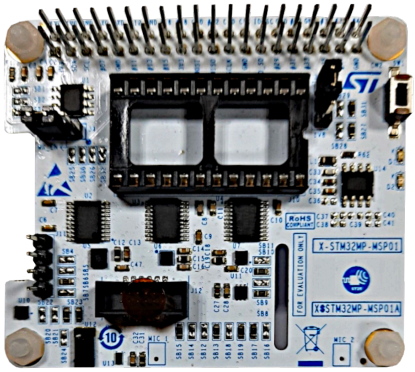
X-STM32MP-MSP01

Data brief

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 gausses)
  - IIS2DLPC: 3-axis accelerometer for industrial applications (±2/±4/±8/±16 g)
  - STTS22H: digital temperature sensor (-40 to +125°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.

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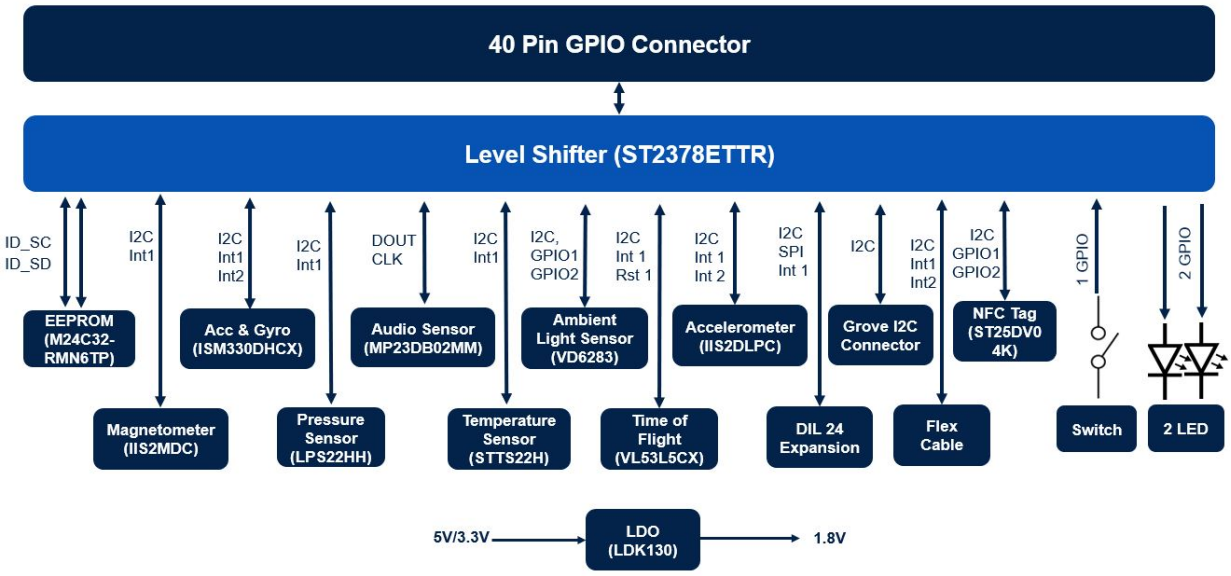
1 Block diagram

