UM11195

LM75B-PCT2202 temperature sensor daughter card

Rev. 1 — 15 March 2019 User manual

Document information

Information	Content
Keywords	Fm+ Development Kit, OM13320, Temperature Sensor, LM75, PCT2202
Abstract	Installation guide and User Manual for the LM75B-PCT2202 Temperature Sensor Daughter Card that connects to OM13320 Fm+ Development Kit. This board permits easy and simple evaluation of most of the NXP temperature sensor portfolio of products.

Revision history

Rev	Date	Description
v.1	20190315	Initial version

1 Introduction

The LM75B-PCT2202 Temperature Sensor Daughter Card connects directly to the OM13320 Fm+ Development kit and permits easy evaluation of most of NXP's Temperature Sensor portfolio of products.

Table 1 lists the supported devices.

The LM75B-PCT2202 Temperature Sensor Daughter Card is shipped with LM75BDP (TSSOP8) and PCT2202UK (WLCSP6) temperature sensor devices soldered on the board.

There are three additional package footprints for LM75B: LM75BD (SO8), LM75BGD (XSON8U) and LM75BTP (HWSON8).

Table 1. Devices supported by OM13257 Temperature Sensor Daughter Card

Part Number	Package Number	Package Description
LM75BD	SOT96-1	SO8
LM75BDP	SOT505-1	TSSOP8
LM75BGD	SOT998-2	XSON8U
LM75BTP	SOT1069-2	HWSON8
PCT2202UK	PCT2202UK	WLCSP6

1.1 Features of the LM75B-PCT2202 Temperature Sensor Daughter Card

- Direct connection to OM13320 Fm+ Development kit
- Flexible power supply configuration: 3.3 V or 5 V
- Jumper configuration of device I^2C address
- LED indicators for power and INT
- Scope ground connection loop

2 Board jumper setup

2.1 Power Supply

The power supply selection for the LM75B-PCT2202 temperature sensor daughter card is very flexible and allows for detailed analysis and evaluation of all the NXP temperature sensor devices. JP1 labeled PWR selects between 5 V supplied from the tester connector CN4 (jumper between pin 2 and 3) and the Fm+ board connector CN5 (jumper between pin 1 and 2). If 3.3 V is desired, no jumper is required.

JP2 (labeled VDD) selects between 5 V and 3.3 V for the main power supply on pin 8 of the device under test. Add a jumper between pins 2 and 3 for 3.3 V supplied by the Fm+ board or 1 and 2 for 5 V selected by JP1.

See Figure 2 for more details.

2.2 I^2C Address

The I^2C address of the slave temperature sensor device is selected via JP10, JP11 and JP12 connected to pin 5, 6, and 7 of the device under test respectively. Pin 1 of the jumpers is connected to 0 V, while pin 3 is connected to VDD selected above. Consult the datasheet for the I^2C addresses corresponding to the logic levels on each pin.

See Figure 2 for more details.

2.3 SCL and SDA source

There are two I^2C buses implemented on the Fm+ board and JP3 and JP4 select either Bus 1 or Bus 2 as a source to the device under test. Jumper between pins 1 and 2 to select Bus 2 as a source and jumper between pins 2 and 3 to select Bus 1.

JP5 and JP6 are selected I^2C bus to be used to communicate to either LM75B or PCT2202.

Remark: SCL and SDA from CN4 Tester Connector are always connected to the device under test. If two masters are used, there may be contention.

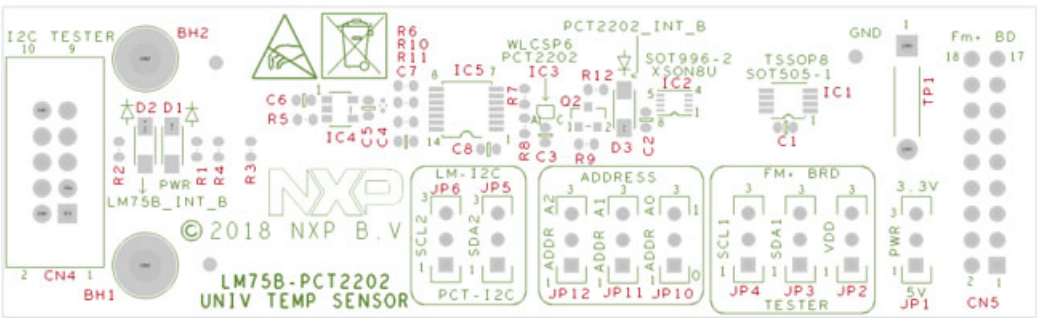

Figure 1. LM75B-PCT2202 jumper location and configuration

3 Connector pinouts

3.1 CN5 Fm+ Development Board connector

The OM13257 can connect directly to the OM13320 Fm+ Development kit via CN5. This connector provides power, I^2C signals and other ancillary signals.

Remark: Table 2 lists pin description for CN5.

