

GHPP750PDO

(-500Pa~500Pa)

Description

The GHPP7xxx series piezoresistive sensors use advanced design, extensive application of MEMS silicon pressure sensor that combines advanced micromachining techniques. They use the latest CMOS signal conditioning circuit to provide an accurate, high precision digital output signal. The cost effective and high performance sensor is designed to meet the strict requirements of OEM customers.

The GHPP750PDO is fully calibrated and temperature compensated with a total error band(TEB)of less than 3% V_{FSS} over the compensated range. Besides the output is a 14-bit binary number and has I²C mode and SPI mode.

Features

- | |
|--------------------------------------|
| • Operating Temperature: -20°C~100°C |
| • SOP8 Package |
| • Micro-pressure Sensors |
| • Gauge and Differential Pressure |

Applications

- | |
|-----------------------|
| • Respiratory Monitor |
| • Sleep Apnea |
| • Intelligent Sickbed |

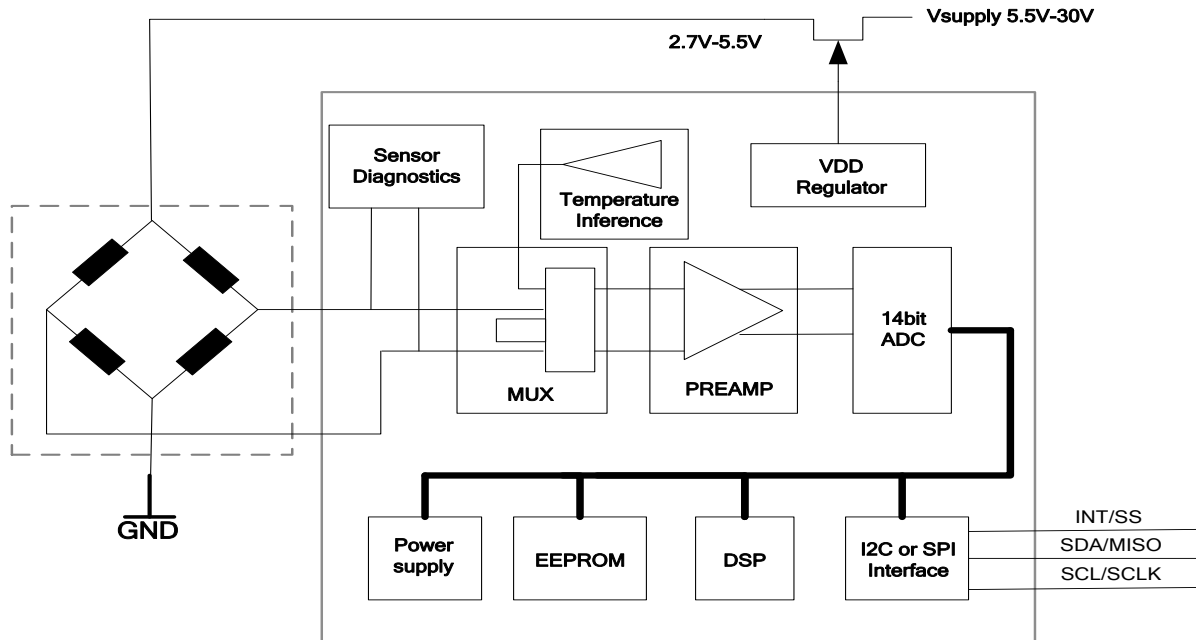
Ordering Information

Type	Supply Voltage	Package	Pressure Port	Pressure Type	Marking
GHPP750P3DOD8	3.3V	SOP8	Barb	Differential	GHPP750P3DOD8
GHPP750P3DOG8	3.3V	SOP8	Barb	Gauge	GHPP750P3DOG8
GHPP750PDOD8	5V	SOP8	Barb	Differential	GHPP750PDOD8
GHPP750PDOG8	5V	SOP8	Barb	Gauge	GHPP750PDOG8

