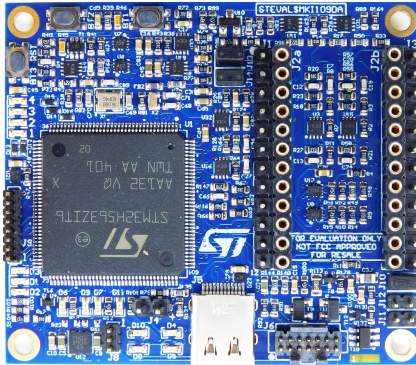


Professional MEMS tool: evaluation board for all ST MEMS sensors



Features

- Plug-and-play rapid evaluation of all MEMS sensors
- Compatible with all ST MEMS DIL24 adapter boards
- User-friendly MEMS Studio GUI evaluation software to manage and analyze MEMS sensor data
- Supports I²C, I³C, SPI, and TDM communication interfaces
- Software-adjustable power circuitry to set sensor supply voltage from 0 to 3.6 V on VDD and VDDIO pins of the DIL24 adapter board
- Onboard measurement of supply current
- Firmware update via USB
- SD card slot (SD card not included)
- USB Type-C[®] connector
- RoHS compliant
- CE certified

Description

STEVAL-MKI109D is an evaluation platform that allows engineers to monitor the behavior of ST MEMS sensors and maximize the performance of new product designs, accelerating time to market.

This board is compatible with ST MEMS adapter boards and supports I²C, I³C, SPI, and TDM communication interfaces for very high output data rates.

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 target application.

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

You can run the [MEMS-Studio](#) graphical user interface (GUI) on a host PC to manage the data flow from MEMS sensors and analyze sensor waveforms, which can help you explore the operating modes and power settings to optimize sensor performance and accuracy in your application. Firmware for the STEVAL-MKI109D is also available in the MEMS Studio software solution.

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 measurement units (IMUs) and can be used to evaluate the latest generation of high-resolution MEMS sensors for automotive, consumer, and industrial applications.

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

1 Schematic diagrams

Figure 1. STEVAL-MK1109D circuit schematic (1 of 11)

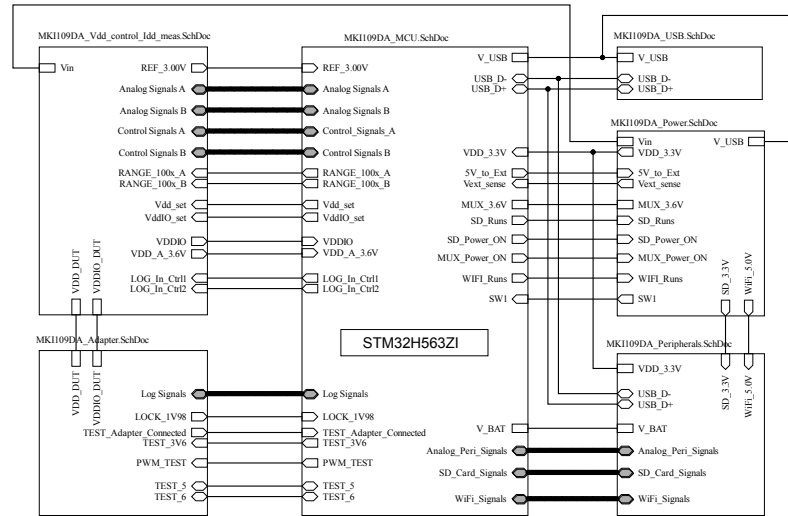


Figure 2. STEVAL-MKI109D circuit schematic (2 of 11)
Power & Reference for Idd measurement

