

## DESCRIPTION

Posifa's PVC3000 series of MEMS Thermopile Vacuum Sensors bring a breakthrough to vacuum measurement by offering an effective range from 1 millitorr (0.13 Pascal) all the way to atmosphere (760 torr, or 101K Pascal). By contrast, a Pirani vacuum sensor's upper range is capped at 30 torr. A piezoresistive pressure sensor cannot measure vacuum below 10 torr. A costly capacitive pressure sensor is limited to 0.1 torr at the lower end of its range. Thus, PVC3000 can do the job of two sensors, i.e. a Pirani sensor and a piezoresistive/capacitive pressure sensor.

In addition, PVC3000 has an ultra-fast response time of less than 2 millisecond, and a low power consumption of 14 mW (typical). By using pulse excitation power consumption can be reduced further.

PVC3000 uses Posifa's second generation thermal conductivity sensor die (PTCD20), and operates under the principle that the thermal conductivity of gases is proportional to its vacuum pressure.

PVC3000 is available in either SMD or TO metal can form factors, PVC3001 in a TO5 metal can, PVC3004 in a TO46 metal can, and PVC3002 in SMD



## FEATURES

- Range: 0.001 to 760 Torr (0.13 to 101K Pa)
- Fast Response Time < 2 mSec
- Low power consumption: < 14 mW
- Can be cleaned by immersing in solvent, prolonging useful life

## APPLICATIONS

- Leak detection in any closed system maintained under primary vacuum, such as in Vacuum Insulated Panels
- Portable digital vacuum gauges

## ABSOLUTE MAXIMUM RATINGS

- Operating Temperature: -40 to 270 °C
- Storage Temperature: -40 to 90 °C
- Shock: 100 g peak (5 drops, 3 axis)

