# T F6812F-A00/WOF explosion-proof combustible gas sensor specification

## characteristic：

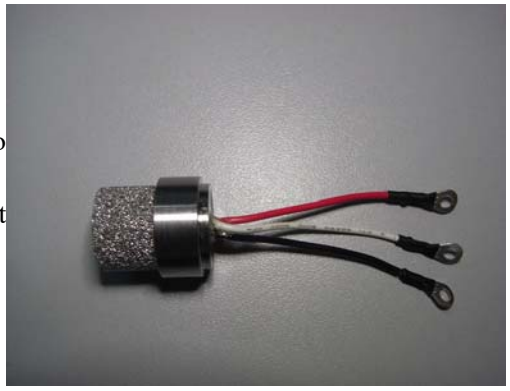
• Flameproof design • Linear output • Compact size

• Meet RoHS requirements

## apply：

• Flammable gas and organic solvent discharge for fixed installations in explosion-proof locations

Undetected detection



TF6812F-A00/W0F protection produced by Tianjin Figaro Explosive contact combustion gas sensor, with high accuracy, Good durability, stability, fast response speed, and linear output

Features and characteristics

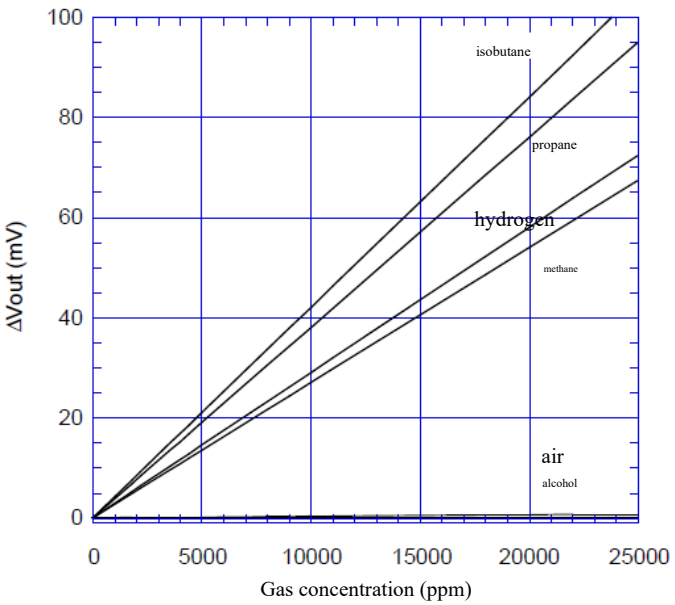
The TF6812F-A00 sensor housing incorporates a built-in filter, which exhibits significantly lower cross-sensitivity to organic solvent vapors like ethanol compared to traditional contact combustion sensors. This design effectively reduces false alarm rates in environments with such interfering gases, particularly in kitchen applications. Additionally, the sensor demonstrates superior resistance to silicon poisoning, ensuring greater durability than conventional contact combustion models.

TF6812F-W0F sensor has no activated carbon filter, can be used for the detection of ethanol, acetone and other steam, but the sensor does not have anti-silicon poisoning effect. Therefore, it is generally not recommended to use it in the case of hydrogen, methane and liquefied gas detection.

The figure below is a typical sensitivity characteristic, all of which are obtained under standard test conditions. The vertical axis is the output sensitivity of the sensor--Vout (mV):

Vout = Vout (gas) -Vout (air)