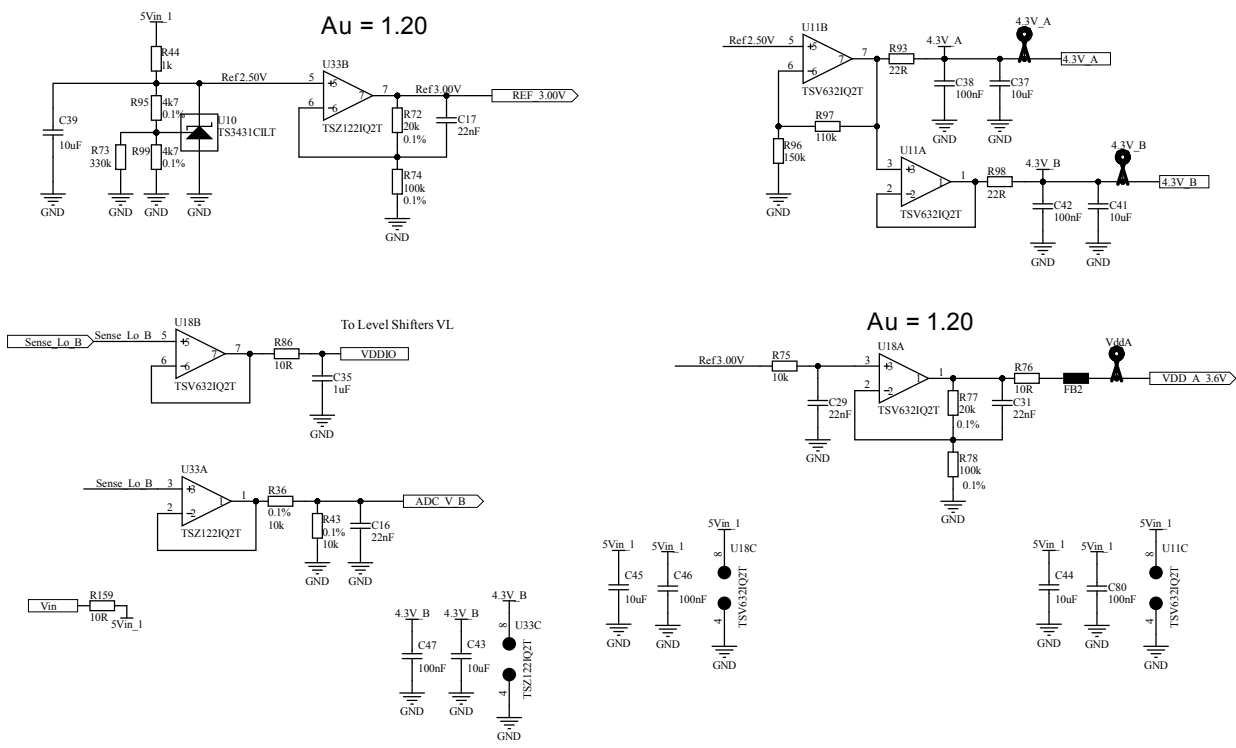


Figure 3. STEVAL-MKI109D circuit schematic (3 of 11)
V1 - Dual Channel Idd measurement - Iin

