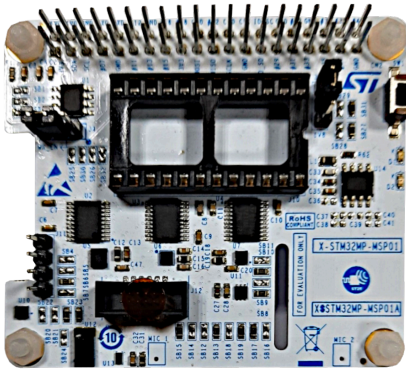


STM32MP expansion board for motion MEMS, environmental, ToF, and ALS sensor applications



Features

- Included sensors:
 - ISM330DHCX: 3-axis accelerometer and 3-axis gyroscope
 - IIS2MDC: 3-axis digital magnetometer (± 50 gauss)
 - IIS2DLPC: 3-axis accelerometer for industrial applications ($\pm 2/\pm 4/\pm 8/\pm 16$ g)
 - STTS22H: digital temperature sensor (-40 to $+125^\circ\text{C}$)
 - LPS22HH: nano pressure sensor (260 - 1260 hPa)
 - VD6283TX: ambient light sensor
 - VL53L5CX: Time-of-Flight (ToF) multizone ranging sensor
- Dynamic NFC/RFID tag
- Digital microphone
- Standard DIL 24 pin socket for adapter boards
- Compatible with [STM32MP157F-DK2](#) and Raspberry Pi

Product summary	
STM32MP expansion board for motion MEMS, environmental, ToF, and ALS sensor applications	X-STM32MP-MSP01
Discovery kit with STM32MP157F MPU	STM32MP157F-DK2
iNEMO inertial module with Machine Learning Core	ISM330DHCXTR
STM32 MPU OpenSTLinux software expansion package for X-STM32MP-MSP01	X-LINUX-MSP1
Applications	Industrial Robots/ Virtual Augmented Reality/Wearable

Description

The [X-STM32MP-MSP01](#) is a multisensor evaluation board that embeds motion MEMS, environmental, ambient light and Time-of-Flight sensors, a digital microphone, and an NFC tag. This board works with the STM32MPU discovery kit. It can be used with the [X-LINUX-MSP1](#) to read the sensors.

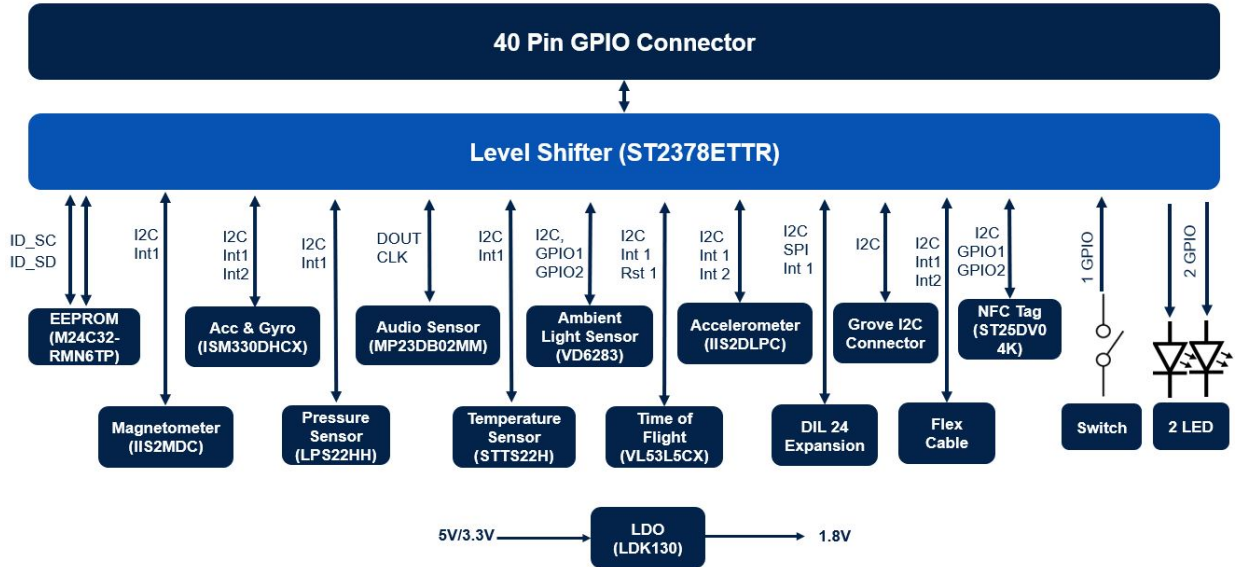
The [X-STM32MP-MSP01](#) main devices are the [ISM330DHCX](#) 3-axis accelerometer and gyroscope, the [IIS2MDC](#) 3-axis magnetometer, and the [LPS22HH](#) MEMS nano pressure sensor.

The board also includes the [STTS22H](#) digital temperature sensor, the [VD6283TX](#) ambient light sensor, the [IIS2DLPC](#) 3-axis accelerometer, the [VL53L5CX](#) multizone ranging sensor, and the [MP23DB02MM](#) digital MEMS microphone. The on-board dynamic NFC/RFID tag IC can work with a dual interface for the I²C, through a 13.56 MHz RFID reader, or via an NFC phone.

The [X-STM32MP-MSP01](#) interfaces with the [STM32MP1Dev](#) via a 40-pin GPIO connector pins using I²C, SPI, and general GPIO pins. It is compatible with [STM32MP157F-DK2](#) and a Raspberry Pi GPIO connector layout.

