



life.augmented



presented by
EBVElektronik
| An Avnet Company |

Solutions for Smarter Driving Automotive Applications Overview





Content



Smart Driving	3
ADAS	4
Body and Convenience	6
Chassis and Safety	8
Electro-Mobility	10
Powertrain for ICE	12
In-vehicle Infotainment	14
Telematics and Networking	16
Mobility Services	18
Key Technologies	20
Development Tools	22





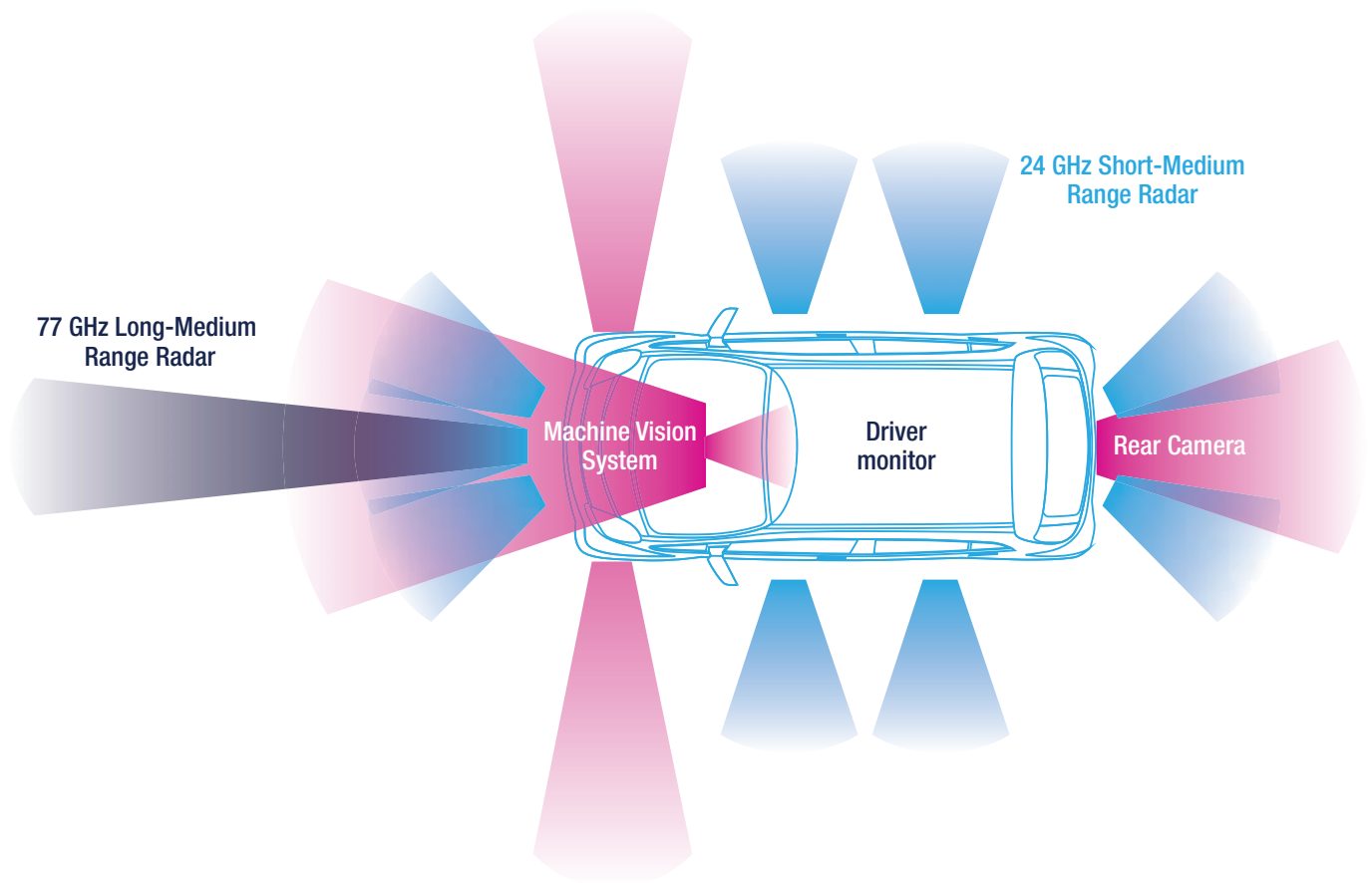
Advanced Driver Assistance Systems (ADAS) aim to drastically reduce road accidents and the associated casualties by helping drivers avoid accidents altogether. These systems react faster than any human, are constantly vigilant, and are already being adopted and deployed across car segments, from premium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

Camera-based technologies provide high-reliability and adaptability for a wide-range of driver assistance applications, for example, front vision, rear vision and 360° surround coverage. Radar-based ADAS uses two different carrier frequencies, 24 GHz for short-range (SRR) and 77 GHz for long-range (LRR) applications, to support features such as blind-spot detection and collision avoidance.

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:

Image Signal Processor	Power Management	EOS and ESD Protection	32-bit Automotive Microcontrollers
Image Sensor	Automotive Radar Transceiver	Ultrafast and Schottky diodes	
HW & SW Development Tools – Sample Kits, Evaluation Kits, Product Selectors			

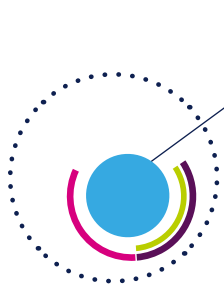


FIND OUT MORE

https://www.st.com/content/st_com/en/applications/adas.html?icmp=tt7374_gl_qron_jun2018

Short-medium range Radar (24 Ghz)
 Long-medium range Radar (77 Ghz)
 Vision Systems
 Camera System





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.