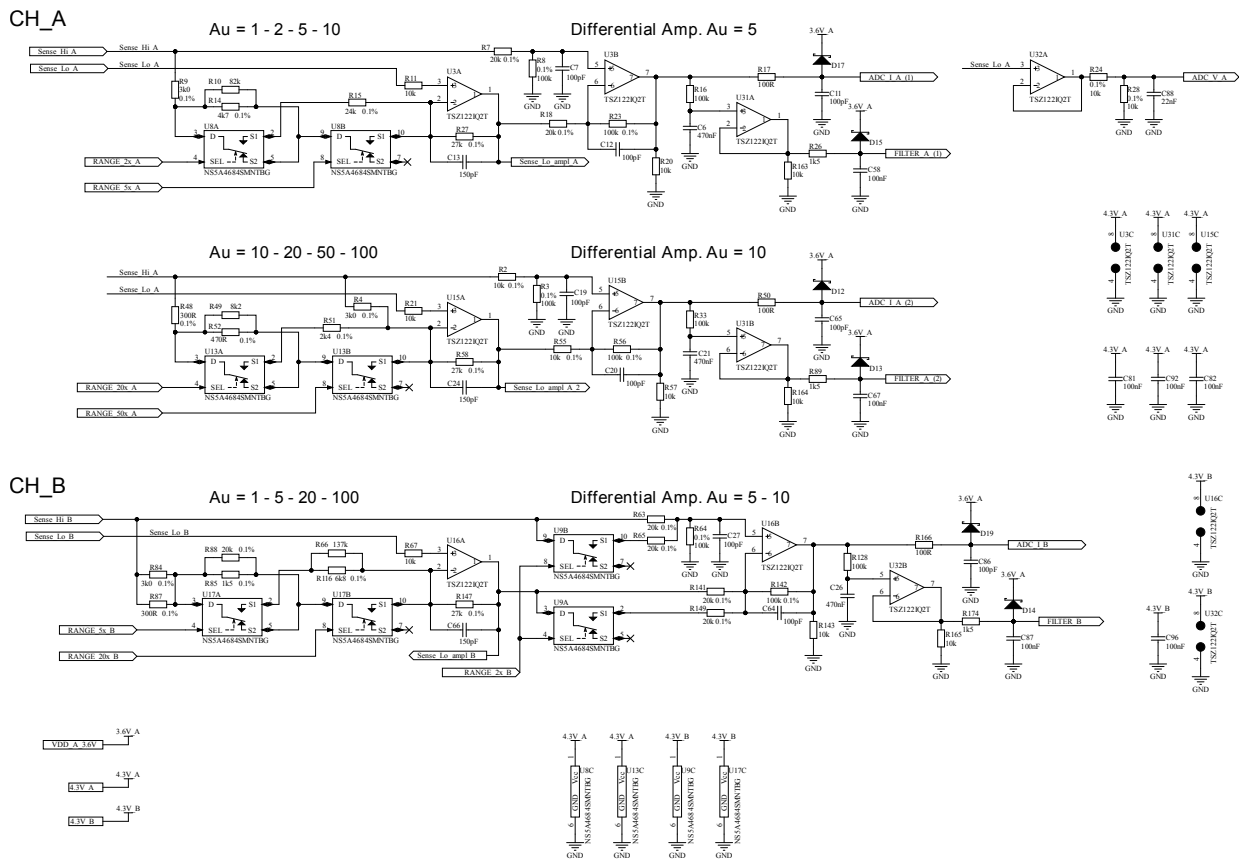


Figure 4. STEVAL-MKI109D circuit schematic (4 of 11)

I_{dd} measurement - log

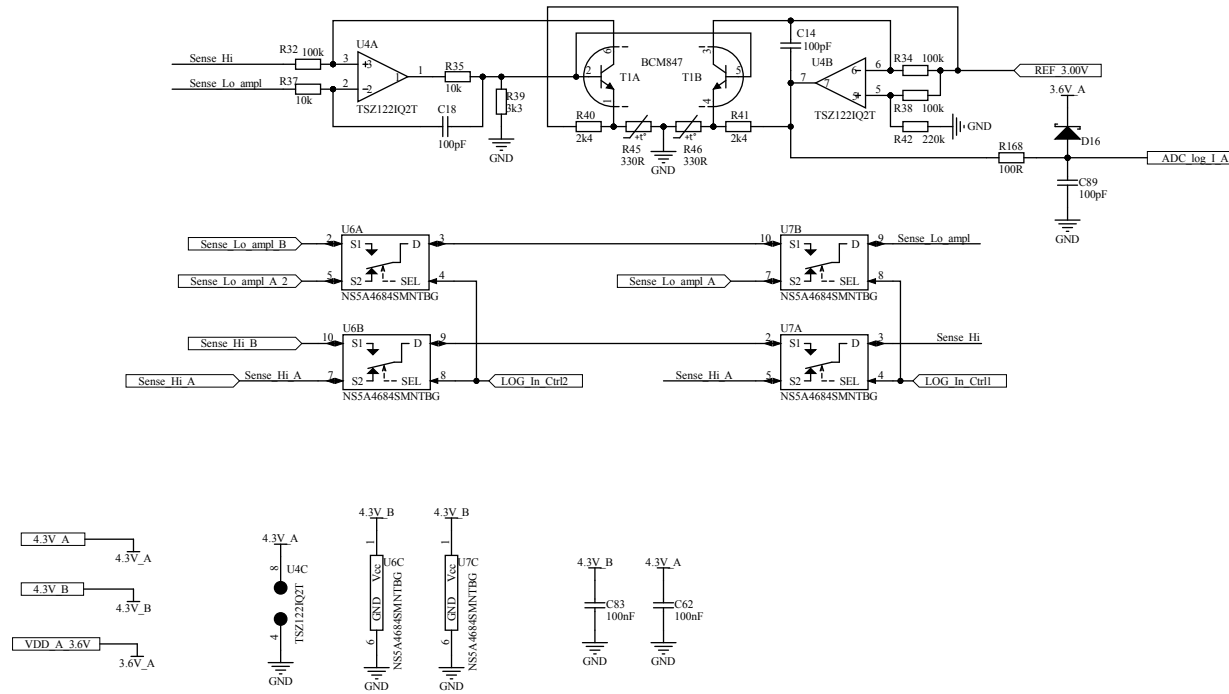


Figure 5. STEVAL-MKI109D circuit schematic (5 of 11)