1 Block diagram

Figure 1. X-STM32MP-MSP01 block diagram



2 Schematic diagrams

Figure 2. X-STM32MP-MSP01 circuit schematic (1 of 11)

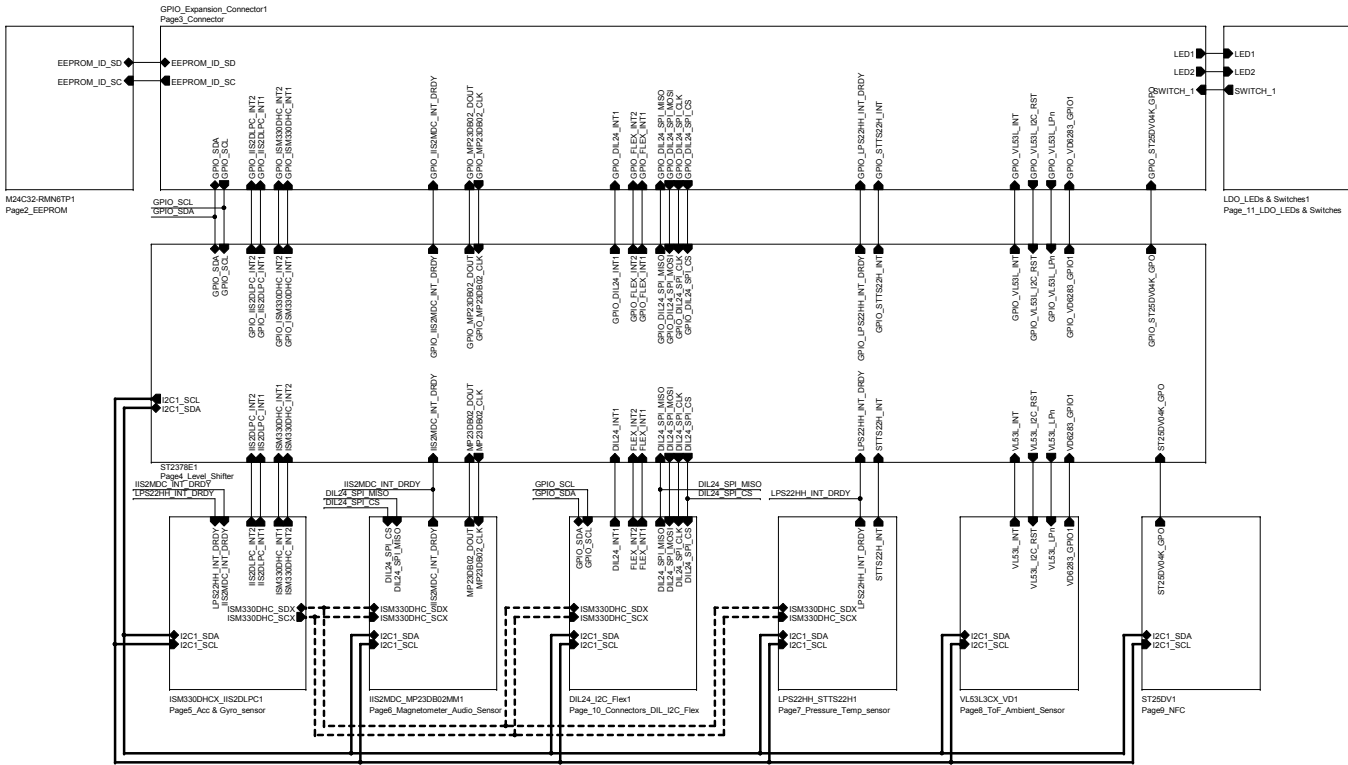


Figure 3. X-STM32MP-MSP01 circuit schematic (2 of 11)