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Block Diagram

Operating Characteristics

Characteristics	Conditions	Min	Typ	Max	Unit	Notes
Supply Voltage	TA = 25 °C	2.7	5.0	5.5	V	
Output Resolution	—			14	Bit	
Output (-Rated)	TA = 25 °C	1245	1638	2031	Counts	
Output (0Pa)	TA = 25 °C	7799	8192	8585	Counts	
Output (+Rated)	TA = 25 °C	14352	14745	15138	Counts	
TEB	0~85 °C			±3	%FSS	
Sensitivity	TA = 25 °C		13.11		Counts/Pa	
Compensated Temperature	—	0		+85	°C	
Operating Temperature	—	-20		+100	°C	
Storage Temperature	—	-40		+125	°C	
Humidity	TA = 25°C	95			%RH	No Condensing
ESD	HBM	-4		+4	kV	EN 61000-4-2
Proof Pressure		30			kPa	
Burst Pressure		50			kPa	
Vibration	15g, Sweep from 10 Hz to 2000 Hz to 10Hz					
Shock	20g, 18 ms					
Soldering Temperature	@265°C, 9 sec max					

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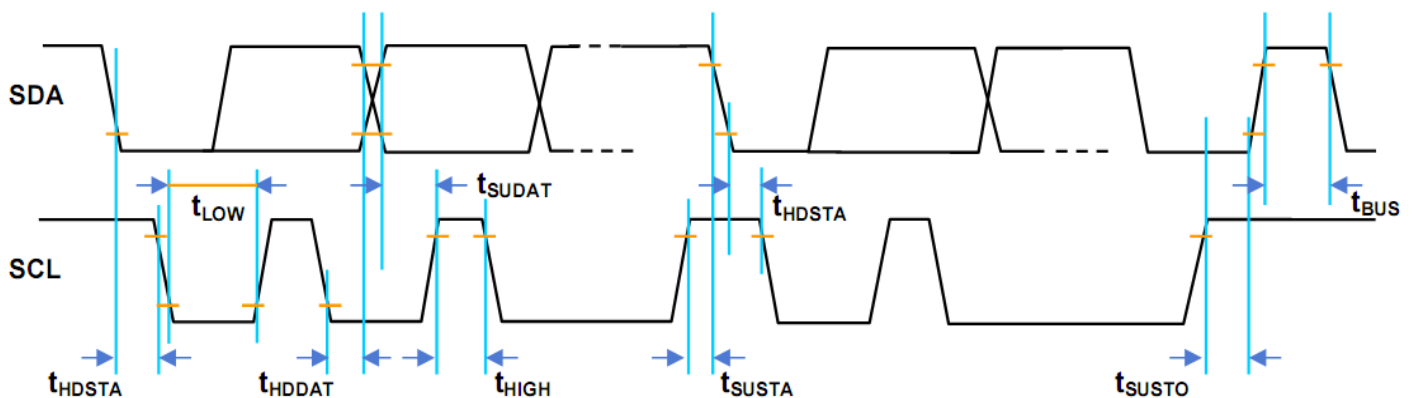
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Serial Interface Parameters

Parameter	Symbol	Min	Max	Unit	Notes
Input High Level	V_{IH}	0.8	1	VDD	—
Input Low Level	V_{IL}	0	0.2	VDD	—
Output Low Level	V_{OL}	—	0.1	VDD	—
Pullup Resistor	R_{PU}	1		K Ω	SCL and SDA Pull-up Resistor
Load Capacitance SDA	C_{L_SDA}	—	200	pF	@400kHz
SCL Clock Frequency	f_{SCL}	100	400	kHz	—
Bus Free Time	t_{BUF}	2	—	μ s	—
Hold Time START Condition	$t_{HD, STA}$	0.1	—	μ s	—
Low Period of SCL	t_{LOW}	0.6	—	μ s	—
HighPeriod of SCL	t_{HIGH}	0.6	—	μ s	—
Setup Time Repeated START Condition	$t_{SU, STA}$	0.1	—	μ s	—
Data Hold Time	$t_{HD, DAT}$	0	—	ns	—
Data Setup Time	$t_{SU, DAT}$	0.1	—	ns	—
Rise Time of Both SDA and SCL	t_r	—	300	ns	—
Fall Time of Both SDA and SCL	t_f	—	300	ns	—
Setup Time for STOPCondition	$t_{SU, STO}$	0.1	—	μ s	—

