



Automotive Solutions for Powertrain for ICE





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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.



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 systems, high-efficiency smart power electronics at the heart of all automotive sub-systems and devices for hybrid and electric vehicle applications.

MORE CONNECTED

Vehicles are more connected using our infotainment and telematics processors and sensors, as well as our radio tuners and amplifiers, positioning technologies, and secure vehicle-to-vehicle (V2V) and vehicle-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.

80%

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

Powertrain for ICE



ST
provides
silicon solutions
for Engine
Management

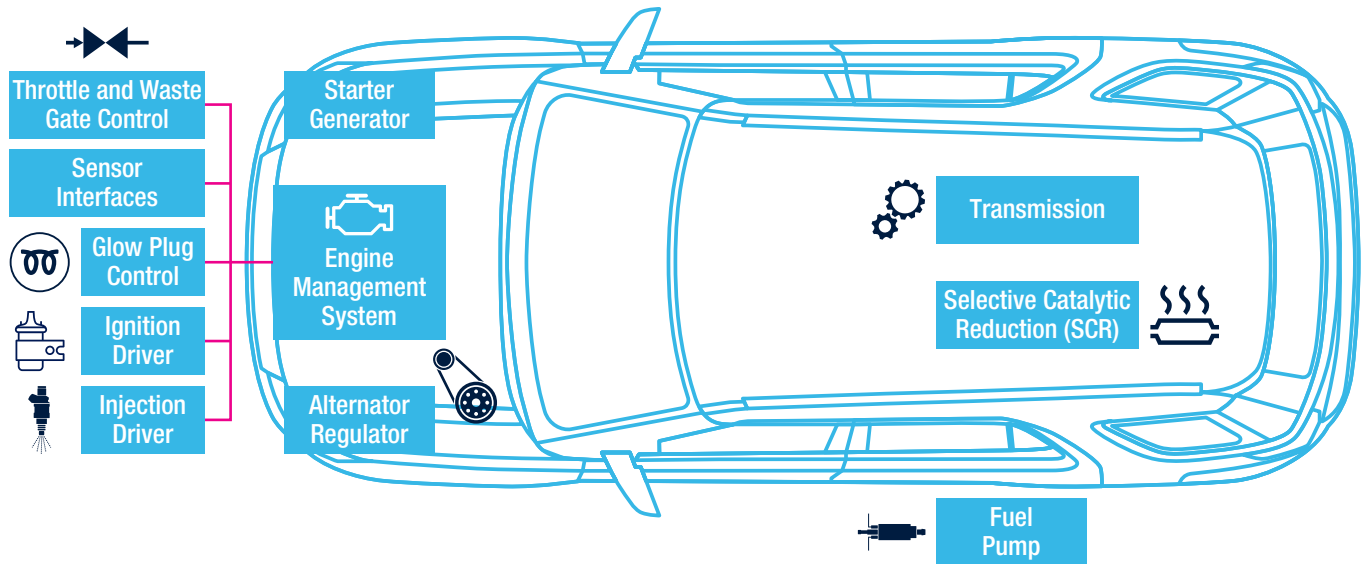
Reducing CO₂ and particle emissions, while increasing engine performance and improving the overall driving experience requires ever more sophisticated semiconductor-based solutions.

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 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 (brushed and brushless), 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 ICE applications include:

VIPower and BCD Actuators and Motor Control	Transceivers	Power Management	EOS & ESD protection, EMI filters	32-bit Automotive Microcontrollers
	Power Diode, MOSFET & IGBT	Signal Conditioning	Sensor Interfaces	

HW & SW development and evaluation tools



FIND OUT MORE

www.st.com/powertrain-for-ice

Gasoline Direct Injection (GDI)
Gasoline multi-point Injection
Diesel Direct Injection
LPG Engine Control

CNG Engine Control
Alternator Regulator
Fuel Pump
Motorcycle Engine Control

Selective Catalytic Reduction
Transmission Control
Glow Plug Control

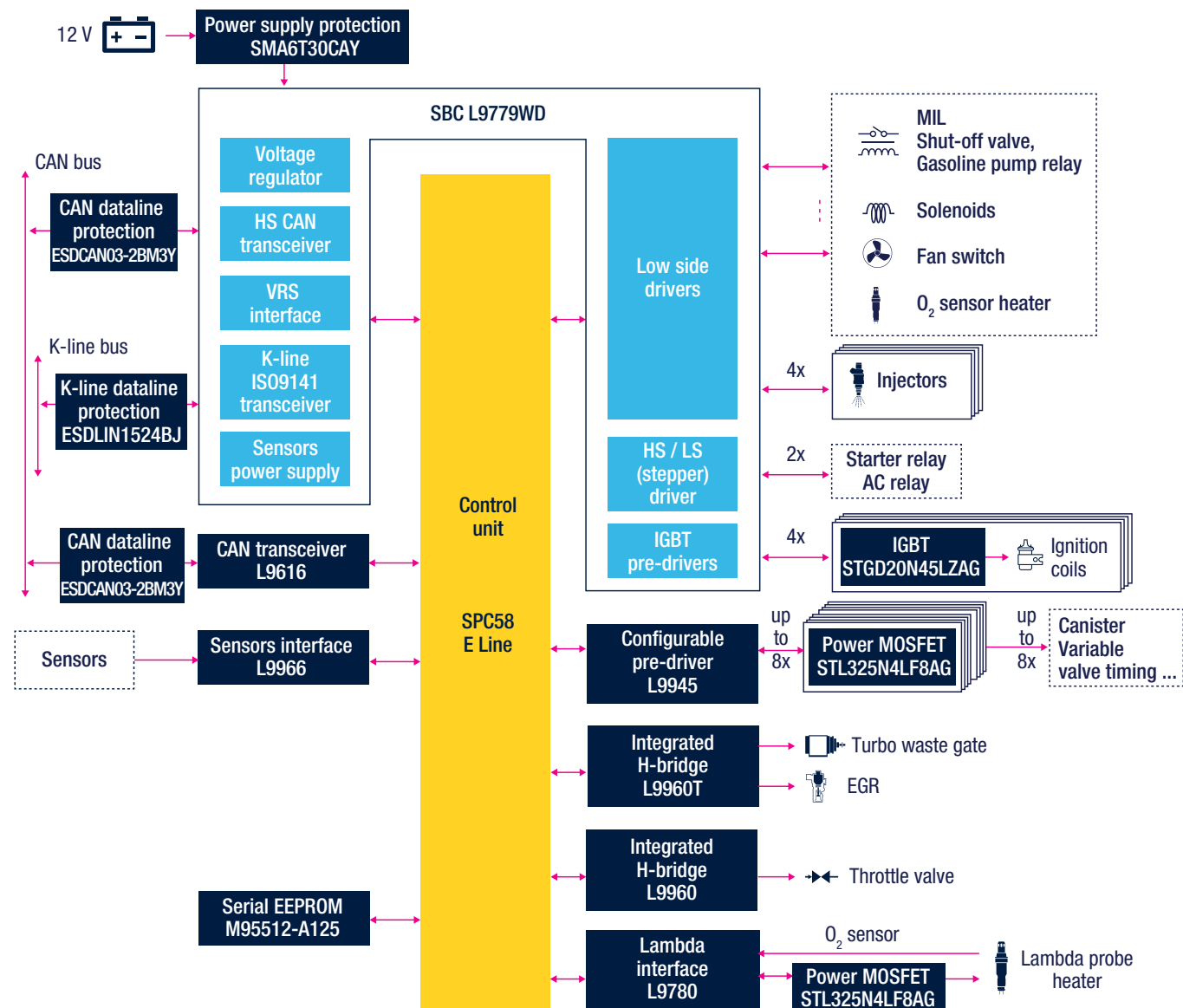
GASOLINE MULTI-POINT INJECTION

Gasoline multi-point fuel injection (MPI) is the most widely used powertrain system for spark ignition engines. This system, where fuel is injected at low pressure in the inlet air manifold, is a proven, robust and simple technology.

To control and optimize performance, a wide range of semiconductor solutions are required that are specifically designed for automotive applications.

We have a wide and comprehensive offer including SPC5 32-bit microcontrollers and specifically designed System Basis Chips (SBC) that combine voltage regulators for the various DC rails, bus interface ICs for the most common standards including CAN, ISO 9141 K-line, and high- and low-side drivers.

Gasoline multi-point



FIND OUT MORE

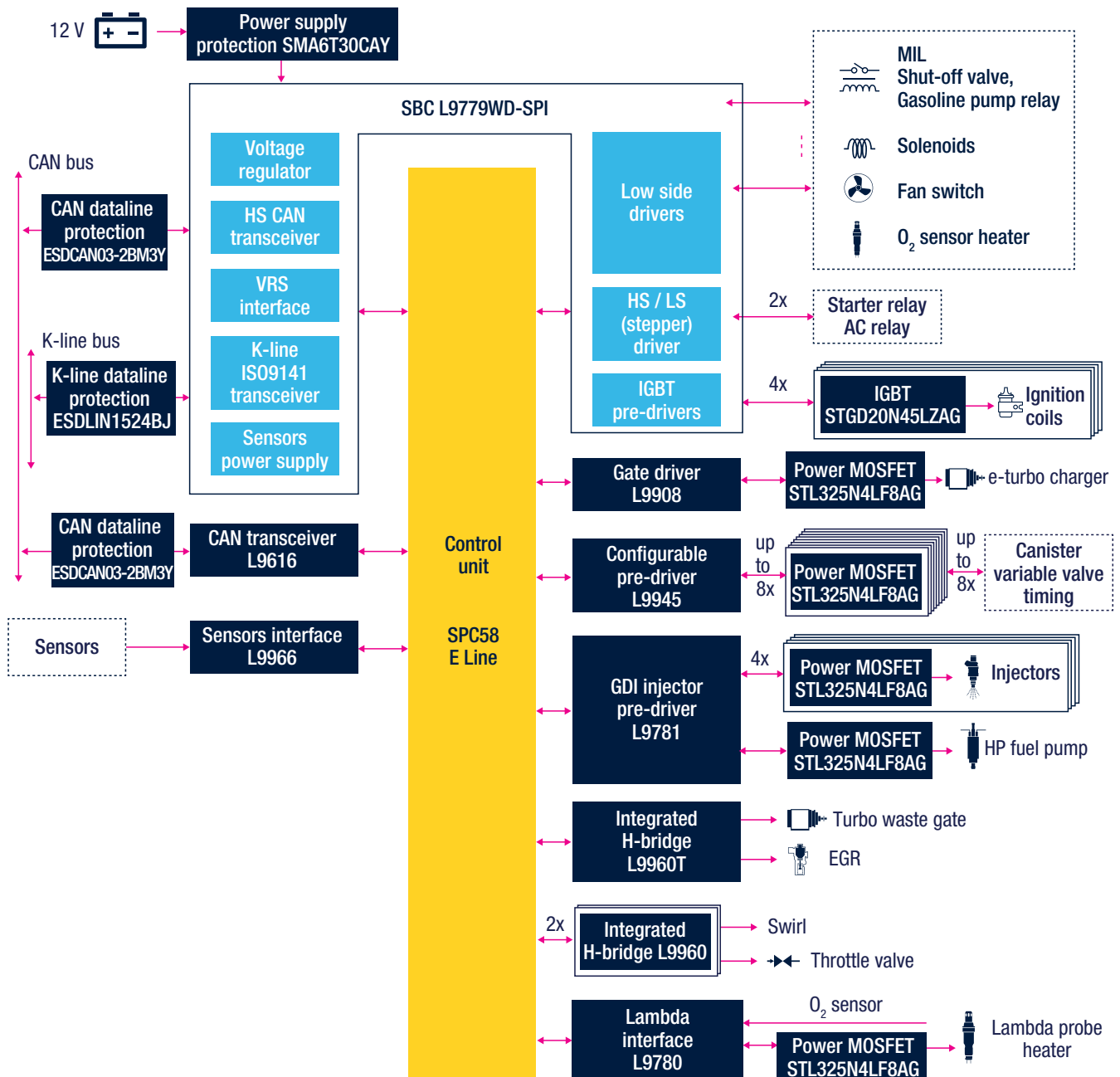
www.st.com/gasoline-multi-point-injection

GASOLINE DIRECT INJECTION (GDI)