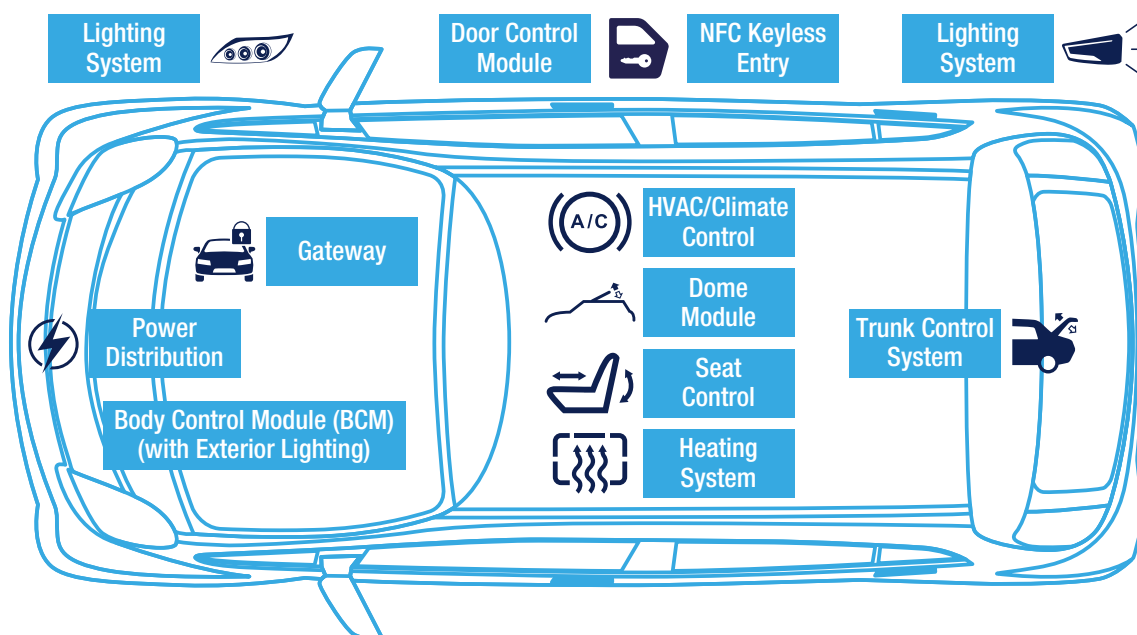
Body control modules (BCM) are increasingly being used to control multiple vehicle functions, with integration becoming a key discriminator. Cost-effective flexible semiconductor solutions for BCMs depend upon having the right technology for the application needs.

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, whether with LIN, CAN or Ethernet.

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

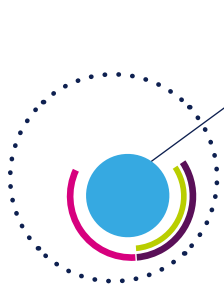
FIND OUT MORE

https://www.st.com/content/st_com/en/applications/body-and-convenience.html?icmp=tt7375_gl_qron_jun2018

Body Control Module
Consumer Device Charging
Dome Module
Door Lock
Door Module
Exterior Lighting
Gateway

Head-up Display
Heating System
HVAC / Climate Control
LED Lighting System
NFC Keyless entry
Power Distribution
Seat Control





Chassis and Safety



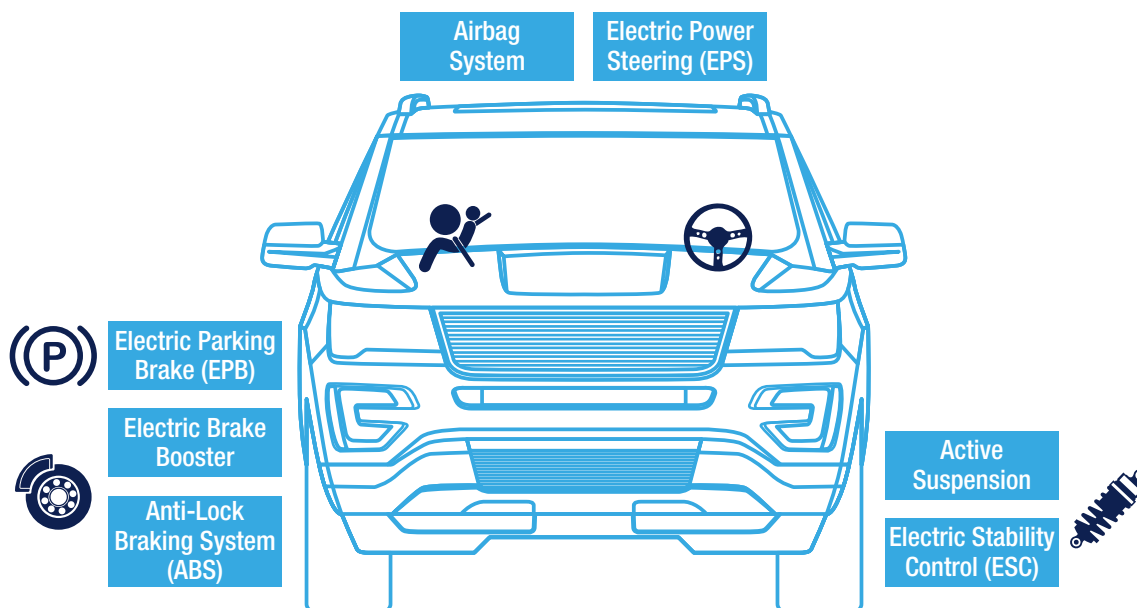
Active and passive safety systems that reduce the risk of accidents, as well as their consequences, are becoming more sophisticated with an increasing electronic component count.

