ZMDI®

The Analog Mixed Signal Company

PINK IS THE NEW GREEN®

ENABLING ENERGY EFFICIENT SOLUTIONS

The Fast Track to Energy-Efficient Vehicles

ZMDI's Leading-Edge Automotive ICs: Precise, Rugged, Versatile and Low-Power

Energy Efficient Mixed Signal Solutions

Zentrum Mikroelektronik Dresden AG (ZMDI) is a global provider of high-performance, energy-efficient analog and mixed signal semiconductors and application specific ICs. Innovation-driven and customer-focused, we enable IC solutions that reduce fuel consumption and CO_2 emissions to help protect the environment. Our products include rugged AEC-Q100-certified ICs that expedite automotive product design by providing advanced sensor-signal conditioning and configurability while minimizing power consumption. Our sophisticated calibration and configuration techniques significantly reduce external component count and time to market for products that meet new emission-reduction standards.

For over 50 years, we have offered our customers high-quality products and services at great value. Our high performance products and excellent application support have earned us our customers' trust and built long-term partnerships with automotive market leaders. ZMDI's solutions enable our customers to create the most energy-efficient products in sensors, power management, and lighting.

Vehicles account for 16% of the annual worldwide consumption of primary energy resources. ZMDI's products can help reduce this by enabling energy-saving innovations for fuel efficiency and low-power sensing applications thereby reducing carbon emissions. Smart sensors help improve the control mechanisms of modern automotive powertrains. Improvements in engine, transmission, and steering systems deliver greater fuel efficiency and power density so that today's smaller and lighter powertrains provide significantly more output power than in the past. ZMDI devices support the demanding battery sensing needed for automatic start-stop systems for micro-hybrid vehicles, which reduce fuel consumption. Implementing our battery sensing solutions in smart start/stop systems can help achieve an 8% fuel efficiency improvement.

Automotive Industry
Improving Fuel Efficiency

ZMDI's IC solutions help fulfill the new emission standards. Here are some examples:

Battery monitoring: Monitoring the status of the car battery with our smart battery sensor solutions enables automatic start-stop features in cars, which can reduce fuel consumption up to 8%.

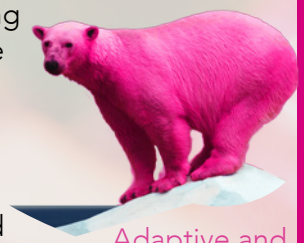
Ethanol sensing: ZMDI's IC solution enables optimization of fuel injection based on the actual ethanol value and therefore helps reduce emissions.

Electric power steering: ZMDI provides SSCs for contactless magnetic position sensors that enable advanced, energy-efficient electric power steering systems. ZMDI's IC solution measures torque via an AMR sensor on the steering wheel. Electric energy is provided to the steering motor only if it is needed as indicated by the torque measurement value, instead of constantly driving a traditional hydraulic pump, which would continuously consume energy, causing higher fuel consumption.

Visit **www.zmdi.com**
for more detailed information

Battery Management Solutions

Our new line of battery management system ICs are revolutionary, adding an unprecedented degree of "intelligence" to monitoring systems. Optimized for harsh automotive environments, these award-winning integrated system-on-chip solutions provide precision measurements for accurate prediction of battery conditions, enabling optimized usage and extended lifetime of the battery. A leading-edge integrated microprocessor enables the next generation of control for battery monitoring systems.



Adaptive and Efficient

Low-Power Mobile Sensing ICs

ZMDI offers low-power sensor ICs that can be used in a variety of cabin features such as car navigation systems and environmental control supporting highly accurate measurements with best-in-class power consumption.

Precise and Deliberate

Automotive Sensor Signal Conditioners

ZMDI provides high precision, reliable, and robust sensor signal conditioners (SSCs) that can operate even in harsh automotive conditions with long-term stability. Our highly efficient, high-value application specific and standard product SSCs are compatible with virtually any type of resistive or capacitive sensor; e.g., pressure, humidity, temperature, force, torque, flow, strain, angle, position, altitude, and rotational speed. They include diagnostic functions often required for automotive sensor modules to support the maintenance-on-demand policy of many automotive OEMs as well as special failure-mode operations required for safety-critical sensor applications such as brake pressure sensing.

Adaptable and Rugged

Worldwide Leadership in Sensor Intelligence and Interface Solutions for Automotive Products

Automotive IC Solutions

Products available at ZMDI On-Line Store

ZSSC3170 Sensor Signal Conditioner with LIN and PWM Interface

- AEC-Q100 qualified grade 0 (-40 to 150°C) with excellent EMC/ ESD robustness
- Optimized for automotive environments with special protection circuitry, safety/ diagnostic functions, and excellent electromagnetic compatibility
- Digital polynomial compensation of sensor offset, sensitivity, temperature drift, and non-linearity with ZMDI's one-pass calibration
- Configurable LIN publisher frame content; complies with LIN specifications 1.3 / 2.0 / 2.1
- Current consumption in sleep mode: ≤ 100µA
- Supply voltage: 7 to 18 V with load dump protection on LIN pin up to 40V
- Digital output (up to 12-bit LIN and PWM)

