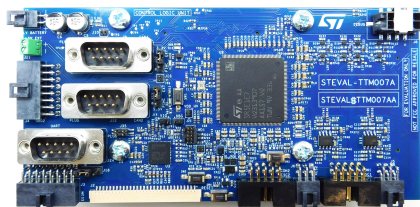


Control board for automotive motor control applications



Features

- Control board designed for high-voltage motor control application like traction inverter
- Designed for ASIL D applications
- Based on ASIL D devices: SR5E1E7 MCU (2x 32-bits Arm Cortex(R)-M7) and SPSB100 power management IC with integrated watchdog for safety
- Supported in [StellarStudio](#) MC configurator tool
- A full set of motor position feedback acquisition allows to address and to manage the most advanced F.O.C. algorithms
- Full compatibility with different gate driver boards for traction inverters: STEVAL-APD03ACB, STEVAL-APD04ACB, and STEVAL-APD05ACB
- Provided with OBD2 port for vehicle interface, two CAN flexible data-rate (CAN-FD) and one UART ports

Description

The [STEVAL-TTM007A](#) has been specifically designed for high-voltage motor control applications like traction inverter and for ASIL D applications.

The board hosts a new concept of control logic unit based on ASIL D SR5E1E7 MCU with 2x 32-bits Arm Cortex®-M7 in eTQFP176 package and ASIL-D SPSB100 power management IC with integrated watchdog for safety (AEC-Q100 qualified ISO 26262).

The [STEVAL-TTM007A](#) can be supplied by 12 V input (aux battery) or by 5 V input bypassing the integrated power management IC (PMIC).

The board is provided with a 100-pin motor control connector fully compatible with several gate driver boards for traction inverter applications up to 350 kW, like the [STEVAL-APD03ACB](#) and the [STEVAL-APD05ACB](#) based on the galvanically isolated gate driver L9502E, the [STEVAL-APD04ACB](#) based on STGAP4S.

This motor control connector supports the dual motors, the six phase motors, the externally excited synchronous motor (EESM) and provides a redundancy in the resolver feedback circuitry conditioning.

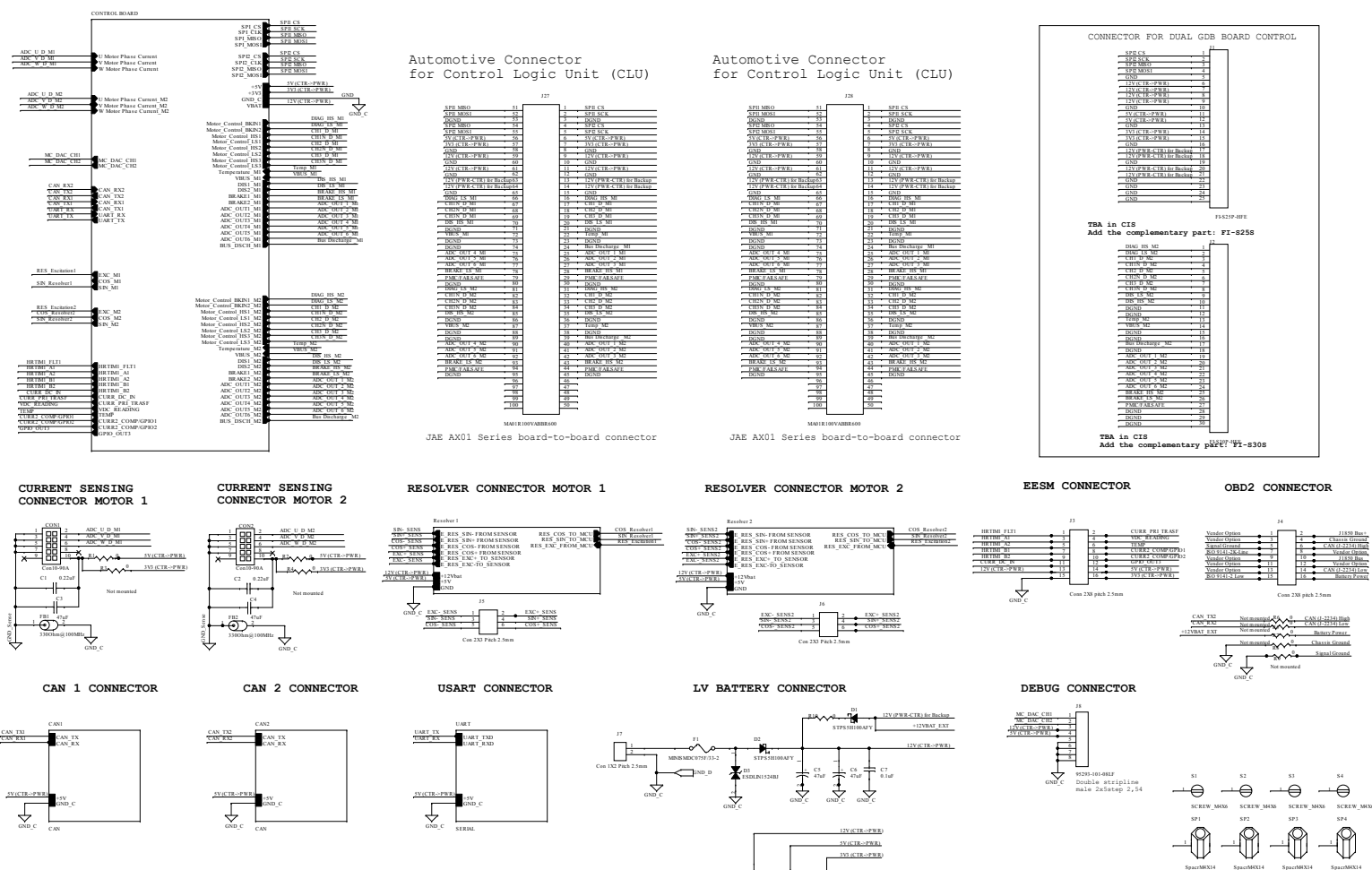
The [STEVAL-TTM007A](#) hosts many connectors: Two CAN-FD, one UART, one OBD2, and a huge quantity of external connections for digital outputs/inputs and analog outputs/inputs with optimized filters for signal conditioning.