Active safety applications such as electric power steering, electric parking brakes, active suspension, anti-lock braking systems (ABS) 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 technology.

ST offers a range of both standard and dedicated devices to enable all these chassis and safety applications. These include standard low-side, high-side, bridge and pre-drivers, 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	EPB & 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

https://www.st.com/content/st_com/en/applications/chassis-and-safety.html?icmp=tt7376_gl_qron_jun2018

Electrical Power Steering
 Electrical Parking Brake
 Electric Brake Booster
 Belt Tensioner

Airbag System
 Active Suspension
 ABS and ESC





Electro-Mobility

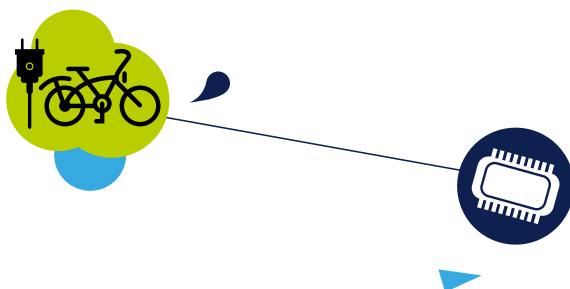


The electrification of vehicles is increasing rapidly, driven by the availability of higher-performance and more cost-effective battery technologies, and improved mileage vehicles as well as ecological awareness, and government incentives and regulation.

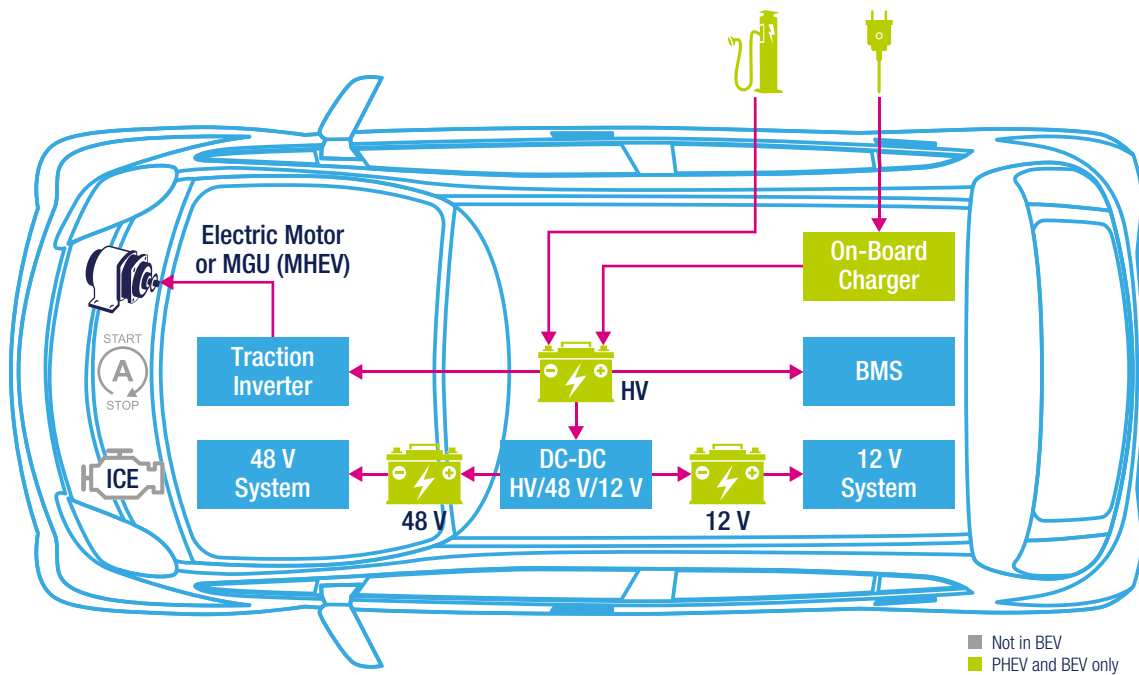
ST provides leading-edge solutions for hybrid (HEV), and battery electric vehicles (BEV) based upon proven and innovative technologies and backed up with our extensive power management experience.

Best-in-class IGBT, silicon and SiC (Silicon Carbide) MOSFETs and diodes, 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 accordance with the AEC-Q100 and AEC-Q101 standards.

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



KEY APPLICATIONS



SOLUTIONS

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



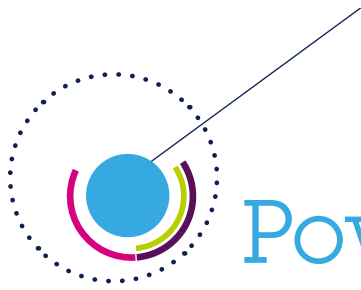
FIND OUT MORE

https://www.st.com/content/st_com/en/applications/electro-mobility.html?icmp=tt7377_gl_qron_jun2018

Battery Management System (BMS)
Charging Station
DC-DC Converter
Electric 2-wheelers

Electric Traction (Main Inverter)
Mild Hybrid 48 V Systems
On Board Charger (OBC)





