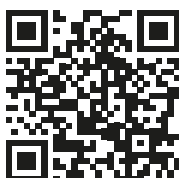


## SOLUTIONS

ST's key products and solutions for Electro-Mobility applications include:

SiC MOSFETs and Diodes	Transceivers	Signal Conditioning	Power Management	32-bit Automotive Microcontrollers
Power MOSFETs and IGBTs	Power Diodes and Thyristors	EOS and ESD Protection	BCD Integrated and Isolated Drivers	

HW & SW Development Tools – Sample Kits, Evaluation Kits, Product Selectors



## FIND OUT MORE

[www.st.com/electro-mobility](http://www.st.com/electro-mobility)  
 Battery Management System (BMS)  
 DC-DC Converter  
 Electric Traction (Main Inverter)  
 Mild Hybrid 48V Systems

On Board Charger (OBC)  
 Acoustic Vehicle Alerting System (AVAS)  
 HV Battery Disconnect & Fire-off System  
 Vehicle Control Unit (VCU)

# Powertrain for ICE



**ST**  
provides  
silicon solutions  
for Engine  
Management

Reducing CO<sub>2</sub> and particle emissions, while increasing engine performance and improving the overall driving experience requires ever more sophisticated semiconductor-based solutions.

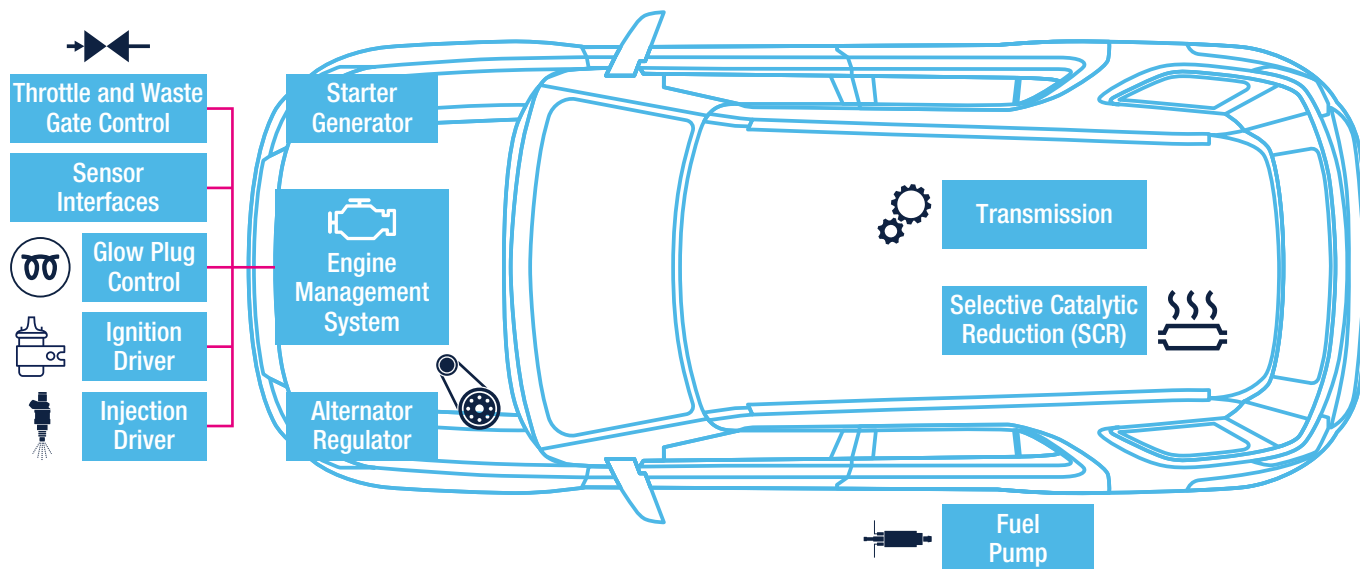
A combination of increased processing power, built-in security and safety features, and innovative power technologies are revolutionizing Internal Combustion Engine (ICE) powertrain applications.

