



● INNOVATIVE SOLUTIONS FOR VEHICLE ELECTRIFICATION

READY FOR THE *RE*volution

INNOVATION WITH PURPOSE
ALLEGRO
microsystems

Drive for Excellence With Allegro

Powerful solutions purpose-built for EV applications

From high-voltage (HV) inverters and traction motors, to HV converters and transmissions, to on-board chargers (and beyond), our portfolio includes a suite of current sensors, gate drivers, DC-DC regulators, and power management integrated circuits (PMICs) for a multitude of electrified vehicle (EV) applications. These powerful Allegro products simultaneously minimize footprints and layouts, ensure efficient power-dense system designs, and reduce system weight. When a single product is used for multiple EV applications, you can further simplify complex bills of materials (BOMs) and inventories while lowering your overall system costs.

Quality is designed and built into all of our products.^[1] Backed by three decades of leadership in the semiconductor industry delivering ISO 26262-certified,^[2] safety-oriented, AEC-Q100 qualified, Grade 0 innovations, our solutions will help advance your EV design into the *rEvolution*.

We have the solutions you need for your EV applications, including:

- Starter generators
- HV inverters
- On-board chargers (OBCs)
- DC-DC converters
- Thermal management systems
- Propulsion e-motors
- EV transmissions
- Battery charge/disconnect
- Battery monitoring systems
- Battery cooling fans
- Power distribution / disconnect units (PDUs)
- Positive temperature coefficient (PTC) heaters

Features and Benefits of Allegro Products in Your EV Designs

Reduce wear and increase safety: ASIL-rated for safety and contact-less for longevity, our innovative designs allow for magnetic sensing with ruggedness and reliability.

Design with flexibility and improve fuel efficiency: Capability for 50% larger air gap using our [giant magneto-resistance \(GMR\) speed sensors](#) can enable novel designs.

Build safer, charge quicker: Our Grade 0, electromagnetic-compatibility (EMC) robust, ASIL-ready solutions deliver high efficiency, galvanic isolation, fast switching current tracking, safety, and rapid disconnect.

Drive farther: Get more miles per charge from the unparalleled energy return of our increased-efficiency sensors.

Combat electromagnetic interference in compact systems: Shielded, HV [current sensors](#)—the largest selection in the industry—provide robust stray field immunity in small packages.

Reduce emissions and improve performance: Industry-leading diagnostics allow easy monitoring and regulation.

Improve fan reliability: With a tiny footprint and improved airflow, our solutions give your designs some breathing room.

Enhance passenger comfort with “golden ear” approved, whisper-quiet solutions: Quiet down with our low-noise, low-vibration fan drivers for improved cabin comfort.

[1] Our advanced process PPMs are < 0.1.

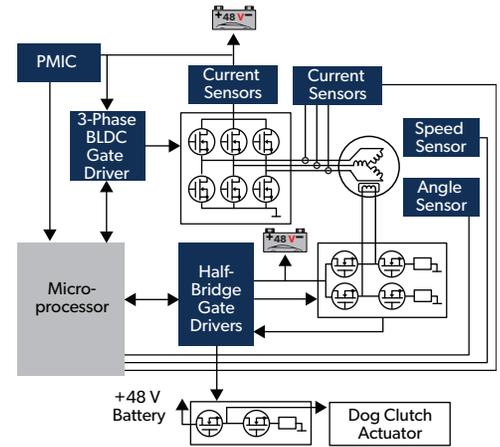
[2] Our ISO 26262 development process is certified by SGS-TÜV Saar GmbH.

Multiple Product Families for EV Applications

Find your EV applications in the following block diagrams. If you design with something shown in a **dark-blue block**, we have your solution. Next, find the right product for those EV applications and more in the tables that follow these diagrams.

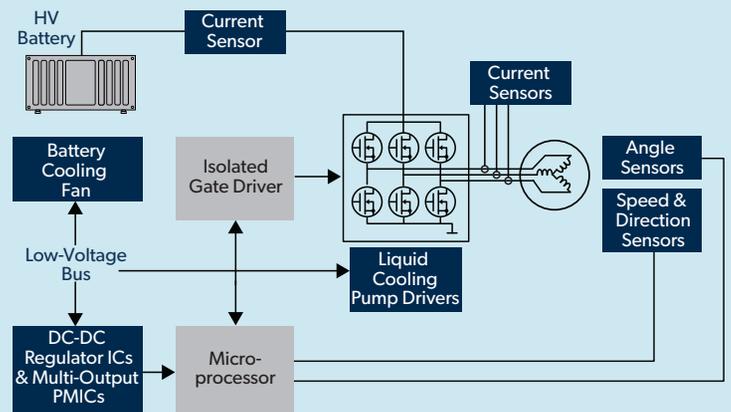
Integrated Belt Starter Generators (iBSGs)*

Engineer the future of 48 V mild-hybrid systems. Our comprehensive power and sensing solutions for electrified powertrains and starter generator applications improve performance and enable emission reductions. Our expansive offering—including the smallest gate drivers in the industry—provides superior transient immunity, complete with ASIL B and ASIL D certifications.