Figure 1. **X-STM32MP-MSP01 block diagram**



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2 Schematic diagrams

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

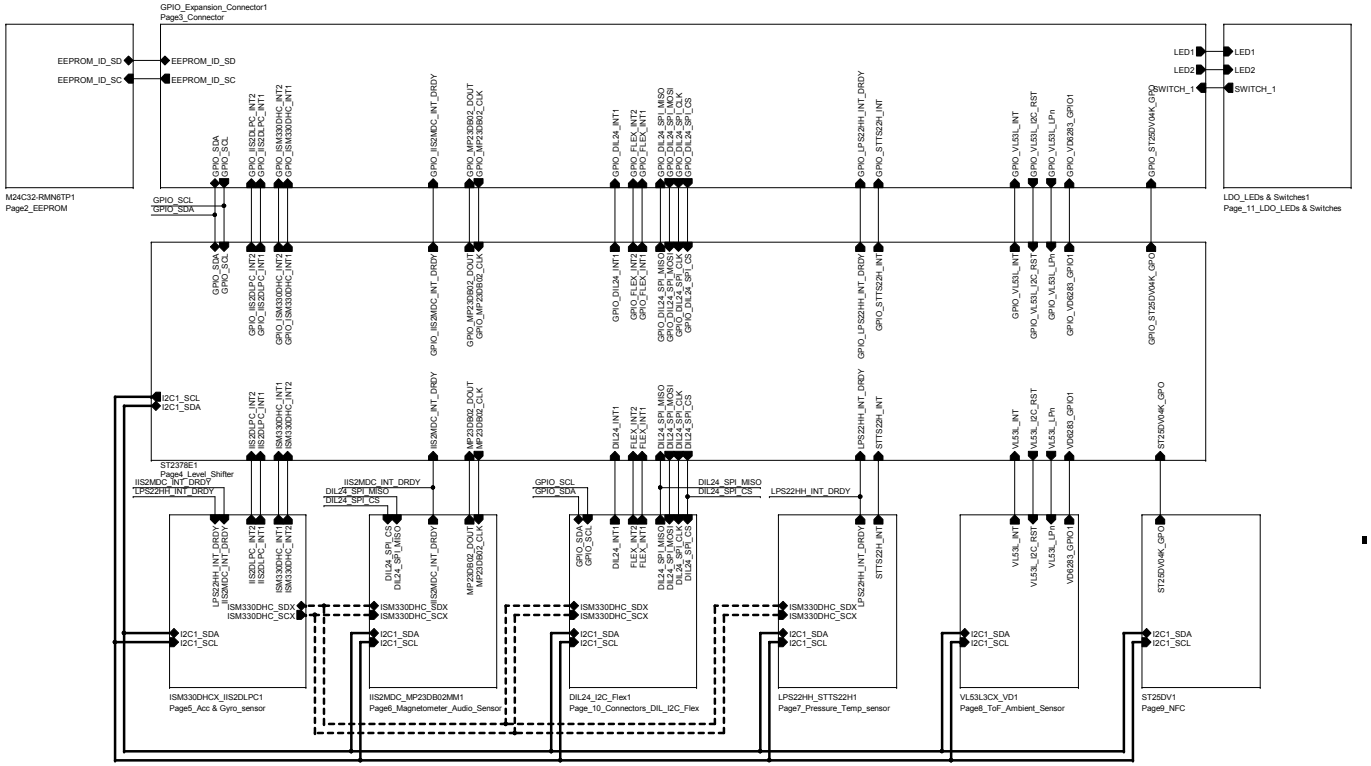

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Figure 3. X-STM32MP-MSP01 circuit schematic (2 of 11)

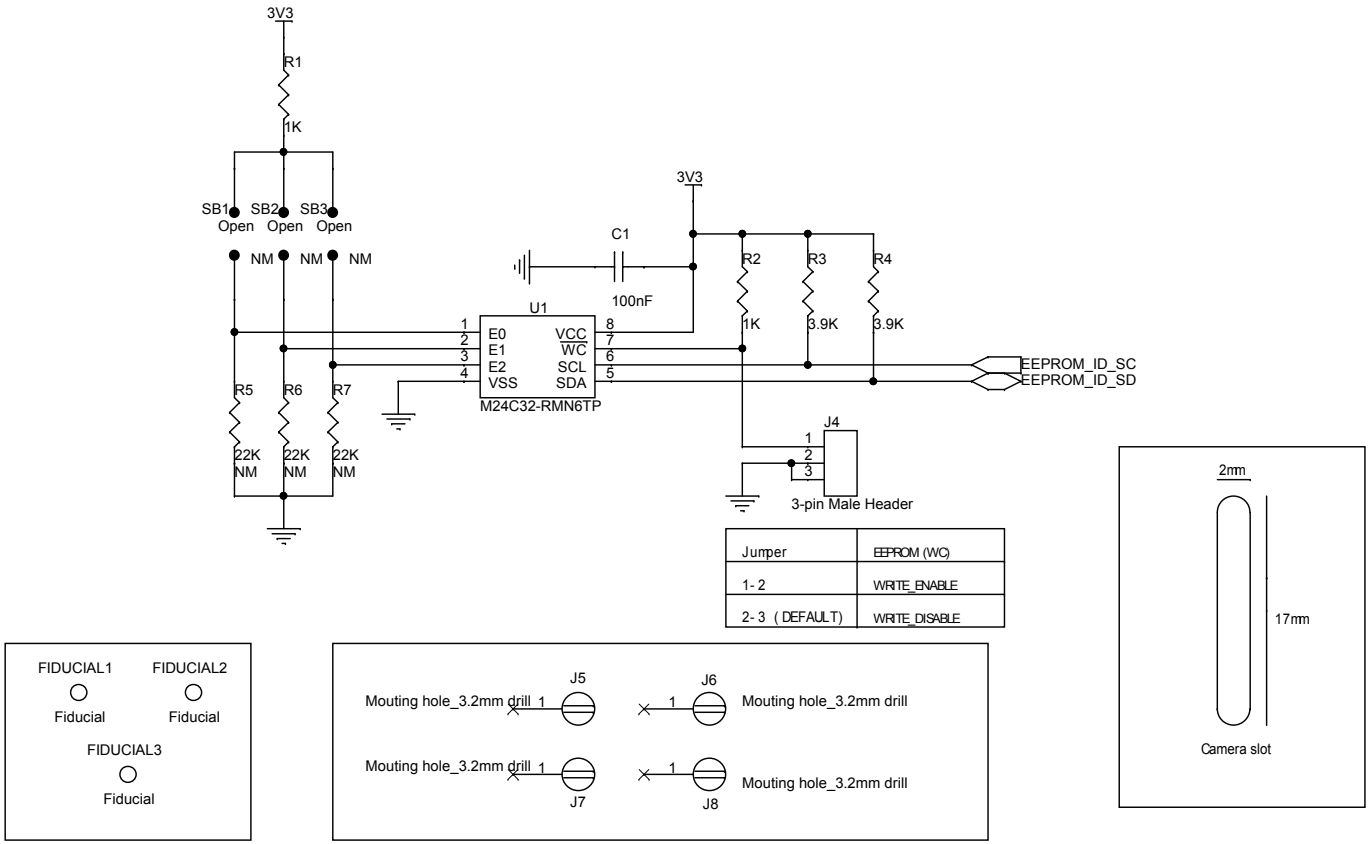

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Figure 4. X-STM32MP-MSP01 circuit schematic (3 of 11)