ST provides silicon solutions for a broad range of Engine Management Systems (EMS), from motorcycles to multi-cylinder gasoline direct injection and common-rail diesel engines, as well as for transmission control and actuation. Our broad in-house technology portfolio enables a complete range of solutions, from cost-effective highly integrated systems to solutions meeting the most advanced high-performance application requirements.

Our product portfolio addresses your entire system solution, providing 32-bit automotive microcontrollers, standard low-side, high-side and bridge smart power devices for driving solenoids, DC motors and stepper motors. Dedicated ICs for actuator driving, charging and power management, together with one of the industry's broadest ranges of Power MOSFETs and IGBTs complete the ICE powertrain offer.



## KEY APPLICATIONS



## SOLUTIONS

ST's key products and solutions for Powertrain for Internal Combustion Engines applications include:

VIPower and BCD Actuators and Motor Control	Transceivers	Power Management	EOS and ESD Protection	32-bit Automotive Microcontrollers
	Power Diode, MOSFET & IGBT	Signal Conditioning	Sensor Interfaces	
HW & SW Development Tools – Sample Kits, Evaluation Kits, Product Selectors				



### FIND OUT MORE

[www.st.com/powertrain-for-ice](http://www.st.com/powertrain-for-ice)  
 Engine Management Systems  
 24 V Engine Management  
 Gasoline Direct Injection  
 Gasoline multi-point Injection

Diesel Direct Injection  
 LPG Engine Control  
 CNG Engine Control  
 Alternator Regulator  
 Electric Turbo Compressor

Fuel Pump  
 Motorcycle Engine Control  
 Selective Catalytic Reduction  
 Transmission

# In-Vehicle Infotainment



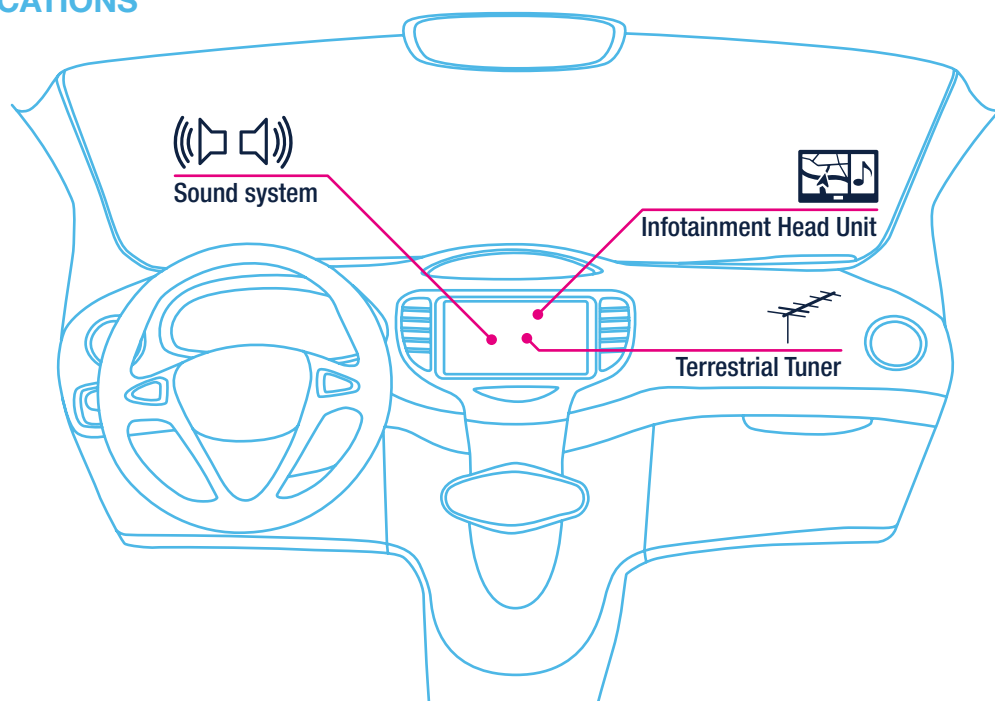
**ST**  
provides IC  
solutions  
for complex  
infotainment  
cluster, integrating  
advanced audio  
and video features

Consumer experiences with personal electronics are shaping expectations for in-vehicle infotainment systems making it a fast-evolving segment of the automotive industry. Vehicle occupants expect to be entertained, connected and able to seamlessly access information and content from a variety of sources.