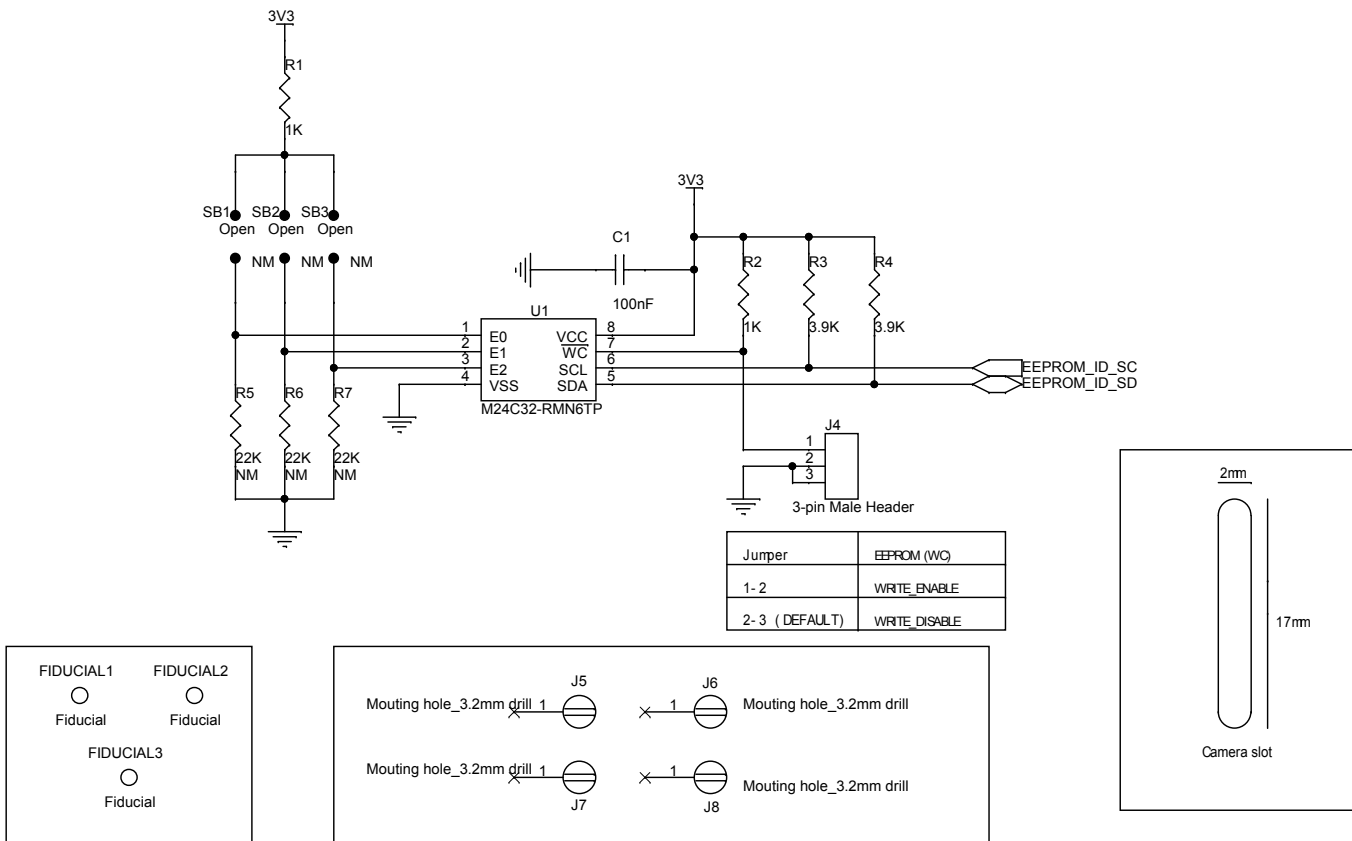


Figure 4. X-STM32MP-MSP01 circuit schematic (3 of 11)

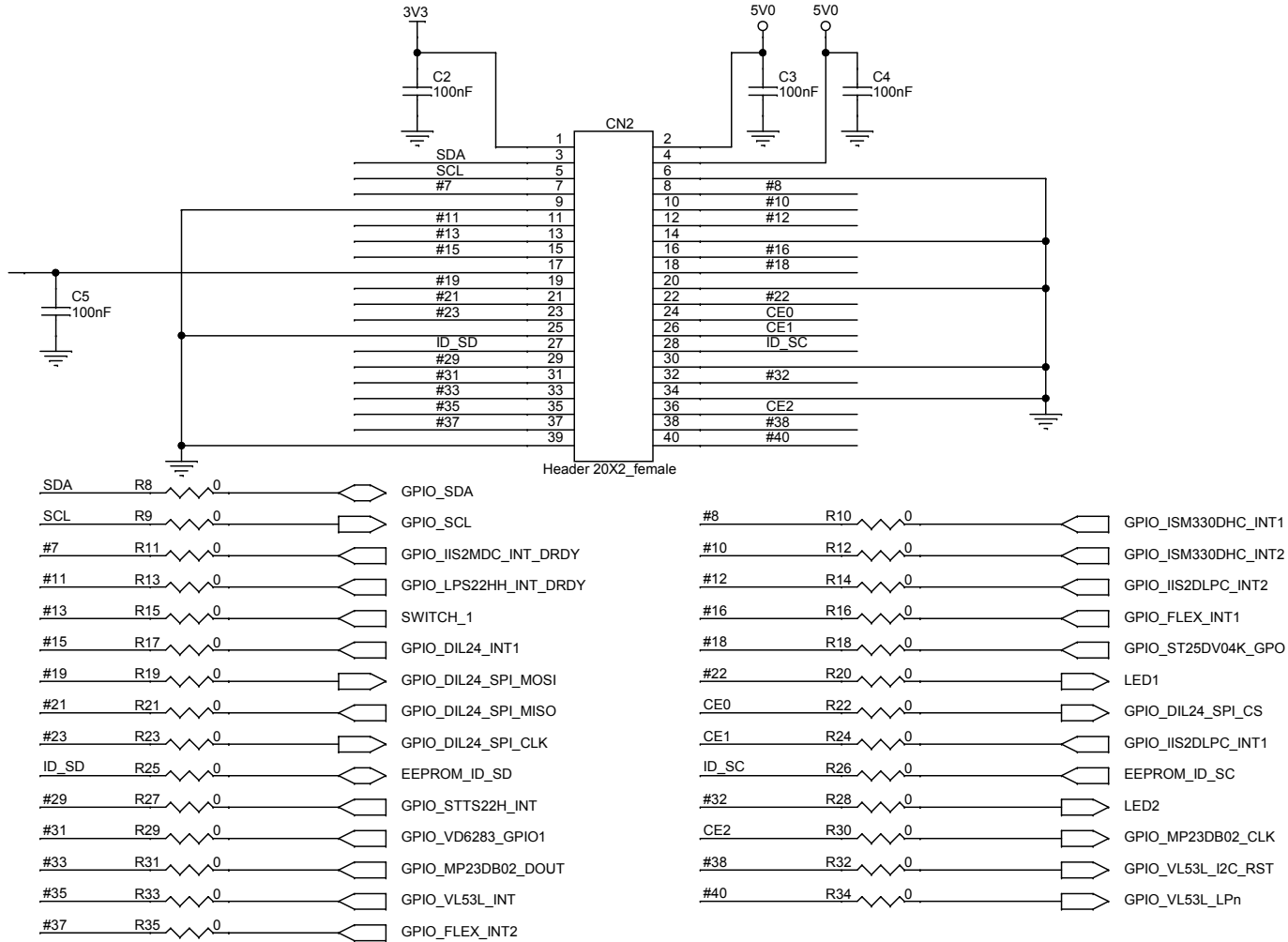


Figure 5. X-STM32MP-MSP01 circuit schematic (4 of 11)

