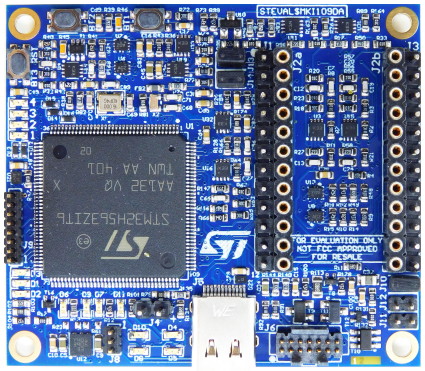
STEVAL-MKI109D

Data brief

Professional MEMS tool: evaluation board for all ST MEMS sensors



Product summary	
Professional MEMS tool: evaluation board for all ST MEMS sensors	STEVAL-MKI109D
High-performance, Arm Cortex-M33 with TrustZone, MCU with 2-MByte Flash, 640-Kbyte RAM, 250 MHz CPU	STM32H563ZI
Software solution for MEMS sensors with graphical no-code design of algorithms and development of embedded AI features	MEMS Studio
Applications	Industrial sensors

Features

- Plug and play rapid evaluation of the ST MEMS sensor
- Compatible with all available ST MEMS DIL24 adapter boards
- PC-based evaluation software with user friendly graphical interface
- Full support of I2C, I3C, SPI and TDM data modes
- Software-adjustable power circuitry to set sensor supply voltage from 0 to 3.6 V on VDD and VDDIO pins of DIL24
- On line current consumption measurement
- Firmware update via USB
- Can be used with PC software like MEMS studio GUI to manage and analyze MEMS sensor data
- SD card slot (SD card not included)
- USB Type-C® connector
- RoHS compliant
- CE Certified

Description

STEVAL-MKI109D is a development platform that allows engineers to monitor the behavior of ST MEMS sensors.

This mother board can help to accelerate the time to market and maximize the performance of new product designs.

This board is compatible with ST MEMS adapter boards and supports I_2C, I3C, and SPI data modes for very high output data rates. It is also able to manage the TDM interface.

This professional MEMS tool features a high performance STM32H563ZI microcontroller and flexible power management with software-adjustable power circuitry that allows you to set the sensor supply voltage from 0 to 3.6 V and replicate the operating conditions in the intended application.

The board includes accurate power monitoring on sensor supply voltage and current, so external instruments are not required.

The SD card can help to create ad hoc application for ST MEMS devices.

You can run the graphical user interface (GUI) MEMS Studio on a host PC to manage data flow from MEMS sensors and analyze MEMS sensor waveforms, which can help you explore the operating modes and power settings to optimize sensor performance and accuracy in your application,

The STM32H563ZI Arm Cortex®-M33 microcontroller with DSP and FPU can process much more than sensor readings such as barometric pressure and accelerometer or

gyroscope data. It can handle complex datasets like optical or electronic image stabilization (OIS and EIS, respectively) from ST's advanced 6-axis inertial modules and can be used to evaluate the latest generation of high-resolution MEMS sensors for industrial applications.

The firmware of STEVAL-MKI109D is available through the MEMS studio application.

