EVM User's Guide: HDC3020FLXEVM

HDC3020FLX Evaluation Module User's Guide

Description

The HDC3020FLXEVM is a Flexible Print Circuit (FPC) based breakout sensor board. It enables users to evaluate the performance of the HDC3020 digital relative humidity (RH) and temperature sensor on a compact and easy to use circuit board.

Get Started

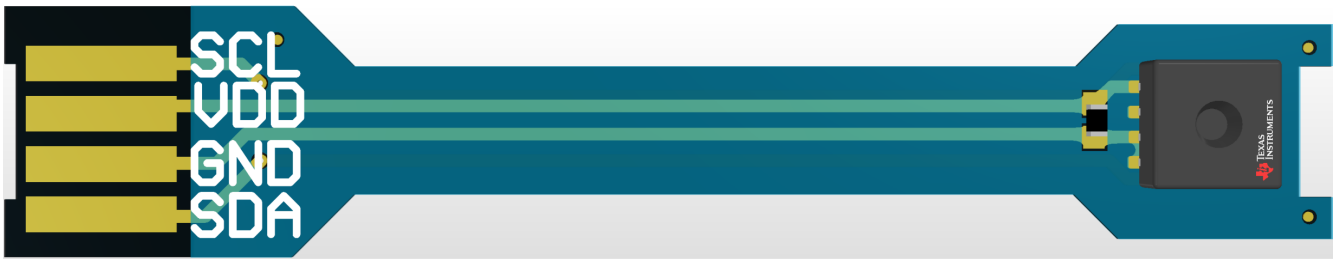
1. Order the HDC3020FLXEVM on ti.com
2. Solder wires to the exposed gold fingers of the HDC3020FLXEVM
3. Refer to the HDC3020 datasheet for IC details
4. Visit our E2E forums for support or questions

Features

- Diverse array of applications due to light and compact footprint of evalutation module
- Plug and play capability allows users to implement sensor in any system with I2C interface
- Low thermal mass enables faster temperature and humidity response times as well as a quicker response from the integrated heater

Applications

- Washer & dryer
- Refrigerator & freezer
- Industrial transport
- Cold Chain asset tracking & data logger
- IoT environmental sensors
- Air quality and gas detection
- Humidifier/dehumidifier
- Thermostat
- CPAP and ventilator
- Water leak detector
- IP Camera



1 Evaluation Module Overview

1.1 Introduction

The HDC3020FLXEVM is a 25.4mm long FPC based evaluation board. One end of the board contains the HDC3020 device along with a 0.1uF bypass capacitor. The opposite end of the board has four exposed gold fingers enabling the user to solder wires of desired length to suite their application. Since there is no digital front end, the HDC3020FLXEVM requires a host device with an I2C interface to read temperature and humidity data. The HDC3020FLXEVM's device address is fixed to 0x44 and cannot be reconfigured. The Alert and Reset pins are unavailable on the HDC3020FLXEVM.

Figure 1-1. HDC3020FLXEVM Board Sections

1.2 Kit Contents

Table 1-1 details the contents of the EVM kit. Contact the nearest Texas Instruments Product Information Center for missing components. TI highly recommends checking the TI website for the latest revision.

Table 1-1. Kit Contents

Item	Quantity
HDC3020FLXEVM	1

1.3 Specification

Table 1-2. HDC3020FLXEVM Operating Conditions

Board Section	Conditions	Temperature Range
EVM Board	Temperature Sensor	-40°C to 125°C
	Relative Humidity Sensor	-20° to 80°C

1.4 Device Information

The HDC3020 is an integrated, capacitive based relative humidity (RH) and temperature sensor. The device provides high accuracy measurements over a wide supply range (1.62V – 5.5V) and ultra low power consumption in a compact 2.5mm × 2.5mm × 0.8mm WSON 8-pin package. Both the temperature and humidity sensors are 100% tested and trimmed on a production setup that is NIST traceable and verified with equipment that is calibrated to ISO/IEC 17025 standards.

1.5 Interface Example

The HDC3020FLXEVM can be paired with the existing HDC3020EVM and can be evaluated using the HDC3020EVM's GUI. By separating the existing sensor module from the HDC3020EVM, a user can solder wires

from the HDC3020FLXEVM to the HDC3020's digital front end. This makes for a quick and easy evaluation of the flex sensor module, before moving on to testing in end equipment.