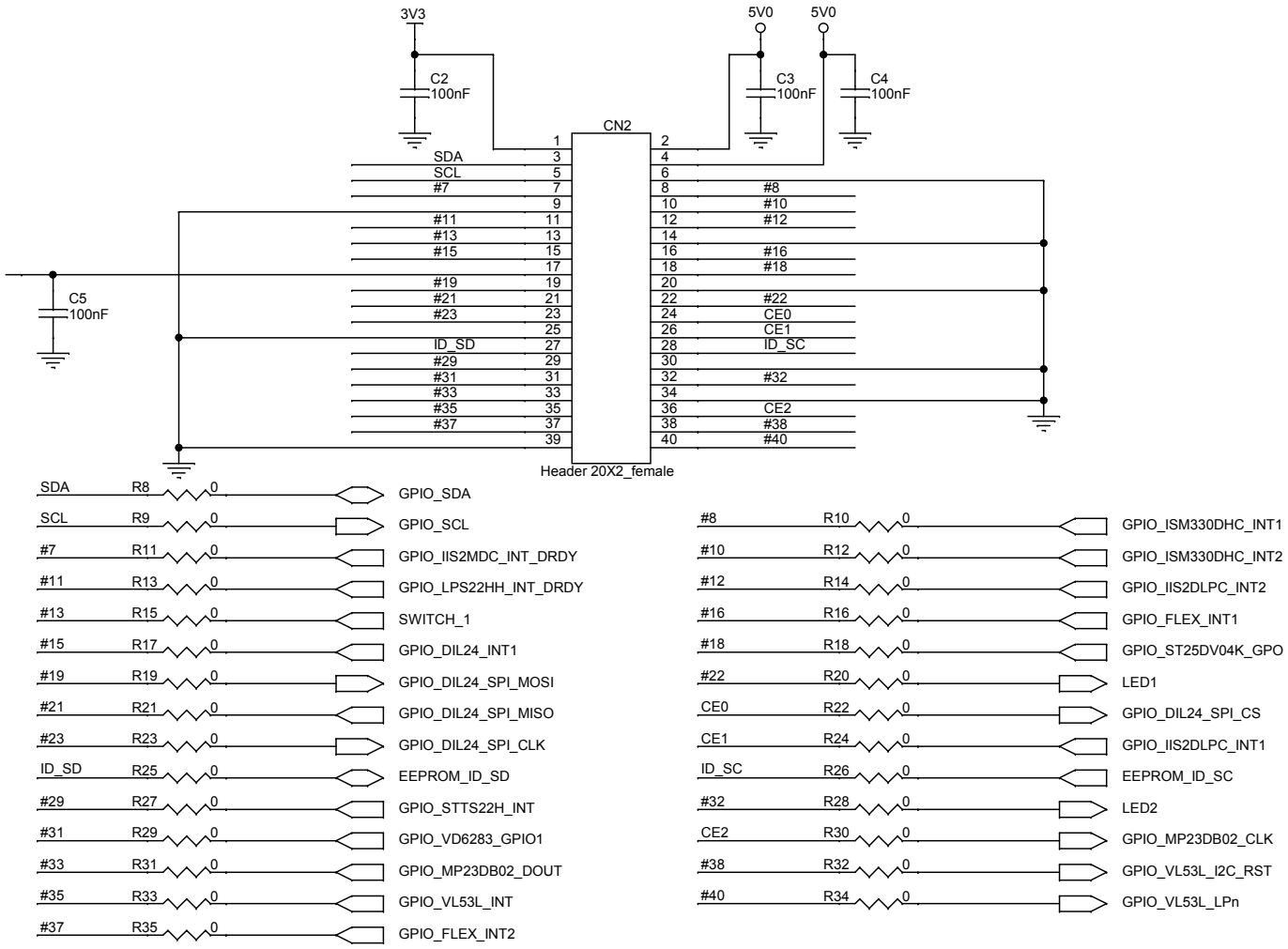

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Figure 5. X-STM32MP-MSP01 circuit schematic (4 of 11)

