

May 10, 1990

- Specification Sheets -

FIGARO GAS SENSOR TGS 800

FIGARO ENGINEERING INC.

1. Model : Figaro Gas Sensor TGS 800

2. Structure and Materials

Structure : Refer to Fig.1 in page 3

Part	Material	Standard
Sensing element	Sintered SnO ₂ semiconductor	Refer to Article 4 "Electric Characteristics"
Flame arrester	SUS 316, 100 mesh stainless steel gauze	Double layer
Heater coil	Chrome alloy wire $\phi = 0.06$	Resistance value of heater: $R_H = 38 \Omega \pm 3 \Omega$ (measured at room temperature)
Lead wire	Gold alloy wire $\phi = 0.08$	
Housing	Glass Fiber reinforced polyamide resin	Approved by 94HB of UL standard Durable temperature: Max 240°C
Pin	Ni	The pins can withstand a withdrawal force in exceed of 5Kg. in the pins direction

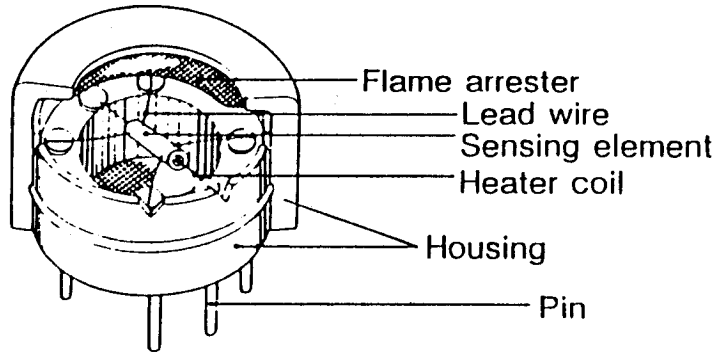
3. Circuit Condition

Item	Standard	Remarks
Heater power consumption	$P_H = 650mW$	Typical value
Sensor power consumption	$P_S \leq 15mW$	$P_S = V_C^2 \cdot R_S / (R_S + R_L)^2$
Heater voltage (V _H)	$V_H = 5.0V \pm 0.2V$ A.C. or D.C.	
Circuit voltage (V _C)	$V_C \leq 24V$ A.C. or D.C.	$P_S \leq 15mW$
Load Resistor (R _L)	variable	Same as above

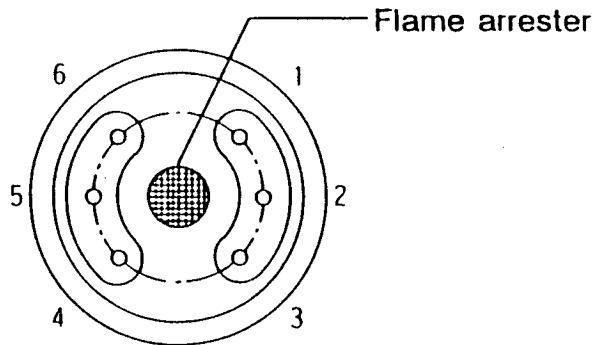
4. Electric Characteristics

Item	Test Condition	Standard
Sensor Resistance	<p>Basic measuring circuit is shown in Fig. 4 in page 4</p> <p>Test gas : H₂ (purity 99%)</p> <p>Test chamber capacity : 1ℓ or more per sensor</p> <p>Standard atmospheric condition: clean air temperature: 20°C ± 2°C relative humidity: 65% ± 5%</p> <p>Before testing, 48 hours pre-heating under standard atmospheric condition is necessary</p>	<p>《in clean air》</p> <p>$R_S = 10K\Omega \sim 130K\Omega$</p> <p>《in H₂ 10ppm》</p> $\frac{R_S(H_2\ 10ppm)}{R_S(Air)} = 0.2 \sim 0.6$
Response time	After exposure to H ₂ 10ppm, sensor resistance must reach 90% of the stable level in H ₂ 10ppm	Within 20 seconds
Time for initial stabilization	After switch on, sensor resistance must reach 80% of the stable level in clean air	Within 1 hour
Insulation resistance	Apply DC 100V between live and dead metal part	5MΩ or more
Dielectric strength	Apply 500V for one minute between live and dead metal part	No dielectric breakdown is caused (Current leakage: under 1mA)