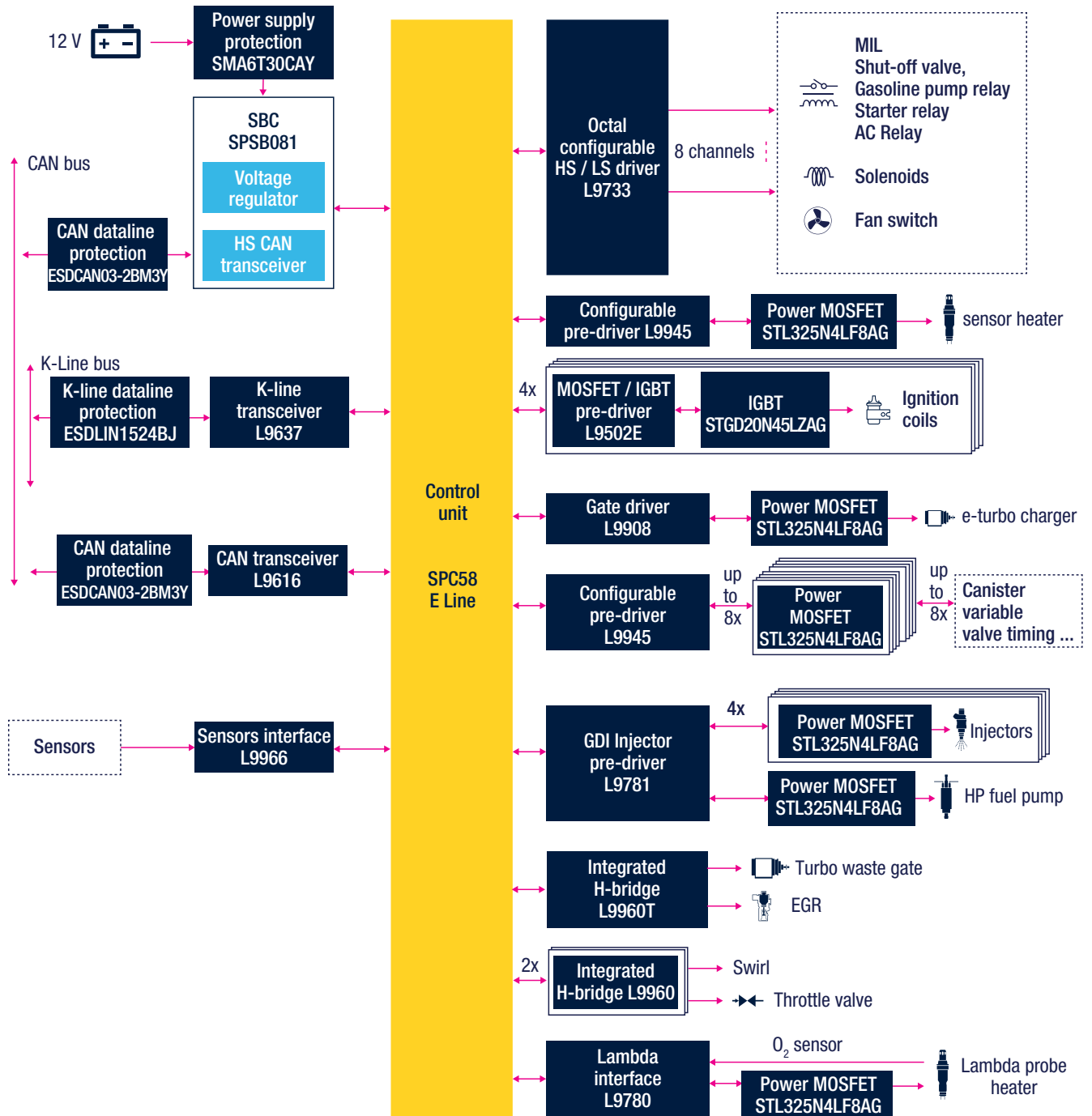
Governmental regulations, energy concerns and market requirements for very high performing vehicles brought the automakers to develop enhanced engine solutions. A key application combining fuel saving and high performances is Gasoline Direct Injection (GDI).

ST, with a strong portfolio of advanced technologies, can provide dedicated solutions for all the gasoline direct injection application needs. Our highly integrated System Basis Chips (SBC) combine all the required functions, including voltage regulation, bus interface, high/low side drivers, etc.

GDI based on System Basis Chips



Gasoline Direct Injection (GDI) based on Discrete solution



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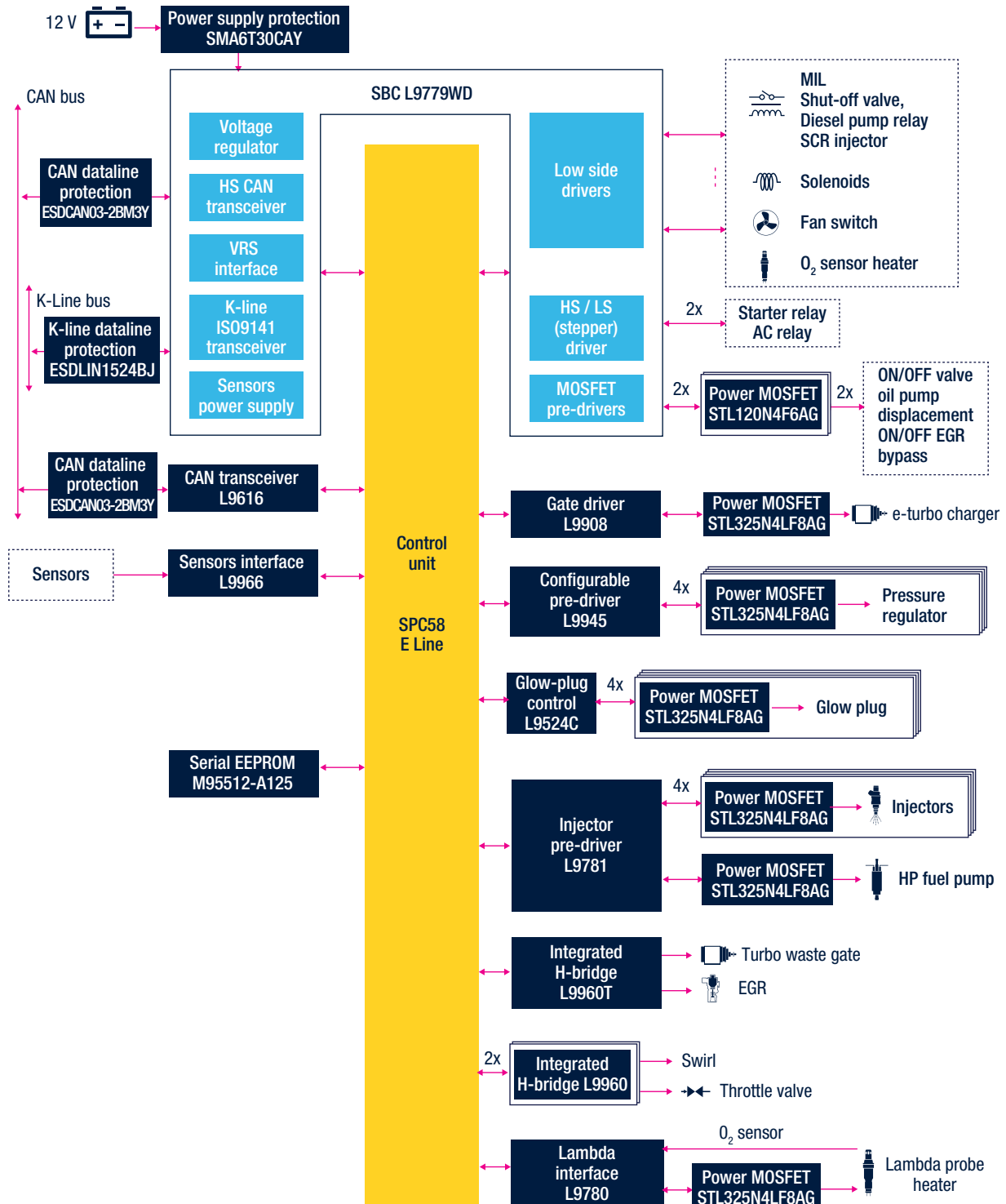
DIESEL DIRECT INJECTION (DDI)

The diesel engine is one of the most efficient types of internal combustion engine. Advanced fuel injection technologies based on high-pressure common rail systems and optimized exhaust gas after-treatment systems help reduce noise and particle emissions while maintaining high performance and efficiency.

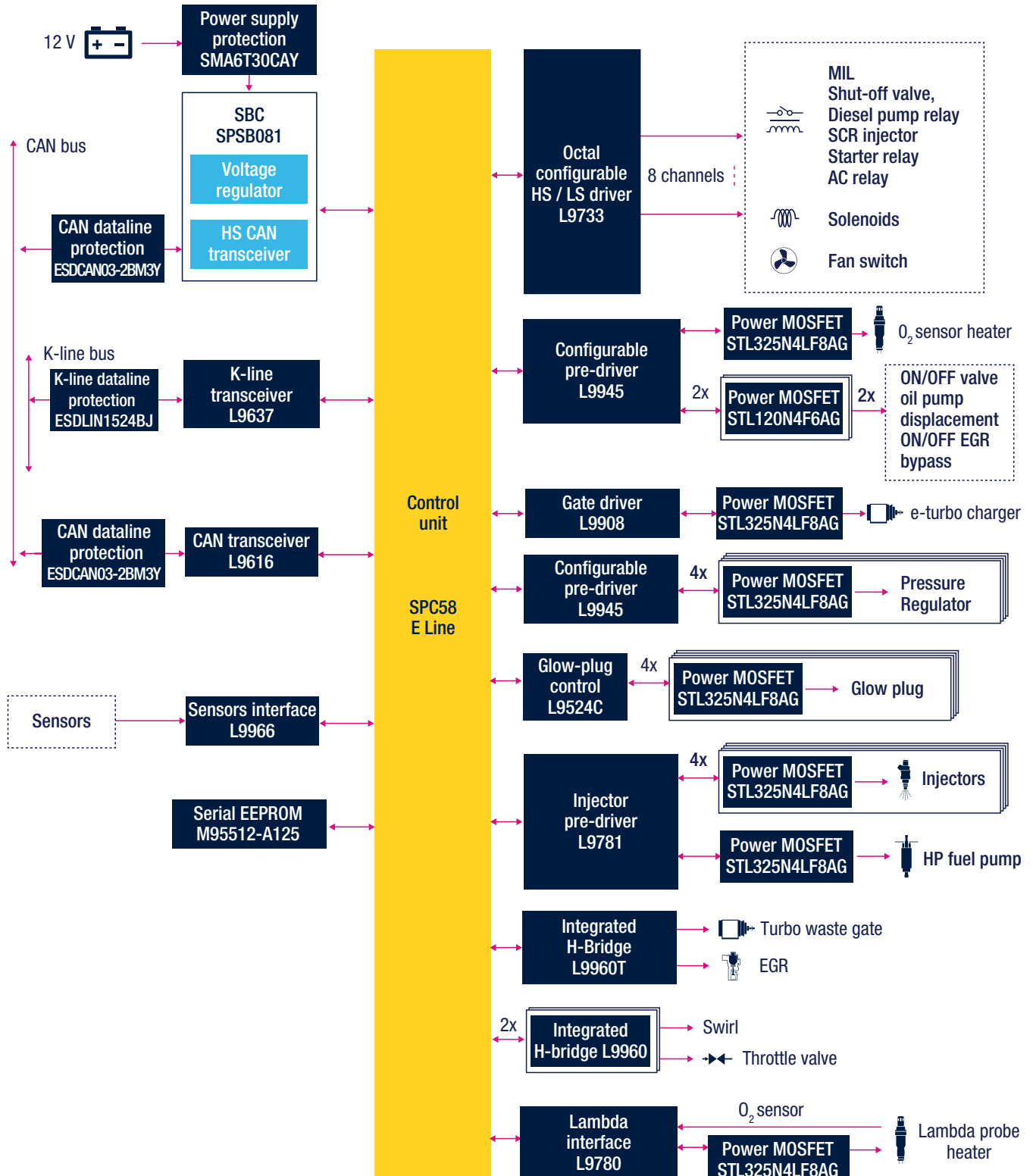
The use of electronic control plays an increasingly central role in optimizing performance at the appropriate cost point while helping ensure compliance with emission regulations and provide greater fuel efficiency.

We have a complete offer with specifically designed System Basis Chips (SBC) that combine voltage regulators for the various DC rails, bus interface ICs for the most common standards including CAN, ISO 9141 K-line, Variable Reluctance Sensors (VRS) and high- and low-side drivers. The SPC5 32-bit microcontroller family can provide the processing power and connectivity.

DDI based on System Basis Chips



DDI based on discrete solution



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www.st.com/diesel-direct-injection

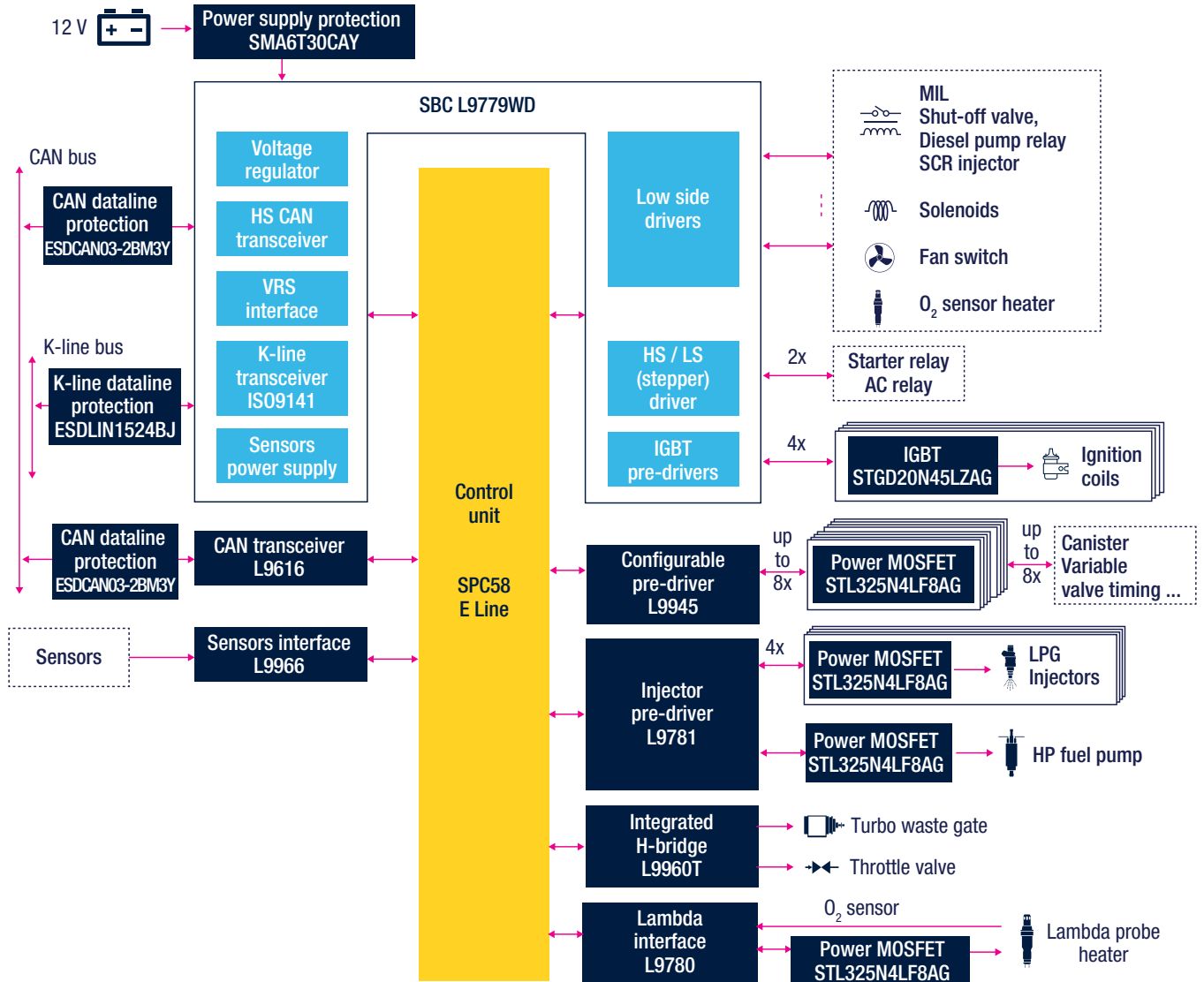
LPG ENGINE CONTROL

The growing demand for engines with reduced fuel costs or tax and mobility incentive schemes implemented in many countries has pushed car manufacturers to develop systems running on alternative fuels. Gasoline internal combustion engines running on Liquid Petroleum Gas (LPG) are based on proven technologies and typically have lower emissions and lower fuel costs than gasoline and diesel vehicles.

