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version history

version : 20161117 V2.3 version used for PCB production (and H Sensor)

        Last saved date : 18 Jan 2017 19:01:25

version : 20161117 V2.0 initial version of schematic and board layout
        not yet for production

version nov   Vx.1 version without layout. no doc

As there was for SM1 also a project with almost the same name and function (but SPI interface) this project starts with version 2.0

introduction

In this folder you find information for the assemblage the temperatuur sensor circuit for the SOLID project.

The PCB is created with the Eagle software form CADSoft (Autodesk)

This project is related to the SOLID humidity sensor.

Dimension of the board is ~ 13 x 20 mm

On the board there is a voltage regulator but this is normally not used and the resistor R1 of 0 ohm has to be mounted.
In that case the max voltage is 5 V. But nominal is 3.3 V.
In case the LDO is used the max voltage is 5.5 V. But the I2C lines are still between 3.3 and 0 V.

There are no pull ups on the I2C line. Standard is 100 kHz I2C bus.

For full operation see the data sheet of the temperature sensor in the doc directory

The connector used, is of the family micro-match 6 sockets. The corresponding wire pin connector is 7-215083-6 (Farnell[1] order code 149068) .

If only 4 wires are connected, it is also possible to place the the 7-188275-4 (Farnell 3784710) , 4 pins socket . Same as used for the SiPm board.

7-215083-4   (Farnell 149032)

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Commercial contact information:

Design sources / info

- SOLID_TSENSOR_sch.pdf SOLID_HSENSOR_brd.pdf   pdf files of the design.
- SOLID_TSENSOR_info.odt this file.
- SOLID_TSENSOR_info.pdf this file in pdf format
- SOLID_TSENSOR_bom.csv/ods   bill of material
- SOLID_TSENSOR_cmploc.pdf location of the components on the PCB
- directory doc : data sheet
- directory prodinfo : pcb layout and gerber files sent to SEED for PCB production

Addressing and programming

For production all address resistors will be placed .

In case the address line has to be "0" one has to remove the 10 K resistor on the top. (to be verified , most likely it is not needed to remove the resistor) .

In case the addres line has to be "1" the 1 K resistor has to be removed.

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1   Mouser is in general cheaper in big quantities

The testpins T0 .. T2 are used in case one wants to lock the ee-prom . For the usage in SOLID the ee-prom will be used as electronic identification and so will be locked.

Status

PCB

The 7x PCB v2.3 was grouped in one PCB together with 3 H Sensors. To get the device ID's correct an extra layer was created for the silk screen (so the device nr don't change when copieng th layout).

There are no scoring on the boards so the individual boards has to be sawed .

Tested is only the version without the regulator.

ee-prom locking is not tested

Impovements

When more then one SOLID_TSENSOR sensor is connected to a flat cable the alert lines are tight together. As this is an open drain it is not a electrical problem,
But one could put 0 resistors between the alert pin and the connector pin 5 and 6 to have some more flexibility.

software

There exist a class to read the board via the I2C.

https://developer.mbed.org/users/wbeaumont/code/AT30TSE752TST/

This software is tested with the first 6 boards .   One board is failing on writing to the ee-prom
It can read the temperature in the highest resolution and also can read and write to the ee-prom.
It also can lock the ee-prom

It also has methods forsetting config registers volatile as none volataile locking etc. But most of these fuction are not tested (yet)