

SSPS-TCC151D

Piezoresistive sensor differential pressure



PRODUCTS FEATURES

- Measurement range : 0~10/50/100/200 kPa
- Mems technology, solid-state reliability
- Calibrated mV output
- Temperature compensated
- Working temperature: -30°C~+125°C
- Differential pressure

1. Technical specifications

1.1 Basic value

Table 1. Technical specifications

Specifications	Symbol	Min.	Typ.	Max	Unit	
Pressure Range	Pop	10, 50, 100, 200			kPa	
		1.45, 7.25, 14.5, 29			PSI	
Working Voltage	Vs	—	10	16	Vdc	
Working Current	Io	—	6	—	mAdc	
Storage Temperature	Tstg	-30	25	+125	°C	
Working Temperature	Topt	-20	—	+100	°C	
Bridge Resistance	RL	4.5	5	5.5	kΩ	
Offset/Zero Output	Voff	-1	0	+1	mV	
Sensitivity	Vfss	38.5	40	41.5	mV	
FS Output	ΔV/ΔP	10kPa	—	4	—	mV/kPa
		50kPa	—	0.8	—	
		100kPa	—	0.4	—	
		200kPa	—	0.2	—	
Linearity		-0.5	—	+0.5	%VFSS	
Hysteresis		—	±0.15	—	%VFSS	
TCO(Temp. Coefficient of Offset)	TCVOFF	-1.0	—	+1.0	mV	
TCS(Temp. Coefficient of Span)	TCVFSS	-2.0	—	+2.0	%VFSS	
Response Time	TR	—	2.5	—	ms	
Long-term Stability(1000h)		—	±0.5	—	%FS	

Note:

1. Sensor output is ratiometric within this specified excitation range. Operating the device above the specified excitation range may induce additional error due to sensor self-heating.
2. Full Scale Span (VFSS) is defined as the algebraic difference between the output voltage at full rated pressure and the output voltage at the minimum rated pressure.
3. Offset (Voff) is defined as the output voltage at the minimum rated pressure
4. Linearity: Output deviation from a straight line relationship with pressure, using end point method, over the specified pressure range.
5. Temperature Hysteresis: Output deviation at any temperature within the operating temperature range, after the temperature is cycled to and from the minimum or maximum operating temperature points, with zero differential pressure applied.
6. Pressure Hysteresis: Output deviation at any pressure within the specified range, when this pressure is cycled to and from the minimum or maximum rated pressure, at 25°C.
7. TcSpan: Output deviation at full rated pressure over the temperature range of 0 to 55°C, relative to 25°C.

- 8. TcOffset: Output deviation with minimum rated pressure applied, over the temperature range of 0 to 55°C, relative to 25°C
 - 9. Response Time is defined as the time for the incremental change in the output to go from 10% to 90% of its final value when subjected to a specified step change in pressure
 - 10. Offset stability is the product's output deviation when subjected to 1000 hours of Pulsed Pressure, Temperature Cycling with Test Condition.
- Unless otherwise specified, measurements were taken on base of above testing condition.

1.2 Electronic performance, construction value and Environment condition

Table 2.

Electronic performance	
Power supply	≤16 VDC or 6.0 m ADC
Input impedance	4kΩ~6kΩ
Output impedance	4kΩ~6kΩ
Insulation resistor	100 MΩ, 100VDC
Over Pressure	1.5x Rated Pressure
Construction value	
Sensing die	Silicon
Die mounting glue	Silicone gel
Leading wire	Gold wire
Package housing	PPS
Pin	Silver plated copper
Net Weight	Approx. 5g
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 FR4, silicone, silicone glue, metallic material and PPS.
Reference side	dry air and non-corrosive gas compatible with PPS, silicon and silicone glue or epoxy, gold, aluminum and silver.

1.3 Test condition

Table 3. Test condition

Parameter	Value
Medium	gas
Medium Temp.	25±1°C
Environment Temp.	25±1°C
Shock	0.1g (1m/s ²) Max
Humidity	(50%±10%) RH
Power supply	(10±0.005) VDC

2. Mechanical dimensions

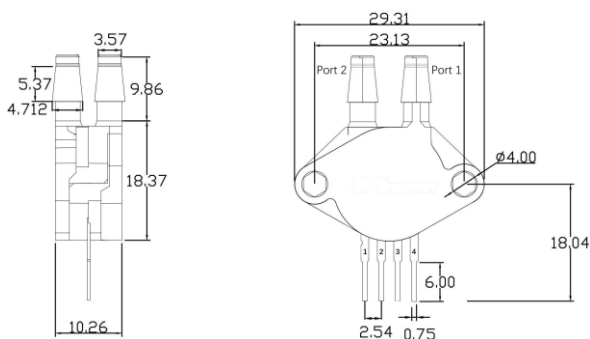


Figure 2.1. Mechanical dimension in mm

3. Pin connection and definition

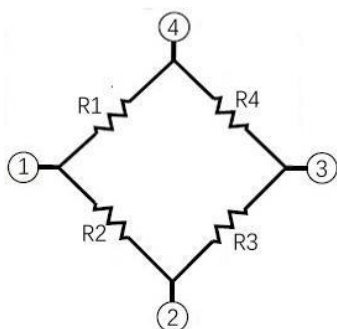


Figure 3.1. Circuit

Table 5. Pin definition

Pin	1	2	3	4
Definition A	Vs+	Vo-	GND	Vo+
Definition B	GND	Vo+	VDD	Vo-

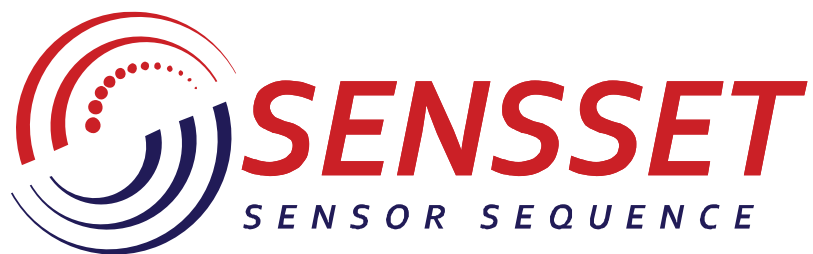
Definition A or B can be freely selected for connection

Table 6. Definition symbol

Symbol	Vs+	GND	Vo+	Vo-
Definition	Power+	Ground	Output+	Output-

4. Order information

SSPS-TCC151		Series compensated, surface mount housing – SIP with 4 pins.		
	D	Differential		
		KP	kPa	
		010	0~10kPa	
		050	0~50kPa	
		100	0~100kPa	
		200	0~200kPa	
SSPS-TCC151	D	KP	100	Example: SSPS-TCC151DKP100



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Development, production and supply of high-tech sensors