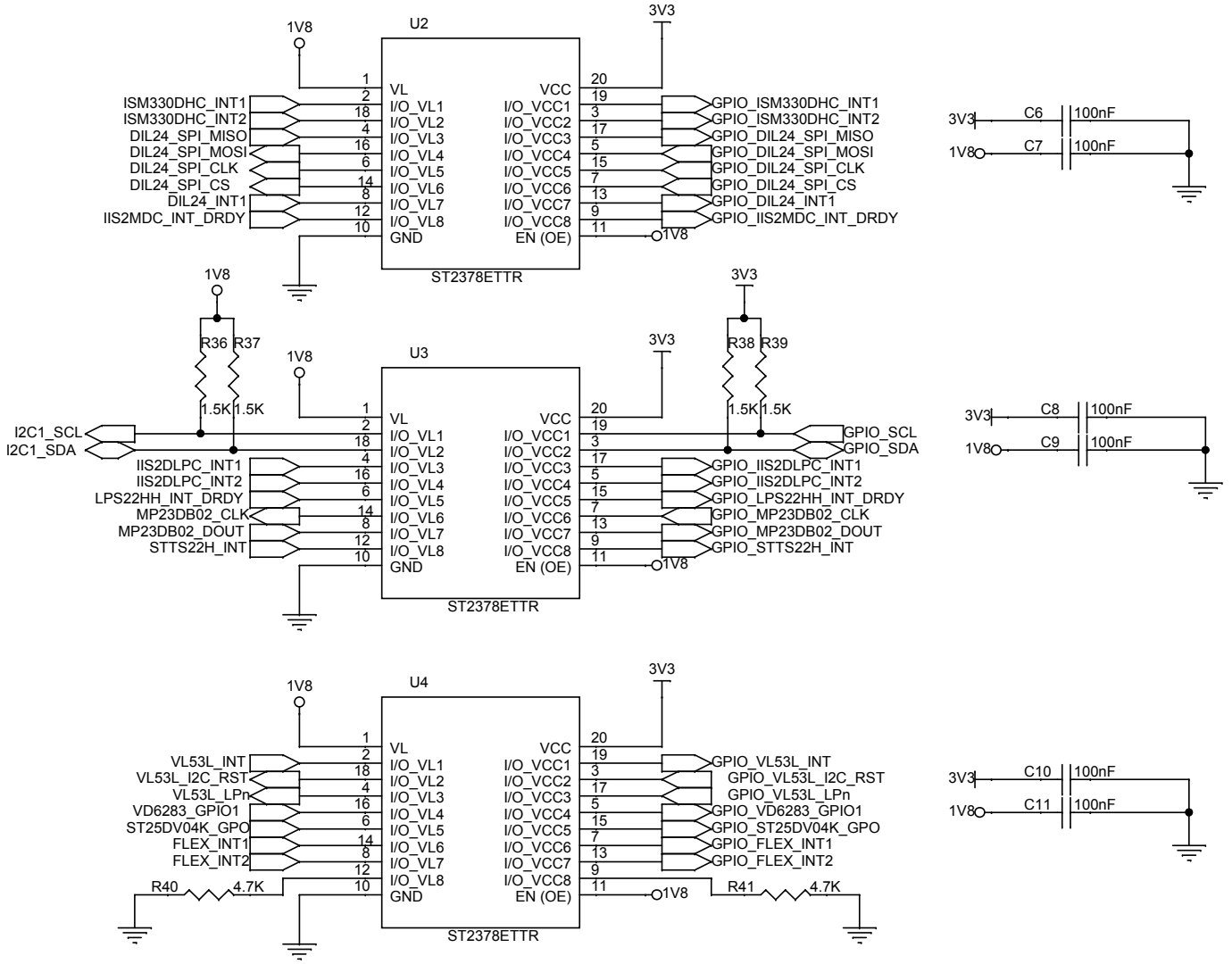

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Figure 6. X-STM32MP-MSP01 circuit schematic (5 of 11)

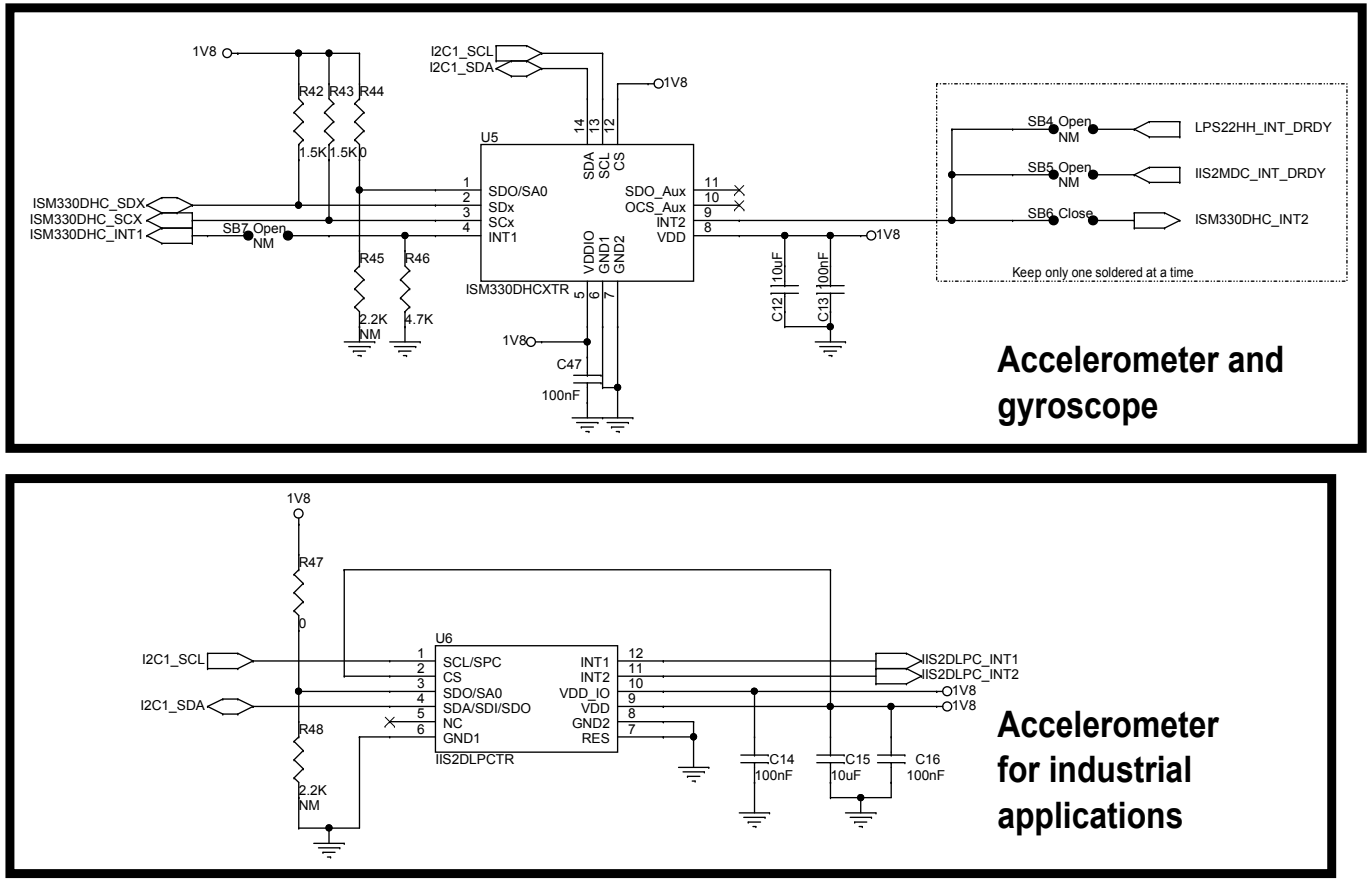

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Figure 7. **X-STM32MP-MSP01 circuit schematic (6 of 11)**