At ST, we have been developing innovative integrated circuits for in-vehicle Infotainment since our first car radio ICs. Our latest designs provide IC solutions for complex infotainment cluster, integrating advanced audio and video features, mirroring smartphones and multimedia devices and running apps, while transmitting data quickly and securely inside and outside the car. Greater processing power, high in-car bandwidth and secure external communication links together with multi-standard radio receivers and world-class audio amplifiers all combine to ensure that you can build infotainment systems for all your markets.

Our extensive infotainment portfolio covers the full application spectrum from high-end integrated platforms (featuring multi-channel digital radio and outstanding full-digital audio amplifiers) to simple, cost-effective entry-level car-radio solutions.

## KEY APPLICATIONS



## SOLUTIONS

ST's key products and solutions for In-Vehicle Infotainment applications include:

Audio Power Amplifiers	GNSS	Power Management	EOS and ESD Protection	Infotainment & Digital Audio Processors and Secure Processors
Tuners	Bluetooth, USB and Connectivity	Sensors	MEMS Microphones	
HW & SW Development Tools – Sample Kits, Evaluation Kits, Product Selectors				



### FIND OUT MORE

[www.st.com/in-vehicle-infotainment](http://www.st.com/in-vehicle-infotainment)

Infotainment Module  
Tuner  
Sound System

Positioning system  
Infotainment Head Unit  
Digital Clusters

# Telematics and Networking



**ST**  
covers a wide  
selection of  
telematics and  
networking  
devices

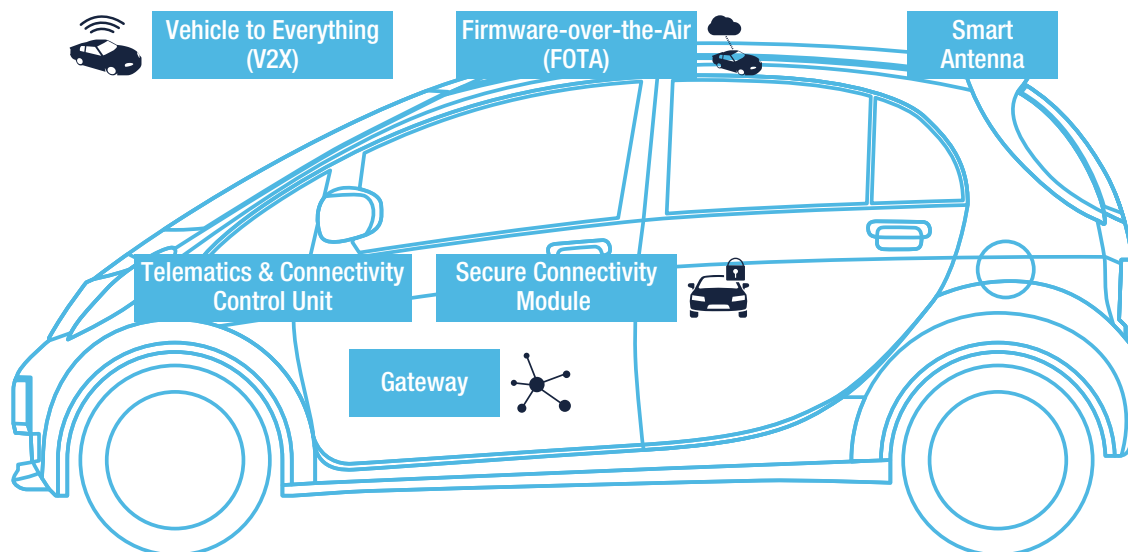
Connectivity is revolutionizing the vehicles on our roads. Connectivity to the cloud and cloud-based services benefit occupants but also manufacturers by enabling over-the-air software upgrades and predictive maintenance. The increasing count of electronic control units (ECUs) for safety, engine management, motor control, infotainment all need to be networked, upgradeable and secure. In-car connectivity for occupants, Wi-Fi or Bluetooth needs to fit seamlessly with the other networks. Vehicle-to-Vehicle (V2V) and Vehicle-to-Everything (V2X) communication channels need to be secured and linked with a telematics gateway.

