SSPS-TND50

Piezoresistive sensor differential pressure

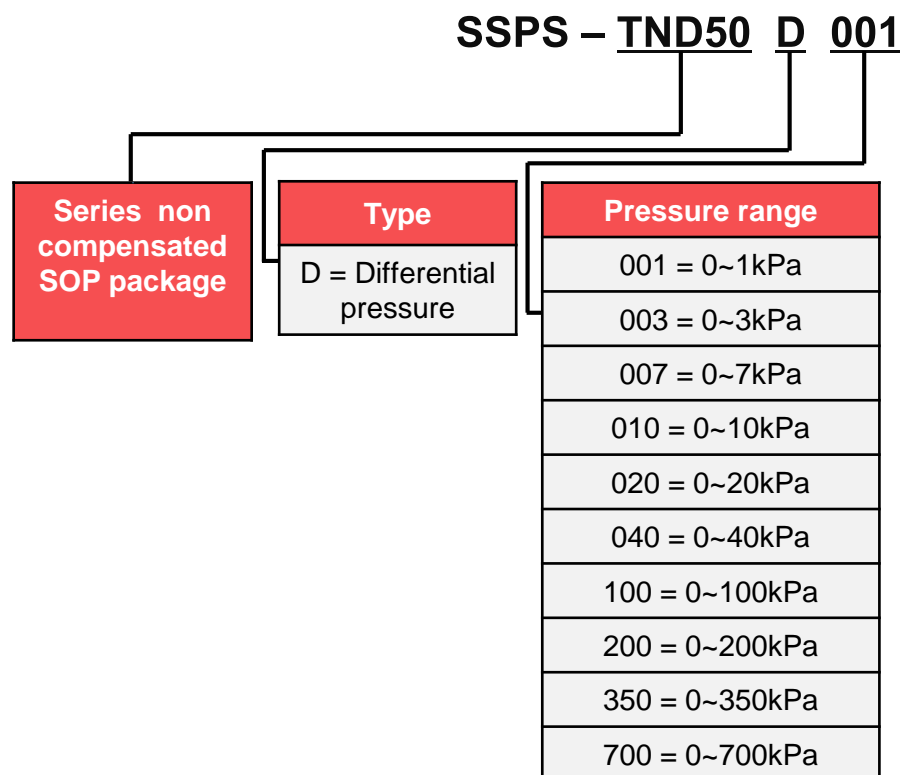## PRODUCTS FEATURES

- Range : -100…-1kPa~0…1kPa…700kPa

- MEMS technology, solid-state reliability

- Horizontal barb inlet pipe

- Surface mounting

- For non-corrosive gas or air

- Working temperature: -30°C~+125°C

- Gage(optional)/differential pressure type

- Easy to use and embed in OEM equipment

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1. Product model code table

SSPS – TND50 D 001

Series non compensated SOP package	Type	Pressure range	
	D = Differential pressure	001 = 0~1kPa	
		003 = 0~3kPa	
		007 = 0~7kPa	
		010 = 0~10kPa	
		020 = 0~20kPa	
		040 = 0~40kPa	
		100 = 0~100kPa	
		200 = 0~200kPa	
		350 = 0~350kPa	
		700 = 0~700kPa	

100kPa = 0.1mKp = 750mmHg = 10MH20 ≈ 1bar ≈ 14.5 psi

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2. Technical specifications

Performance characteristics		MIN.	TYP.	MAX.	Unit	Note
Pressure range		-100,1,3,7,10,20,40,100,200,350,700			kPa	
		-15,0.15,0.6,1,1.5,2.9,5.8,15,30,50,100			PSI	
Working temperature		-30		+125	°C	
Storage temperature		-40	±0.5	+140	°C	
Bridge		4	5	6	kΩ	
Offset		-20		+20	mV	
FS output	1/3 kPa	20		40	mV	
	7 kPa	25	35	45	mV	
	10 kPa	35	50	65	mV	
	20 kPa	35	40	50	mV	
	40 kPa	60	75	90	mV	
	100/200kPa	60	90	120	mV	
	≥350kPa	80	100	130	mV	
Temp. coefficient of resistance		1600	2100	2600	ppm/°C	4
Temp. coefficient of offset (TCO)		-0.05	+0.02	0.05	%FS/°C	2,4
		-0.05	+0.02	0.05	%FS/°C	3,4
Temp. coefficient of span (TCS)		-0.26	-0.23	-0.2	%FS/°C	2,4
		-0.05	+0.02	0.05	%FS/°C	3,4
Linearity		-0.3		0.3	%FS	5
Hysteresis		-0.2		0.2	%FS	
Repeatability		-0.2		0.2	%FS	
Long-term stability		-1.0		1.0	%FS	
Response time			2		mSec	

