TGS832-A00 Sensor for Detecting Freon Gas

characteristic：

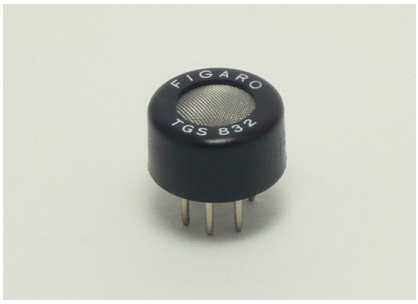
* High sensitivity to Freon gas
* Fast response time
* Good long-term stability
* Simple application circuit

apply：

:: Portable or fixed fluorocarbon leak detectors

The Faguo sensor's sensitive element is constructed from tin dioxide (SnO_2) semiconductor. In clean air, it exhibits low conductivity. When the air contains detectable gases, the sensor's conductivity increases proportionally with the gas concentration. Through a simple circuit design, these conductivity changes are converted into corresponding signal outputs that directly indicate the gas concentration.

The TGS832-A00 sensor demonstrates exceptional sensitivity to refrigerants commonly used in air conditioners and refrigerators, including R-134a, R-404a, R-407c, and R-410. Featuring gas vent holes on both the sensor cap and base, it employs a pump suction principle to enhance airflow circulation. This design enables rapid response capabilities, making it particularly suitable for portable gas leak detectors.



Sensitivity characteristics:

The following figure shows the typical sensitivity characteristic curve, which was measured under our company's standard test conditions (see back).

The vertical axis indicates the sensor resistance ratio Rs / Ro, where Rs and Ro are defined as follows: Rs = the sensor resistance value in various gas concentrations

Ro = 100ppm R-134a sensor resistance value

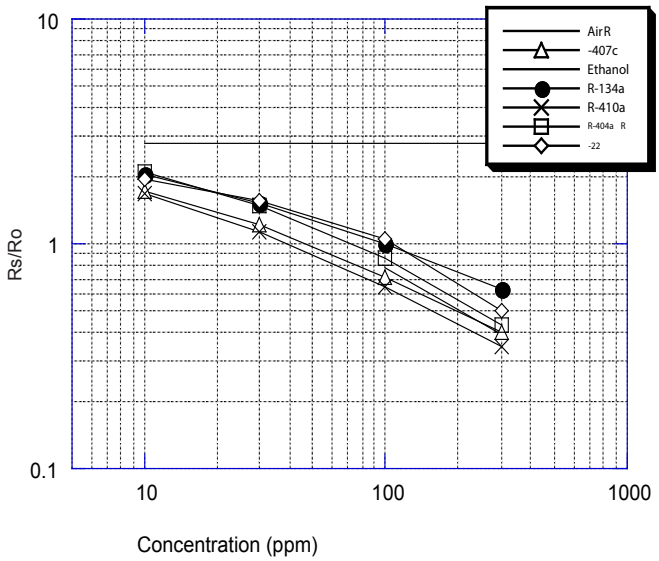
Temperature and humidity characteristics:

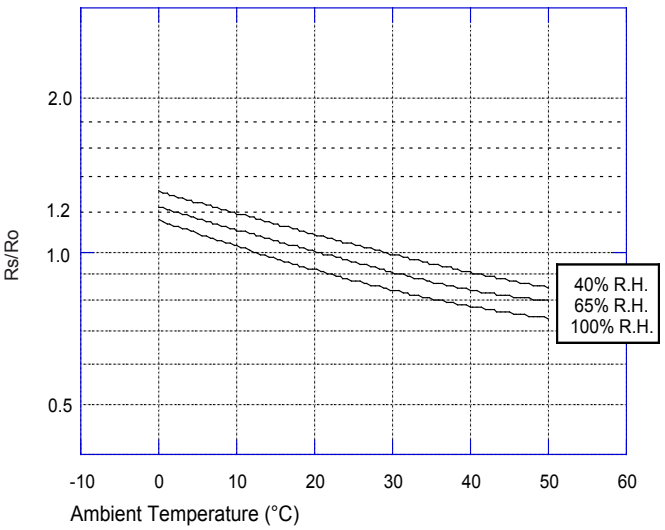
The following figure shows the representative characteristic curve affected by temperature and humidity.

