

SENSYLINK Microelectronics

(CHT8315)

***Low Voltage Digital Humidity
& Temperature Sensor***

CHT8315 is a Low Voltage Digital Humidity and Temperature Sensor with $\pm 3.0\%RH$ accuracy for humidity and $\pm 0.5^{\circ}C$ accuracy for temperature. It is compatible with SMBus, I²C Interface. It is ideally used in HVAC, environment monitor etc.

Low Voltage Digital Humidity and Temperature Sensor

Description

CHT8315 is a low voltage digital humidity and temperature sensor with $\pm 3.0\%RH$ (Max.) accuracy for humidity and $\pm 0.5^{\circ}C$ (Max.) 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 3.4MHz) 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 measured frequency will become fastest when alert is triggered.

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

Available Package: DFN3x3-6 package

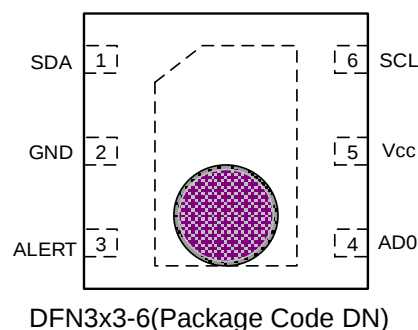
Features

- Operation Voltage: 1.35V to 5.5V
- Average Operating Current: 1.0uA (Typ.)@ 3.3V, 1Con/s for Both temperature and humidity Conversion
- Standby Current: 35nA(Typ.), 60nA (Max.)
- Temperature Accuracy with calibration:
 $\pm 0.5^{\circ}C$ (Max.) from $0^{\circ}C$ to $100^{\circ}C$
 $\pm 1.0^{\circ}C$ (Max.) from $-40^{\circ}C$ to $125^{\circ}C$
- Humidity Accuracy with calibration:
 $\pm 3.0\%RH$ (Max.) at 50%RH
 $\pm 5.0\%RH$ (Max.) 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 3.4MHz
 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
- Automatically switched to fastest measurement mode once alert is triggered
- Temperature Range: $-40^{\circ}C$ to $125^{\circ}C$
- Humidity Range: 0%RH to 100%RH

Applications

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

PIN Configurations (Top View)



Typical Application

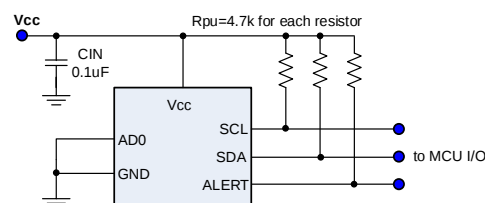


Figure 1. Typical Application of CHT8315

Low Voltage Digital Humidity and Temperature Sensor

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.

Function Block

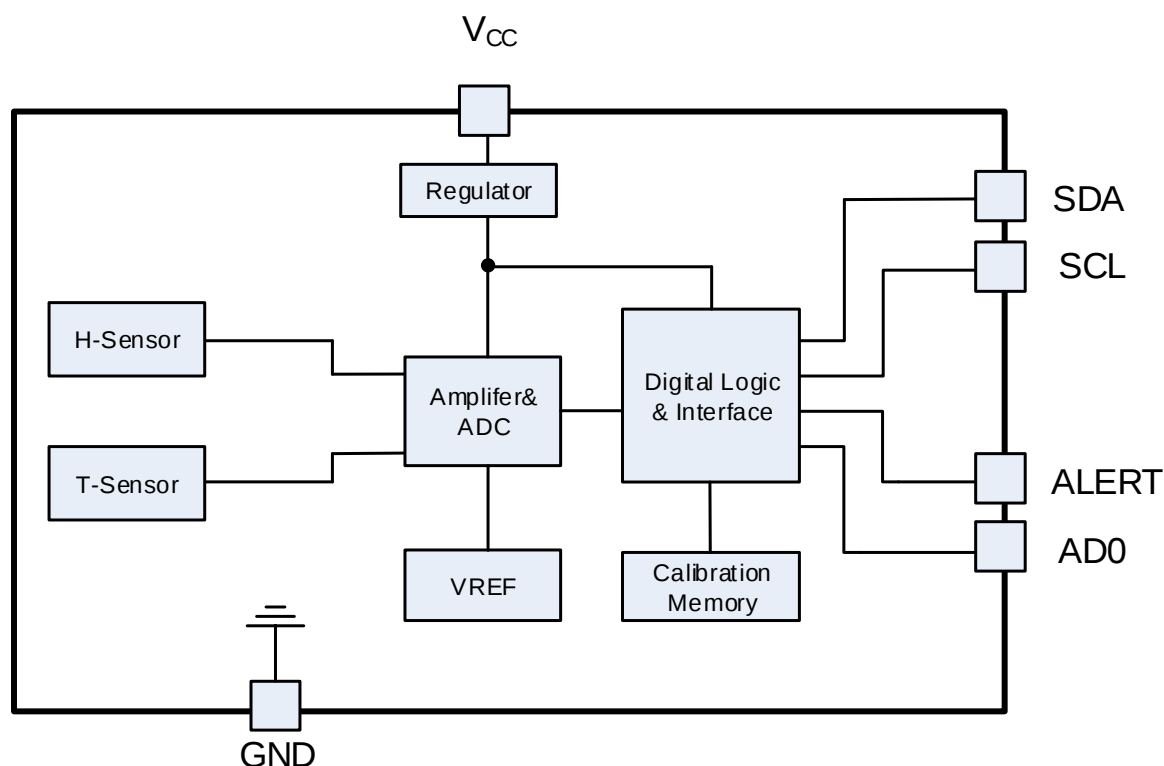


Figure 2. CHT8315 function block

Low Voltage Digital Humidity and Temperature Sensor

Ordering Information

CHT8315 X X - X

Package Type

DN : DFN3x3-6

Packing

R: Tape & Reel

Protection

C : with Cover

Blank : without Cover

Order PN	Accuracy	Green ¹	Package	Marking ID ²	Packing	MPQ	Operation Temperature	Protection Cover
CHT8315DNR	±0.5°C ±3%RH	Halogen free	DFN3x3-6	8315 YWWAXX	Tape & Reel	3,000	-40°C~+125°C	No
CHT8315DNR-C	±0.5°C ±3%RH	Halogen free	DFN3x3-6	8315 YWWAXX	Tape & Reel	3,000	-40°C~+125°C	Yes

Notes

1. Sensylink can meet RoHS2.0/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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