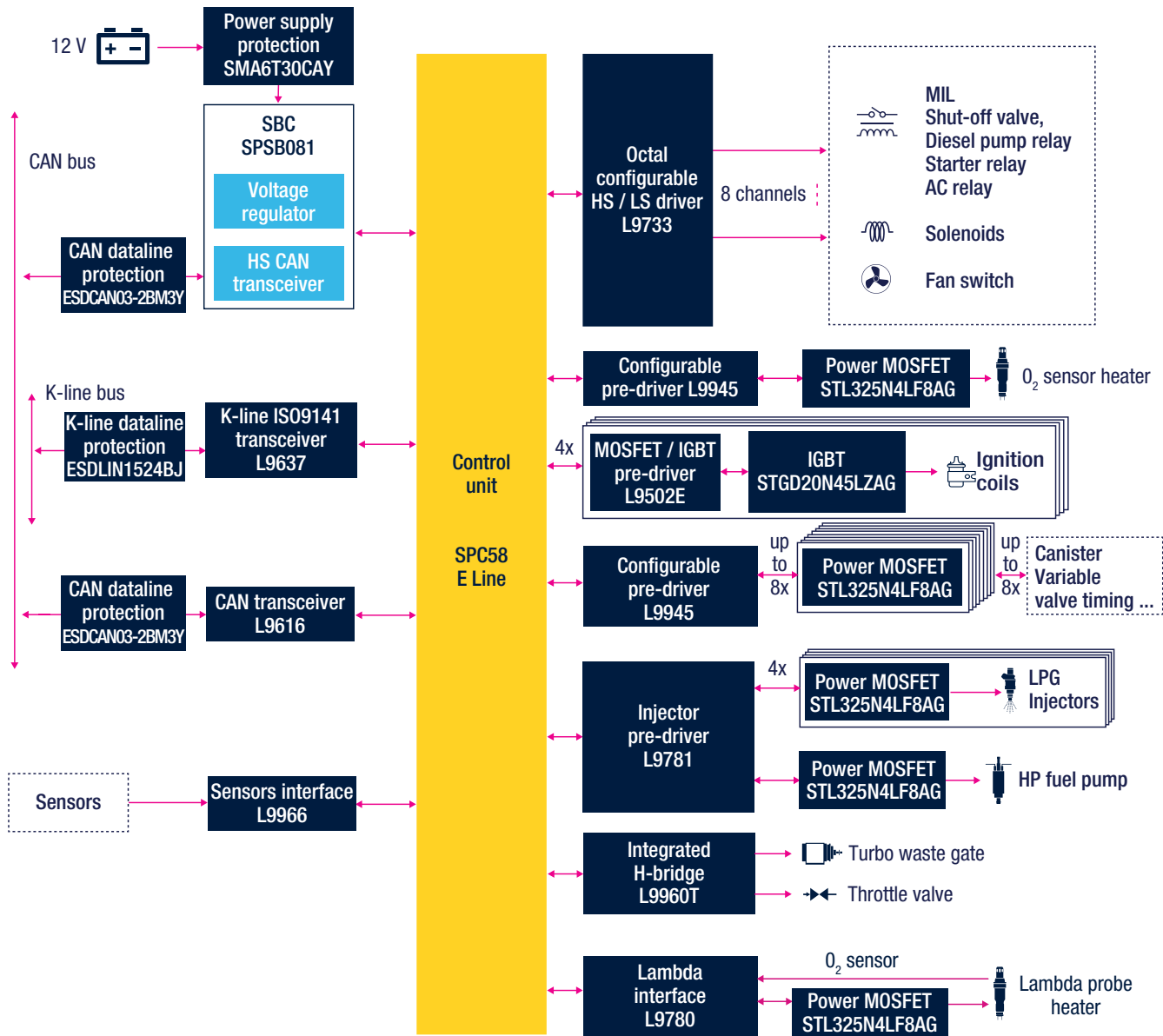
LPG is often used in bi-fuel vehicles, where it can be used alternatively with gasoline or diesel.

We have a wide and comprehensive offer including SPC5 32-bit microcontrollers and specifically designed System Basis Chips (SBC) that combine voltage regulators for the various DC rails, bus interface ICs for the most common standards including CAN, ISO 9141 K-line, and high- and low-side drivers.

LPG based on System Basis Chips



LPG based on discrete solution



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www.st.com/lgp-engine-control

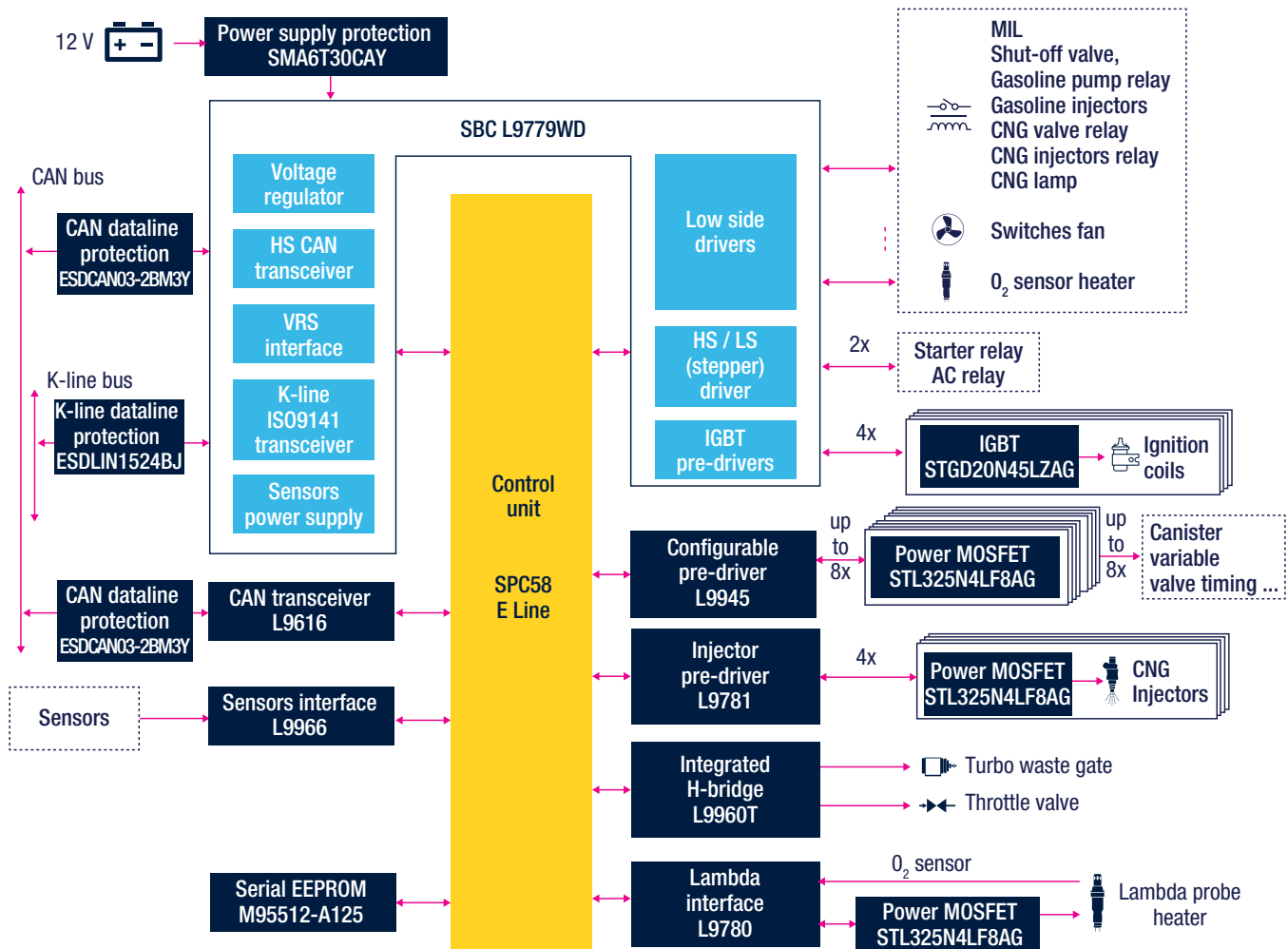
CNG ENGINE CONTROL

The growing demand for engines with reduced fuel costs or tax and mobility incentive schemes implemented in many countries has pushed car manufacturers to develop systems running on alternative fuels. Gasoline internal combustion engines running on Compressed Natural Gas (CNG) are based on proven technologies and typically have lower emissions and lower fuel costs than gasoline and diesel vehicles.

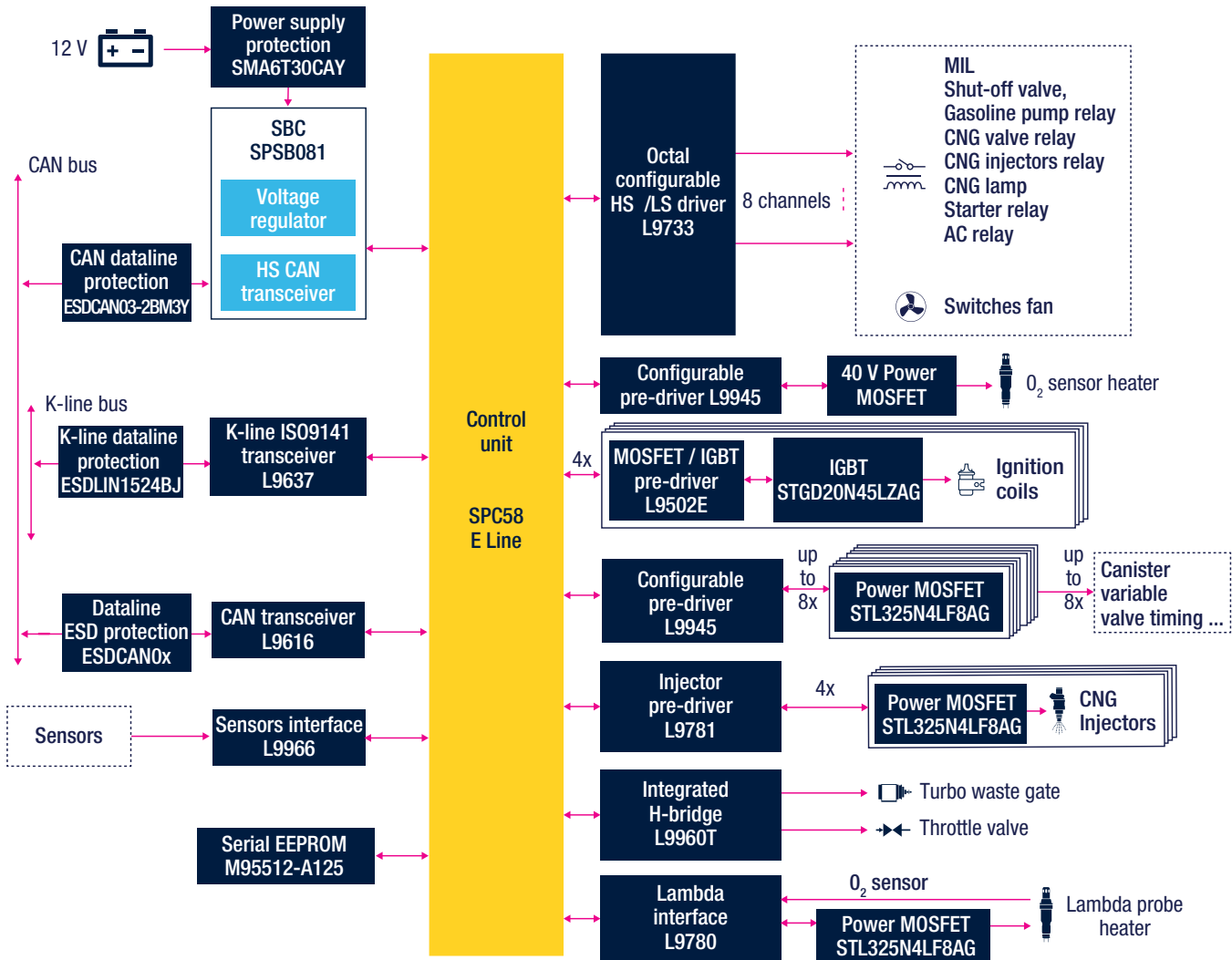
CNG is often used in bi-fuel gasoline vehicles, where it can be used alternatively with gasoline.

ST offers dedicated solutions for controlling powertrains in CNG and dual fuel vehicles.