The vertical axis shows the sensor resistance ratio Rs / Ro, where Rs and Ro are defined as follows:

Rs = Resistance value of the sensor at various temperature and humidity in 100ppm R-134a

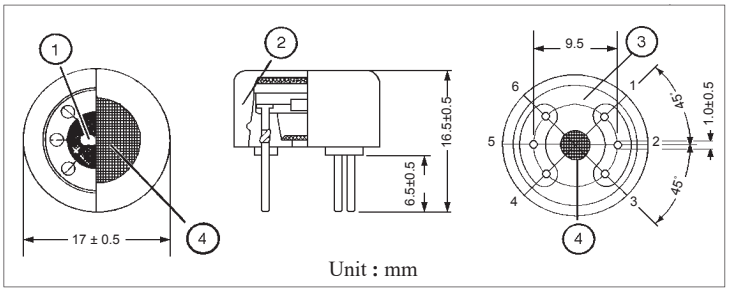
Ro = Sensor resistance value at 100ppm R-134a, temperature and humidity of 20°C, 65% R.H





Important Notice: The application conditions for Feigaro sensors may vary depending on specific customer requirements. Feigaro strongly recommends consulting our technical team prior to use, particularly when the detected gas is not listed. Feigaro assumes no liability for any usage that has not undergone professional testing by Feigaro.

Structure and size:



Unit : mm

① Detection element:

An oxidation aluminum ceramic tube is built with a heating wire and a thick layer of SnO 2 coating on the surface

② Sensor cap:

③ Sensor substrate:

66# Nylon

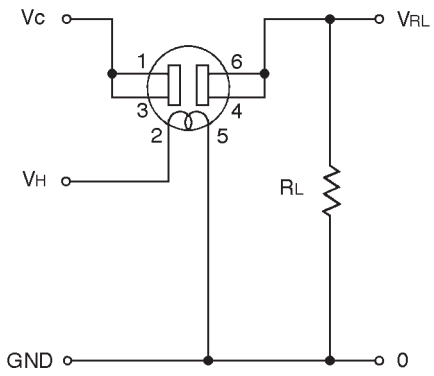
④ Fuses:

SUS 316 100 mesh double layer wire mesh

The circuit diagram on the right shows the sensor's symbol code, and the structure above and the size diagram show the sensor's pin numbers.

As shown in the figure, when the sensor is connected to the base circuit, the rise of the load output voltage (V RL) and the fall of the sensor resistance (R S) will depend on the detection concentration of the object gas.

Pin and basic test circuit:



Standard circuit conditions:

project	symbol	rating	remarks
loop voltage	VH	5.0±0.2V	AC perhaps DC
circuit voltage	Vc	Max 24V	Only DC P s ≤15mW
load resistance	RL	variable	0.45kΩ min.

electrical character：

project	symbol	condition	specifications
Sensor resistor	Rs	R-134a at 100ppm/ air	4kΩ ~ 40kΩ
The rate of change of the sensor resistance	Rs/Ro	R s (R-134a at 300ppm/ air) / R s (R-134a at 100ppm/ air)	0.50 ~ 0.65
Heating element resistance	RH	room temperature	30.0 ± 3.0Ω
Heater power consumption	PH	VH=5.0V	835mW (typical)

standard test conditions：

When the TGS832 is tested under the standard conditions specified below, it must comply with the electrical characteristics in the table above.

Test conditions: 20°C ±2 °C,65±5%R.H

Circuit condition: V C = 10.0±0.1V(AC or DC)

V H =5.0±0.05V(AC or DC)

R L = 10.0kΩ± 1%

circuit condition: over 7 days

The power consumption value (P s) can be calculated by the following formula:

$$P_S = \frac{(V_C - V_{RL})^2}{R_S}$$

The sensor resistance (R s) can be calculated from the following formula according to the measured value of V OUT (V RL):

$$R_S = \left(\frac{V_C}{V_{RL}} - 1\right) \times R_L$$

The typical characteristics of the sensor are shown in this product specification. The actual characteristics of the sensor vary depending on the product. Please refer to the specifications for each sensor.

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