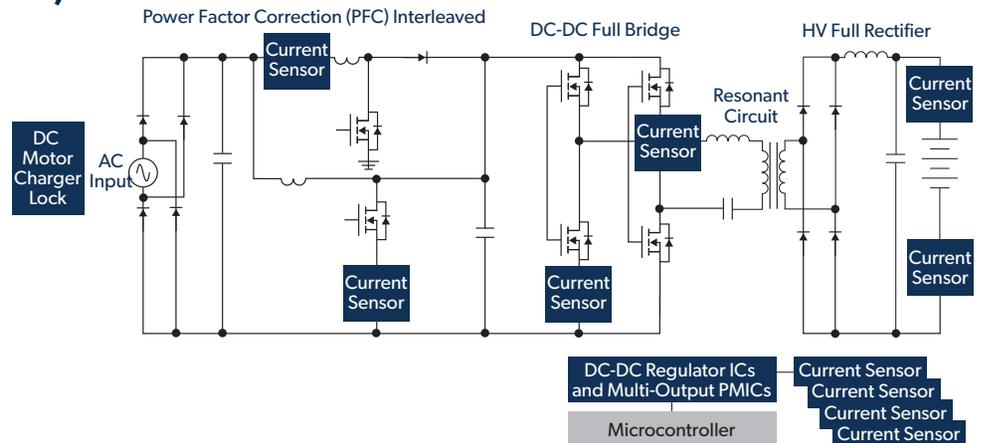
High-Voltage (HV) Inverters and Traction Motors*

Want it all? Precise torque, maximum power, and high inverter efficiency? Our high-power-density, efficient, high-bandwidth, high-accuracy, coreless solutions deliver the performance you need and reduce your system weight and footprint.



On-Board Chargers (OBCs)*

Charge ahead with the fastest solutions in the industry: Our innovative current sensors, Grade 0 regulators, and gate drivers offer high efficiency and safety for your OBCs.

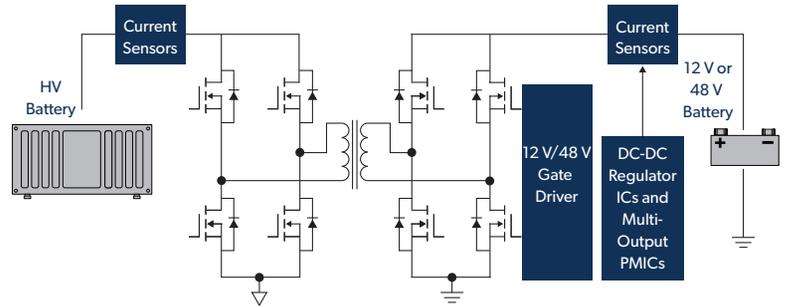


* **We Have Your EV Solution** Dark-blue blocks indicate we have your EV solutions. For specific products, refer to the product tables at the end of this brochure.

Multiple Product Families for EV Applications

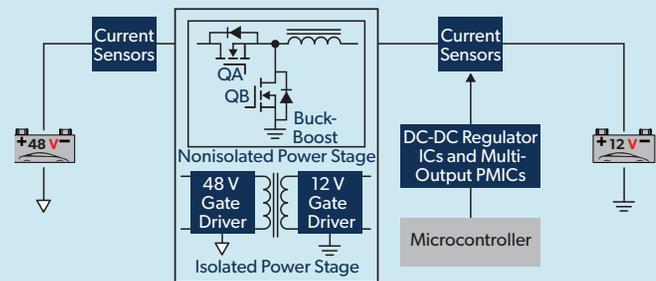
HV DC-DC Converters (> 200 V to 48 V or 12 V)*

Shrink your BOMs and printed circuit boards (PCBs) with our 1 MHz current sensor solutions that lower costs, reduce space requirements, and improve speed and safety in your higher-voltage applications.



