Brief Description

The ZSSC3154 is an integrated circuit for highly accurate amplification and sensor-specific correction of a bridge sensor signal. Up to two temperature sensors can also be read in parallel.

The circuitry provides different configurations of the analog outputs to show two measurement results simultaneously. This also allows generating a complementary bridge sensor signal, which is often a requirement in safety-relevant applications.

The ZSSC3154 can measure and process two external temperature sensors to compensate the temperature drift of the bridge sensor signal and to output a separate temperature signal.

An integrated calibration microcontroller with an on-chip EEPROM performs the digital compensation of the sensor offset, the sensitivity, the temperature drift, and the nonlinearity of a sensor signal.

The single-pass, digital end-of-line calibration combined with the integrated broken-chip detection supports automatic and highly efficient mass production.

Features

- Differential bridge sensor input
- Half-bridge sensor or temperature sensor input
- Digital compensation of offset, gain, nonlinearity, and temperature dependency
- Two analog outputs; behavior programmable by EEPROM configuration
- Sequential analog output mode provides two measurement values at one output pin
- On-chip diagnostic and safety features including sensor connection diagnostic and broken-chip detection
- 2 EEPROM words for arbitrary user data
- Multiple configurable output options

Benefits

- Bridge sensor signal validation for safety applications via two antivalent analog outputs or via half-bridge sensor measurement output
- Simultaneous measurement of sensor signals, including temperature signal for compensation and for temperature output
- Efficient use of non-calibrated elements for bridge sensors and temperature sensors without external trimming components
- Single-pass end-of-line calibration algorithm minimizes production costs
- Excellent EMC/ESD robustness and AEC-Q100 qualification

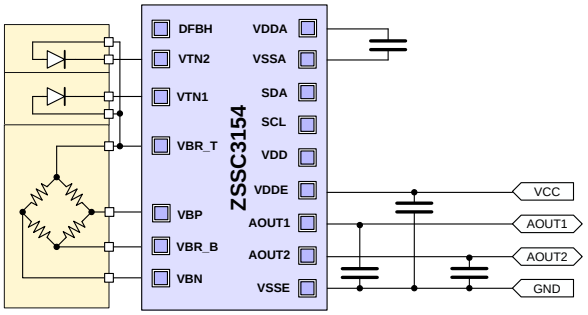
Available Support

- Evaluation Kit
- Application Notes
- Calculation Tools

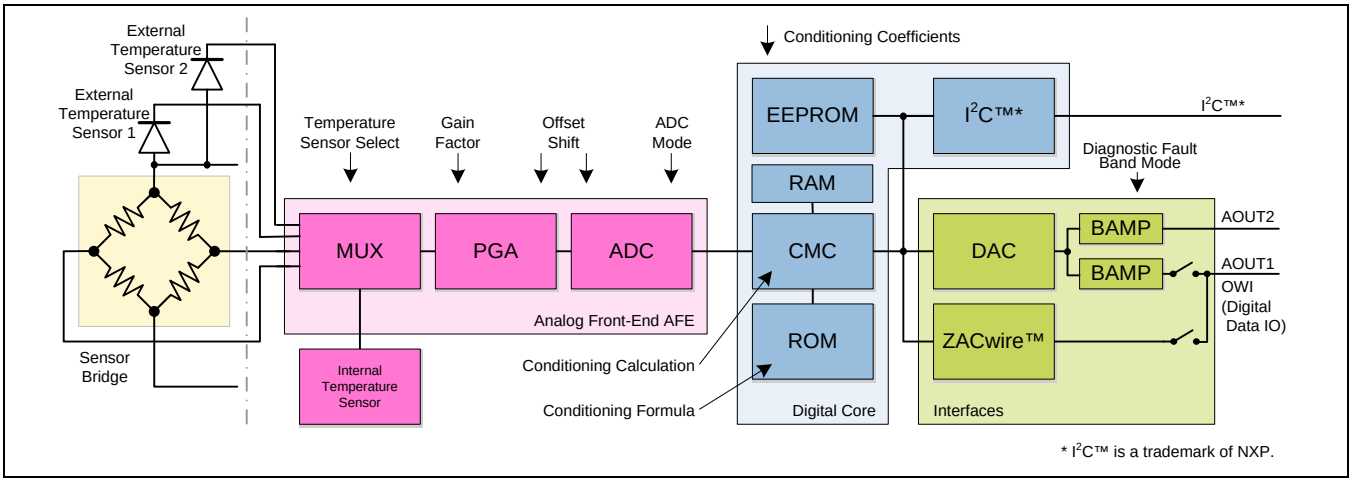
Physical Characteristics

- Supply voltage: 4.5 to 5.5V
- Maximum supply voltage: 7.7V
- Input span: 1.8 to 267mV/V
- ADC resolution: 14 bit
- Output resolution: > 12 bit from 10% to 90%
- Operating temperature range: -40°C to 150°C
- Package: QFN32 (5x5mm; wettable flank) or die

ZSSC3154 Basic Circuit



ZSSC3154 Block Diagram



Ordering Information

Product Sales Code	Description	Package
ZSSC3154BA1B	ZSSC3154 Die – Temperature Range -40 to 125°C	Wafer
ZSSC3154BA1C	ZSSC3154 Die – Temperature Range -40 to 125°C	Sawn on frame
ZSSC3154BA3R	ZSSC3154 QFN32 (5x5 mm; wettable flank) – Temperature Range -40 to 125 °C	Reel
ZSSC3154BE3R	ZSSC3154 QFN32 (5x5 mm; wettable flank) – Temperature Range -40 to 150 °C	Reel
ZSSC3154KIT	ZSSC3154 SSC Evaluation Kit: Communication Board, SSC Board, Sensor Replacement Board, 5 QFN32 samples (software can be downloaded from the product page www.IDT.com/ZSSC3154)	Kit

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