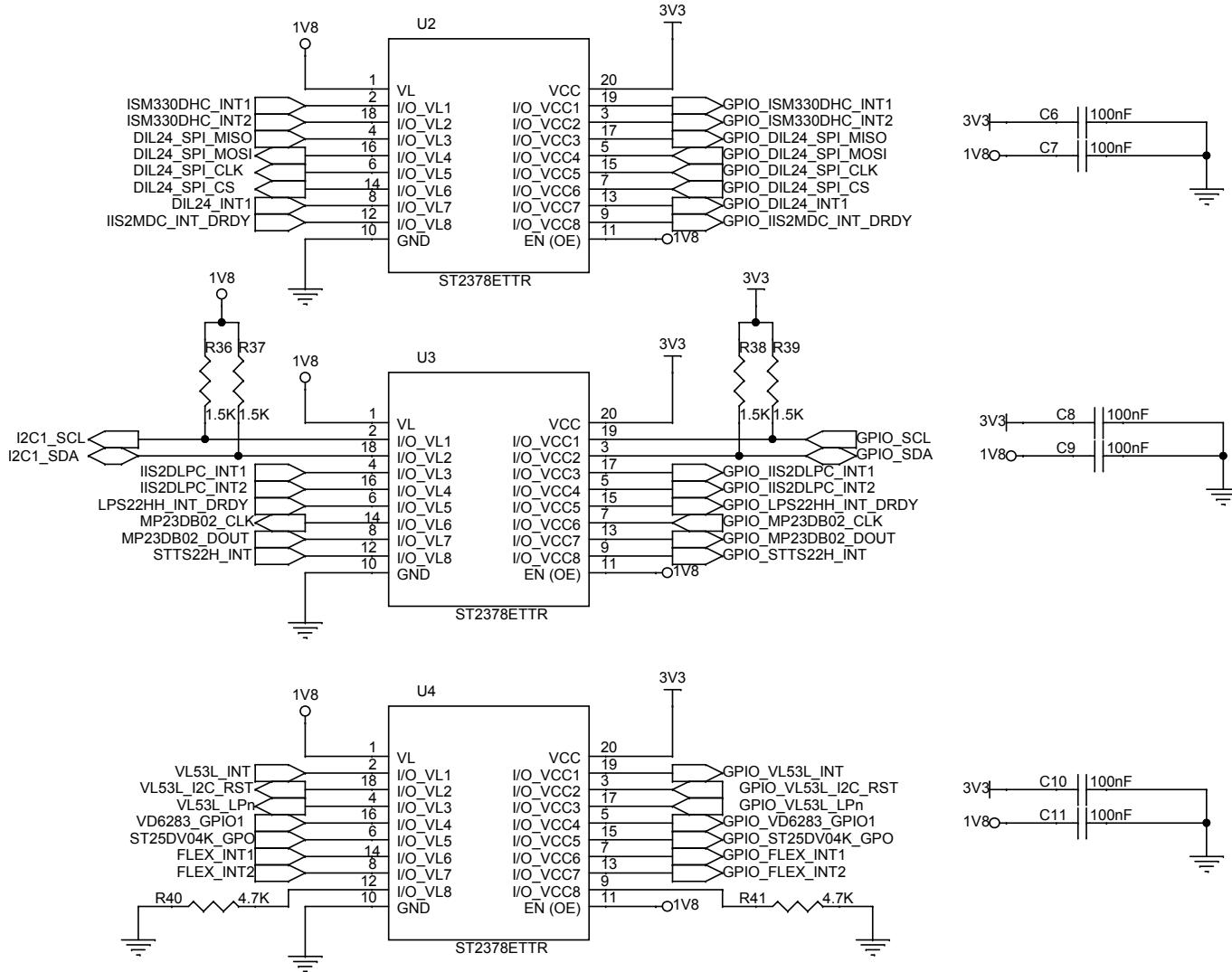


Figure 7. X-STM32MP-MSP01 circuit schematic (6 of 11)

