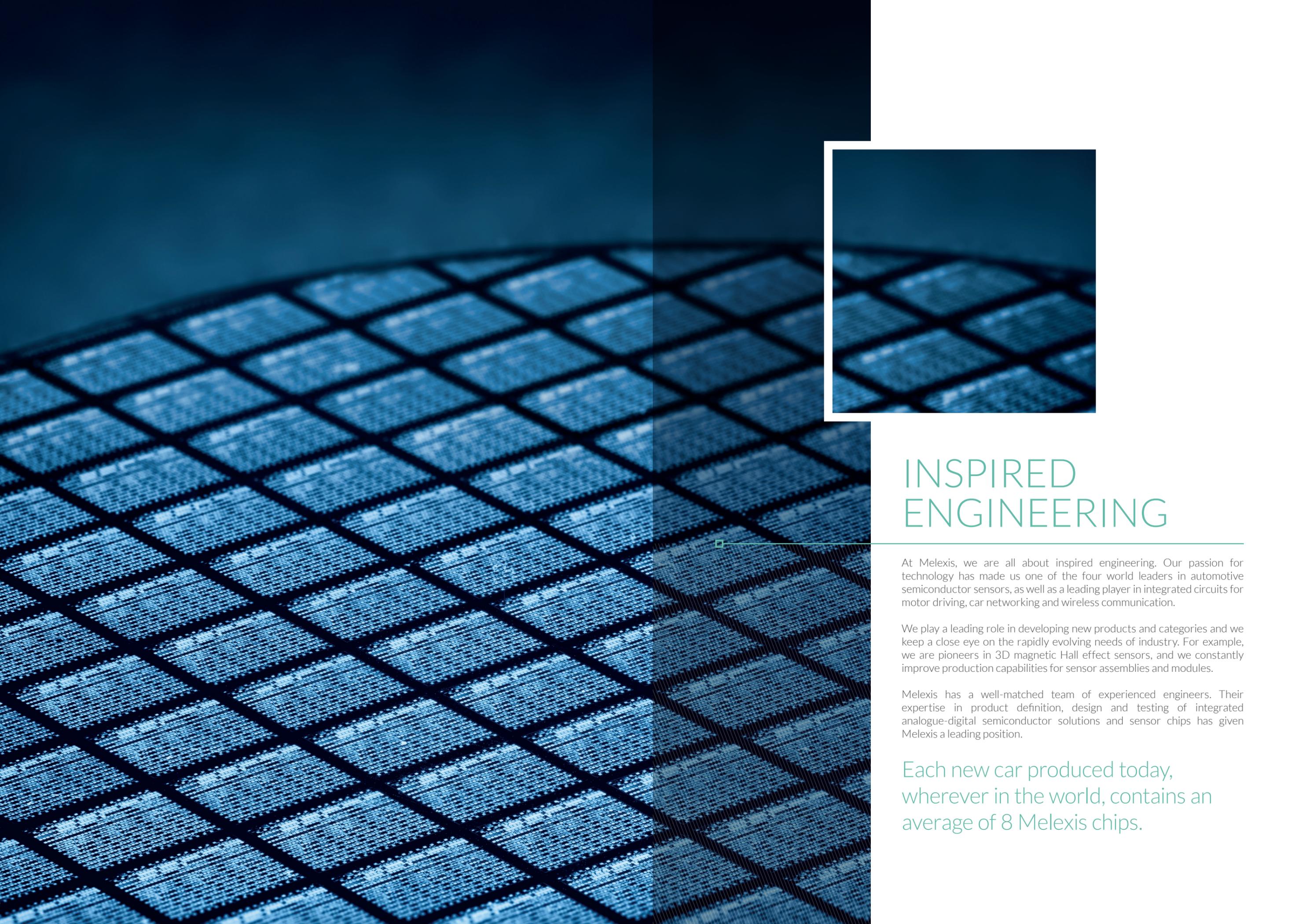


Melexis
INSPIRED ENGINEERING

A large, detailed microscopic image of a semiconductor chip, showing a dense grid of square cells. The image is in shades of blue and black, with a perspective that makes the grid recede into the distance. A smaller, white-bordered inset of the same image is positioned in the upper right quadrant of the page.

INSPIRED ENGINEERING

At Melexis, we are all about inspired engineering. Our passion for technology has made us one of the four world leaders in automotive semiconductor sensors, as well as a leading player in integrated circuits for motor driving, car networking and wireless communication.

We play a leading role in developing new products and categories and we keep a close eye on the rapidly evolving needs of industry. For example, we are pioneers in 3D magnetic Hall effect sensors, and we constantly improve production capabilities for sensor assemblies and modules.

Melexis has a well-matched team of experienced engineers. Their expertise in product definition, design and testing of integrated analogue-digital semiconductor solutions and sensor chips has given Melexis a leading position.