CNG based on System Basis Chips



CNG based on discrete solution



FIND OUT MORE

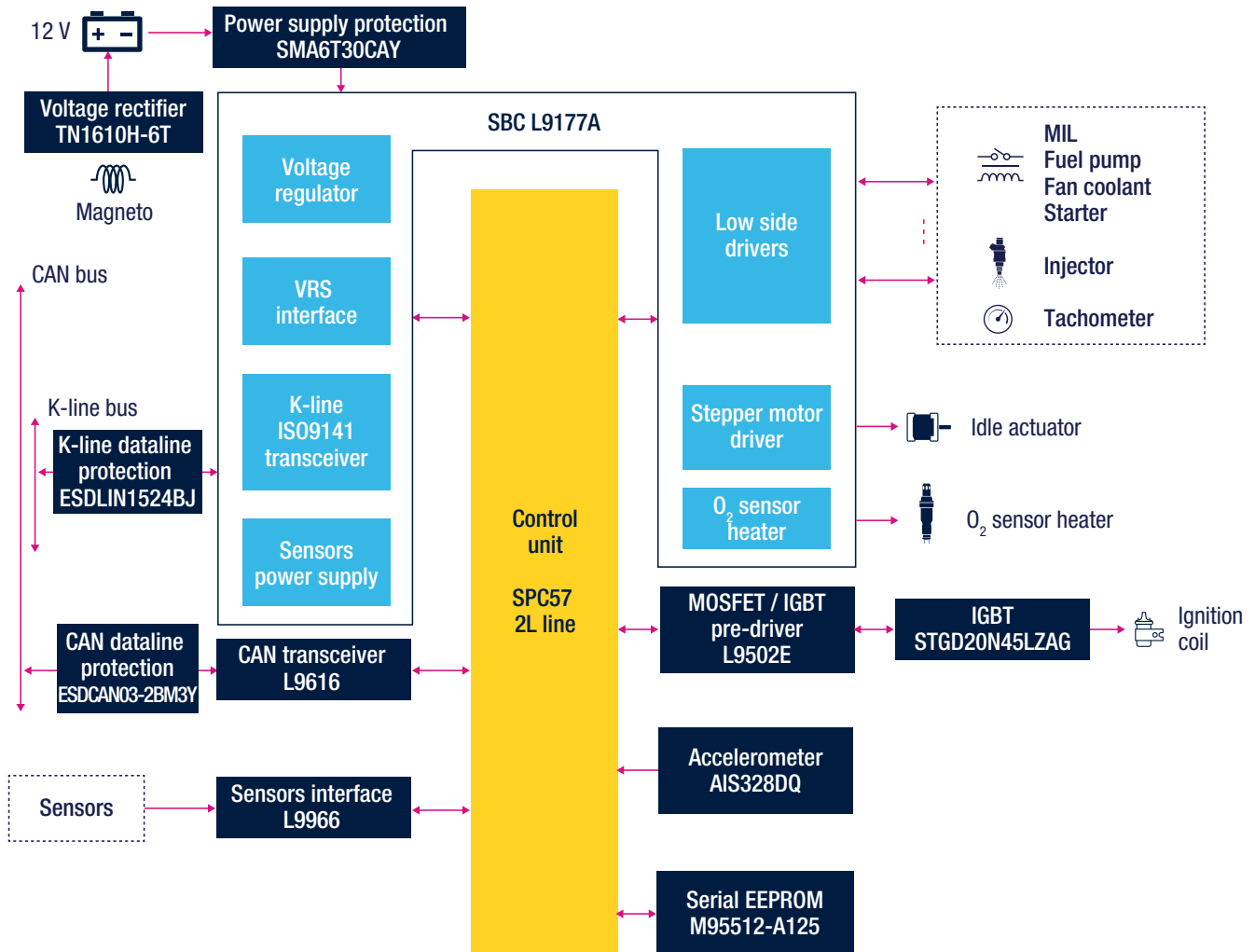
www.st.com/cng-engine-control

MOTORCYCLE ENGINE CONTROL / MONO-CYLINDER

Increasingly strict motorcycle emission regulations require engine manufacturers of both traditional and emerging markets to replace carburetors with electronically-controlled injection systems.

Improved fuel efficiency and reduced emissions as well as driving performance – all at an appropriate cost point – are the key challenge for motorcycle manufacturers, especially those building smaller motorcycles and scooters.

We offer dedicated solutions for motorcycle engine management. These include SPC5 32-bit microcontrollers and specifically designed System Basis Chips (SBC) that combine voltage regulators for the various DC rails, bus interface ICs for the most common standards including CAN, ISO 9141 K-line, and high- and low-side drivers.

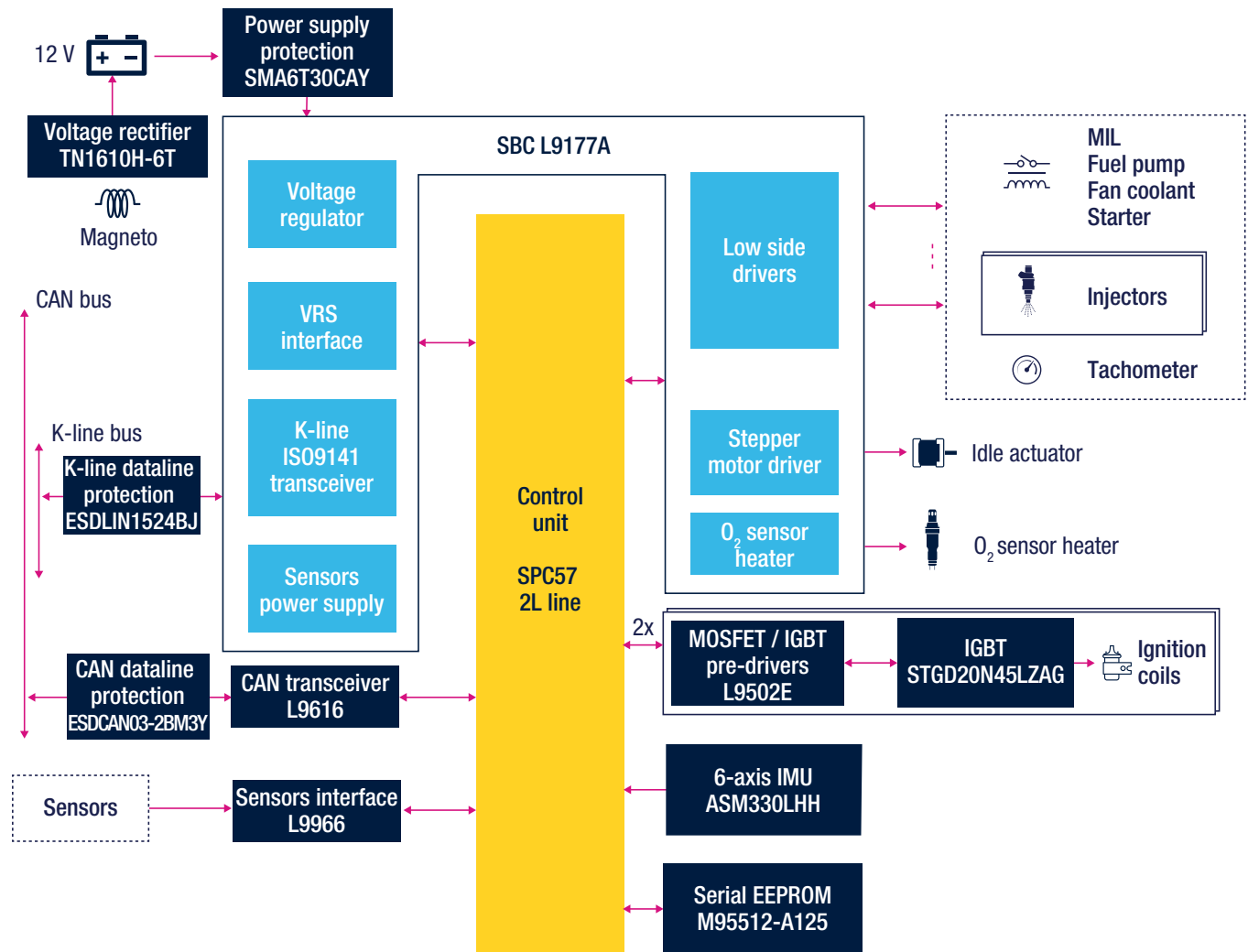


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www.st.com/single-cylinder-motorcycle-engine

MOTORCYCLE BI-CYLINDER

Solutions for bi-cylinder motorcycle engine management. SPC5 32-bit microcontrollers for the control unit and specifically designed System Basis Chips (SBC) that combine voltage regulators, bus interfaces, low-side drivers and O₂ sensor heaters.

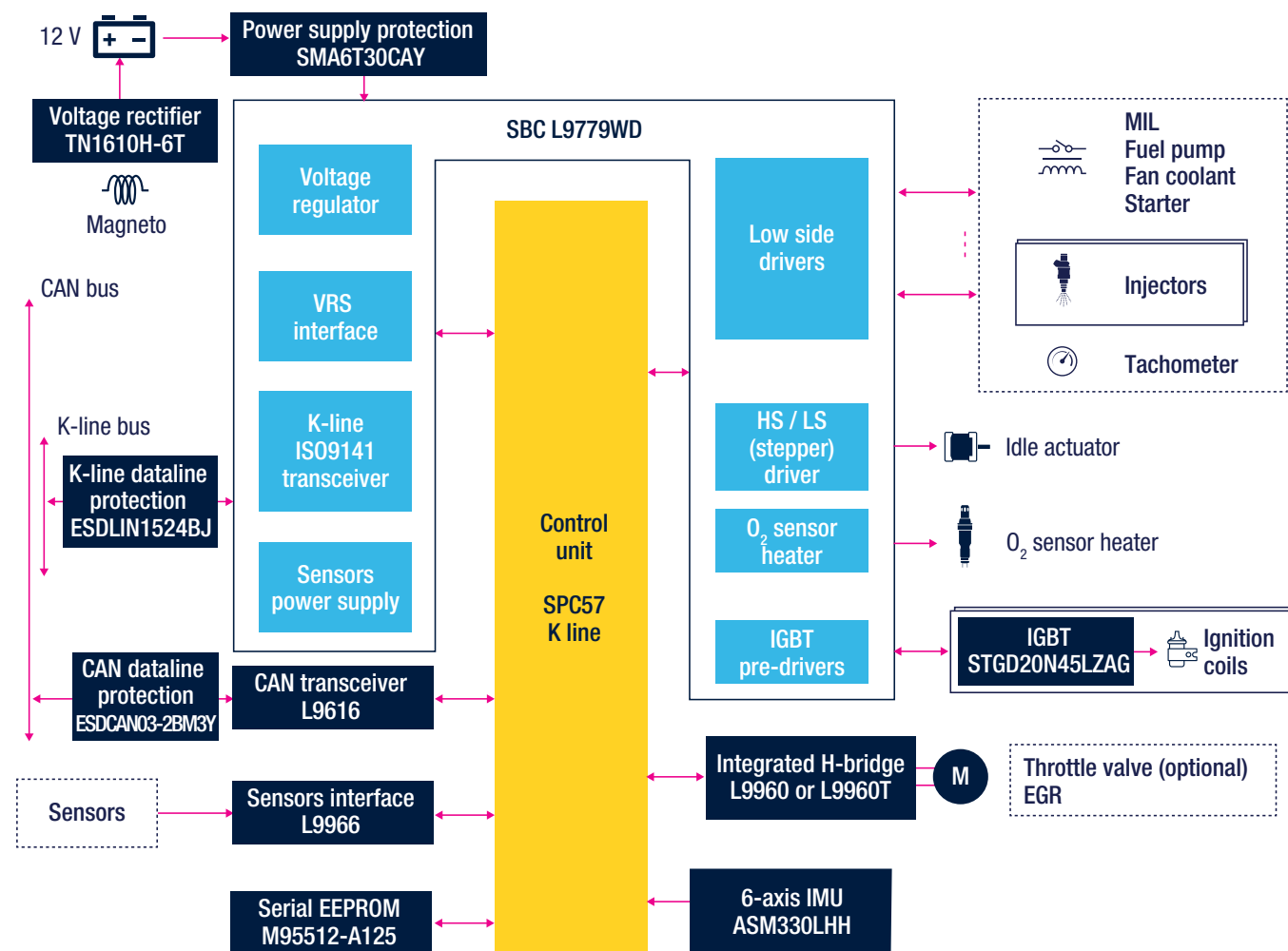


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www.st.com/two-cylinder-motorcycle-engine

MOTORCYCLE MULTI-CYLINDER

Solutions for multi-cylinder motorcycle engine management. SPC5 32-bit microcontrollers for the control unit and specifically designed System Basis Chips (SBC) that combine voltage regulators, bus interfaces, low-side drivers, O₂ sensor heaters and IGBT pre-drivers.