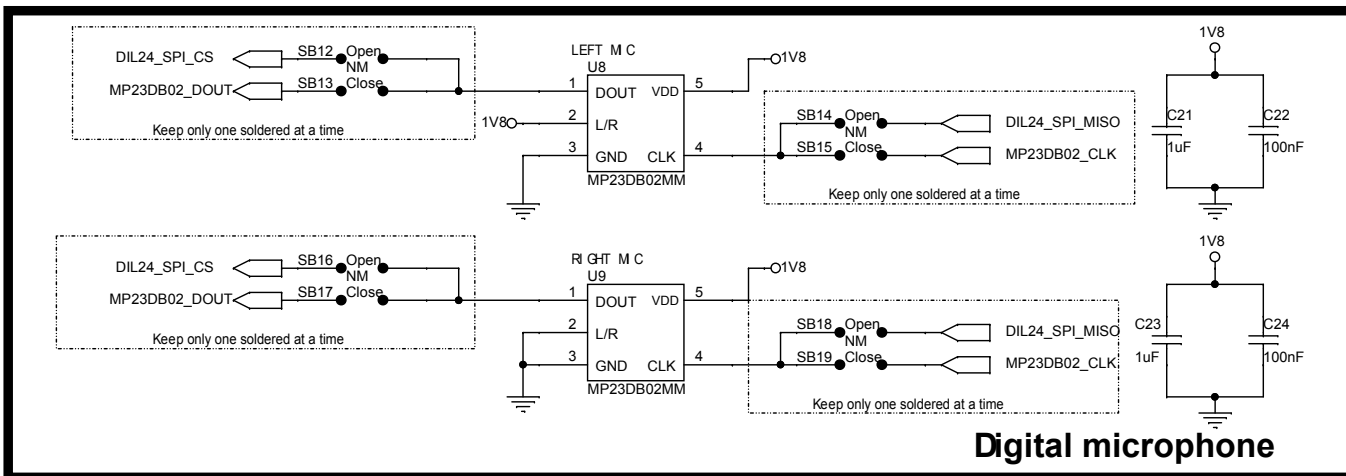
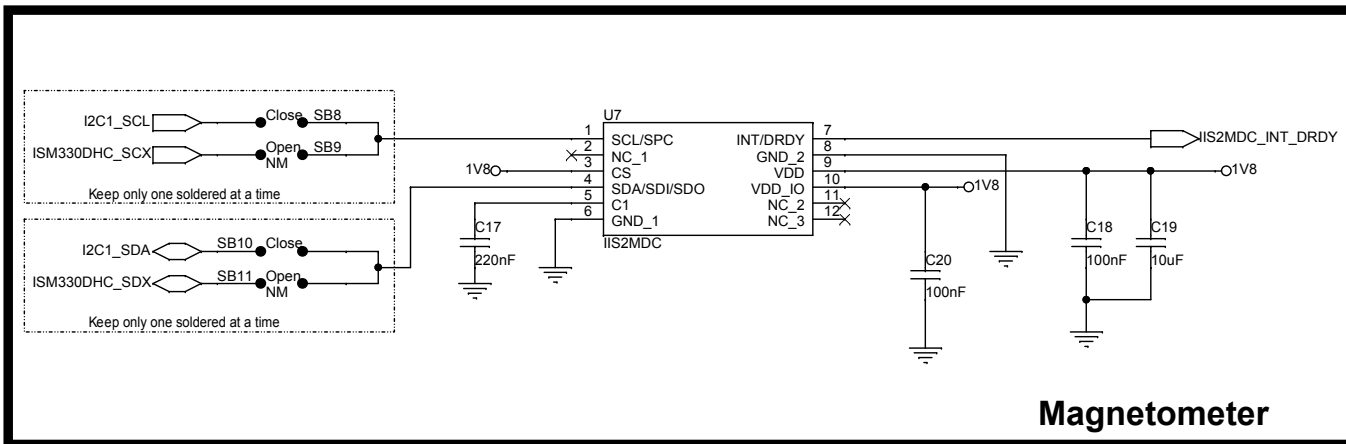


Figure 8. X-STM32MP-MSP01 circuit schematic (7 of 11)