Powertrain for ICE

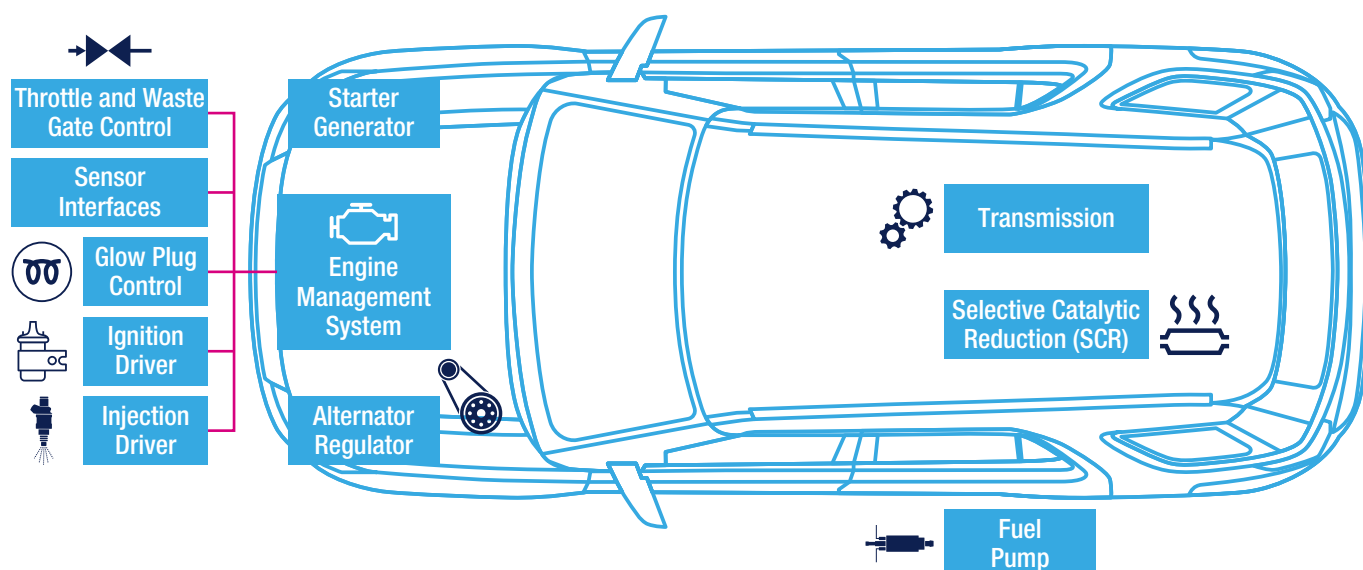


Reducing CO₂ and particle emissions, while increasing engine performance and improving the overall driving experience requires ever more sophisticated semiconductor-based solutions. A combination of increased processing power, built-in security and safety features, and innovative power technologies are revolutionizing Internal Combustion Engine (ICE) powertrain applications.

ST provides silicon solutions for a broad range of Engine Management Systems (EMS), from motorbikes 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.

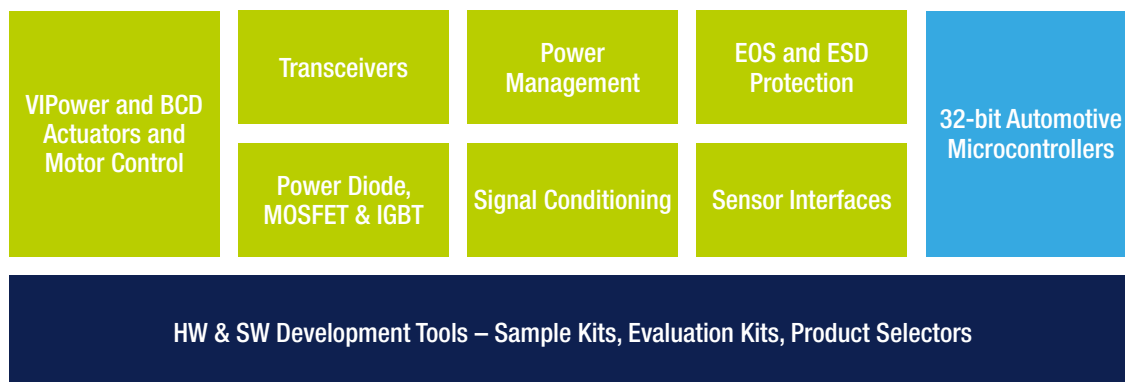
Our product portfolio addresses your entire system solution, providing 32-bit automotive microcontrollers, standard low-side, high-side and bridge smart power devices for driving solenoids, DC motors and stepper motors. Dedicated ICs for actuator driving, charging and power management, together with 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:



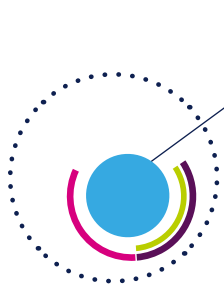
FIND OUT MORE

https://www.st.com/content/st_com/en/applications/powertrain-for-ice.html?icmp=tt7379_gl_qron_jun2018

Engine Management Systems
 24 V Engine Management
 Gasoline Direct Injection
 Gasoline multi-port 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