1 Schematic diagrams

Figure 1. **STEVAL-MKI109D circuit schematic (1 of 11)**

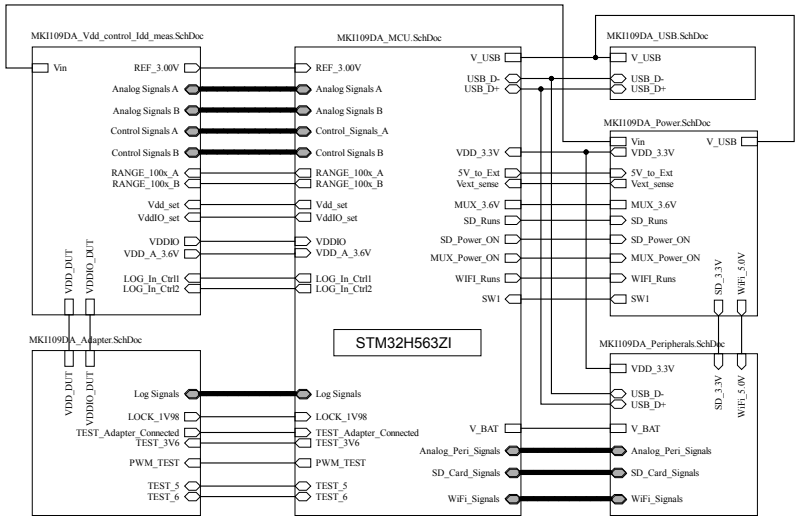


Figure 2. **STEVAL-MKI109D circuit schematic (2 of 11)**

Power & Reference for Idd measurement

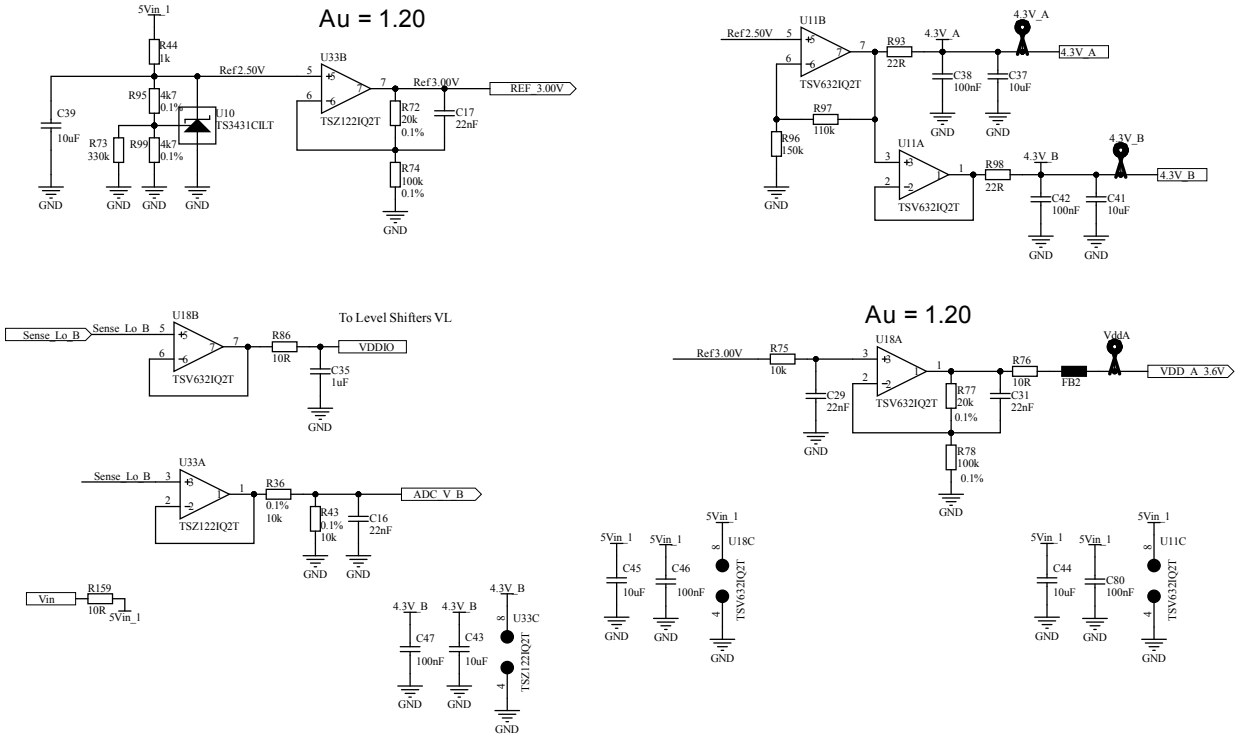


Figure 3. STEVAL-MKI109D circuit schematic (3 of 11)

