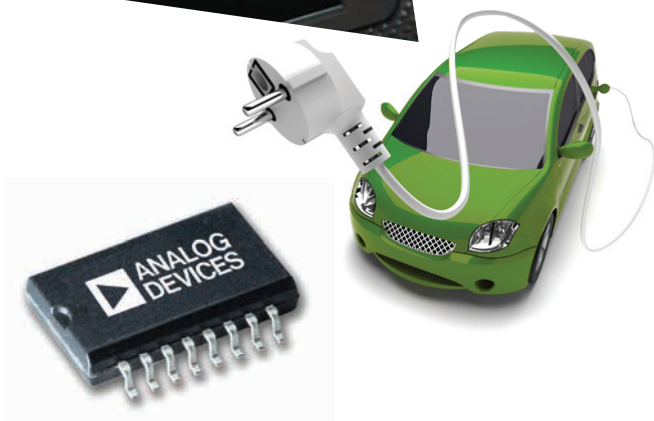
Signal Processing Technology
for Automotive Systems

In Automotive Electronics, signal processing plays a major role by enabling new functionality and better performance. To create the safer, greener, and more comfortable automobiles of the future, designers are turning to Analog Devices' broad technology base in data converter, amplifier, MEMS, sensor, sensor interface, digital isolator, processor, and RF technologies for system level ICs, which enable cost-effective, higher performance designs.



Scan the code with your smartphone to visit
www.analog.com/automotive

ANALOG DEVICES

Our Goal: Make Cars Greener, Safer, and More Comfortable

Analog Devices' components and application-specific ICs are found in the most innovative systems for rollover detection and stability control, crash sensing for airbag deployment, radar and camera based driver assistance, battery management for electric and hybrid electric vehicles, and 12 V/24 V systems, fuel injection, transmission control, head units, audio amplifiers, and many other emerging applications. As a long-term supplier to the auto industry, our zero-defect management system is an integral part of our design and manufacturing processes, and all Analog Devices' plants are ISO 9001/2000, QS 9000, ISO 14000, and TS 16949 certified. ADI also complies with Automotive Safety Integrity Levels using ISO 26262 standards for electric and electronic systems.

ADI Makes Cars Greener

- HEV/EV 12 V/24 V Battery Management
- Lithium Cell Management
- Stop/Start System
- Sensor Interface
  - Transmission Control
  - Fuel Injection
  - Fluid Level Sensing
  - Fluid Condition Sensing
  - HVAC

ADI Makes Cars Safer

- Passive
  - Rollover Detection
  - Airbag/Crash Sensing
  - Occupant Sensing
- Active
  - Stability Control
  - Roll Stability
  - Hill Start Assist
  - Electronic Parking Brake
- Preventive
  - Radar ADAS
  - Lidar ADAS
  - Camera ADAS

ADI Makes Cars More Comfortable

- Audio/Multimedia
  - Head Units Audio/Video
  - Audio Amplifiers
  - Noise Cancellation
  - Connectivity

Linear ICs

- Amplifiers (Op Amp, Diff Amp, Log, VGA)
- Analog Processing Products (Switches, Multiplexers)
- Converters (ADC, CDC, DAC, RDC)
- Digital Potentiometers
- *i*Coupler® Digital Isolators
- RF
- Voltage References

Sensors and Sensor Interface

- MEMS Accelerometers
- MEMS Gyroscopes (Yaw Rate, Rollover)
- Integrated Remote Crash Sensors
- Temperature Sensors
- Capacitance-to-Digital Converters (CDCs)
- Impedance-to-Digital Converters

Processors

- Fixed-Point Blackfin® Processors
- Floating-Point SHARC® Processors
- SigmaDSP® Audio Processors
- Analog Microcontroller

Function-Specific ICs

- Sensor-Conditioning Amps
- Current-Sense Amps
- Current-Threshold Detectors
- Capacitance-to-Digital Converters
- Resolver-to-Digital
- RF Chipset
- Line Drivers
- Filter Amps