Each new car produced today,
wherever in the world, contains an
average of 8 Melexis chips.



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GREAT PEOPLE, GREAT TEAMS, GREAT RESULTS

We strongly believe in engineering with a purpose. Since the birth of the company in Belgium in 1988, we have grown to over 1,400 employees in 14 countries, all passionate about creating the future. This shared vision throughout the company has enabled us to grow. Our people are co-creators and they help shape the company culture every day. It is this culture that has allowed us to perfect the link between great people, great teams and great results.

We take pride in our track record as an industry leader in terms of innovation, operational excellence, growth and results. We remain committed to lean ways of working that have brought us where we are today. This way, we create enduring value for customers, shareholders and other stakeholders.

OUR STRATEGY

Customer focus and a consistent strategic vision have been the basis of Melexis' growth for many years. Creating innovative products and bringing them into production in a timely and reliable way is essential to our success and that of our customers. A combination of team spirit, a shared set of core values and no-nonsense culture allows our staff to offer high-quality, leading technological solutions to customers.

We focus on a product's complete lifecycle. That is why we maintain close relationships with our customers and our suppliers. We aim for strong continuity in these collaborative activities, especially in the field of development, engineering and technical support. This allows us to go beyond developing a good product. It offers us crucial insight and the big-picture perspective needed to develop applications that anticipate future plans and needs, new trends and emerging markets.

Recognitions



FORBES LISTS MELEXIS IN TOP 50 MOST TRUSTWORTHY COMPANIES IN WESTERN EUROPE

Forbes screened more than 1,100 listed non-financial companies and gave Melexis a place in the top 50 in 2016, recognizing our consistently transparent accounting system and solid corporate policy.

TECHNOLOGY IS OUR DRIVING FORCE

Automotive is our largest market, and today we are in the forefront of technological advancement in the sector. Looking forward, we are striving to make cars, trucks and off-road equipment safer, more reliable and more energy efficient.

Our ambition is not limited to the automotive industry, however. Melexis is also active in smart appliances, home automation, and the industrial and medical sectors. We never develop technology for technology's sake. Rather, we create products that make a difference in someone's life, whether it is a body temperature sensor or an in-vehicle network solution.

SUSTAINABLE AT HEART

We see increasing concern for safety and sustainability in the world, two areas in which we have been active for many years. From magnetic sensor and sensor interfaces, to wireless and actuators, we are constantly innovating to create more sustainable and more reliable vehicles. The Melexis environmental policy strives to keep our environmental footprint as small as possible. We take our responsibility to both people and our planet very seriously.

Our environmental policy is based on four principles:

- **Sustainable development:** the development of products and processes that have a minimal impact on the environment, now and in the future.
- **Prevention is better than cure:** we design products that are 'safe at launch' and 'right first time', maximizing the value of the effort and materials used.
- **The total environmental impact counts:** production (including energy consumption), use and end-of-life disposal have as little effect as possible on the environment.
- **Open contacts with all the stakeholders:** everything we do contributes to our corporate social responsibility, with team members playing an active part. This positive attitude helps to determine the financial and technological success of the company. We are proud of our daily efforts to produce less waste, improve efficiency and contribute to building a sustainable future.





CUSTOMER-DRIVEN INNOVATION, THE MELEXIS WAY

For Melexis, it's not just about the technology, but the positive difference that technology can make in a person's life, whether it's in using a body temperature sensor or an in-vehicle networking solution. Our quality mission statement sets out our aim:

“Smart solutions that enable innovation and strengthen the confidence of our customers.”

Technological innovation cannot happen in isolation. Our stakeholders directly inspire all our products. That's why we constantly interact with our customers to understand their needs and demands. And these we transform into products. This customer focus is the key to our success.

THE MELEXIS PRODUCT RANGE



The jellyfish

Some jellyfish have ocelli: light-sensitive organs that do not form images but which can detect light and are used to distinguish up from down, according to sunlight shining on the water's surface. The box jellyfish has 24 eyes, two of which are capable of seeing colour, and four parallel information processing areas that act in competition, supposedly making it one of the few creatures to have a 360-degree view of its environment.



DESIGN WITH A PURPOSE

Smart electronic systems continue to have a big impact on the automotive sector. In modern cars, many simple tasks have been taken out of the driver's hands, improving the driving experience, increasing comfort and becoming more energy-efficient and safer. This development is only possible because of technologies that interact directly with the immediate environment. The latest generation of cars is equipped with new systems that help avoid lane departure, maintain a safe distance from the vehicle ahead and brake automatically in an emergency.

These developments are no longer limited to the automotive sector. Everyday objects are also becoming more energy-efficient and safer through more intelligent functionalities and better communication. For systems to be able to detect/sense their environment in real time what is required is not just secure data communication with the right transfer speeds, but also precise control and remote actuation. Detecting, processing, actuating and communicating have become familiar concepts in every industry.

