

Brief Description

The ZSSC3135 is a member of the ZSSC313x 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 ZSSC3135 is specially designed for piezoresistive bridge sensor elements. The amplification stage with an analog gain of 105 in combination with optional temperature compensation via an external temperature sensor meets or exceeds the requirements of piezoresistive sensor applications.

Features

- Adjustable to nearly all resistive bridge sensor types: analog gain of up to 105, maximum overall gain of 420
- Sample rate up to 200 Hz
- ADC resolution 13/14 bit
- Safety functionality sensor connection
- External temperature sensor
- 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

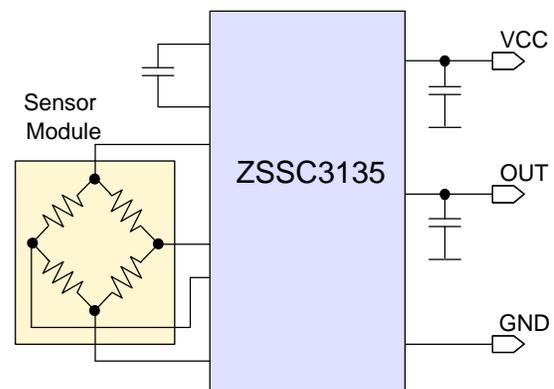
Available Support

- Evaluation Kits
- Application Notes
- Mass Calibration System

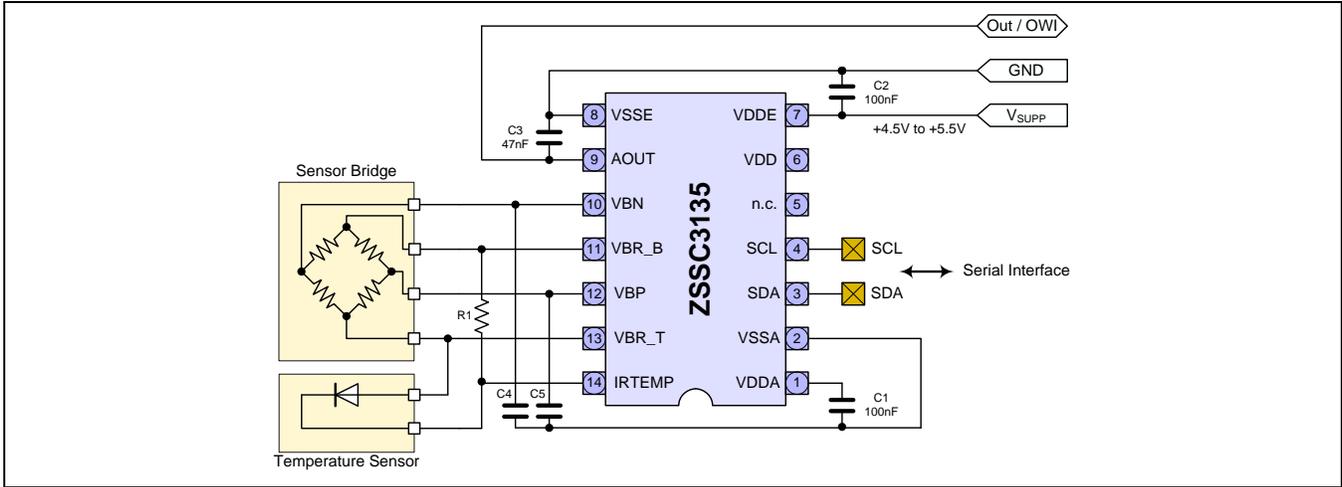
Physical Characteristics

- 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

ZSSC3135 Minimum Application Requirements



ZSSC3135 Application Example



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

| Product Sales Code | Description | Package |
|---------------------------------------|---|--|
| ZSSC3135BE1 | ZSSC3135 die – tested; temperature range -40 to +150°C | Unsaun wafer: add “B” to sales code Die on frame: add “C” to sales code |
| ZSSC3135BA1 | ZSSC3135 die – tested; temperature range -40 to +125°C | Unsaun wafer: add “B” to sales code Die on frame: add “C” to sales code |
| ZSSC3135BE2 | ZSSC3135 SSOP14 – temperature range -40 to +150°C | Tube: add “T” to sales code Tape & Reel: add “R” |
| ZSSC3135BA2 | ZSSC3135 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, ZSSC3135 IC samples, USB cable (software can be downloaded from the product page www.IDT.com/ZSSC3135) | 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/ZSSC3135) | Kit |

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