

## Brief Description

The ZSC31015 is adjustable to nearly all piezo-resistive bridge sensors. Measured and corrected bridge values are provided at the SIG™ pin, which can be configured as an analog voltage output or as a one-wire serial digital output.

The digital one-wire interface (OWI) can be used for a simple PC-controlled calibration procedure to program a set of calibration coefficients into an on-chip EEPROM. The calibrated ZSC31015 and a specific sensor are mated digitally: fast, precise, and without the cost overhead associated with trimming by external devices or laser. Integrated diagnostics functions make the ZSC31015 particularly well suited for automotive applications.\*

## Features

- Digital compensation of sensor offset, sensitivity, temperature drift, and non-linearity
- Programmable analog gain and digital gain; accommodates bridges with spans < 1mV/V and high offset
- Many diagnostic features on chip (e.g., EEPROM signature, bridge connection checks, bridge short detection, power loss detection)
- Independently programmable high and low clipping levels
- 24-bit customer ID field for module traceability
- Internal temperature compensation reference (no external components)
- Option for external temperature compensation with addition of single diode
- Output options: rail-to-rail ratiometric analog voltage (12-bit resolution), absolute analog voltage, digital one-wire interface
- Fast power-up to data out response; output available 5ms after power-up
- Current consumption depends on programmed sample rate: 1mA down to 250µA (typical)
- Fast response time: 1ms (typical)
- High voltage protection up to 30V with external JFET

## Benefits

- No external trimming components required
- Simple PC-controlled configuration and calibration via one-wire interface
- High accuracy: ±0.1% FSO @ -25 to 85°C; ±0.25% FSO @ -50 to 150°C
- Single-pass calibration – quick and precise

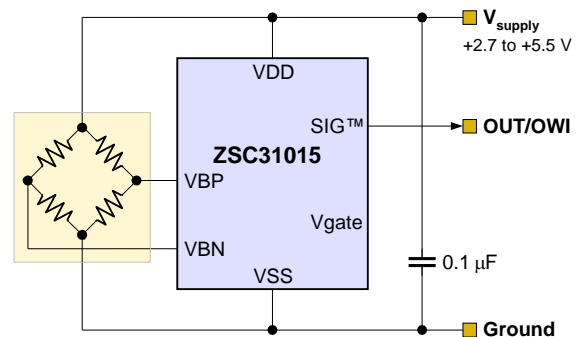
## Available Support

- Evaluation Kit available
- Mass Calibration System available
- Support for industrial mass calibration available
- Quick circuit customization possible for large production volumes

## Physical Characteristics

- Wide operation temperature: -50°C to +150°C
- Supply voltage 2.7 to 5.5V; with external JFET, 5.5 to 30V
- Small SOP8 package

## ZSC31015 Application Circuit



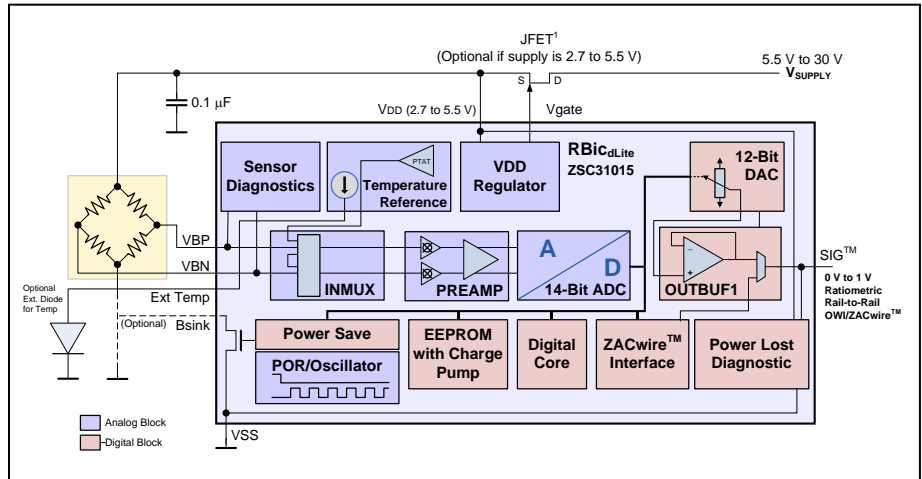
\* Not AEC-Q100-qualified.

ZSC31015 Block Diagram

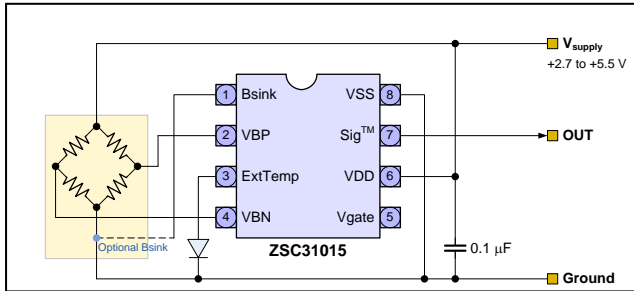
Highly Versatile Applications in Many Markets Including

- ❖ Industrial
- ❖ Building Automation
- ❖ Office Automation
- ❖ White Goods
- ❖ Automotive \*
- ❖ Portable Devices
- ❖ Your Innovative Designs

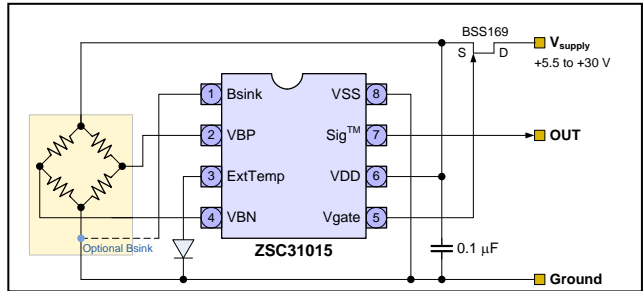
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Rail-to-Rail Ratiometric Voltage Output Applications



Absolute Analog Voltage Output Applications



Ordering Examples (See section 11 of the data sheet for additional temperature range options.)

Sales Code	Description	Package
ZSC31015EEB	ZSC31015 Die — Temperature range: -50°C to +150°C	Unsawn on Wafer
ZSC31015EEC	ZSC31015 Die — Temperature range: -50°C to +150°C	Sawn on Wafer Frame
ZSC31015EEG1	ZSC31015 SOP8 (150 mil) — Temperature range: -50°C to +150°C	Tube: add "-T" to sales code. Reel: add "-R"
ZSC31015KIT	ZSC31015 ZACwire™ SSC Evaluation Kit: Communication Board, SSC Board, Sensor Replacement Board, USB Cable, 5 IC Samples (SOP8 150mil) (ZACwire™ SSC Evaluation Software can be downloaded from <a href="http://www.IDT.com/ZSC31015">www.IDT.com/ZSC31015</a> )	Kit

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### Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,  
Koto-ku, Tokyo 135-0061, Japan  
[www.renesas.com](http://www.renesas.com)

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