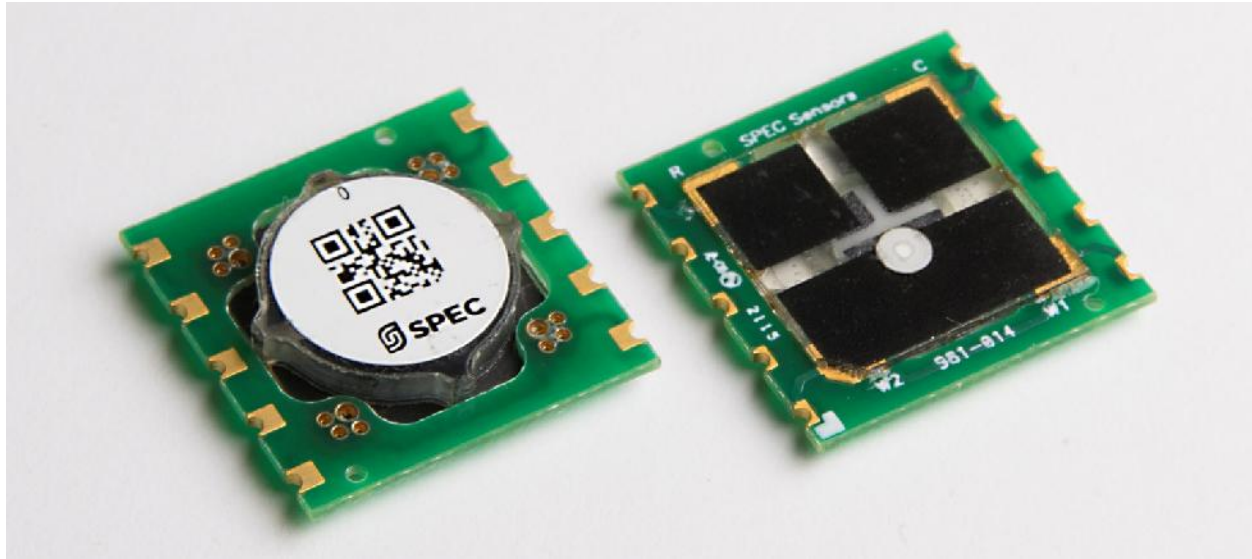


15x15 Respiratory Irritant Sensor 20 ppm C Package 110-902



DESCRIPTION

SPEC Sensors' RESP_IRR_20 is a Screen Printed ElectroChemical sensor component specifically designed for the broad detection of respiratory irritant gases: NO₂, Ozone, Chlorines, SO₂, H₂S and odorous gases.

BENEFITS

- Zero Power Sensor
 - Sensor Circuit - < 10 uW max
- Sensitive - In the ppb range
- Cold operation - No Heating required
- Stable Response– Not affected by humidity, CO₂, N₂, Ar, most saturated hydrocarbons, hexane, ammonia,
- Small Size & Low Profile - 20x20x3 mm
- Easy to Use - Linear Response
- Long Life - 10 years expected life
- Fast Response - < 60 seconds
- ROHS Compliant

APPLICATIONS

- Bad Air Quality Detection
- Indoor Air Monitor
- Air Purifier Controls
- Weather Stations
- Internet of Things
- Smart Homes
- Leak Detection
- HVAC Ventilation Control
- Telemedicine Equipment

SPECIFICATIONS

Measurement Range	0 to 20 ppm (calibrated as NO ₂ equivalents)
Response Time to 90%	< 60 seconds typical
Sensitivity	-30 +/- 5 nA/ppm (NO ₂ equivalents)
Expected Operating Life	> 5 years (10 years @ 23+/-3C; 40+/-10% RH)
Operating Temperature Range	-10 to 40 C (0 to 40 C continuous)
Operating Humidity – non-condensing	0 to 100% RH (15 to 95% continuous)
Power Consumption	< 50 uW circuit & ambient gas dependent
Zero Drift (Over Temperature Range)	+/-0.3 ppm (NO ₂ equivalents)
Resolution	20 ppb NO ₂ (depends on the gas & electronics)

CROSS SENSITIVITY

This sensor exhibits sensitivity to a wide range of gases. The following table lists the relative response of common gases tested at levels to measure interference.

Gas	ppm	Typical Response (as ppm NO ₂)
Carbon Monoxide	10	0
Hydrogen Sulfide	10	27
Ozone	10	8
Nitrogen Dioxide	10	10
Sulfur Dioxide	10	-7
Ethanol	10	1
Nitric Oxide (NO)	10	0
Chlorine	10	6.5
n-Heptane	10	0
Ammonia	10	0
Methane	10	0
Saturated Hydrocarbons	10	0

IMPORTANT PRECAUTIONS

All sensor designs are made for air monitoring @ 1 atm +/- 0.2 atm. Because applications of use and device implementation are outside our control, SPEC Sensors cannot guarantee performance in a given device or application, and disclaims any and all liability therefore. **Customers should test under their own conditions to ensure the sensors are suitable for their requirements.**

Contact the factory to discuss specific concerns that might damage the sensor performance or life.