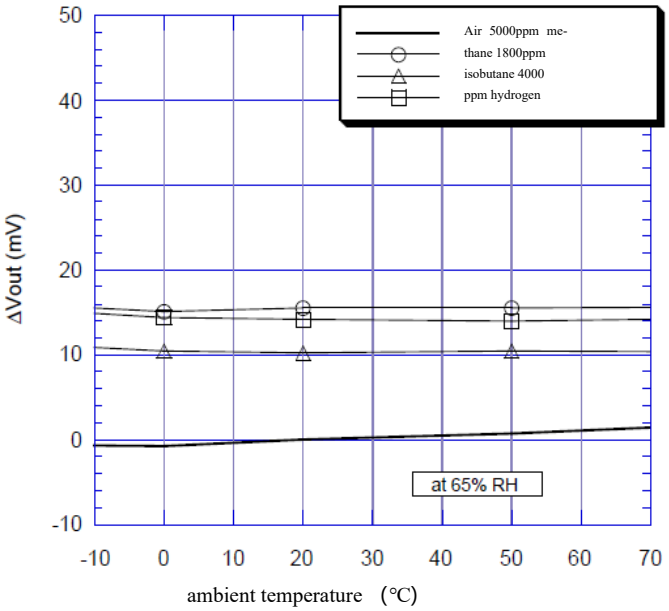
Sensitivity characteristics (TF6812F-A00):




The following figure shows the typical temperature characteristic curve under 65%RH conditions. The vertical axis is the output sensitivity of the sensor--Vout (mV):

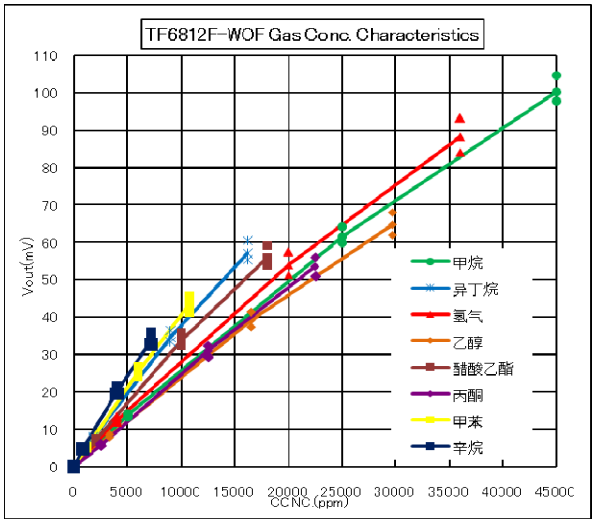
Vout = Vout (gas) -Vout (20°C air)

temperature affect：




Electrical characteristics under standard test conditions

Sensitivity characteristics (TF6812F-WOF):




Relative sensitivity comparison table (TF6812F-WOF):

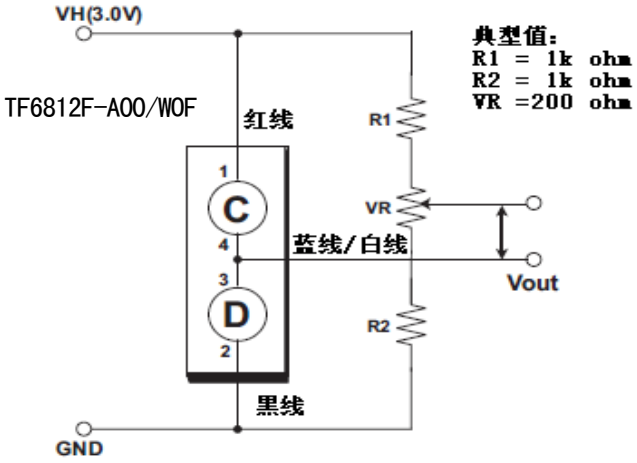
| Gas type | | LEL potency (%) | relative sensitivity TF6812F-WOF |
|---|---|---|---|
| methane | $CH_4$ | 5.0 | 100 |
| alcohol | $C_2H_5OH$ | 3.3 | 60 |
| acetic ether | $CH_3COOC_2H_5$ | 2.0 | 52 |
| acetone | $CH_3COCH_3$ | 2.5 | 43 |
| methylb-enzene | $C_6H_5CH_3$ | 1.2 | 37 |
| octane | $C_8H_{18}$ | 0.8 | 36 |
| isobutane | $C_4H_{10}$ | 1.8 | 57 |
| hydrogen | $H_2$ | 4.0 | 91 |