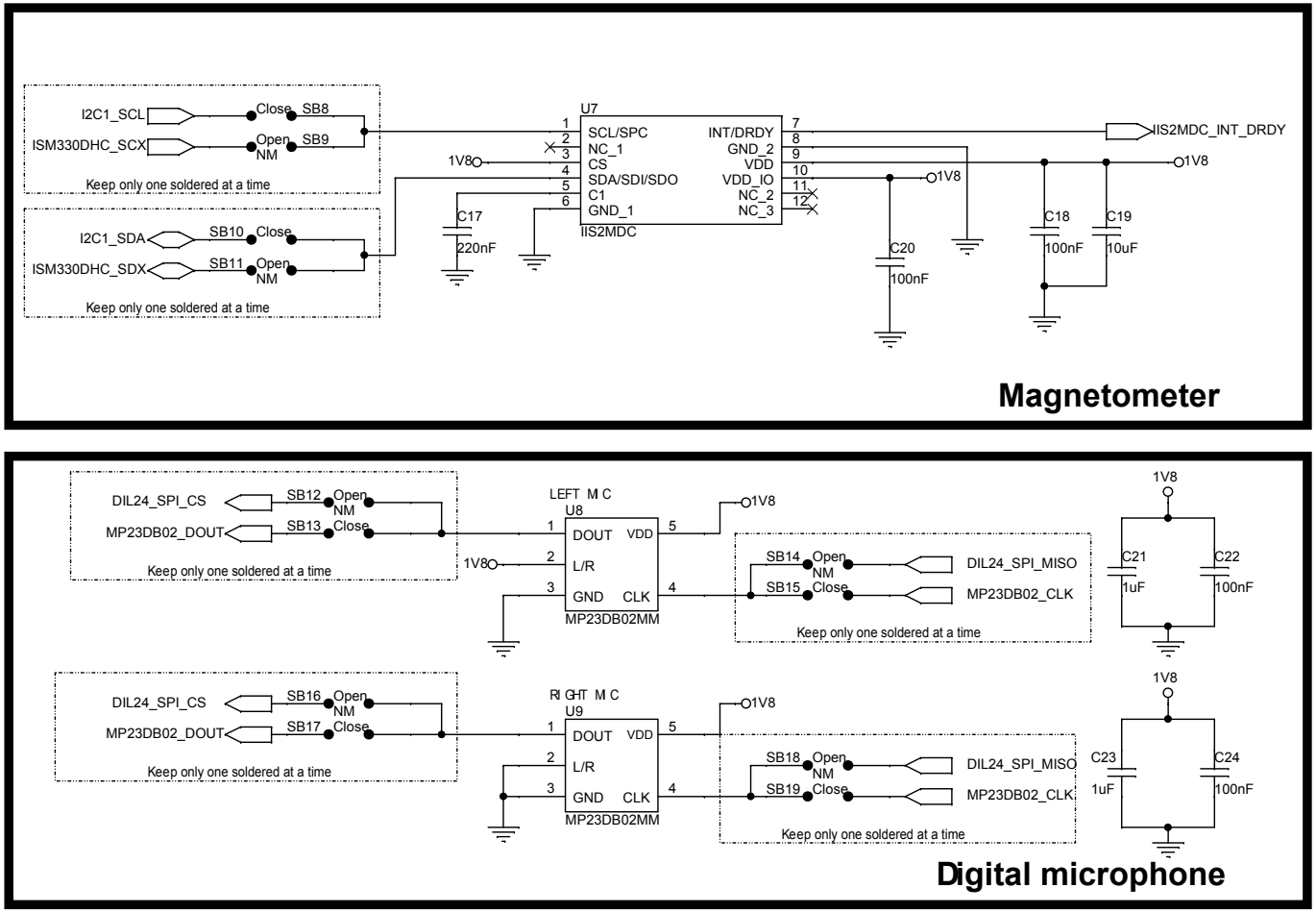

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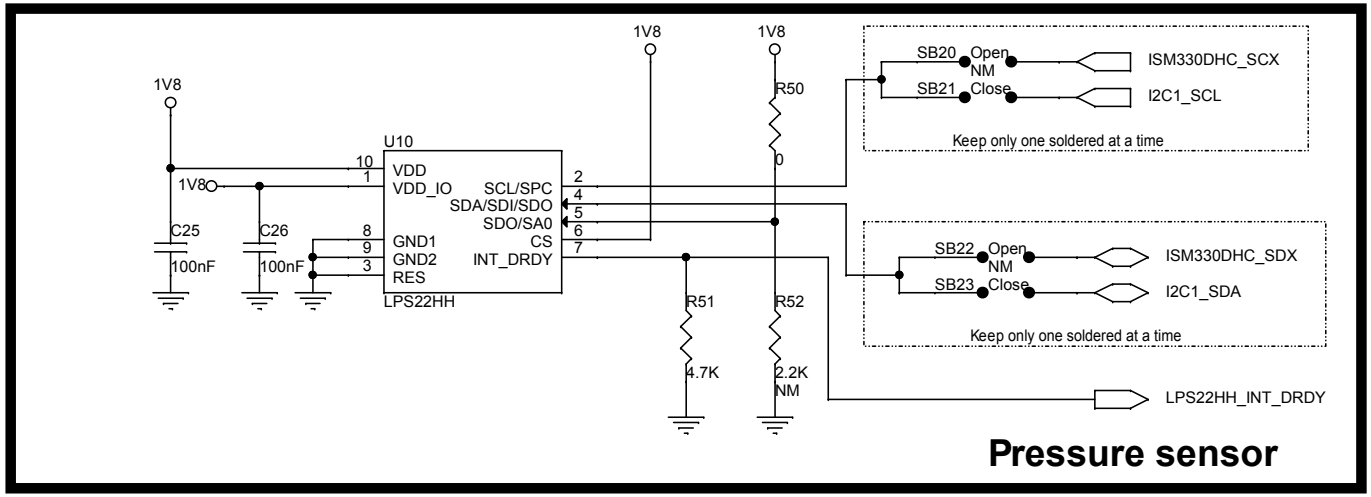
Figure 8. **X-STM32MP-MSP01 circuit schematic (7 of 11)**