ST's product range covers a wide selection of telematics and networking devices from the most accurate GNSS positioning products to powerful multicore telematics processors with embedded security modules, from sensors for vehicle acceleration/deceleration monitoring and crash detection to smart gateways enabling Firmware-over-the-Air (FOTA) updates.

To provide you with the car connectivity solutions you need, we leverage our extensive hardware and software expertise and our partnerships with market leaders.



## KEY APPLICATIONS



## SOLUTIONS

ST's key products and solutions for Telematics and Networking applications include:

GNSS	Bluetooth and Connectivity	Power Management	Telematics & Secure Processors, 32-bit Automotive Microcontrollers
V2X	Sensors	EOS and ESD Protection	

HW & SW Development Tools – Sample Kits, Evaluation Kits, Product Selectors



### FIND OUT MORE

[www.st.com/telematics-and-networking](http://www.st.com/telematics-and-networking)

Vehicle-to-Everything (V2X)  
Smart Antenna  
Secure Connectivity Module

Telematics and Connectivity Control Unit  
Firmware Over-the-Air (FOTA)  
Smart Gateway

# Mobility Services



Mobility services are growing rapidly as vehicles become more connected. Powerful processing, vehicle connectivity and innovative sensors enable new possibilities for software service developers and a wealth of applications for car owners.

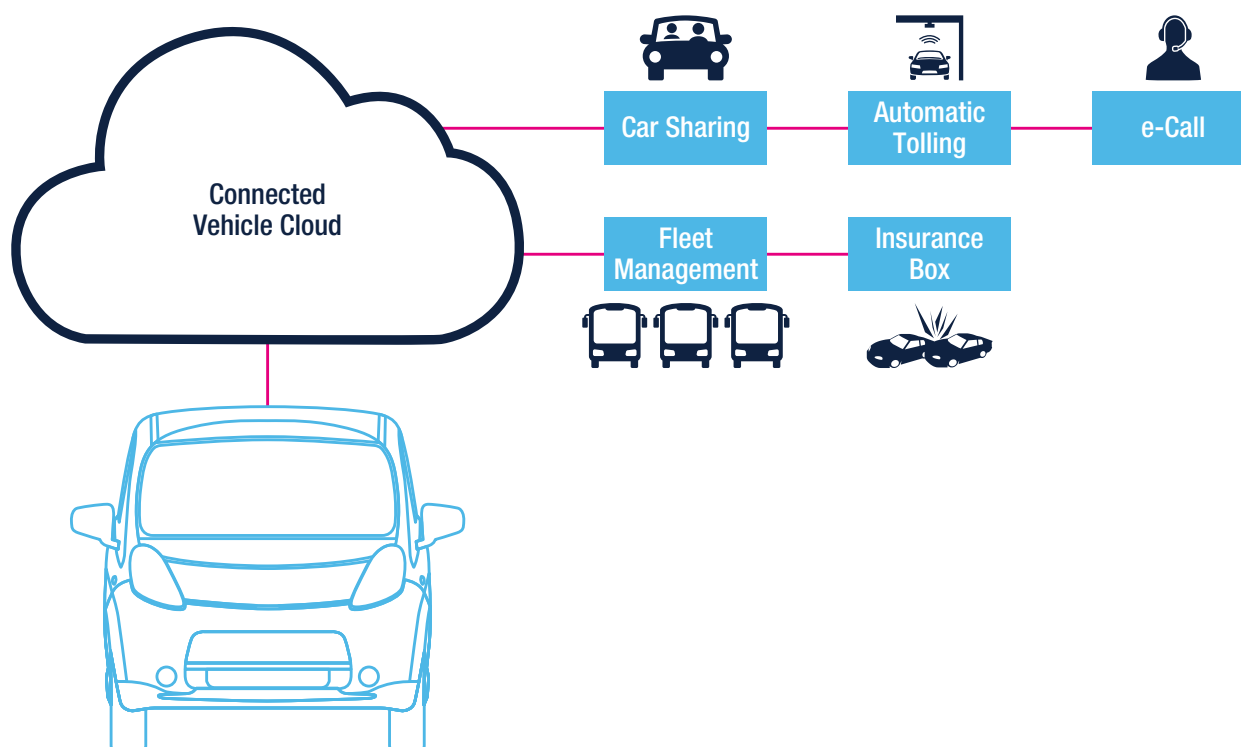
Services designed to enhance car safety such as “emergency call” in the event of an accident rely on sensors to detect an accident, on telematics processing and GNSS positioning to transmit the accident location, and on cameras to record the event and provide advance information to the arriving emergency services.

