

Automotive Solutions

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START

EV Charging

⚡ 80%

Time Remaining

5 sec...



Pushing innovation to create intelligent
power and sensing technologies that solve
the most challenging customer problems.

onsemiTM

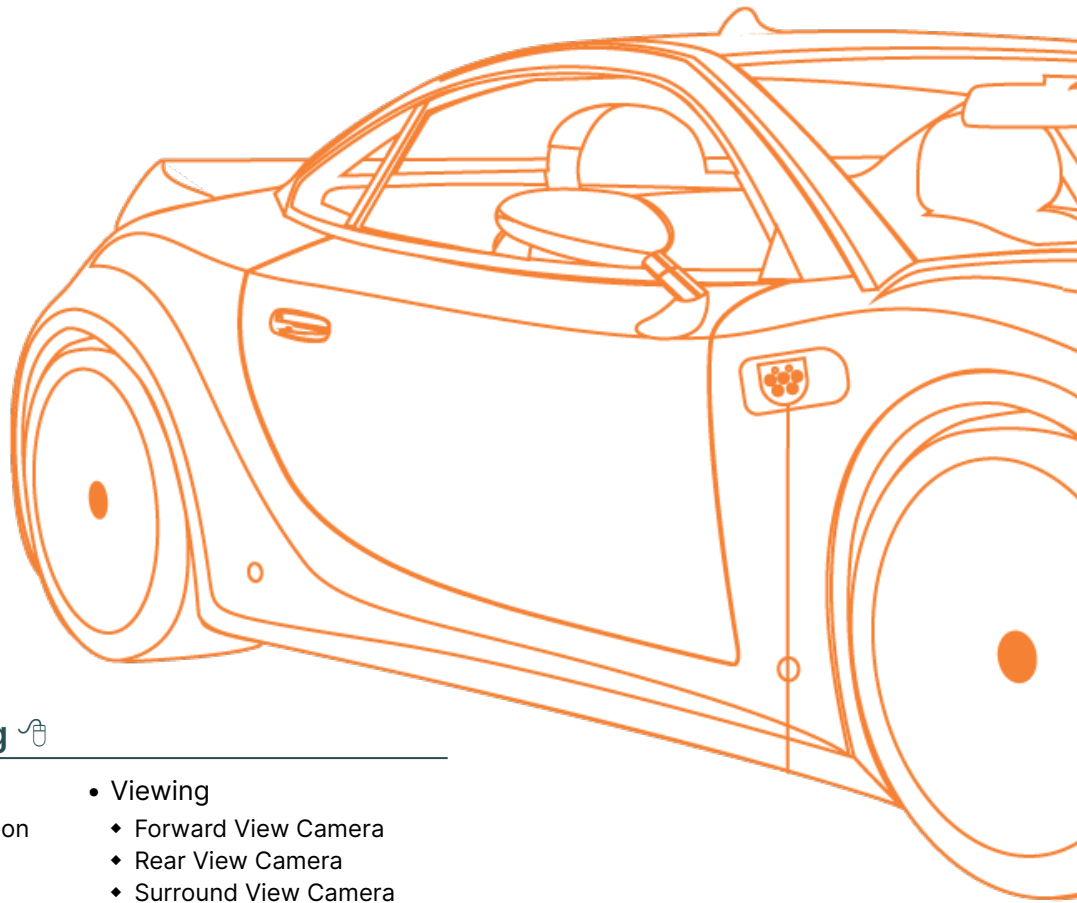
[onsemi.com](https://www.onsemi.com)

Vehicle Electrification

- HEV/PHEV/BEV
 - ♦ On-Board Charger
 - ♦ Traction Inverter
 - ♦ EV Auxiliary
 - ♦ HV-LV DC-DC Converter
 - ♦ Electronic Throttle Control
- 48 V Boardnet
 - ♦ 48 V Starter Generator
 - ♦ 48 V-LV DC-DC Converter

Powertrain, Safety & Security

- Powertrain Control Module (PCM)
 - ♦ Engine/Injection Control (Gasoline/Diesel)
 - ♦ Transmission Control Module (TCM)
- Ignition Control
- Position Sensing
- Electric Pump & Fan Control
- Turbo & Compressor Control
- Supplementary Restraint System



