WÜRTH ELEKTRONIK

EVALUATION BOARD MANUAL

TEMPERATURE SENSOR IC

Evaluation board order code	Sensor order code
2521020222591	2521020222501

VERSION 1.0

FEBRUARY 19, 2020

Revision history

Manual version	Product version	Notes	Date
1.0	1.0	• Initial release of the manual	February 2020

Abbreviations

Abbreviation	Description
I^2C	Inter integrated circuit
n.m.	not mounted

Contents

1 General description

1.1 Introduction

The evaluation board of the temperature sensor provides an opportunity to verify the sensor performance and develop a prototype using an external processor e.g. Amber Pi design kit (Part No: 2609017281001). It can be directly plugged to Amber Pi design kit using the mounted I^2C interface pins. It can also be placed on a bread board using through hole pin header connections.

The temperature sensor IC (Part No: 2521020222501) is a 16-bit compact silicon based digital temperate sensor with an I^2C interface. The sensor features programmable temperature thresholds and interrupt functionality.

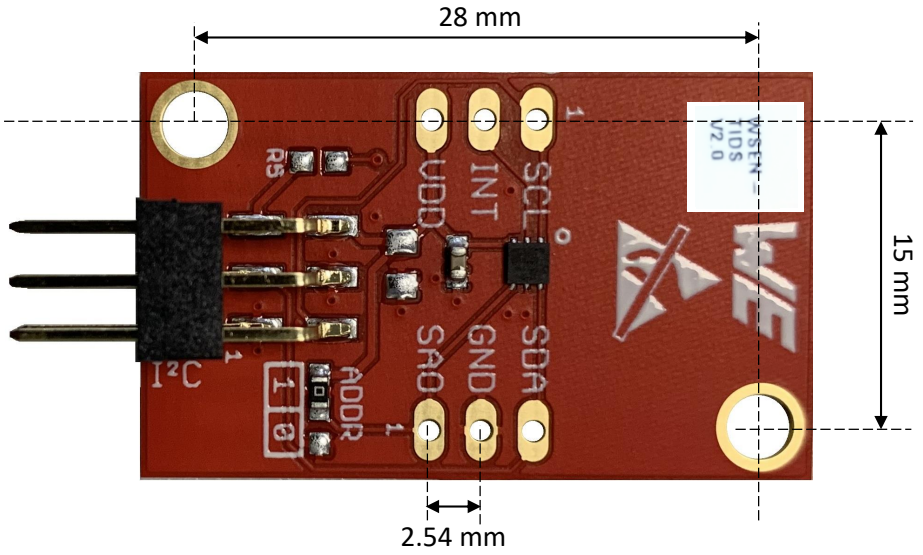


Figure 1: Evaluation board for the temperature sensor IC

1.2 Ordering information

WE order code	Dimensions	Description
2521020222501	2.0 x 2.0 x 0.5 mm	tape & reel packaging
2521020222581	2.0 x 2.0 x 0.5 mm	5 pcs cut tape packaging
2521020222591	33 x 20 mm	Evaluation board temperature sensor IC

Table 1: Ordering information

2 Functional description

The temperature sensor evaluation board supports the standard I²C communication interface.

- A positive supply voltage is applied to the sensor through *VDD* pin.
- The 7-bit I²C slave address of the temperature sensor is either 0111000b or 0111111b based on the *SAO* pin connection.

By default the 7-bit slave address of the temperature sensor on the evaluation board is 0111000b (0x38). i.e. *SAO* pin of the sensor is connected to *VDD* using 0Ω resistor ADDR.

The 7-bit slave address of the temperature sensor can be changed to 0111111b (0x3F) by removing 0Ω resistor ADDR from '1' part and mounting it on the '0' part of the evaluation board. i.e. *SAO* pin is connected to *GND* using 0Ω resistor ADDR.

Pin No.	Name	Function	I/O	Comments
1	*SCL*	I²C serial clock	Input	
2	*INT*	Interrupt	Output	Do not connect if not used
3	*VDD*	Positive supply voltage	Supply	
4	*SAO*	I²C device address selection	Input	High: device address is 0111000b Low: device address is 0111111b
5	*GND*	Negative supply voltage	Supply	
6	*SDA*	I²C serial data	Input/Output	

Table 2: Pin description

Please refer to the data sheet of the temperature sensor (Order code: 2521020222501) for more information about the electrical properties.