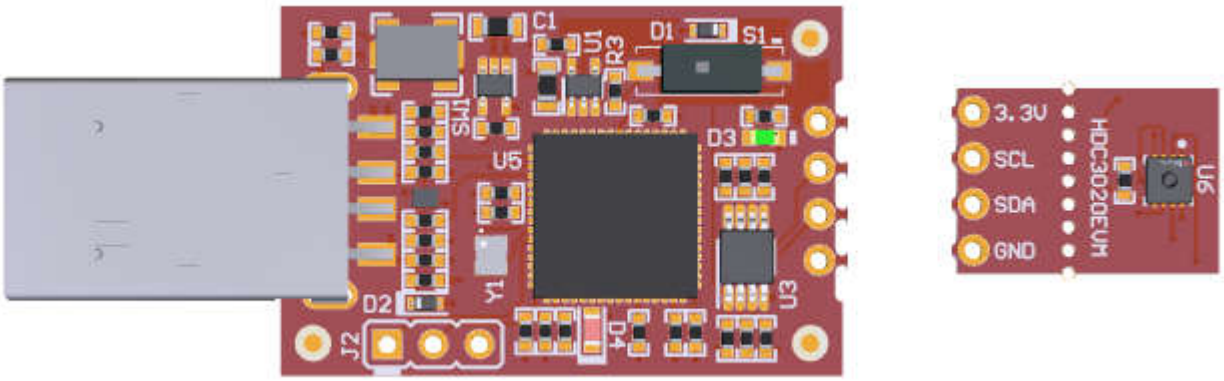


Figure 1-2. HDC3020EVM Breakable Section

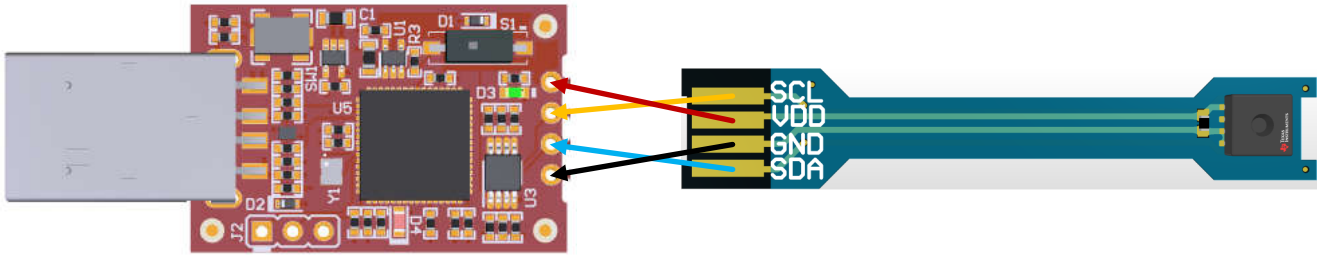


Figure 1-3. Soldering HDC3020FLXEVM to HDC3020EVM

2 Hardware Design Files

2.1 Schematic

Figure 2-1 illustrates the EVM schematic.

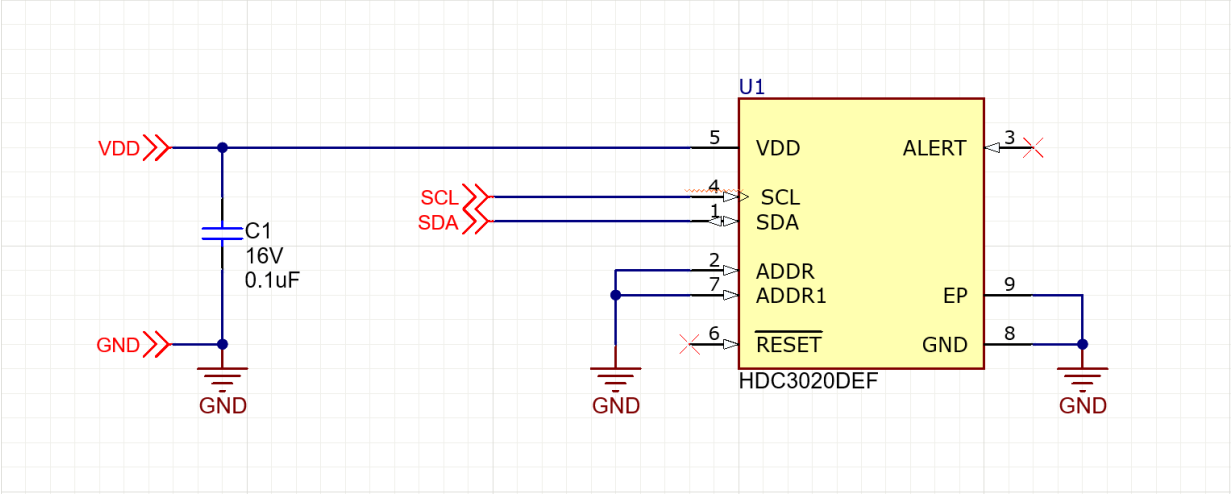


Figure 2-1. HDC3020FLXEVM Schematic

2.2 PCB Layouts

Figure 2-2. PCB Top

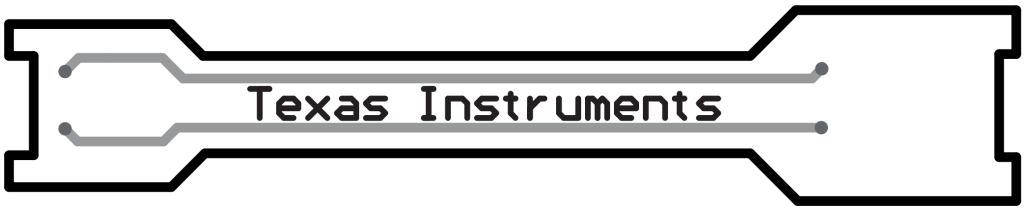


Figure 2-3. PCB Bottom

2.3 Bill of Materials (BOM)

Table 2-1 lists the HDC3020FLXEVM bill of materials (BOM).

Table 2-1. HDC3020FLXEVM Bill of Materials

Designator	Qty	Value	Description	Package Reference	Part Number	Manufacturer
C1	1	0.1µF	CAP, CERM, 0.1 uF, 16 V,+/- 10%, X7R, 0201	0201	GRM033Z71C104KE14D	MuRata
U1	1		Integrated Humidity and Temperature Digital Sensor	WSON8	HDC3020DEF	Texas Instruments

3 Additional Information

3.1 Trademarks

4 Related Documentation

The following document provides information regarding Texas Instruments integrated circuits used in the assembly of the HDC3020FLXEVM. This user's guide is available from the TI website under literature number SBOU320. Any letter appended to the literature number corresponds to the document revision that is current at the time of the writing of this document. Newer revisions can be available from the TI website at http://www.ti.com/, or call the Texas Instruments Literature Response Center at (800) 477-8924 or the Product Information Center at (972) 644-5580. When ordering, identify the document by both title and literature number.

Table 4-1. Related Documentation

Device	Literature Number
HDC3020	SNAS778
HDC302x Silicon Users Guide	SNAU265

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