Air Quality Sensor (RSM711)

1. FEATURES

- High sensitivity to Air contaminant gases
  - CO / Ethanol / HCHO / etc.
- Low power consumption
  - Approx. 200mW @ 5.0V supply
- Small size
  - Metal Can Package (TO-5)
- Uses simple electrical circuit

2. APPLICATIONS

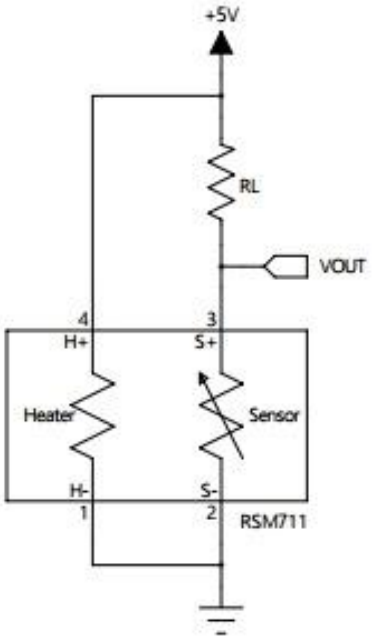
- Indoor air quality monitor
- Air cleaners
- IoT devices
- Ventilation control
- Gas alarm device

3. Package Image

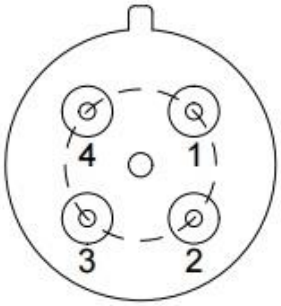
4. DESCRIPTION

The RSM711 is a metal oxide semiconductor type sensor in which a sensor layer and a heater layer are formed on an alumina substrate. It can detect the gaseous air contaminants (CO / Ethanol / HCHO / etc.). In the sensor, the sensing materials are placed on the alumina substrate, and the resistance of the sensing material is varied according to the concentration of the air pollution gases. The RSM711 is fabricated on the TO-5 package with several holes. It can reduce the influence of interference gases as well as protect from humidity or dust.

Typical application circuit



5. PIN CONFIGURATION AND FUNCTIONS



PIN NO.	I/O(1)	FUNCTION
1	G	Negative input of heater
2	G	Negative output of sensor
3	O	Positive output of sensor
4	P	Positive output of heater

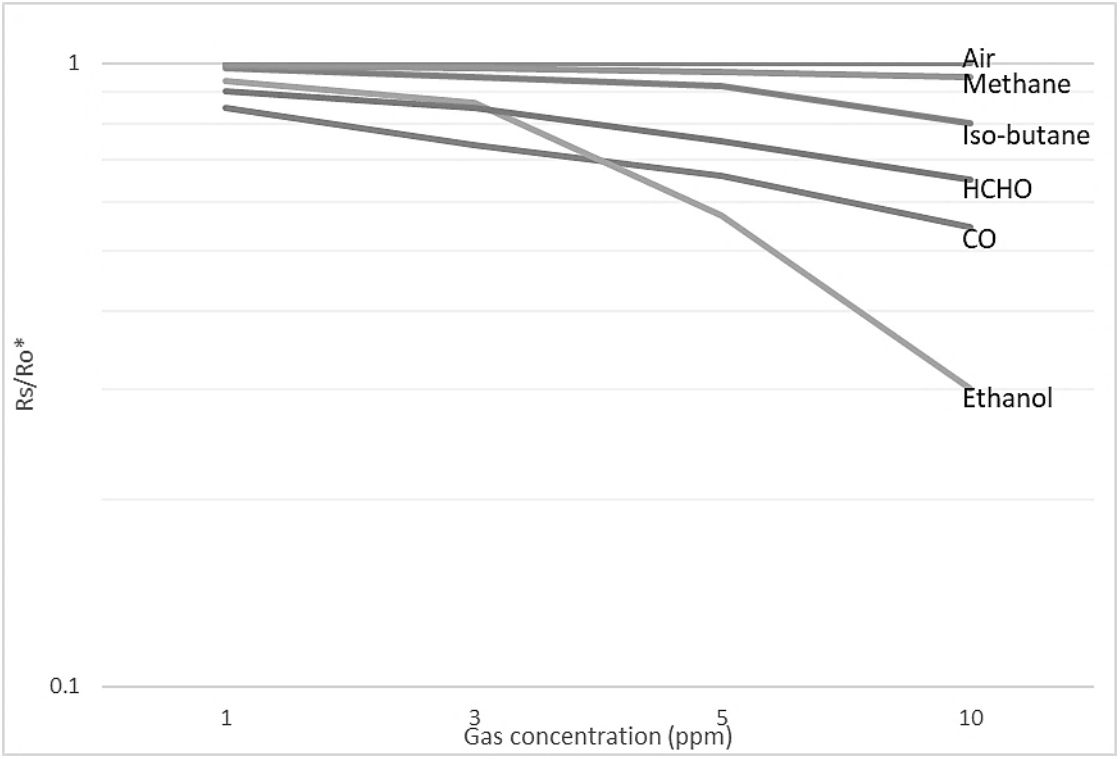
(1) I=input, O=output, I/O=input and output, P=power supply, G=ground

