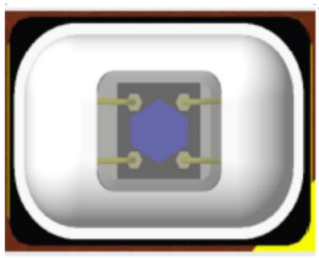


Data Sheet	PSA0201700

General Description

The PSA0201700 is a high-resolution, 0kPa to 700kPa absolute pressure sensor in a compact 4-pin SMD package. Pressure is detected using a Wheatstone resistor array. It features an analog voltage output. It features high-precision, high temperature stability, and wide dynamic range.

Features

- Pressure range: 0kPa to 700kPa
- 0.12mV/Pa sensitivity
- 0.01%FS/°C temperature coefficient
- 3.3V_{DC} nominal power supply voltage

Applications

- Barometers
- Tire Pressure Monitoring
- Power Pressure
- Wind Tunnels
- Air Pumps
- Water Pumps

Electrical Characteristics

Absolute Maximum Ratings (T_A = 25°C, unless otherwise specified.)

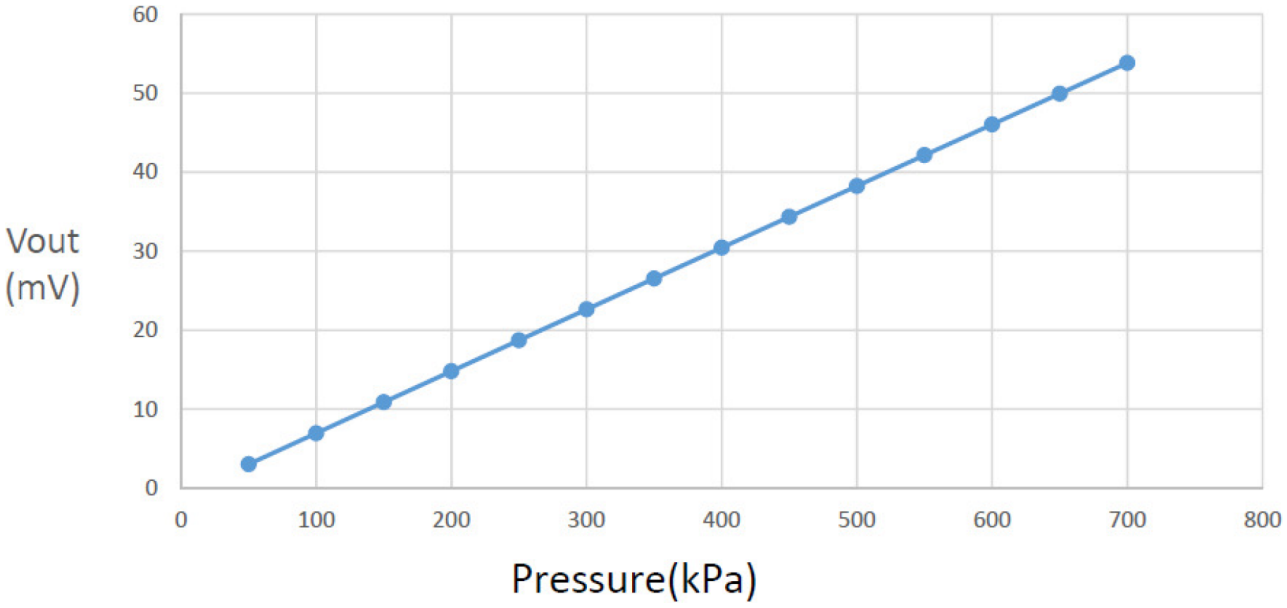
Parameter	Conditions	Minimum	Typical	Maximum	Unit
V_{DD}		-0.3		15	Volts
IO Pin		-0.3		V_{DD}+0.3	Volts
Burst Pressure				7000	kPa
ESD Class	Human Body Model	-2000		2000	Volts
Storage Temperature		-40		125	°C

Performance Characteristics (V_{DD} = 3.3V, T_A = 25°C, unless otherwise specified.)