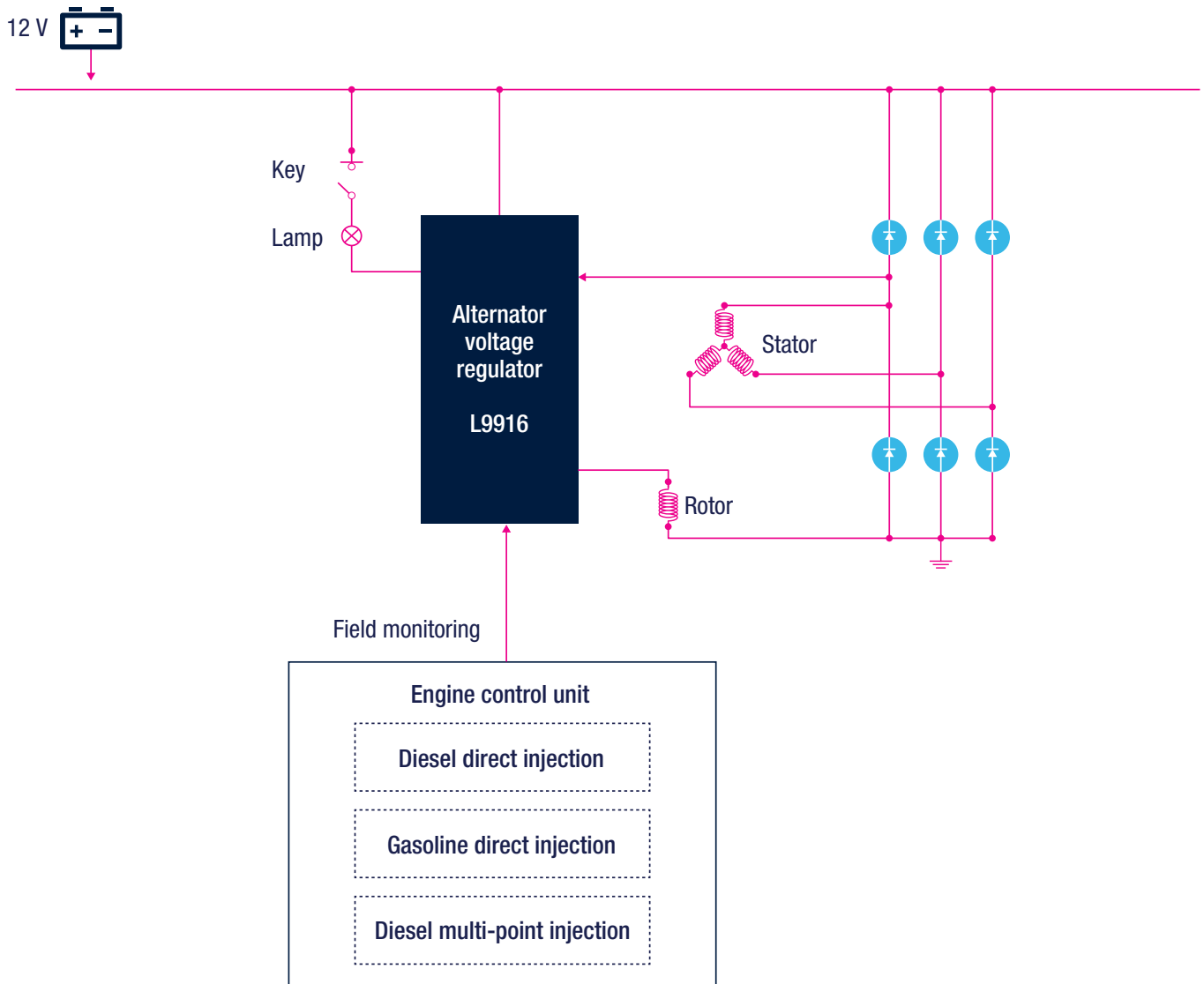
FIND OUT MORE

www.st.com/multi-cylinder-motorcycle-engine

ALTERNATOR REGULATOR

Found in every Internal Combustion Engine (ICE) vehicle, the alternator – and its associated control electronics – is becoming increasingly important as a key component due to the growing number of electrically actuated functions and their impact on overall power requirements.

ST has an extensive range of efficient and reliable control solutions that can be integrated using any of the various protocols used by different OEMs. Our offer covers from basic multi-function IC solutions up to advanced ECU IC controlled solutions.



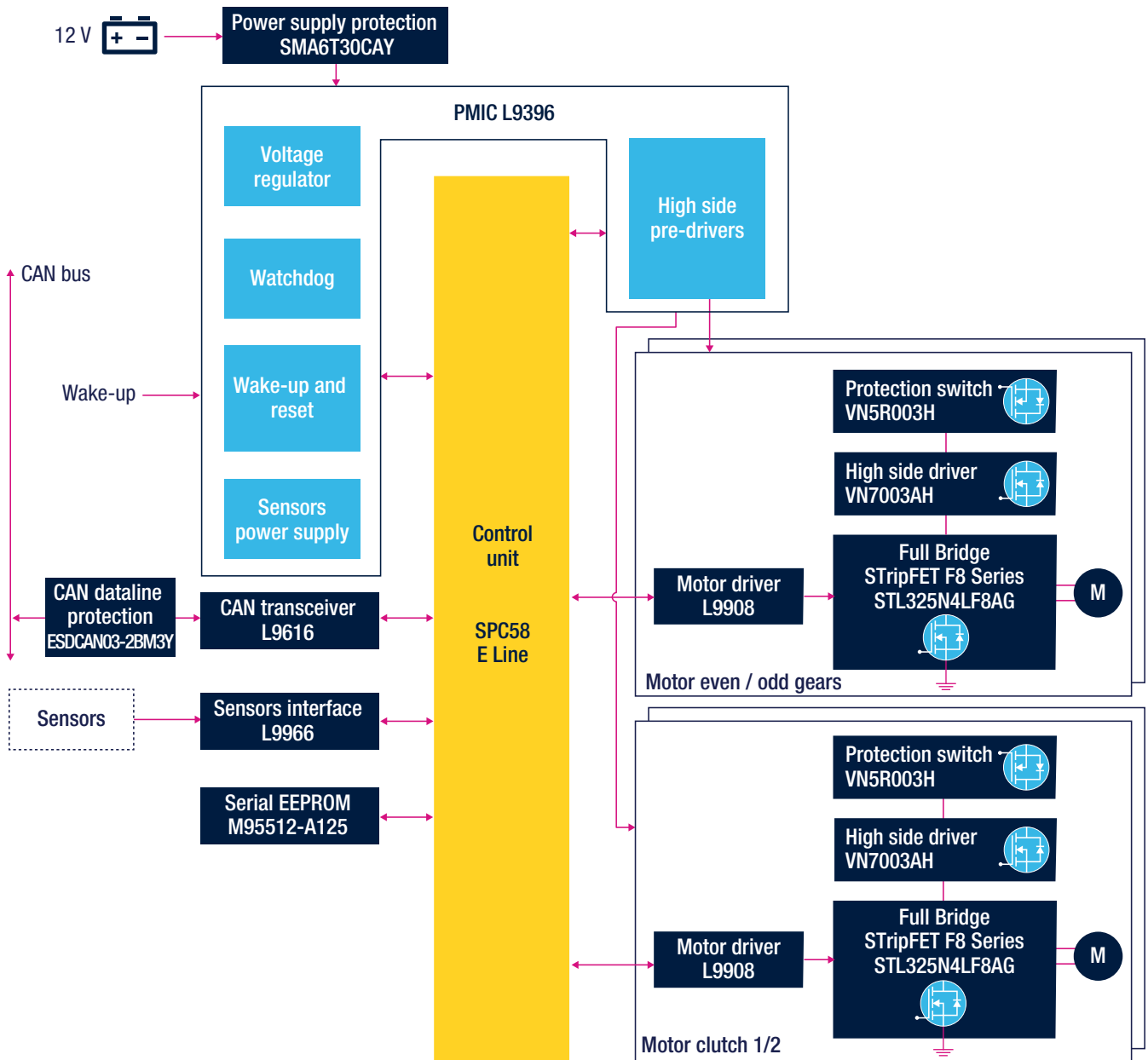
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www.st.com/alternator-regulator

TRANSMISSION CONTROL / ELECTRIC TRANSMISSION

An Automated Manual Transmission (AMT) is an advanced control system for gear shifting that eliminates the need for a clutch pedal while still letting the driver decide when to change gears. This electronically actuated and synchronized clutch and gear-box can help improve driving experience – especially in city traffic – as it completes the clutch and gear-shift operations more quickly and accurately than a human.

A complete electric transmission solution including SPC5 32-bit microcontrollers for control units, an SBC with high-side pre-drivers, Motor driver ICs and STripFET Full-Bridge power devices.

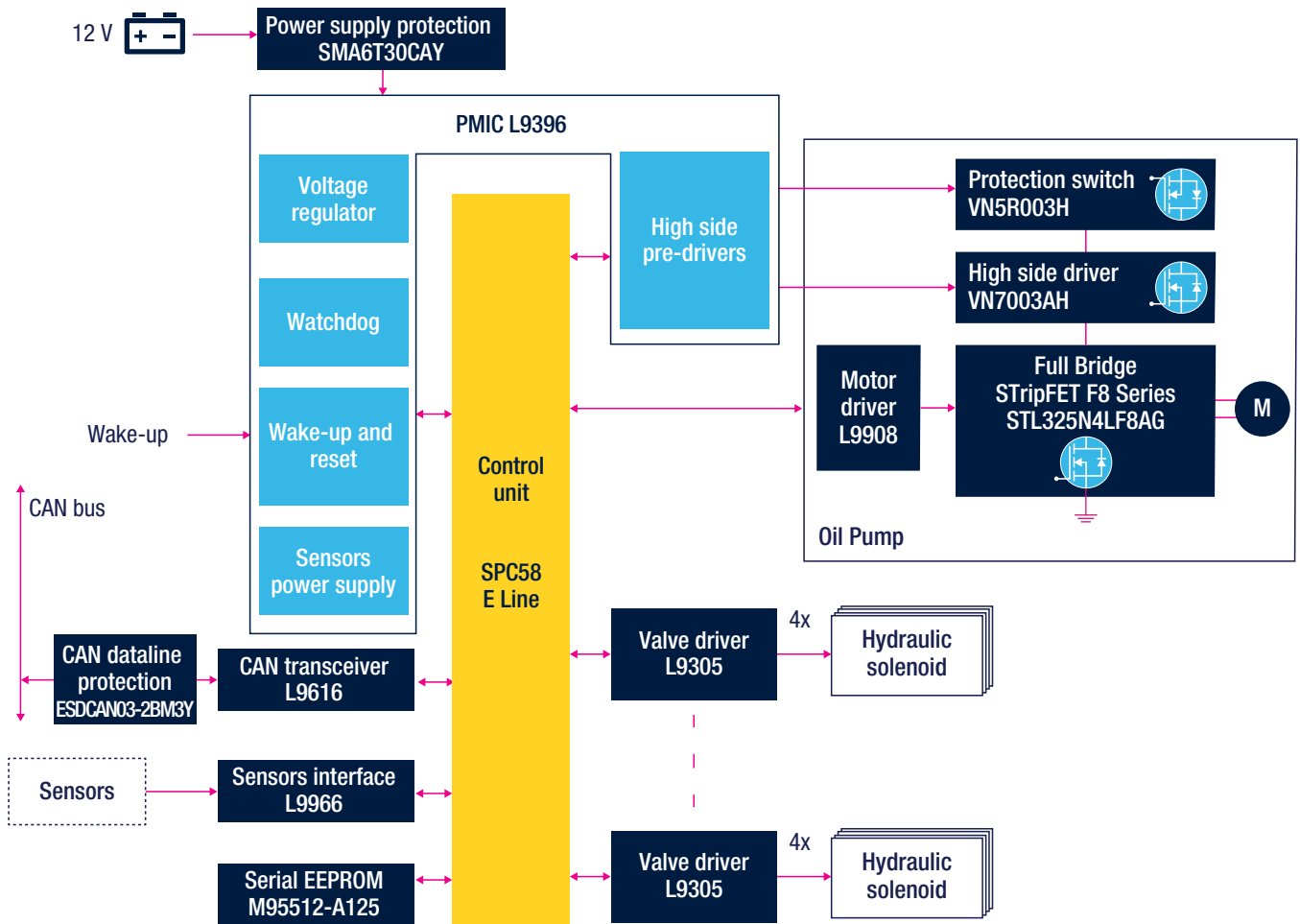


FIND OUT MORE

www.st.com/electric-transmission

HIGH-END HYDRAULIC TRANSMISSION

A complete high-end Hydraulic Transmission solution including SPC5 32-bit microcontrollers for control units, an SBC with high-side pre-drivers, Motor driver ICs and STripFET Full-Bridge power devices.