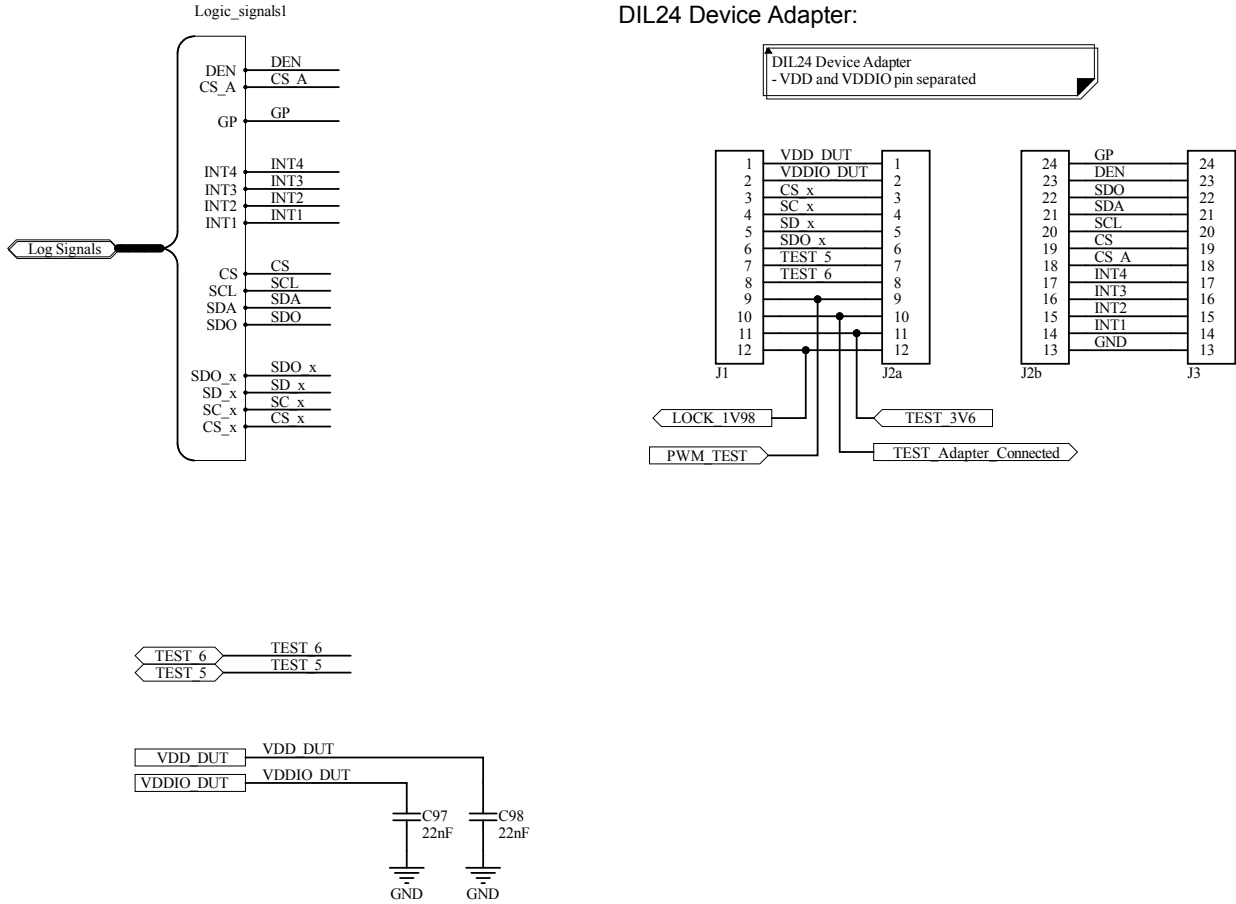


Figure 6. STEVAL-MKI109D circuit schematic (6 of 11)