2.1 Evaluation board in operation

2.1.1 Pin header connection

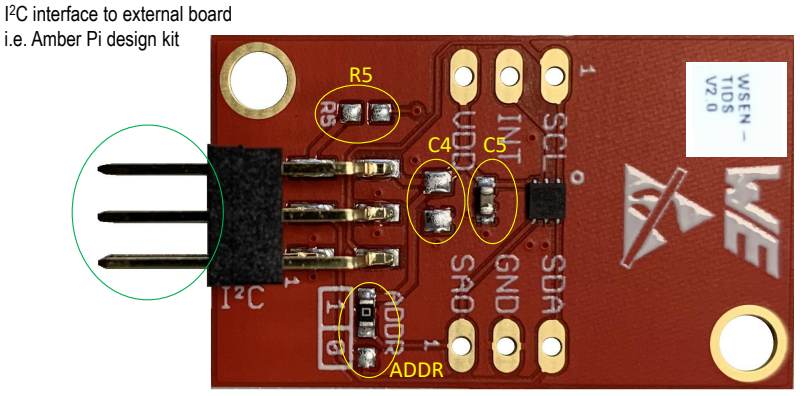
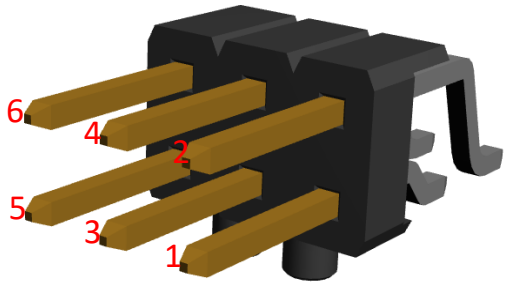


Figure 2: Pin header connection to the external boards. e.g. Amber Pi design kit



No	Description
1	*GND*
2	*SCL*
3	*SDA*
4	*GND*
5	*INT*
6	*VDD*

Table 3: Pin header to the external boards

The pin configuration of the mounted pin header is same as other sensor evaluation boards from Würth Elektronik eiSos.

STOP

When the evaluation board is connected to Amber Pi design kit using I²C interface pins, INT interrupt pin function will not be available.

Component	Description
R5	Open. Connect a 0Ω resistor to enable the interrupt function on INT pin.
C4	Open. Optionl 10 µF decoupling capacitor can be connected in parallel to the C5.
ADDR	Defines 7-bit slave address for I²C communication. Slave address of the sensor is 0111000b (0x38). *SAO* is connected to *VDD*.

Table 4: Functionality of the resistors and capacitors on the evaluation board

2.1.2 Through hole connection

Through hole pin header connection gives direct access to each sensor pin. *SDA*, *SCL* and *INT* pins must be connected to *VDD* via pull-up resistors. *SAO* pin connection to either *VDD* or *GND* is also necessary in order to define an I²C slave address.

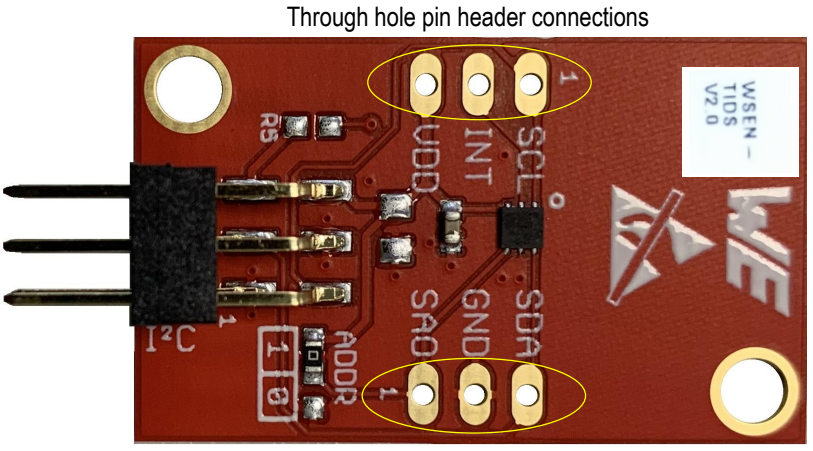


Figure 3: Through hole connection

Pleaser refer to the application circuit described in the user manual of the sensor (Order code: 2521020222501) for more information.