ADAS & Autonomous Driving

- Sensing
 - ♦ Pedestrian, Vehicle, Object Detection
 - ♦ Lane Keep Assist
 - ♦ Park Assist
 - ♦ Automated Cruise Control
 - ♦ Automated Emergency Braking
 - ♦ Automated Headlight Handling
 - ♦ Automatic Windshield Wiper
- In-Cabin
 - ♦ Driver Monitoring System
 - ♦ Occupant Monitoring System
 - ♦ Driver Drowsiness Detection
 - ♦ Gesture Control
- Viewing
 - ♦ Forward View Camera
 - ♦ Rear View Camera
 - ♦ Surround View Camera
 - ♦ Blind Spot Monitoring
 - ♦ eMirror

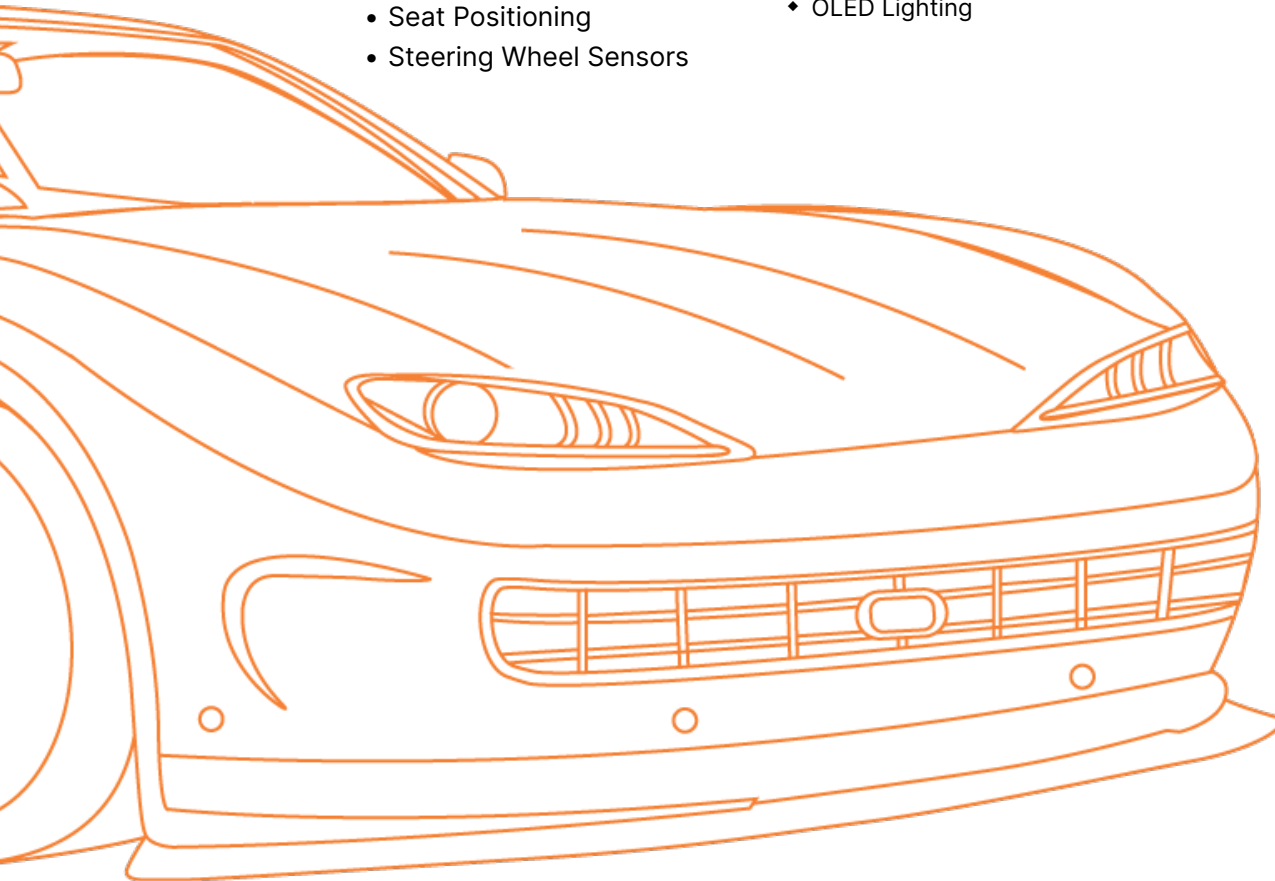
Infotainment

- Navigation Systems
- Satellite/Digital Radio
- Active Antennas
- Connectivity – HDMI, USB, USB-C PD, Bluetooth® Low Energy
- In-Vehicle Networking

onsemi enables energy efficient automotive solutions that reduce emissions, improve fuel economy, and enhance lighting, safety, connectivity, and infotainment power delivery systems. The company provides a broad array of sensors (image, LiDAR, and ultrasonic), power devices (silicon, WBG, discretes, modules), power management, protection, processing, signal conditioning and control products.