NO AUTOMATION WITHOUT SENSORS

The trend towards more autonomous and more hybrid and electric vehicles strengthens the demand for sensors. Sensors play a crucial role in the transition to the fleet of tomorrow, since high-tech vehicles must be able to process a wide range of parametric data, such as speed, pressure, temperature, positioning and proximity detection. This so-called 'intelligent observability and controllability' is a challenge that Melexis has taken on with professional know-how and enthusiasm.

Sensors make many of the drive, comfort, and safety applications in modern vehicles possible. Air-conditioning, particulate traps, exhaust after-treatment systems and electronic stability control systems are just a few examples of applications that simply could not exist without the extensive use of sensor technology.

SENSE

The hammerhead shark

This god of the ocean represents our SENSE products. Through its "hammer" shaped head it is capable of electrolocation to detect prey. The process uses specialized electroreceptors to detect and locate the source of an external electric field in its environment.



SENSE

Sensors detect magnetic, thermal, mechanical and optical stimuli and convert measurement of these physical phenomena into an electrical signal. Without the use of these sensors there would be no automation.

The Melexis range of magnetic sensors offers solutions for robust and reliable contactless switches, replacing traditional mechanical switches (which are large, expensive and unreliable) for applications such as seat-belt buckles and brake and clutch pedals. Thanks to the improved properties of programmable switch and latch ICs, our customers benefit from increased flexibility in both design and manufacture. Typical uses for these sensor devices are for determining movement, position and speed, as well as current sensing. As these magnetic sensors perform contactless measurements, they are immune to wear and tear, dust, dirt, humidity and vibration.

Melexis has developed advanced pressure sensors, based on micro-electro-mechanical system (MEMS) whereby the pressure causes a temporary and reversible distortion in a mechanical structure etched into the IC. MEMS technology is also used in products such as Melexis' own far infrared thermal sensor array. Melexis technologies, such as proximity sensors and Time-of-Flight (ToF) 3D-cameras are exactly what early users of Natural User Interfaces are looking to integrate.

Position sensors

We are a pioneer in programmable angular and linear Hall sensors for rotary, linear, and joystick motion.



90365



90364



90393



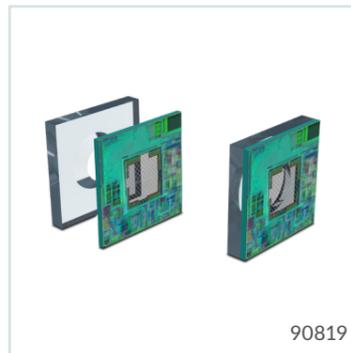
90288

Pressure sensors

Wide range of versatile pressure sensor solutions.



90809



90819



91804

Temperature sensors

To measure absolute temperature.



90614



90640



92242



92231

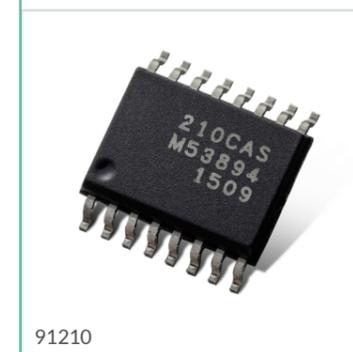
Latch/switch
Unique latch/switch family with lateral sensitivity.

Current sensors

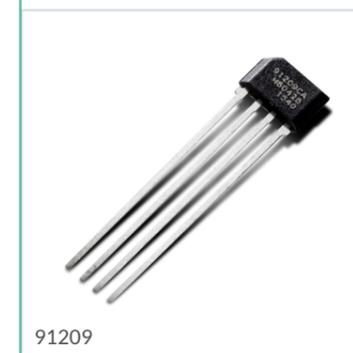
Based on renowned Hall effect technology.



91208



91210



91209

Optical sensors

Innovations in optic sensors.



75305



75023



90217



90254

Speed sensors
Solutions for speed measurement.

Sensor interfaces

To interface external sensor elements with other devices.



90320



90342



75030/31



75308

AUTOMOTIVE APPLICATIONS

■ Automotive interior and exterior lighting

It is becoming increasingly common in modern automotive design for headlamps, as well as rear and side lights, to utilize LEDs. Discover our innovative car interior and exterior lighting solutions.

■ Brake pressure sensor

Brake pressure sensing is used in the dynamic brake control (DBC) systems of vehicles to improve brake effectiveness in emergency stop situations.

■ Cockpit light dimming

LED cockpit lighting and interior lighting system that enables feedback loops for controlling dimming settings of cockpit instrumentation lighting, so consistent color and brightness levels can be maintained.

■ Comfort sensing

Accurate and low-cost way for measuring the body temperature of vehicle occupants in order that climate control systems can operate with maximum effectiveness and comfort can be assured.

