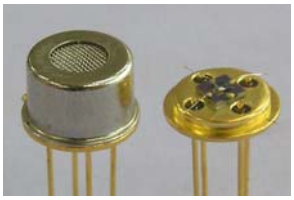
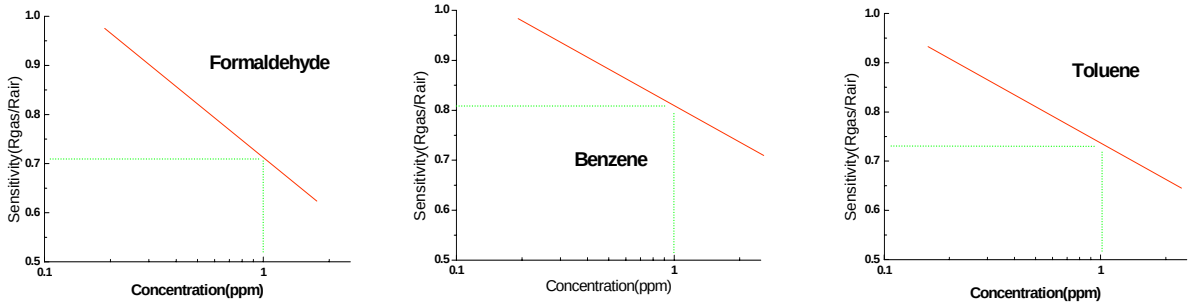
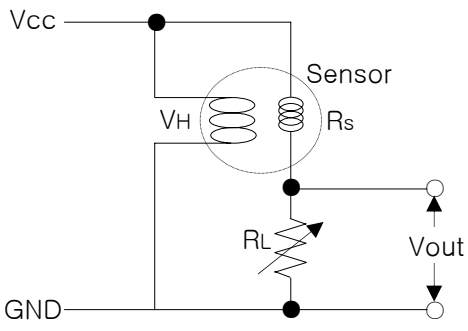
VOCs Sensor – for the detection of Formaldehyde, Tolune, Organic Solvent



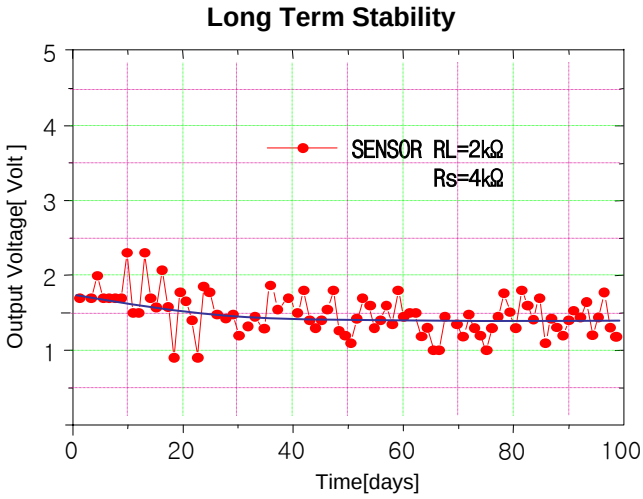
1. Sensitivity characteristic slope



2. Basic Measuring Circuit & Stability



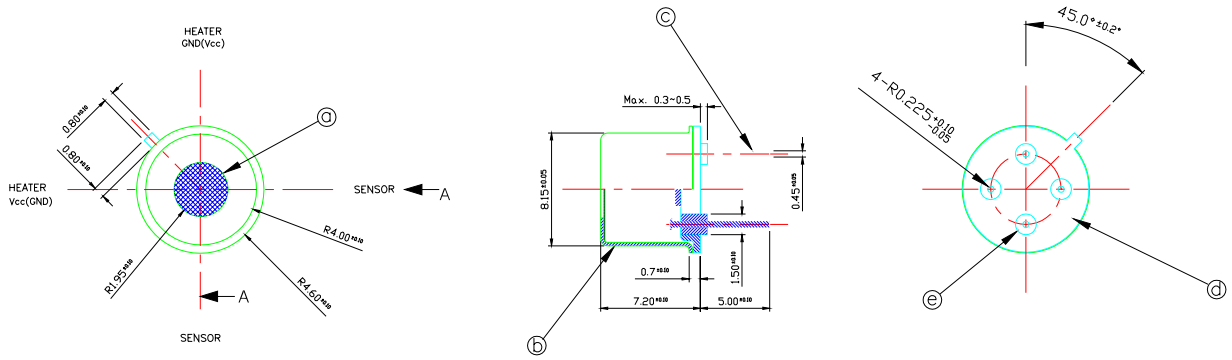
Vcc : Circuit Voltage(5V) VH : Heater Voltage(5V)
RL : Load Resistance Rs : Sensor Resistance



