Solid Polymer Sensor
ES1-AG1-200 - All Gas

Technical Specification

Part Number:

01-ES1-AG1-200-01

Features

High sensitivity

Low cost alternative to PID

No electrolyte leakage

Low cost at large volumes

Individually calibrated including test report

Detect to most VOC Gases

Strong signal to noise

Smallest EC Sensor in the world

Fast Response time

Typical applications

Consumer Market
General Gas Detection
VOC Gas Detection
Low Power Nose
Mobile Phone Nose
Indoor Air Quality
Outdoor Air Quality
Breath Alcohol Detector

Performance

Sensitivity	55 ± 15 nA / ppm
Zero current	± 100 nA
Response time	
$-T_{50}$	< 10 s
$-T_{90}$	< 30 s
Range	200 ppm
Repeatability	1 %
Lower Detectable Limit (LDL)	<1 ppm
Resolution (16Bit ADC)	0.1 ppm
Maximum overload	1000 ppm
Linear range	200 ppm

Environment

Temperature Range	-40 to 50 °C
Humidity Range (non condensing)	10 to 95 % R.H
Pressure Range	800 to 1200 hPa

Operation

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Operating principle	amperometric, 3-electrode
Bias voltage	0 mV
Recommended load resistor	100
Warm up time	< 90 / 60 s

Lifetime

Long Term Sensitivity Drift	< 1 %/month
Zero Drift in clean air	< 2 ppm
Storage conditions	0-20 °C
Storage life	6 month
Expected Life Time	> 3 years
Warranty	24 month

Housing

Housing material	ABS
Weight	< 0.7 g

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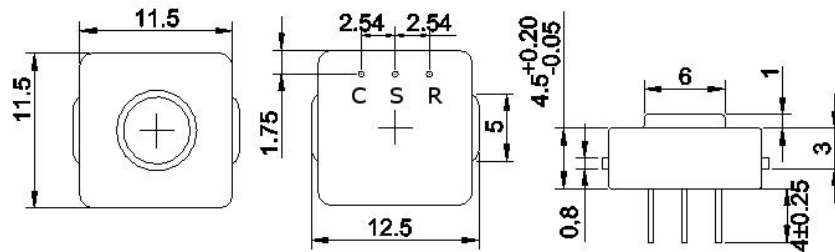
Dimensions

All dimensions in mm

Temperature curve

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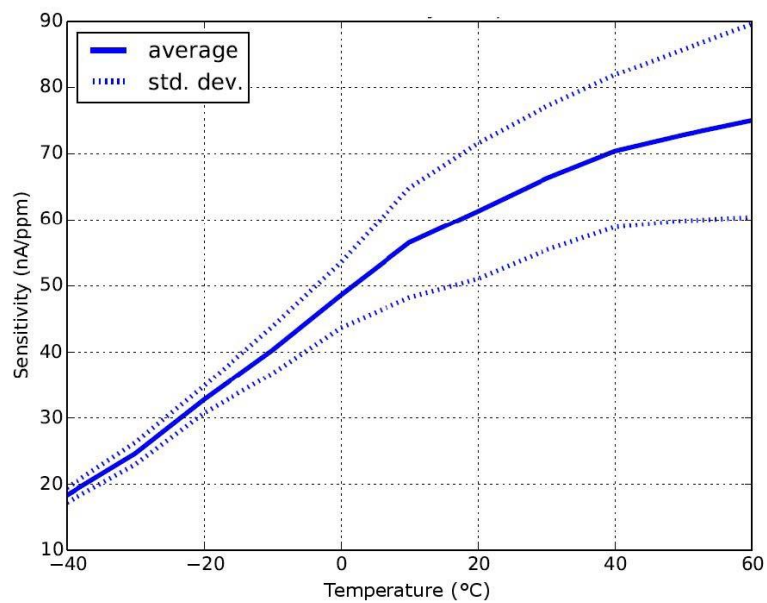
Cross sensitivity

Gas	Formula	Test concentration (ppm)	Sensor reading (ppm)
Ammonia	NH_3	50	0
Carbon Dioxide	CO_2	1000	0
Carbon Monoxide	CO	100	100
Chlorine	Cl_2	1.0	0
Dichlor methane	CH_2Cl_2	30	0
Ethanol	$C_2H_5Cl_2$	104	100
Ethylene oxide	C_2H_5OH	14	<2
Ethylene	C_2H_4		Yes
Hydrogen	H_2	100	20
Hydrogen Sulphide	H_2S	10	400
Hydrogen Cyanide	HCN	10	9
Isopropanol	C_3H_7OH		yes
Methan	CH_4	30000	0
Methanal	HCHO		Yes
Methanol	CH_3OH		Yes
Methylpropene	C_4H_8	15	18
Nitric Oxide	NO	25	n.e.
Nitrogen Dioxide	NO_2	10	-5
Ozone	O_3	0.5	0
Sulphur Dioxide	SO_2		yes
Toluene	C_7H_8		No
Xylene	C_5H_{10}		No
Gasoline			yes
Acetylene	C_2H_2		yes
Methyl Mercaptan	CH_4S		yes
Phosphine	PH_3		yes
Tetrahydrothiophene	THT	10	<1
Vinyl Chloride	C2H3Cl		yes
Formaldehyde	HCHO		yes
Ozone	O_3		yes
Hydrazine	N2H4		yes
Arsine	AsH_3		yes

Fluorine	F_2	yes
Chlorine Dioxide	ClO_2	No
Bromine	Br_2	No
Hydrogen Chloride	HCl	No
Hydrogen Bromide	HBr_2	No
Acrylonitrile	CH2CHCN	No
Acetone	CH3COCH3	No

Above sensor reading in ppm after calibration to CO.

Cross sensitivities indicated withyes showed a signal response under a bump test.

We will continue to do more cross gas testing.

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