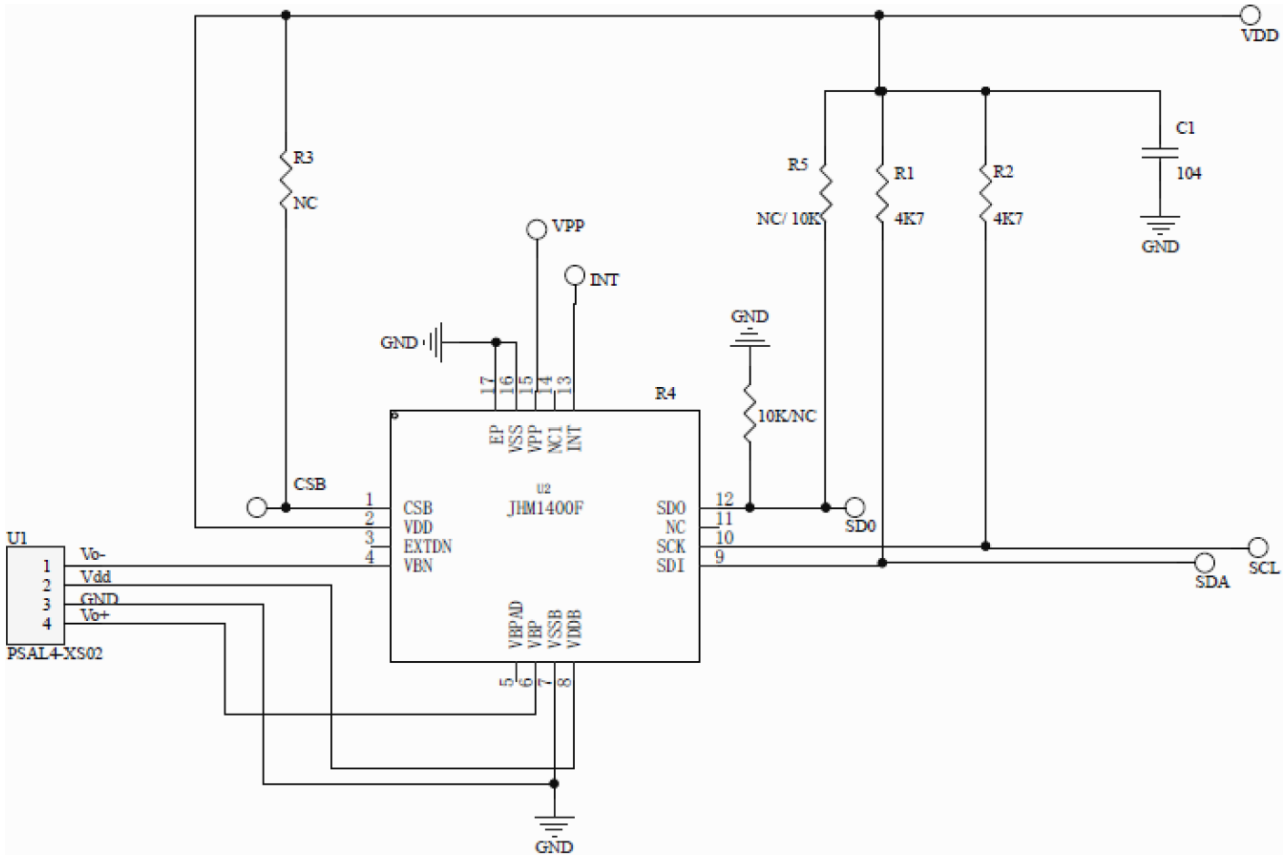
Parameters	Conditions	Minimum	Typical	Maximum	Unit
V_{DD}		1.8	3.3	5.4	Volts
I_{DD}			1.0	3.0	mA
Operating Temperature		-40		125	°C
Wheatstone Bridge Resistor Element Values		8		10	kW
Pressure Characteristics					
Pressure Range		0		700	kPa
Sensitivity		0.0624	0.078	0.0936	mV/kPa
Linearity	-20°C ≤ T_A ≤ 85°C		0.15		%FS
Overload Pressure	Note 1			2100	kPa
Output Offset	Pressure = 0Pa	-10		10	mV
Output Offset Temperature Drift Coefficient (TCO)			0.01		%FS/°C
Sensitivity Temperature Drift Coefficient (TCS)			-0.20		%FS/°C

Note 1: Pressures above this maximum will damage the sensor including the internal pressure sensitive film and the MEMS structures.

