DATASHEET

GP6A SERIES

VERSION 03

AIoTSensing Inc.
Website: http://www.aiotsensing.com

History of Revision

Datasheet Rev.	Date	Note
01	Sep/22/2021	Released
02	Mar/17/2023	Extend measurement range
03	Nov/28/2024	Modify the accuracy from ±1%FS to ±2.5%FS
04	Apr/11/2025	Update mounting holes to 1.2mm Update soldering Recommendation

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1. Features

- Pressure ranges from -100KPa to1000kPa
- Gage pressure type
- Total Error Band reach to ±1.0 %FSS
- Calibrated temperature range of 0°C to 60°C
- Amplified analog output(10% to 90%Vdd)
- 3~5.0V power supply
- Package size is 7.0mm x10.3mm x10.0mm

2. Applications

- Medical Breathing
- Industrial Controls
- HVAC
- Environmental Controls
- Portable Equipment

3. Descriptions

The GP6A is SOIC-6 package, PCB mounted pressure sensor from AIoT Sensing. Its offer state-of-the-art pressure transducer technology to produce an amplified analog output. All products are designed and manufactured according to ISO 9001 standard.

The GP6A is fully calibrated and temperature compensated with a total error band (TEB) of less than 1.0% over the compensated pressure range. The sensor operates from single supply 5.0VDC and requires a single external component for proper operation. It provides 10% to 90%Vdd according to pressure change.

4. Standard Pressure Ranges

Gage Pressure Type Products			
Device	**Operating Range**	**Proof Pressure**	**Burst Pressure**
GP6A-010KG/N/D	0~10k Pa/-10~0kPa/-10~10k Pa	50Kpa	100Kpa
GP6A-015KG/N/D	0~15k Pa/-15~0kPa/-15~15k Pa	50Kpa	100Kpa
GP6A-035KG/N/D	0~35kPa/-35~0kPa/-35~35 kPa	70 kPa	105kPa
GP6A-040KG/N/D	0~40kPa/-40~0kPa/-40~40 kPa	80 kPa	120kPa
GP6A-050KG/N/D	0~50kPa/-50~0kPa/-50~50 kPa	80 kPa	120kPa
GP6A-100KG/N/D	0~100kPa/-100~0kPa/-100~100kPa	200 kPa	300kPa
GP6A-200KG/C	0~200kPa/-100~200kPa	400 kPa	600kPa
GP6A-300KG/C	0~300kPa/-100~300kPa	700 kPa	1100kPa
GP6A-500KG/C	0~500kPa/-100~500kPa	1000 kPa	1500kPa
GP6A-700KG/C	0~700kPa/-100~700kPa	1500 kPa	2100kPa
GP6A-1000KG/C	0~1000kPa/-100~1000kPa	2000 kPa	3000kPa
Customer customization	≤1000KPa		

5. Performance Characteristics

Parameter	Min	Typ	Max	Units	Specification Notes
Accuracy TEB		±2.5		%FSS	@GP6A-010KG/N/D
Accuracy TEB		±1		%FSS	>10Kpa
Long term stability		±0.1		%FSS/yr	

Note:

1. Accuracy and temperature compensation range could be customized;
2. Anti static protection during welding;
3. Overload voltage (6.5Vdc) or current (5mA) may burn the circuit chip;
4. Please add 0.1uf capacitance between VDD and GND.
5. Compensation Temperature：