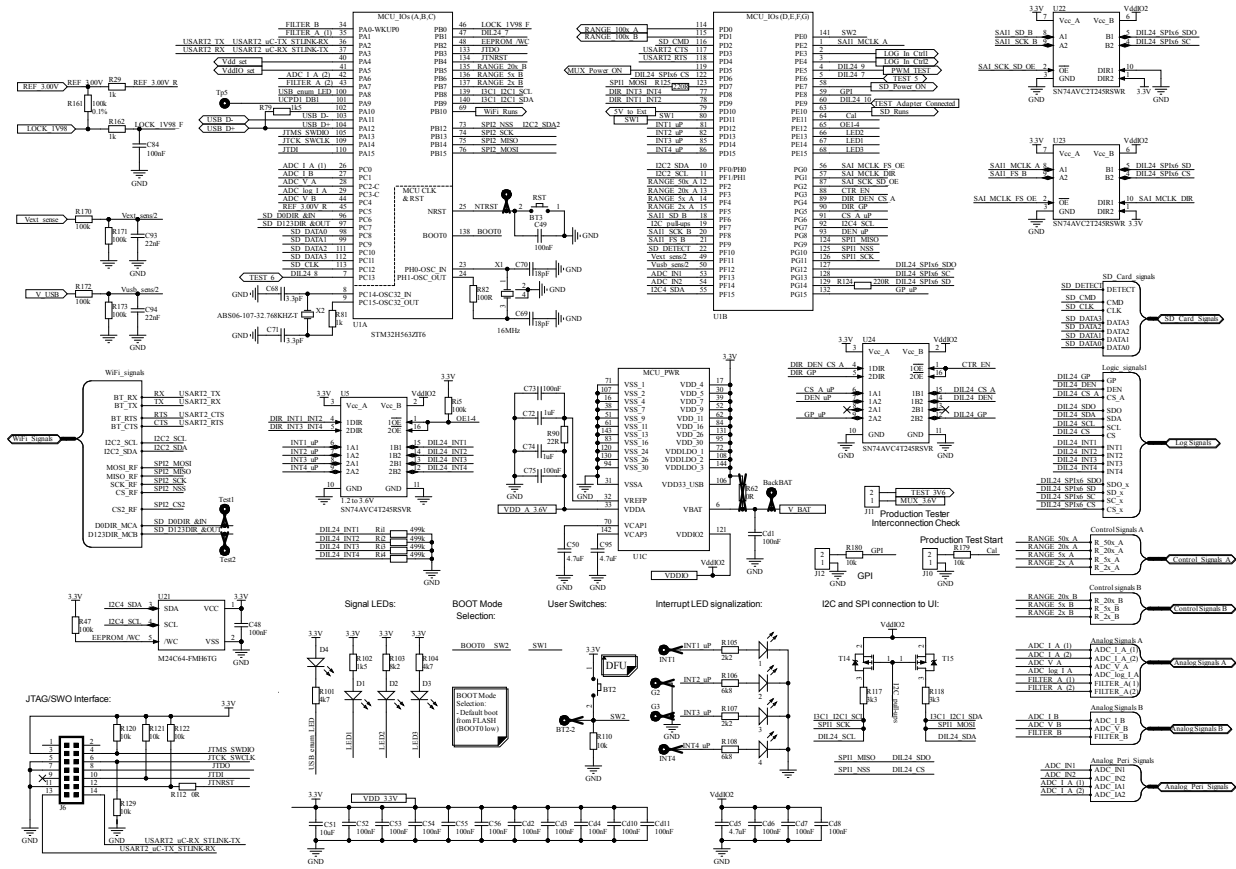


Figure 7. STEVAL-MKI109D circuit schematic (7 of 11)

USB Connection:

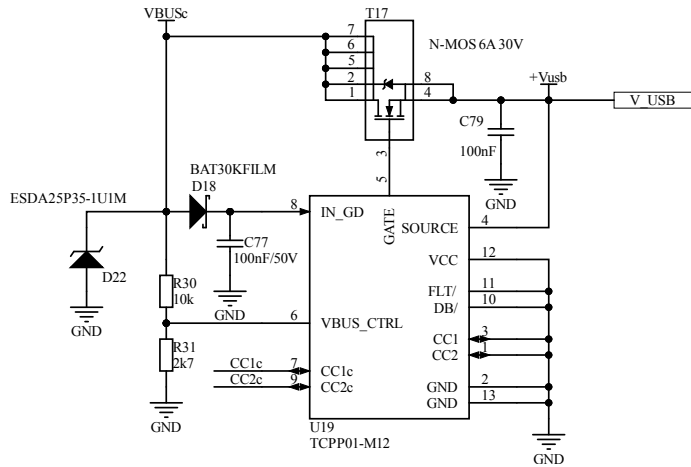
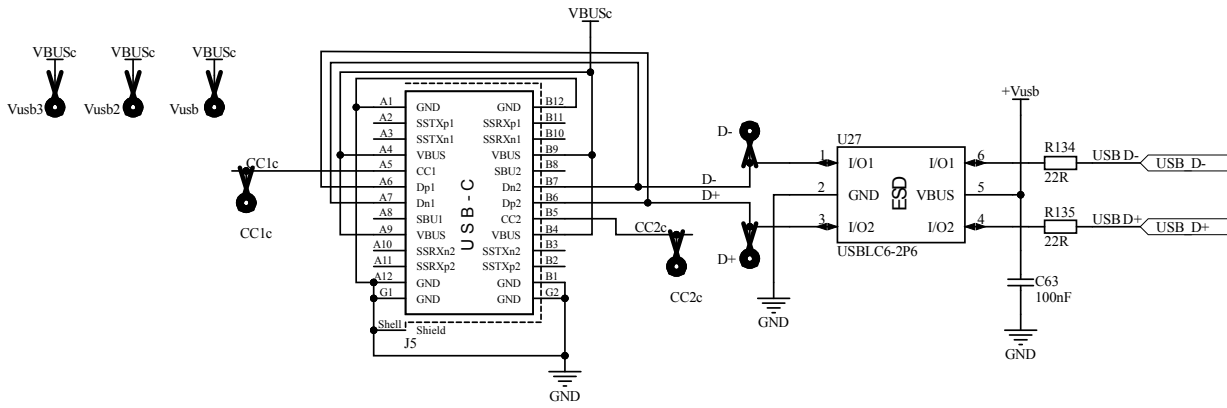


