Sensing Solutions Overview

IDT is a trusted partner in the sensing market with more than twenty years of experience developing leading-edge core technologies for sensor signal conditioning (SSC) devices. IDT’s sensor signal conditioning ICs are all-in-one, energy efficient products that are easy-to-use and are supported by advanced software and expert technical support. Our single-pass operation calibration lowers costs by reducing test time without sacrificing precision. Our portfolio offers a broad range of resistive and capacitive SSC ICs. IDT’s highly accurate; single-pass calibration operation enables design of cost-effective, accurate sensing systems.

IDT SSC ICs Enable Easy Sensor Platform Development

• Analog and One-Wire interface
• Digital I²C & SPI output
• Resistive and capacitive sensor interface
• High analog gain for sophisticated sensors
• Industrial and consumer applications
• Low-power and battery-powered applications
• Single-pass calibration
• High ADC resolution up to 24 bit
• Wafer and packaged delivery forms
Why Choose IDT SSCs?

IDT SSC ICs are all-in-one, energy-efficient products that are easy-to-use and are supported by advanced software and expert technical support staff.

Innovation-driven and customer-focused, we enable IC solutions that reduce fuel consumption and CO2 emissions to help protect the environment. Our products range from very low-power SSCs for mobile applications to rugged AEC-Q100-qualified 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.

Lowest Total System Cost with IDT SSCs
Automotive Solutions

Body
- HVAC
- Power seat
- Mirror control

Infotainment
- Timing solutions
- Wireless power
- Power management

Safety
- Seat occupant detection
- Hands-off detection

Chassis
- Electric power steering
- ABS/ESP

Powertrain
- Oil level/pressure/temperature/quality
- In-cylinder pressure
- UREA pressure
- Mass air flow sensor
- Seat pressure sensor transmission
- Throttle control
- High temperature sensing (HTS)
- Flex fuel
- E-gas
- Diesel handling

BASIC SELECTION GUIDE FOR IDT SSC FAMILY

Sensor Type
- Capacitive
- Resistive

Further selection by:
- Temp. Comp.
- Temp. Range
- Gain & Resolution
- Sample Rate
- Supply Voltage
- Operating Current
- Output Type
- Analog
- SPI/I²C
- PWM
- ZACwire™
- Alarm

Yes
- Automotive

No
- ZSC31150
- ZSSC3170
- ZSSC4151
- ZSSC4169

- ZSC3101x
- ZSC31050
- ZSSC3026
- ZSSC3018
- ZSSC3224
Featured SSC Products

ZSC31150

Automotive Sensor Signal Conditioner

- Digital compensation of sensor offset, sensitivity, temperature drift and non-linearity
- Accommodates nearly all bridge sensors by PGA and programmable ADC
- Capable of conditioning bridge sensor signals ranging from 1 to 275mV/V
- Set of diagnostics functions needed for safety applications
- Temperature compensation via internal diode, external diode or bridge sensor element
- Output options: voltage (0 to 5V), I²C, ZACwire™ (one-wire interface)
Automotive Sensor Signal Conditioner with Analog Output

- Safety and diagnostic functions that can enable support for automotive (ASIL B) and industrial (SIL 2) safety critical applications related to the ISO 26262:2011 and IEC 61508 standards
- Digital compensation of sensor offset, sensitivity, temperature drift, and non-linearity
- Adjustable to nearly all full or half bridge sensors
- Analog gain of 200, supporting sensors with spans down to 1mV/V using the digital zooming option
- Output options: ratiometric 12-bit analog voltage output (e.g., 5-95% or 10-90%) with freely adjustable clamping or ZACwire™ digital one-wire-interface (OWI)
Automotive Grade Resistive Sensor Signal Conditioner with SENT Output

- Differential bridge sensor input and on-chip or external temperature sensors
- Digital compensation for offset, gain, and higher order nonlinearity as well as temperature
- Accuracy: ±0.50% FS at -40°C to 150°C
- SENT output based on SAE J2716 Revision 3.0 standard using Fast and Serial Data Message Channels
- Support for the user’s ASIL C safety applications
## Single-bridge Sensor Signal Conditioners