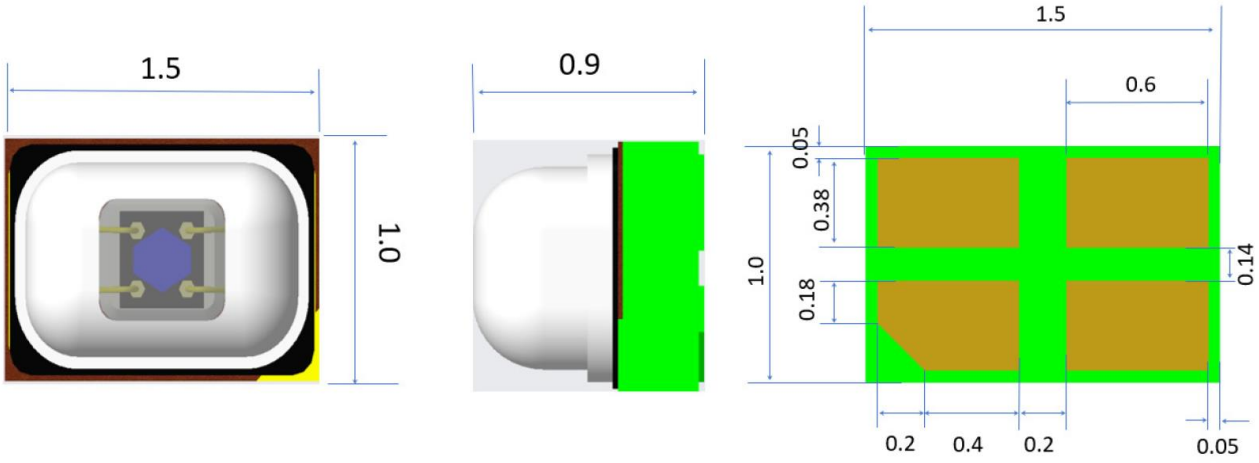
Typical Performance Curve (V_{DD} = 3.3V, T_A = 25°C.)



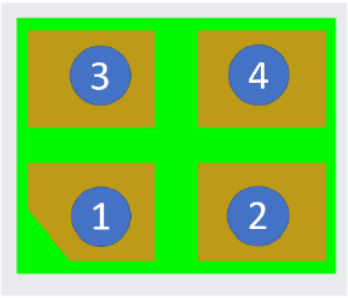
Typical Application Circuit



Dimensions and Pin Definitions (Tolerance: ±0.1mm, unless otherwise specified.)