Figure 8. STEVAL-MKI109D circuit schematic (8 of 11)

Power Supply:

Power Supply:
-VDD 3.3V ... Power supply for micro
-Vin ... 5V for Idd meas. analog circuits
& VDD_DUT/VDDIO_DUT

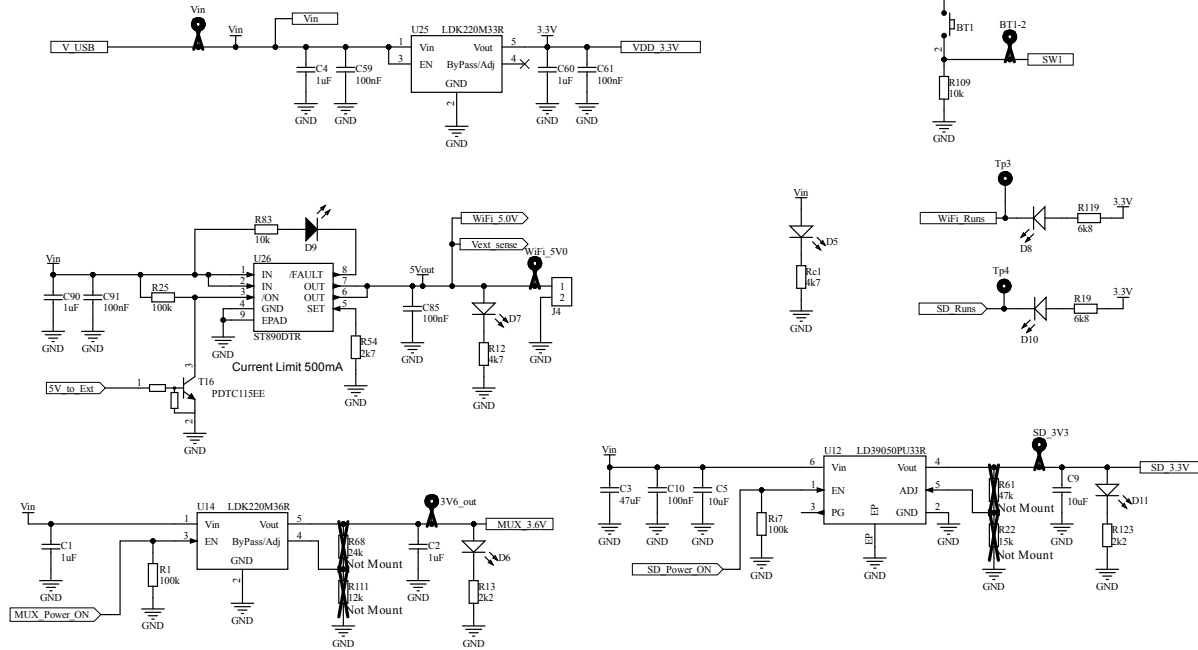


Figure 9. STEVAL-MKI109D circuit schematic (9 of 11)