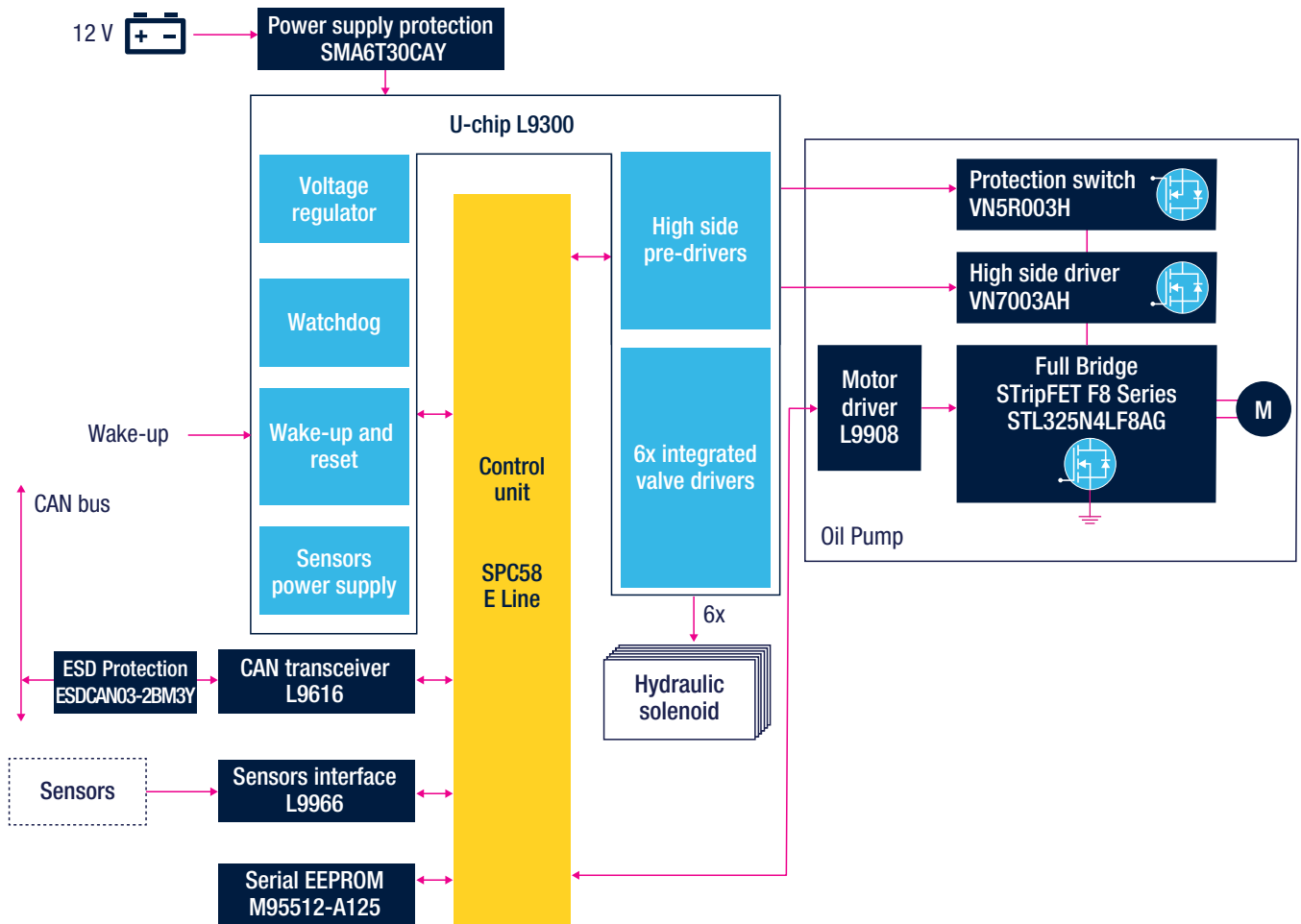


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www.st.com/high-end-hydraulic-transmission

CVT AND LOW-END HYDRAULIC TRANSMISSION

A complete Continuously Variable Transmission (CVT) and low-end Hydraulic Transmission solution including SPC5 32-bit microcontrollers for control units, an SBC with high and low -side pre-drivers, Motor driver ICs and STripFET Full-Bridge power devices.



FIND OUT MORE

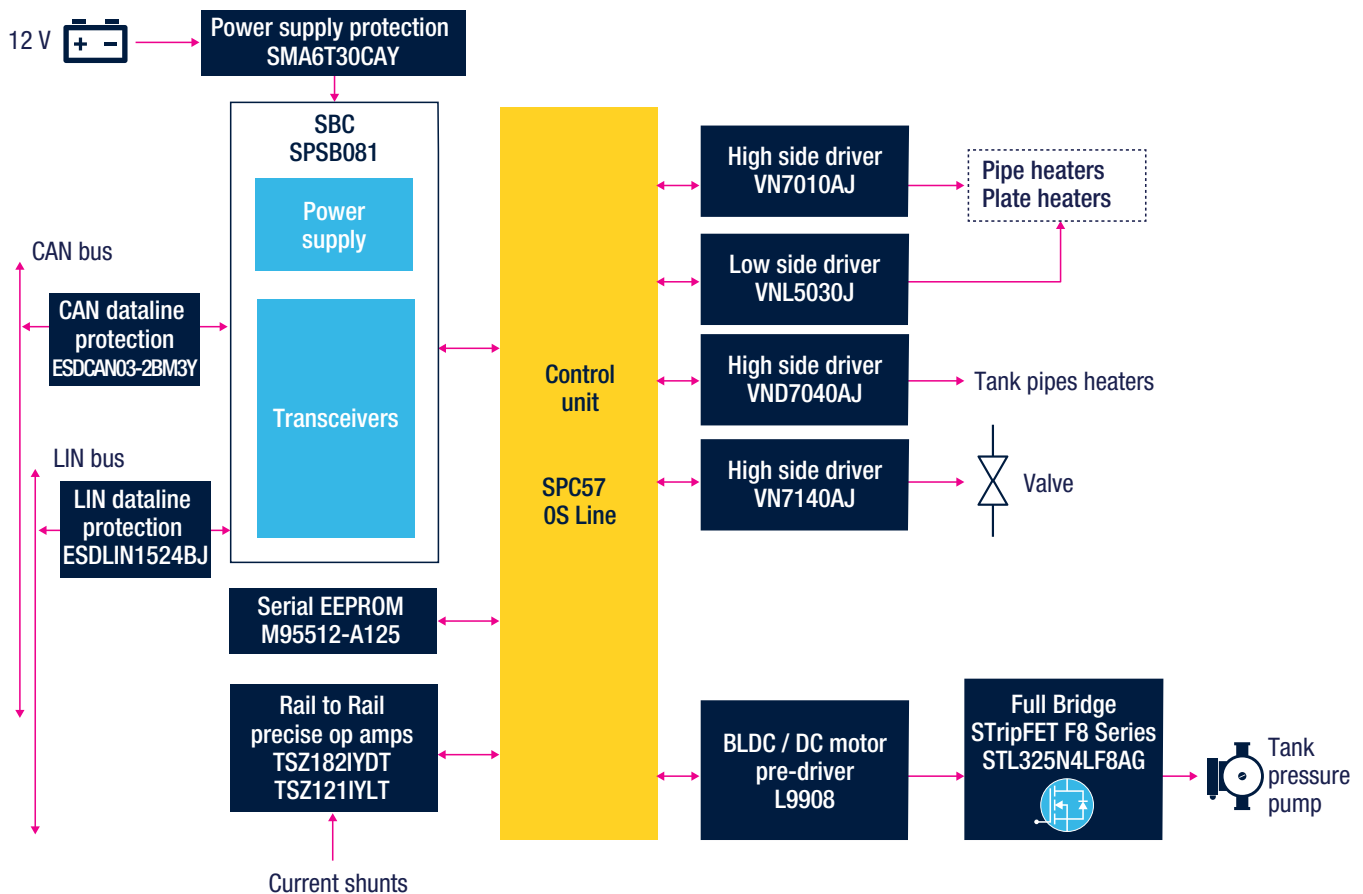
www.st.com/cvt-and-low-end-hydraulic-transmission

SELECTIVE CATALYTIC REDUCTION (SCR)

Selective Catalytic Reduction (SCR) is a chemical process converting nitrogen oxides (NOx) into diatomic nitrogen and water as well as a small amount of carbon dioxide. This process is facilitated by the addition of automotive-grade urea – known as Diesel Exhaust Fluid (DEF) or commercial brands like AdBlue and Bluetech – to convert hazardous NOx emissions from diesel engines into harmless nitrogen and water.

The SCR block controls a pump that draws DEF from its tank and injects it, with an appropriate dosing valve, into the diesel exhaust gases. To optimize fuel efficiency, a gas sensor is located after the catalytic reduction process and its information is fed to the diesel engine ECU that combines this information with the engine status and gives to the SCR unit accurate information regarding the right amount of DEF liquid to release.

We have a range of three-phase gate drivers and Power MOSFETs for the commonly used brushless DC (BLDC) motors, as well as SPC5 32-bit microcontrollers and dedicated power management ICs with voltage regulators and CAN and LIN Interface ICs to simplify the design of high-efficiency solutions.



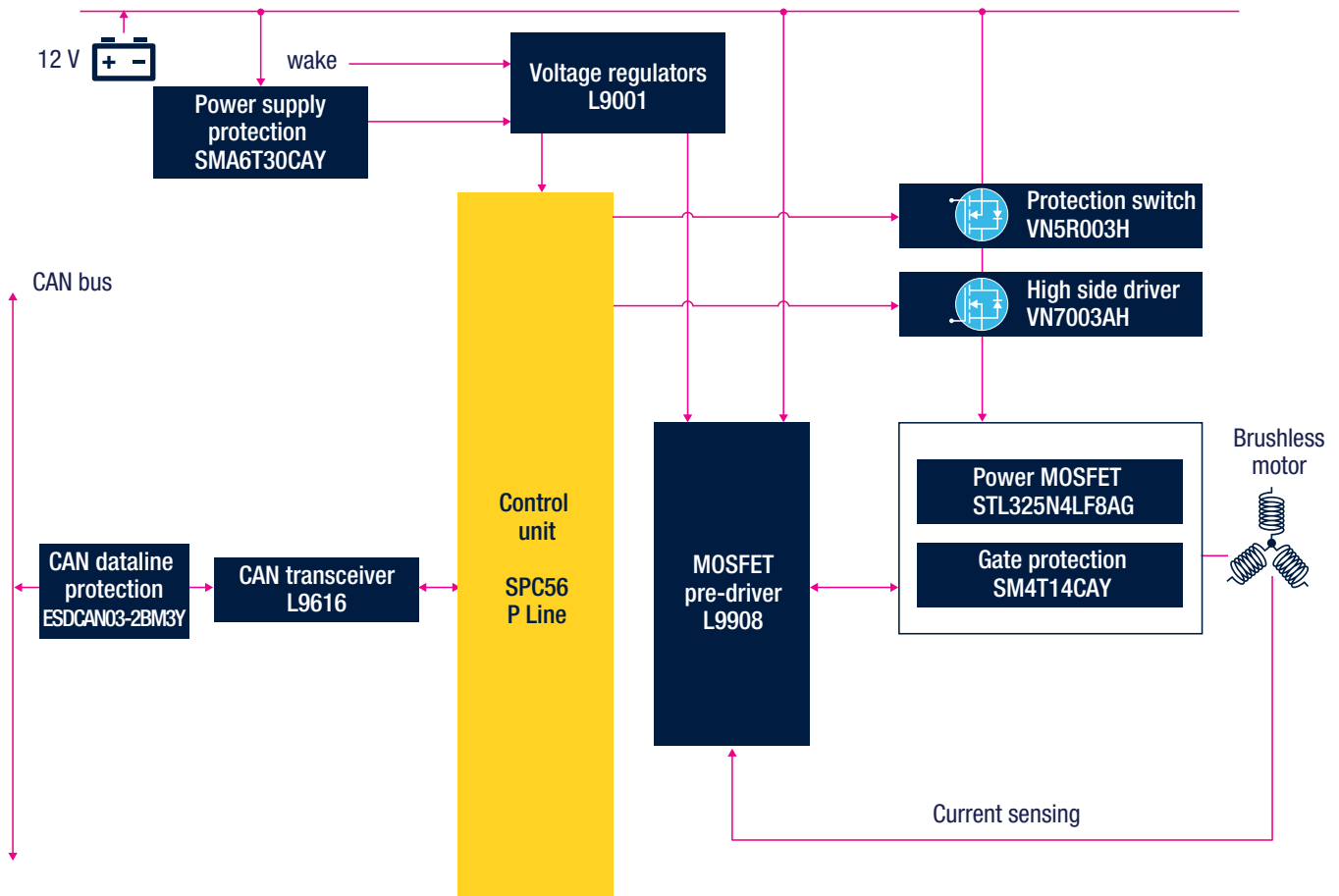
FIND OUT MORE

www.st.com/selective-catalytic-reduction-scr

FUEL PUMP

Tackling the challenge of achieving improved fuel efficiency, reducing CO₂ emissions and increasing the reliability of vehicles means looking at every possible source of energy loss and rethinking the way the associated sub-system is built. This is why electric fluid pumps are replacing mechanical systems as they can help reduce losses from hydraulic friction.

Electric fuel pumps are most often implemented with brushless DC (BLDC) motors and ST has a complete range of three-phase gate drivers and Power MOSFETs to power them. SPC5 32-bit automotive-grade microcontrollers plus dedicated voltage regulators and power management ICs simplify the design of high-efficiency solutions.



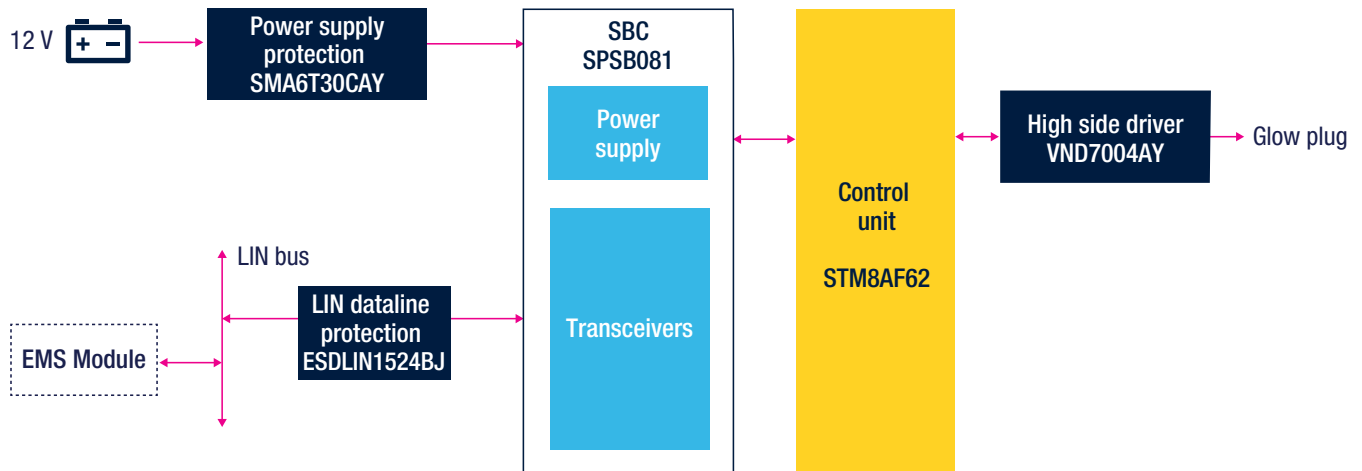
FIND OUT MORE

www.st.com/fuel-pump

GLOW PLUG CONTROL

A glow plug is a pencil-shaped piece of metal with a heating element at the tip. Despite its simple design and electronic content, it plays a fundamental role in diesel injection systems by igniting the fuel even when the engine is insufficiently hot for normal operation, thus reducing the cranking time to start the engine.