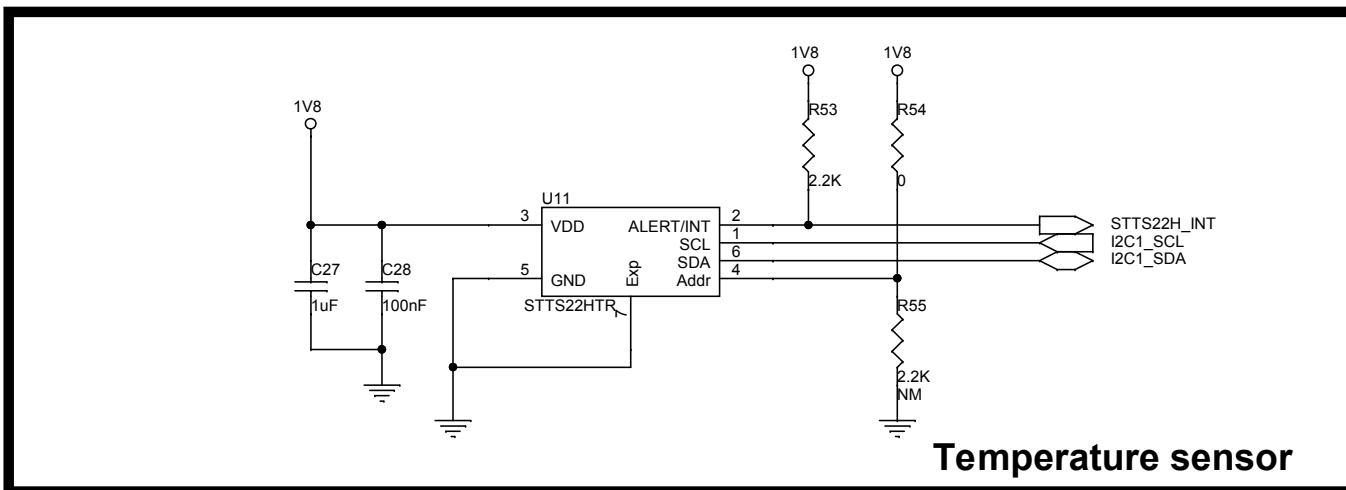
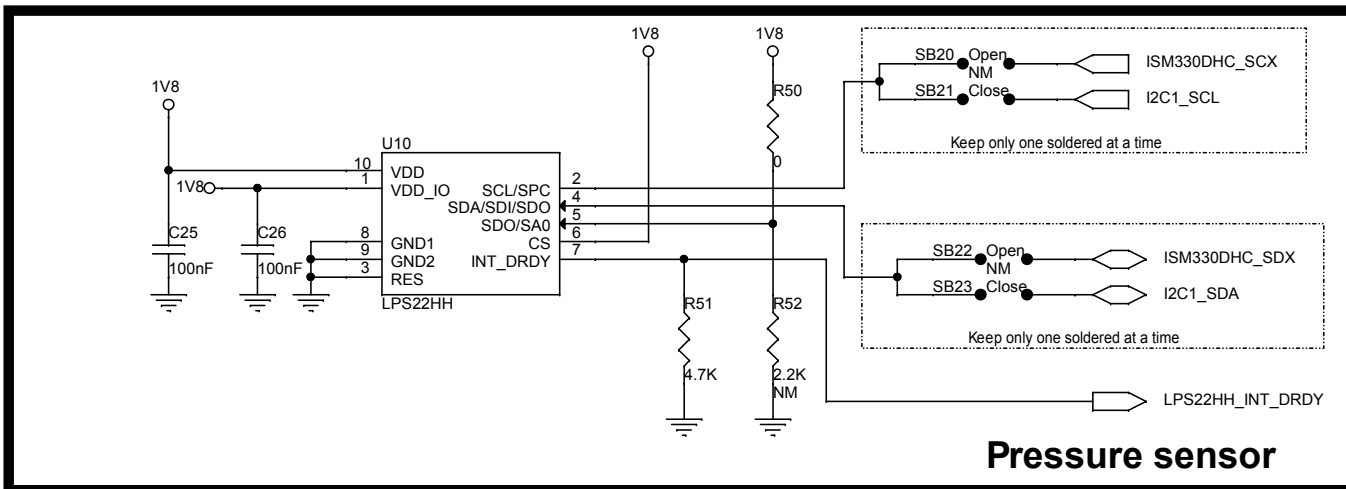
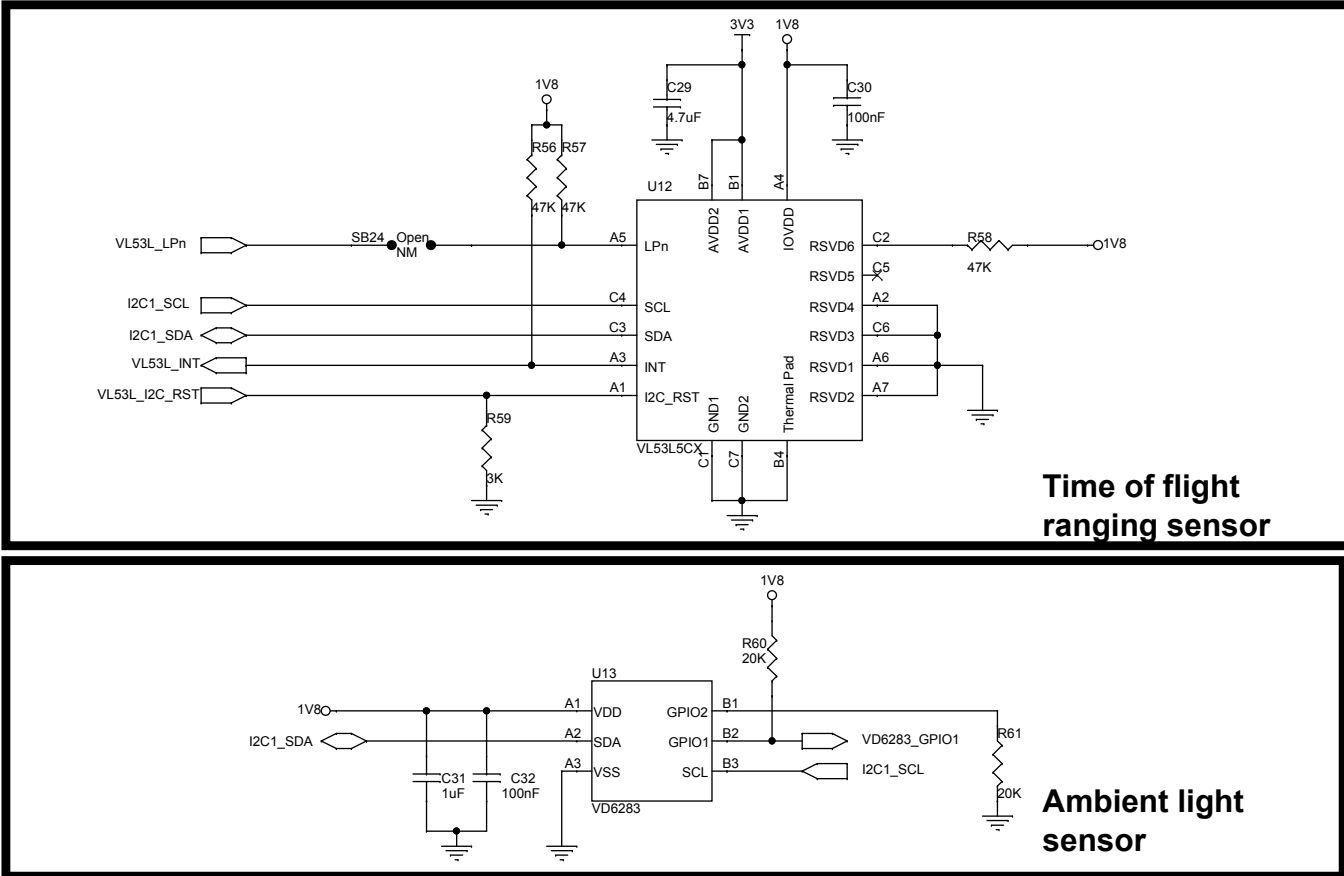