■ EGR high temperature sensor

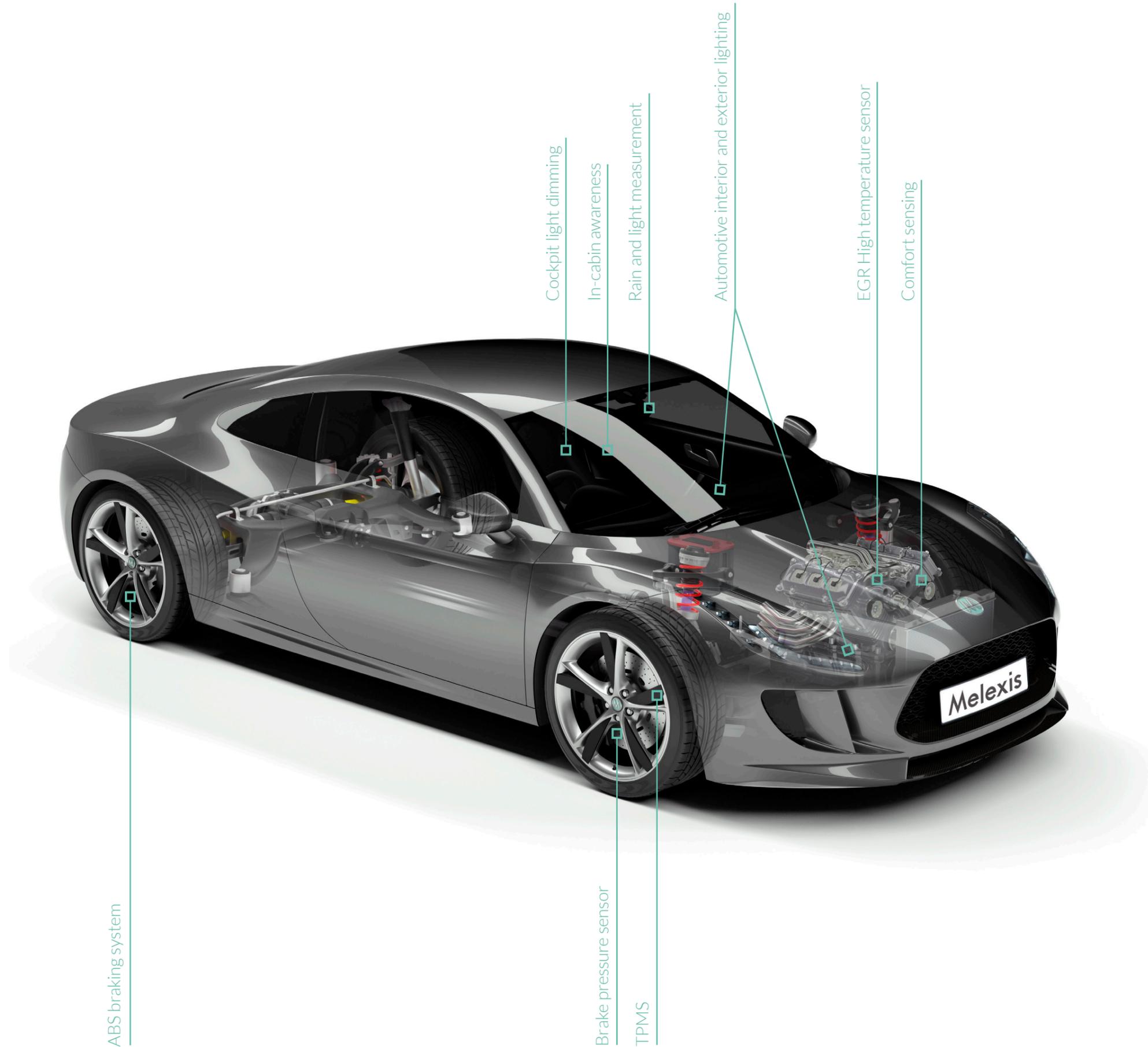
This emissions reduction solution is able to deal with high temperature levels, sensing up to 1,300°C, that characterize automotive environments.

■ ABS braking system

Stopping a vehicle quickly on a slippery road surface can prove to be very challenging. The anti-lock brake system (ABS) stops the wheels from locking when the brakes are applied.

■ In-cabin awareness

Optical ToF technology is used for gesture recognition so that an array of different in-cabin operations can be undertaken - like accepting/rejecting calls, adjusting the climate control system, changing the volume setting of the music system, accessing the navigation system, ... ToF imaging apparatus is also able to map the location and size of vehicle occupants in 3D.