Dual Channel Controlled Power Supply

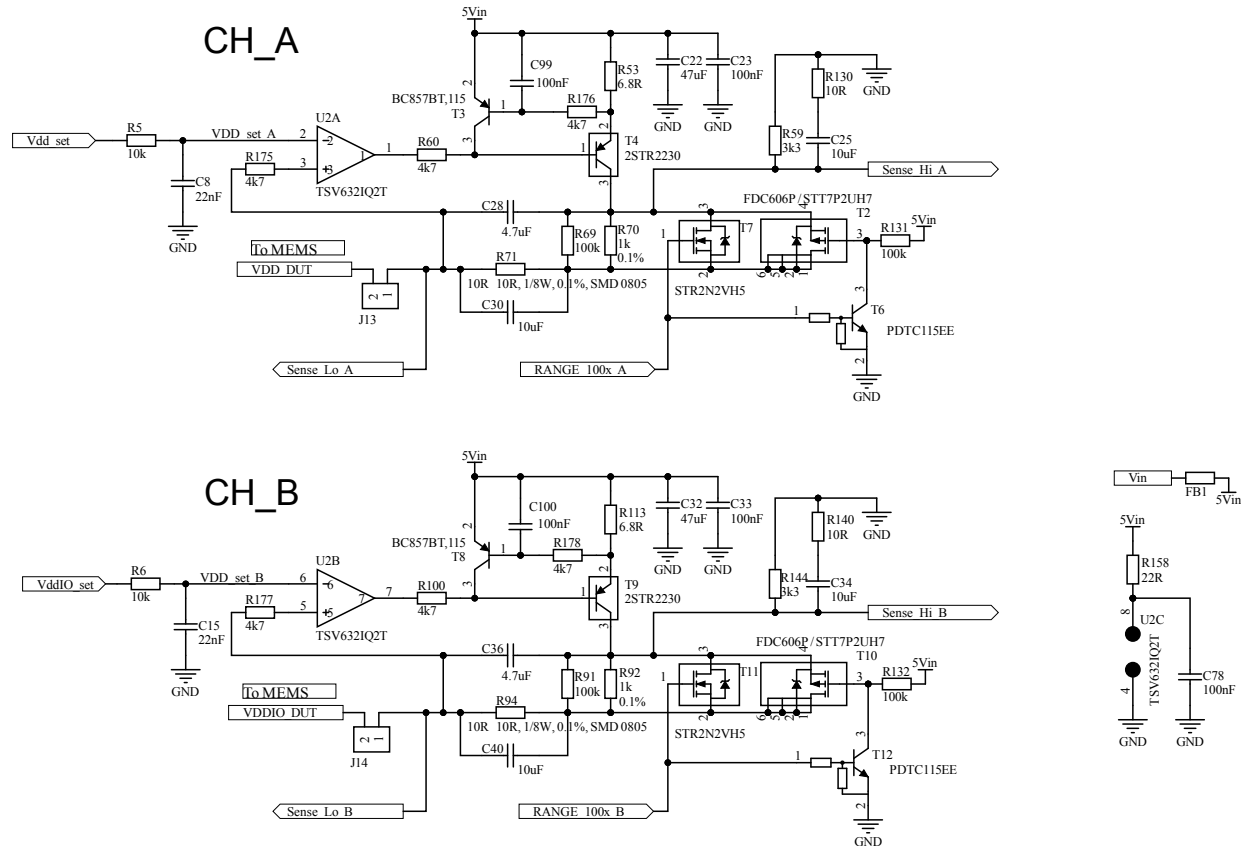


Figure 10. STEVAL-MKI109D circuit schematic (10 of 11)

