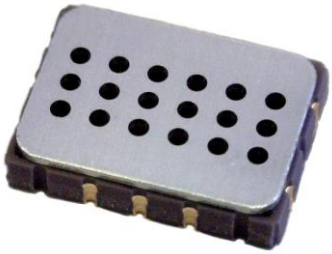
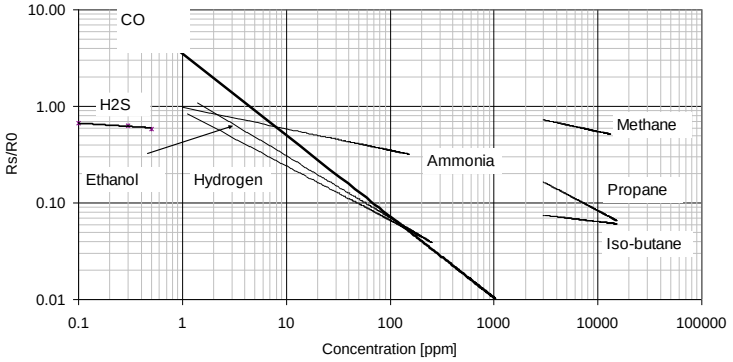
The MiCS-5524 is a compact MOS sensor.

The MiCS-5524 is a robust MEMS sensor for indoor carbon monoxide and natural gas leakage detection; suitable also for indoor air quality monitoring; breath checker and early fire detection.



Features

- Smallest footprint for compact designs (5 x 7 x 1.55 mm)
- Robust MEMS sensor for harsh environments
- High-volume manufacturing for low-cost applications
- Short lead-times



Continuous power ON, 25°C, 50% RH

Detectable gases

• Carbon monoxide	CO	1 – 1000ppm
• Ethanol	C_2H_5OH	10 – 500ppm
• Hydrogen	H_2	1 – 1000ppm
• Ammonia	NH_3	1 – 500ppm
• Methane	CH_4	>1000ppm

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Performance sensor

Characteristic RED sensor	Symbol	Typ	Min	Max	Unit
Sensing resistance in air (see note 1)	R_0	-	100	1500	kΩ
Typical CO detection range	FS		1	1000	ppm
Sensitivity factor (see note 2)	S_{60}	-	1.2	50	-

Notes:

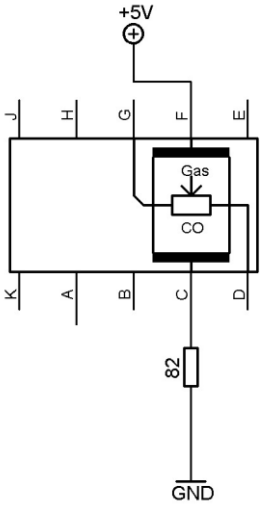
1. Sensing resistance in air R_0 is measured under controlled ambient conditions, i.e. synthetic air at 23 ±5°C and 50 ± 10% RH. Sampling test.

2. Sensitivity factor is defined as Rs in air divided by Rs at 60 ppm CO. Test conditions are 23 ± 5°C and 50 ± 10% RH. Indicative values only. Sampling test.

IMPORTANT PRECAUTIONS:

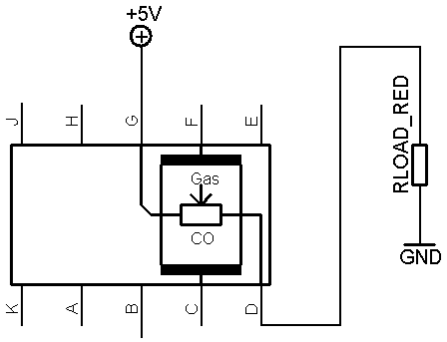
Read the following instructions carefully before using the MiCS-5524 described here to avoid erroneous readings and to prevent the device from permanent damage.