3 Evaluation board

3.1 Schematic diagram

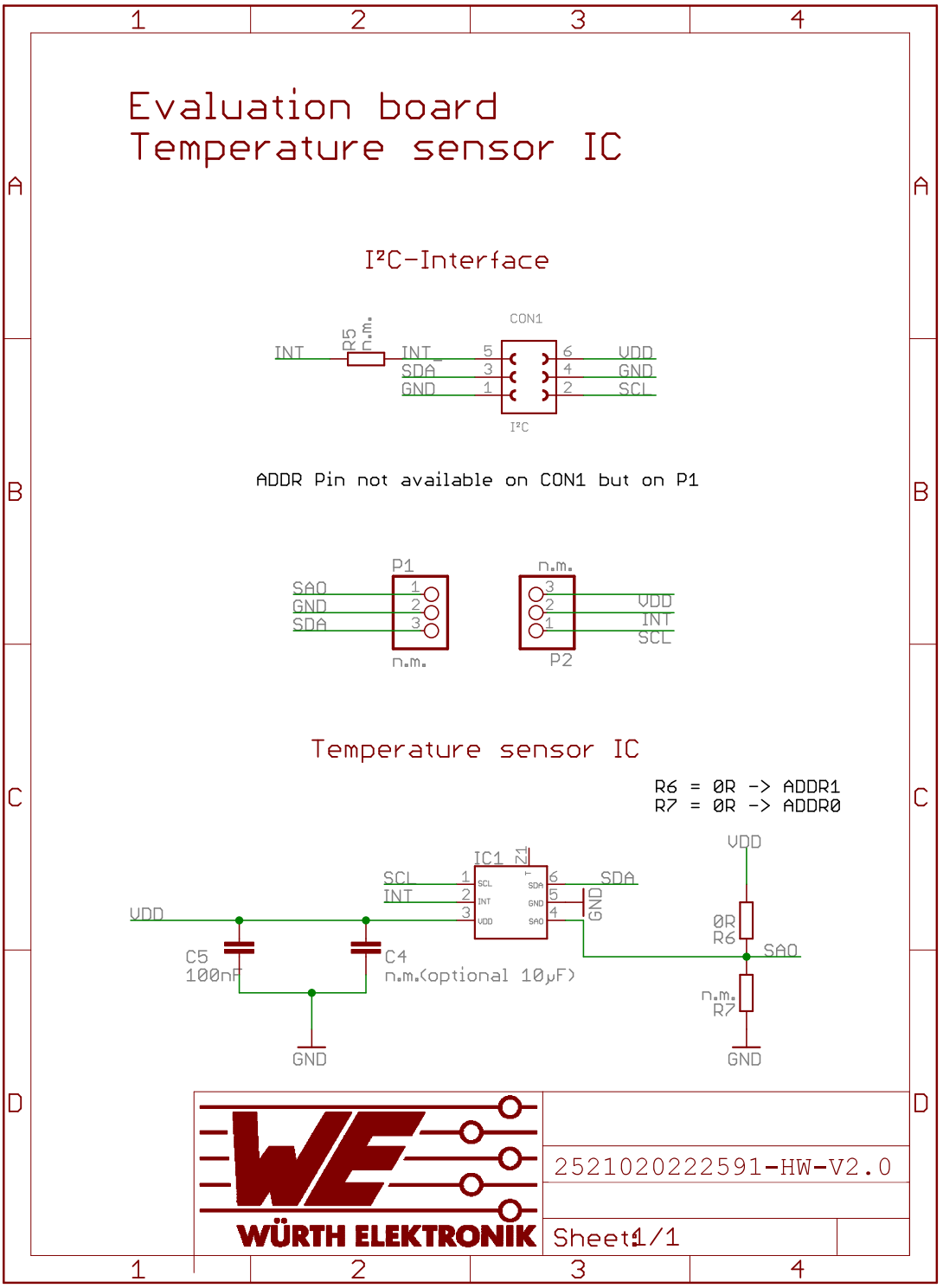


Figure 4: Schematic diagram

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