Application-Specific ICs

- Battery Monitors
- Oil Quality Sensors
- Oil Level Sensors
- Pressure Sensor Interface
- Transmission Control ASIC
- Radar Analog Front End

Audio/Video Products

- Analog/HDMI/DVI Interfaces
- AV Analog-to-Digital Converters
- AV Digital-to-Analog Converters
- AV Codecs
- AV Amplifiers
- MEMS Microphones
- Sample Rate Converters
- Video Compression
- Video Decoders
- Video Encoders

Our Mission: Add Value Four Ways

1 Provide Leading Product Quality and Reliability

Serving automotive markets >20 years has driven quality mindedness in ADI

- Focus on zero defects reaching customers through defect detection and prevention in design and manufacture
- Design for reliability and manufacturing standards ensures high levels of product quality at start-of-production
- Continuous reliability monitoring ensures stability over lifetime of the product
- World class failure analysis capabilities provide fast and comprehensive assessment of customer problems, with emphasis on responsiveness
- Globally dispersed, regional customer quality teams provide rapid and comprehensive support for any quality concerns

2 Demonstrate Key Technology Competencies

Dedicated to breakthrough innovations to give you a competitive edge

- Differentiated semiconductor processes and IC architectures
- Broadest and deepest range of circuits for analog and mixed-signal converters, amplifiers/linear, and RF
- High performance clocking and timing
- High performance MEMS/sensors
- Mixed-signal/data converter circuit innovation for leading-edge nanometer CMOS
- RF and microwave
- Ultralow power circuits that use less power than low-power products

3 Offer a Flexible and Reliable Supply Chain

Product availability

- Best-in-class die bank and finished goods buffer strategy
- Flexible supply chain supporting long product life cycles

Minimized supply risk

- Risk prevention and mitigation as integral part of our supply chain
- Forward looking capacity planning in our fabs and with our partners

Lean supply chain

- Full suite of logistic programs (EDI, VMI, Consignment Stock)

4 Enable Challenging Solutions

Extract very small signals out of noisy environment

- Physical sensor signals like pressure and temperature
- Small currents (µA), voltages (µV), capacitance (fF), inductance