- The sensor must be reflow soldered in a neutral atmosphere, without soldering flux vapours.
- The sensor must not be exposed to high concentrations of organic solvents, silicone vapours or cigarette-smoke in order to avoid poisoning the sensitive layer.
- Heater voltage above the specified maximum rating will destroy the sensor due to overheating.
- This sensor is to be placed in a filtered package that protects it against water and dust projections.
- SGX sensortech strongly recommends using ESD protection equipment to handle the sensor.



MiCS-5524 with recommended supply circuit (top view)

R is a 82 Ω. This resistor is necessary to obtain the right temperature on the heater while using a single 5V power supply. The resulting voltage is typically VH = 2.4V.

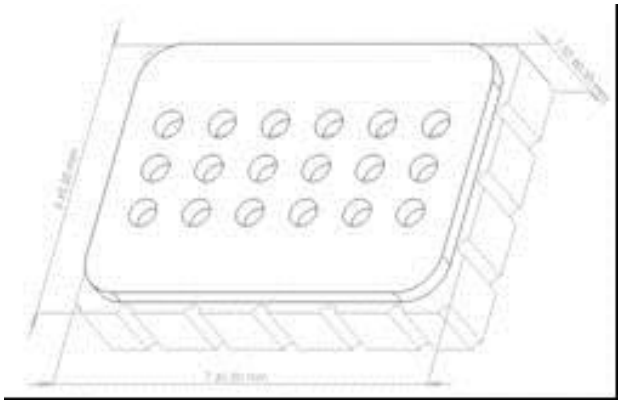


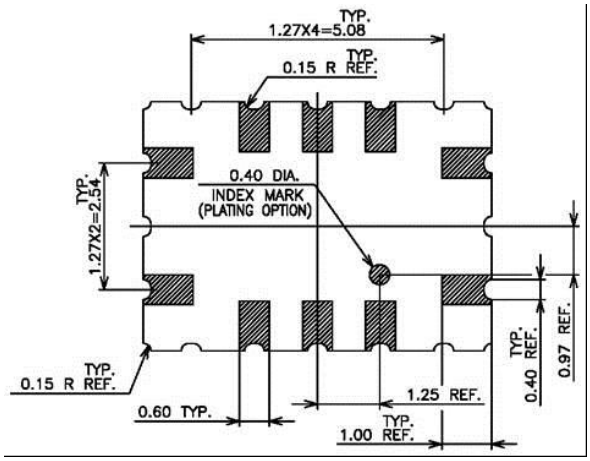
MiCS-5524 with measurement circuit (top view)

The voltage measured on the load resistor is directly linked to the resistance of the sensor respectively. RLOAD must be 820 Ω at the lowest in order not to damage the sensitive layer.

Parameter	Symbol	Typ	Min	Max	Unit
Heating power	P_H	76	71	81	mW
Heating voltage	V_H	2.4	-	-	V
Heating current	I_H	32	-	-	mA
Heating resistance at nominal power	R_H	74	66	82	Ω

Rating	Symbol	Value / Range	Unit
Maximum heater power dissipation	P_H	88	mW
Maximum sensitive layer power dissipation	Ps	8	mW
Voltage supplyHeating current	Vsupply	4.9 – 5.1	V
Relative humidity range	RH	5 – 95	%RH
Ambient operating temperature	Tamb	-30 – 85	°C
Storage temperature range	Tsto	-40 – 120	°C
Storage humidity range	RHsto	5 - 95	%RH

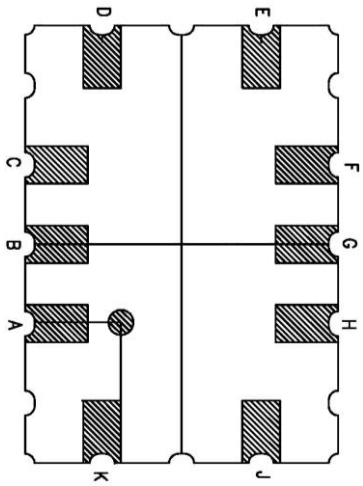




Package outline dimensions

The package is compatible with SMD assembly process.