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Electrical performance

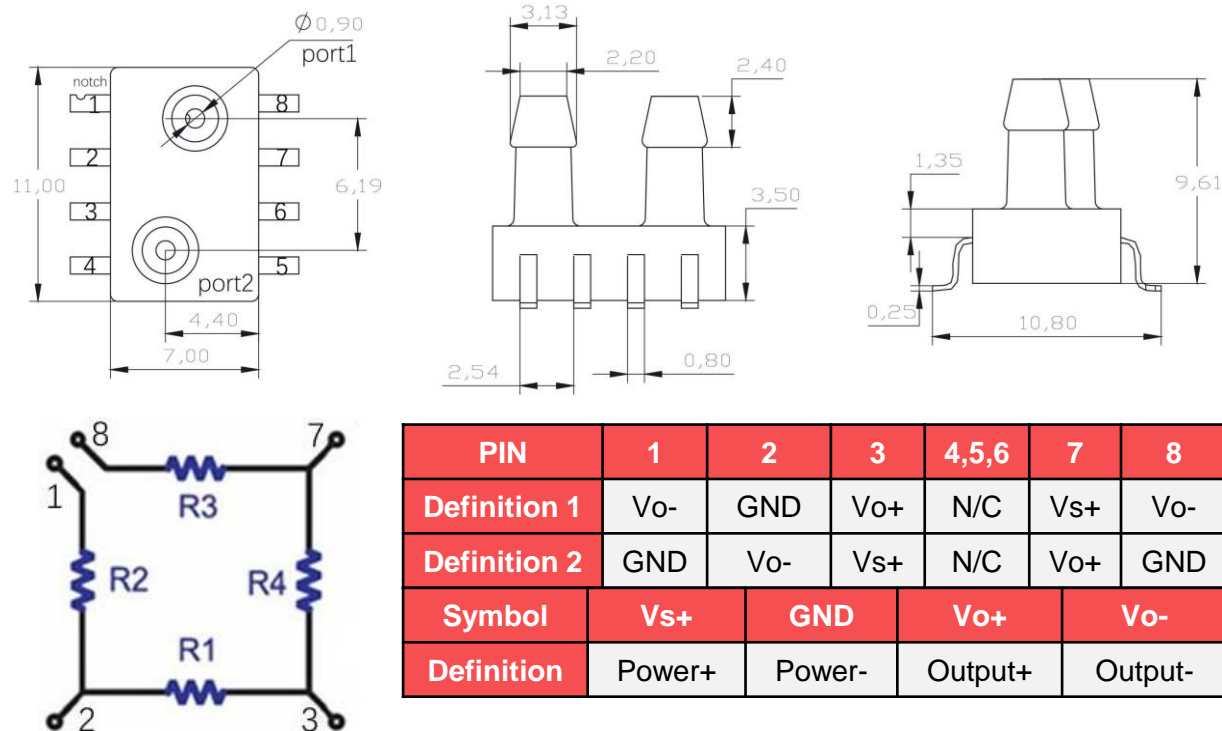| Parameters	Value
Power supply	≤ 15 VDC or ≤ 3.0 mADC
Input Impedance	4KΩ~6kΩ
Output impedance	4KΩ~6kΩ
Insulation Resistor	100MΩ, 100VDC
Over pressure	1.5X Rated Pressure
Environment condition	
Orientation	Deviate 90° from any direction, zero change ≤ 0.05%FS
Shock	No change at 10gRMS, (20~2000)Hz condition
Impact	100g, 11ms
Medium compatibility	Pressure side: air or gas compatible with silicone, silicone glue, epoxy glue or PPS
	Reference side: dry air and non-corrosive gas compatible with PPS, silicon and silicone glue or epoxy, gold, aluminum and silver