OTHER MARKETS

Our strengths in the automotive sector don't prevent us from looking further. Cross-pollination with other markets offers us opportunities that allow us to continue to grow and innovate. We are also active in the smart appliances, home automation, industrial and medical sectors. Furthermore, we are witnessing growth in the market for 'smartly integrated actuators', which are used, for instance, in robotics.



Bulldozer



Drone



Forklift truck



Extractor hood



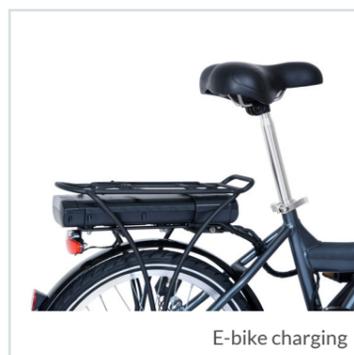
DVD player



Garage doors



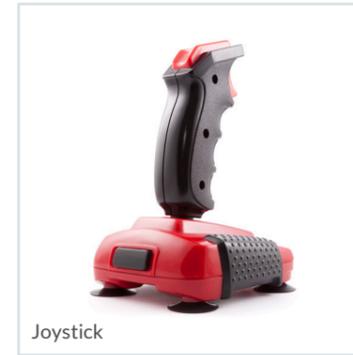
Handheld thermometers



E-bike charging



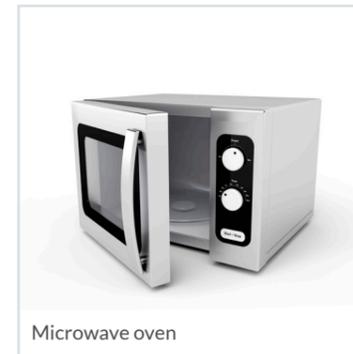
Ventilation fan



Joystick



Robot arm



Microwave oven



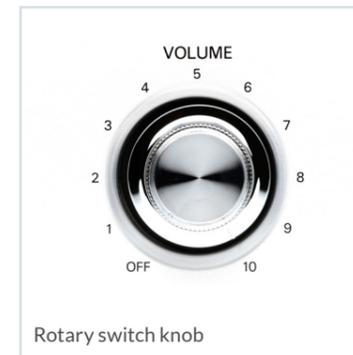
Robot humanoid



Security camera



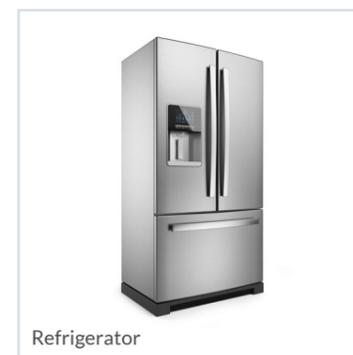
Printer



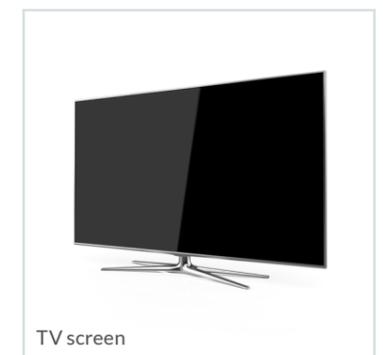
Rotary switch knob



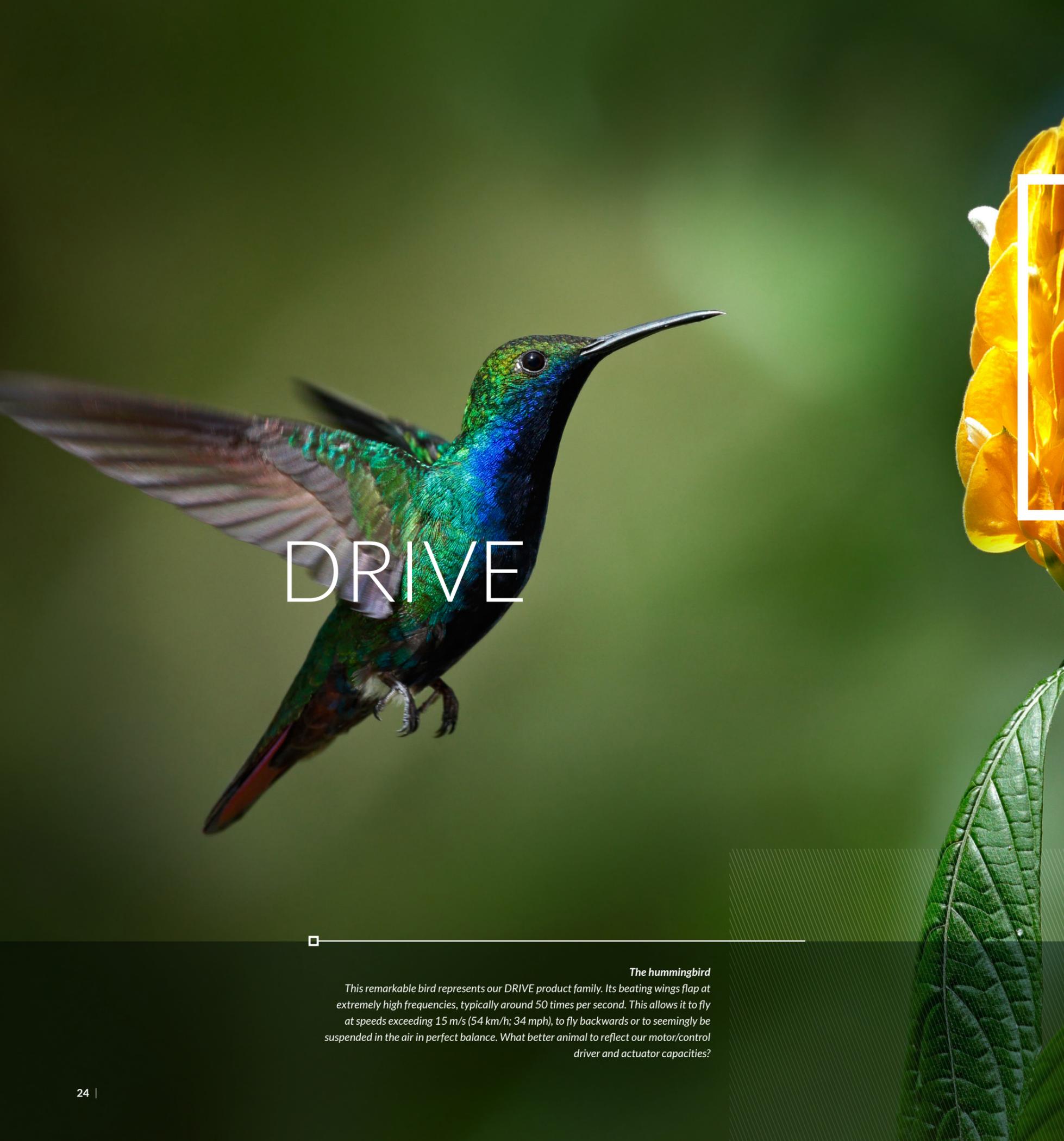
Kitchen stove



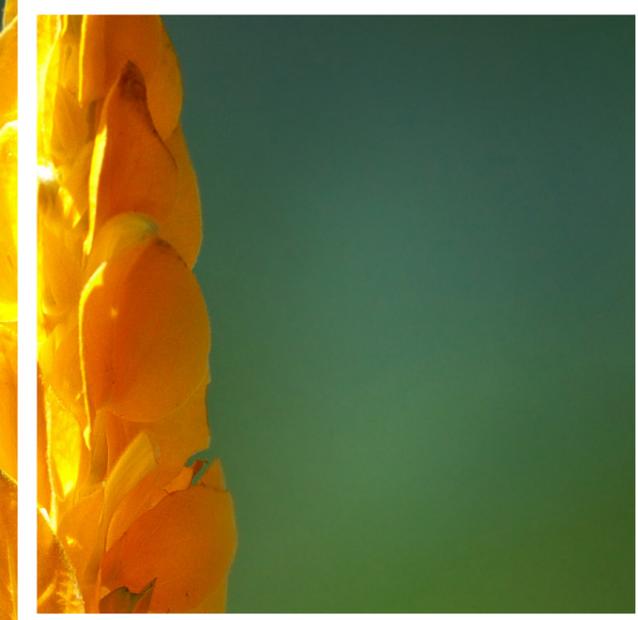
Refrigerator



TV screen



DRIVE



DRIVE

Melexis powers the interaction between systems. Our highly integrated products make you drive smarter.

A vehicle's ability to gather information from its surroundings is not enough as such. True interaction only occurs in combination with driving and activating. Smart motor drivers for water pumps, oil pumps and powerful fans contribute to more energy-efficient systems. All the necessary components, such as a physical LIN transceiver, LIN controller, voltage regulator, and 16-bit micro-controller, along with support functions such as data conversion, current modulation and LED color, and ageing compensation are integrated into the chip.



The hummingbird

This remarkable bird represents our DRIVE product family. Its beating wings flap at extremely high frequencies, typically around 50 times per second. This allows it to fly at speeds exceeding 15 m/s (54 km/h; 34 mph), to fly backwards or to seemingly be suspended in the air in perfect balance. What better animal to reflect our motor/control driver and actuator capacities?

With its patented TruSense™ technology, Melexis has carried out pioneering work on smart motor drivers and it is now applying this expertise to bring outstandingly effective solutions to the market.

Fan drivers

For cooling down CPUs & power converters and for controlling air streams.