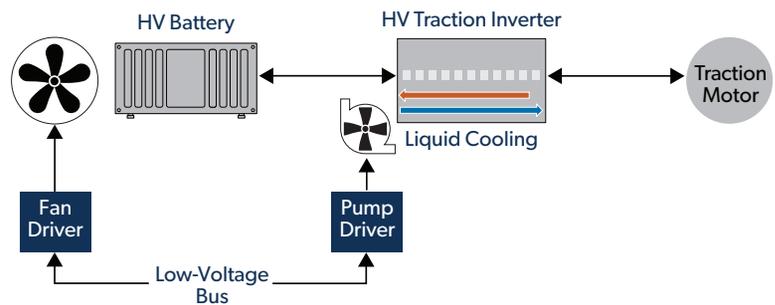
Bidirectional 48 V or 12 V DC-DC Converters*

Our bidirectional 48 V to 12 V DC-DC converters can reduce your BOM and PCB size. Compared to common transformers, our products enable better efficiency, frequency isolation, and integration for compact designs.



Thermal Management for Battery and Inverter Cooling*

Electrify your engine cooling system with our three-phase brushless DC (BLDC) driver IC products that keep your battery and inverter systems running cool and quiet. These sensorless, code-free, low-noise motor drivers can drive up to 500 W with an operational range varying from 4 or 5.5 V to 50 V.



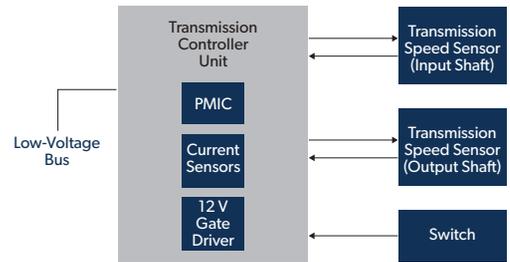
* **We Have Your EV Solution**

Dark-blue blocks indicate we have your EV solutions. For specific products, refer to the product tables at the end of this brochure.

Multiple Product Families for EV Applications

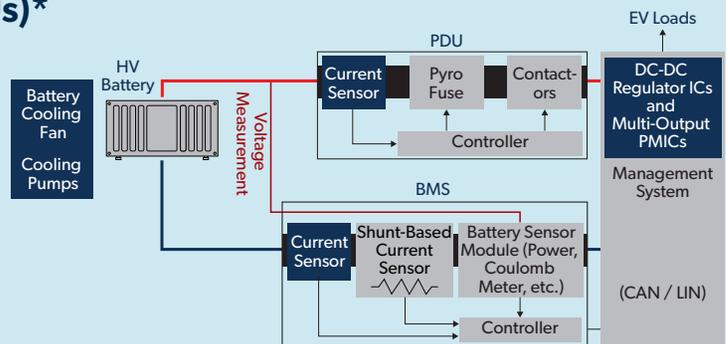
Transmission Drive Unit Sensors*

Alleviate consumer range anxiety and design electrified powertrains that achieve maximum motor power and performance. Our advanced GMR speed and direction sensor ICs offer a 50% larger air gap to give you installation flexibility with impressive stray field immunity and reduced system size and cost.



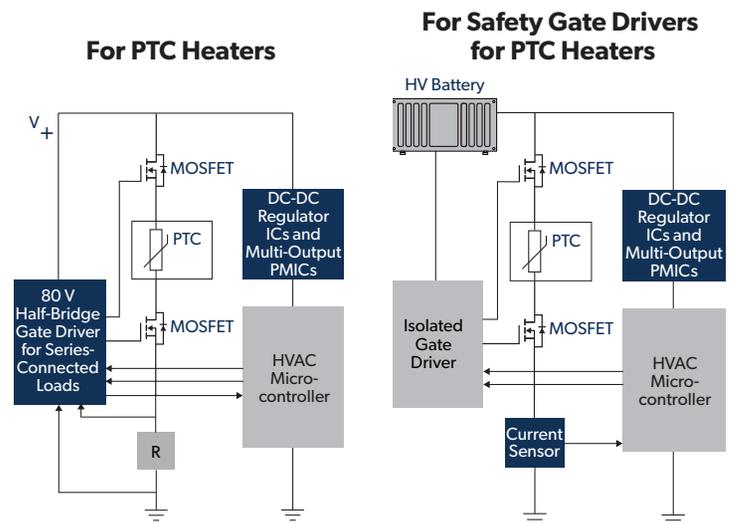
HV Battery: Battery Management / Monitoring Systems (BMSs) and Power Distribution / Disconnect Units (PDUs)*

Design robust and reliable battery management systems with functional safety in mind. Our current sensor ICs help you achieve ASIL ratings with highly accurate measurement of the battery current.