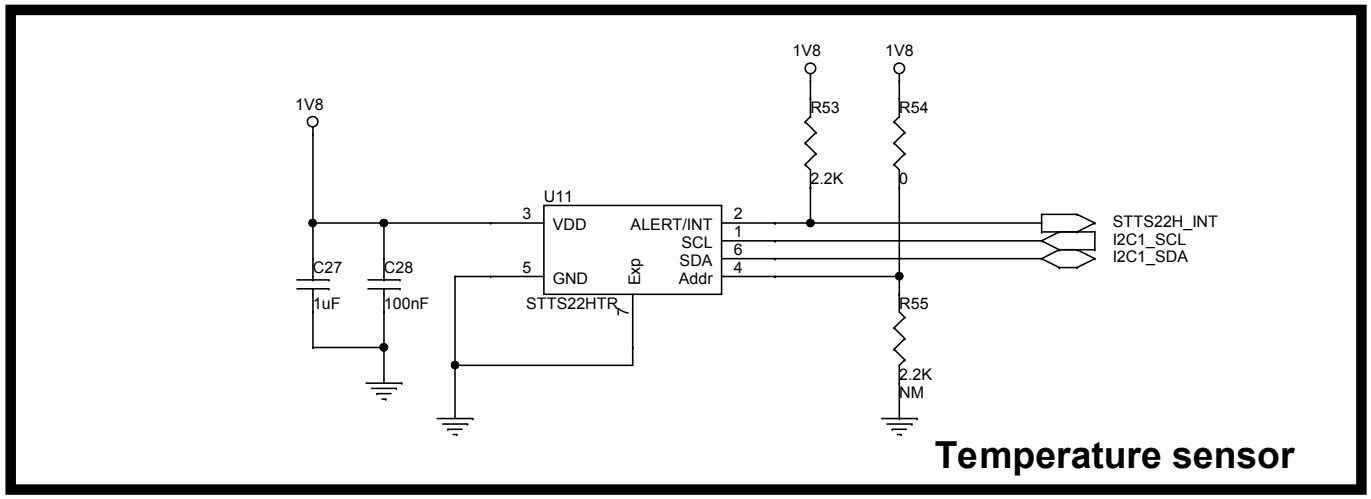


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Figure 9. **X-STM32MP-MSP01 circuit schematic (8 of 11)**

