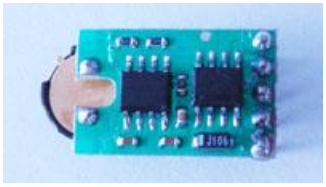
HUMIDITY SENSOR MODULE

2010-5-31 PRELIMINARY Version: 2.0



- Relative humidity sensor
- Two point calibrated with capacitor type sensor, excellent performance
- Frequency output type, can be easily integrated with user application system
- Very low power consumption
- No extra components needed

Summary

The HH10D relative humidity sensor module is comprised with a capacitive type humidity sensor, a CMOS capacitor to frequency converter and an EEPROM used to holding the calibration factors. Due to the characteristics of capacitor type humidity sensor, the system can respond to humidity change very fast. Each sensor is calibrated twice at two different accurate humidity chambers, two unique sensor related coefficients are stored onto the EEPROM on the module. The data is used for humidity calculation.

FEATURES

- Relative humidity sensor
- Two point calibrated with capacitor type sensor, excellent performance
- Frequency output type, can be easily integrated with user application system
- Very low power consumption
- No extra components needed

Applications

- HVAC
- Automotive
- Consumer Goods
- Weather Stations
- Dehumidifiers
- Humidifiers
- Test & measurement
- Data Logging
- Automation
- White Goods- Medical

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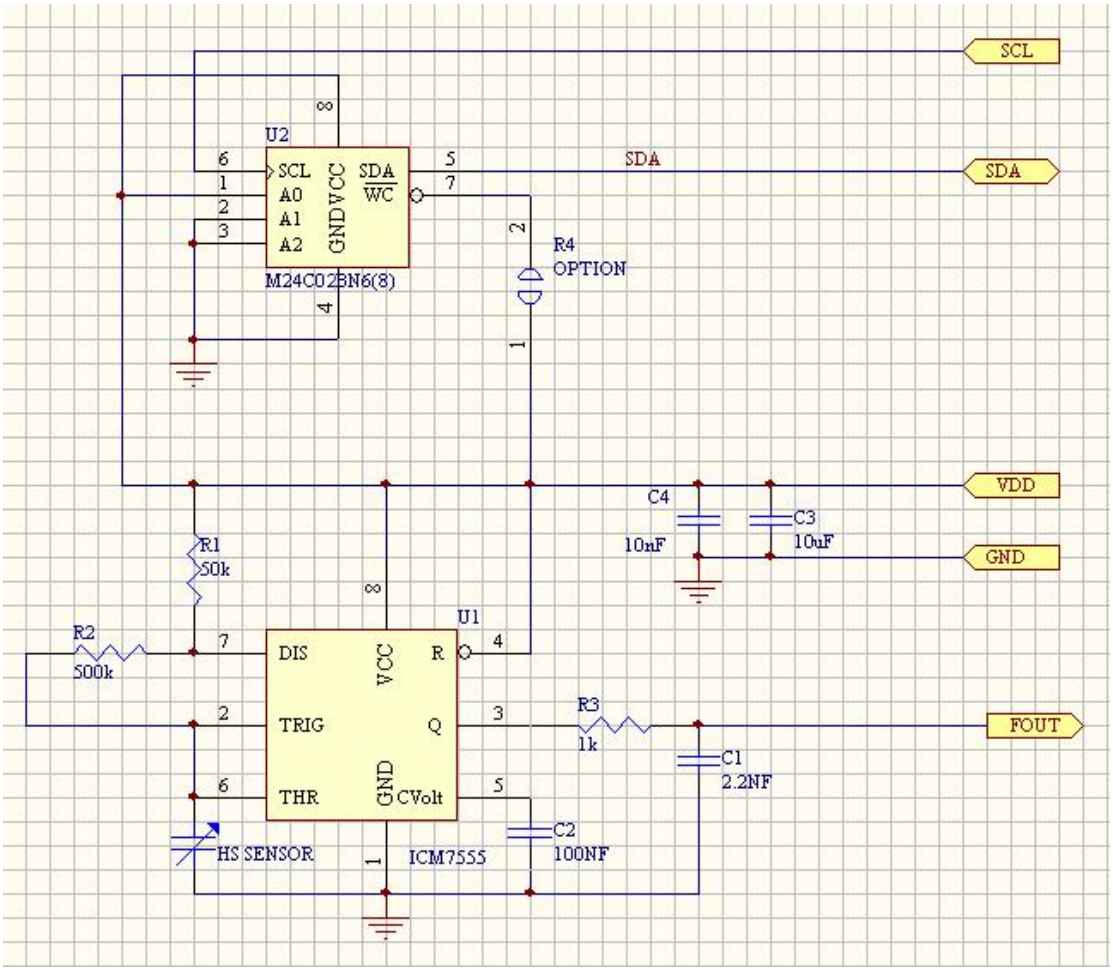
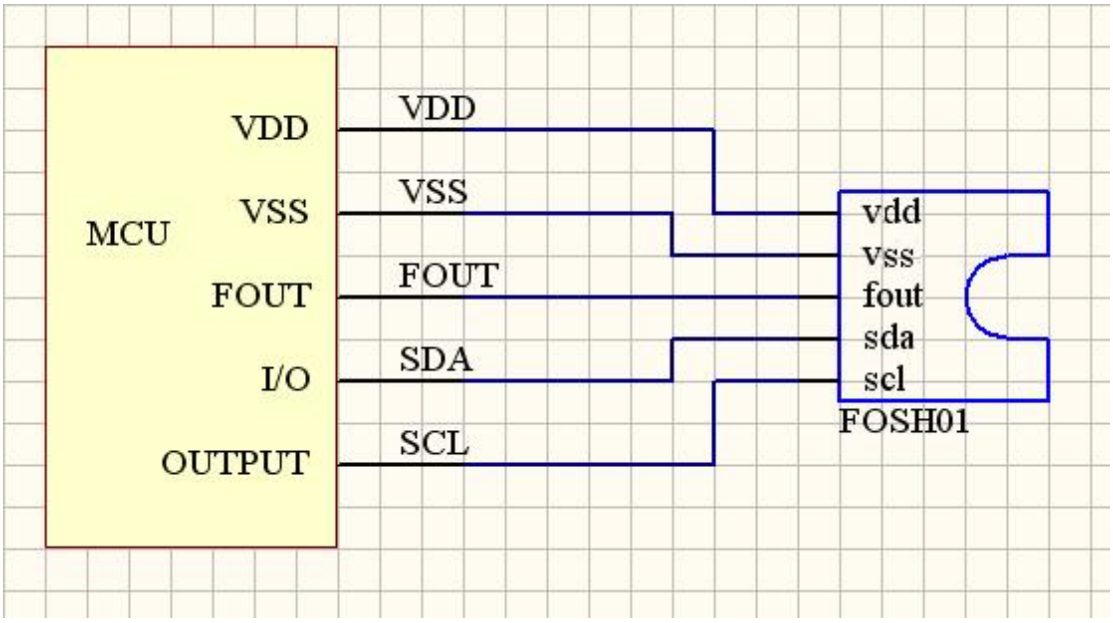