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Supply Voltage (V)</th>
<th>Interface</th>
<th>Adjustable Analog Gain</th>
<th>Resolution (Bits)</th>
<th>Sample Rate Max (kHz)</th>
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</thead>
<tbody>
<tr>
<td>ZSSC3015</td>
<td>Resistive Sensor Signal Conditioner with Diagnostics - AEC-Q100 qualified</td>
<td>2.7 - 5.5</td>
<td>Ratiometric Voltage, Absolute Voltage, ZACwire</td>
<td>6, 24, 48, 96</td>
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<td>ZSC31150</td>
<td>Automotive Sensor Signal Conditioner</td>
<td>4.5 - 5.5</td>
<td>Ratiometric Voltage, ZACwire, I²C</td>
<td>3, 7, 9, 14, 26, 35, 52, 70, 105, 140, 210, 280, 420</td>
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<td>7.8</td>
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<td>ZSSC3131</td>
<td>Capacitive Sensor Signal Conditioner with Digital Output</td>
<td>4.5 - 5.5</td>
<td>Ratiometric Voltage, ZACwire, I²C</td>
<td>3, 7, 9, 14, 26, 35, 52, 70, 105</td>
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<td>ZSSC3135</td>
<td>Sensor Signal Conditioner for Piezoresistive Bridge Sensors</td>
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<td>Ratiometric Voltage, ZACwire, I²C</td>
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<td>ZSSC3136</td>
<td>Automotive Sensor Signal Conditioner for Safety Switch Applications</td>
<td>4.5 - 5.5</td>
<td>Ratiometric Voltage, ZACwire, I²C</td>
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<td>ZSSC3138</td>
<td>Automotive Sensor Signal Conditioner for Ceramic Sensor Applications</td>
<td>4.5 - 5.5</td>
<td>Ratiometric Voltage, ZACwire, I²C</td>
<td>3, 7, 9, 14, 26, 35, 52, 70, 105, 140, 210, 280, 420</td>
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<td>ZSSC3154</td>
<td>Automotive Sensor Signal Conditioner with Dual Analog Output</td>
<td>4.5 - 5.5</td>
<td>Ratiometric Voltage, ZACwire, I²C, Dual Analog Output</td>
<td>3, 7, 9, 14, 26, 35, 52, 70, 105, 210, 280, 420</td>
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<td>ZSSC3170</td>
<td>Automotive Sensor Signal Conditioner with LIN and PWM Interface</td>
<td>7 - 18</td>
<td>PWM, LIN</td>
<td>3, 7, 9, 14, 26, 35, 52, 70, 105, 140, 210, 280, 420</td>
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<td>ZSSC4151</td>
<td>Automotive Sensor Signal Conditioner with Analog Output</td>
<td>4.5 - 5.5</td>
<td>Ratiometric Voltage, ZACwire, I²C</td>
<td>1 - 200</td>
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<td>ZSSC4162</td>
<td>Automotive Sensor Signal Conditioner Dual Bridge SENT Output</td>
<td>4.75 - 5.25</td>
<td>SENT 3.0, I²C</td>
<td>1 - 200</td>
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<td>ZSSC4169</td>
<td>Automotive Grade Resistive Sensor Signal Conditioner with SENT Output &amp; ASIL-C</td>
<td>4.5 - 5.5</td>
<td>SENT, I²C</td>
<td>1-200</td>
<td>18</td>
<td>1.56</td>
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The products in this guide represent a portion of IDT’s automotive sensing solutions.

To request samples, download documentation, or learn more, visit: [IDT.com/ssc](http://IDT.com/ssc)

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**Global Strength, Local Focus**

IDT is headquartered in Silicon Valley – the heart and soul of technical innovation. Our global locations place design and sales support wherever our customers happen to be, whether in the Americas, Europe or Asia.

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