Insurance boxes can record events prior to accidents but are also changing the market by enabling driver monitoring which provides data to customize tariffs on the driver’s behavior.

Other mobility services range from fleet management, to car sharing, from free parking place detection to road tolling. All these services rely on automotive sensors, processors and communication ICs available from ST.

As the car evolves from a personal vehicle to a shared service provided by a fleet of driverless vehicles in a smart city environment, the level of offered services will grow dramatically. ST’s solutions are used in many advanced driving systems, and our proven record in secure connectivity and sensor technologies can serve as the platform on which Mobility services can be built.

## KEY APPLICATIONS



## SOLUTIONS

ST's key products and solutions for Mobility Services applications include:

GNSS	Bluetooth, NFC and Connectivity	Ultrafast and Schottky Diodes	Transceivers and Interfaces	Telematics Processors and 32-bit Automotive Microcontrollers
Audio Power Amplifier	Power Management	EOS and ESD Protection	Sensors	

HW & SW Development Tools – Sample Kits, Evaluation Kits, Product Selectors



### FIND OUT MORE

[www.st.com/mobility-services](http://www.st.com/mobility-services)  
e-Call  
Insurance Telematics Box  
Fleet Management

Car Sharing  
Automatic Tolling  
eScooter

# Key Technologies

## RESEARCH & DEVELOPMENT AND MANUFACTURING

To keep its technology edge, ST maintains a strong commitment to innovation, with approximately 7,400 people working in R&D and product design and spending about 16% of its revenue in R&D. Among the industry's global technology leaders, ST owns and continuously refreshes a substantial patent library (~17,000 patents; ~9,500 patent families and ~500 new patent filings per year).

The Company draws on a rich pool of chip-manufacturing technologies, including advanced FD-SOI (Fully Depleted Silicon-on-Insulator) CMOS (Complementary Metal Oxide Semiconductor), differentiated Imaging technologies, RF-SOI (RF Silicon-On-Insulator), BiCMOS, BCD (Bipolar, CMOS, DMOS), Silicon Carbide, VIPower™, and MEMS technologies.

ST believes in the benefits of owning manufacturing facilities and operating them in close proximity to its R&D operations.

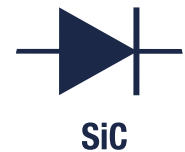
ST has a worldwide network of front-end (wafer fabrication) and back-end (assembly and test and packaging) plants. ST's principal wafer fabs are located in Agrate Brianza and Catania (Italy), Crolles, Rousset, and Tours (France), and in Singapore. These are complemented by assembly-and-test facilities located in China, Malaysia, Malta, Morocco, the Philippines, and Singapore.