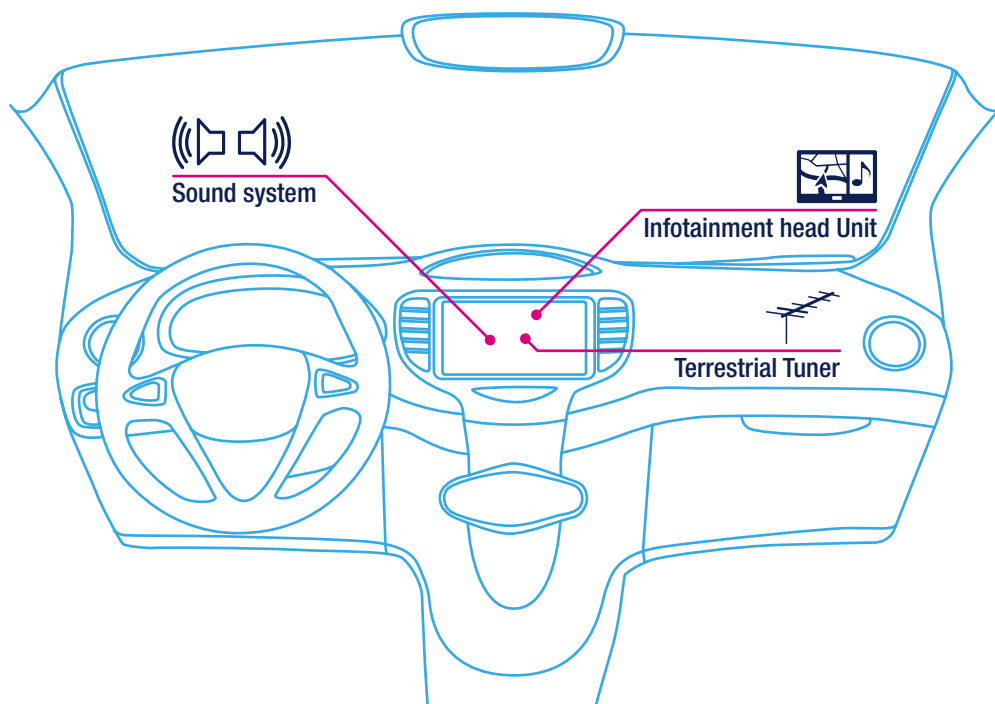
Consumer experiences with personal electronics are shaping expectations for in-vehicle infotainment systems making it a fast-evolving segment of the automotive industry. Vehicle occupants expect to be entertained, connected and able to seamlessly access information and content from a variety of sources.

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 clusters, 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, secure external communication links and world-class audio amplifiers all combine to ensure that you can build infotainment systems for all your markets.

Our extensive infotainment portfolio covers everything from the high-end integrated platforms, digital radio and outstanding class AB and class D audio power amplifiers.



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				



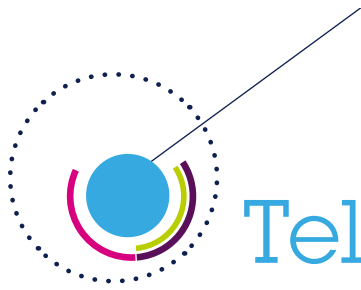
FIND OUT MORE

https://www.st.com/content/st_com/en/applications/in-vehicle-infotainment-ivi.html?icmp=tt7378_gl_qron_jun2018

Infotainment Module
Terrestrial Tuner
Sound System

Positioning system
Infotainment Head Unit
Digital Clusters





Telematics and Networking



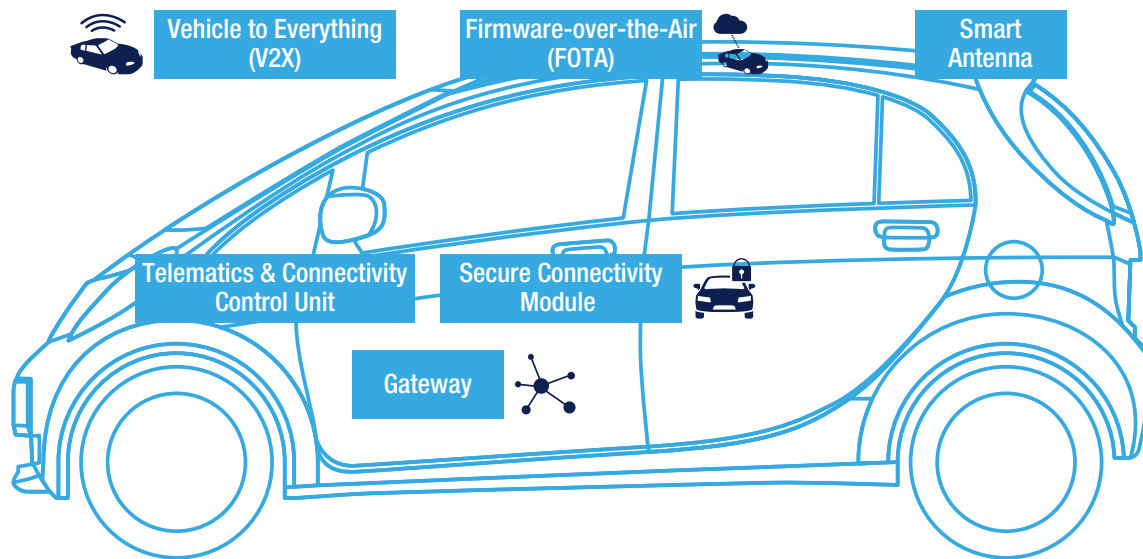
Connectivity is revolutionizing the vehicles on our roads. Connectivity to the cloud and cloud based services benefit occupants but also manufacturers by enabling over-the-air software upgrades and predictive maintenance. The increasing count of electronic control units (ECUs) for safety, engine management, 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) communications are coming soon and all these 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:



FIND OUT MORE

https://www.st.com/content/st_com/en/applications/telematics-and-networking.html?icmp=tt7380_gl_qron_jun2018

Vehicle-to-Everything (V2X)
 Insurance Telematics Box
 Smart Antenna
 Secure Connectivity