Product summary	
Control board for automotive motor control applications	STEVAL-TTM007A
ASIL D gate driver board for traction inverter in EV/HEV applications	STEVAL-APD03ACB
Gate driver board for traction inverter in EV/HEV applications	STEVAL-APD04ACB
ASIL D gate driver board for traction inverter in EV/ HEV applications	STEVAL-APD05ACB
Applications	Traction inverters and OBC for powertrain architectures

Schematic diagrams



Figure 1. STEVAL-TTM007A schematic diagram (1 of 10)



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You should thoroughly validate and test any implementation of this design to confirm the functionality of the application.*

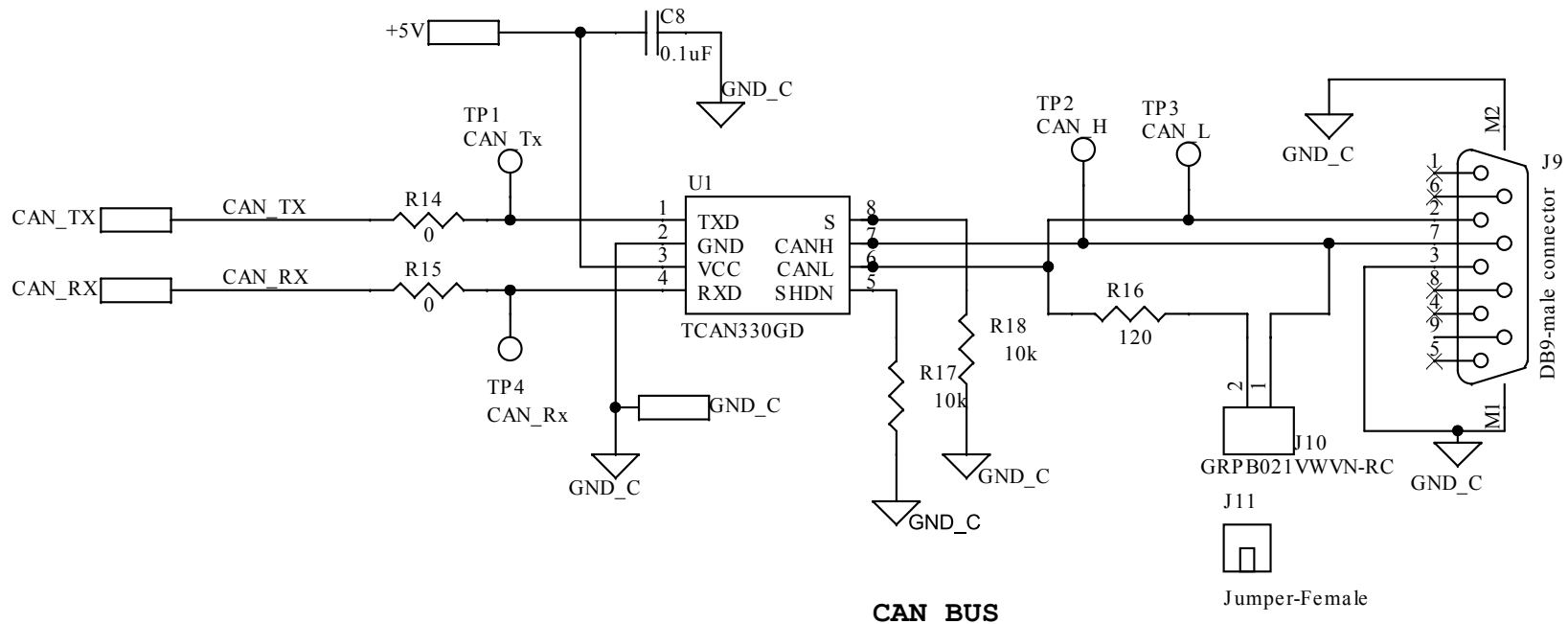


Figure 3. STEVAL-TTM007A schematic diagram (3 of 10)