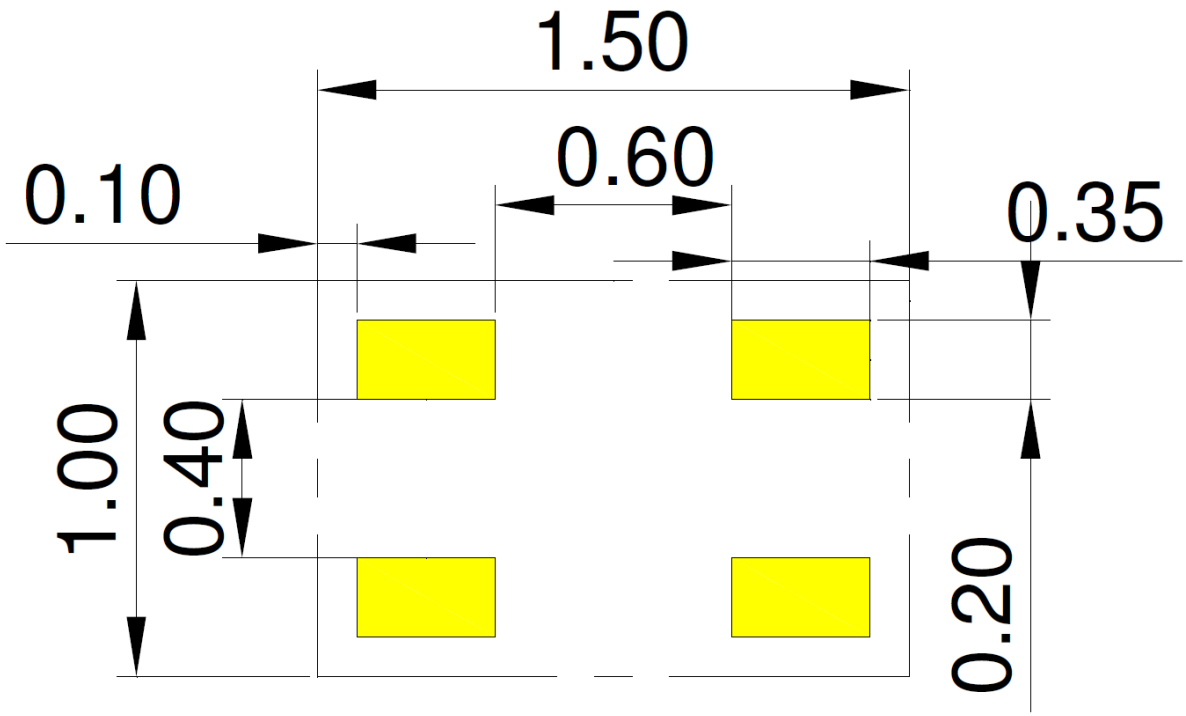
Top View Side View Bottom View



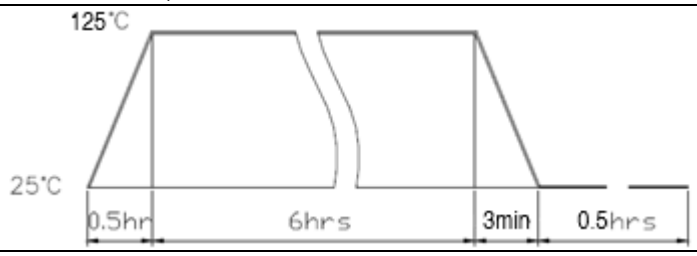
According to the pin number indicated in the left figure (upward view), the four connection modes of the chip are respectively.

1. Pad1→V_{dd} ; Pad2→V_{o-} ; Pad3→V_{o+} ; Pad4→Gnd
2. Pad1→Gnd ; Pad2→V_{o+} ; Pad3→V_{o-} ; Pad4→V_{dd}
3. Pad1→V_{o+} ; Pad2→Gnd ; Pad3→V_{dd} ; Pad4→V_{o-}
4. Pad1→V_{o-} ; Pad2→V_{dd} ; Pad3→Gnd ; Pad4→V_{o+}

Solder Footprint Dimensions (Tolerance: ±0.5mm, unless otherwise specified.)



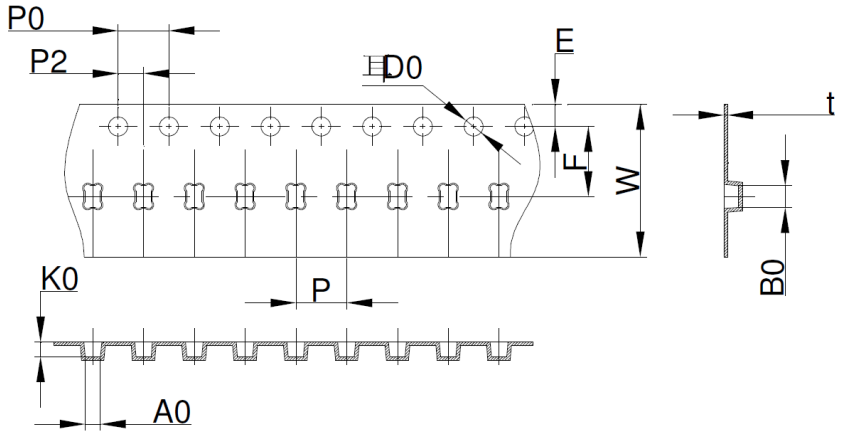
Reliability Testing (Results are ≤ 1%FS.)

Type of Test	**Test Specifications**
High Temperature Test	• Test chamber temperature: 125±5°C. Humidity: ≤ 50%. • Chamber pressure: 4bar. Previous pressure output value was ≤ 5%FS,
Low Temperature Test	• Test chamber temperature: -40±5°C. ΔT ≤ 1°C/min.
High Temperature Test	• Test chamber temperature: 155±5°C. ΔT ≤ 1°C/min.
Constant Humidity Test	• Test chamber temperature and humidity, respectively: 30°C, 93% RH; 30°C, 85% RH; 40°C, 93% RH; 40°C, 85% RH. • Measure V_{OUT} at 0bar and 4bar.
Alternating Humidity Test	• Test chamber temperature and humidity, respectively: 55±2°C, 92±3% RH. Hold 12.5hrs. • Test chamber temperature and humidity, respectively: 25±3°C, ≤ 95±3% RH. Hold 12hrs.
Temperature Cycle Testing	
Vibration Test	• Frequency: 5Hz ≤ f_V ≤ 100Hz. • Test in atmospheric environment conditions, ≥ 2hrs.
Dust Test	• Place sample in atmospheric environment, ≥ 2hrs according to standard conditions. • Place the sample in a sand test chamber; Repeat more than 8 times
Salt Spray Test	• 5±1% salt-solution, 6.5 ≤ PH≤ 7.2, 35±2℃ • Place the sample in salt solution, turn on the power supply of the test chamber. • Apply pressure saturated barrel. • Increase chamber temperature to stable 35±2°C. • Initiate salt-solution spray at 1Kgf rate.