ZSSC3154 – High-Precision SSC with Dual Analog Output

- AEC-Q100 qualified grade 1 (-40 to 125°C) with excellent EMC/ ESD robustness
- Optimized for automotive environments with special protection circuitry, safety/ diagnostic functions, and excellent electromagnetic compatibility
- Interfaces with a variety of differential, temperature and half-bridge sensors and provides simultaneous measurement for highest accuracy
- Supports low sensitivity sensors (down to 1mV/V) and delivers high accuracy output
- Digital compensation of offset, gain, nonlinearity, and temperature effects with ZMDI's one-pass calibration
- Dual analog outputs

ZSSC3131/3135/3136/3138 Sensor Signal Conditioner Family

- Our footprint compatible family approach offers the best fitting IC selection for cost-optimization
- AEC-Q100 qualified grade 0 (-40 to 150°C) with excellent EMC/ ESD robustness
- Optimized for automotive environments with special protection circuitry, safety/ diagnostic functions, and excellent electromagnetic compatibility
- Supports low sensitivity sensors and delivers high accuracy output
- Digital compensation of sensor offset, sensitivity, temperature drift, and non-linearity with ZMDI's one pass calibration
- Internal or external temperature compensation
- Nominal 5V supply with built-in protection up to +/- 33V
- Analog output

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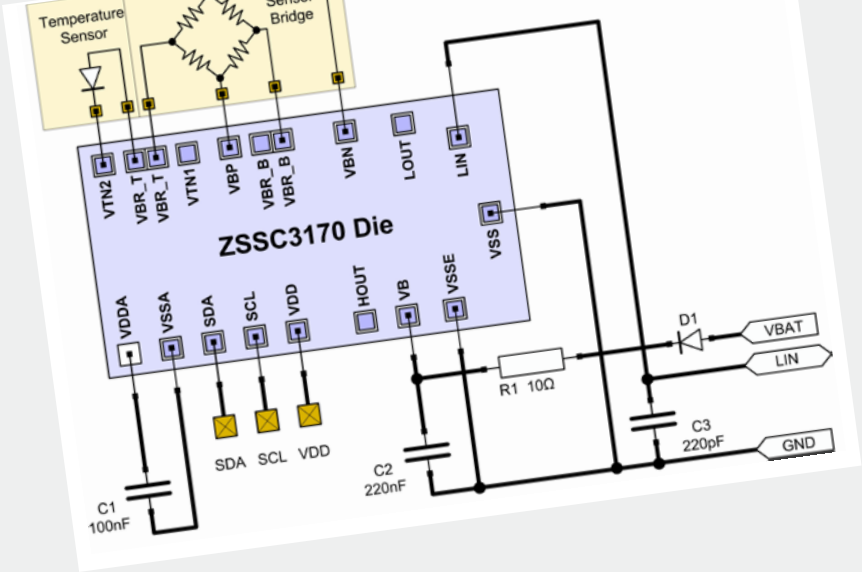
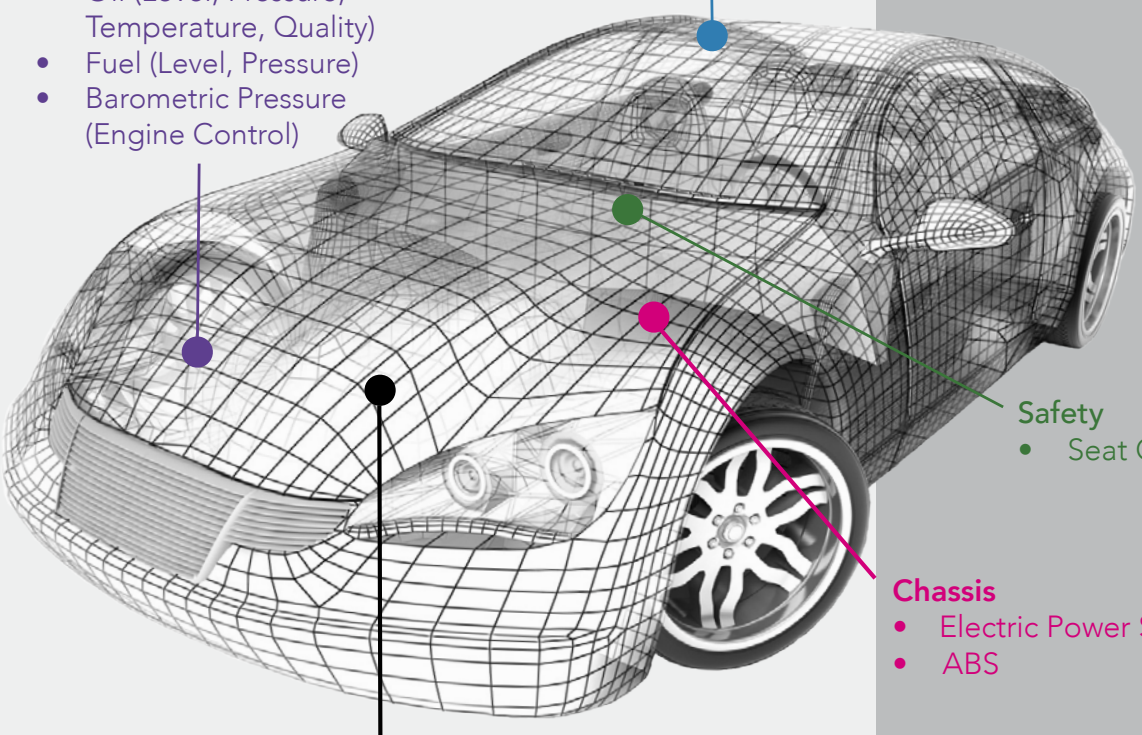


