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

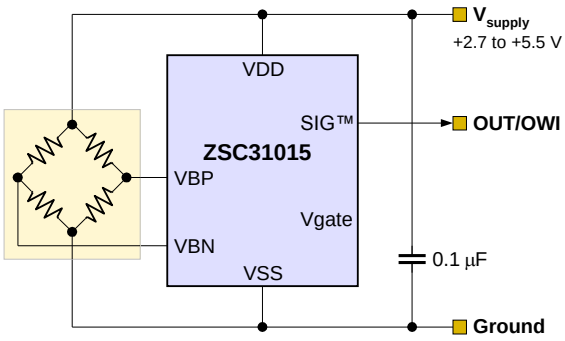
Available Support

- 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



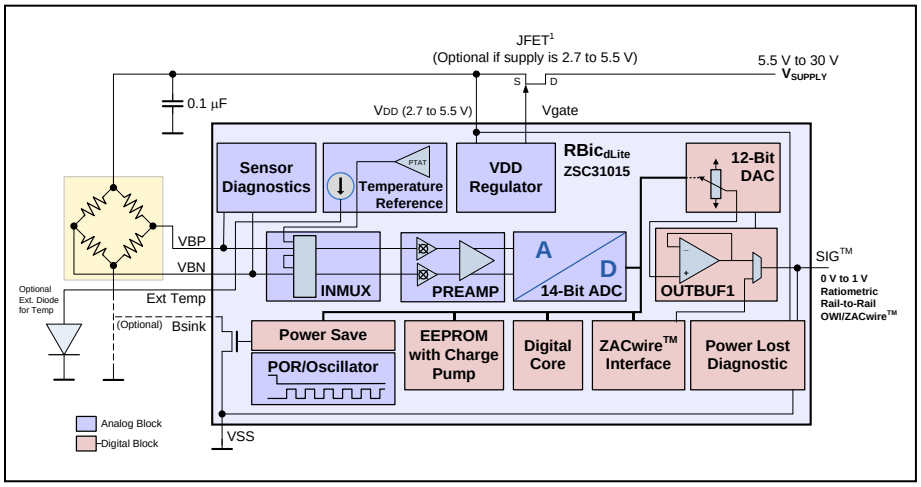
* Not AEC-Q100-qualified.

ZSC31015 Block Diagram

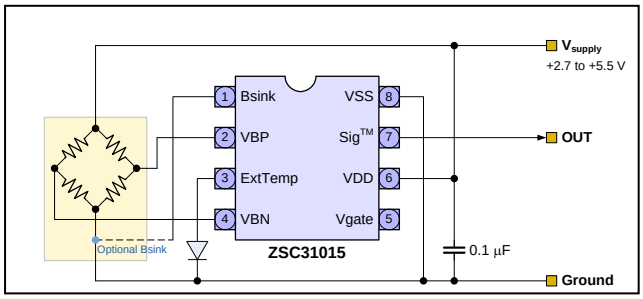
Highly Versatile Applications in Many Markets Including

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

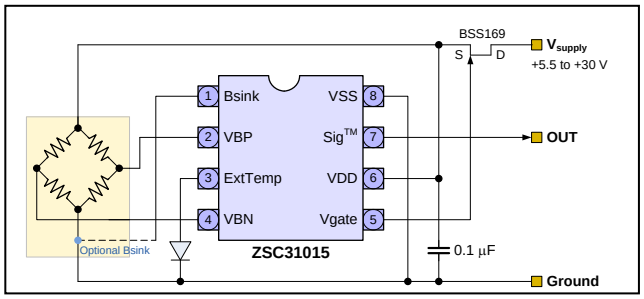
* Not AEC-Q100-qualified.



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 www.IDT.com/ZSC31015)	Kit

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