3. Specifications

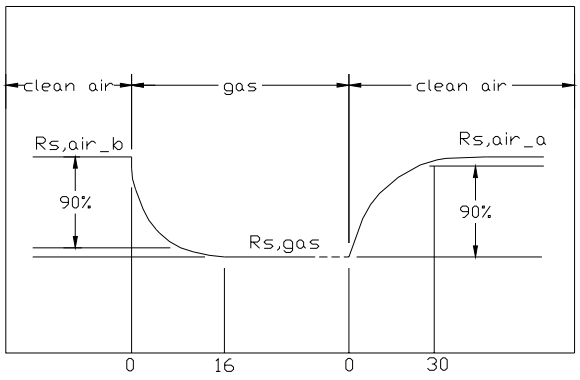
Model number			MS1100	MS1100-111
Sensing element type			Semiconductor	◀—
Target gas			VOCs, HC, Smoke, Organic compounds	◀—
Electrical characteristics under standard Test conditions	R_H	Heater resistance	25.5Ω±0.2Ω	◀—
	V_H	Heater Voltage	5.0V±2%	◀—
	R_L	Road resistance	Variable	◀—
	P_H	Power consumption	Less than 420㎽	Less than 430㎽
	V_C	Circuit Voltage	Less than12.0V	◀—
Sensitivity Characteristics $\beta = R_{s,gas}/R_{s,air}$ $\Delta V = V_{out,air} - V_{out,gas}$	$R_{s,air}$ $V_{out,air}$	Sensor resistance	1.7kΩ to 24 kΩ (Refer to Rank Table)	◀—
	β ΔV	Toluene :5ppm Smoke:1,000ppm (ESSE, Korea)	0.4≤β≤0.6 β≤0.4	
	Response time		Reaction : less than 5sec Recovery : less than 10sec	◀—
	* Standard test condition (balance gas : clean air, or special gas) • Temp. : 20℃±5℃, • Humidity : RH65%±10%, • Pressure : 1atm • Test chamber : more than 1ℓ/EA, • Pre-heating time : more than 1hr			
Environmental condition	* Operation temp. & Relative humidity : -10℃ to 60℃, less then dew point * storage temp. : -20℃ to 80℃ * Oxygen concentration : 21% ± 2%(The sensitivity characteristics are influenced by variation in oxygen concentration			

4. Structure and Dimensions



MS1100

5. Reaction time(T_{90})



Reaction Time(T_{90}) : Less then 10sec
[Between Rs,air_b & Rs,gas]

Recovering Time(T_{90}) : Less then 20sec
[between Rs,gas & Rs,air_a]

Beginning stability time(T_{90}) : Less then 10 minute

Rs,air_b : Sensor Resistance without gases
Rs,gas : Sensor Resistance after blowing gases
Rs,air_a : Sensor Resistance removing gases

6. Characteristic of the other gases (β=Rgas/Rair)

	Smoke (HC)	Alcohol (C_2H_5OH)	Hydrogen (H_2)	Butyl acid ($C_5H_{10}O_2$)	비 고
Concentration	1,000ppm	50ppm	100ppm	1ppm	
Sensitivity	0.3	0.1	0.6	0.4	

* Sensitivity(β) = Rgas/Rair
* Rgas : 가스 주입 완료 후, 출력저항, Rair : 청정대기 상태에서의 출력저항

7. Rank Table(30)

Rank	Resistance	Rank	Resistance	Rank	Resistance
30A	1.7 ~ 2.0kΩ	**30D**	2.8 ~ 3.3kΩ	**30G**	4.7 ~ 5.7kΩ
30B	2.0 ~ 2.4kΩ	**30E**	3.3 ~ 3.9kΩ	**30H**	5.7 ~ 7.1kΩ
30C	2.4 ~ 2.8kΩ	**30F**	3.9 ~ 4.7 kΩ		

* R_L = 1kΩ
* Rgas : 가스 주입 완료 후, 출력저항, Rair : 청정대기 상태에서의 출력저항

8. Application

* Air Purifier
* Damper