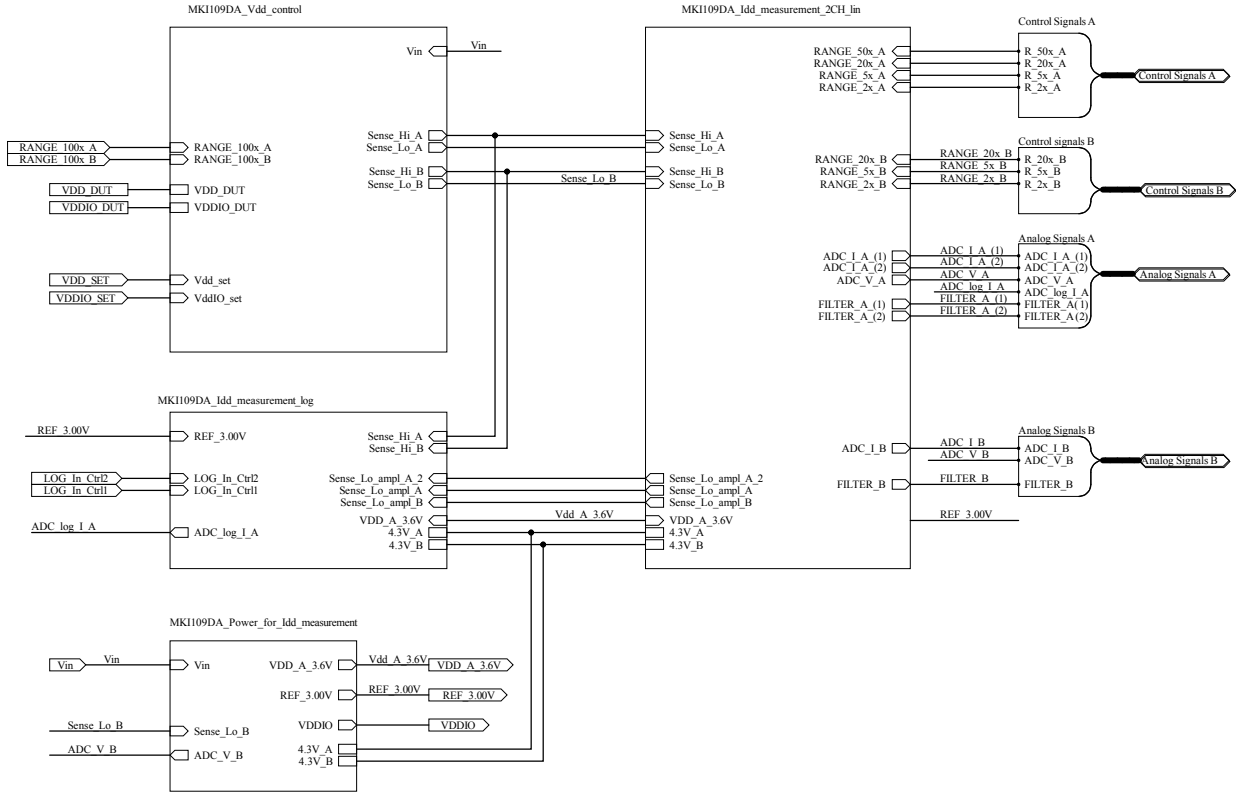
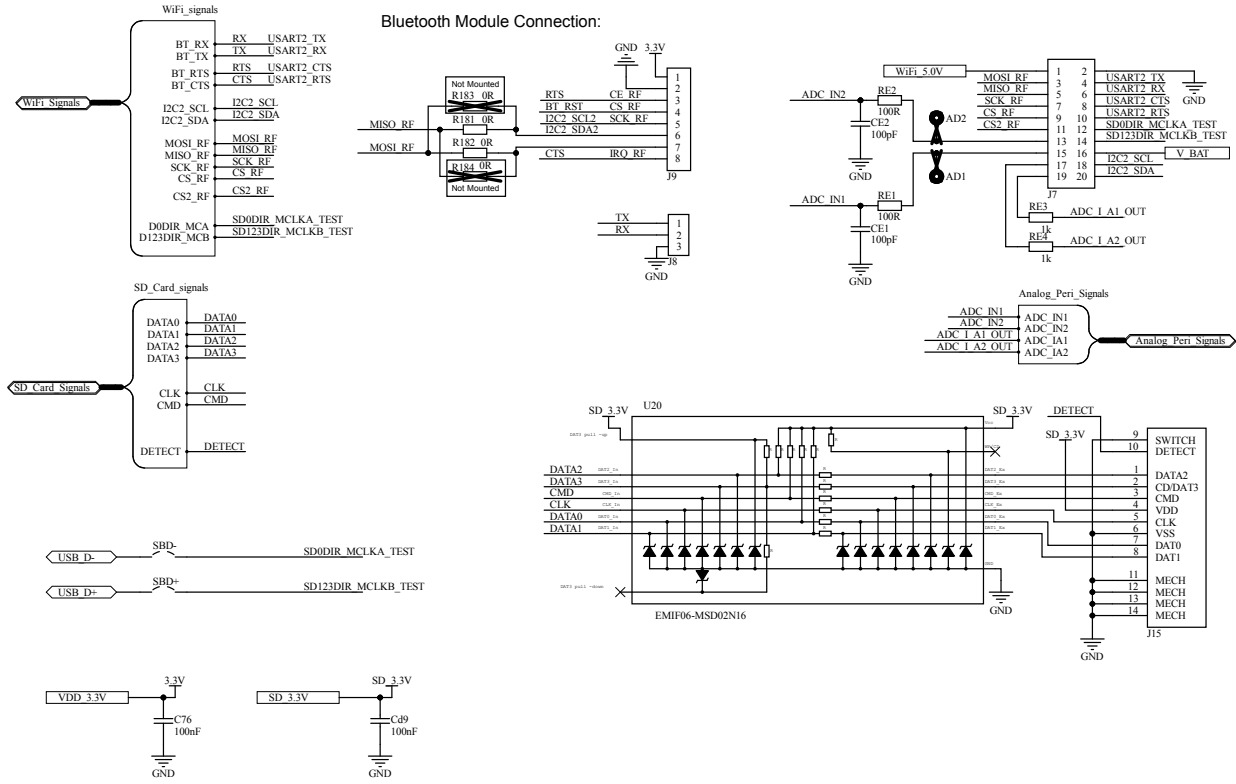


Figure 11. STEVAL-MKI109D circuit schematic (11 of 11)



Revision history

Table 1. Document revision history

Date	Revision	Changes
24-Sep-2024	1	Initial release.
20-Jan-2025	2	Updated description in cover page.

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