Positioning & Navigation
 Firmware Over the air (FOTA)
 Gateway





Mobility Services



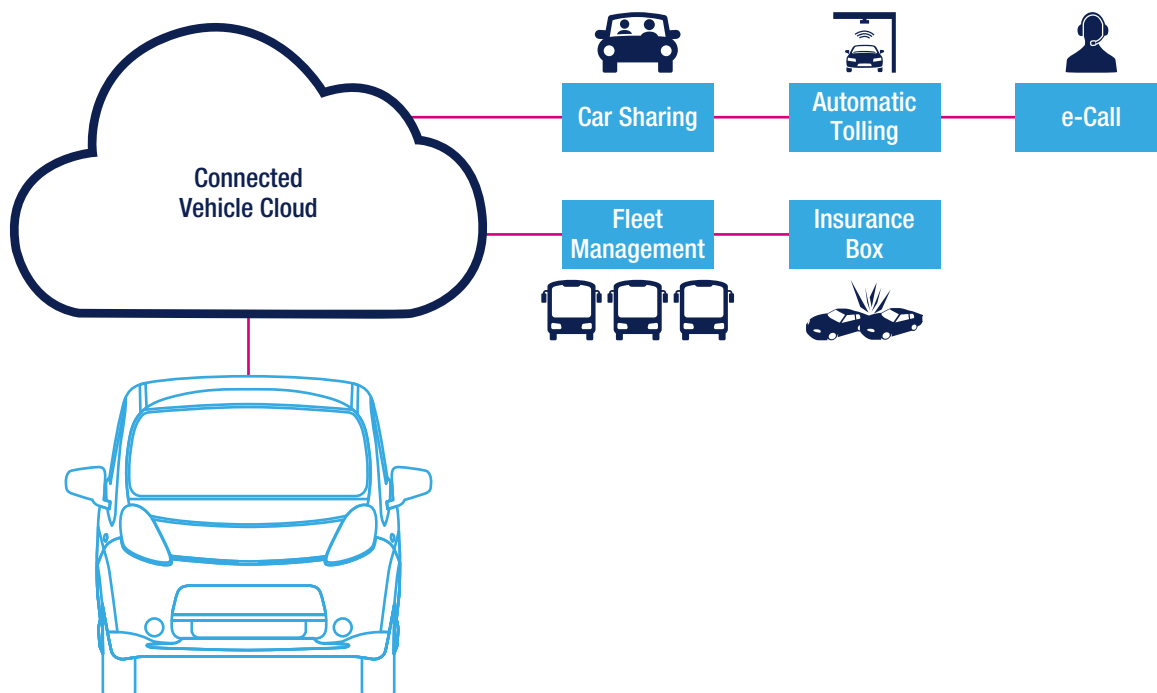
Mobility services are growing rapidly as vehicles become more connected. Powerful processing, vehicle connectivity and innovative sensors enable new possibilities for software service developers and a wealth of applications for car owners.

Car Safety enhancing services like “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-board 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 based upon 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, processing and communications semiconductors 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 products 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

https://www.st.com/content/st_com/en/applications/mobility-services.html?icmp=tt7381_gl_qron_jun2018

e-Call
Insurance Telematics Box
Fleet Management

Car Sharing
Automatic Tolling



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 and coordination with 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 has been working with Silicon Carbide since 1996. In 2009 ST started to produce its first SiC MOSFETs and since then we have added 1200 V versions of both SiC MOSFETs and power Schottky diodes to complement the original 650 V versions.

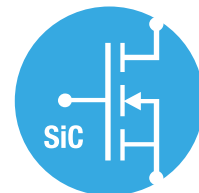
ST produces the automotive-grade SiC power devices, in a dedicated 6" front-end wafer fab, that are becoming the key enabler in the automotive industry for vehicle electrification.

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 is the perfect choice for the control of automotive exterior and interior lighting, DC motors for seat adjustment, door locks and window lifts, resistive heaters and any kind of power load that needs control and sensing as well as power. VIPower products are replacing a host of electro-mechanical solutions, and providing lower power, lower chip count and lower pin-count solutions.

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.



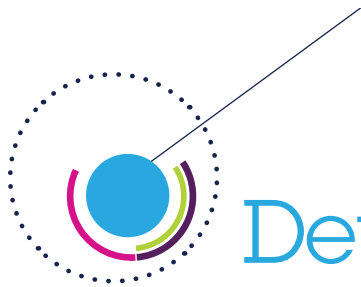
BCD (BIPOLAR-CMOS-DMOS)

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.

BCD technology is used widely in the automotive industry and products are found in active suspension, braking, transmission, airbag, car audio and notably engine management and charging applications. A key engine management application is for fully integrated System-on-Chip solutions for CO₂ reducing Gasoline Direct Injection (GDI) systems. For EV charging BCD is ideal for battery management systems (BMS).





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.

Product Selectors

Rapidly find the most relevant automotive products for your designs.

Evaluation Boards

ST evaluation boards help you evaluate the features and performance of selected products and system solutions that demonstrate optimized and tested solutions for your application design.

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 through 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 is also available for the SPC5 family of automotive microcontrollers.

SPC5
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

https://www.st.com/content/st_com/en/products/evaluation-tools/product-evaluation-tools/mcu-eval-tools/spc5-automotive-mcu-eval-tools.html?icmp=tt7555_gl_qron_jun2018



SIMULATORS FOR MOTOR CONTROL

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.

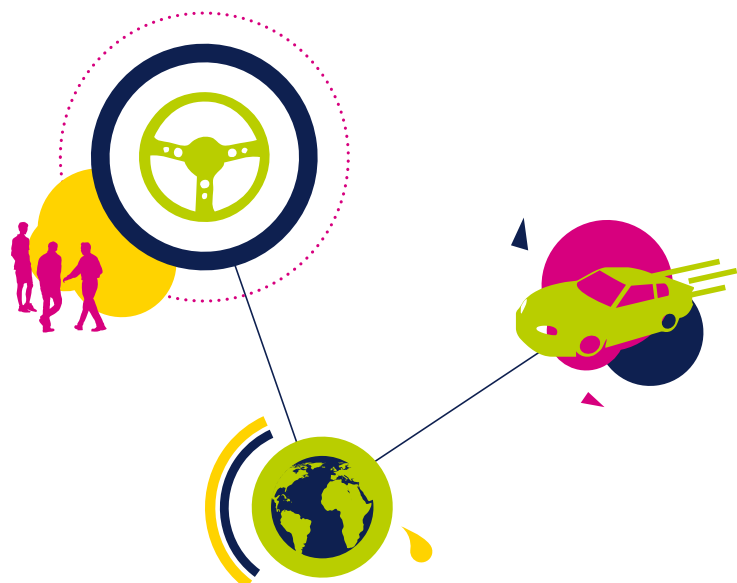
A built-in Interactive selector provides a short list of suitable devices based on first level system requirements. It assists you in detailing your actual system configuration with layout, load and driving profile customization to build an accurate model of the final application.