C: 0℃ to 50 ℃

S: -20℃ to 60 ℃

T:Customer customization

6. Block Diagram

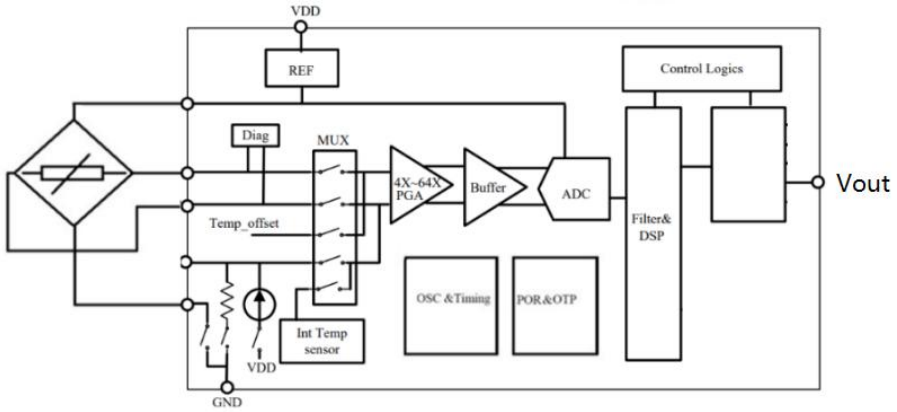


Figure 1: Functional Block Diagram

7. Electrical Specifications

7.1 Electrical Characteristics

Table7.1: DC Characteristics @VDD=3.3V, T=25℃ unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Operation Supply Voltage	V_{DD}		2	5	5.5	V
Operation Temperature	T_{OP}		-40		85	℃
Compensated Temperature	Tco		0		60	℃
Analog output Current					40	mA
Offset output				10%		%VDD
Span output				90%		%VDD
Full Scale				80%		%VDD
Upper output limit			3/4		1	VDD
Lower output limit			0		1/4	VDD
Rload			1			Kohm
Cload					15	nF

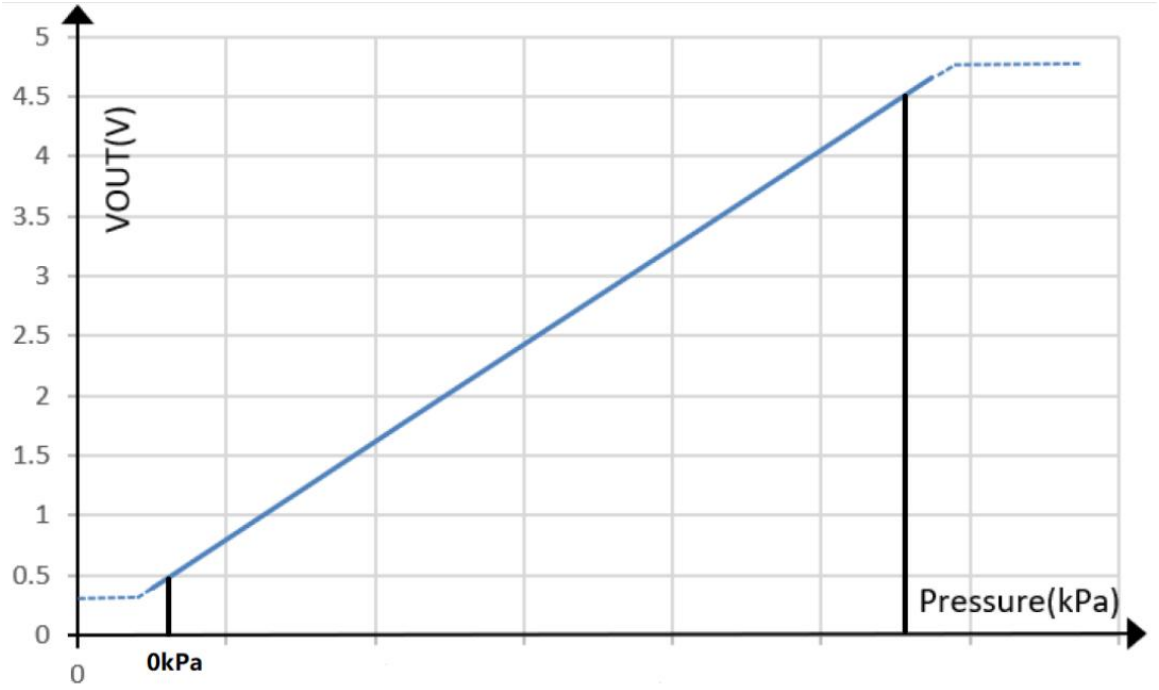
7.2 Absolute Maximum Rating

Table7.2: Absolute Maximum Rating

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{DD}		-0.3	5.0	5.5	V
Interface Voltage	V_{IF}		-0.3		VDD+0.3	V
Storage Temperature Range	T_{STG}		-40		125	℃
ESD Rating		Human body model	-2		+2	kV
Latch-up Current		At 85℃	-100		100	mA

Stresses above those listed as “absolute maximum ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device under these conditions is not implied. Exposure to maximum rating conditions for extended periods may affect device reliability.