HV Positive Temperature Coefficient (PTC) Heaters*

Reduce the risk of overheating and improve passenger comfort and safety in 48 V systems. We offer compact solutions—including half-bridge gate drivers with high isolation, current sensors, and EMC-compliant safety-focused PMICs—to give you reliable and safe solutions that reduce your overall PTC heater footprint.



* **We Have Your EV Solution**

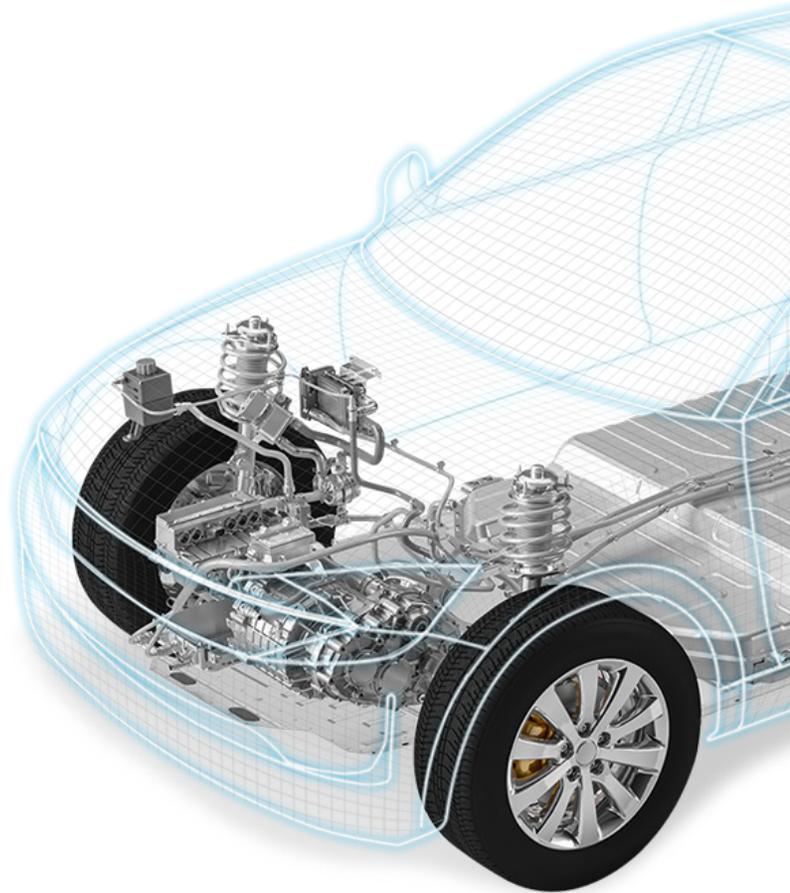
Dark-blue blocks indicate we have your EV solutions. For specific products, refer to the product tables at the end of this brochure.

Cross-Platform Solutions for the Cars of Tomorrow

Product	Application									
	IBSGs	HV Inverters / Traction Motors	OBCs	HV DC-DC Converters	Bidirectional 48 V / 12 V DC-DC Converters	Thermal Management for Battery & Inverter Cooling	Transmission Drive Unit Sensors	HV Battery: BMSs and PDU	HV PTC Heaters	Safety Gates for HV PTC Heaters
Angle and Position Sensors										
A1324/5/6						●				
A1333	●	●				●		●		
A31315						●	●			
AAS33001	●	●				●		●		
Current Sensors										
ACS37002			●	●						
ACS37610*	●	●		●				●		
ACS37612	●	●		●				●		
ACS70311	●	●		●				●		
ACS71240					●		●			●
ACS72981					●		●			●
ACS732			●							
ACS733			●							
ACS772			●	●						●
ACS773			●	●						●
Speed Sensors										
A17501	●	●								
A17502	●	●								
ATS17501	●	●								
ATS19480										
Transmission Speed and Position Sensors										
ATS128							●			
ATS19420							●			
ATS19520							●			
ATS19580							●			
DC-DC Regulators: DC-DC										
A81803*	●	●	●	●	●		●	●		●
A81805*	●	●	●	●	●		●	●		●
A8586	●	●	●	●	●		●	●		●
ARG81800	●	●	●	●	●		●	●		●
DC-DC Regulators: PMIC										
A81407	●	●	●	●	●		●	●		●
A81411	●	●	●	●	●		●	●		●

Sense, Regulate, Drive—Connect with Your Solution:

Our pipeline of robust innovation drives our broad and expanding solution portfolio. The links in the application charts on this page and the next page can help you find the sensors, regulators, and drivers you need. By using one product for multiple applications, you may be able to simplify not only aspects of your design, but also aspects of running your business, like inventory management. You may also be able to reduce costs through large-quantity purchases.