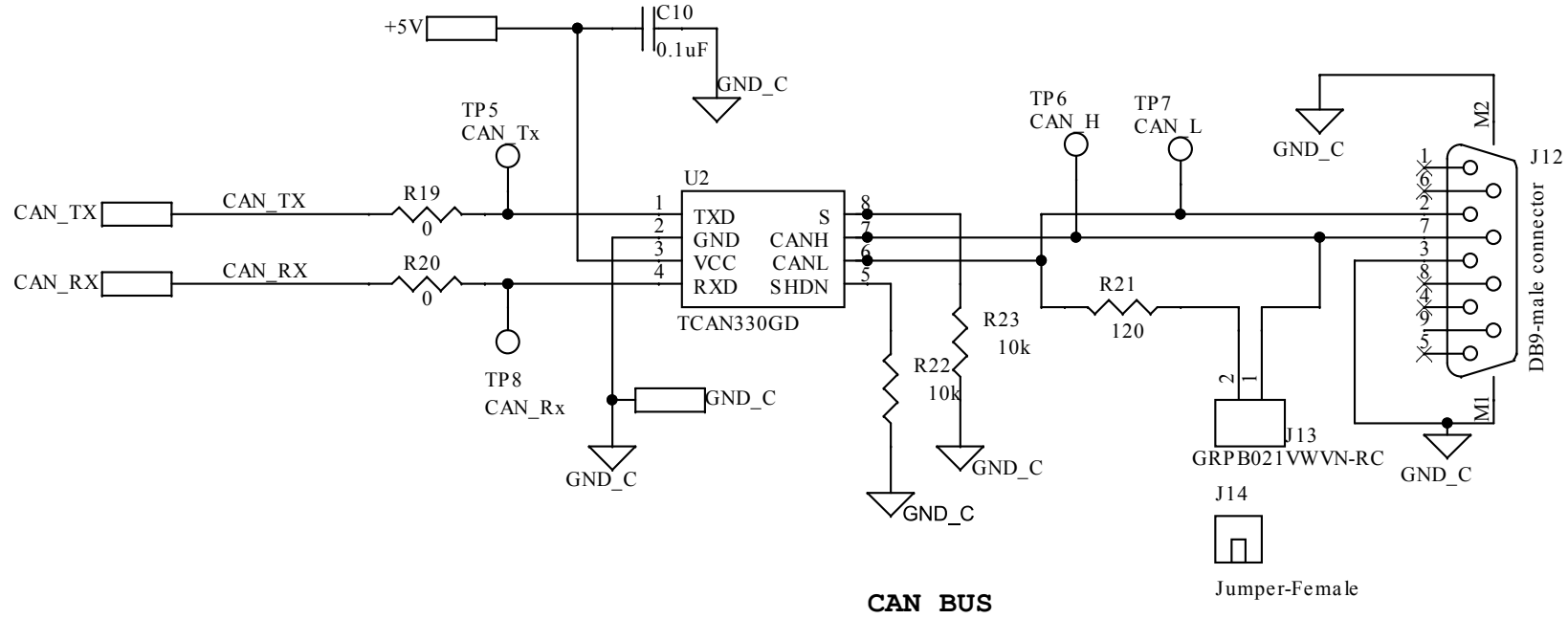


Figure 4. STEVAL-TTM007A schematic diagram (4 of 10)