ST has a range of solutions based on our proprietary VIPower silicon technology that enable compact and robust glow plug control unit design.



FIND OUT MORE

www.st.com/glow-plug-control

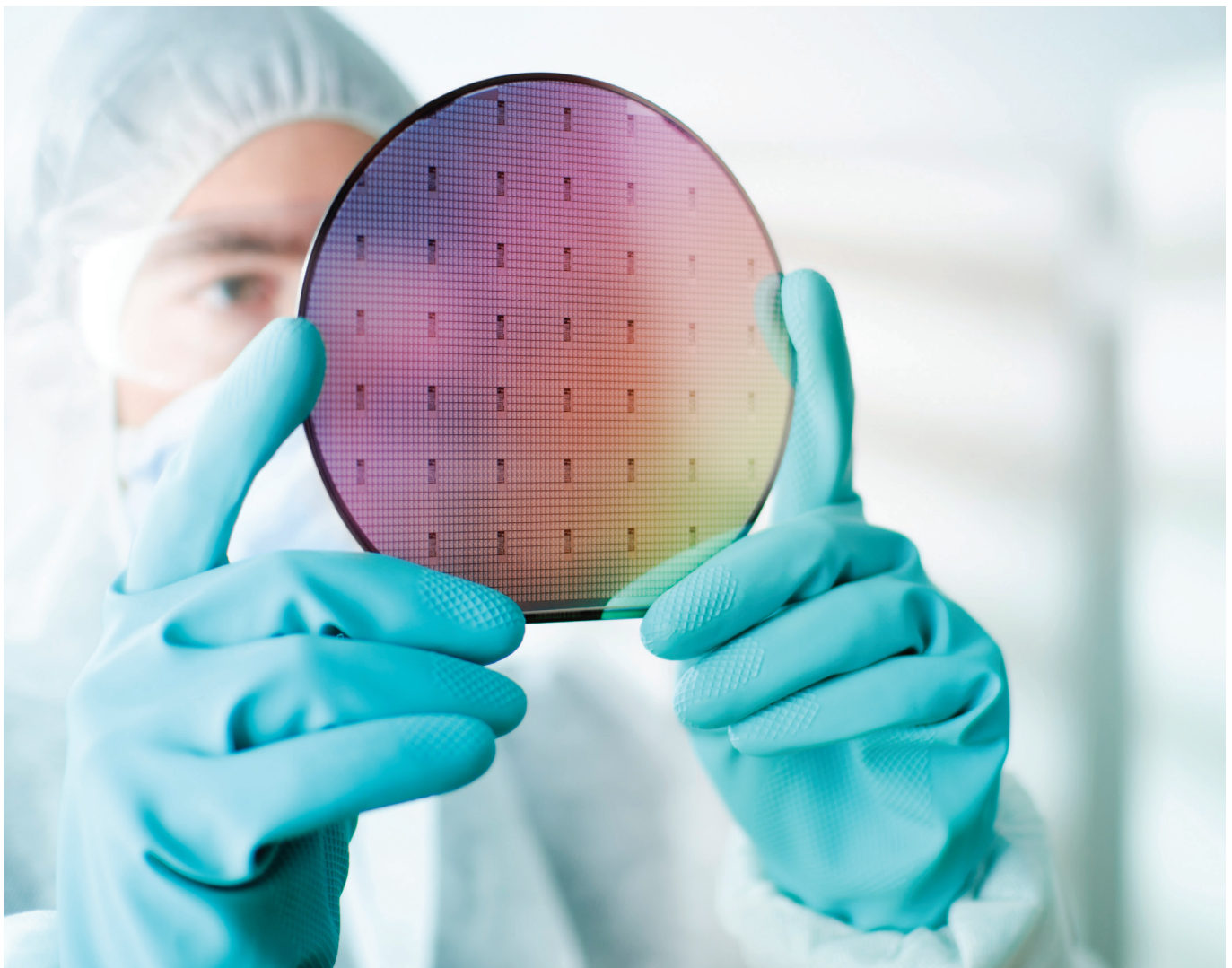
Key Technologies

RESEARCH & DEVELOPMENT AND MANUFACTURING

To keep its technology edge, ST maintains a strong commitment to innovation, with approximately 9,000 people working in R&D and product design and spending about 12% of its revenue in R&D. Among the industry's global technology leaders, ST owns and continuously refreshes a substantial patent library with over 19,500 active and pending patents. The company also uses its over 200 R&D partnerships to further foster its innovation.

ST 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), Si MOSFET, SiC MOSFET, Si IGBT, VIPower, Transil, Trench Schottky Diodes, 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

CMOS (Complementary Metal Oxide Semiconductor)

CMOS (Complementary Metal Oxide Semiconductor) is a pure digital technology invented in the 60's. It is largely used in digital products for processing purposes. Starting from CMOS, other technologies have been set up including BCD (Bipolar-CMOS-DMOS) used for mixed signal products, FD-SOI that allows to reduce silicon geometries below 28nm, and embedded NVM at the heart of MCUs. The robustness and versatility of this technology, present in billions of devices, makes it very suitable for all automotive applications.

FD-SOI / RF-SOI

Fully Depleted Silicon-on-Insulator, or FD-SOI, is a planar process technology that delivers the benefits of reduced silicon geometries while actually simplifying the manufacturing process. The buried oxide layer, specific to FD-SOI MOS, lowers the parasitic capacitances and efficiently confines the electrons flowing from the source to the drain, dramatically reducing performance degrading for leakage currents. This is a key advantage for pure digital products, especially when required to operate at high temperature, allowing very innovative power management techniques. The advanced ADAS platforms are based on this technology and produced in Crolles 300 facility on a 28nm node. Moreover, thanks to the tight electrostatic control of the transistor, FD-SOI is recognized as a leading technology for low-power, RF and millimeter-wave applications.

Associated with the high-density PCM embedded non-volatile memory, ST offers a unique platform for automotive applications.

Key applications include ADAS, RF switches and tuners, low-noise amplifiers, power amplifiers, monolithic integrated RF and FEMs (switches, LNAs, PAs and passives).

FD-SOI

NON-VOLATILE MEMORIES (eNVM)

ST has a strong background in non-volatile memories (NVM) and has developed embedded NVM technologies to enable real-time MCUs and other products that benefit from real-time access to NVM. Today, automotive volumes are at 90 nm and 40 nm technology nodes, and the new Stellar MCU family uses phase-change memory (PCM) to exploit the features of CMOS FD-SOI technology. This evolution to PCM places ST at the forefront of automotive MCUs.

ST standalone non-volatile memories (NVM) are also highly regarded in the industry, especially our automotive serial EEPROM, which is ideal for high-quality and flexible parameter storage, with a wide portfolio ranging from 1 Kbit to 4 Mbits. The automotive Serial EEPROM is robust, high-performance, and designed for intensive operation at high temperatures, making it suitable for all high-reliability applications. The EEPROM is AEC-Q100 qualified, screened through a specific high-reliability testing flow, and PPAP Level 3 compliant. The EEPROM is manufactured in 150 nm technology nodes and is progressively extending to 110 nm. The I²C, SPI, and Microwire buses are supported for three packages: SO8N, TSSOP8, and DFN8 up to 150°C.



EEPROM

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.

VIPower

Vertical Intelligent Power (VIPower) is a technology developed by ST and in production since 1991. VIPower technology provides 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, and mixed-signal designs. VIPower technology plays 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.

The new VIPower M0-9 SPI drivers feature full digital diagnostics with embedded ADC for load current sensing. These new devices implement sophisticated software logic that also simplifies AUTOSAR compatibility.

Designed to replace standard melting fuses in automotive power distribution systems, our new STi²Fuse smart switches feature wire harness protection on top of the typical high-side driver functions for additional savings on component and production costs, while extending EV range and reducing the carbon footprint of vehicles.



TRANSIL

TRANSIL is a key planar technology for our Automotive transient voltage suppressors (TVS) designed to protect automotive sensitive circuits against surges as defined in ISO 7637-2 and ISO 16750 also called load-dump (battery lines), ISO 7637-3 (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.

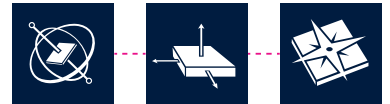


Data line ESD protection

ST's automotive data line ESD protection devices include transient voltage suppressors (TVS) and application-specific discrete devices that provide system level protection against ESD surges according to standard IEC 61000-4-2. ESD protection devices are manufactured using automotive-grade processes and qualified to AEC-Q101 standards. As such, they can address all automotive applications and domains including advanced driver-assistance systems (ADAS), vehicle-to-everything (V2X), CAN-FD, SerDes (serializer/deserializer), and Ethernet Base-T standards to name just a few, in order to achieve high level immunity with the very low clamping voltage. Moreover, ST offers innovative, miniature wettable flank DFN packages to ease Automatic Optical Inspection (AOI).

A growing and diversified portfolio of MEMS and sensor solutions

Enabling the transition to a sustainable Onlife era, ST offers an extensive MEMS sensor portfolio based on more than 25 years of experience and innovation. Moreover, our new generation of MEMS sensors features an embedded intelligent sensor processing unit (ISPU) to help meet the challenges of incorporating AI into energy-saving Edge-based applications.



Our sensors offer three key attributes:

- Capable of directly processing the data they capture and delivering meaningful insights in the local device, **smart sensors** reduce transmitted data and cloud processing requirements, thus lowering power consumption at the system level.
- Able to interface with other sensor applications, our **open sensors** let third parties benefit from ST's in-sensor processing innovations, while building an ecosystem to jointly create value for customers.
- Providing high-precision data that allows better quality decisions and makes interactions smoother and more natural, our **accurate sensors** also reduce factory calibration time and resources, which also reduces energy needs.

To reduce design costs and effort for a more rapid time to market, our comprehensive ecosystem includes helpful developer resources with ready-to-use boards as well as software tools and real-life example code.

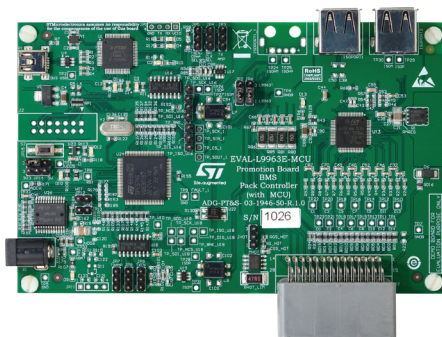
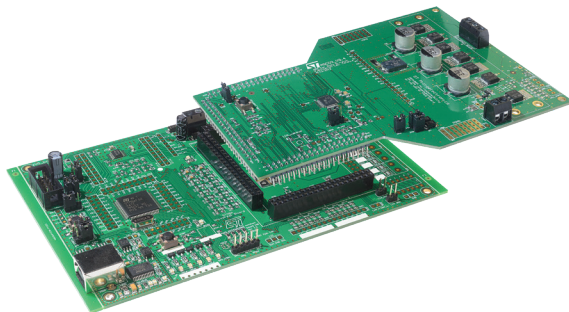
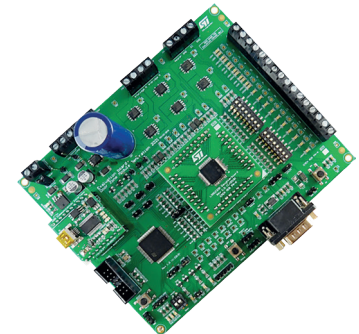
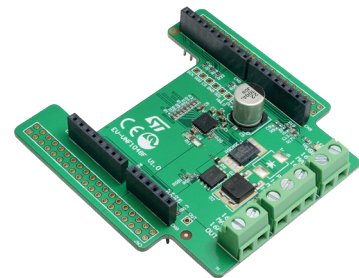
Development Tools

EVALUATION BOARDS, eDESIGN SUITE, AND SOFTWARE

ST provides a set of eDesign suites 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 provide schematics, BOM and Gerber files to facilitate your hardware design and demonstration software packages are also available..

Evaluation kits

Product evaluation kits help you to design, test, and calibrate your automotive application. A wide range of boards is available to evaluate the specific features of products and solutions in their applications. A complete set of documents and resources including circuit diagrams and bills of material as well as reference guides is available. Additional software including ready-to-use example code and user-friendly GUIs complete our offer.



FIND OUT MORE

www.st.com/automotive-evalboards

eDesignSuite

eDesignSuite is a comprehensive set of easy-to-use design-aid utilities ready to help you streamline the system development process with a wide range of ST products.



TwisterSIM

TwisterSIM is an off-line Electro-Thermal simulator for our VIPower automotive power devices. It helps shorten design solution cycle by enabling complex evaluations including load-compatibility, wiring harness optimization, fault condition impact and diagnostic behavior analysis and Dynamic Thermal performance.



STPOWER Studio

The STPOWER Studio dynamic electro-thermal simulation software offers comprehensive power and thermal analysis for a growing number of STPOWER devices. It helps users select the best power device for the specific application mission profile and predicts device behavior under given operating conditions.



Rectifier diodes simulator

With just a few clicks our on-line FERD & Schottky diode simulator lets you estimate power losses based on application waveforms and select the best components for your solution.



AC switch simulator

Our AC switch simulator provides graphs of estimated temperature and voltage blocking capabilities to so you can quickly determine the best switch for your solution.



TVS simulator

Simply specify the surge input waveform and system ratings to be protected and this intuitive simulator lets you sort and select the best TVS protection for your design.