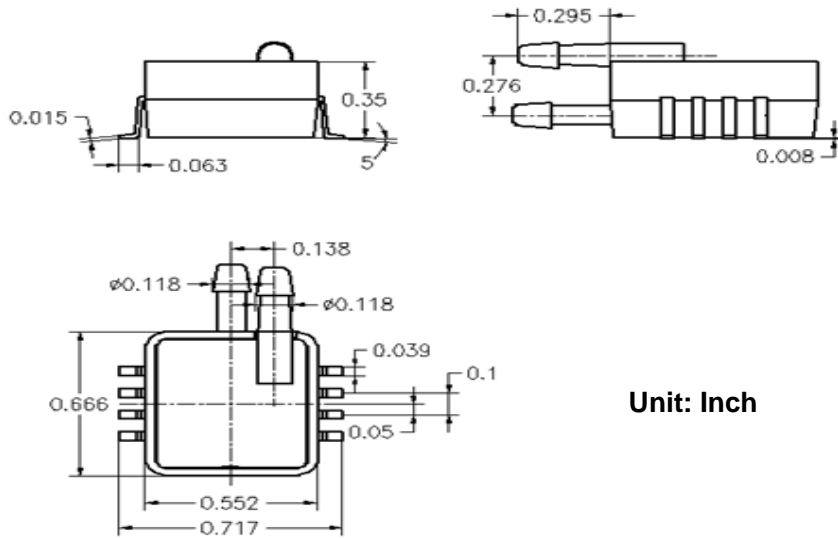
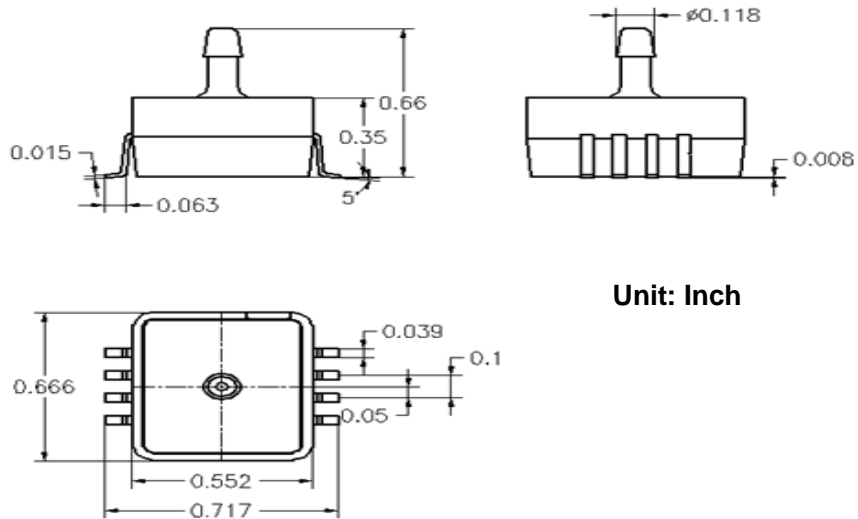
Notes: The hold time of high level and low level should remain the same.



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Package Dimensions
Package Dimensions of GHPP750PDOD8

Package Dimensions of GHPP750P3DOG8

Output Versus Pressure

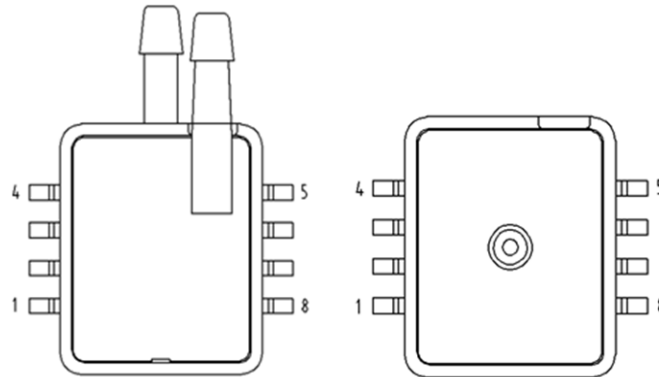
Type	Unit	Gauge Pressure		Differential Pressure			Supply Voltage
		0	+Rated	-Rated	0	+Rated	
GHPP750P3DOD8	Counts	—	—	1638	8192	14745	3.3V
GHPP750P3DOG8	Counts	1638	14745	—	—	—	3.3V
GHPP750PDOD8	Counts	—	—	1638	8192	14745	5V
GHPP750PDOG8	Counts	1638	14745	—	—	—	5V