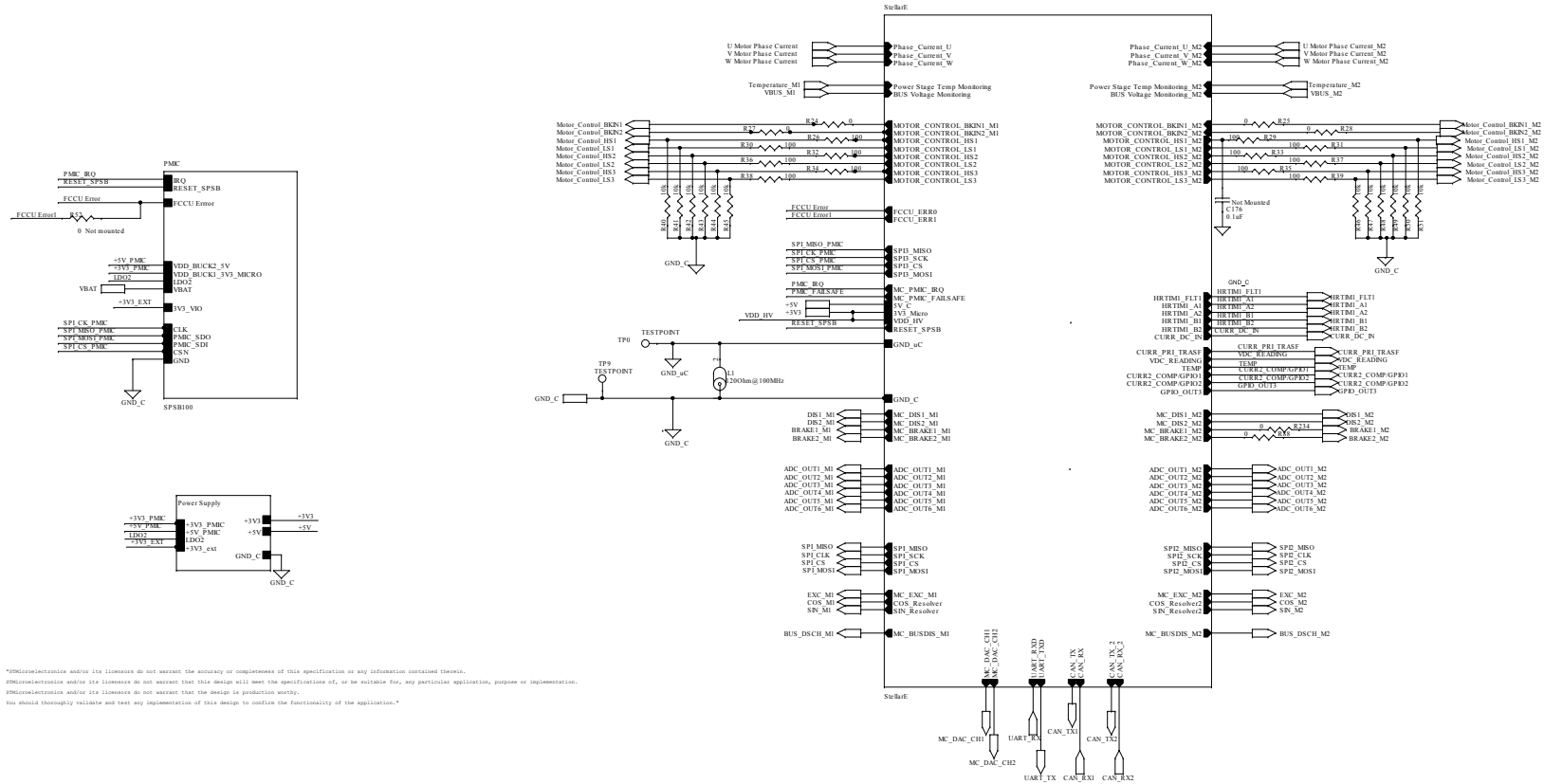




Figure 6. STEVAL-TTM007A schematic diagram (6 of 10)