## KEY TECHNOLOGIES FOR AUTOMOTIVE PRODUCTS

### Silicon Carbide

Silicon Carbide (SiC) is a wide bandgap material, with many advantages compared to silicon in the field of power electronics. Operating temperatures are higher, heat dissipation is improved and switching and conduction losses are lower making it an ideal technology for vehicle electrification. Silicon-carbide-based traction inverters can increase electric vehicle range and SiC-based chargers reduce the charge time.

ST produces the automotive-grade SiC power devices, in a dedicated 6" front-end wafer fab, that are becoming the key enabler in the automotive industry for vehicle electrification.



### VIPower™

VIPower™ is a technology developed by ST and in production since 1991. Vertical Intelligent Power technologies provide control, protection and diagnostics for medium/high power automotive loads. The technology combines Vertical Double Diffused MOS Power devices with their own temperature and current sensors and CMOS and HV components for Power-Analog- Mixed design.

VIPower™ technology will play a key role in the move towards electric vehicles. The smart 48 V Networks used in mild- and full-hybrid cars require intelligent power switches to drive high-and low-sided loads and electric motors, with very low losses and high current sense accuracy, all monitored via the connections to the ECUs microcontroller.





## BCD (BIPOLAR-CMOS-DMOS)

BCD (BIPOLAR-CMOS-DMOS) is a key technology for power ICs. BCD combines the strengths of three different process technologies onto a single chip: Bipolar for precise analog functions, CMOS (Complementary Metal Oxide Semiconductor) for digital design and DMOS (Double Diffused Metal Oxide Semiconductor) for power and high-voltage elements.

This combination of technologies brings many advantages: improved reliability, reduced electromagnetic interference and smaller chip area. BCD has been widely adopted and continuously improved to address a broad range of products and applications in the fields of power management, analog data acquisition and power actuators. For EV charging BCD is ideal for battery management systems.

## 1200V AEC-Q101 qualified technologies for EV charging

High voltage rectifier and thyristor technologies are the keys to develop robust, immune AC line connected systems exhibiting high power density. ST has developed a set of automotive grade technologies for full rectification functions in the low frequency (AC line) or high frequency ranges (DC-DC conversion). AEC Q101 qualified, these rectifier diode and thyristor series are available to design robust converters compatible with the most stringent electromagnetic norms such as burst or surge voltages.

## TRANSIL™

TRANSIL™ is a key planar technology for Automotive TVS series designed to protect automotive sensitive circuits against surges as defined in ISO 7637-2 and ISO 16750 tests A and B also called load-dump (battery lines), ISO7637-3 (data lines) and ESD as defined in ISO 10605. Protection is also provided against other perturbations generated by elements like ignition, relay contacts, alternators, injectors, SMPS, etc.

This technology is compatible with high-end circuits where low leakage current and high junction temperatures are required to provide reliability and stability over time.

## STPOWER

Leading-edge power technologies for both high- and low-voltage applications combined with a full package range and innovative die bonding technologies exemplify ST's innovation in power transistors of the STPOWER™ family.

ST offers a wide portfolio of power MOSFETs ranging from -100 to 1700 V, IGBTs with breakdown voltages ranging from 300 to 1250 V and power bipolar transistors ranging from 15 to 1700 V. Improved thermal design of ST's power electronics systems, and our silicon-carbide (SiC) MOSFETs ensure automotive robustness with the industry's highest temperature rating of 200 °C.

Our extensive STPOWER™ product portfolio combined with state-of-the art packaging and protection solutions enable designers to create products with high reliability, efficiency and safety.