Figure 9. X-STM32MP-MSP01 circuit schematic (8 of 11)



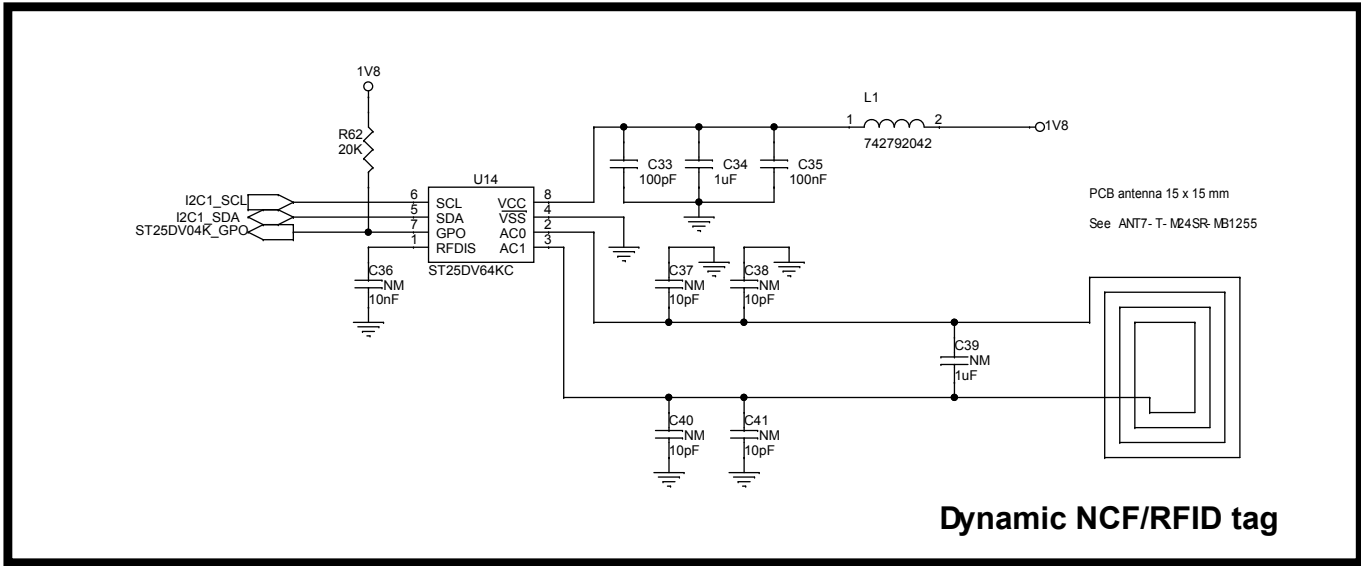


Figure 11. X-STM32MP-MSP01 circuit schematic (10 of 11)

