SENSYLINK Microelectronics

(CHT8310)
Low Voltage Digital Humidity &Temperature Sensor

CHT8310 is a Low Voltage Digital Humidity and Temperature Sensor with typical accuracy of ±2%RH and ±0.2°C. It is compatible with SMBus, I^2C Interface. It is ideally used in HVAC, environment monitor etc.

Description

CHT8310 is a low voltage digital humidity and temperature sensor with ±2%RH(Typ.) accuracy for humidity and ±0.2℃(Typ.) accuracy for temperature. Humidity and Temperature data can be read out directly via digital interface by MCU, Bluetooth Chip or SoC chip.

The digital interface is compatible with SMBus and I²C protocol. Also it supports communication with fast speed (up to 400kHz) and high speed (up to 1.0MHz) for I²C protocol.

Each chip is specially calibrated for temperature and humidity accuracy in factory before shipment to customers. There is no need for re-calibration anymore.

It includes a high precision band-gap circuit, an analog to digital converter, a calibration unit with non-volatile memory, and a digital interface block.

It has ALERT logic output pin with open drain structure, which is active low or high.

The chip supports up to 4 devices in one I²C bus by setting different slave address via AD0 pin.

Available Package: DFN3x3-6 package

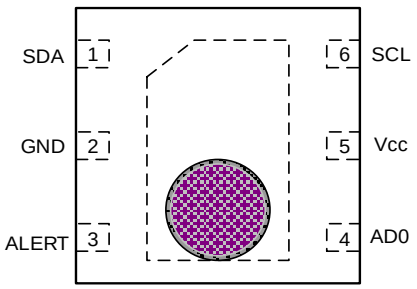
Features

- Operation Voltage: 1.65V to 5.5V
- Average Operating Current: 2.0uA (Typ.)@ 3.3V, 1Con/s for Both temperature and humidity Conversion
- Standby Current: 55nA(Typ.)
- Temperature Accuracy with calibration:
  - ±0.2℃(Typ.) from 0℃ to 80℃
  - ±0.4℃(Typ.) from -20℃ to 100℃
  - ±0.5℃(Typ.) from -40℃ to 125℃
- Humidity Accuracy with calibration:
  - ±2%RH(Typ.) from 20%RH to 80%RH
- Digital Interface compatible with SMBus and I2C, support:
  - Up to 4 different slave addresses by setting AD0 pin
  - Packet Error Checking feature to improve communication reliability and robustness
  - Speed up to 1.0MHz
  - SMBus timeout feature
  - SMBus Alert Response Alert (ARA)
  - SMBus General Call
- Programmable High/Low Limit Alert for Temperature and/or Humidity
- Supports One shot or continuous measurement
- Temperature Range: -40℃ to 125 ℃
- Humidity Range: 0%RH to 100%RH

Applications

- Smart HVAC System
- Environment Monitor
- Portable/Wearable Weather Monitor

PIN Configurations (Top View)



DFN3x3-6(Package Code DN)

Typical Application

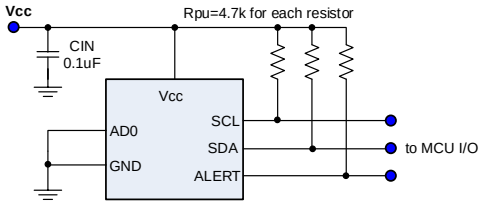


Figure 1. Typical Application of CHT8310

Pin Description

PIN No.	PIN Name	Description
1	SDA	Digital interface data input or output pin, need a pull-up resistor to Vcc.
2	GND	Ground pin.
3	ALERT	To Indicate alert status of over Humidity and/or Temperature limitation programmed by setting temperature and/or high/low-limit registers. Need a pull-up resistor to Vcc in application. It is open drain output with active low or high by setting POL bit.
4	AD0	Slave Address selection pin, the chip can be defined total 4 different slave addresses by connecting this pin to GND, Vcc, SCL or SDA pin respectively. If leave this pin open, address is 0x80. See Slave Address for detail.
5	Vcc	Power supply input pin, using 0.1uF low ESR ceramic capacitor to ground
6	SCL	Digital interface clock input pin, need a pull-up resistor to Vcc.
	Thermal Pad	Not connected with any internal pin