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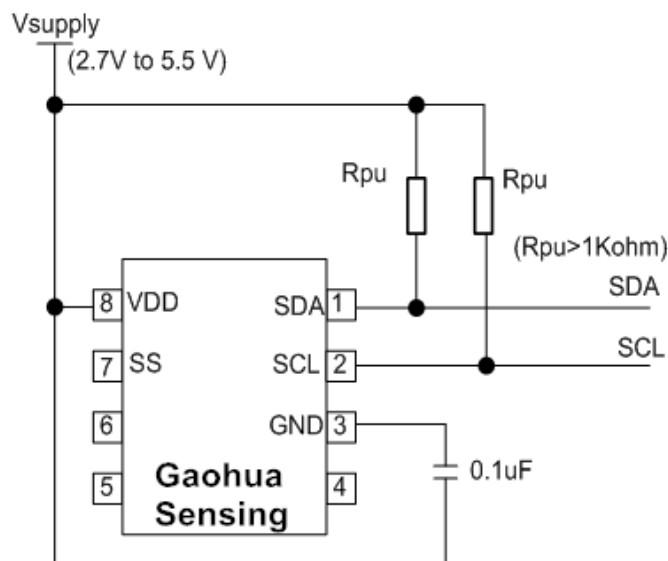
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Pin Definition



Pin	Definitio	Description
1	SDA	I ² C data if in I ² C Mode; Master-In-Slave-Out if in SPI Mode
2	SCL	I ² C clock if in I ² C Mode; Serial Clock if in SPI Mode
3	GND	Ground
7	SS	Enable Signal Under SPI Mode
8	VDD	Supply+

Typical Application Circuit



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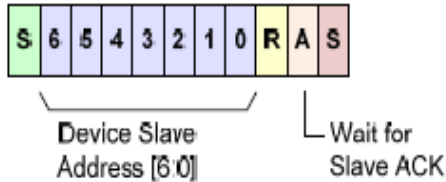
Data Reading

The GHP750PDO has four I2C read commands: Read_MR, Read_DF2, Read_DF3, and Read_DF4.

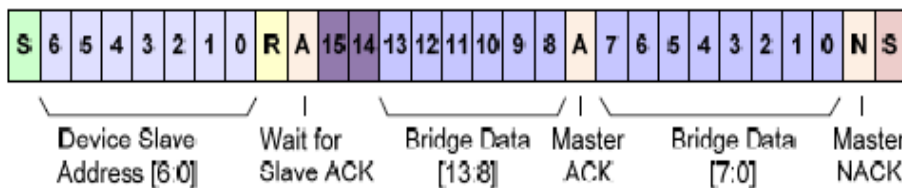
The Read_MR communication contains only the slave address and the READ bit.

For Data Fetch commands, the number of data bytes returned by the RBiCiLite™ is determined by when the master sends the NACK and stop condition.

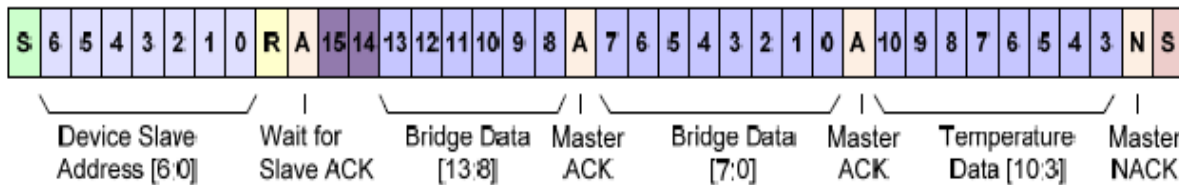
(1) I²C Read_MR – Measurement Request:
Slave starts a measurement and DSP calculation cycle.



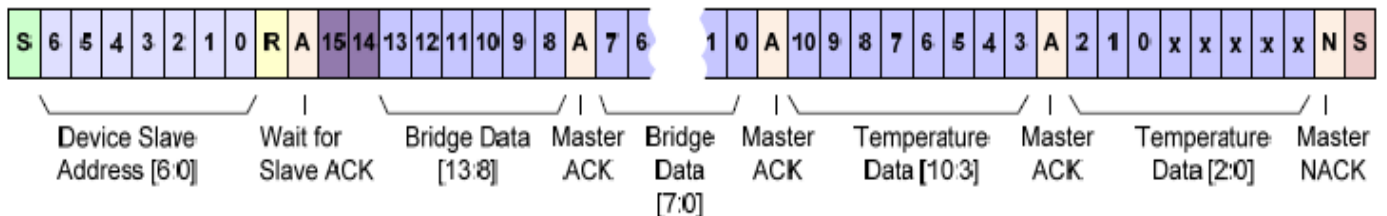
(2) I²C Read_DF2 – Data Fetch 2 Bytes:
Slave returns only bridge data to the master in 2 bytes.