US90A/US91A

LED drivers

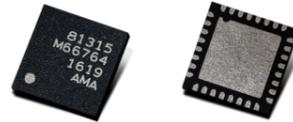
LED-driver solutions for automotive.



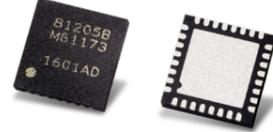
81106/8/12

Embedded motor drivers

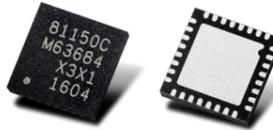
For pumps, blowers, fans, positioning BLDC actuators, ...



81310/15



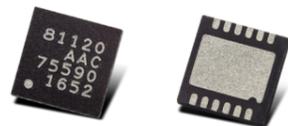
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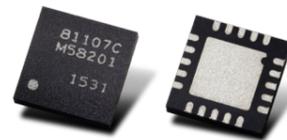
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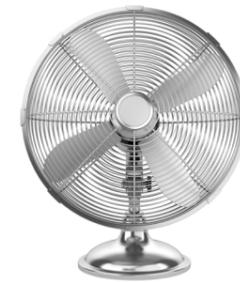


81120



81107

OTHER MARKET APPLICATIONS



Ventilation fan



Drone



Printer



Wireless phone charger



Refrigerator



HVAC sensor fans

Dashboard CPU cooling fans

Multimedia CPU cooling fan

ADAS CPU cooling fans

Seat fans

LIN HVAC flap stepper

LIN ambient lighting

Automotive passive start

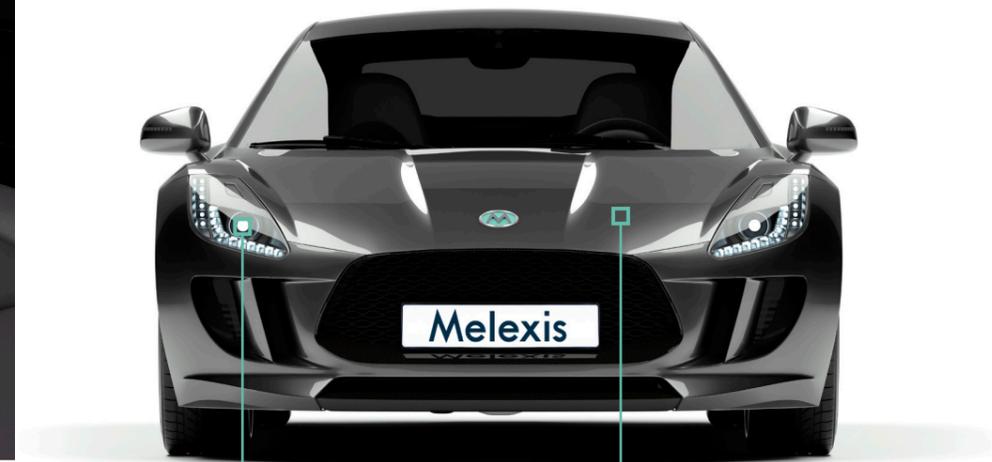
AUTOMOTIVE APPLICATIONS

■ Cooling solutions

- Cooling fans in several places within the car, including technology to increase motor efficiency, reduce acoustic noise and EMC noise.
- Smart cooling valves with position sensing for efficient powertrain cooling of battery or engine.
- Smart cooling flaps and fans for in-cabin temperature regulation for driver and passengers.

■ LIN RGB ambient lighting

LED drivers deliver the precise control of RGB lighting needed to personalize cabin interiors, improve driver attention and enhance the overall driving experience.



LED headlamp fans

Power management cooling fan (DC/DC converter, battery cooling)



COMMUNICATE

*The ant
Ants communicate in a unique manner, through pheromones - scented chemicals. They are detected at the tips of the ants' super sensitive antennae and tell the ant which way to turn with the varying pheromone strength.*



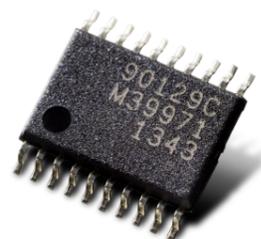
COMMUNICATE

Melexis builds bridges between components. We provide pathways between them, allowing them to communicate in a clear and fast way, whether wired or wireless.

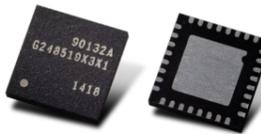
Recently, products have been used in tire pressure monitoring systems (TPMS), remote or passive keyless entry (RKE/PKE), and in infotainment systems using near field communication (NFC). In addition to TPMS, wireless connectivity is a key technology in various areas of the automotive and industrial markets. In home and building automation, Melexis ICs are used worldwide in remote controls for garage doors, access control, intruder alarms and increasingly the Internet of Things, for example smart meters.

NFC sensors

Designed to support a large scope of protocols.