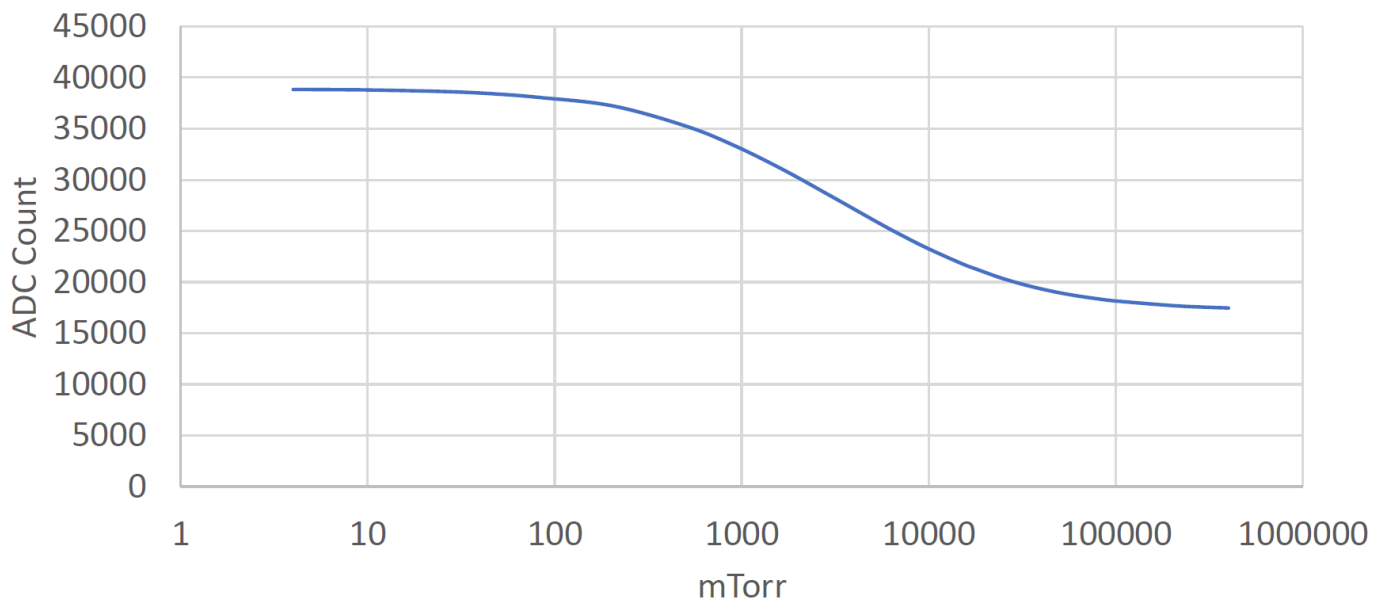
## ELECTRICAL CHARACTERISTICS

Test Conditions: Excitation Voltage = 1.2 Vdc, Ta=23°C					
SPECIFICATIONS	MIN	TYP	MAX	UNIT	CONDITIONS
Range	10 <sup>-3</sup>		760	Torr	
Heater Resistance		110		Ohm	
Thermopile Resistance		210		Kohm	
Excitation Voltage	0.8	1.2	1.5	Vdc	
Thermopile Output	130	180	220	mV	At 1.2V excitation
Response Time		2		mSec	
Operating Temperature Range	-40		270	°C	
Storage Temperature	-40		90	°C	
Shock Resistance			1000	g	
Overpressure			27.5	Bar	

## OUTPUT VS. VACUUM

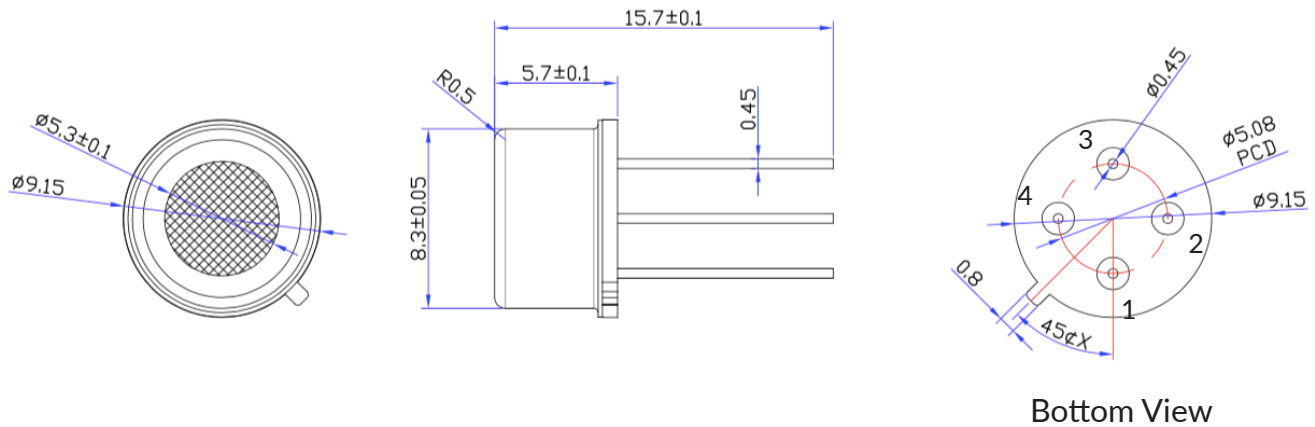
Excitation = 1.2 Vdc, Ta = 23 °C, Gain = 8x, ADC Resolution: 16 bit