Fig. 1. Structure



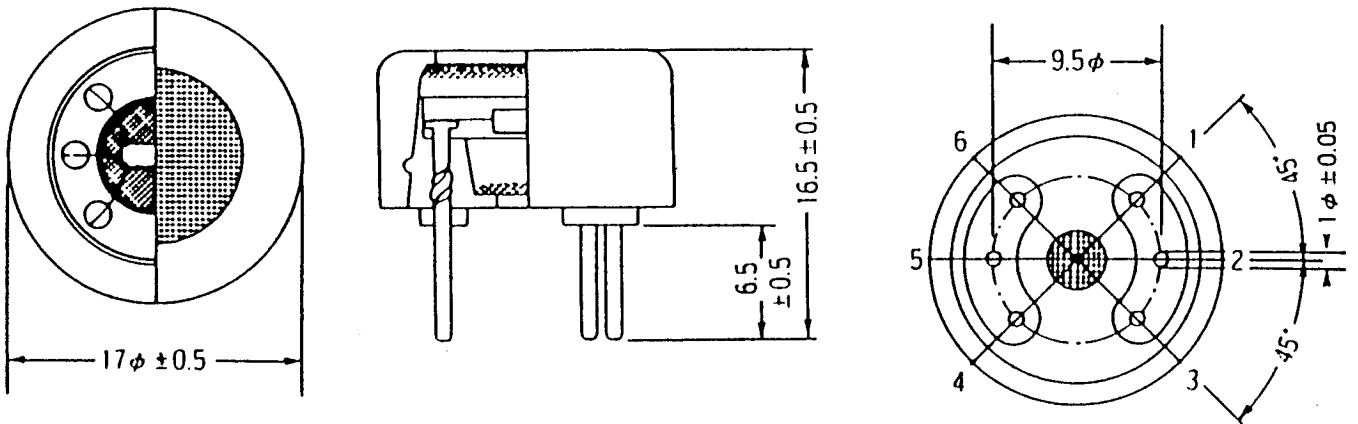
(a) Cut View



(b) Bottom View

The numbers in the figure indicate the six pins.

Fig. 2. Dimensions



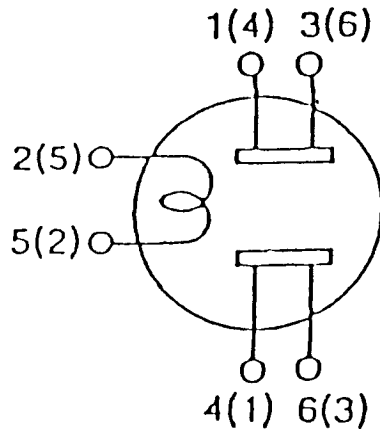


Fig. 3 Symbol of TGS 800 in Electric Circuit

- * 2, 5 : Heater pin
- 1, 3 : Connected electrode pair
- 4, 6 : Connected electrode pair