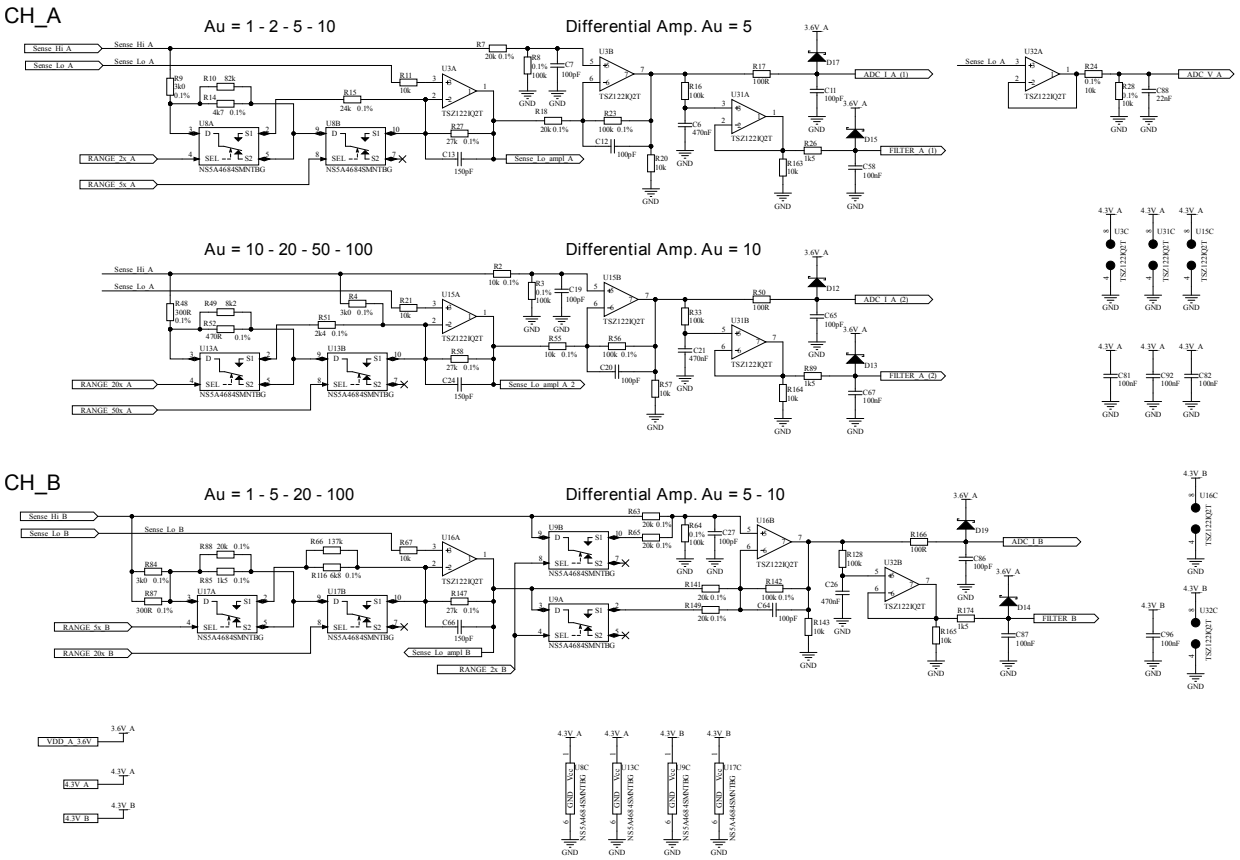


Figure 4. **STEVAL-MKI109D circuit schematic (4 of 11)**

Idd measurement - log

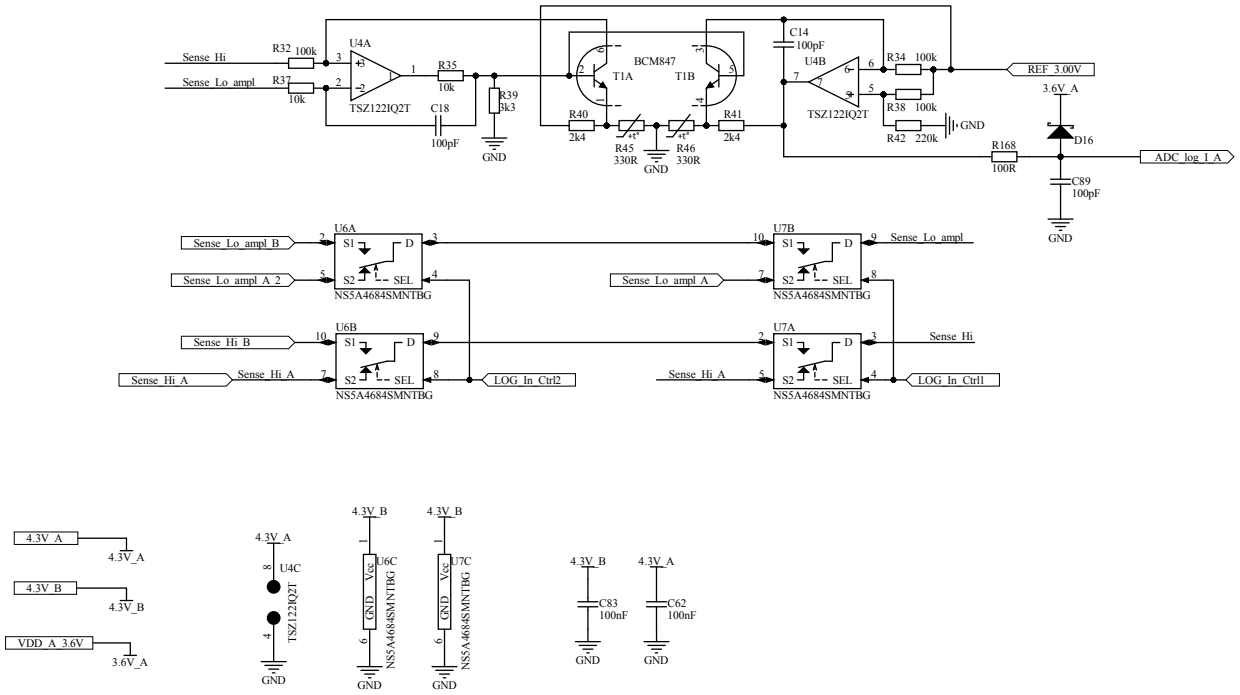


Figure 5. STEVAL-MKI109D circuit schematic (5 of 11)