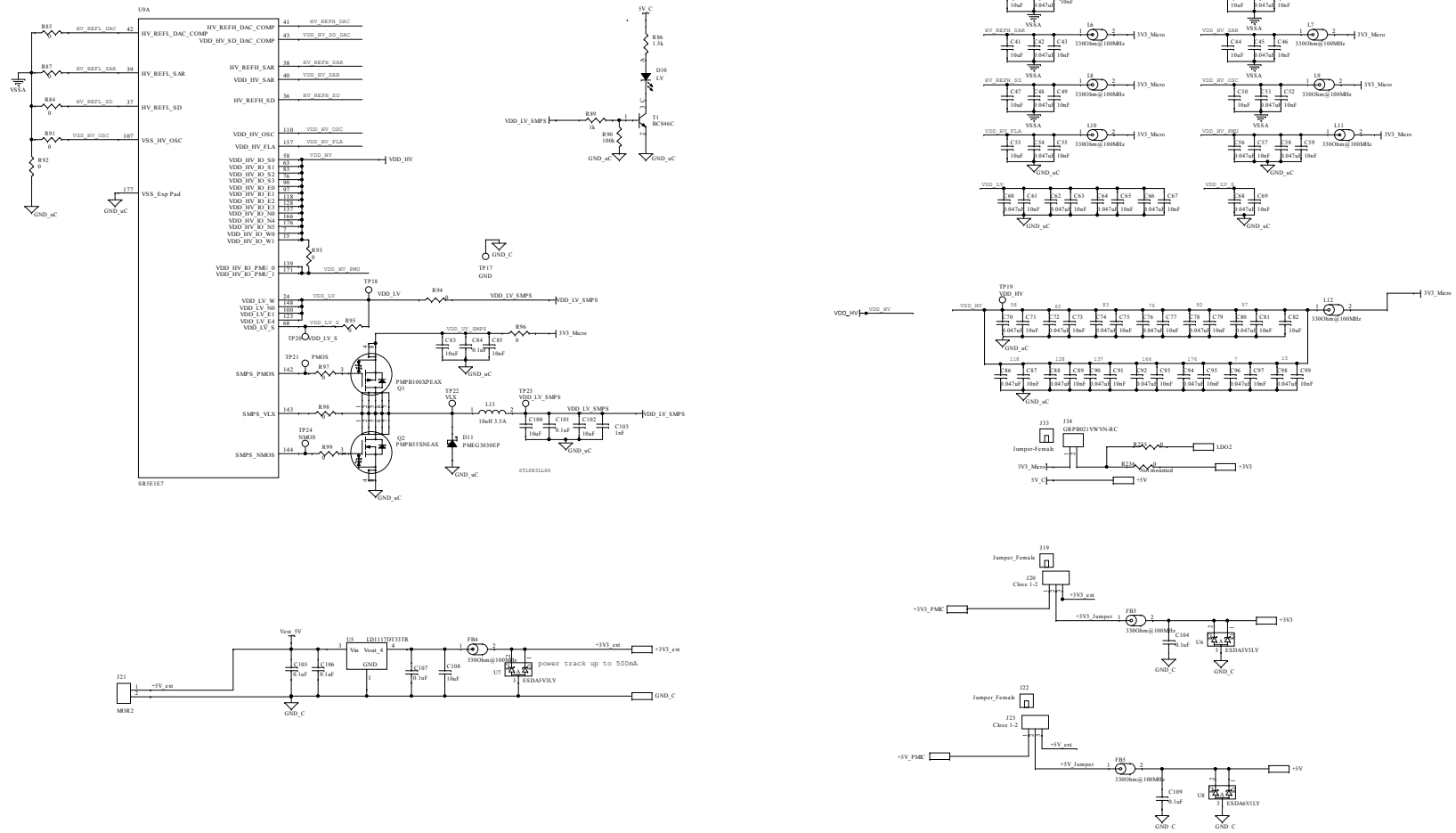
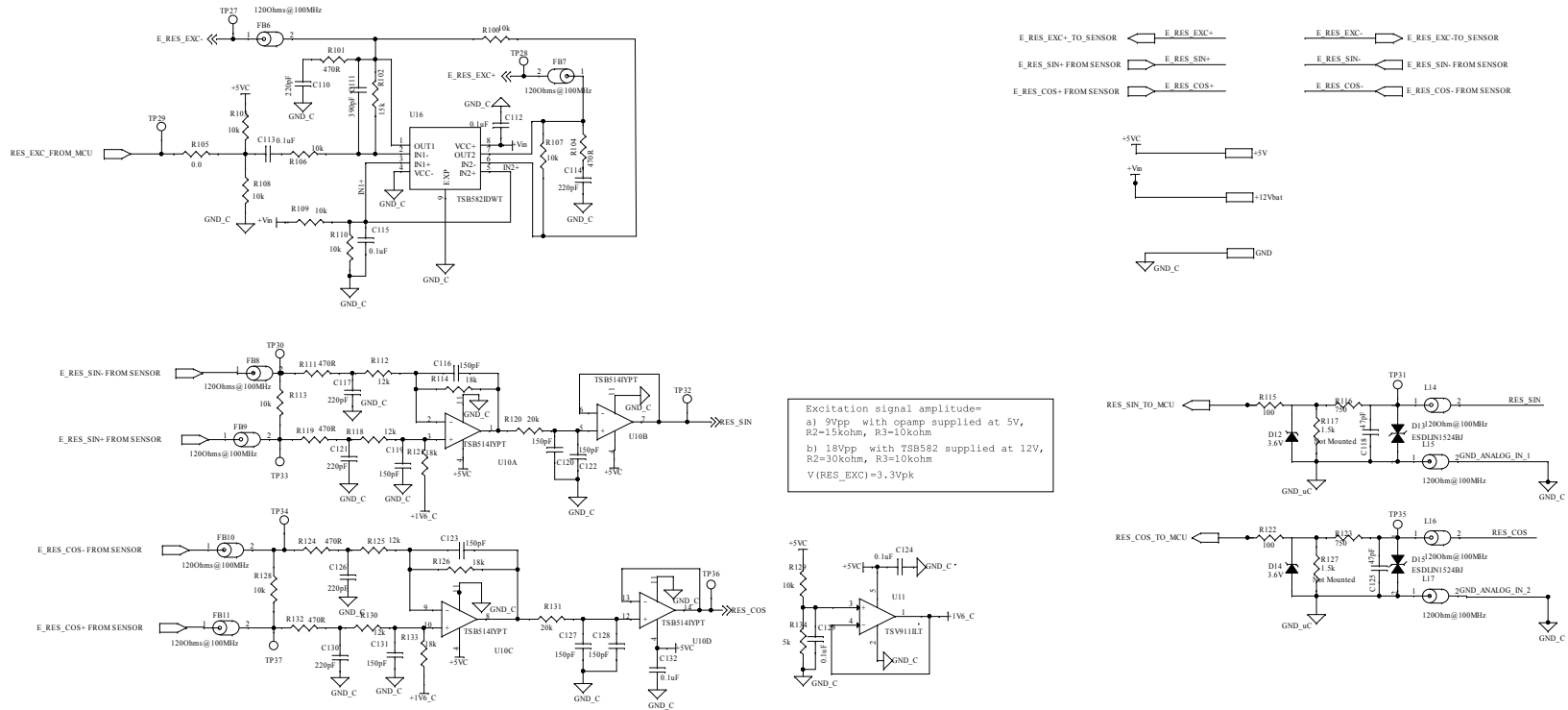


Figure 7. STEVAL-TTM007A schematic diagram (7 of 10)