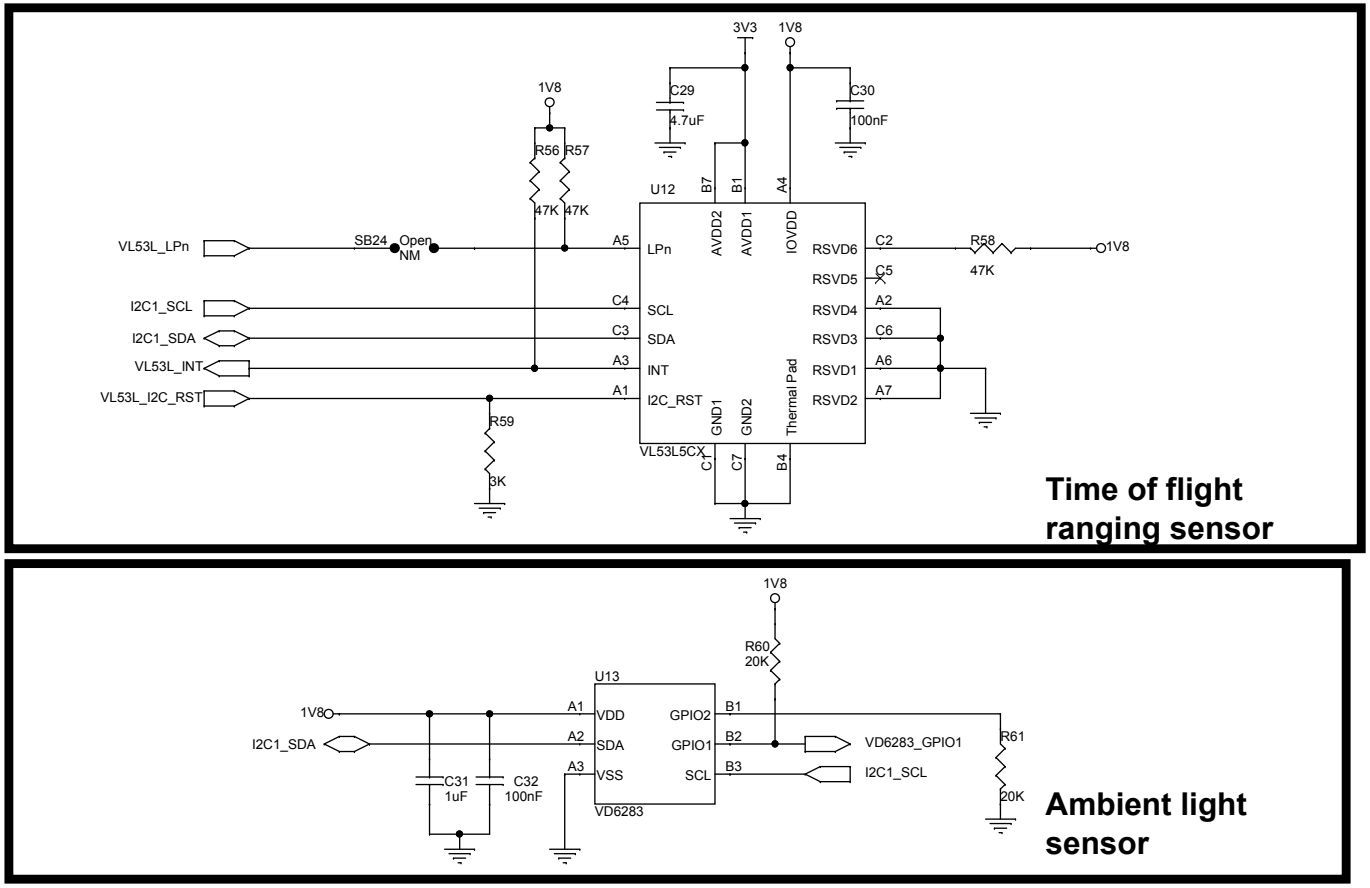

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Figure 10. **X-STM32MP-MSP01 circuit schematic (9 of 11)**

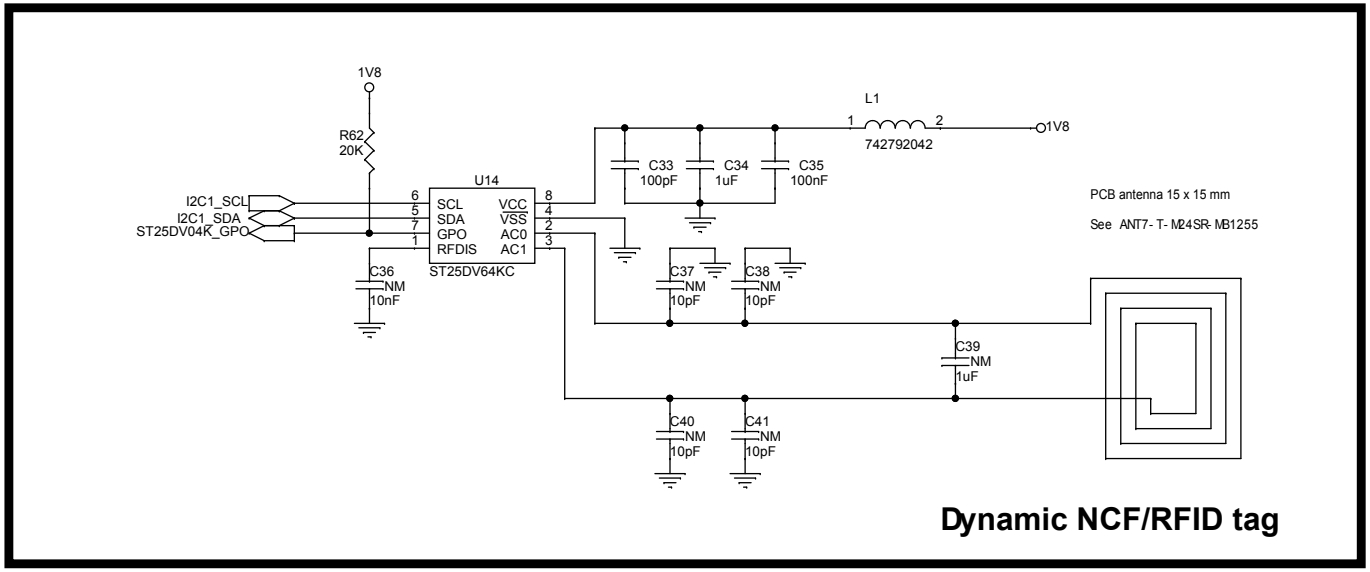

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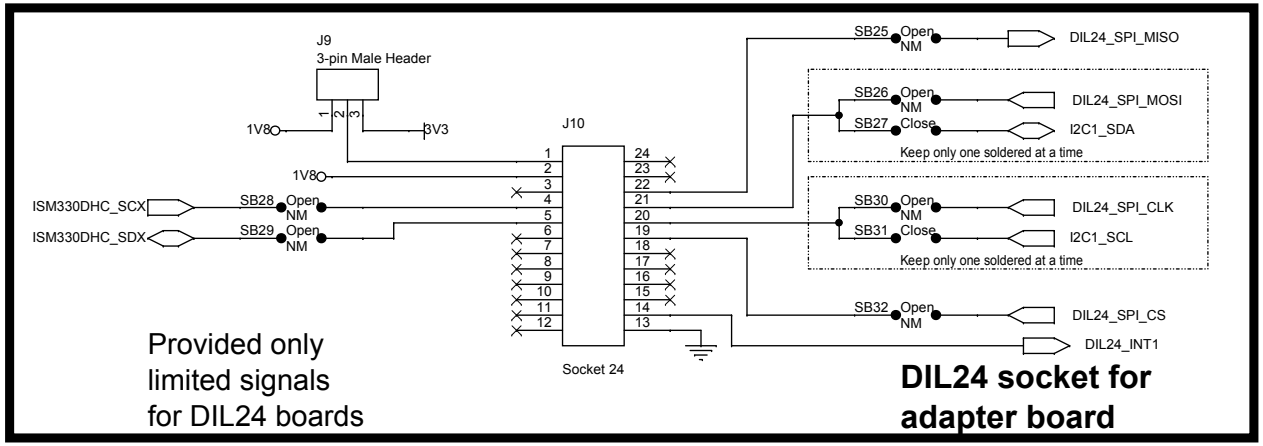
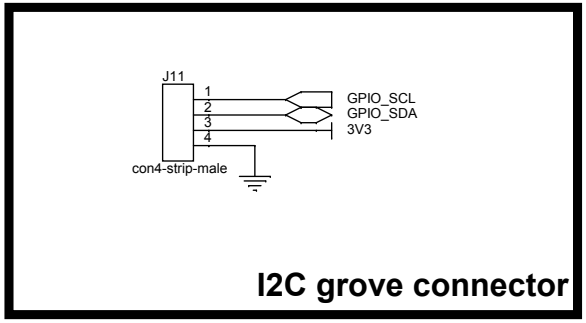
Figure 11. **X-STM32MP-MSP01 circuit schematic (10 of 11)**