Note: The left figure shows the electrical characteristics under standard test conditions

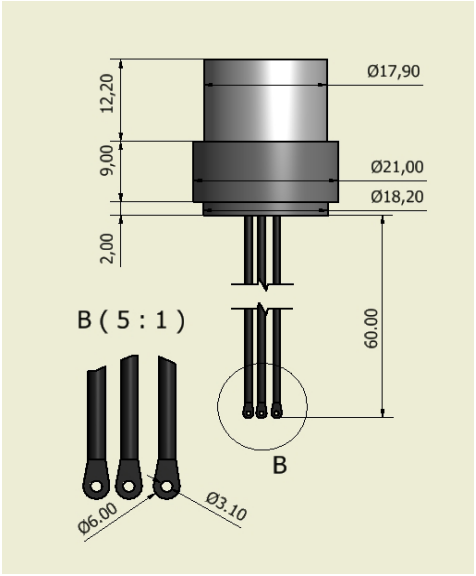
## Basic test circuit:

The TF6812F-A00/W0F sensor consists of two components:

1) The detection element (D) is highly sensitive to flammable gases, while the reference element (C) remains non-sensitive. These components are connected to a Wheatstone bridge circuit. When no flammable gas is present in the environment, the variable resistor is adjusted to generate a stable reference signal from the bridge. When flammable gas is detected, it burns on the surface of the detection element, causing a temperature rise that increases its resistance. This imbalance in the bridge circuit results in measurable changes in the output voltage.




## Shape and size and lead color:




| Model / lead | TF6812F-A00 | TF6812F-W0F |
|---|---|---|
| The power supply is positive | red | red |
| Power supply negative | black | black |
| signal wire | orchid | white |

specifications：

| model | | TF6812F-A00 | | TF6812F-WOF | |
|---|---|---|---|---|---|
| Sensor type | | Contact combustion type | | | |
| Object gas | | Hydrogen, methane, isobutane | | Ethanol, acetone, toluene and other organic solvents | |
| Scope of detection | | 0 to 100% LEL (per gas) | | | |
| anti-hazard classification | | ExdⅡC Gb | | | |
| Standard loop conditions | Working voltage | 3.0±0.1V AC/DC | | | |
| Electrical characteristics under standard test conditions | Heater current | 175mA (typical) | | | |
| | Heater power consumption | 525mW (typical) | | | |
| | zero drift | ±35mV | | | |
| | Output sensitivity (ΔVout) | hydrogen | Output 12-18mV at 4000ppm concentration | alcohol | Output 13-19mV at 3300ppm concentration |
| | | methane | Output 12-18mV at 5000ppm concentration | acetone | Output 7-13mV at 2200 ppm concentration |
| | | isobutane | Output 7-11mV at 1800 ppm concentration | methylbenzene | Output 6-12mV at 1100 ppm concentration |
| standard test conditions | Test gas conditions | 20±2℃，65±5%RH | | | |
| | Loop conditions | Vc=3.0±0.05V AC/DC | | | |
| | preheating time | ≤30s | | | |
| Gas filters | | have<br>Low sensitivity to ethanol and other organic solvent vapors | | not have | |
| Fight silicon poisoning | | Silicon compounds are more durable than traditional contact combustion sensors | | not have | |
| going | | -10℃～+70℃, ≤99%RH | | | |
| storage condition | | -10℃～+80℃, ≤99%RH | | | |

This specification may be changed without prior notice to improve performance.

Important note:

○As working conditions vary between users, Figaro strongly recommends that users consult our technicians prior to using Figaro sensors, particularly when the detected gas is not listed in our catalog. Figaro shall not be held liable for any applications or products not described herein.

○Avoid impact during use.

○The installation method should be selected according to the relevant requirements of GB3836.1-2010, GB 3836.2-2010, GB3836.4-2010, GB3836.15-2000 and other standards.



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