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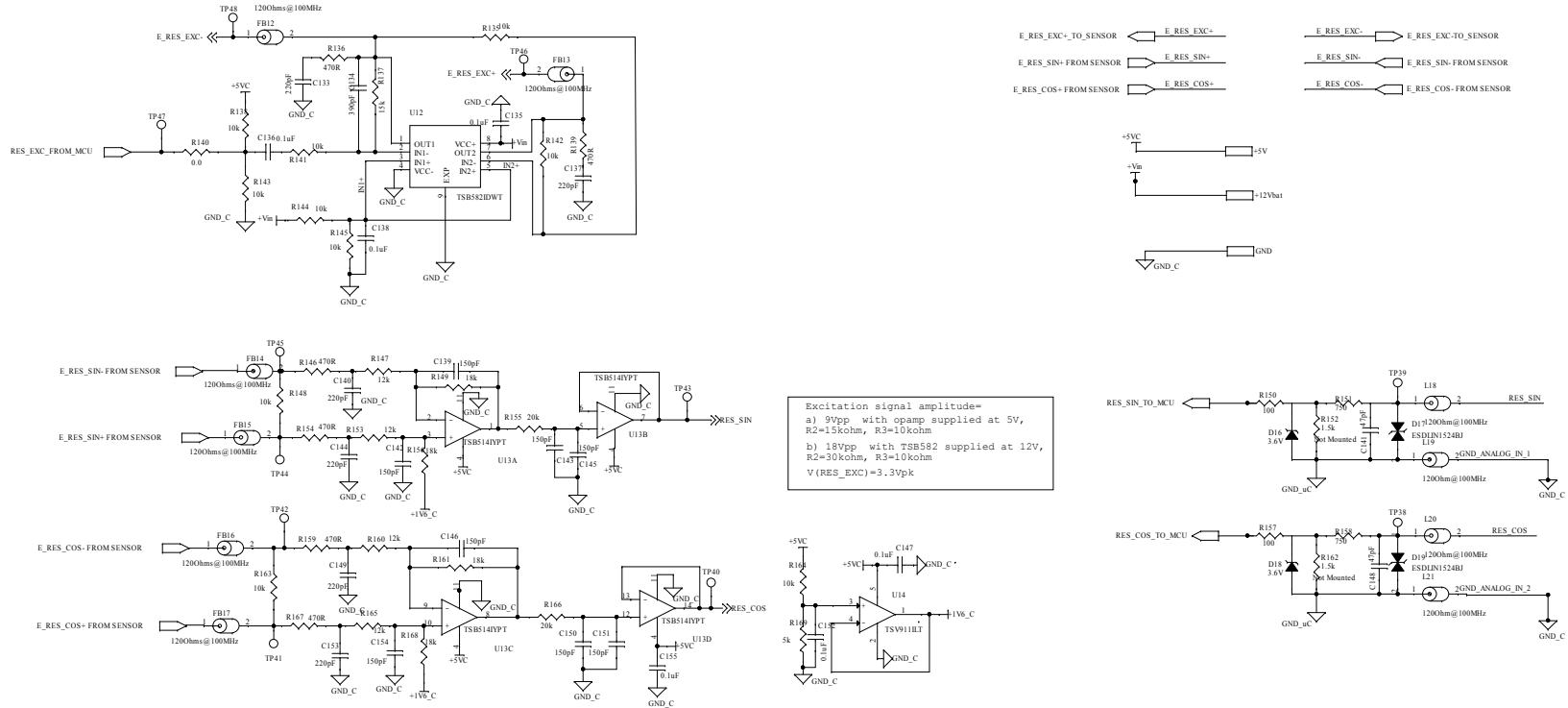
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Figure 8. STEVAL-TTM007A schematic diagram (8 of 10)