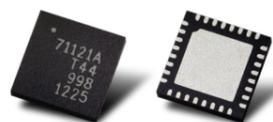
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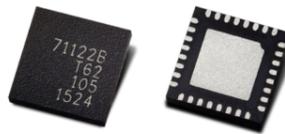
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Radio-frequency receivers

For TPMS, keyless entry and industrial, scientific and medical applications.



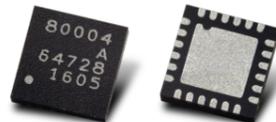
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71122

LIN system basis chips

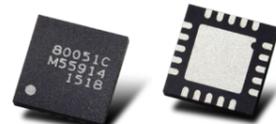
Meeting all your single wire bus system requirements.



80004/2



80050/30



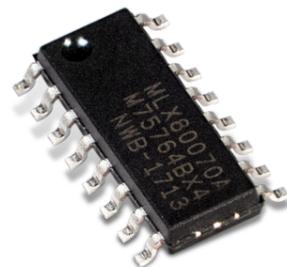
80051/31

CAN system basis chips

Meeting all your single wire bus system requirements.



8056



80070



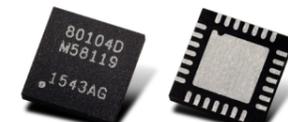
74190

Keyless go & start

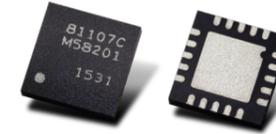
High power low-frequency (LF) drivers and built-in immobilizers.

Switch controllers

Fully integrated LIN slaves for switch or similar IO Control/Extension applications.



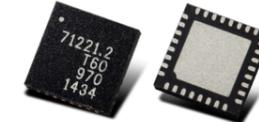
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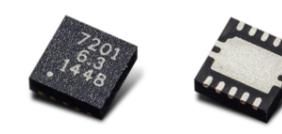
81107/9

Radio-frequency transceivers

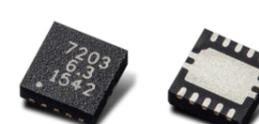
For keyless entry, wireless networking and two-way remote controls.



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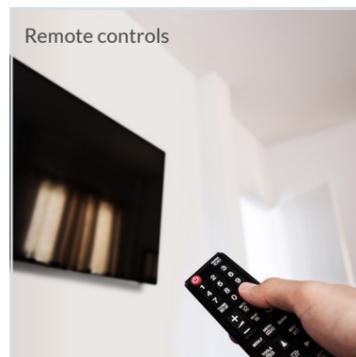
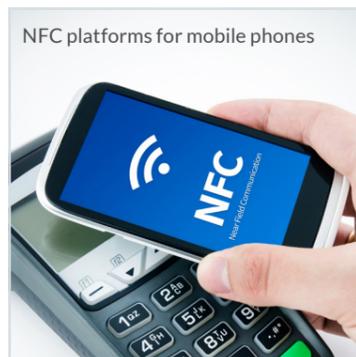
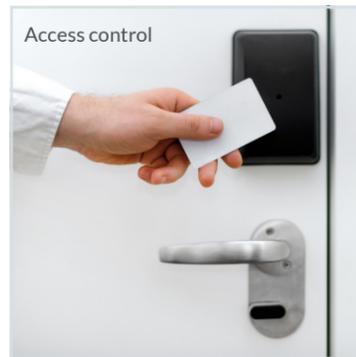
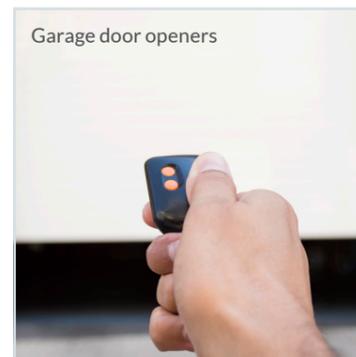
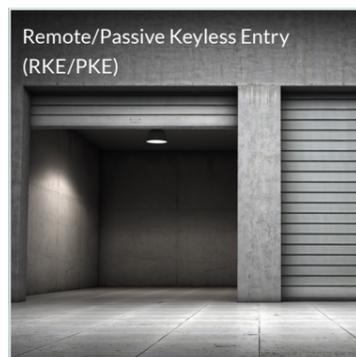


72036

Radio-frequency transmitters

For industrial, scientific and medical applications.

PRACTICAL APPLICATIONS



CONCLUSION

Melexis products allow systems to become more 'aware' and interact directly with their surroundings. The Melexis strategy is focused on innovation in both its new and established product ranges, allowing us to take advantage of beneficial market developments in sectors including automotive, industry, medical, and home and building automation. With our expertise in product definition, design, and testing for integrated analog or digital semiconductor solutions and sensor chips, the company is sure to maintain its commanding market position.



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-  Research & Development
-  Sales & Applications
-  Manufacturing



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