

Brief Description

The ZSSC3015 sensor signal conditioner IC 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 ZACwire™ 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 ZSSC3015 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 ZSSC3015 particularly well suited for automotive applications.

Features

- Digital compensation of sensor offset, sensitivity, temperature drift, and nonlinearity
- 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, ZACwire™ digital one-wire interface
- Fast power-up to data out response; output available 5ms after power-up
- Current consumption depends on programmed sample rate and mode: 1mA down to 300µA (typ.)
- Fast response time: 1.4ms typical
- High voltage protection: ≤ 30V with external JFET
- AEC-Q100 qualified

Benefits

- No external trimming components required
- PC-controlled configuration and calibration via ZACwire™ one-wire interface – simple, low cost
- High accuracy (as high as ±0.1% FSO @ -25 to 85°C; ±0.25% FSO @ -50 to 150°C)
- Single-pass calibration – quick and precise

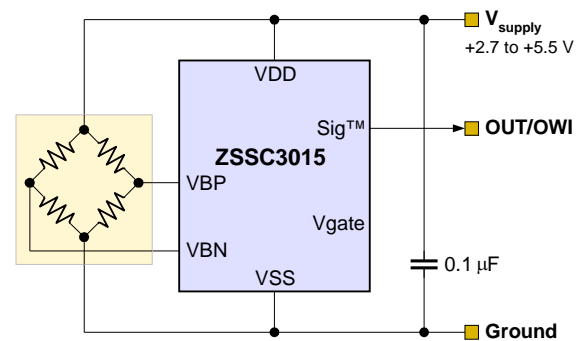
Available Support

- 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

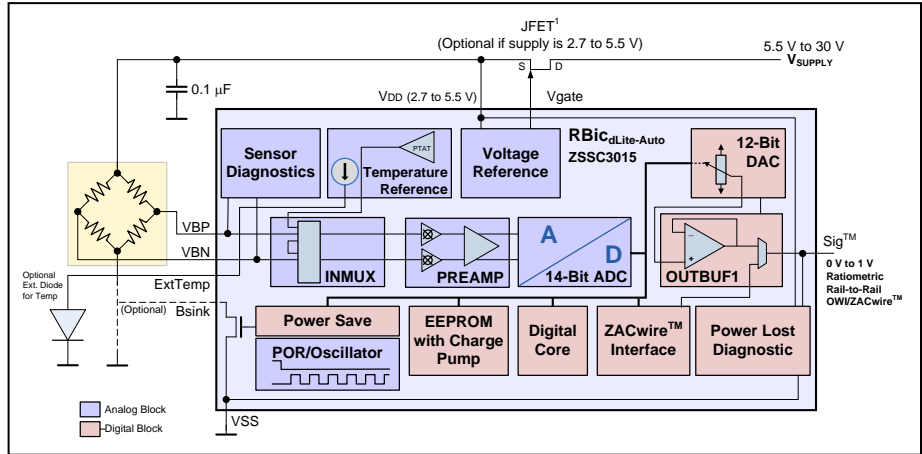
ZSSC3015 Application Circuit



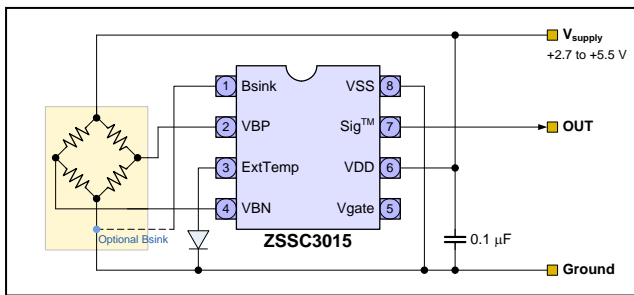
ZSSC3015 Block Diagram

Highly Versatile Applications
in Many Markets Including

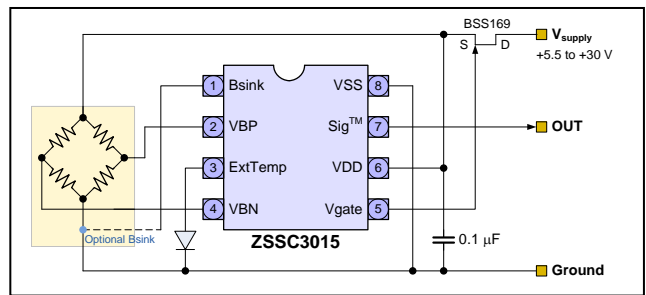
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- ❖ Office Automation
- ❖ White Goods
- ❖ Automotive
- ❖ Portable Devices
- ❖ Your Innovative Designs



Rail-to-Rail Ratiometric Voltage Output Applications



Absolute Analog Voltage Output Applications



Part Ordering Examples (See section 11 in the data sheet for additional options.)

Sales Code	Description	Package
ZSSC3015NE1B	ZSSC3015 Die — Temperature range: -50°C to +150°C	Unsawn on Wafer
ZSSC3015NE1C	ZSSC3015 Die — Temperature range: -50°C to +150°C	Sawn on Wafer Frame
ZSSC3015NE2T(R)	ZSSC3015 SOP8 (150 mil) — Temperature range: -50°C to +150°C	Tube: add "-T" to sales code. Reel: add "-R"
ZSSC3015KIT	ZSSC3015 SSC Evaluation Kit: Communication Board, SSC Board, Sensor Replacement Board, USB cable, 5 IC samples, instructions for downloading SSC Evaluation Software	Kit

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