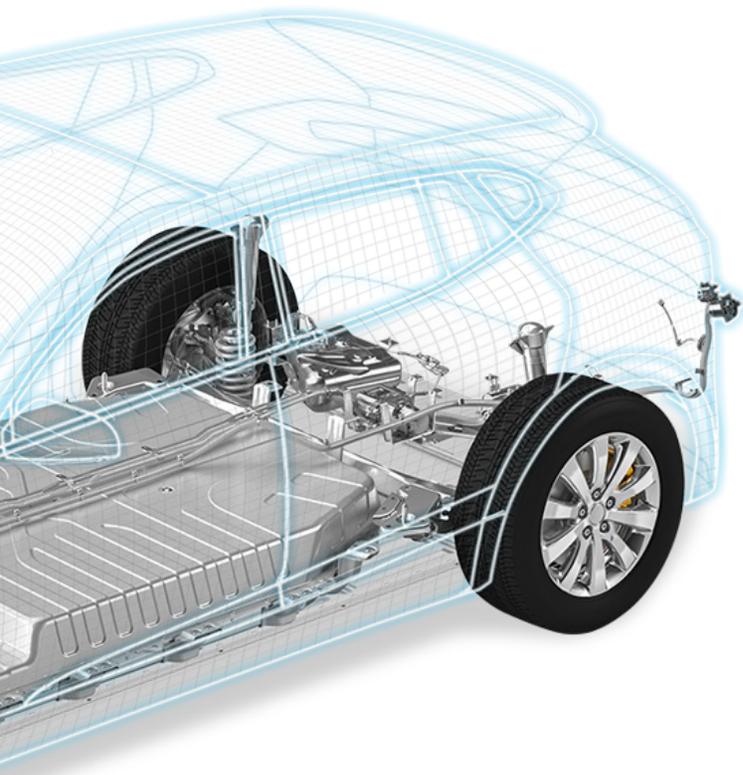


* For samples, contact your local service representative at: allegromicro.com/contact-us

Single-Source Solutions for Savings Today

Simplify designs, BOMs, and inventories—Some examples of our multi-purpose EV solutions include:

- EMC-compliant PMICs that are the most broadly applicable [high-temperature PMICs](#) in the industry and are EMC compliant.
- Small, lightweight, [coreless, shielded current sensor ICs](#) that provide efficient high power density with minimal components.
- Integrated MOSFETs and gate drivers that require few external components.
- A [BLDC IC family](#) that enables a common chipset for 12 V to 48 V systems.



Product	IBSGs	HV Inverters / Traction Motors	OBCs	HV DC-DC Converters	Bidirectional 48 V / 12 V DC-DC Converters	Thermal Management for Battery & Inverter Cooling	Transmission Drive Unit Sensors	HV Battery: BMSs and PDUs	HV PTC Heaters	Safety Gates for HV PTC Heaters
---------	-------	--------------------------------	------	---------------------	--	---	---------------------------------	---------------------------	----------------	---------------------------------

Product	Application									
Motor Drivers										
AMT49100	●									
AMT49101	●									
A4918							●			
A4926				●	●					
A4928				●	●				●	
A49413						●				
A49413							●			
A4950			●							
A4964		●				●		●		
A5932		●				●		●		
A5947		●				●		●		
A89304		●				●		●		
A89307						●		●	●	
A89500	●		●	●	●				●	
A89503	●								●	
AMT49502	●				●				●	

* For samples, contact your local service representative at: allegromicro.com/contact-us

The Allegro Advantage: It's Electrifying

With sales, technology, and research and development locations around the world, our global resources allow us to work closely with industry leaders to develop innovative and tailored solutions, including:

- **Industry-leading algorithms**—based on decades of deep system-level knowledge—to offer increased accuracy and better performance



More than **30 years** of technological innovation and leadership

- **Thermally efficient packages with small footprints** to improve electric drivetrain performance in all conditions



Top supplier of automotive sensor ICs

- **Safety by design to provide the best diagnostic features** in the industry



Trusted partner to 55+ automotive OEMs worldwide

- **Compliance with stringent quality standards:**

- IATF 16949:2016
- ISO9001
- RoHS
- Japanese 5S



600+ active US patents



INNOVATION WITH PURPOSE

Learn more about our EV solutions:
allegromicro.com/evsolutions

