MG811   CO2 Sensor
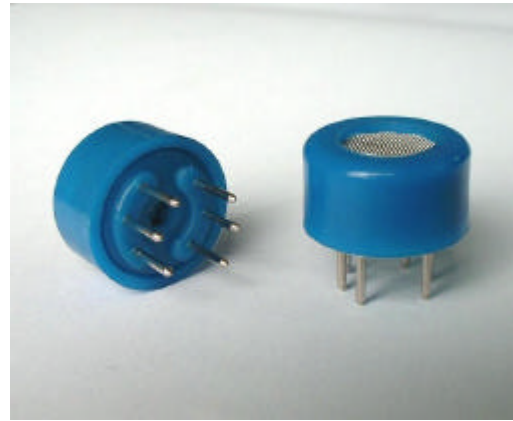
Features

Good sensitivity and selectivity to CO2
Low humidity and temperature dependency
Long stability and reproducibility

Application

Air Quality Control
Ferment Process Control
Room Temperature CO2 concentration Detection

Structure and Testing Circuit

Sensor Structure and Testing Circuit as Figure, It composed by solid electrolyte layer 1 Gold electrodes 2 Platinum Lead 3 Heater 4 Porcelain Tube 5 100m double-layer steeless net 6 Nickel and copper plated ring 7 Bakelite (8) Nickel and copper plated pin 9

Figure 1A

Figure 1B
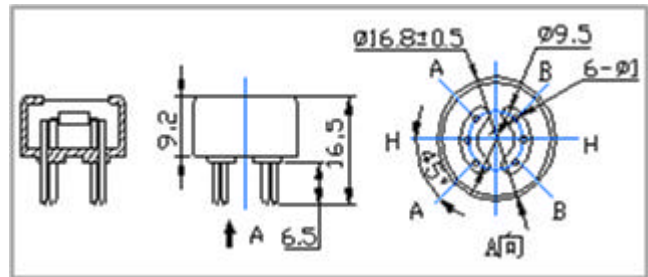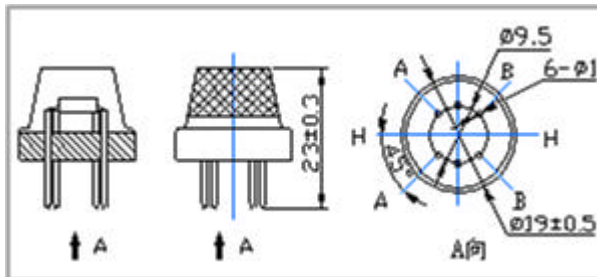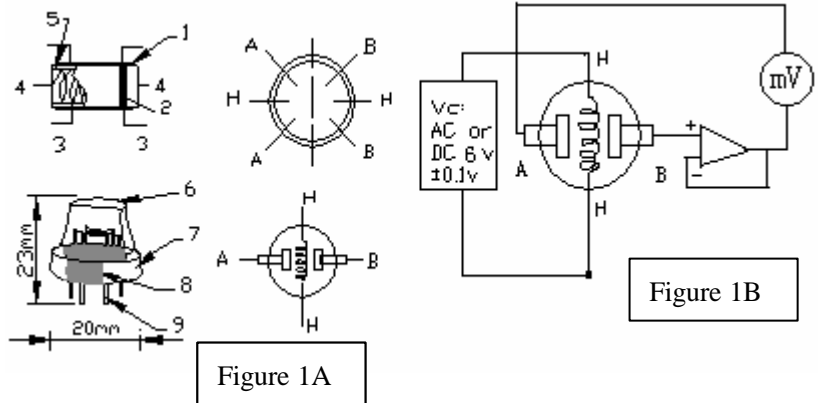
Working Principle

Sensor adopt solid electrolyte cell Principle   It is composed by the following solid cells

Air   Au|NASICON|| carbonate|Au, air   CO2

When the sensor exposed to CO2   the following electrodes reaction occurs

Cathodic reaction $2Li^+ + CO_2 + 1/2O_2 + 2e^- = Li_2CO_3$

Anodic reaction $2Na^+ + 1/2O_2 + 2e^- = Na_2O$

Overall chemical reaction $Li_2CO_3 + 2Na^+ = Na_2O + 2Li^+ + CO_2$

The Electromotive force EMF   result   from the above electrode reaction, accord with according to Nernst's equation:

$$EMF = Ec - (R \times T) / (2F) \ln (P(CO_2))$$

$P(CO_2)$—CO2--- partial Pressure   Ec—Constant Volume   R—Gas Constant volume

T— Absolute Temperature   K   F—Faraday constant

From   Figure 1B Sensor Heating voltage supplied from other circuit , When its surface temperature is high enough , the sensor equals to a cell, its two sides would output voltage signal ,and its result accord with Nernst's equation   In sensor testing, the impedance of amplifier should be within 100—1000G   Its testing current should be control below 1pA.

Specifications

Symbol	Parameter Name	Technical	Remarks
V_H	Heating Voltage	6.0±0.1 V	AC or DC
R_H	Heating Resistor	30.0±5%	Room Temperature
I_H	Heating Current	@200mA	
P_H	Heating Power	@1200mW	
Tao	Operating Temperature	-20—50	
Tas	Storage Temperature	-20—70	
? E?M F	Output	30—50mV	350—10000ppmCO2

Sensitivity

Figure 2 Shows gas sensor sensitivity curve.