Circuit Diagram



Application Circuit

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Sensor Performance Specification

Parameters	Conditions	Min	Typ	Max	Units
Resolution		0.3	0.08	0.05	%
Accuracy			3		%
Repeatability		-0.3		0.3	%
Uncertainty			2		%
Range		0		99	%
Response Time			8		S
Hysteris			1		%
Long Term Stability		-0.5		0.5	%
Interchangeability		Fully Interchangeable			

HH10D Humidity Module Characteristic				
Parameter	min	nominal	max	unit
humidity range	1		99	%
accuraccy	-3		+3	%
temperature range	-10		+60	C
working voltage	2.7	3	3.3	V
stability versus time		1%		per year
power consumption	120	150	180	uA
Output Frequency Range	5.0	6.5	10	KHZ

Calculation

In order to read out the correct humidity, 4 calibration factors need to be read out from the EEPROM at address of 10 and 11,12 and 13 for sensitivity, offset.

Once the frequency output from the sensor is measured, then the correct humidity value can be calculated in the following method:

HH10D Humidity Calculation Algorithm

Data Definition		eeprom address
sensitivity	**Sens(2byte value)**	**10**
Offset	**2 byte value**	**12**
RH(%)=	**(offset-Soh)*sens/2^12**	

* RH(%) linear humidity value
* RH_corr temperature compensated humidity value
* Soh is the measured frequency value at Fout port
- the eeprom physical address is fixed to 01.

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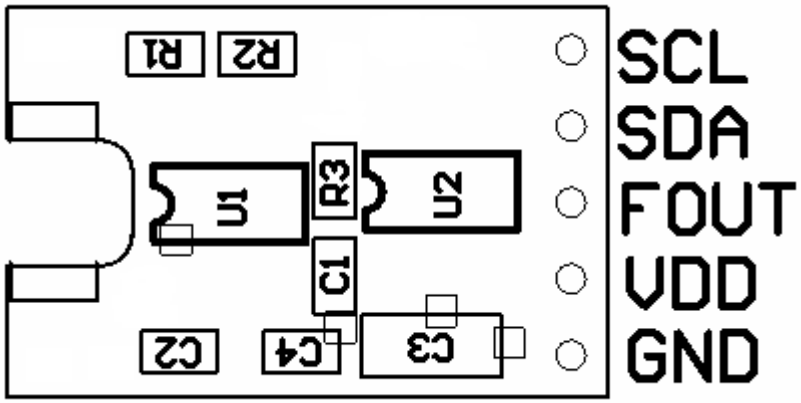
Module PCB Layout:



L：24mm
W：8mm
Pin Pitch：2.54mm

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