Body Electronics & LED Lighting

- HVAC
- Body Control Module
- Door/Mirror/Window Control
- Seat Positioning
- Steering Wheel Sensors
- Smart Junction Boxes
- Advanced Front Lighting System
 - Pixel Lighting
 - OLED Lighting
- Interior: Door, Dome, RGB Accent
- Exterior: CHMSLs, RCLs, Accent, Puddle



onsemi™

onsemi Automotive Solutions

- Power the electrification of the Automotive industry with intelligent power technologies that allow for lighter and longer-range electric vehicles and enable efficient fast-charging systems.
- Enhance the Automotive mobility experience with intelligent sensing technologies – imaging and depth-sensing that make the most advanced vehicle safety and automated driving systems possible.

Automotive Experience

With over 40 years of supporting the automotive sector and a complete portfolio of AEC-qualified products, **onsemi** enables customers to design high-reliability solutions that create value for the end-user while delivering peak performance.

Electrification

- Leading in Silicon and investing to lead in Silicon Carbide (SiC)
- Scalable solutions to meet the broadest range of OEM vehicle platforms and power tiers
- High-efficiency and longer-range cell and trench and planar structure – SiC technology
- High power density and less weight using advanced interconnects and direct cooling technology
- Lower cost per kW

Advanced Safety

- Highest level of efficiency and functional safety for a complete ADAS solution
- Capable of supporting Functional Safety systems rated up to ASIL-D using combined intelligent power and sensing solutions
- Best-in-Class Imaging – 100x the human eye
- Larger market share than all competitors combined
- Saving nine lives per hour

The demanding standards of the automotive industry drive **onsemi** design, manufacturing, and delivery processes. Our commitment to the automotive market extends beyond delivering extraordinary devices to ensure that our manufacturing and quality processes meet the industry's need for reliability and robustness. **onsemi's** customers consumed over 73 billion parts in 2021 with an average quality defect rate of less than 80 parts per billion.

Vehicle Electrification

Electrification of the powertrain and vehicle auxiliary systems reduces CO2 output and positively impacts the environment. The latest **onsemi** power technologies and innovative packaging achieve best-in-class performance – from maximum power density and high efficiency to rock-solid reliability using SiC, IGBT, and Super-Junction MOSFET technologies. These are vital, transformative foundations for battery electric vehicle (BEV), mild-hybrid (MHEV), plugin hybrid (PHEV), and fuel cell electric vehicle (FCEV) systems.

ADAS

ADAS and Automation Systems – adaptive front lighting, autopilot, park assist, surround-view and rear-view cameras, lane departure warning, automatic emergency braking, adaptive cruise control, and collision avoidance – lead to increased levels of safety and ultimately fully autonomous vehicles. **onsemi** provides a comprehensive product portfolio of high-performance image sensors and LiDAR detectors, power management, lighting solutions, and motor drivers supported by highly experienced system design and applications engineering expertise, reference designs, powerful and flexible development kits together with an extensive partnership ecosystem.

Body Electronics and LED Lighting

Deploying matrix and beamforming technologies in advanced LED front lighting paves the way for increased user functionality and safety. Increased electronics content – LED and power solutions for rear combination lamps (RCL), center high mount stop light (CHMSL), exterior lighting accents, body, HVAC, lift gates, and seating – drives innovation throughout the automotive control module ecosystem. **onsemi** offers AEC-qualified linear and DC-DC LED drivers, power management, analog signal chain products, in-vehicle networking (IVN), MOSFETs, and standard logic that help automotive customers complete their designs rapidly to quicken time-to-market.

Powertrain, Safety and Security

Engine control modules – powering performance, diagnosing and mitigating problems – Tire Pressure Monitoring (TPMS), ultrasonic sensing, Remote Keyless Entry (RKE) and Passive Entry Passive Start (PEPS) systems – integrating Bluetooth Low Energy (BLE) to allow seamless access to your car – improve user experience and safety for drivers, passengers, and pedestrians alike. **onsemi** addresses the critical needs of automotive powertrain and safety design with a complete portfolio of ignition IGBTs, power management, analog signal chain products, BLE SoCs, IVN, MOSFETs, memory, and standard logic.