Function Block

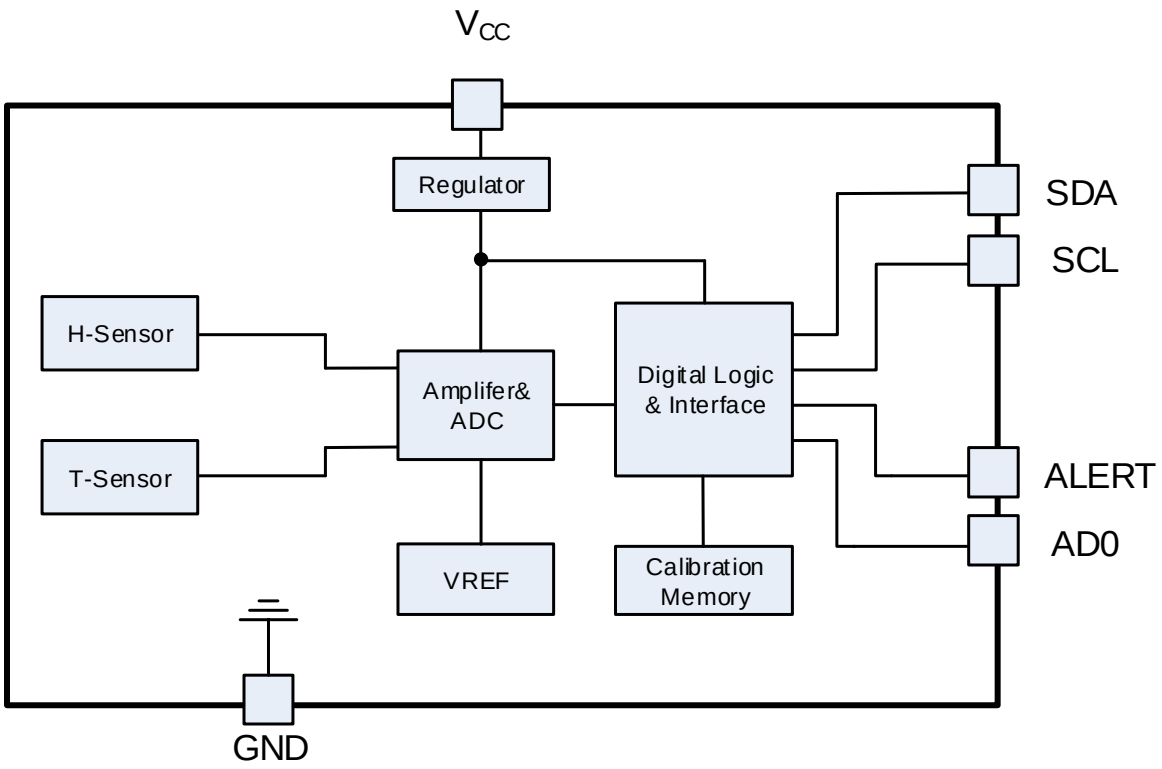
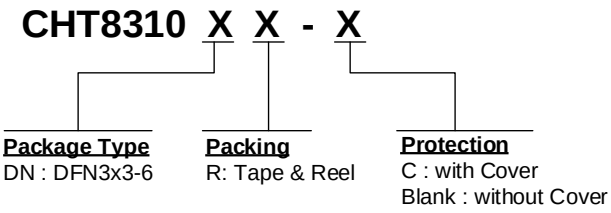


Figure 2. CHT8310 function block

Ordering Information



Order PN	Accuracy	Green[1]	Package	Marking ID[2]	Packing	MPQ	Operation Temperature	Protection Cover
CHT8310DNR	±0.2℃ ±2.0%RH	Halogen free	DFN3x3-6	8310 YWWAXX	Tape & Reel	3,000	-40℃~+125℃	No
CHT8310DNR-C	±0.2℃ ±2.0%RH	Halogen free	DFN3x3-6	8310 YWWAXX	Tape & Reel	3,000	-40℃~+125℃	Yes

Notes

1. Sensylink can meet RoHS 2.0/REACH requirement. So most package types Sensylink offers only states halogen free, instead of lead free.

2. Marking ID includes 2 rows of characters. In general, the 1st row of characters are part number, and the 2nd row of characters are date code plus production information.

SENSYLINK Microelectronics Inc.

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