Brief Description

The ZSSC3131 is a member of the ZSSC313x product family of CMOS integrated circuits designed for automotive/ industrial sensor applications. All family members are well suited for highly-accurate amplification and sensor-specific correction of resistive bridge sensor signals. An internal 16-bit RISC microcontroller running a correction algorithm compensates sensor offset, sensitivity, temperature drift, and non-linearity of the connected sensor element. The required calibration coefficients are stored by the one-pass calibration procedure in an on-chip EEPROM.

The ZSSC3131 is optimized for simple switch and cost-sensitive sensor applications. The integrated adjustable digital filter enables building fast-switching real-time applications as well as stabilized applications for switching input signals that are unstable or disrupted.

Features

- Adjustable to nearly all resistive bridge sensor types: maximum analog gain of 105; maximum overall gain of 420
- Sample rate up to 200 Hz
- ADC resolution 13/14 bit
- Internal temperature compensation
- Integrated adjustable digital filter
- Digital compensation of sensor offset, sensitivity, temperature drift, and non-linearity
- Output options: ratiometric analog voltage output (5 - 95% maximum, 12.4 bit resolution) or ZACwire™ (digital One-Wire Interface (OWI))
- Sensor biasing by voltage
- High voltage protection up to 33 V
- Supply current: Max. 5.5mA
- Reverse polarity and short circuit protection
- Wide operation temperature range: -40 to +150°C
- Traceability by user-defined EEPROM entries

* Note: I²C™ is a trademark of NXP.

** FSO = Full Scale Output.

Benefits

- Family approach offers the best fitting IC selection to build cost-optimized applications
- No external trimming components required
- Low number of external components needed
- PC-controlled configuration and One-Pass/ end-of-line calibration via I²C™* or ZACwire™ interface: Simple, cost-efficient, quick, and precise
- High accuracy (0.25% FSO** @ -25 to +85°C; 0.5% FSO @ -40 to +125°C)
- Optimized for automotive/industrial environments due to robust protection circuitries, excellent electromagnetic compatibility, and AEC-Q100 qualification

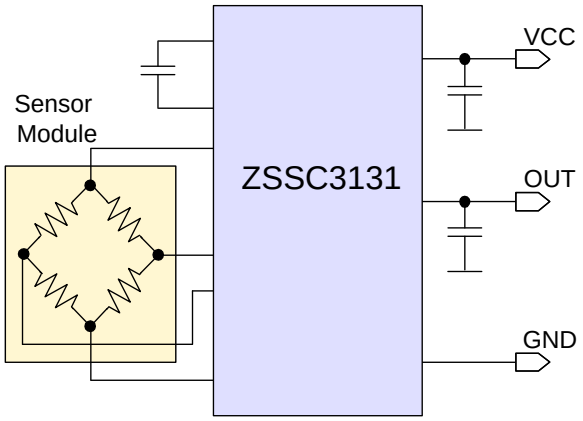
Available Support

- Evaluation Kits
- Application Notes
- Mass Calibration System

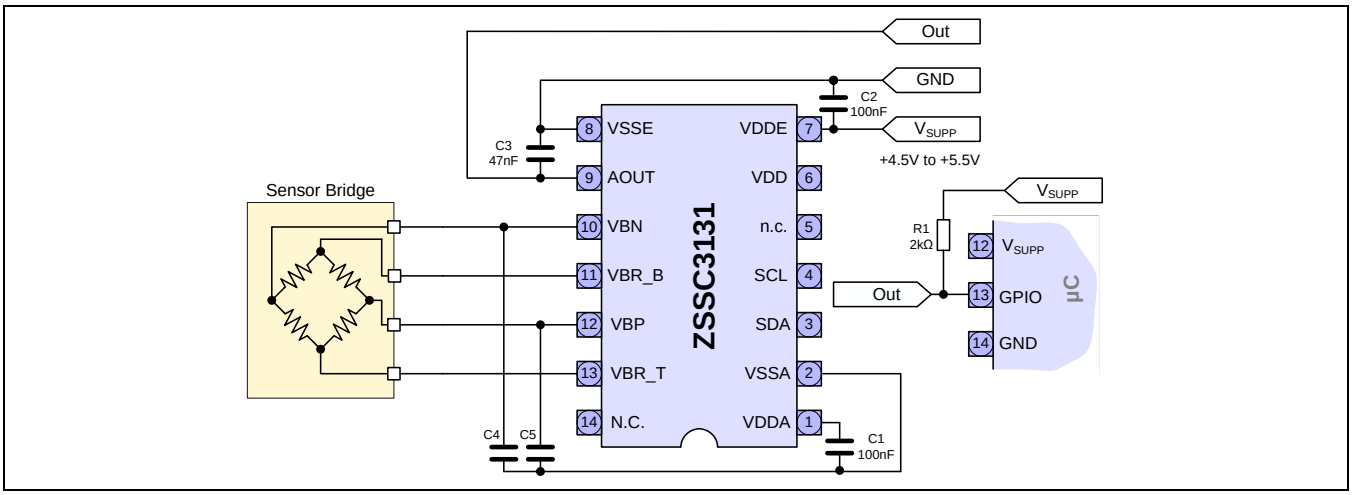
Physical Characteristics

- Supply voltage 4.5 to 5.5 V
- Operation temperature: -40°C to +125°C (-40°C to +150°C extended temperature range depending on product version)
- Available in RoHS-compliant JEDEC-SSOP14 package or delivery as die

ZSSC3131 Minimum Application Requirements



ZSSC3131 Switch Application Example



Ordering Information *(See data sheet section 8 for complete delivery options.)*

Product Sales Code	Description	Package
ZSSC3131BE1	ZSSC3131 die – tested; temperature range -40 to +150°C	Unsawn wafer: add “B” to sales code Die on frame: add “C” to sales code
ZSSC3131BA1	ZSSC3131 die – tested; temperature range -40 to +125°C	Unsawn wafer: add “B” to sales code Die on frame: add “C” to sales code
ZSSC3131BE2	ZSSC3131 SSOP14 – temperature range -40 to +150°C	Tube: add “T” to sales code Tape & Reel: add “R”
ZSSC3131BA2	ZSSC3131 SSOP14 – temperature range -40 to +125°C	Tube: add “T” to sales code Tape & Reel: add “R”
ZSSC313xKITV1.1	ZSSC313x Evaluation Kit, revision 1.1, including Evaluation Board, ZSSC3131 IC samples, USB cable (software can be downloaded from the product page www.IDT.com/ZSSC3131)	Kit
ZSSC313x Mass Calibration System V1.1	Modular Mass Calibration System (MSC) for ZSSC313x including MCS boards, cable, connectors (software can be downloaded from the product page www.IDT.com/ZSSC3131)	Kit

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