

MEMS-based Hydrogen Sulfide Sensor

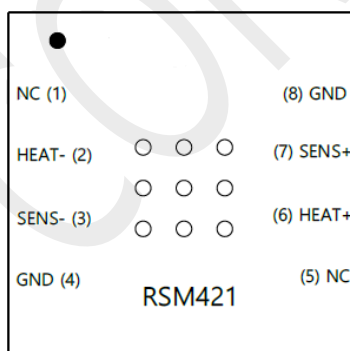
1. FEATURES

- High sensitivity & selectivity
- Surface mount package
- Low cost
- Low power consumption
 - Less than 45mW @ 1.7V supply
- Small size
 - MEMS-based semiconductor process
 - 5.0 mm x 5.0 mm Ceramic package

2. APPLICATIONS

- Halitosis measurement devices
- Air cleaners
- IoT devices
- Ventilation control

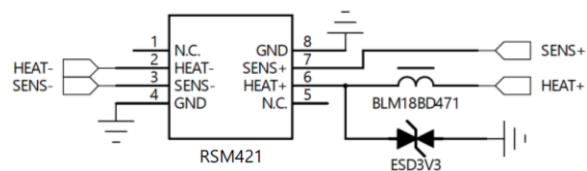
3. Package Image



4. DESCRIPTION

The RSM421 is a Micro Electro Mechanical Systems (MEMS) based Hydrogen sulfide (H_2S) sensor which offers miniaturization and low power consumption. In the sensor, the sensing materials are placed on the micro-heater, and the resistance of the sensing material is varied according to the concentration of Hydrogen sulfide gases. The RSM421 is fabricated on the ceramic package with several holes. It can reduce the influence of interference gases as well as protect from humidity or dust.

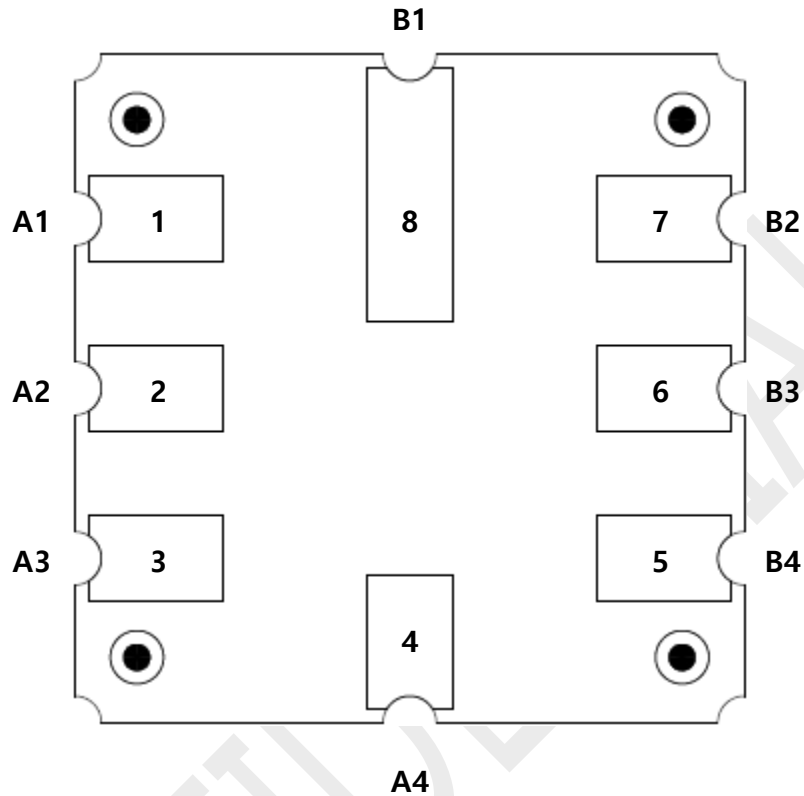
PART NUMBER	PACKAGE	BODY SIZE
RSM421	Ceramic (8)	5.0 mm x 5.0 mm



Typical application circuit

5. PIN CONFIGURATION AND FUNCTIONS

Top view pin map



Note : A. External diode and bead are suggested on 6 pin.

Pin functions

PIN		I/O ⁽¹⁾	FUNCTION
NAME	NO.	I/O	
A1	1	-	NC
A2	2	P	Negative input of heater
A3	3	I/O	Negative output of sensor
A4	4	G	Ground
B4	5	-	NC
B3	6	P	Positive input of heater
B2	7	I/O	Positive output of sensor
B1	8	G	Ground

(1) I=input, O=output, I/O=input and output, P=power supply, G=ground

6. SPECIFICATIONS

Model number		RSM421
Sensing principle		MOS type
Standard package		Ceramic
Target gases		Hydrogen sulfide (H ₂ S)
Typical detection range		0.1 ~ 10ppm
Electrical characteristics under standard test conditions	Heater voltage	1.7VDC
	Heater resistance	Approx. 40Ω at room temp
	Heater current	26mA
	Heater power consumption	45mW (typical)
	Sensor resistance	1kΩ ~ 10kΩ in air
	Sensitivity (change ratio of R _s)	~0.4 (R _s / R _o @H ₂ S 0.5ppm)
Standard test conditions	Conditioning period before test	1 hour or longer

7. APPLICATION GUIDANCE

Since the output of the RSM421 is a resistance, a conventional measurement part should have a current source in parallel with the output of the sensor to convert the resistance to voltage. For ESD protection, the diode or bead is also suggested in the power pin. Its configuration is illustrated in the typical application diagram.

8. OUTLINE DIMENSIONS

