

## MS5637

# PERIPHERAL MODULE

### Digital Pressure Sensor

#### General Description

The MS5637 peripheral module provides the necessary hardware to interface the MS5637 digital barometric pressure and temperature sensor to any system that utilizes Pmod compatible expansion ports configurable for I<sup>2</sup>C communication. The MS5637 sensor is a self-contained pressure and temperature sensor that is fully calibrated during manufacture. The sensor can operate from 1.5V to 3.6V. The sensor module includes a high-linearity pressure sensor and an ultra-low power 24 bit  $\Sigma$  ADC with internal factory-calibrated coefficients.

#### Specifications

- Measures pressure from 300mbar to 1200mbar
- Measures temperature from -40°C to 125°C
- I<sup>2</sup>C communication
- Fully calibrated
- Fast response time
- Very low power consumption

#### Features

- 12-pin Pmod compatible connector
- I<sup>2</sup>C interface
- Secondary 12-pin connector allows daisy chain
- FPGA fabric available for download
- $\mu$ C C code available for download
- 24 bit resolution for pressure
- 24 bit resolution for temperature
- Parameters stored on chip

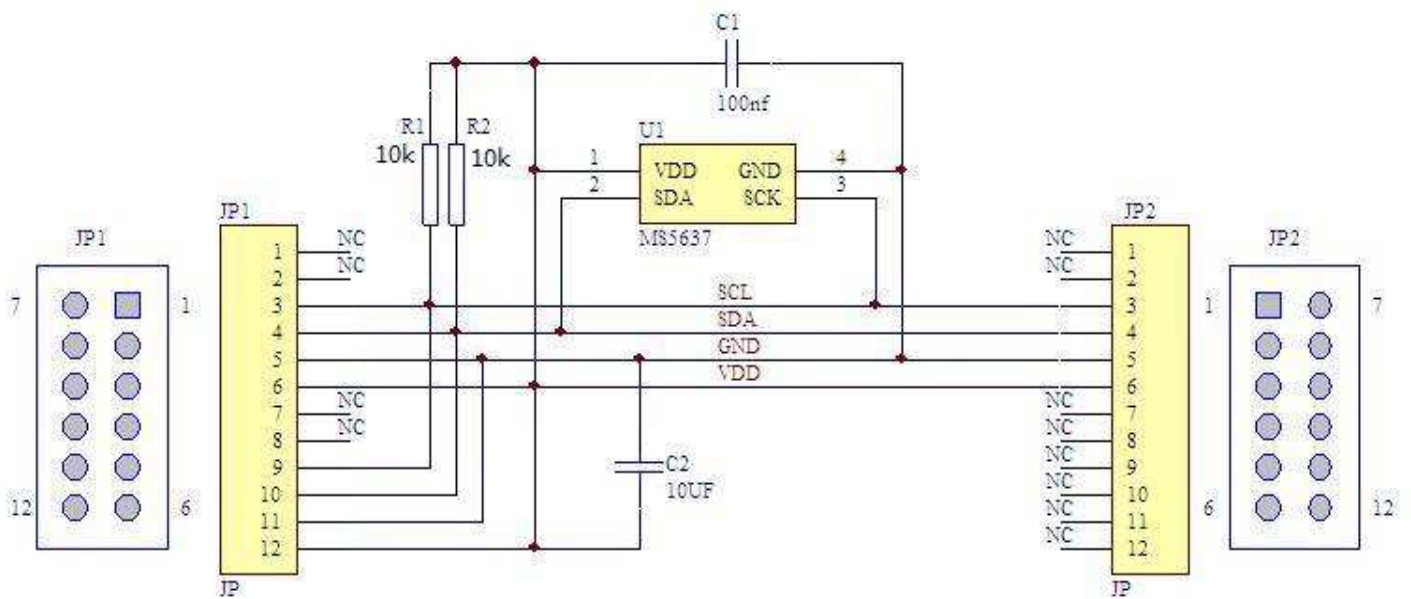
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## Performance

- 300 to 1200mbar pressure range
- -40°C to 85°C temperature range
- Very low power consumption
- Operates from 1.5V to 3.6V
- Altitude resolution at sea level is 20 cm of air
- Fast conversion time – 0.5 mS typical

## Schematic



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## Connector Pin Assignments (I<sup>2</sup>C Communications)