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



FIND OUT MORE

https://www.st.com/content/st_com/en/products/embedded-software/evaluation-tool-software/twistersim.html?icmp=tt7556_gl_qron_jun2018



EBV EUROPEAN HEADQUARTERS

EBV Elektronik GmbH & Co. KG | DE-85586 Poing | Im Technologiepark 2-8 | Phone: +49 8121 774 0 | www.ebv.com

EBV REGIONAL OFFICES | Status July 2018

AUSTRIA

AT-1120 Wien
Grünbergstraße 15 / Stiege 1 / 7. OG
Phone: +43 1 89152 0
Fax: +43 1 89152 30

BELGIUM

BE-1831 Diegem
De Kleetlaan 3
Phone: +32 2 716001 0
Fax: +32 2 72081 52

BULGARIA

BG-1505 Sofia
48 Sitnyakovo Blvd., Serdika
offices, 10th floor, Unit 1006
Phone: +359 2 9264 337
Fax: +359 2 9264 133

CZECH REPUBLIC

Amazon Court
Karolinska 661/4
CZ-18600 Prague
Czech Republic
Phone: +420 2 34091 011
Fax: +420 2 34091 010

DENMARK

DK-8230 Åbyhøj
Ved Lunden 10-12, 1. sal
Phone: +45 8 6250 466
Fax: +45 8 6250 660

DK-2730 Herlev
Lyskær 9, 1. sal
Phone: +45 39 6905 11
Fax: +45 39 6905 04

ESTONIA

EE-10414 Tallinn
Niine 11
Phone: +372 62 5799 0
Fax: +372 62 5799 5
Cell: +372 513 2232

FINLAND

FI-02240 Espoo
Pihatörmä 1 a
Phone: +358 9 2705279 0
Fax: +358 9 2705498

FI-90100 Oulu
Nahkatehtaankatu 2
Phone: +358 8 4152627 0
Fax: +358 8 4152627 5

FRANCE

FR-13856 Aix-en-Provence
1330 Rue G.G. de la Lauziere
Europarc Pichaury, Bâtiment A2
Phone: +33 442 3965 40
Fax: +33 442 3965 60

FR-92184 Antony Cedex (Paris)
2-6 Place Du General De Gaulle -
CS70046
Phone: +33 1 409630 00
Fax: +33 1 409630 30

FR-35510 Cesson Sévigné (Rennes)
35, av. des Peupliers
Phone: +33 2 998300 50
Fax: +33 2 998300 60

FR-67400 Illkirch Grafenstaden
35 Rue Gruningier
Phone: +33 3 904005 92
Fax: +33 3 886511 25

FR-31500 Toulouse
8 chemin de la terrasse
Parc de la plaine
Phone: +33 5 610084 61
Fax: +33 5 610084 74

FR-69693 Venissieux (Lyon)
Parc Club du Moulin à Vent
33, Av. du Dr. Georges Lévy
Phone: +33 4 727802 78
Fax: +33 4 780080 81

GERMANY

DE-85609 Aschheim-Dornach
Einsteinring 1
Phone: +49 89 38882 351
Fax: +49 89 38882 444

DE-10587 Berlin
Englische Straße 28
Phone: +49 30 747005 0
Fax: +49 30 747005 55

DE-30938 Burgwedel
Burgdorfer Straße 2
Phone: +49 5139 8087 0
Fax: +49 5139 8087 70

DE-59439 Holzwickede
Wilhelmstraße 1
Phone: +49 2301 94390 0
Fax: +49 2301 94390 30

DE-41564 Kaarst
An der Gumpgesbrücke 7
Phone: +49 2131 9677 0
Fax: +49 2131 9677 30

DE-71229 Leonberg
Neue Ramtelstraße 4
Phone: +49 7152 3009 0
Fax: +49 7152 759 58

DE-90471 Nürnberg
Lina-Ammon-Straße 19B
Phone: +49 911 817669 0
Fax: +49 911 817669 20

DE-04435 Schkeuditz
Airport Business Center Leipzig
Frankfurter Straße 2
Phone: +49 34204 4511 0
Fax: +49 34204 4511 99

DE-78048 VS-Villingen
Marie-Curie-Straße 14
Phone: +49 7721 99857 0
Fax: +49 7721 99857 70

DE-65205 Wiesbaden
Borsigstraße 36
Phone: +49 6122 8088 0
Fax: +49 6122 8088 99

HUNGARY

HU-1117 Budapest
Budafoki út 91-93, West Irodaház
Phone: +36 1 43672 29
Fax: +36 1 43672 20

IRELAND

IE-Dublin 12
Calmount Business Park
Unit 7, Block C
Phone: +353 1 40978 02
Fax: +353 1 45685 44

ISRAEL

IL-40600 Tel Mond
Drorim South Commercial Center
P.O. Box 149
Phone: +972 9 77802 60
Fax: +972 3 76011 15

ITALY

IT-20092 Cinisello Balsamo (MI)
Via C. Fropa, 34
Phone: +39 02 660962 90
Fax: +39 02 660170 20

IT-50019 Sesto Fiorentino (FI)
EBV Elektronik Srl
Via Lucchese, 84/B
Phone: +39 05 543693 07
Fax: +39 05 542652 40