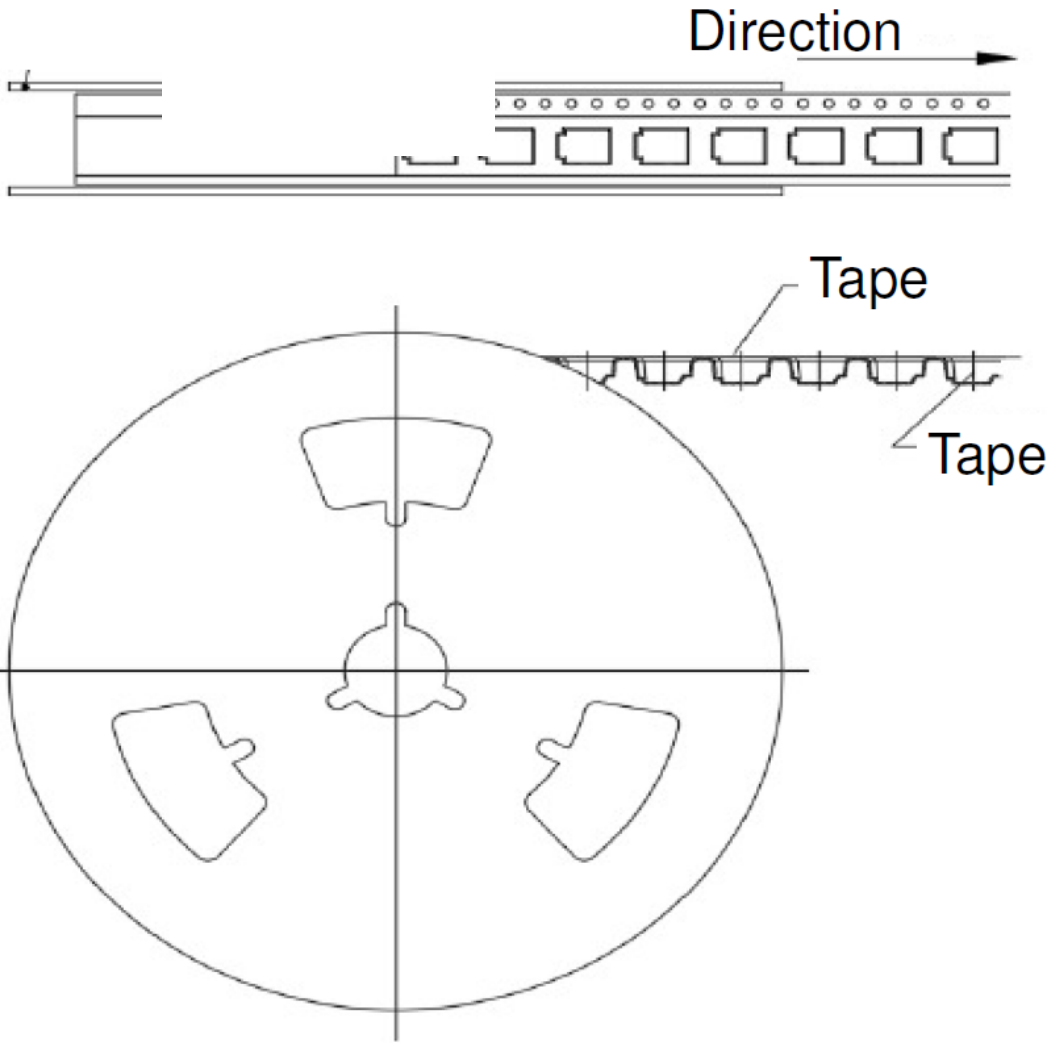
Packaging

13in reel：1,500pcs

1 Box = 4 Reels (6,000pcs)



E	1.75±0.1	ΦD0	1.50+0.10^-0	P2	2.00±0.1	B0	1.70±0.1
F	5.50±0.1	P0	4.00±0.1	P	4.00±0.1	K0	1.15±0.1
W	12.00±0.3	10P0	40.00±0.2	A0	1.20±0.1	t	0.30±0.05



Specifications Revisions

Revision	Description	Date	Approval
A	Datasheet Released from Engineering	10/30/2023	
B	Specification Table Edits; Added Application Circuit Schematic; Edited Reliability Testing Table.	12/04/2023	KH
C	Corrected the Typical Performance Curve. Updated the Packaging diagram	04/09/2024	KH

Note:

1. Unless otherwise specified:
    A. All dimensions are in millimeters.
    B. Default tolerances are ±0.5mm and angles are ±3°.
2. Specifications subject to change or withdrawal without notice.