

A wireframe model of a car's front end, including the hood, headlights, and grille, rendered in a glowing blue and cyan color. The model is composed of a network of interconnected lines and points, with some points highlighted in orange. The background is a dark blue gradient with faint, scattered orange dots.

**INNOVATION
WITH PURPOSE**
AUTOMOTIVE OVERVIEW

ALLEGRO MICROSYSTEMS IS REDEFINING THE FUTURE OF POWER AND SENSING SEMICONDUCTOR TECHNOLOGIES.

We are passionate about developing intelligent solutions that give our customers a competitive edge and move technology—and the world—forward.



GLOBAL LEADER IN POWER AND SENSING SOLUTIONS

- Development, production and marketing of sensor and power integrated circuits
- Differentiated product portfolio built on proprietary process technology
- Flexible, global manufacturing model
- Global sales, support and tech centers
- Strong financial performance, investments in innovation
- Focus on sustainability and safety (compliant with ISO 9001 & IATF 16949, ISO 14001, RoHS, ISO 26262)
- Aligned to megatrends in ADAS, hybrid/EV, autonomous cars, industry 4.0

11 BILLION SENSORS SHIPPED ALL TIME

>350 ACTIVE US PATENTS

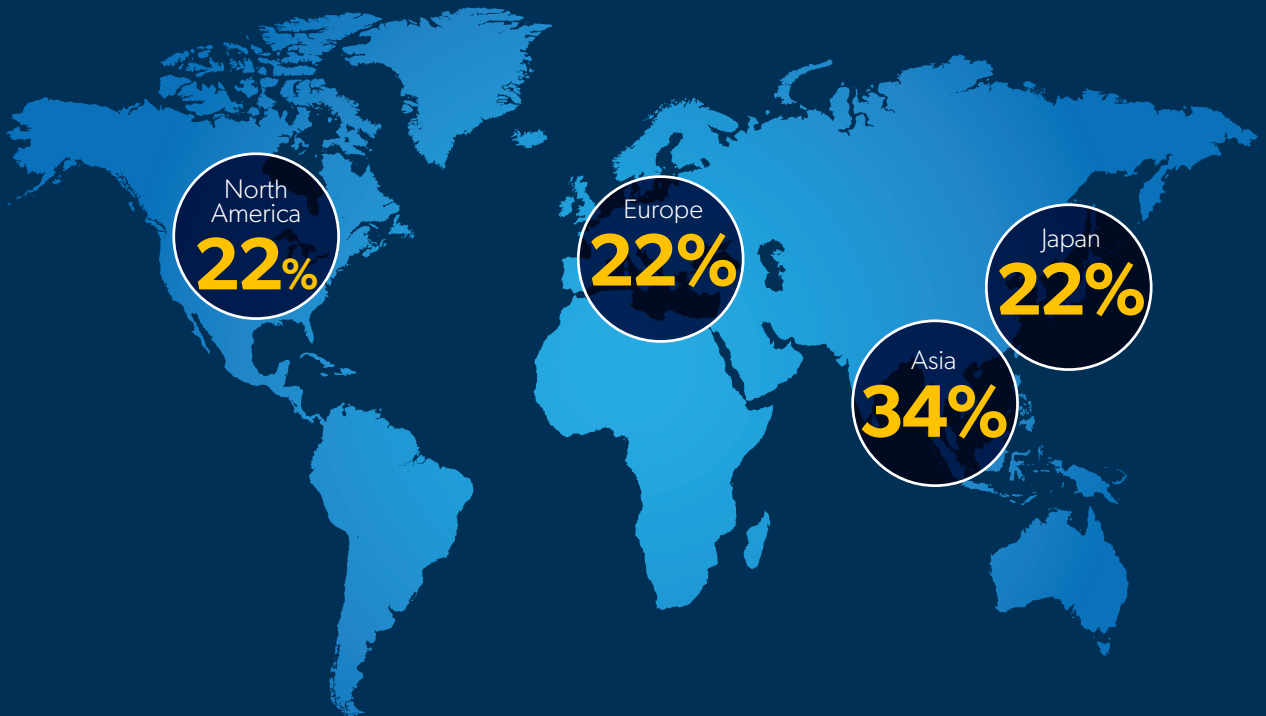
WORLDWIDE AUTOMOTIVE MARKET PRESENCE

73% automotive sales

Over 9 Allegro ICs
in the typical vehicle



TOTAL ALLEGRO SALES BY MARKET



ALLEGRO AUTOMOTIVE SALES BY REGION



TECHNOLOGY FOR ALL AUTO APPLICATIONS

EFFICIENCY

- Camshaft
- Crankshaft
- Start/Stop Systems
- Battery Cooling Fans
- Inverter & DC/DC Converter
- HVAC Systems and Pumps
- On-Board Charger
- Transmission/E-Clutch

SAFETY

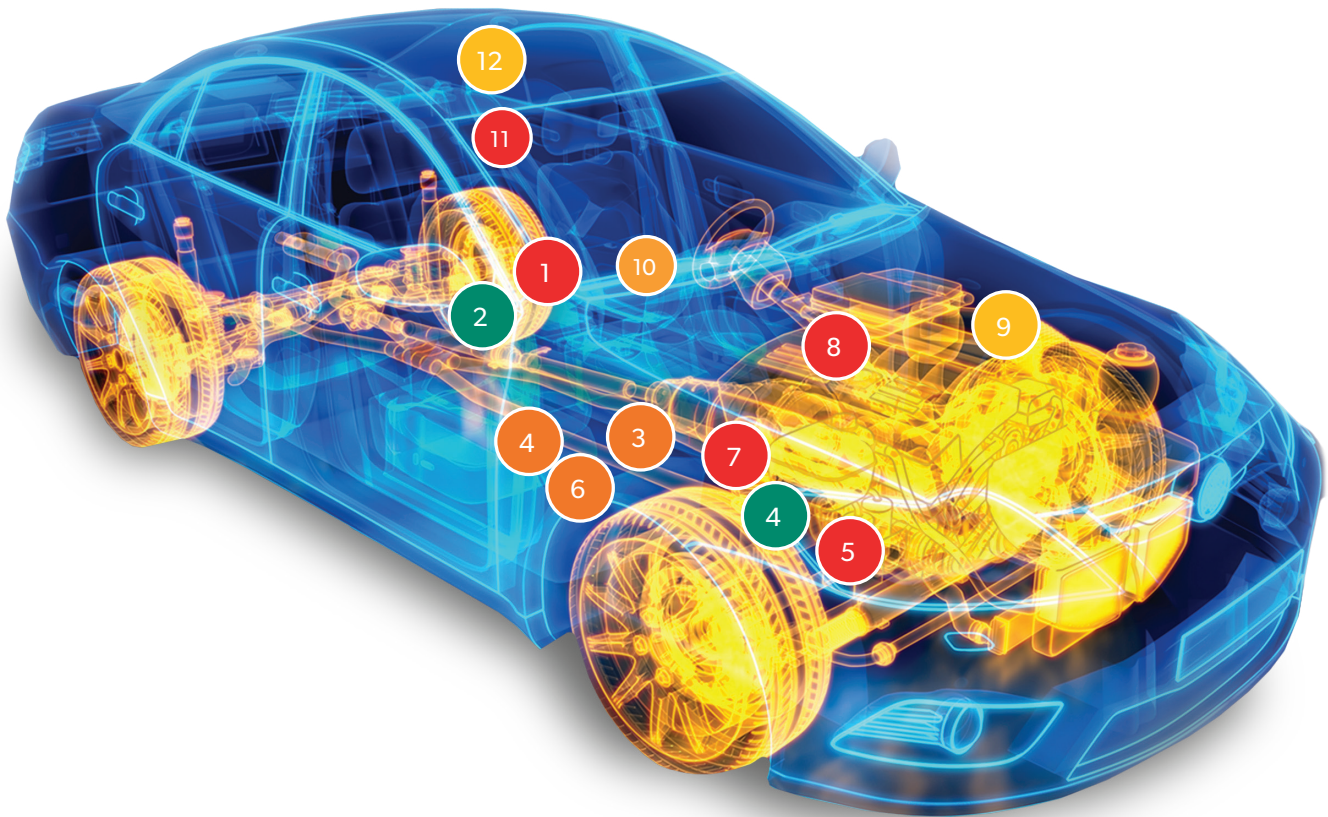
- Power Steering Systems
- Anti-Lock Brake/Stability Control
- Seatbelt
- Seat Position
- Electric Parking Brake