# Development Tools

## PRODUCT SELECTORS, SAMPLES, EVALUATION BOARDS

ST provides a set of Smart Selectors tuned to the needs of the Automotive Industry. Once the appropriate products have been selected, a wide range of samples and evaluation boards are available to help you get started and reduce your development times. In addition to boards, ST provides schematics, BOM and Gerber files to facilitate your hardware design and demonstration software packages are available too.

### VIpower™ Smart Selector

VIpower's Smart Selector is designed to help and assist users to choose the best VIpower™ high/low-side switch or H-bridge device for their Automotive application.

All you need to do is select a few parameters related to your specific application, and the selector provides the relevant device. Parameters include nominal voltage (12V for automotive cars or 24V for trucks), a topology (high-side, low-side or h-bridge), the number of channels and type of load to drive (bulbs, motors, etc.). The selection can be further refined by setting source type (DC or PWM), temperature and PCB type.



FIND OUT MORE

[www.st.com/vipower-smartselector](http://www.st.com/vipower-smartselector)



### VIpower-FINDER

VIpower-FINDER is the application available for Android™ and iOS™ that allows you to explore the ST VIpower product portfolio using portable devices.

You can easily define the device that best fits your application using the smart or the parametric search engine. You can also find your product thanks to the efficient part number search engine.

#### Key Features

- Smart, parametric or part number search capability for product
- Technical datasheet downloading and off-line consulting
- Ability to share technical documentation via social media or via email
- Available on Android™ and iOS™ app stores



FIND OUT MORE

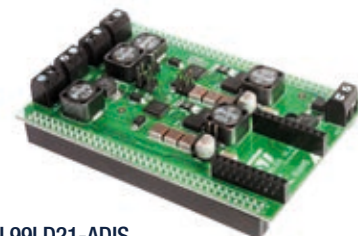
[www.st.com/vipower-finder](http://www.st.com/vipower-finder)

## Easyboards

The Easyboard concept was created to give customers the chance to evaluate products without committing to the expense, time and resources typically needed to design a custom circuit board. Easyboards are simple and low-cost evaluation tools that connect a VIPower™ product to a load. This allows a straightforward evaluation of the device and of all the application functionalities, including the auto-protection capability for hazardous conditions. Each evaluation board includes a VIPower™ device soldered onto a small 2-layer PCB with heavy copper and thermal vias, to support maximum device current and customer-configured thermal relief strategies.

Easyboards come with the following part numbers:

- EV-VNx7xxx: VIPower M0-7 High Side Switches single, dual and quad channels for 12 V battery lines
- EV-VNx5Txxx: High Side Switches for 24V systems
- EV-VNH7xxx: Motor Control solutions



L99LD21-ADIS



SPC560B-DIS



**FIND OUT MORE**

[www.st.com/automotive-evalboards](http://www.st.com/automotive-evalboards)

## Dynamic Electro-Thermal simulator for devices in VIPower technology

**TwisterSIM** is a unique electro-thermal simulator that helps shorten the design solution cycle by enabling, in a few clicks, complex engineering evaluations with accurate simulations like load compatibility, wiring harness optimization, fault condition impact analysis, diagnostic behavior analysis and dynamic thermal performance.

A built-in Interactive selector provides a short list of suitable devices based on first level system requirements. It assists you in detailing your actual system configuration with layout, load and driving profile customization to build an accurate model of the final application.

**TwisterSIM** supports a large selection of Low/High-side driver/switches and H-bridges for Motor Control.



**FIND OUT MORE**

[www.st.com/twistersim](http://www.st.com/twistersim)

## SPC5 AUTOMOTIVE MCU EVALUATION TOOLS: EASIER EVALUATION AND FASTER DEVELOPMENT

A complete range of hardware evaluation and emulation tools supports the SPC5 family of automotive microcontrollers. Discovery and Premium development boards are available to support your development from preliminary evaluation to advanced solution development.

ST Discovery boards, available for each product line, enable a quick and easy way to evaluate the microcontroller's main features. The expansion connector makes it easy to plug-in application and extension modules for rapid prototyping.