Measure and process high dynamic signals

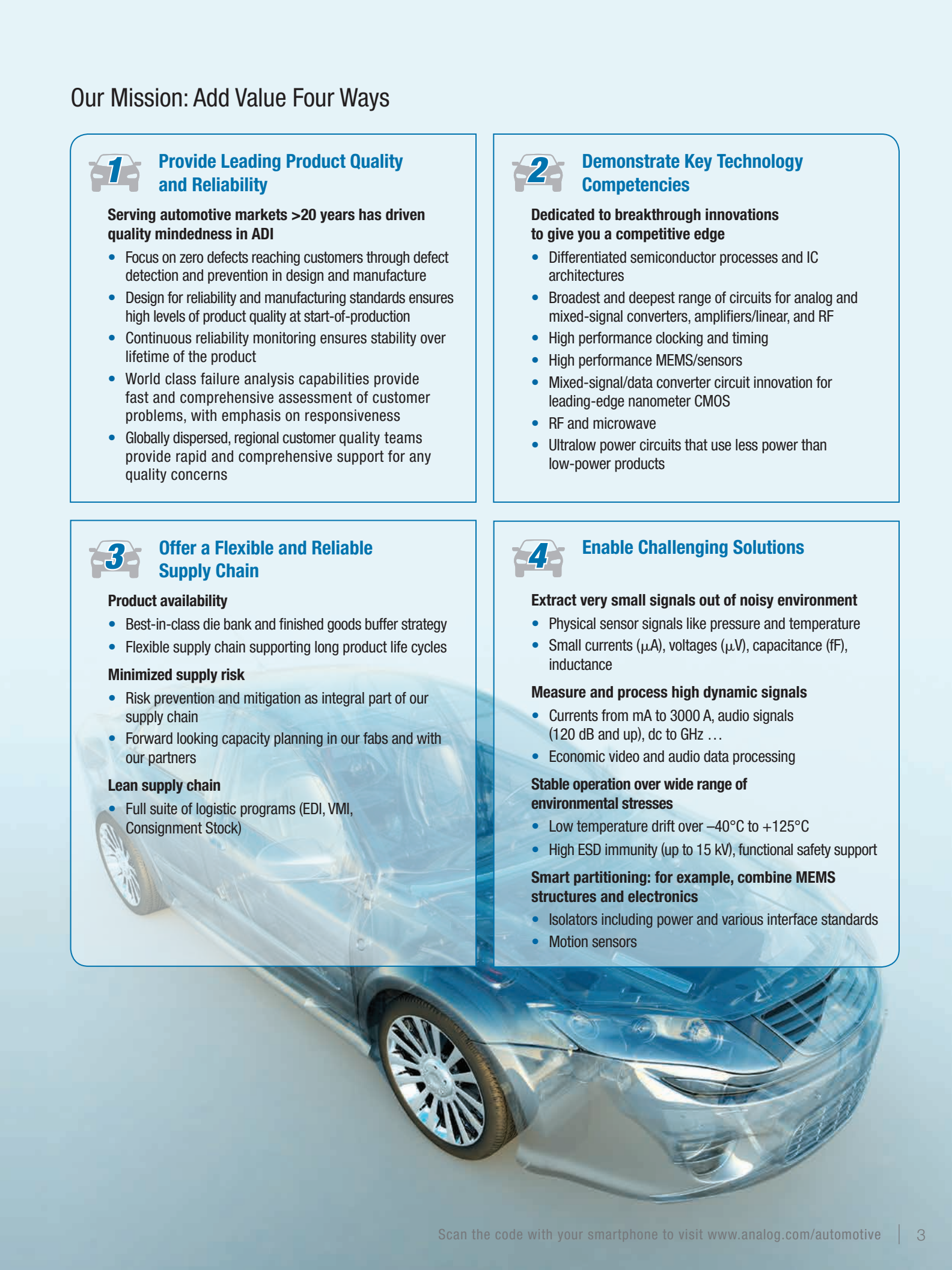
- Currents from mA to 3000 A, audio signals (120 dB and up), dc to GHz …
- Economic video and audio data processing

Stable operation over wide range of environmental stresses

- Low temperature drift over –40°C to +125°C
- High ESD immunity (up to 15 kV), functional safety support

Smart partitioning: for example, combine MEMS structures and electronics

- Isolators including power and various interface standards
- Motion sensors



Online Design Support for All Your Automotive Design Questions

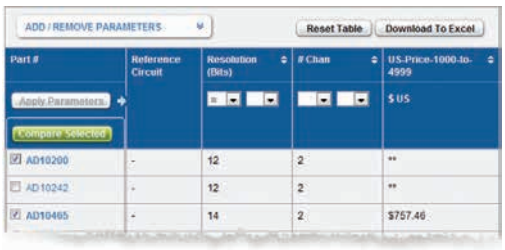
The Analog Devices website offers automotive design engineers a dedicated online design resource aimed at providing timely and relevant technical information in one convenient location.

Once you have located your desired application, you can select from a variety of different technical resources, including

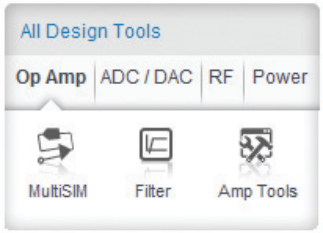
- Product data sheets
- Sample interactive circuit diagrams
- Application notes
- Technical white papers
- Circuit notes
- On-demand technical webcasts
- Engineering online community
- Video tutorials
- Design tools

Visit us at www.analog.com/automotive.

Parametric Search and Product Selection



Simulation and Software Tools



Reference Circuits and FPGA Reference Designs

Circuits from the **Lab**®
Reference Circuits

EngineerZone Support Communities, ADI Wiki

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