Table 2. CN5 Fm+ Board connector pinout

CN5 Pin Number	Function	Board Connection
1	—	No connect
2	—	No connect
3	SCL2	I^2C Bus 2 to JP4 pin 1
4	SDA1	I^2C Bus 1 to JP3 pin 3
5	INT_B	Interrupt to INT LED and U1 pin 3
6	RESET_B	
7	+5 V	JP1 pin 1
8	+3.3 V	JP2 pin 3
9	GND	
10	GND	
11	+3.3 V	JP2 pin 3
12	+5 V	JP1 pin 1
13	RESET_B	
14	INT_B	Interrupt to INT LED and U1 pin 3
15	SDA2	I^2C Bus 2 JP3 pin 1
16	SCL1	I^2C Bus 1 JP4 pin 3
17	—	No connect
18	—	No connect

3.2 CN4 Tester connector

Generation, inspection and logging of I2C-bus data is easily achieved with third-party development tools from Total Phase (http://www.totalphase.com) . There are two tools called Aardvark and Beagle that direct connect to this board through CN4.

Remark: Since SDA and SCL are both connected to the device under test, the Aardvark and the Fm+ Development board cannot be used simultaneously. The Beagle, a bus sniffer, does not have any issues.

Table 3. CN4 Tester connector pinout

CN4 Pin Number	Function	Board Connection
1	SCL	JP6 pin 2
2	Ground	

CN4 Pin Number	Function	Board Connection
3	SDA	JP5 pin 2
4	+5 V	JP1 pin 3
5	+5 V	JP1 pin 3
6	+5 V	JP1 pin 3
7	—	
8	—	
9	—	
10	Ground	

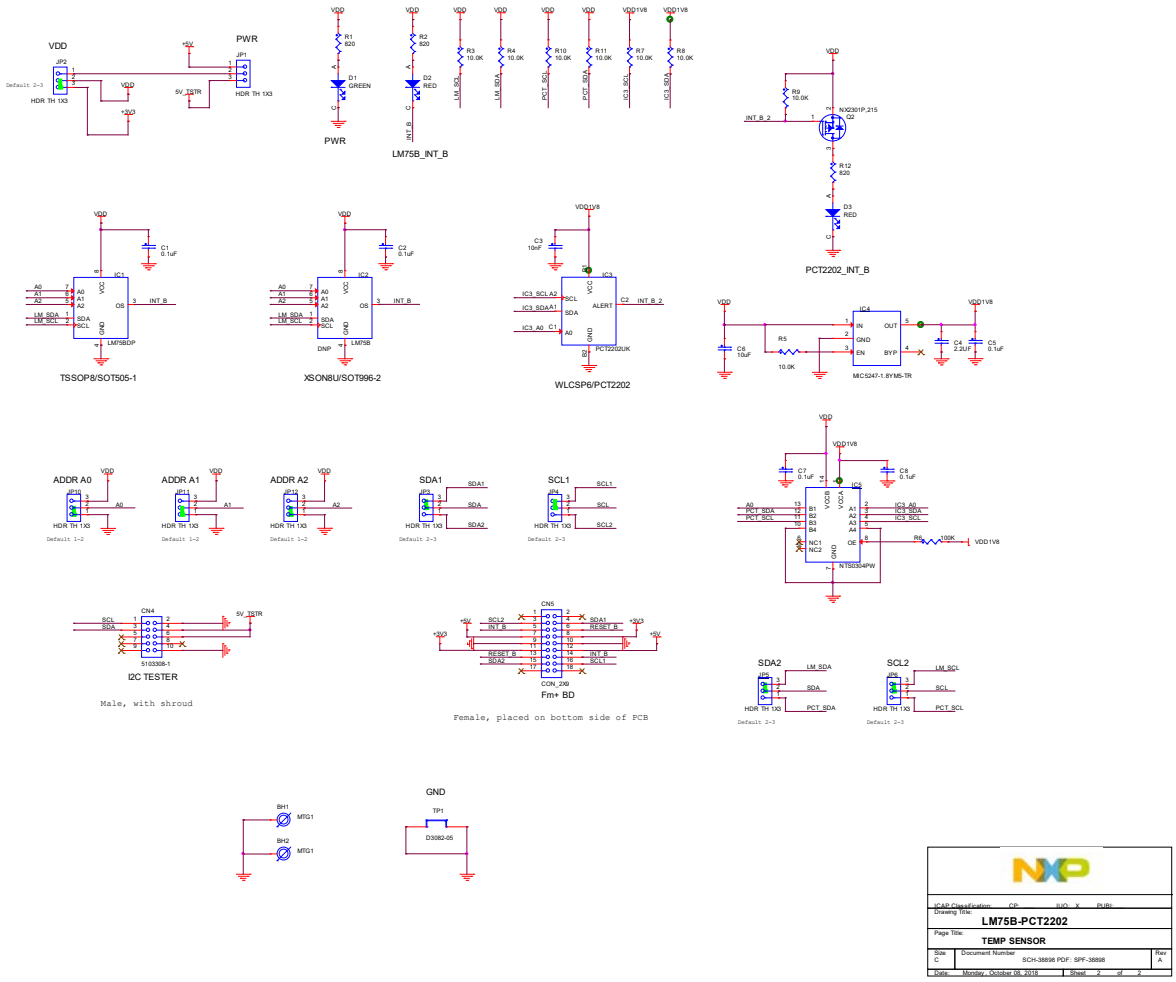

Figure 2. Temp sensor schematic

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Tables

Figures