8. Pressure Transfer function



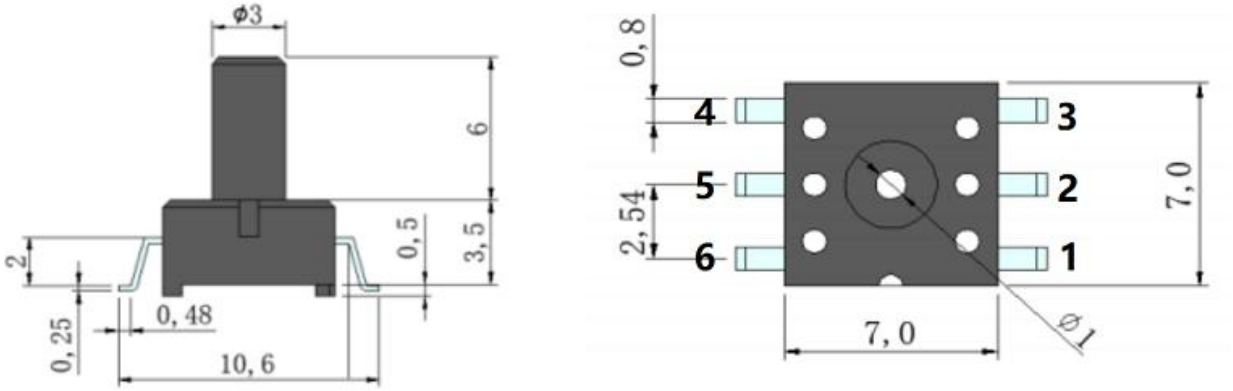
9. Pin Configuration and Description

Pin	Name	Type	Function
1	GND	G	Power Ground
2	VDD	P	Positive supply voltage
3	Vout	O	Analog output
4	NC	NC	Not Connect
5	NC	NC	Not Connect
6	GND	G	Power Ground

NOTE:

• Do not connect to NC pins.

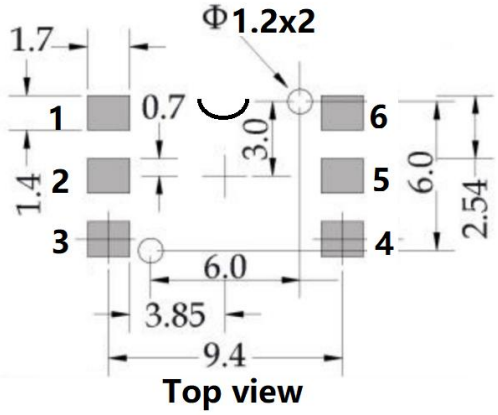
10. Package Outline



NOTES:

• All dimensions in units of [mm]

11.Recommend footprint



Note: As shown in the picture, please reserve 2 mounting holes with a diameter of 1.2 mm

