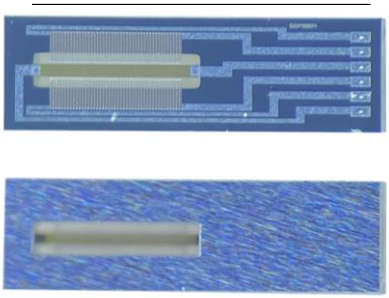
XGZF9304 GAS FLOW SENSOR DIE

FEATURES



- Thermodynamic Principle
- MEMS Technology
- High Sensitivity, especially for low flow
- Low offset Drift and High Response
- Resistant to vibration, pressure and thermal shock

APPLICATIONS

- ■Ventilator,Oxygen Generator, CPAP Device, Anesthesia, Critical care equipment etc,.
- ■HVAC, Air purifier, Environmental monitoring etc,.
- ■Fuel cell control and more air flow control and measurement

INTRODUCTION

XGZF9304 flow sensing chip is a thermodynamically based measurement of gas flow through the surface of the chip. All pads are pulled to one side for ease of packaging. In addition a low heat source resistor is used so that it can operate at voltages as low as 5V, so the chip has low power consumption. The sensitive area of the chip consists of a heating resistor and two sets of thermopiles. The thermopiles are distributed at the two ends of the heating resistor as upstream and downstream, when a gas flows through, the upstream heat is taken away and cooled, and the downstream is heated up by heat delivery, and the heat distribution is no longer symmetrical, and the difference between the

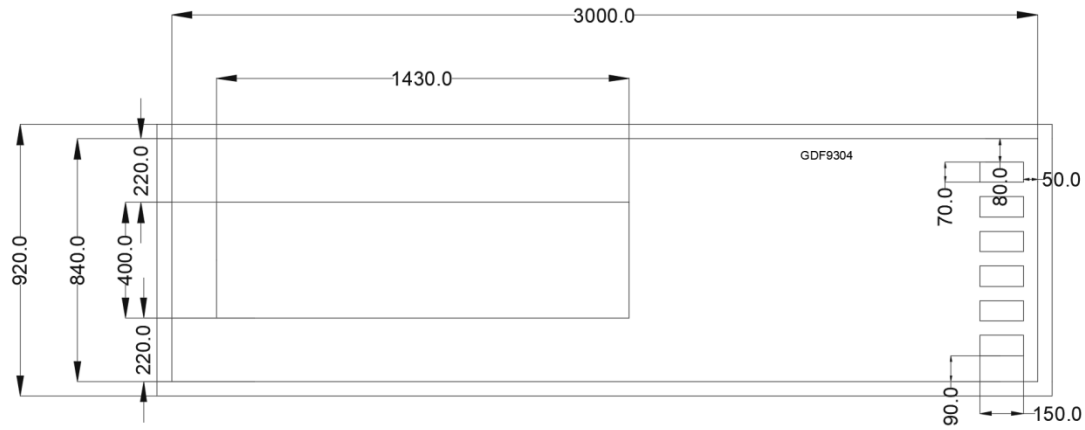
output voltage of the upstream and downstream thermopiles is used as the output of the sensor, which improves the measurement accuracy and reduces the error.

Compared with traditional MEMS flow sensors, XGZF9304 has two key advantages. The first is the replacement of the thermistor with a thermopile temperature measurement element of special structural design, which can realize ultra-low noise signal, improve measurement accuracy and simplify peripheral circuit. Secondly, traditional MEMS flow sensing chips use probes to measure, it is easy to destroy the original flow field, so that the measurement accuracy is reduced, while the XGZF9304 can be placed in the manifold, reducing the chance of contamination of the chip surface.

SPECIFICATION

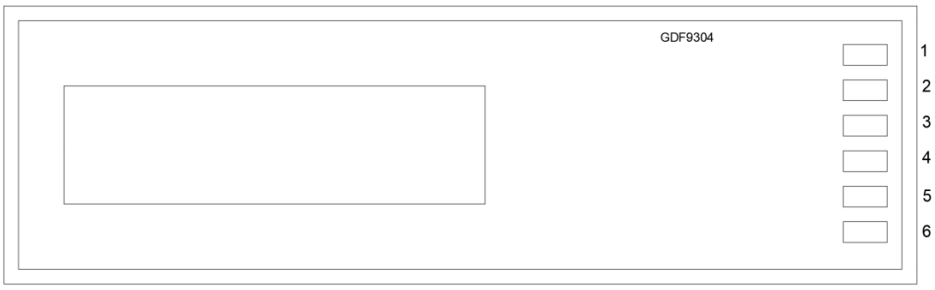
Parameter	Min.	Typ.	Max	Unit
Thermal Source Resistance	250	265	280	Ω
Temperature Coefficient		250		ppm/K
Thermal Source Drive Voltage	3	5		V
Offset Thermopile Output	1.2	1.5	1.8	V
Thermopile Resistors	210	230	260	KΩ
Offset Thermopile Differential Output	20	30	40	mv
Response Time			5	ms
Working Temperature	-50		150	°C
Working Pressure		15		Bar
Note: Unless otherwise specified,measurements were taken on base of 5Vdc and 20°C				