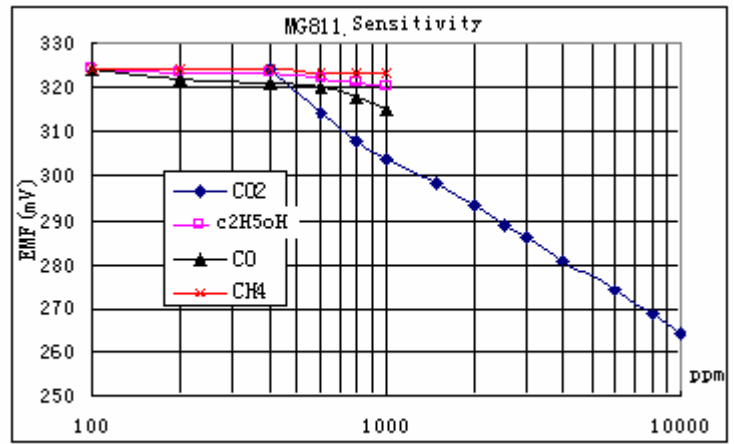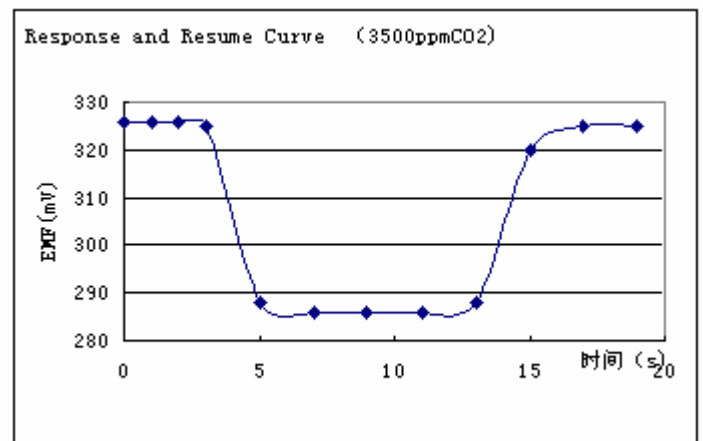   Conditions:

    Tem   28

    RH   65%

    Oxygen   21%

    EMF: sensor EMF under different gas and
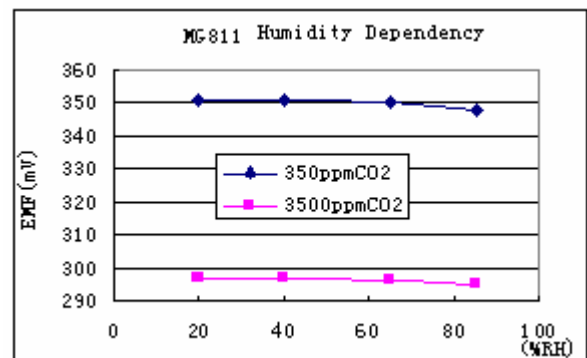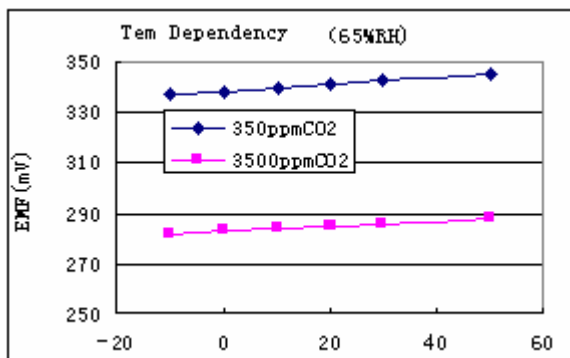
concentration .

Response and Resume   Characteristic

Figure 3 shows Solid electrolyte sensor response
and resume characteristics.

Temperature and Humidity Dependency

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Multiple Function Sensor Development Tools *category:*

Click to view products by DF Robot *manufacturer:*

Other Similar products are found below :

MAXWSNENV# STEVAL-MKIT01V1 KT-O2-25%-TB200A-E KT-TVOC-200-TB200A KT-NmHc-200-TB200A SEN0344 PIM520 PIM518 PIM519 PIM502 AS7022-EVALKIT ALTEHTG2SMIP MAX30101WING# OB1203SD-U-EVK MIKROE-4265 A000070 EV_ICG-20660L GX-F12A-P GX-F15A GX-F8AI-P GX-H15AI-P GX-H6A-P GX-HL15B-P 1093 MIKROE-2455 MIKROE-2458 MIKROE-2507 MIKROE-2508 MIKROE-2516 MIKROE-2529 1458 MIKROE-1628 176 189 1893 2106 ATQT4-XPRO GP30-DEMO MODULE GX-F12AI-P GX-F15A-P GX-FL15B-P GX-H12AI-P GX-H15A-P GX-H6AI-P GX-H8A-P GX-F15AI-P GX-FL15A-P AAS-AQS-UNO DFR0018 DFR0131