(3) I²C Read_DF3 – Data Fetch 3 Bytes:
Slave returns 2 bridge data bytes & temperature high byte (T[10:3]) to master.

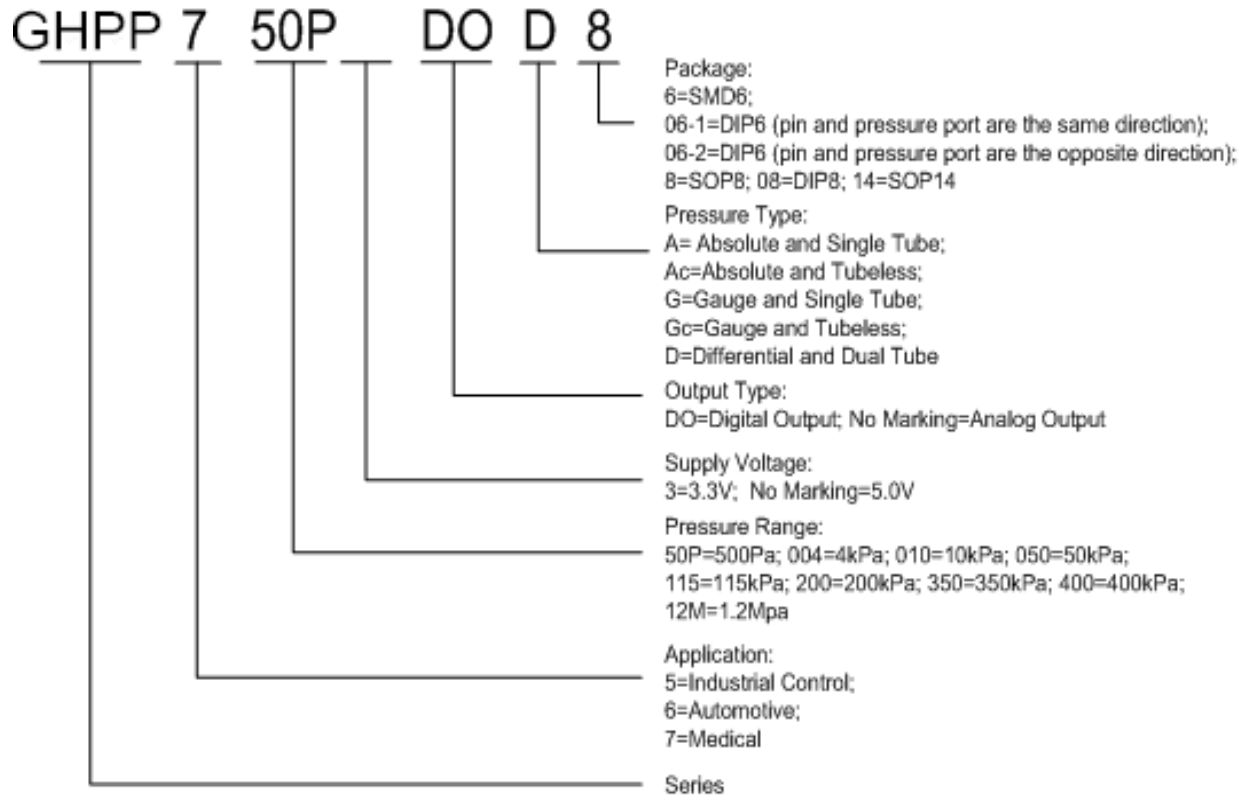


(4) I²C Read_DF4 – Data Fetch 4 Bytes:
Slave returns 2 bridge data bytes & 2 temperature bytes (T[10:3]) and (T[2:0]xxxx) to master.



- S Start Condition
- 5 Device Slave Address (example: Bit 5)
- 2 Data Bit (example: Bit 2)
- R Read/Write Bit (example: Read=1)
- A Acknowledge (ACK)
- N No Acknowledge (NACK)
- S Stop Condition
- Status Bit

User Guide



Notes:

All specifications are subject to change. Contact Gaohua for specifications and engineering drawings that are critical to your application. Drawings contained in this document are for reference only.

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