Note:
1) The max negative pressure specified above is exactly 98.07kPa in actual application
2) Excitated by constant voltage
3) Excitated by constant current
4) Temperature coefficient is measured from 0°C to 60°C
5) Defined as best fit straight line
   Unless otherwise specified, measurements were taken on base of above testing condition

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3. Pin connection and definition

PIN	1	2	3	4,5,6	7	8
Definition 1	Vo-	GND	Vo+	N/C	Vs+	Vo-
Definition 2	GND	Vo-	Vs+	N/C	Vo+	GND
Symbol	**Vs+**	**GND**		**Vo+**		**Vo-**
Definition	Power+	Power-		Output+		Output-

| Optional Type	Port 1	Port 2	Illustration (P1 default as High Pressure cavity, and P2 default as low pressure cavity)
Differential Pressure	+P	-P	Output is proportional with pressure difference value between PORT 1 and PORT 2. If pressure of P1<P2, the output polarity(Vo+ and Vo-) will be reverese
Gauge Pressure	+P	ATMOS	Output is proportional with the pressure of PORT1. If Presssure of P1< P2, the output polarity (Vo+ and Vo-) will be reverse.

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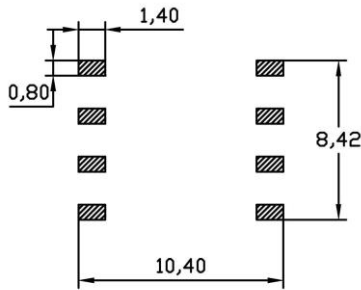
Footprint	Application circuit
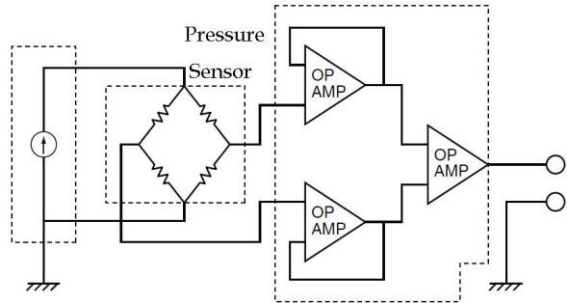
4. Mounting

   The following steps is for transmitting the air pressure to sensor after sensor soldering on PCB.
1) Select the air pressure inlet flexiable pipe(recommended dia:3.0mm) that is firm enough to prevent the pressure leaks.
2) Inlet pipe can't be blocked with gel or glue etc,.
3) Avoiding excessive external force operation

5. Soldering

   Due to its small size, the thermal capacity of the pressure sensor is low. Therefore, take steps to minimize the effects of external heat.Damage and changes to characteristics may occur due to heat deformation. Use a non-corrosive resin type of flux. Since the pressure sensor is exposed to the atmosphere, do not allow flux to enter inside.

Manual soldering:

1) Raise the temperature of the soldering tip between 260 and 300°C (30 W) and solder within 5 seconds.

2) The sensor output may vary if the load is applied on the terminal during soldering.

3) Keep the soldering tip clean.

Reflow soldering (SMD Terminal)

4) The recommended reflow temperature profile conditionsaregivenbelow.

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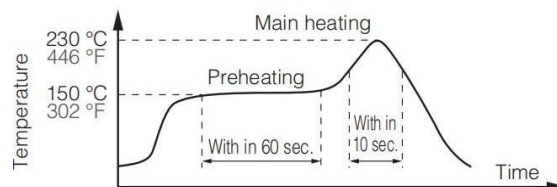
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5）We recommend the screen solder printing method as the method of cream.

6) Please refer to the recommended PC board specification diagram for the PC board foot pattern.

7) Self alignment may not always work as expected, therefore, please carefully the position of the terminals and pattern.

8) The temperature of the profile is assumed to be a value measured with the printed wiring board of the terminal neighborhood.

9) Please evaluate solderbility under the actual mounting conditions since welding and deformation of the pressure inlet port may occur due to heat stress depending on equipments or conditions.

6.Connecting

1) Correctly wire as in the connection diagram. Reverse connection may damage the product and degrade the performance.

2) Do not use idle terminals(N/C) to prevent damages to the sensor.