COMFORT

- HVAC Systems
- Infotainment
- Heads Up Display
- Closure Systems
- Lighting
- Window Lift Motors
- Trunk Latch, Auto Trunk Open
- Seat/Lumbar Motors

DEEPLY INTEGRATED IN CONVENTIONAL VEHICLES

Over 80 Allegro ICs in common luxury car platforms

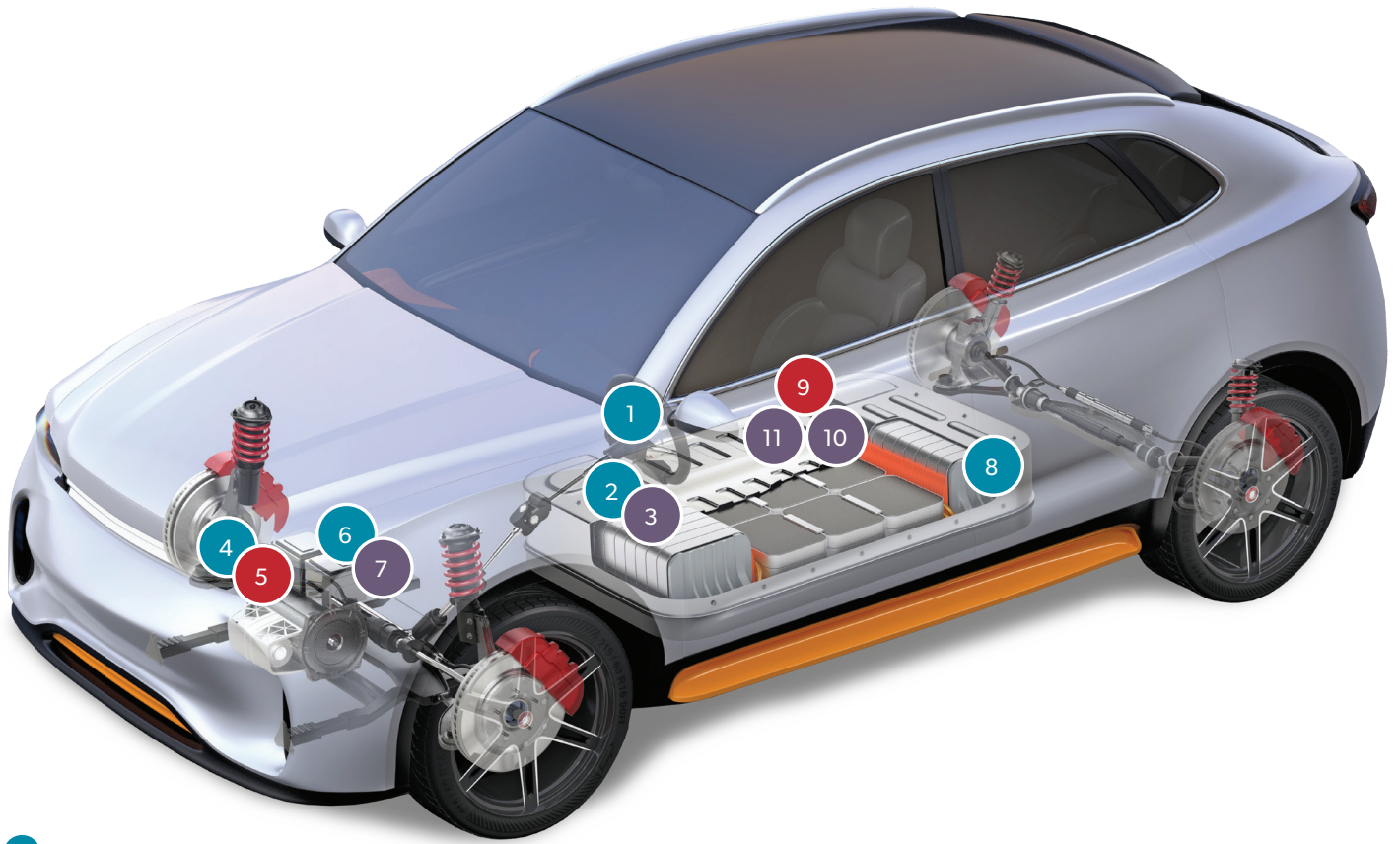


- Body and Convenience
- Conventional Powertrain
- Safety Applications
- Hybrid / xEV Solutions

- 1 PMICs / Custom Infotainment ICs
- 2 Blower Motor
Air Mix
- 3 Camshaft Sensors
Crankshaft Sensors
VVT Motor
- 4 Water / Oil / Fuel Pumps and Fan
Turbochargers
- 5 Headlight Position / Motor Drive
- 6 Gear Position / Speed
Clutch / Fork Position
Neutral Safety Switch
- 7 Brake Light (Pedal) Switch
Brake / Accelerator Pedal
- 8 Window Lift Motors (Anti-pinch)
- 9 Wheel Speed / ABS Sensors
EPB Motor Drive / Position / Current
- 10 EPS Torque Sensor
EPS Motor Drive / Current / Position
EPS Hand Wheel Position
Shifter Position / PRNDL
ASIL Grade PMICs
Steering Lock
- 11 Trunk Latch Position / Auto Trunk Open
- 12 Seat Position Detection
Seat Motor Commutation
Seat Belt Buckles
Seat Belt Pre-tensioners
Seat Cooling Fan

ENABLING THE CAR OF THE FUTURE

Allegro solutions widely used in 48V and xEV applications



- Current
- Power IC
- Speed / Position

- | | | |
|------------------------------------|---|---|
| 1 Battery Monitoring | 5 Shaft Position of High Speed Traction Motor | 9 Commutation Digital Position Sensors
High Speed Angular Position Sensors |
| 2 DC/DC Converters | 6 Integrated Starter Generator | 10 60-80V BLDC Gate Drivers
DC/DC PMICs |
| 3 DC/DC Regulators | 7 DC Gate Driver For Field Steering | 11 48V HVAC, Turbo, Pumps |
| 4 Motor Inverter, In Phase Sensing | 8 On Board Battery Charger | |