ST Premium boards, available for all lines and packages, provide user access to the device's complete feature set and functionalities for advanced development. The SPC5 motherboards, used in combination with adapters, enable full access to all of the MCU's signals and peripherals (such as CAN, SPI, LIN, FlexRAY and Ethernet).

The offer is complemented by a series of emulation solutions for high-speed tracing, monitoring and bypassing.

A full range of state-of-the-art tools and software from major third parties are also available for the SPC5 family.



SPC5 MCUs  
toolchain



**Discovery kits**  
Quick starter kit for  
early evaluation

ST Discovery boards enable the user for a  
quick evaluation of main device features



**Premium boards**  
Complete HW solutions for  
advanced development

ST Premium boards ensure full access to  
device's features and functionalities



**SPC5Studio**  
Freeware Eclipse based  
Development Studio

SPC5Studio integrates our Resources  
Configurator, Code Generator supporting  
major third party tools



**Embedded Software &  
AUTOSAR Solutions**  
Drivers and Software Libraries

Crypto and flash SW Libraries  
Core & Instruction Self test Libraries  
AUTOSAR MCAL



**FIND OUT MORE**

[www.st.com/auto-sp5-mcu-evaltools](http://www.st.com/auto-sp5-mcu-evaltools)





## AUTODEVKIT™

A viable, simple, low-cost tool for automotive application engineers

A new development flow and toolset dedicated to the Automotive & Transportation market delivering to engineers the best and easiest way for quick evaluation and rapid prototyping in a common, integrated and flexible environment supporting complete ECU-like development.

AutoDevKit is an Eclipse plug-in running under SPC5Studio Integrated Development Environment.



AEK MCU Discovery  
and Functional  
Boards

### KEY FEATURES

- Focus in developing your application without bothering about hardware and software implementation details
- Assemble and re-assemble hardware and software components without compatibility issues
- Expand and customize your application adding new components, scaling your microcontroller for cost optimization, changing the compiler, adding a real-time operating system and other Eclipse-compatible plug-ins

AEKD System  
Solution  
Demonstrators

STSW Embedded  
Software

### FIND OUT MORE

Find out more at [www.st.com/autodevkit](http://www.st.com/autodevkit)

Software download [www.st.com/autodevkitsw](http://www.st.com/autodevkitsw)

Join our Community at <https://community.st.com/autodevkit>

## MODULAR TELEMATICS PLATFORM (MTP): OPEN DEVELOPMENT PLATFORM FOR SECURE CAR-CONNECTIVITY APPLICATIONS

ST's Modular Telematics Platform (MTP) provides an open development environment for prototyping advanced Smart Driving applications, particularly those requiring secured vehicle connectivity to back-end servers, cloud services or road infrastructure. Its main central computing module is based on the Telemaco3P, the industry's first automotive processor to include a dedicated Hardware Security Module (HSM) providing state-of-the-art on-chip security, authentication, and cryptography. MTP also offers a comprehensive set of automotive-connectivity devices both on the board and in plug-in modules, ensuring development flexibility and extensibility.

MTP integrates ST's automotive-grade multi-constellation GNSS Teseo IC with dead-reckoning sensors, while an optional on-board ST33 Secure Element is available to further enhance the secure storage capability of the platform. MTP supports automotive buses including CAN, FlexRay, and BroadRReach® (100Base-T1). Moreover, optional Bluetooth™ low energy, Wi-Fi, and LTE modules offer access to wireless networks.

Designed for advanced automotive telematics use cases including remote diagnostics and secure Electronic-Control-Unit (ECU) Firmware-over-the-Air (FOTA) updating, the MTP includes extension connectors for V2X and precise positioning modules too.

On top of this extensive hardware offering, the MTP Quick Start Package and the Board Support Package (BSP) based on open source Linux, FreeRTOS, and Yocto complete the package to enable agile solution prototyping.





# life.augmented



Order code: **BRAUTOMOTIVE1020**

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