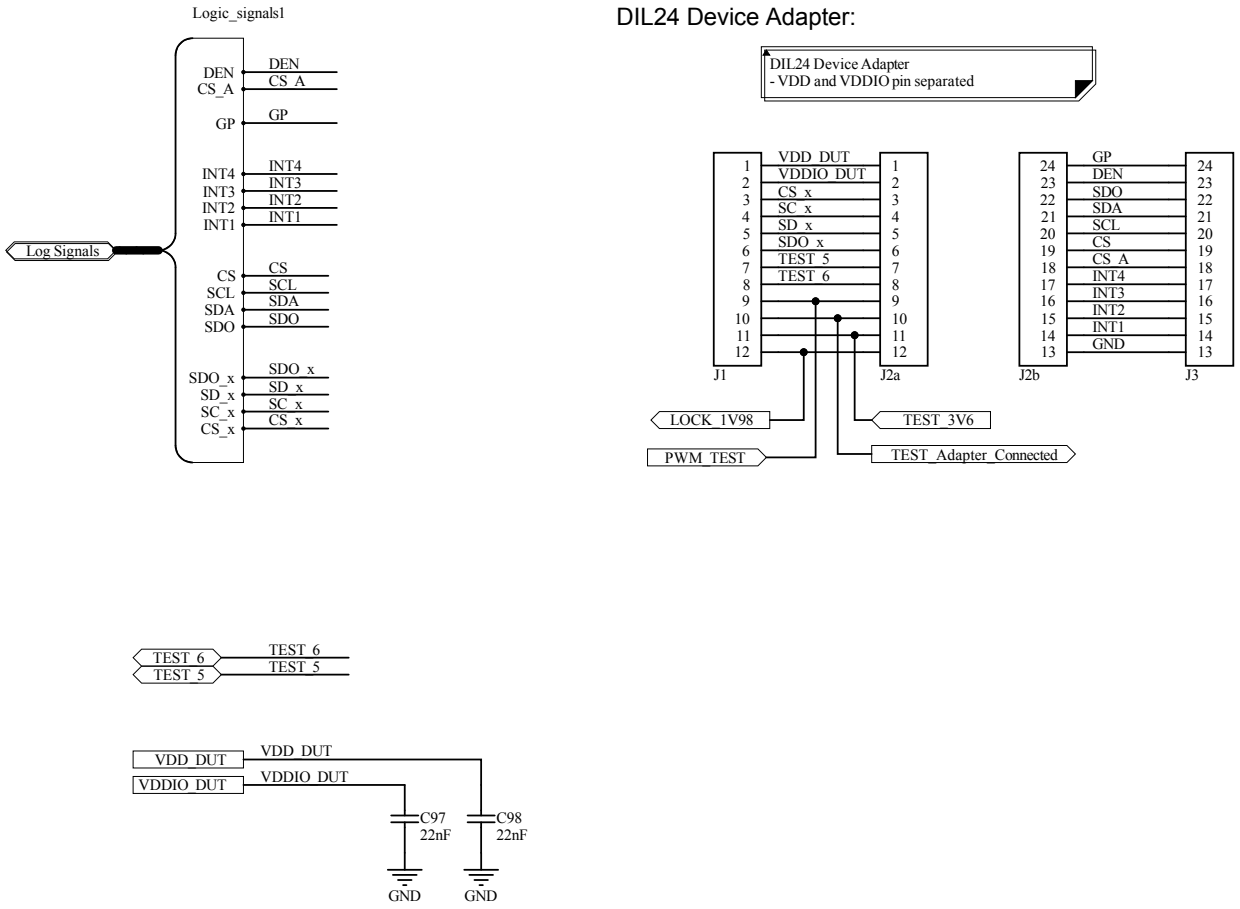


Figure 6. STEVAL-MKI109D circuit schematic (6 of 11)