Connectivity and Configurability— Keys to Next-Generation Automotive Designs

Accelerate automotive designs with AEC-Q100 certified ICs from ZMDI

Powertrain
- Transmission
- Throttle Control
- MAP
- E-Gas
- Diesel Heating
- Oil (Level, Pressure, Temperature, Quality)
- Fuel (Level, Pressure)
- Barometric Pressure (Engine Control)

Body
- HVAC
- Interior Lighting
- Power Seat
- Rain Sensor
- Sun Sensor
- Humidity Sensor



Safety
- Seat Occupant Detection

Chassis
- Electric Power Steering
- ABS

Energy Management
- Battery Management

Automotive IC Solutions
Products available at ZMDI On-Line Store

ZSC31150 Resistive Bridge SSC with ZACwire™ and I²C™ Interface

- AEC-Q100 qualified grade 0 (-40 to 150°C) with excellent EMC/ ESD robustness
- Optimized for automotive environments with special protection circuitry, safety/ diagnostic functions, and excellent electromagnetic compatibility
- Supports low sensitivity sensors (down to 1mV/V) and delivers high accuracy output
- Digital compensation of sensor offset, sensitivity, temperature drift, and non-linearity with ZMDI's one pass calibration
- Internal or external temperature compensation
- Nominal 5V supply with built-in +/- 33V protection
- Analog output

ZSSC3015 Resistive Sensor Signal Conditioner with Advanced Diagnostics

- AEC-Q100 qualified grade 0 (-40 to 150°C)
- Optimized for automotive environments with protection circuitry, safety/ diagnostic functions
- Digital compensation of sensor offset, sensitivity, temperature drift, and non-linearity with ZMDI's one-pass calibration
- Internal temperature compensation of sensor
- Current consumption as low as 300µA depending on mode and sample rate
- Nominal 3V, 3.3V or 5V supply with high voltage protection: ≤ 30V with external JFET
- Analog output

ZSSC1856 Lead-Acid Battery Monitor with Embedded Microprocessor

- Winner of the 2012 and 2013 Frost & Sullivan Product Innovation Award
- Battery sensing/ management IC for automotive systems: measures battery current, battery voltage, and temperature
- High-precision 24-bit sigma-delta ADC with on-chip voltage reference
- Two silicon dies stacked in a single package: a System Basis Chip and a 32-bit ARM® Cortex™-M0 microprocessor core (trademark of ARM, Ltd.) with flash memory for customer software
- Integrated, precision measurement solution for accurate prediction of battery state of health (SOH), state of charge (SOC), or state of function (SOF); directly connected to 12V battery supply
- Industry's smallest footprint allows minimal module size and cost
- Optimized for ultra-low power consumption without sacrificing performance: draws only 100µA or less in sleep mode
- Robust power-on-reset (POR) concept for harsh automotive environments
- Wide operation temperature: -40°C to +125°C
- LIN2.1 compliant / SAE J2602-1 supported transceiver

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ZMDI - Making positive impact

As a result of ZMDI's leadership in energy-efficient solutions for automotive, industrial, and mobile applications, we have been honored with prestigious awards.

We have been selected as a finalist in the **EE Times and EDN Annual Creativity in Electronics (ACE) Awards 2014** for the category "Energy Technology Award" for our ZSSC1956 Intelligent Battery Monitoring Solution, as well as for the "Marketing Team" for our marketing campaigns. In 2012 as well as 2013, we received the **Green Apple Award** for products that contribute to "passive" energy savings. ZMDI was honored with the "**Best Company for Innovation and Sustainability Award**" (regional) by the International Alternative Investment Review (IAIR) for 2013. In 2012, we received the "**Innovative Enterprise of the Year 2012**" presented by the president of Bulgaria. Frost & Sullivan have recognized us with the 2012 **Europe Frost & Sullivan New Product Innovation Award** for our innovative battery-monitoring device.

World-class customer support from ZMDI can help you navigate the path to superior automotive products

ZMDI evaluation kits and calibration tools can help you find the shortcuts and minimize time to market for your innovative automotive applications.

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