DIMENSION (Unit:mm)



Parameter	Min.	Typ.	Max.	Unit
Length	3		3.05	mm
Width	0.84		0.89	mm
Thickness	0.38		0.43	mm
Pad (L*W*H)	150*70*1			um
Wafer Size	150±0.5			mm
Wafer Thickness	400			um
Dicing Channel Width	100			um
Die Quantity/Wafer	13448			pcs
Pad Materials	AL			

ELECTRIC CONNECTION



Pad No.	Definition
1	Upstream output of thermopile +
2	Upstream output of thermopile -
3	Thermal Source +
4	Downstream output of thermopile +
5	Downstream output of thermopile +
6	Thermal Source -

NOTES:

- Storage

All pressure sensors die should be stored in their original packaging. They should not be placed in harmful environments such as corrosive gases nor exposed to heat or direct sunlight, which may cause deformations. Similar effects may result from extreme storage temperatures and climatic conditions. Avoid storing the sensor dies in an environment where condensation may form or in a location exposed to corrosive gases, which will adversely affect their performance. Plastic materials should not be used for wrapping/packing when storing or transporting these dies, as they may become charged. Pressure sensor dies should be used soon after opening their seal and packaging.

■ Operation

Media compatibility with the pressure sensors must be ensured to prevent their failure. The use of other media can cause damage and malfunction. Never use pressure sensors in atmospheres containing explosive liquids or gases.

Ensure pressure equalization to the environment, if gauge pressure sensors are used. Avoid operating the pressure sensors in an environment where condensation may form or in a location exposed to corrosive gases. These environments adversely affect their performance.

If the operating pressure is not within the rated pressure range, it may change the output characteristics. This may also happen with pressure sensor dies if an incorrect mounting method is used. Be sure that the applicable pressure does not exceed the overpressure, as it may damage the pressure sensor.

Do not exceed the maximum rated supply voltage nor the rated storage temperature range, as it

may damage the pressure sensor.

Temperature variations in both the ambient conditions and the media (liquid or gas) can affect the accuracy of the output signal from the pressure sensors. Be sure to check the operating temperature range and thermal error specification of the pressure sensors to determine their suitability for the application.

Connections must be wired in accordance with the terminal/PIN assignment specified in the data sheets. Care should be taken as reversed pin connections can damage the pressure transmitters or degrade their performance. Contact between the pressure sensor terminals and metals or other materials may cause errors in the output characteristics.

■ Design notes (dies)

This specification describes the mechanical, electrical and physical requirements of a piezoresistive sensor die for measuring pressure. The specified parameters are valid for the pressure sensor die with pressure application either to the front or back side of the diaphragm as described in the data sheet. Pressure application to the other side may result in differing data. Most of the parameters are influenced by assembly conditions. Hence these parameters and the reliability have to be specified for each specific application and tested over its temperature range by the customer.

■ Handling/Mounting (dies)

Pressure sensor dies should be handled appropriately and not be touched with bare hands. They should only be picked up manually by the sides using tweezers. Their top surface should never be

touched with tweezers. Latex

gloves should not be used for handling them, as this will inhibit the curing of the adhesive used to bond the die to the carrier. When handling, be careful to avoid cuts caused by the sharp-edged terminals. The sensor die must not be contaminated during manufacturing processes (gluing, soldering, silk-screen process).

The package of pressure sensor dies should not to be opened until the die is mounted and should be closed after use. The sensor die must not be cleaned. The sensor die must not be damaged during the assembly process (especially scratches on the diaphragm).

■ Soldering (transducers, transmitters)

The thermal capacity of pressure sensors is normally low, so steps should be taken to minimize the effects of external heat.

High temperatures may lead to damage or changes in characteristics.

A non-corrosive type of flux resin should normally be used and complete removal of the flux is recommended.

Avoid rapid cooling due to dipping in solvent. Note that the output signal may change if pressure is applied to the terminals during soldering.

【 WARRANTY 】

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