PVC3000 Output Curve



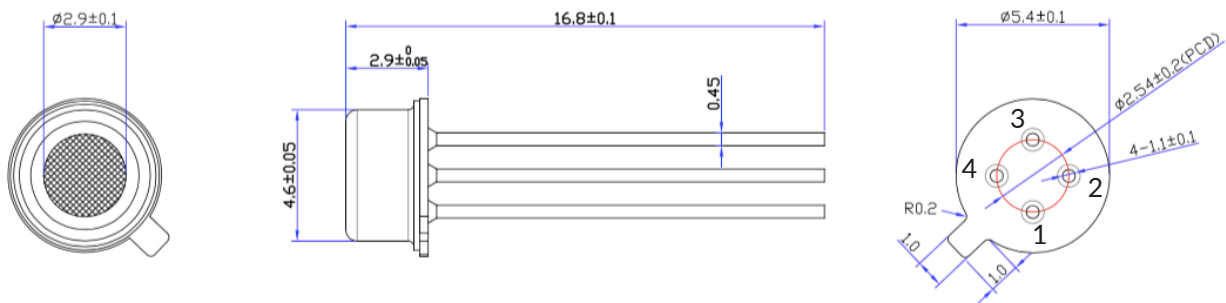
## PACKAGE DIMENSIONS

### PVC3001



Bottom View

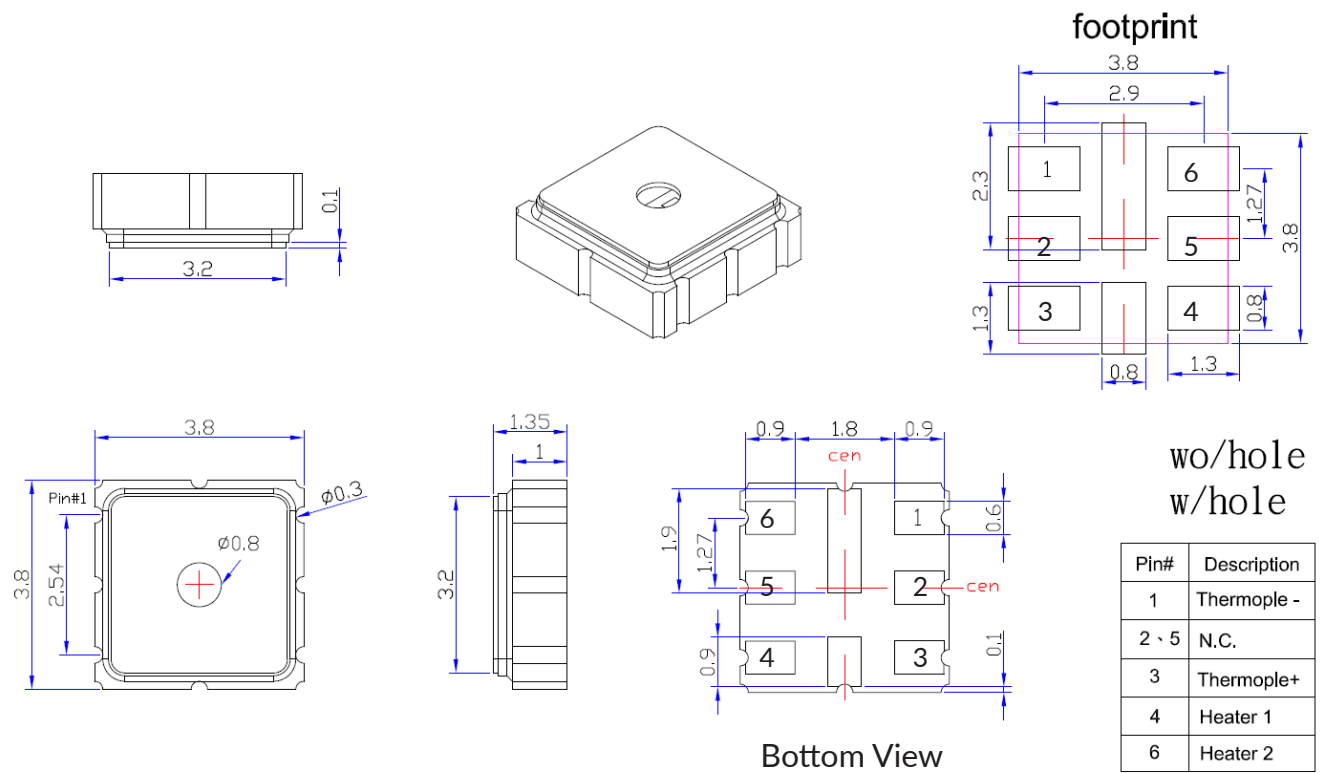
### PVC3004



Bottom View

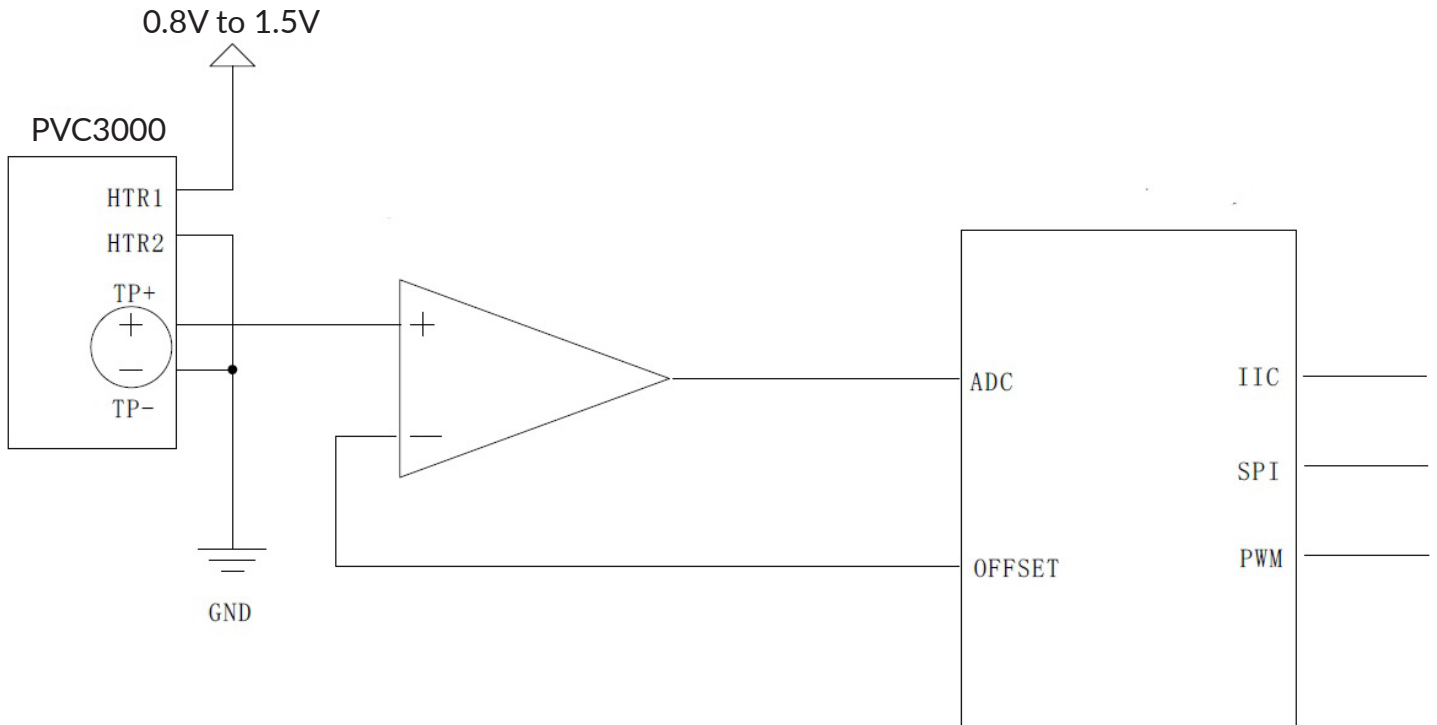
Pin#	Description
1	Thermopile +
2	Heater 1
3	Heater 2
4	Thermopile -

## PVC3002



Note: Tolerance is +/- 0.3 mm unless otherwise specified

## APPLICATION CIRCUIT



## ORDERING INFORMATION

<b>PART NUMBER</b>	<b>SPECIFICATIONS</b>
PVC3001	TO5 package
PVC3004	TO46 package
PVC3002	SMD, Ceramic Substrate

Please contact Posifa or your local distributor to place an order.

### EUROPEAN DISTRIBUTOR

BS-rep GmbH

Eichertstr. 68, D-56745 Weibern, Germany

Tel: +49 (0) 2655 / 96 26 476

Email: info@sensor-rep.de