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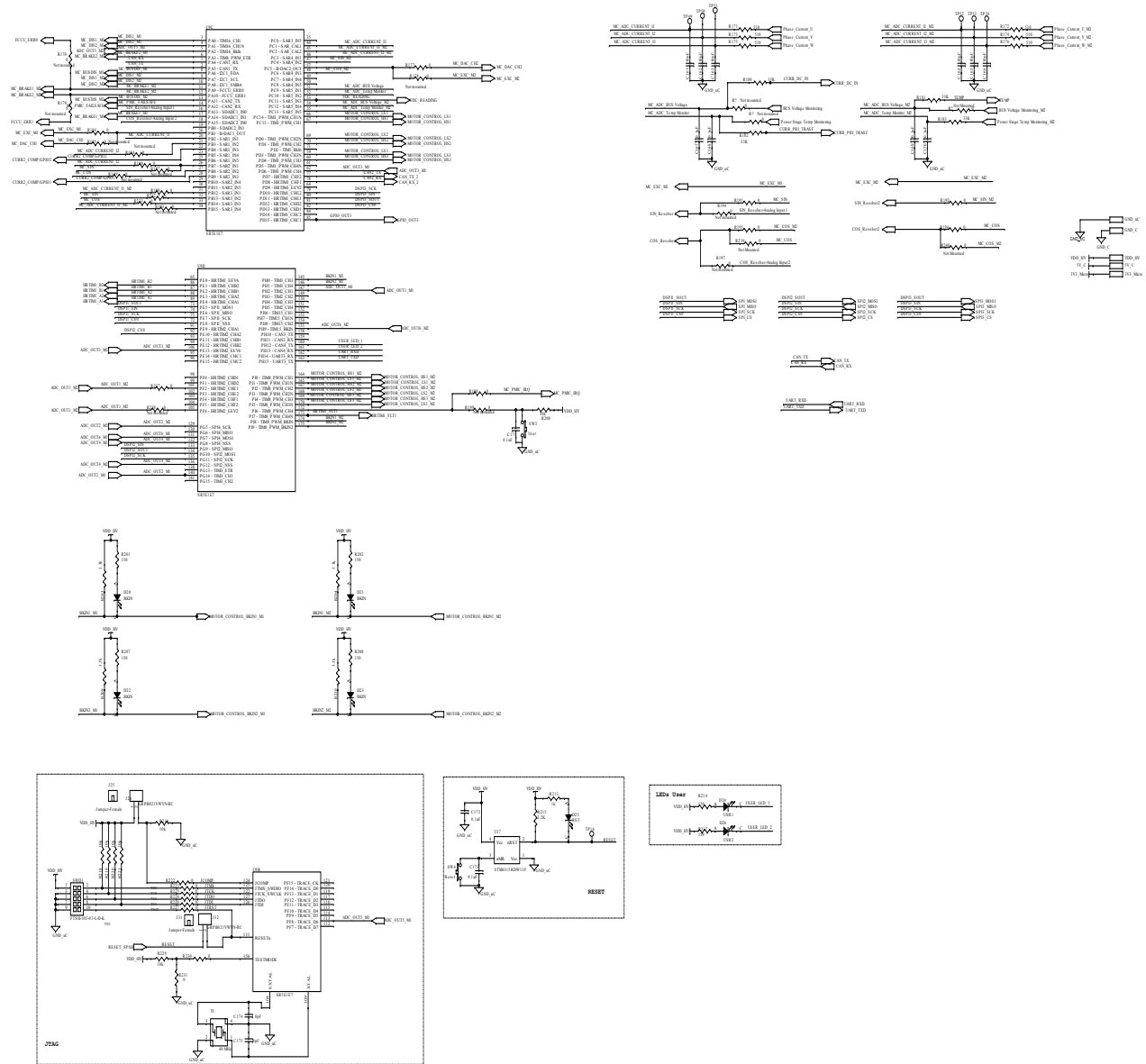
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Figure 10. STEVAL-TTM007A schematic diagram (10 of 10)



2 Board versions

Table 1. STEVAL-TTM007A versions

Finished good	Schematic diagrams	Bill of materials
STEVAL\$TTM007AA ⁽¹⁾	STEVAL\$TTM007AA schematic diagrams	STEVAL\$TTM007AA bill of materials

1. This code identifies the STEVAL-TTM007A evaluation board first version.

Revision history

Table 2. Document revision history

Date	Version	Changes
17-Sep-2024	1	Initial release.
26-Nov-2024	2	Updated, Features, Product summary and Description. Added references to STEVAL-APD03ACB, STEVAL-APD04ACB and STEVAL-APD05ACB.

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