

### Description

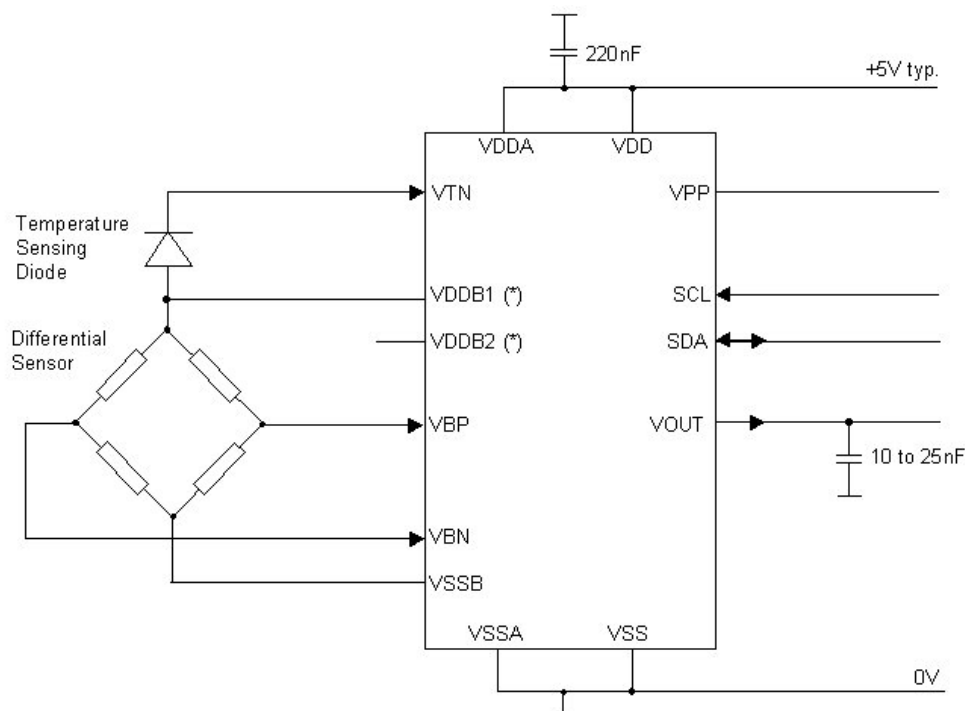
ZMD31020 is a CMOS integrated circuit for the conditioning of ratiometric differential sensor signals. The device provides digital compensation of sensor offset, sensor sensitivity, temperature drift and non-linearity through a 16-bit RISC-microcontroller running a correction algorithm.

A bidirectional I2C-interface allows for a simple PC-controlled calibration procedure, encompassing writing and programming of a set of calibration coefficients into an on-chip EEPROM. Thus a specific sensor and a ZMD31020 device are mated digitally: fast, precise and without cost overhead for trimming components. The ZMD31020 has been designed for commercial, industrial and automotive applications and is specifically suited for piezo-resistive pressure sensors.

### Features

- 0.25%FSO accurate digital concept, based on 16-bit RISC- $\mu$ Controller
- Ratiometric differential input stage: min. span 20mV/V; 15.66x to 42x PGA; 12-bit A-to-D conversion
- Temperature reference: off- or on-chip diode; 10-bit A-to-D Conversion
- 2<sup>nd</sup> order signal conditioning algorithm, based on 7 calibration constants
- 0 to 5V ratiometric analog output & I2C digital output (12-bit resolution)
- Throughput: 100 results / s
- PC-controlled electronic calibration – simple, low-cost
- Operation: -40°C to +125°C; +4.5V to +5.5V
- Deliverable in SSOP14 (5.2mm width) or as die
- Demokit available: samples, documentation, calibration-HW / SW

### Application Circuit



(\*) either pin/pad may be chosen, whichever is more favourable layoutwise

### Application Examples



Refrigerant Pressure Monitoring



Blood Pressure Meter



Filter Check

### Demokit ZMD31020DK

#### Components:

- Calibration board, equipped with zero-insertion-force socket for ZMD31020, PC-interface, and sensor interface
- CD-ROM, containing datasheet, application note, and calibration & evaluation software
- Sensor dummy incl. temperature sensing diode, which fits to the calibration board's sensor interface
- ZMD31020 samples: 10 dice in waffle-pack, 5 finished parts (SSOP14)



### Ordering Information

Order as follows	OperationTemp.	Package	Packing Unit
ZMD31020AB dice on tested unsawn wafer	-40°C ... +125°C	Die	5"-Wafer, electrically tested, unsawn
ZMD31020AC dice on tested sawn wafer	-40°C ... +125°C	Die	5"-Wafer, electrically tested, on frame, sawn
ZMD31020AF finished parts in tube (*)	-40°C ... +125°C	SSOP14	Tube (77 parts / tube)(*)
ZMD31020AF finished parts in tape on reel (*)	-40°C ... +125°C	SSOP14	Tape on reel (2000 parts / reel)(*)
ZMD31020DK demokit			

(\*) The quantity ordered should be a multiple of the quantity / packing unit as specified

#### Sales Office Dresden

ZMD AG  
Grenzstraße 28  
01109 Dresden, Germany  
Phone +49-351-8822-310  
Fax +49-351-8822-337  
e-mail [sales@zmd.de](mailto:sales@zmd.de)  
http:// [www.zmd.de](http://www.zmd.de)

#### Sales Office Long Island

ZMD America Inc.  
201 Old Country Road, Suite 204  
Melville, NY 11747, USA  
Phone +1-631-549-2666  
Fax +1-631-549-2882  
e-mail [sensors@zmda.com](mailto:sensors@zmda.com)  
http:// [www.zmda.com](http://www.zmda.com)

All rights reserved. The material contained herein may not be reproduced, adapted, merged, translated, stored, or used without the prior written consent of the copyright owner. The information furnished in this publication is preliminary and subject to changes without notice.