6. SPECIFICATIONS

Model number			RSM711
Sensing principle			MOS type
Standard package			TO-5 PKG
Target gases			Air contaminants (H2, CO, Ethanol, HCHO, etc.)
Typical detection range			1 ~ 500ppm of CO
Electrical characteristics under standard test conditions	Heater voltage	V_H	5.0VDC
	Heater resistance	R_H	Approx. 83Ω at room temp
	Heater current	I_H	40±4mA
	Heater power consumption	P_H	200mW (typical)
	Sensor resistance	R_S	10MΩ ~ 50MΩ in air
	Sensitivity (change ratio of Rs)		0.4~0.6 (Rs / Rs air @CO 10ppm)
Standard test conditions	Test gas conditions		Normal air at 25±2℃, 40±5%RH
	Conditioning period before test		3 days or longer

7. Sensitivity Characteristics

The figure below represents typical sensitivity characteristics, all data having been gathered at standard test conditions.



Rs = Sensor resistance in displayed gases at various concentrations

Ro = Sensor resistance in fresh air

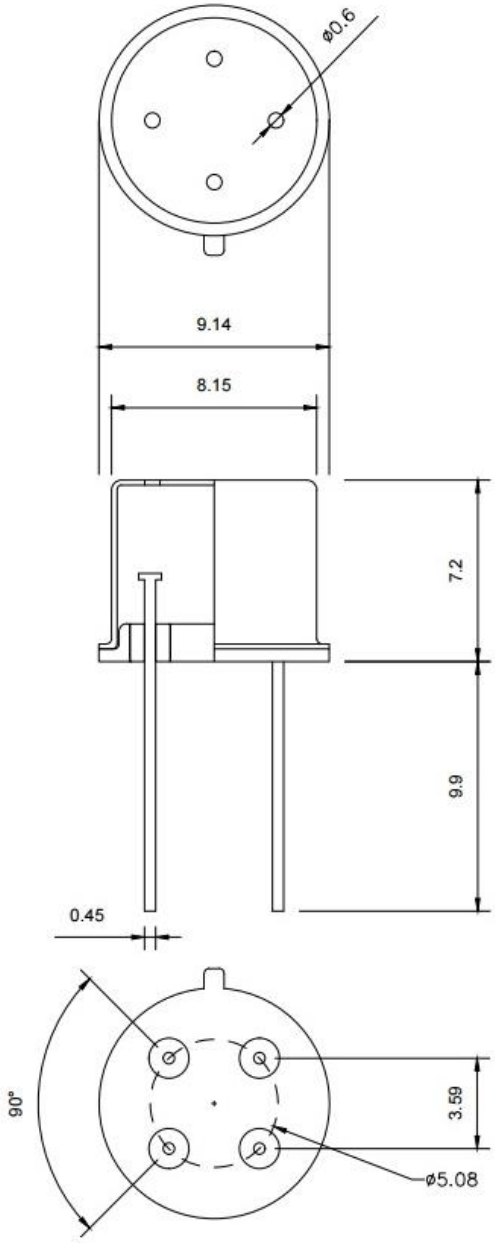
8. APPLICATION GUIDANCE

Heater voltage is applied to the heater to maintain a specific temperature at which the sensing material is optimized for detection. DC voltage is required for the circuit.

Since the output of the sensor 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.

The change of the sensor resistance (RS) is obtained as the change of the output voltage across a load resistor (RL) which is connected in series with the sensor.

9. OUTLINE DIMENSIONS



Top view

Side view

Bottom view