Automotive Quality

Automotive Grade Quality and Control Processes

For over 40 years, **onsemi** has been developing and delivering robust, high-performance solutions that allow designers to meet automotive applications' demanding environmental and performance requirements.

Quality Statement: "At **onsemi**, we focus on embedding quality in every system, tool and process with detailed attention to providing best-in-class products and solutions. This demonstrates our inherent zero defect quality mindset from ideation through to execution and delivery in support of consistent growth."

For certification documents, visit the [Quality](#) page on our web site.

onsemi Quality Processes

- Certified to ISO 9001:2015
- Certified to IATF 16949:2016
- Implemented ISO 26262 Functional Safety Standard
- Quality System and Business Operating System are synonymous and are documented to meet the requirements of the Automotive Standards
- Corrective action systems use various methodologies to ensure we identify and correct the root cause of non-conformance. Preventive action ensures we eliminate potential non-conformances

Production Part Approval Process (PPAP)

Our documented process provides the methods, procedures, and forms to initiate PPAP submission, prepare the required submission documents, and document customer approval when required. This process ensures that **onsemi** components comply with design specifications and that customer designs will maintain desired quality levels.

Zero-Defect Program

- Focused Parts "Non-Zero" devices (bottom-up approach)
- Problem-solving methodology
- Adequate Failure Analysis facilities
- Incident ownership
- Prevent Recurrence Systemic Improvement (top-down approach)
- Process characterization, control plan, and Failure Mode Effect Analysis
- Maverick IoT initiative

Quarterly Detailed Horizon Reports

onsemi's commitment to the automotive market extends beyond delivering great products to ensuring that our manufacturing and quality processes meet the industry's need for reliability and robustness. The demanding standards of the automotive industry drive the company's design, manufacturing, and delivery processes. **onsemi** delivered over 73 billion parts in 2021, with average defect rates of less than 80 parts per billion.

Global Supply Chain Operations

Advanced Capability

onsemi invests in EDI, VMI, and other logistics agreements.

Global Locations

Worldwide, **onsemi** employs ~33,000 people. Headquartered in Phoenix, Arizona, U.S.A., the company owns and operates multiple development centers and manufacturing facilities in the U.S.A., Europe, and Asia.

Global Supply Chain

onsemi operates a flexible, reliable, responsive supply chain that supports complex manufacturing networks and dynamic global market conditions. This includes multiple manufacturing and logistics sites near our customers to ensure supply continuity.

Automotive Long-Term Availability Statement

onsemi is 100% committed to the long-term supply of products according to the automotive industry's supply benchmark requirement. The company works with customers to meet their specific supply requirements. When technically feasible and within certain cost constraints, **onsemi** will make all commercially reasonable efforts to provide automotive customers with advance notice of phase-outs and provide compatible product renewals, ensuring long-term supply considerations and requirements are fully achieved.

Proven Automotive Technical Capabilities

onsemi has developed a set of dedicated, high-voltage automotive power technologies. With parasitic signals running through automobiles, 80 V spikes can occur and must be accounted for by the design team. Modules and components need to sustain such peaks and remain functional. **onsemi** technology enables complex, high-voltage system-on-chip (SoC) solutions that meet requirements for maximum voltage and digital gate integration.

Electro-Magnetic Compatibility

In-Vehicle-Networking (IVN) applications require extended immunity against ESD pulses and EMI. Growing vehicle electronic content makes this even more critical, and automobile manufacturers set performance standards accordingly. **onsemi** offers best-in-class devices using I3T50/80 and I4T30/45/70 technologies that provide advanced capabilities. Robust designs are achieved, for example, by deep trench isolation, which reduces the interference between the voltage domains on the chip.

onsemi offers a range of technologies that allow up to 100 V supply and enable component integration – including embedded microprocessor cores.

onsemi technologies serve as the basis for automotive ASIC and application-specific standard product (ASSP) solutions for powertrain (including high-temperature applications with ambient temperatures $\geq 150^{\circ}\text{C}$), safety, body, dashboard, in-vehicle-networking (IVN), sensors, and actuator applications.

High-Temperature Capability

onsemi offers a broad portfolio of products that operate in extended temperature ranges, up to 150°C . The company has also launched an initiative to extend high-temperature capabilities to 200°C . This initiative includes enhancements to:

- Packaging and Bonding
- High-Temperature Testing
- Component Test Vehicles
- Product Test Vehicles
- CAD Tools
- Libraries
- Spice Device Models

Sales and Design Assistance

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