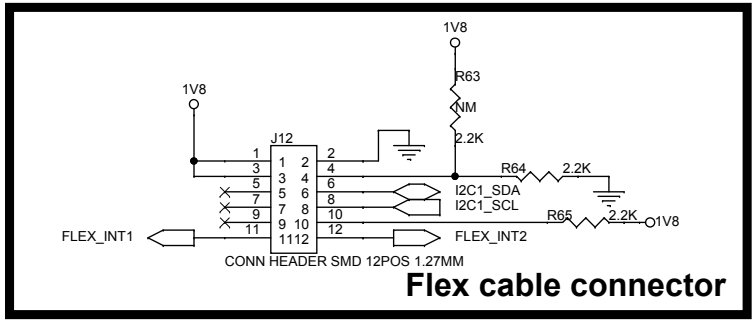


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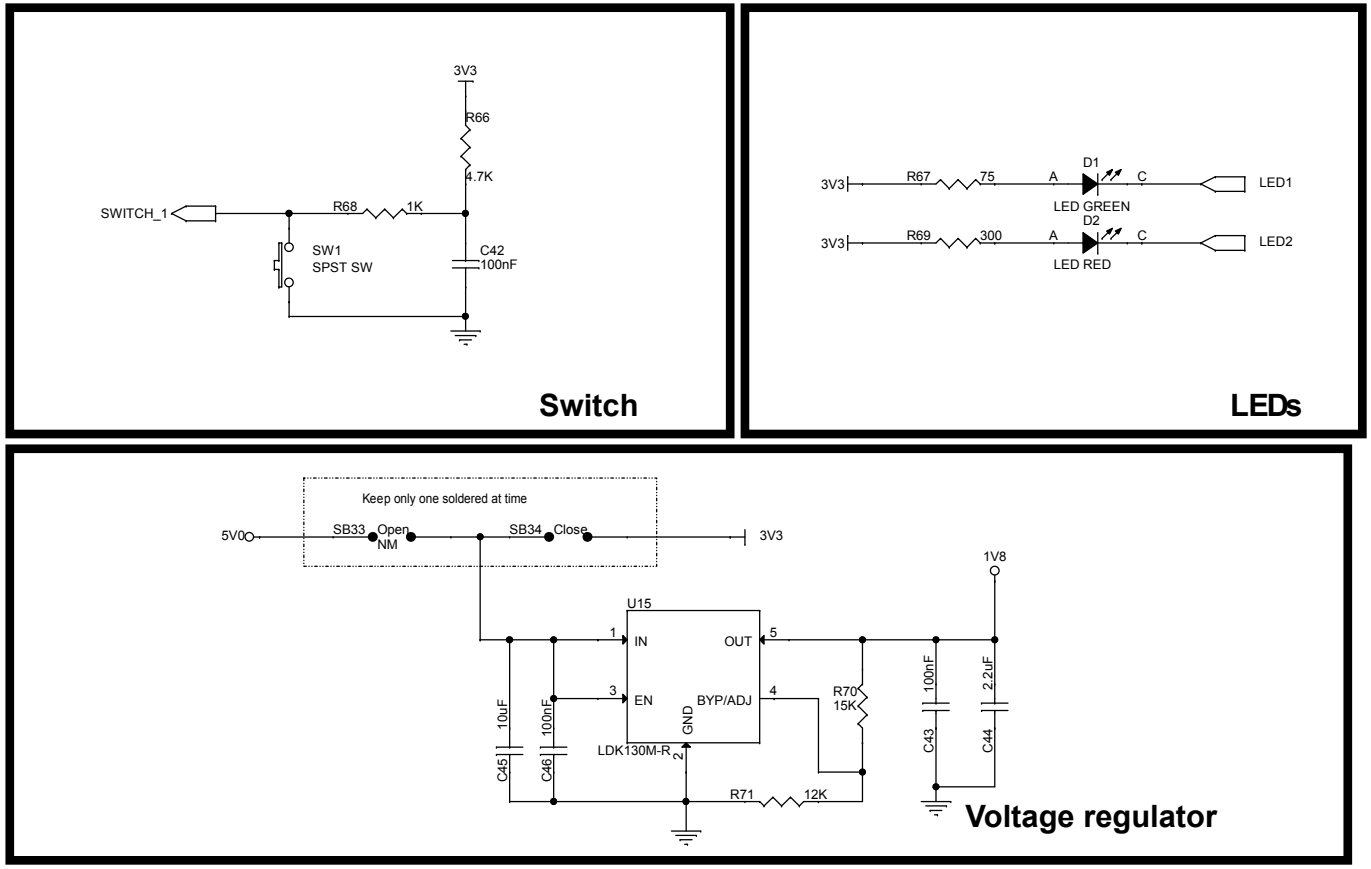
Figure 12. **X-STM32MP-MSP01 circuit schematic (11 of 11)**



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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.*

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Revision history

Table 2. **Document revision history**

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

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