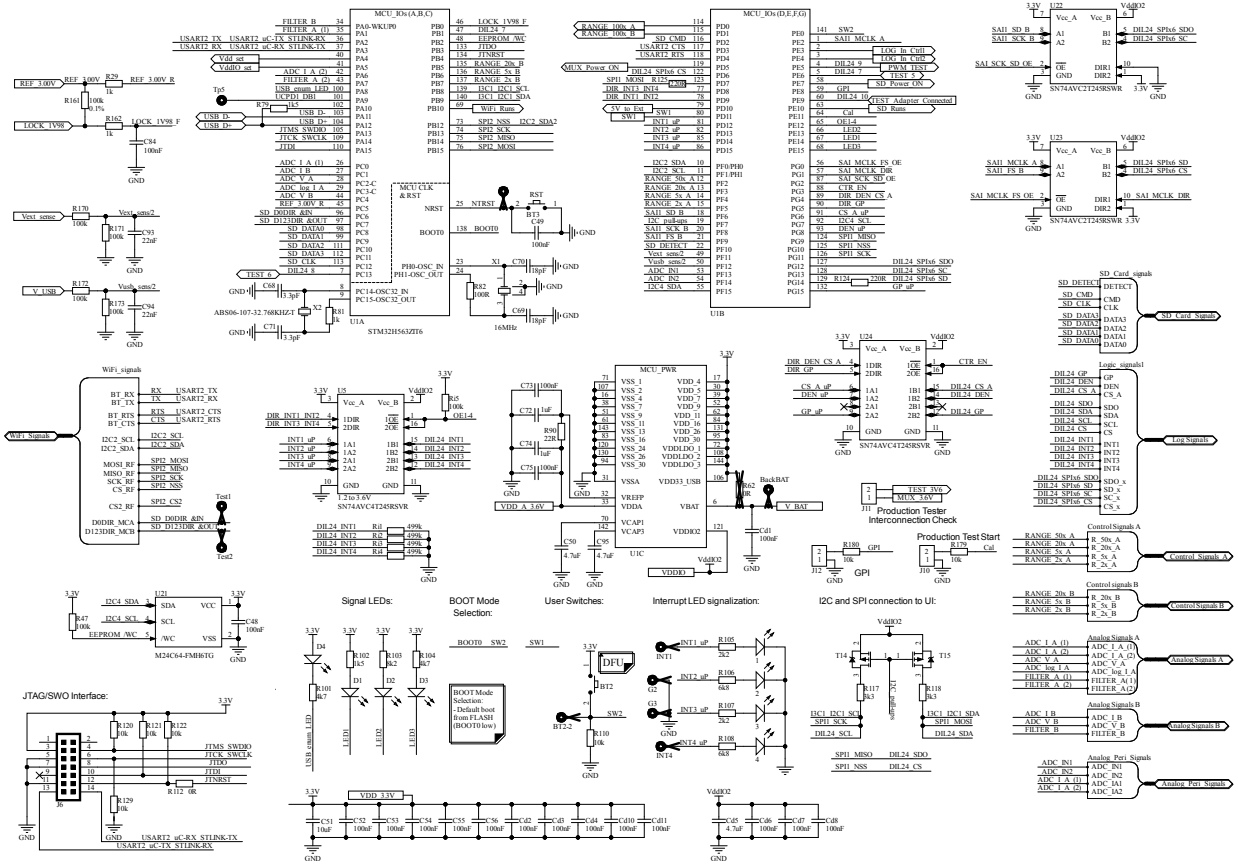


Figure 7. STEVAL-MKI109D circuit schematic (7 of 11)

USB Connection:

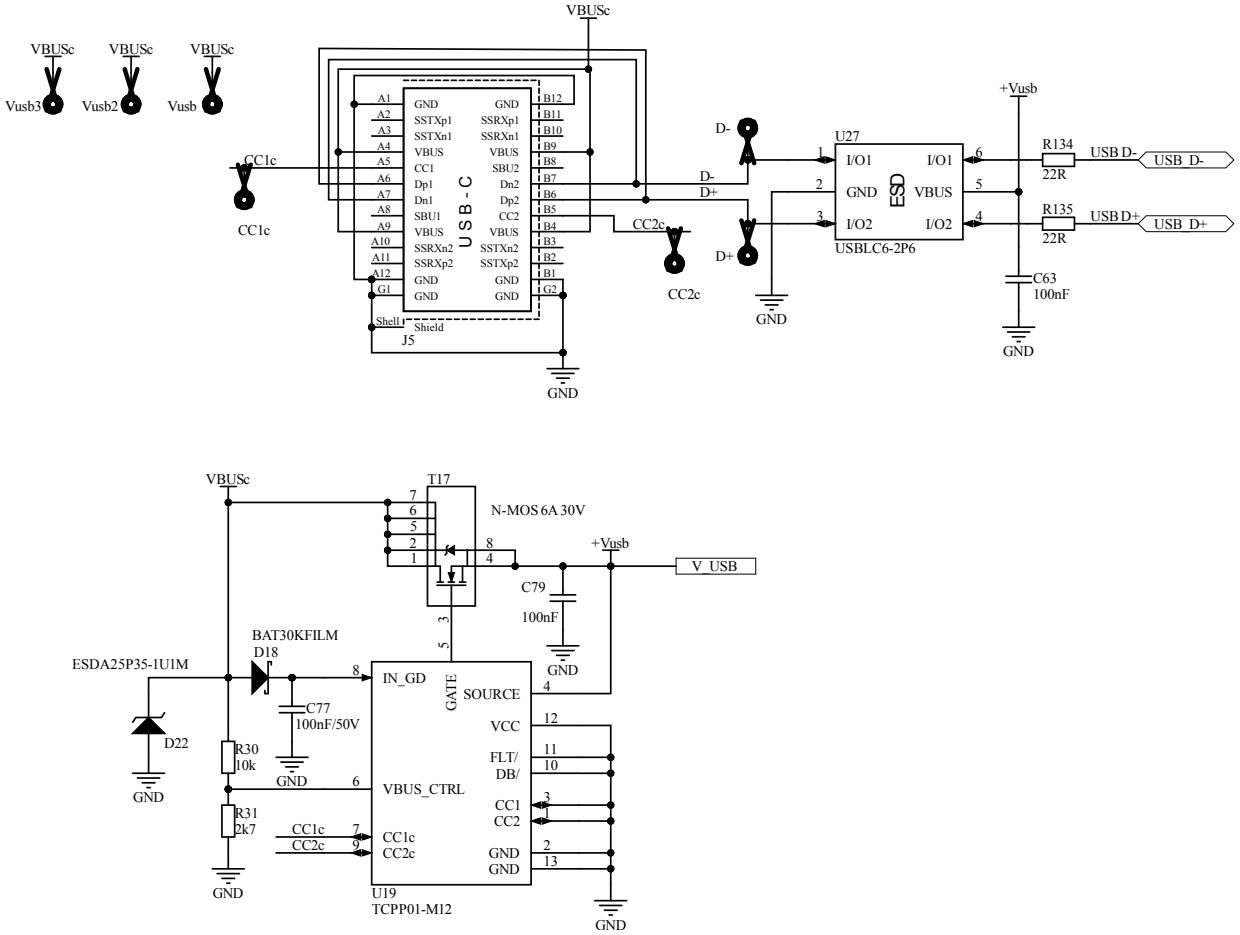


Figure 8. STEVAL-MKI109D circuit schematic (8 of 11)

Power Supply:

