

# ZMD31010

## RBic<sub>Lite</sub><sup>TM</sup> Low-Cost Sensor Signal Conditioner

**ZMDI**<sup>®</sup>

The Analog Mixed Signal Company



### Brief Description

The RBic<sub>Lite</sub><sup>TM</sup> ZMD31010 is a sensor signal conditioner integrated circuit, which enables easy and precise calibration of resistive bridge sensors via EEPROM. When mated to a resistive bridge sensor, it will digitally correct offset and gain with the option to correct offset and gain coefficients and linearity over temperature. A second-order compensation can be enabled for temperature coefficients of gain or offset or bridge linearity. The RBic<sub>Lite</sub><sup>TM</sup> communicates via ZMD's ZACwire<sup>TM</sup> serial interface to the host computer and is easily mass calibrated in a Windows<sup>®</sup> environment. Once calibrated, the output pin Sig<sup>TM</sup> can provide selectable 0 to 1 V, rail-to-rail ratiometric analog output, or digital serial output of bridge data with optional temperature data.

### Features

- Digital compensation of sensor offset, sensitivity, temperature drift, and non-linearity
- Accommodates differential sensor signal spans, from 1.2 mV/V to 60 mV/V
- ZACwire<sup>TM</sup> One-Wire Interface (OWI)
- Internal temperature compensation and detection via bandgap PTAT (proportional to absolute temperature)
- Optional sequential output of both, temperature and bridge readings, on ZACwire<sup>TM</sup> digital output
- Output options: rail-to-rail analog output voltage, absolute analog voltage, digital One-Wire Interface (OWI)
- Fast response time, 1 ms (typical)
- High voltage protection up to 30 V with external JFET
- Chopper-stabilized true differential ADC
- Buffered and chopper-stabilized output DAC

### 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  $85^\circ\text{C}$ ;  $\pm 0.25\%$  FSO @  $-50$  to  $150^\circ\text{C}$ )
- Single pass calibration – quick and precise
- Suitable for battery-powered applications
- Small SOP8 package

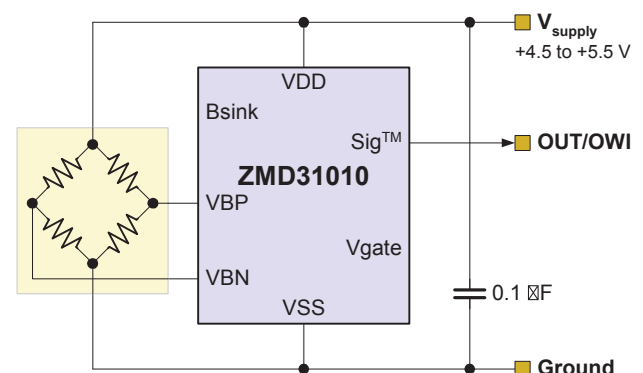
### Available Support

- Development Kit available
- Multi-Unit Calibrator Kit available
- Support for industrial mass calibration available
- Quick circuit customization possible for large production volumes

### Physical Characteristics

- Supply voltage 2.7 to 5.5 V, with external JFET 5.5V to 30 V
- Current consumption depending on adjusted sample rate: 0.25 mA to 1 mA
- Wide operational temperature:  $-50$  to  $+150^\circ\text{C}$

### ZMD31010 Application Circuit – Digital Output



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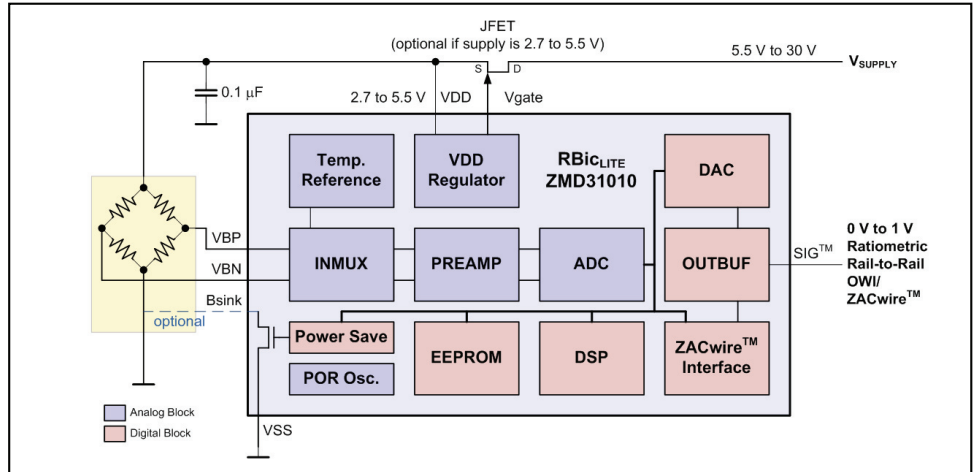
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### ZMD31010 Block Diagram

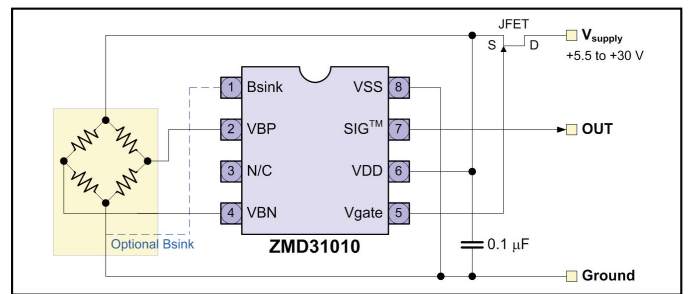
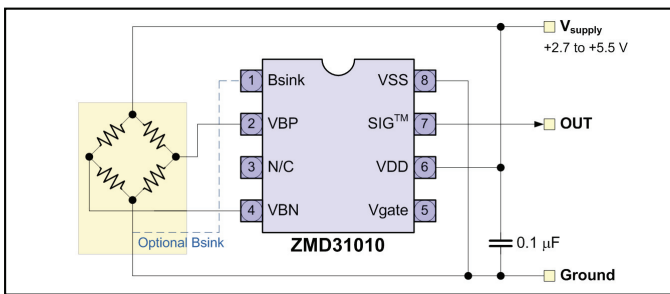
#### Highly Versatile Applications in Many Markets Including

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



### 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
ZMD31010CEB	ZMD31010 RBic <sub>Lite</sub> ™ Die — Temperature range:-50°C to +150°C	Unsawn on Wafer
ZMD31010CEC	ZMD31010 RBic <sub>Lite</sub> ™ Die — Temperature range:-50°C to +150°C	Sawn on Wafer Frame
ZMD31010CED	ZMD31010 RBic <sub>Lite</sub> ™ Die — Temperature range:-50°C to +150°C	Waffle Pack
ZMD31010CEG1	ZMD31010 RBic <sub>Lite</sub> ™ SOP8 (150 mil) — Temperature range:-50°C to +150°C	Tube: add "-T" to sales code Reel: add "-R"
ZMD31010KIT	ZMD31010 SSC Evaluation Kit: Communication Board, SSC Board, Sensor Replacement Board, Evaluation Software, USB Cable, 5 IC Samples	Kit

Sales and Further Information		<a href="http://www.zmdi.com">www.zmdi.com</a>	<a href="mailto:sales@zmdi.com">sales@zmdi.com</a>
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