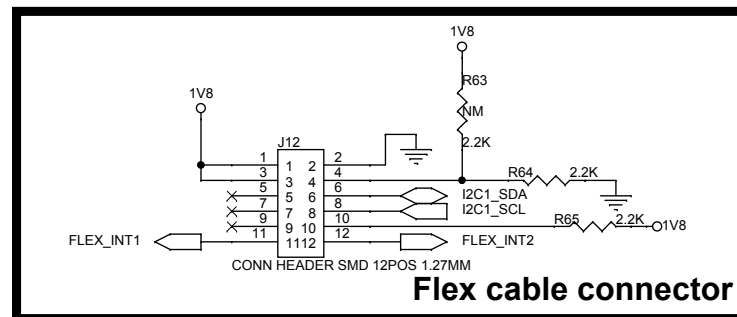
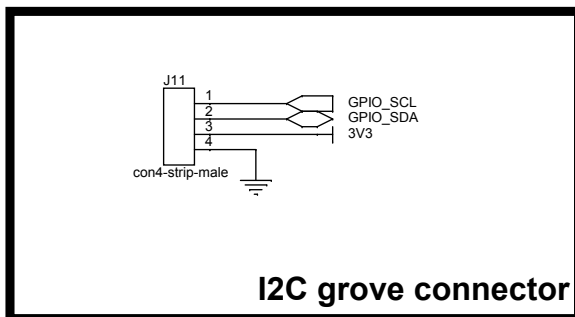
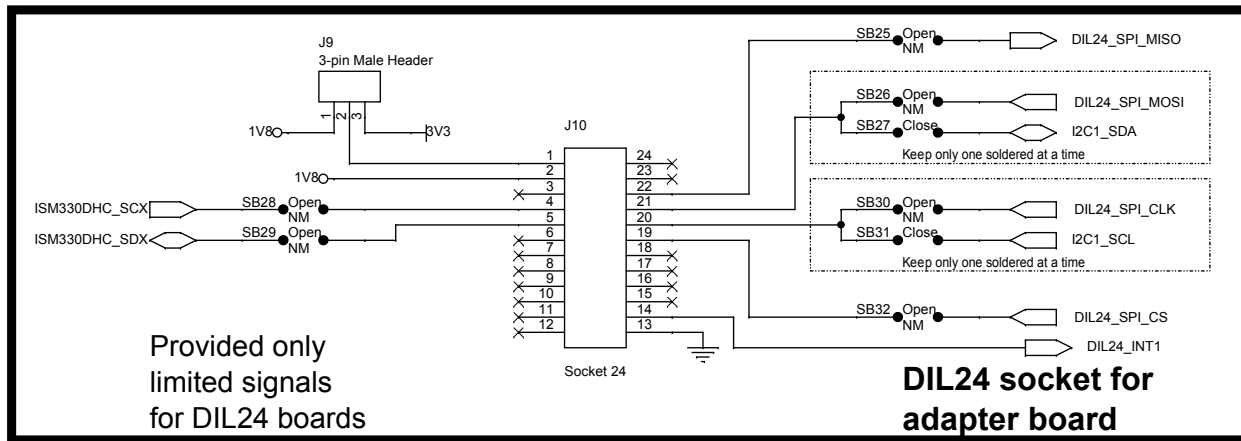
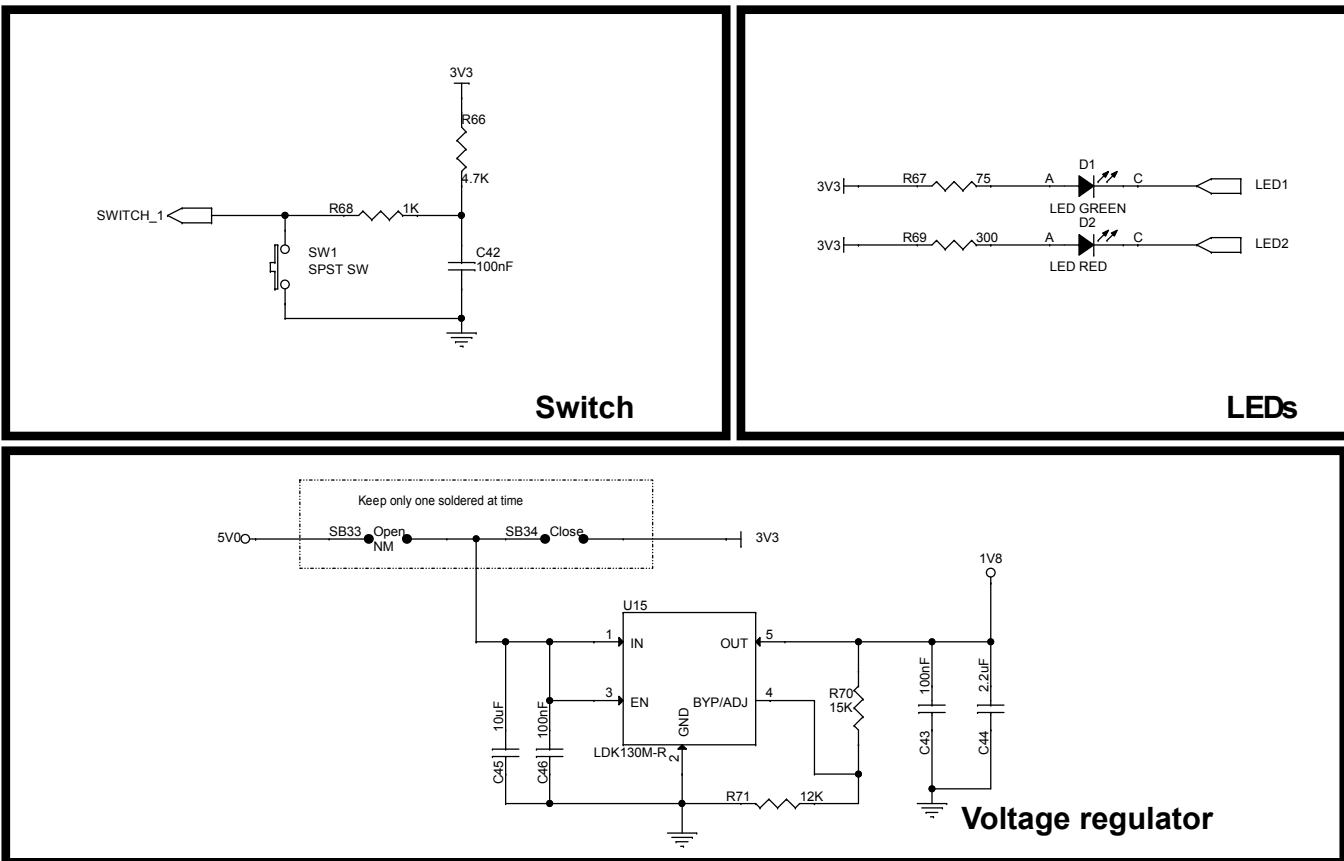


Figure 12. X-STM32MP-MSP01 circuit schematic (11 of 11)



3 X-STM32MP-MSP01 versions

Table 1. X-STM32MP-MSP01 versions

PCB version	Schematic diagrams	Bill of materials
X\$STM32MP-MSP01A ⁽¹⁾	X\$STM32MP-MSP01A schematic diagrams	X\$STM32MP-MSP01A bill of materials

1. This code identifies the X-STM32MP-MSP01 expansion board first version. It is printed on the board PCB.

Revision history

Table 2. Document revision history

Date	Revision	Changes
11-Oct-2022	1	Initial release.

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