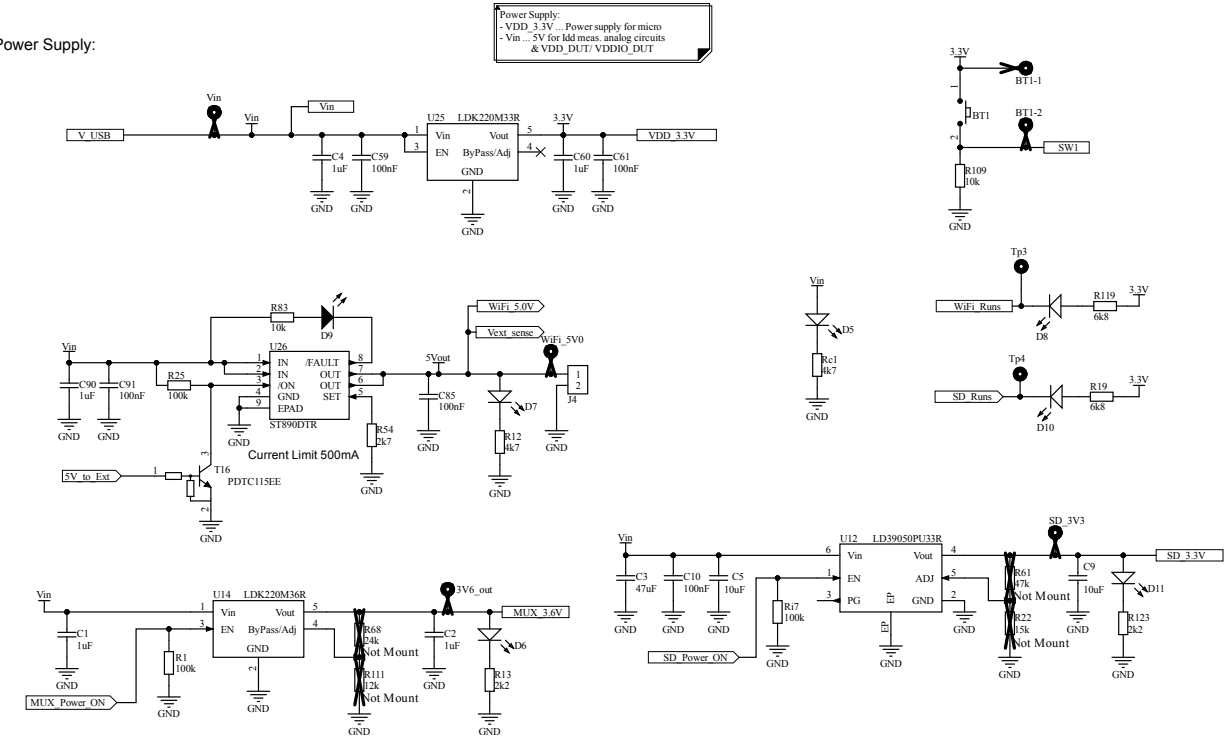


Figure 9. **STEVAL-MKI109D circuit schematic (9 of 11)**

Dual Channel Controlled Power Supply

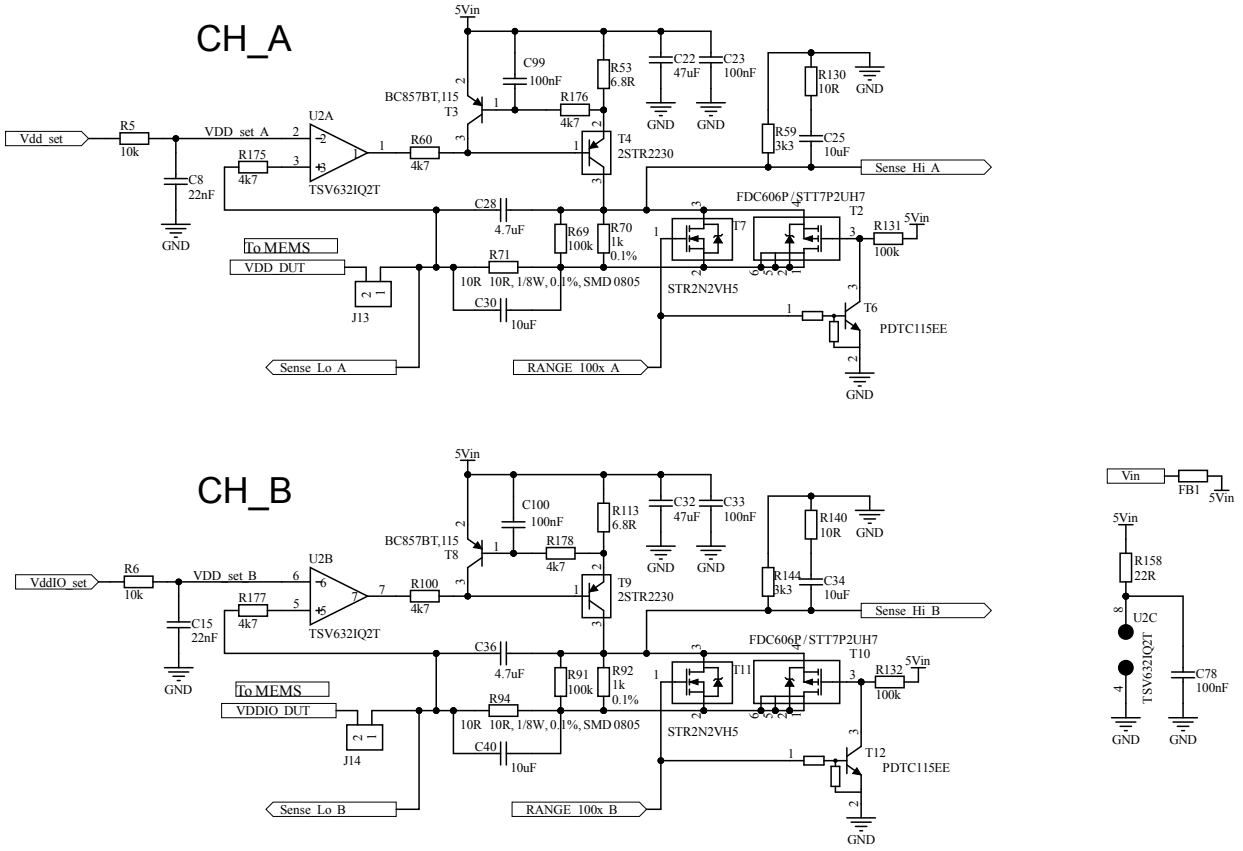


Figure 10. STEVAL-MKI109D circuit schematic (10 of 11)