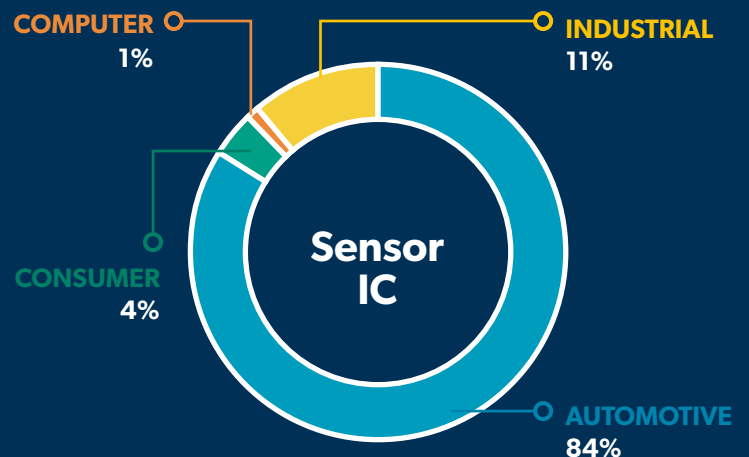
ALIGNED TO TRENDS IN ADAS, HYBRID/xEV, AUTONOMOUS CARS

- Superior safety for ADAS and autonomous vehicles, including ASIL D certification
- High levels of integration for redundancy, including multi-die packages, monolithic sensor technologies (Hall and xMR) for heterogeneous diversity
- Market leading, low electrical noise sensors and motor drivers reduce undesired noise in electric motors
- Disruptive, high voltage, low power loss current sensor ICs capable of sensing 100 mA to 1000 A currents
- Application-Specific ICs to keep people safe when short circuits occur in electric vehicles/electrical systems



#1 WORLDWIDE SUPPLIER OF MAGNETIC SENSOR ICs AND AUTOMOTIVE MAGNETIC SENSOR ICs

- 24% market share for magnetic sensor ICs¹
- 29% market share for automotive magnetic sensor ICs¹
- Shipped more than 1 billion gear tooth sensor (GTS) ICs
- Optimized 2D (Vertical Hall, GMR, TMR) and 3D ICs
- Self-programming, intelligent sensor ICs
- Innovative package technology with:
 - Integrated magnets and passives
 - Dual die ASIL packages
 - Integrated conductor HV current ICs



Allegro magnetic sensor IC business by market

¹ Magnetic Sensor Market and Technologies report, Yole Développement, 2017.

INNOVATIVE INTELLIGENT POWER OFFERINGS

- Proprietary sensorless and FOC BLDC control embedded algorithms that save **space and shorten design cycles**
- Strong focus on **safety and redundancy**—ASIL PMICs and ASIL gate drivers are **green auto start/stop compliant**, first to market phase disconnect
- 60V and 100V BCD for 48V automotive systems
- High efficiency switching regulators and LED driver solutions for automotive
- >65 active patents for power ICs

EXPERT IN MAKING MOTORS SMALLER, QUIETER, MORE EFFICIENT AND MORE RELIABLE

- Suite of brushless DC (BLDC), brush DC, and stepper motor solutions
- Wafer technology includes:
 - 100V components for 48V power systems
 - Hall and xMR sensor technologies
 - Precision analog components
 - Dense digital logic
- Proprietary ICs with on-chip, optimized algorithms for BLDC motor control
- High resolution absolute angle sensor (motor encoder) ICs that operate from zero speed to more than 30,000 RPM
- Low jitter digital position sensor ICs for motor commutation
- Precise current measurement either in phase or on the low side of the motor H-bridge



RESPECTED SUPPLIER TO ALL AUTOMOTIVE OEMS

Supply to >55 automotive OEMs worldwide



Mercedes-Benz



PEUGEOT



RENAULT



上汽通用五菱
SGMW



上汽集团
SAIC MOTOR



Mazda



Audi

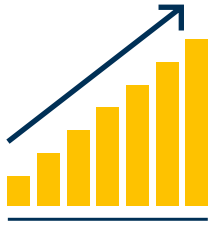


TOYOTA



WULING MOTORS

AUTOMOTIVE-FOCUSED QUALITY MANAGEMENT



Our policy is
**continuous
improvement**

0 Our goal
is zero defects

<0.1 PPM **Track Record Of Reliability**
Automotive PPM of Allegro's
most advanced processes

Allegro is compliant to the following standards:

- ISO 9001 & IATF 16949
- ISO 14001
- RoHS
- ISO 26262 (Automotive Safety—ASIL)



Facilities are compliant to **Japanese 5S standards**

SEE HOW ALLEGRO IS MOVING THE WORLD
TOWARD A SAFE AND SUSTAINABLE FUTURE



INNOVATION WITH PURPOSE

ALLEGRO
microsystems

Learn more about Allegro's automotive solutions at

www.allegromicro.com/auto