12.How to Order

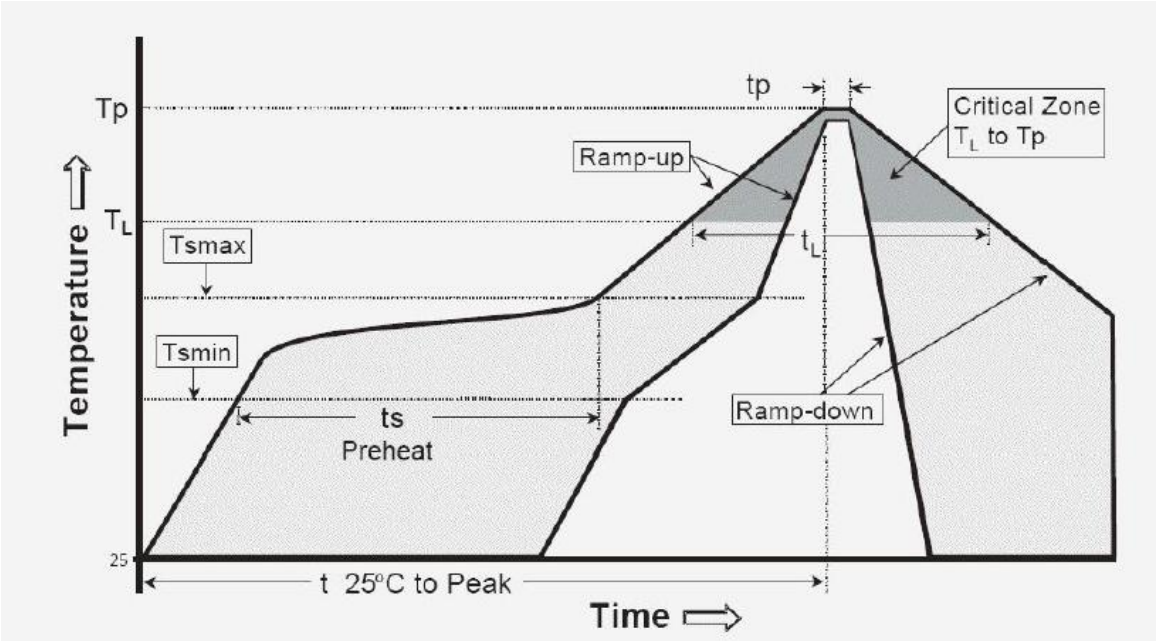
Refer to Table 5 for standard part numbers offered which includes the pressure range and package.
Example P/N with options: GP6A-01BA-00

Table 5 - Part Numbering Scheme:

GP6	A	-	001	B	G

Product Series	Analog output		Pressure Range	Pressure Unit	
				B bar	D Negative & Positive pressure
				K kPa	G Gage
					N Negative pressure
					C Composite pressure

13. Soldering Recommendation（IPC/JEDEC J-STD-020D）



IPC/JEDEC J-STD-020D	Pb-Free Assembly
Average Ramp-up rate （TL-Tp）	1~3℃/s（Max.）
Preheat –Temperature Min. (Tsmin) –Temperature Max. (Tsmax) –Time (Min. to Max.) (ts)	 150℃ 200℃ 60-90 seconds
Tsmax to TL –Tp	3℃/s（Max.）
Time maintained above: –Temperature (TL) –Time (tL)	 217℃ above 40-90 seconds
Peak temperature (Tp)	245~250℃
Time of Real peak temperature within 5℃ (tp)	60 seconds
Average Ramp-down rate （Tp-TL）	2~4℃/s（Max.）
Time 25℃ to peak temperature	4min.（Max.）

Note：

1) It is recommended that only one time reflow soldering, no more than two times.
2) After reflow soldering or other high temperature processes, wait for at least 48 hours (or as required by the data sheet) before data reading and processing.
3) Spot cleaning by hand if necessary, DO NOT wash or submerge sensor in cleaning liquid.
4) It is recommended to use the medium temperature solder paste.

14.Legal Disclaimer

1)For the export of products which are controlled items subject to foreign and domestic export laws and regulations, you must obtain approval and/or follow the formalities of such laws and regulations.

2)Products must not be used for military and/or antisocial purposes such as terrorism, and shall not be supplied to any party intending to use the products for such purposes.

3)Unless provided otherwise, the products have been designed and manufactured for application to equipment and devices which are sold to end-users in the market.

4)Before using products, which were not specifically designed for use in automotive applications, please contact an AIOT sales representative.

5)This specification is subject to change without notice.

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