

GXHT31A

Analog output Temperature and Humidity Sensor

1 Features

- Fully calibrated, linearized, and temperature compensated digital output
- Wide supply voltage range, from 2.0 V to 5.5 V
- Linear analog voltage output within the range of 10% -90%
- Temperature measurement range $-45^{\circ}\text{C}\sim+130^{\circ}\text{C}$
- Typical accuracy of GXHT31A is $\pm 2\%\text{RH} / \pm 0.2^{\circ}\text{C}$
- Measure temperature and humidity separately in parallel, and output them separately by different pins
- Single chip integrated temperature and humidity sensor
- High reliability and long-term stability
- DFN8 packaging

2 Applications

- Communication equipment
- Photovoltaic energy storage
- Consumer electronics
- Cold chain transportation
- Smart home
- Smart agriculture



Figure 1. Chip Rendering

3 Description

GXHT31A is a new generation of single-chip integrated temperature and humidity sensor developed by Galaxy-CAS. It was developed based on the extremely weak signal detection design platform and MEMS process design platform of Beijing Galaxy-CAS Technology. Integrating high-sensitivity MEMS moisture-sensitive components on silicon-based CMOS wafers can reduce the interference of multi-chip signal transmission, reduce chip area, and improve packaging reliability. The chip is packaged in a miniaturized DFN package with an outline size of 2.5 mm x 2.5 mm and a height of 0.9 mm. This enables the GXHT31A to be integrated in a variety of applications. In addition, the wide supply voltage range of 2.0V-5.5V makes it adaptable to various power supply environments.

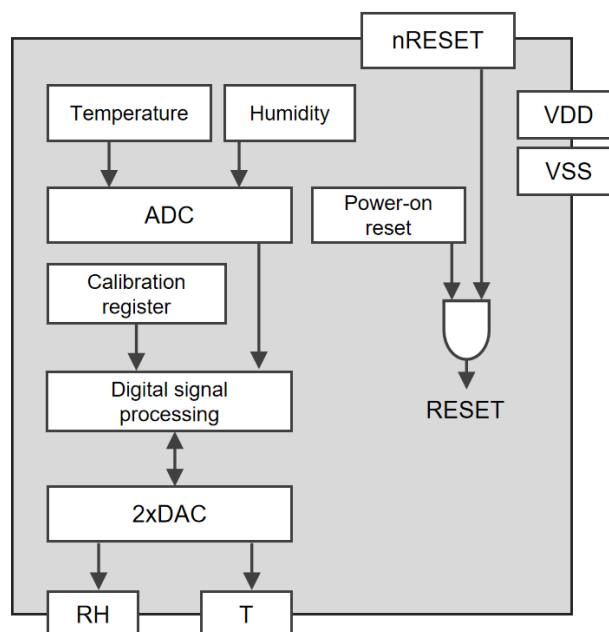


Figure 2. Functional block diagram of GXHT31A

Ordering Information:

Purchase Number	Device	Package	SPQ	Note
GXHT31A-T&R	GXHT31A	DFN8 2.5mm*2.5mm	2000	Tape and reel
GXHT31AC -T&R	GXHT31AC	DFN8 2.5mm*2.5mm	2000	Tape and reel, covered with a dustproof breathable film
GXHT31ACF -T&R	GXHT31ACF	DFN8 2.5mm*2.5mm	2000	Tape and reel, covered with a conformal coating film

12 Important Notices

(1) ESD Precautions

The inherent design of this part makes it very sensitive to electrostatic discharge (ESD). To prevent damage or degradation caused by electrostatic discharge, operate the sensor in an Electrostatic Protected Area (EPA) and take proper measures (operator should be grounded by wrist strap, and all non-insulated or conductive objects should be grounded).

(2) Exposure to Chemicals

The temperature and humidity sensors of Galaxy-CAS Technology are high-sensitivity environmental sensor, not ordinary electronic components. The sensors should not be in close contact with volatile chemicals, such as chemical solvents or organic compounds, especially high concentrations and prolonged exposure are more dangerous. (Ethyl)ketene, acetone, isopropanol, ethanol, toluene, etc., have been shown to cause a shift in humidity readings that is irreversible in most cases.

(3) Dustproof Breathable Film

The temperature and humidity sensors are different from the general sensor chips. The sensors are very sensitive, so their opening part are easily polluted by dust and impurities. For customers in outdoor applications, it is recommended to order our products with a dust-proof and breathable film, which can prevent dust. It can protect the sensor, resist pollution, improve the life and reliability of the sensor, and must not be torn off.



(4) Applications in Extreme Environments

Some applications require the temperature and humidity sensor to be exposed to harsh environments. In many cases, the suitability of the sensor is not considered. There are some situations that require special attention.

a) The sensor needs to return to the normal environment to recover for a period of time after working under abnormal temperature and humidity conditions (> 90).

b) In some application environments, the sensor may be exposed to a high concentration of volatile organic solvents for a long time, which may occur in both the assembly process and the application process. Such applications require attention.

c) In some application environments, the sensor may be exposed to an acidic or alkaline environment, but only a certain concentration will cause harm to the sensor. For bases, pH > 9 will cause damage to the sensor. Etching materials, such as H₂O₂, NH₃, etc., can also harm the sensor in high concentrations.

d) There may be corrosive gases in some application environments. If the concentration is relatively low, it will not affect the sensor, but it will affect the connection of the solder joints. Higher concentrations can also cause damage to the sensor.

(5) Spraying of Conformal Coating

The paint itself is contaminating to the temperature and humidity sensor. For customers who must spray the paint on the board, they need to order our products with a conformal coating film, after spraying the conformal coating, tear off the conformal coating film before normal testing of temperature and humidity. When spraying the conformal coating, keep at least thirty centimeters away from the sensor and move the can slowly to ensure an even coating, the surface will dry in about thirty minutes and the second spraying can be carried out. Allow the paint to dry fully, approximately 24 hours, then gently remove the film.



(6) Packaging and Storage

Before use, it is strongly recommended to store the sensor in its original packaging in the following environment: temperature 10 °C ~ 50 °C (0 °C - 125 °C for a limited time), 20% ~ 65% RH.

(7) Assemblage

The sensor can be stored for 1 year in normal storage environment, and the sensor has a moisture resistance level of 1.