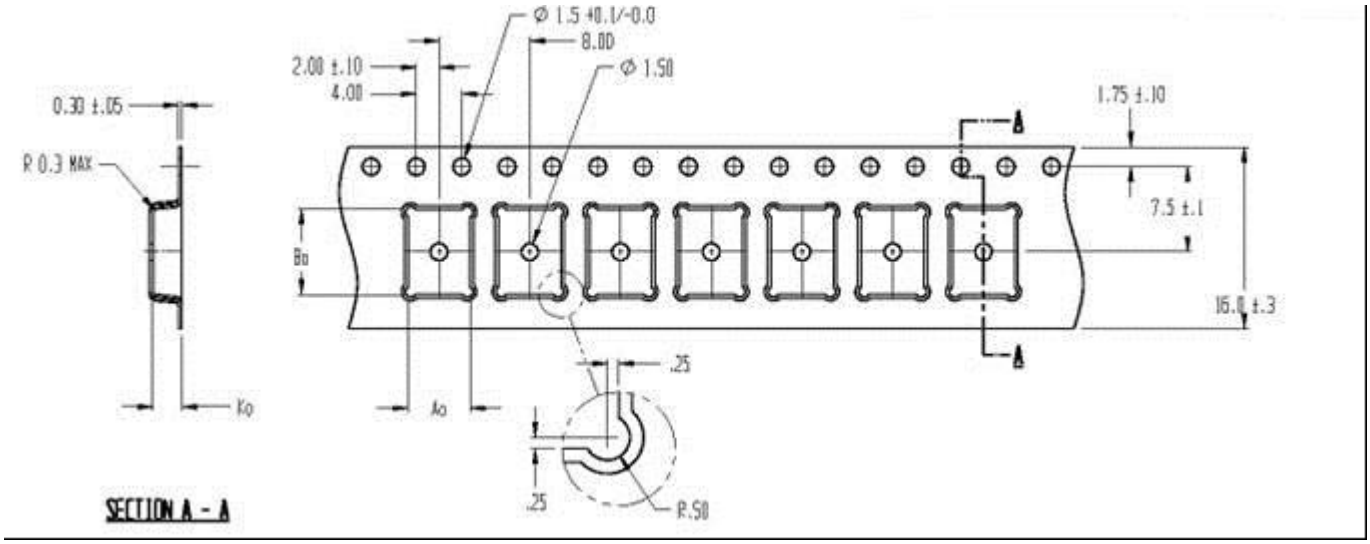
Pin	Connection
A	
B	
C	Rh1
D	Rs1
E	
F	Rh2
G	Rs2
H	
J	
K	



MiCS-5524 configuration (bottom view)

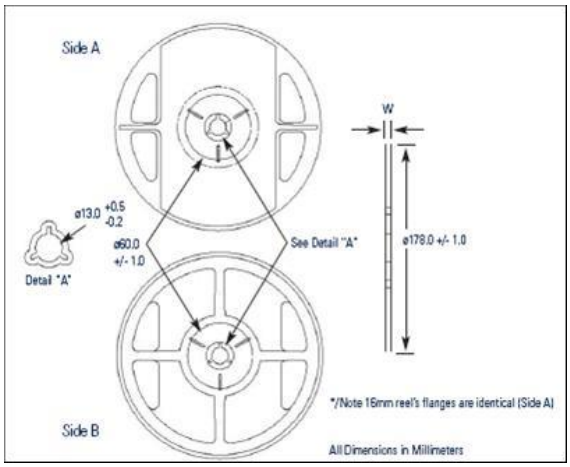
Sensor configuration

The silicon gas sensor structure consists of an accurately micro machined diaphragm with an embedded heating resistor and the sensing layer on top.
The internal connections are shown above.



Packaging

The sensors are packaged in a tape and reel for expedition.
The sensors are placed in a carrier type. The dimensions of the cavity are 5.5 x 7.5 x 2.55 mm (the tolerance is +/- 0.2 mm).
The outside dimension of the reel is either 178 +- mm (for a maximum of 700 sensors) or 330 + 0.25 / -4 mm (for a maximum of 2000 sensors).



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