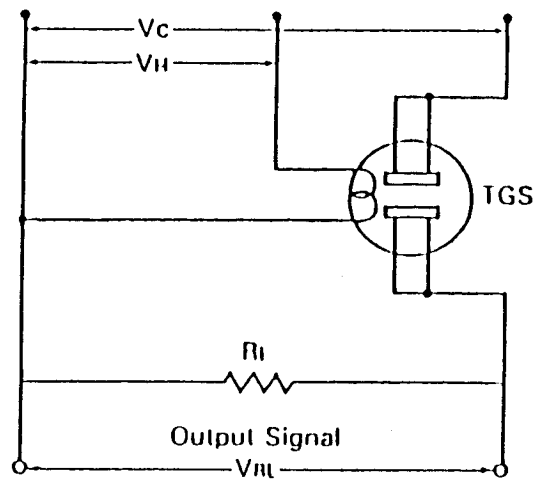


Fig. 4 Basic Measuring Circuit

* Standard Test Condition

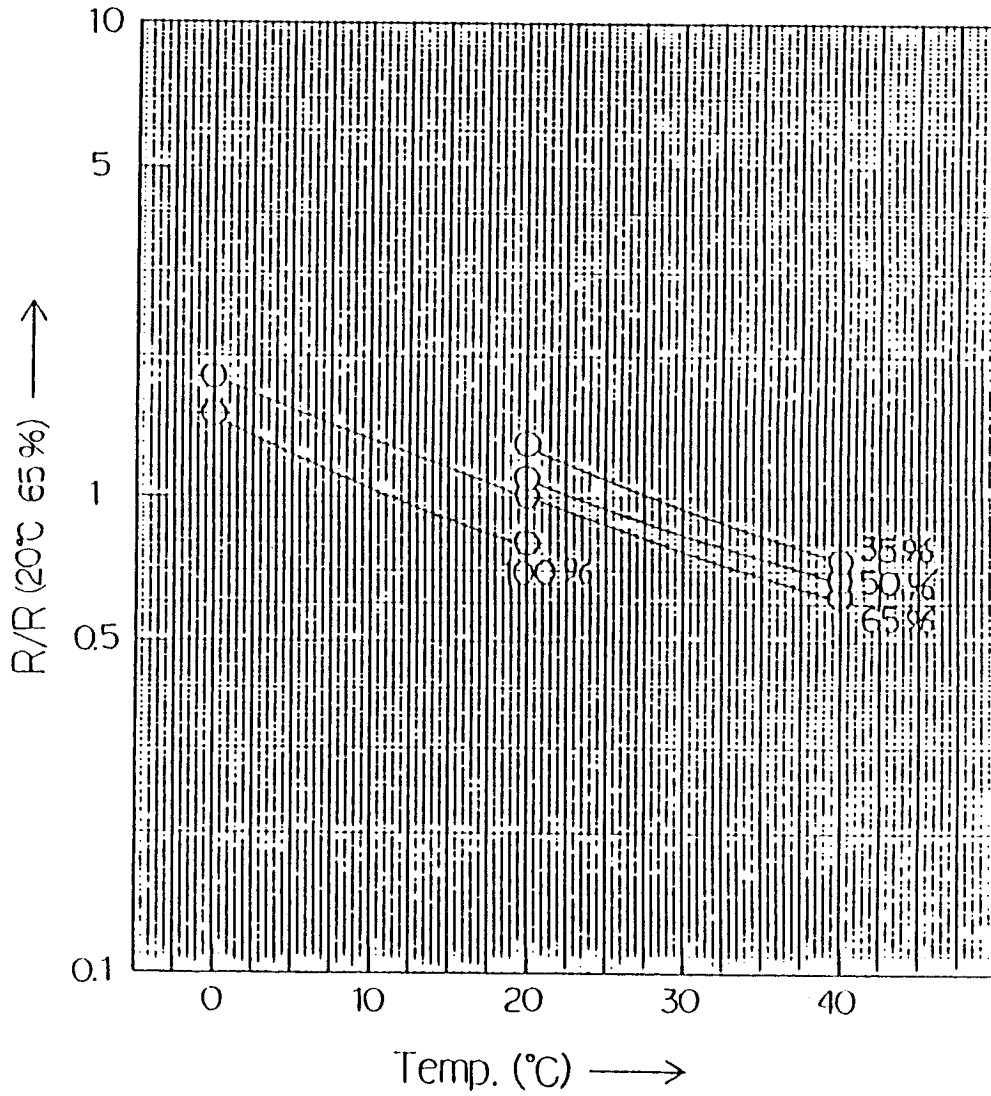
Circuit voltage : $V_C = 10.0V \pm 0.1V$ (A.C. or D.C.)

Heater voltage : $V_H = 5.0V \pm 0.05V$ (A.C. or D.C.)