- Condensation and Water (1)
- Salt Water Contamination (1)
- High Temperature Operation (> 70C) for more than 1 month
- Low Humidity Operation (< 15% RH) for more than 3 months
- High Bias voltage
- Highly contaminated air over a prolonged period
- High levels of particles or soot (unless proper filtering is provided)

(1) Use of porous PTFE membrane or filter cap may address this concern)

MARKING INFORMATION

All gas sensors are tested and marked at the SPEC Sensors factory. Sensors include a label with an alpha-numeric code and a two-dimensional bar code. The codes include the information indicated in the table below.

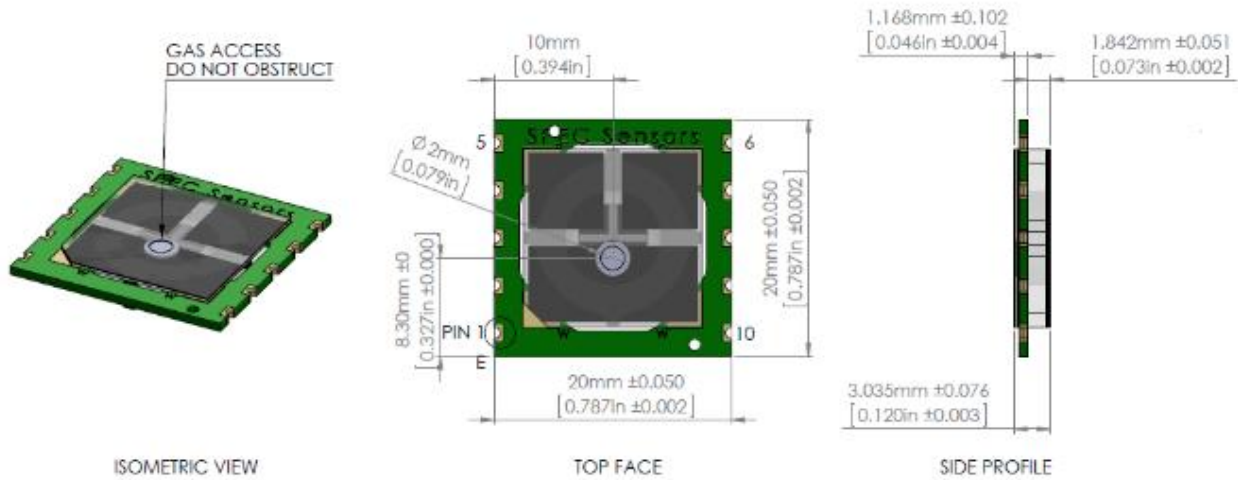
	Unique Serial Number	Sensor Part Number	Target Gas	Date Code (YYMM)	Sensitivity Code (nA/ppm)
Alpha-Numeric Code:	110201 CO 1501 5.57				
2D Code:	010715010101 110201 CO 1501 5.57				

STORAGE CONDITIONS

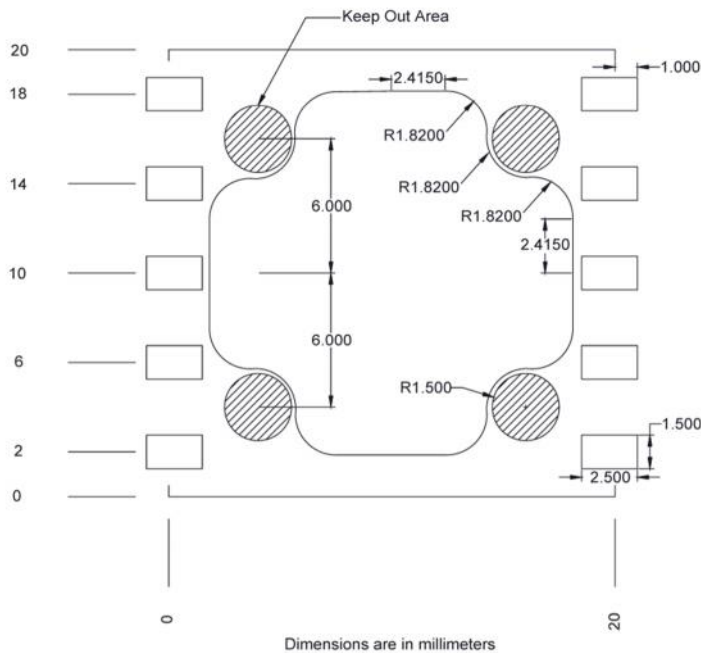
The calculated shelf life for sealed, packaged components is 12 months from the pack seal date, when stored in the factory-sealed bag under the following conditions:

- A. Temperature: 5 to 25 °C
- B. Relative Humidity: 20 to 80%
- C. Pressure: 1 ± 0.2 atm
- D. Storage Time: 12 months

DIMENSIONS



PCB LAYOUT GUIDELINES



PIN	CONNECTION
1	WORKING
2	NC
3	NC
4	NC
5	REFERENCE
6	COUNTER
7	NC
8	NC
9	NC
10	WORKING