

ZMD31015

RBic_{dLite}TM Low-Cost Sensor Signal Conditioner with Diagnostics

ZMDI[®]
The Analog Mixed Signal Company



Brief Description

The RBic_{dLite}TM is adjustable to nearly all piezo-resistive bridge sensors. Measured and corrected bridge values are provided at the SIGTM 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 RBic_{dLite}TM 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 RBic_{dLite}TM 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 250 μ A (typical)
- Fast response time: 1ms (typical)
- High voltage protection up to 30V with external JFET

Benefits

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

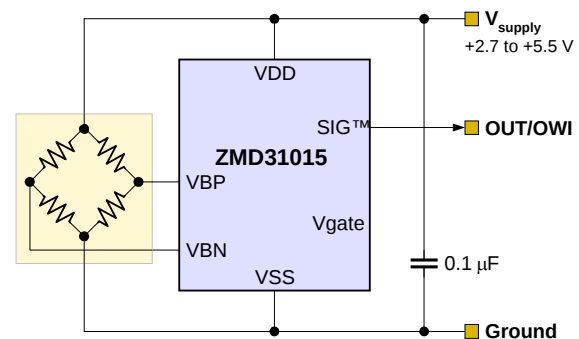
Available Support

- Development Kit available
- Multi-Unit Calibrator Kit 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

ZMD31015 Application Circuit



* Not AEC-Q100-qualified.

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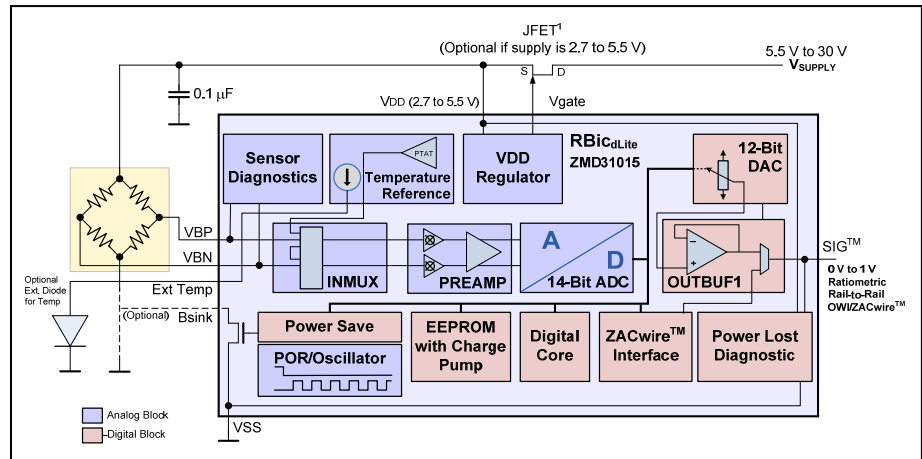


ZMD31015 Block Diagram

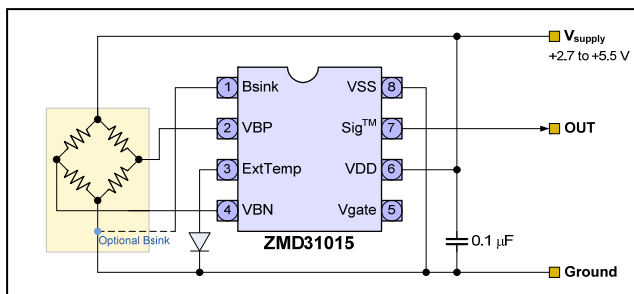
Highly Versatile Applications in Many Markets Including

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

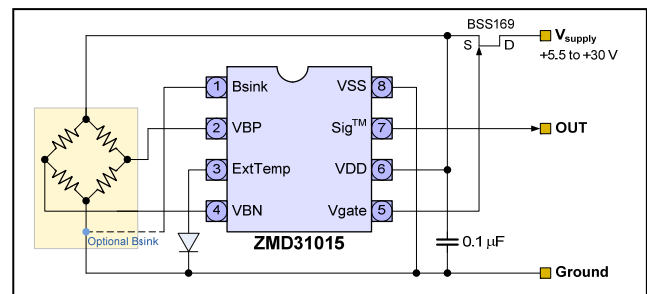
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Rail-to-Rail Ratiometric Voltage Output Applications



Absolute Analog Voltage Output Applications



Ordering Examples (Please contact ZMDI Sales for additional options.)

Sales Code	Description	Package
ZMD31015DEB	ZMD31015 RBic _{dlite} TM Die — Temperature range: -50°C to +150°C	Unsaun on Wafer
ZMD31015DEC	ZMD31015 RBic _{dlite} TM Die — Temperature range: -50°C to +150°C	Sawn on Wafer Frame
ZMD31015DED	ZMD31015 RBic _{dlite} TM Die — Temperature range: -50°C to +150°C	Waffle Pack
ZMD31015DEG1	ZMD31015 RBic _{dlite} TM SOP8 (150 mil) — Temperature range: -50°C to +150°C	Tube: add "-T" to sales code Reel: add "-R"
ZMD31015KIT	ZMD31015 SSC Evaluation Kit: Communication Board, SSC Board, Sensor Replacement Board, Evaluation Software, USB Cable, 5 IC Samples	Kit

Sales and Further Information

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