IT-41126 Modena (MO)
Via Scaglia Est, 33
Phone: +39 059 292 4211
Fax: +39 059 292 9486

IT-80128 Napoli (NA)
Via G. Capaldo, 10
Phone: +39 081 193016 03
Fax: +39 081 198061 24
Cell: +39 335 83905 31

IT-00155 Roma (RM)
Via Edoardo D'Onofrio 212
Phone: +39 06 4063 665/778
Fax: +39 06 4063 777

IT-35030 Sarmeola di Rubano (PD)
Piazza Adelaide Lonigo, 8/11
Phone: +39 049 89747 01
Fax: +39 049 89747 26

IT-10144 Torino (TO)
Via Treviso, 16
Phone: +39 011 26256 90
Fax: +39 011 26256 91

NETHERLANDS

NL-3606 AK Maarssenbroek
Planetenbaan 116
Phone: +31 346 5830 10
Fax: +31 346 5830 25

NORWAY

Postboks 101, Manglerud
Ryensvingen 3B
NO-0681 Oslo
Phone: +47 22 67178 0
Fax: +47 22 67178 9

POLAND

PL-80-838 Gdansk
Targ Rybny 11/12
Phone: +48 58 30781 00

PL-02-676 Warszawa
Postępu 14
Phone: +48 22 25747 06

PL-50-062 Wrocław
Pl. Solny 16
Phone: +48 71 34229 44
Fax: +48 71 34229 10

PORTUGAL

Unipessoal LDA
Edifício Tower Plaza
Rotunda Eng.º Edgar Cardoso, 23 - 14ºG
PT-4400-676 Vila Nova de Gaia
Phone: +351 22 092026 0
Fax: +351 22 092026 1

ROMANIA

4C Gara Herastrai Street
Building B, 2nd Floor - 2nd District
Bucharest
RO 014472
Phone: +40 21 52816 12
Fax: +40 21 52816 01

RUSSIA

RU-620028 Ekaterinburg
Tatischeva Street 49A
Phone: +7 343 31140 4
Fax: +7 343 31140 46

RU-127486 Moscow
Korovinskoye Shosse 10,
Build 2, Off.28
Phone: +7 495 730317 0
Fax: +7 495 730317 1

RU-195197 St. Petersburg
Plustrovsky Prospect 43,
Office 421
Phone: +7 812 635706 3
Fax: +7 812 635706 4

SERBIA

Balkanska 2
XS-11000 Belgrade
Phone: +381 11 40499 01
Fax: +381 11 40499 00
Mobile: +381 63 204506
Mobile: +381 62 780012

SLOVAKIA

SK-82109 Bratislava
Turčianska 2
Green Point Offices
Phone: +421 2 3211114 1
Fax: +421 2 3211114 0

SLOVENIA

SI-1000 Ljubljana
Dunajska 167
Phone: +386 1 5609 778
Fax: +386 1 5609 877

SOUTH AFRICA

ZA-7700 Rondebosch, Cape Town
1st Floor, Unit 0030
Belmont Office Park, Belmont Road
Phone: +27 21 402194 0
Fax: +27 21 4196256

ZA-3629 Westville
Forest Square, 11 Derby Place
Suite 4, Bauhinia Building
Phone: +27 31 27926 00
Fax: +27 31 27926 24

ZA-2157 Woodmead,
Johannesburg
Woodlands Office Park
141 Western Service Road
Building 14-2nd Floor
Phone: +27 11 23619 00
Fax: +27 11 23619 13

SPAIN

ES-08014 Barcelona
c/Tarragona 149 - 157 Planta 19 1º
Phone: +34 93 47332 00
Fax: +34 93 47363 89

ES-39005 Santander (Cantabria)
Racing nº 5 bajo
Phone: +34 94 22367 55
Phone: +34 94 23745 81

ES-28760 Tres Cantos (Madrid)
Centro Empresarial Euronova
C/Ronda de Poniente, 4
Phone: +34 91 80432 56
Fax: +34 91 80441 03

SWEDEN

SE-164 40 Kista
Isafjordsgatan 32B, Floor 6
Phone: +46 859 47023 0
Fax: +46 859 47023 1

SWITZERLAND

CH-8953 Dietikon
Bernstrasse 394
Phone: +41 44 74561 61
Fax: +41 44 74561 00

CH-1010 Lausanne
Av. des Boveresses 52
Phone: +41 216 5401 01
Fax: +41 216 5401 00

TURKEY

Canan Residence
Hendem Cad. No: 54 Ofis A2
Serifali Umraniye
TR-34775 Istanbul
Phone: +90 216 528831 0
Fax: +90 216 528831 1

Armada Is Merkezi
Eskisehir Yolu No: 6 , Kat: 1406
Ofis No: 1406
Sogutozu
TR-06520 Ankara
Phone: +90 312 2956 361
Fax: +90 312 2956 200

UKRAINE

UA-03040 Kiev
Vasilovskaya str. 14
off. 422-423
Phone: +380 44 496222 6
Fax: +380 44 496222 7

UNITED KINGDOM

South East
2, The Switchback
Gardner Road
Maidenhead
GB-Berkshire, SL6 7RJ
Phone: +44 16 28778556
Fax: +44 16 28783811

South West & Wales
12 Interface Business Park
Binknoll Lane
Royal Wootton Bassett
GB-Wiltshire, SN4 8SY
Phone: +44 17 93849933
Fax: +44 17 93859555

North
Manchester International
Office Centre, Suite 3E (MIOC)
Styal Road
GB-Manchester, M22 5WB
Phone: +44 16 149934 34
Fax: +44 16 149934 74

Scotland
1st Floor
180 St. Vincent Street
GB-Glasgow, G2 5SG
Phone: +44 141 242482 0
Fax: +44 141 2211916