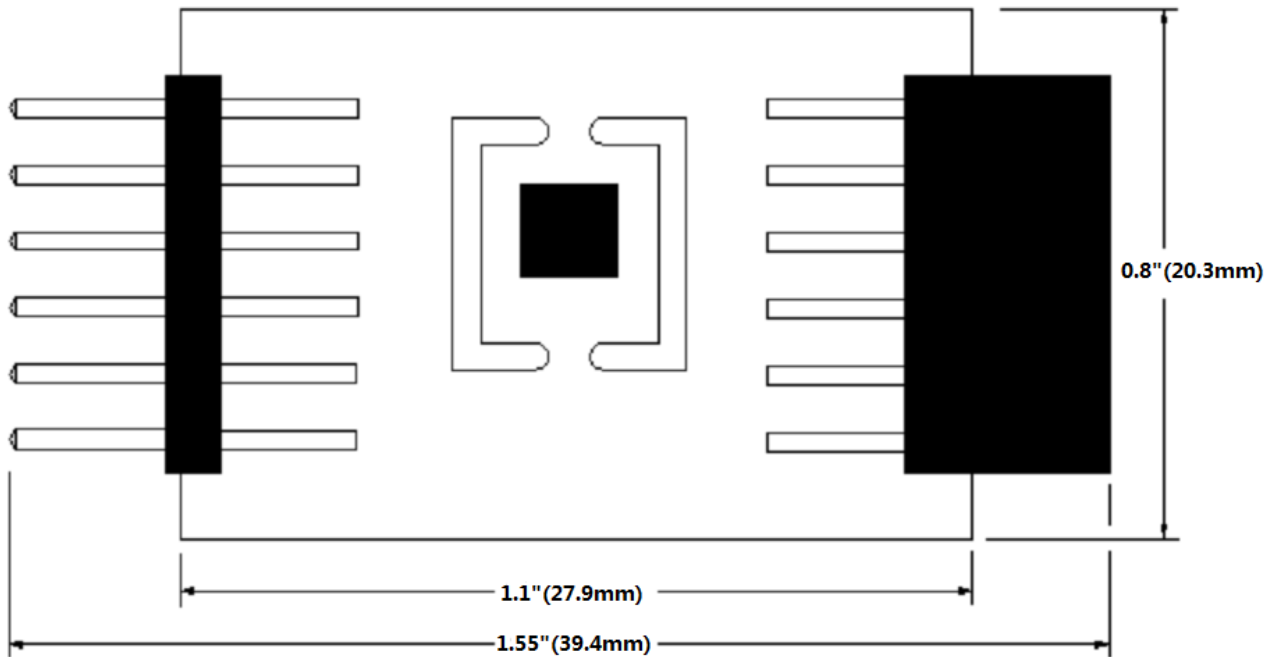
System Plug (Table 1)

Connector J1		
Pin No.	Signal	Description
1	N/C	Not Connected
2	N/C	Not Connected
3	SCL	I <sup>2</sup> C Serial Clock
4	SDA	I <sup>2</sup> C Serial Data
5	GND	Ground
6	Vdd	Power Supply
7	N/C	Not Connected
8	N/C	Not Connected
9	SCL	I <sup>2</sup> C Serial Clock
10	SDA	I <sup>2</sup> C Serial Data
11	GND	Ground
12	Vdd	Power Supply

Expansion Socket (Table 2)

Connector J2		
Pin No.	Signal	Description
1	N/C	Not Connected
2	N/C	Not Connected
3	SCL	I <sup>2</sup> C Serial Clock
4	SDA	I <sup>2</sup> C Serial Data
5	GND	Ground
6	Vdd	Power Supply
7	N/C	Not Connected
8	N/C	Not Connected
9	N/C	Not Connected
10	N/C	Not Connected
11	N/C	Not Connected
12	N/C	Not Connected

## Dimensions(mm)



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## Detailed Description

### I<sup>2</sup>C Interface

The peripheral module can interface to the host in one of two ways. It can plug directly into a Pmod-compatible port (configured for I<sup>2</sup>C) through connector J1, or in this case, other I<sup>2</sup>C boards can attach to the same I<sup>2</sup>C bus through connector J2.

### I<sup>2</sup>C Interface (Daisy Chaining Modules)

Alternatively, the peripheral module can connect to other I<sup>2</sup>C-based Pmod modules through the expansion J2 connector. Connector J1 provides connection of the module to the Pmod host. The pin assignments and functions adhere to the Pmod standard as shown in Table 1. The J2 connector allows the module to be connected through a daisy-chain from another I<sup>2</sup>C module and/or provide I<sup>2</sup>C and power connections to other I<sup>2</sup>C modules on the same bus. See Table 2.

### External Control Signals

The IC operates as an I<sup>2</sup>C slave using the standard 2 wire I<sup>2</sup>C connection scheme. The IC is controlled either by the host (through the Pmod connector). In cases where one or more of the SCL and SDA signals are driven from an external source, resistors R1, R2 provide pull-up. However, this also increases the apparent load to the external driving source. If the external source is incapable of driving these loads, they should be removed.

## Reference Material

- Refer to the MS5637 data sheet for detailed information regarding operation of the IC: <http://www.meas-spec.com/downloads/xxxxxxx.pdf>
- The complete software sensor evaluation kit for ZEDBOARD is available at <http://www.meas-spec.com/TBD/xxxx.zip> (MS5637 ZedBoard Driver)
- The complete software sensor evaluation kit for MICROZED BOARD is available at <http://www.meas-spec.com/TBD/xxxx.zip> (MS5637 MicroZed Board Driver)
- The Boot.bin file of MicroZed Touch Screen Demo Kit for Digital Component Sensors at <http://www.meas-spec.com/TBD/xxxx.zip> (MicroZed Touch Screen Demo)

## Ordering Information

Description	Part Number
MS5673 PERIPHERAL MODULE	DPP101Z000

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