FIND OUT MORE

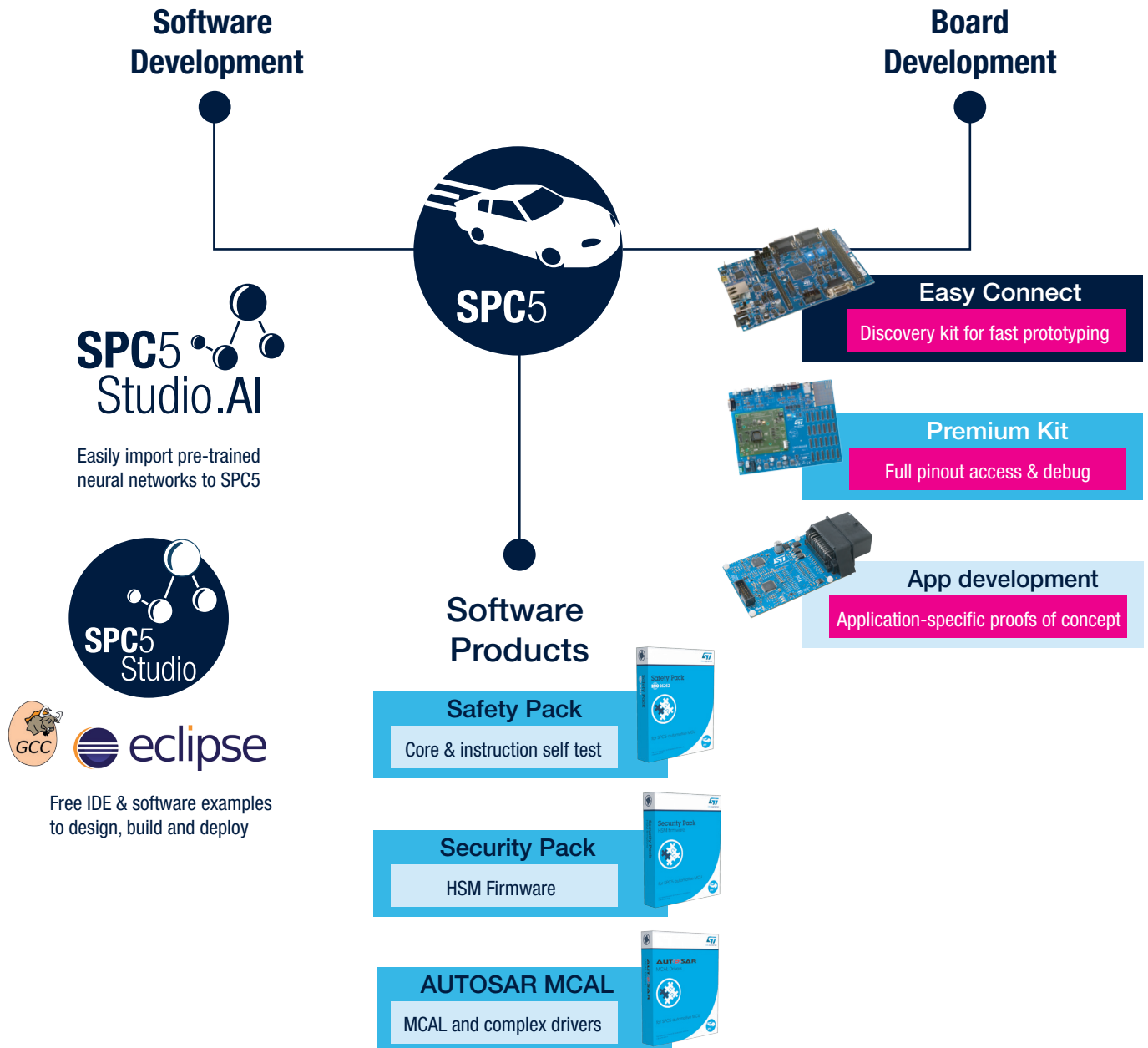
www.st.com/edesign

COMPREHENSIVE SPC5 AUTOMOTIVE MCU DEVELOPMENT ECOSYSTEM

A rich ecosystem with a full set of hardware and software tools allows developers to save time, simplify implementation, quickly prototype their application and benefit from ready-to-use boards and example code. ST offers a wide set of hardware kits ranging from quick evaluation tools to modular and professional boards for developing final proofs-of-concept.

Together with free downloadable SPC5Studio Integrated Development Enviroments (IDE), engineers can easily set up application projects in a short time. SPC5Studio contains a wide selection of example code for starting projects. Additionally, ST offers a set of licensed software packs addressing Safety, Security and AUTOSAR MCAL components.

ST's network of 3rd parties and partners complement the offer with hardware, such as debugger probes, and software tools including compilers and other services.



FIND OUT MORE

www.st.com/auto-sp5-mcu-evaltools

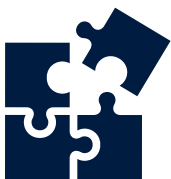
STELLARLINK FAST PROTOTYPING FOR AUTOMOTIVE MCUs

StellarLINK is a USB to JTAG passive debugger dongle for Automotive MCUs. It supports SR5, SR6, and SPC5 automotive microcontrollers and their evaluation boards. StellarLINK is Integrated into StellarStudio and SPC5Studio

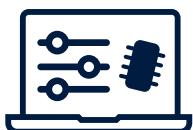
ST programmer & debugger



Supporting Stellar SR5, SR6, and SPC5 MCUs



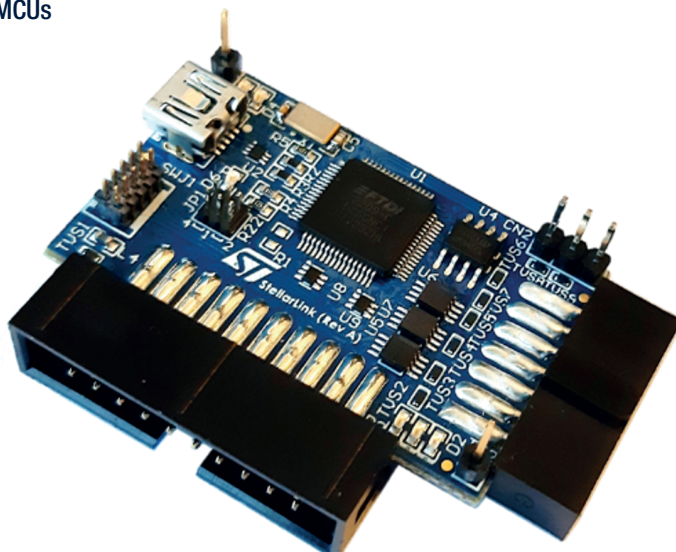
Plug & Play with evaluation boards



Extending Stellar & SPC5 ecosystem



Eco-friendly packaging



FIND OUT MORE

www.st.com/en/development-tools/stellarlink.html

SPC5 SOFTWARE TOOLS



SPC5Studio is a built-on Eclipse plug-in development environment offering a very intuitive and customizable framework to build and deploy embedded applications for SPC5 Power architecture 32-bit microcontrollers.

Integrating software development tools, device configuration tools and examples, SPC5Studio is a complete solution to speed up project development.

Available free for download on the [st.com](https://www.st.com) website.



SPC5Studio includes **SPC5Studio.AI**, a plug-in for Artificial intelligence-based applications, a seamless way to generate, execute and validate pre-trained NN models on automotive MCUs.

Pre-trained neural networks can be automatically generated into an efficient “ANSI C” library that can be compiled, installed and executed.

Pre-trained neural networks can be easily imported by SPC5Studio.AI from the most widely used deep learning frameworks, such as Keras, TensorFlow Lite, Lasagne, Caffe, ConvNetJS, and ONNX.

SOFTWARE PRODUCTS



SPC5 Security Pack provides basic capabilities to support root-of-trust (RoT) where private encryption keys are kept secret during the microcontroller lifetime using a dedicated location inside the OTP space. To further ensure application security, encryption and decryption functionalities are fully executed on the HSM core.



SPC5 Safety Pack is a comprehensive software package rigorously developed according to an ISO 26262-compliant development process, and helps developers achieve the required safety target, up to the most rigorous ASIL-D level. It includes a Safety kit for the Microcontroller Abstraction Layer (MCAL) as well as Core self-test programs that implement safety counter-measures to ensure compliance with MCU ASIL level requirements.



SPC5 AUTOSAR MCAL Driver offers a full set of Microcontroller Abstraction Layer software components in addition to Complex Device Drivers (CDD) to support specific hardware peripherals. MCAL software components are developed in house, through an ISO 26262-certified development process. ST's CDD and MCAL drivers are integrated by 3rd party partners with all the components required for the AUTOSAR architecture including basic software layer and OS, offering a complete off-the-shelf AUTOSAR solution.

ST Security Pack, Safety Pack and AUTOSAR MCAL Pack are licensed products.

AutoDevKit AUTOMOTIVE DEVELOPMENT INITIATIVE

AutoDevKit is a fast growing toolset for Automotive & Transportation Application Development. It allows design engineers to quickly build their prototype combining hardware, firmware and software in an easy way and fully supported by our community.

Our ecosystem offers a wide selection of Automotive MCU and devices covering several automotive applications:

- Battery management systems (BMS)
- Logistics and delivery robots
- AI on standard MCUs
- Internal and external lighting
- Power distribution
- Audio generation and AVAS
- Motor control: door control, side mirror, tailgate and seat adjustment
- HVAC, ventilation, and air quality
- USB type-C power delivery



Once the MCU platform and the functions needed for the application are selected, the developer can start from existing demo codes and customize them using high-level programming, without going into deep technical details.

The automatic pins configuration and the visual procedure enable an easy board assembling with the correct wiring and the embedded debug allows to get a working prototype quickly.



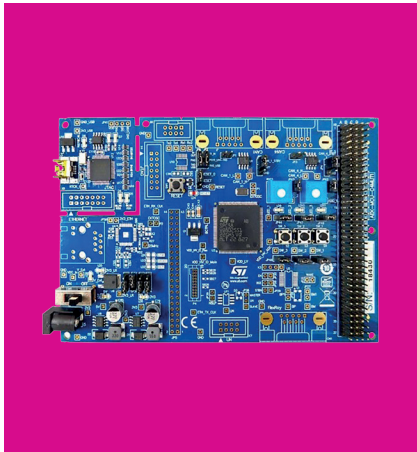
FIND OUT MORE

www.st.com/autodevkit

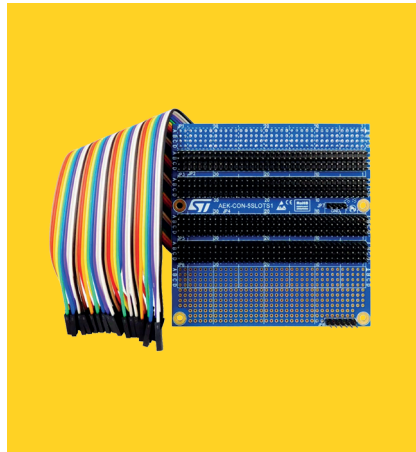
THE AUTODEVKIT ECOSYSTEM INCLUDES:

- MCU Discovery and Functional boards
- System solution and demonstrators
- Embedded software and firmware components and tools

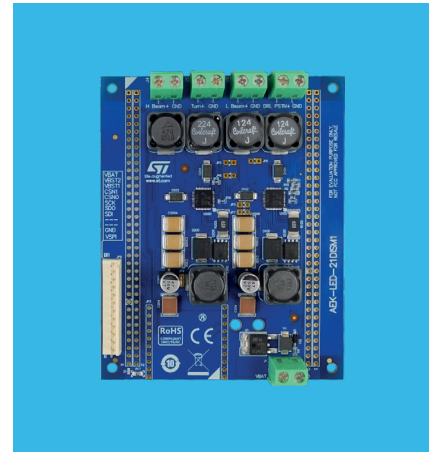
MCU Boards



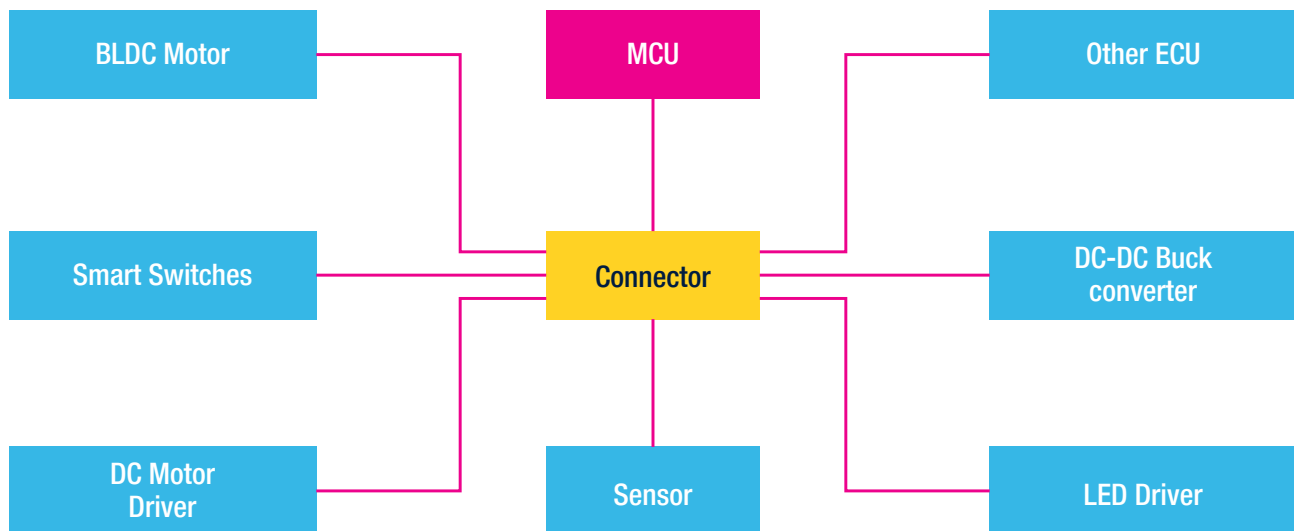
Connector Boards



Functional Boards



Solution /Demonstrator KIT



MCU + Connector + Functional boards

At STMicroelectronics
we create
technology that
starts with You



Order code: BR2311AUTOPICE

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