# ZMD31010

## RBic$_{Lite}$™ Low-Cost Sensor Signal Conditioner

The Analog Mixed Signal Company

## Brief Description

The RBic$_{Lite}$™ 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$_{Lite}$™ communicates via ZMD's ZACwire™ serial interface to the host computer and is easily mass calibrated in a Windows® environment. Once calibrated, the output pin Sig™ 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™ 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™ 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 (±0.1% FSO @ -25 to 85°C; ±0.25% FSO @ -50 to 150°C)
- Single pass calibration – quick and precise
- Suitable for battery-powered applications
- Small SOP8 package

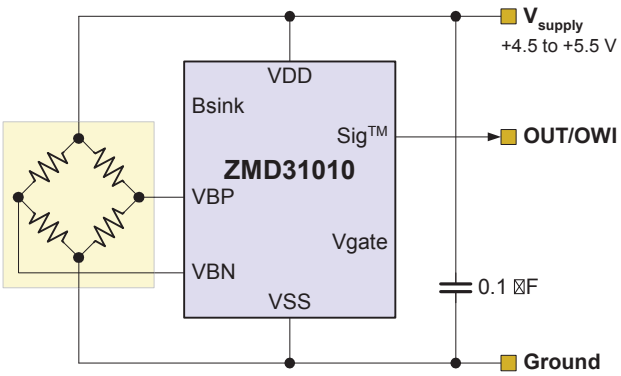
## Available Support

- 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°C

***ZMD31010 Application Circuit – Digital Output***



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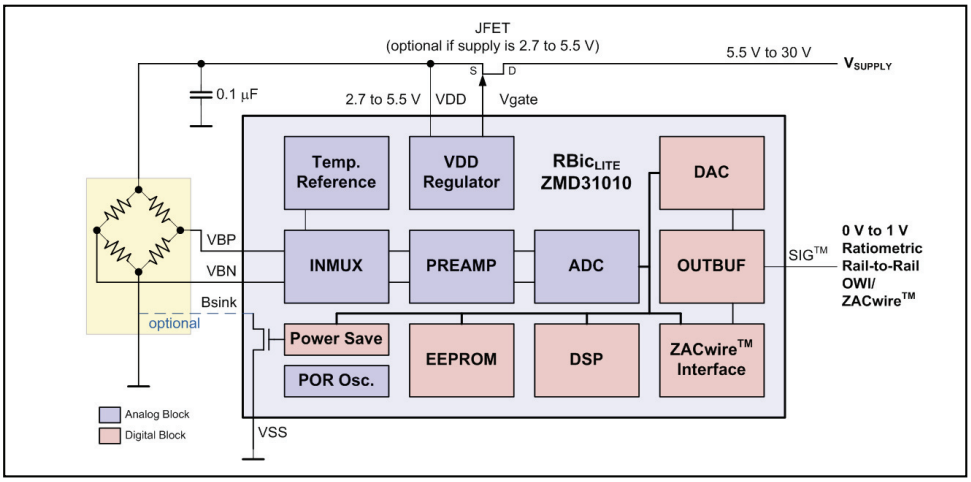
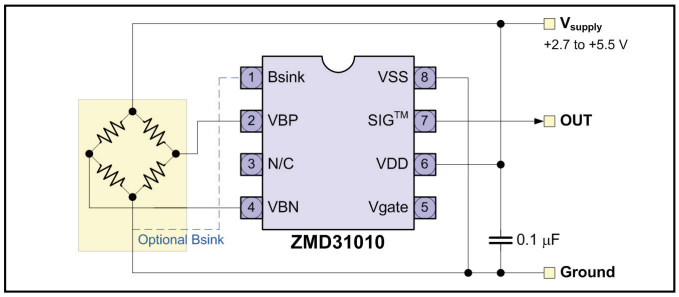
## ZMD31010 Block Diagram



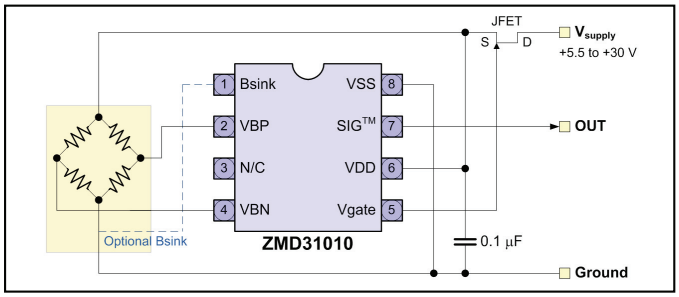

*Highly Versatile Applications in Many Markets Including*

- ***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$_{Lite}$™ Die — Temperature range:-50°C to +150°C | Unsawn on Wafer |
| *ZMD31010CEC* | ZMD31010 RBic$_{Lite}$™ Die — Temperature range:-50°C to +150°C | Sawn on Wafer Frame |
| *ZMD31010CED* | ZMD31010 RBic$_{Lite}$™ Die — Temperature range:-50°C to +150°C | Waffle Pack |
| *ZMD31010CEG1* | ZMD31010 RBic$_{Lite}$™ SOP8 (150 mil) — Temperature range:-50°C to +150°C | Tube: add “-T” to sales code<br>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

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