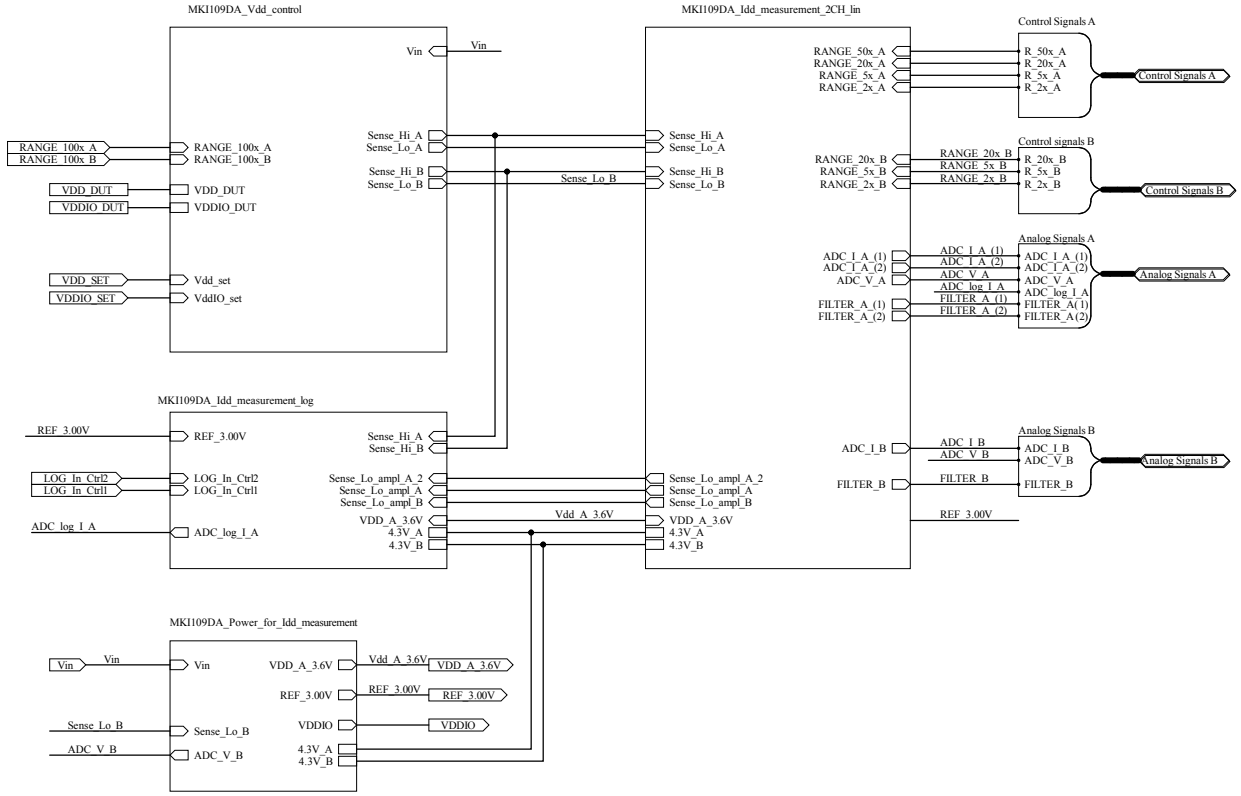
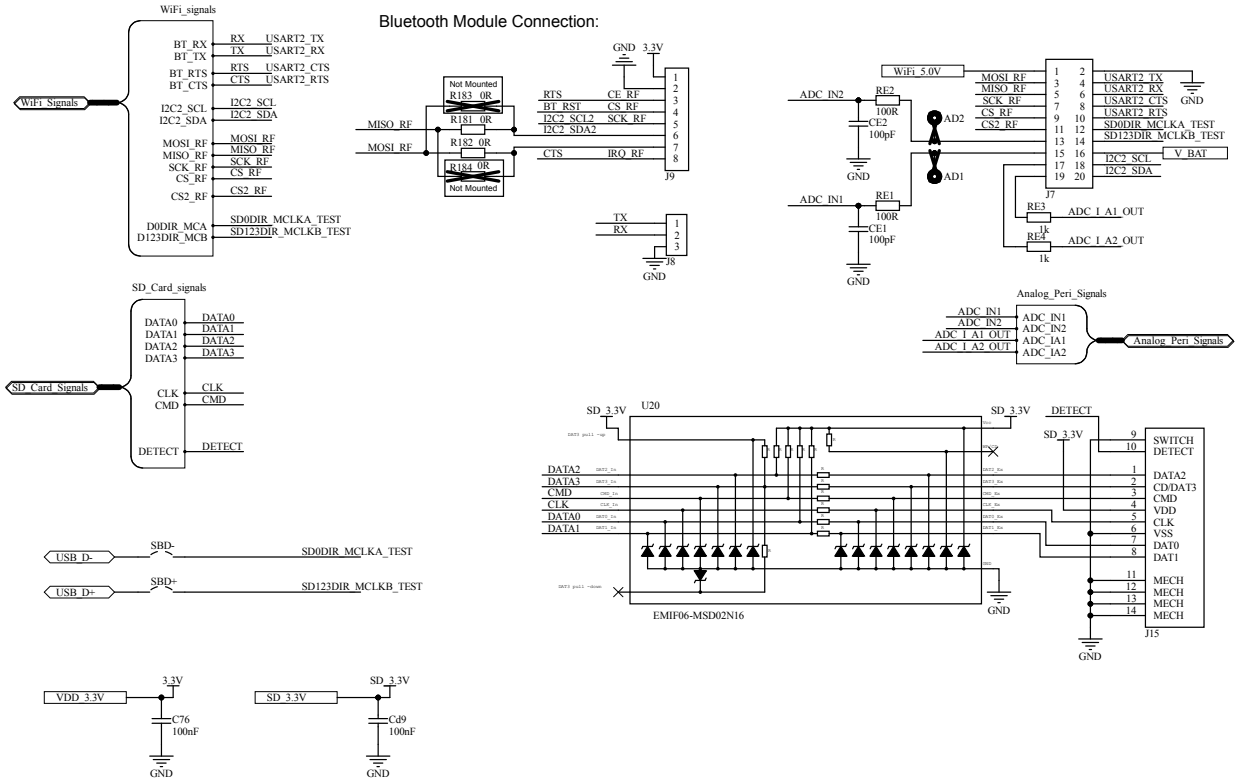


Figure 11. STEVAL-MKI109D circuit schematic (11 of 11)



Revision history

Table 1. **Document revision history**

Date	Revision	Changes
03-Sep-2024	1	Initial release.

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