Load Resistor : $R_L = 4.0K\Omega \pm 1\%$

TGS 800

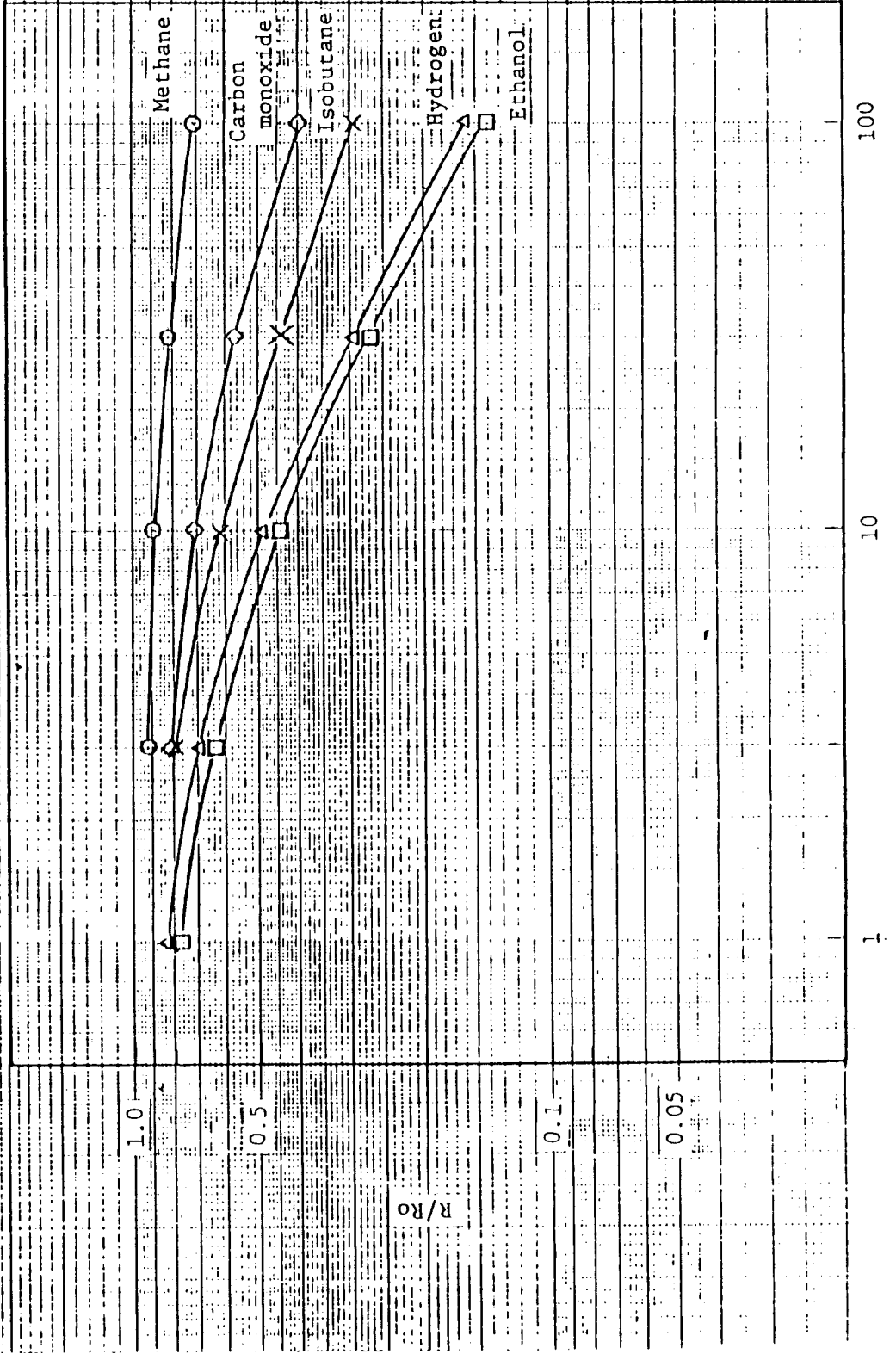
Temperature and Humidity Dependency



TGS 800 Sensitivity Characteristics

(R₀ : AIR)

R₀ = 25KΩ



Gas Conc. (ppm)