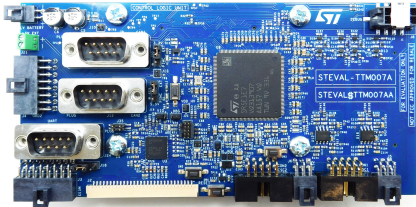


Control board for automotive motor control applications



Features

- 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)
- Supported by the [StellarStudio](#) MC configurator tool
- Motor control connector with 100 pins to support or different kind of motor control application like the dual motor, the six phase motor, the EESM (externally excited synchronous motor and providing a redundancy in the resolver feedback circuitry conditioning)
- A full set of motor position feedback acquisition allows to address and manage all the most advanced F.O. C: algorithms
- 2x CAN-FD and 1x UART communication port
- OBD2 port for vehicle interface
- Full compatibility with different gate driver board for traction inverter up to 350 kW like the STEVAL -03ACB and the STEVAL-05 ACB based on the galvanically isolated gate driver L9502E and the STEVAL-04ACB with the STGAP4S

Product summary	
Control board for automotive motor control applications	STEVAL-TTM007A
Applications	Traction inverters and OBC for powertrain architectures

Description

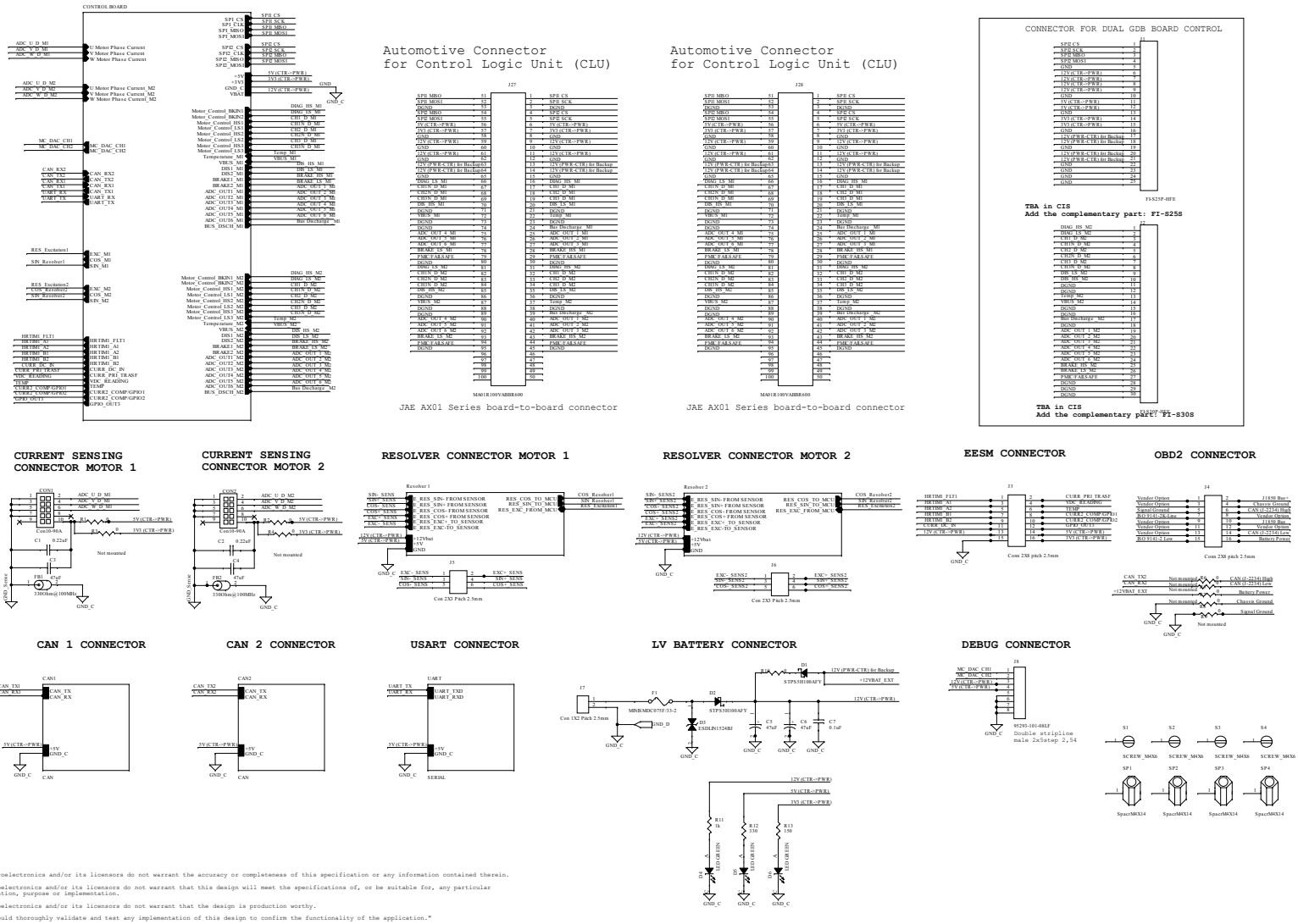
The [STEVAL-TTM007A](#) has been specifically designed for high voltage motor control applications like traction inverter and for ASIL D applications.

The [STEVAL-TTM007A](#) can be supplied by the 12V input (aux battery) or by means of a 5V input by passing the PMIC for the voltage generation.

The [STEVAL-TTM007A](#) hosts many connectors offering a huge quantity of external connections for digital outputs/inputs and analog outputs/inputs with optimized filters for signal conditioning

1 Schematic diagrams

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



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Figure 2. STEVAL-TTM007A schematic diagram (2 of 10)

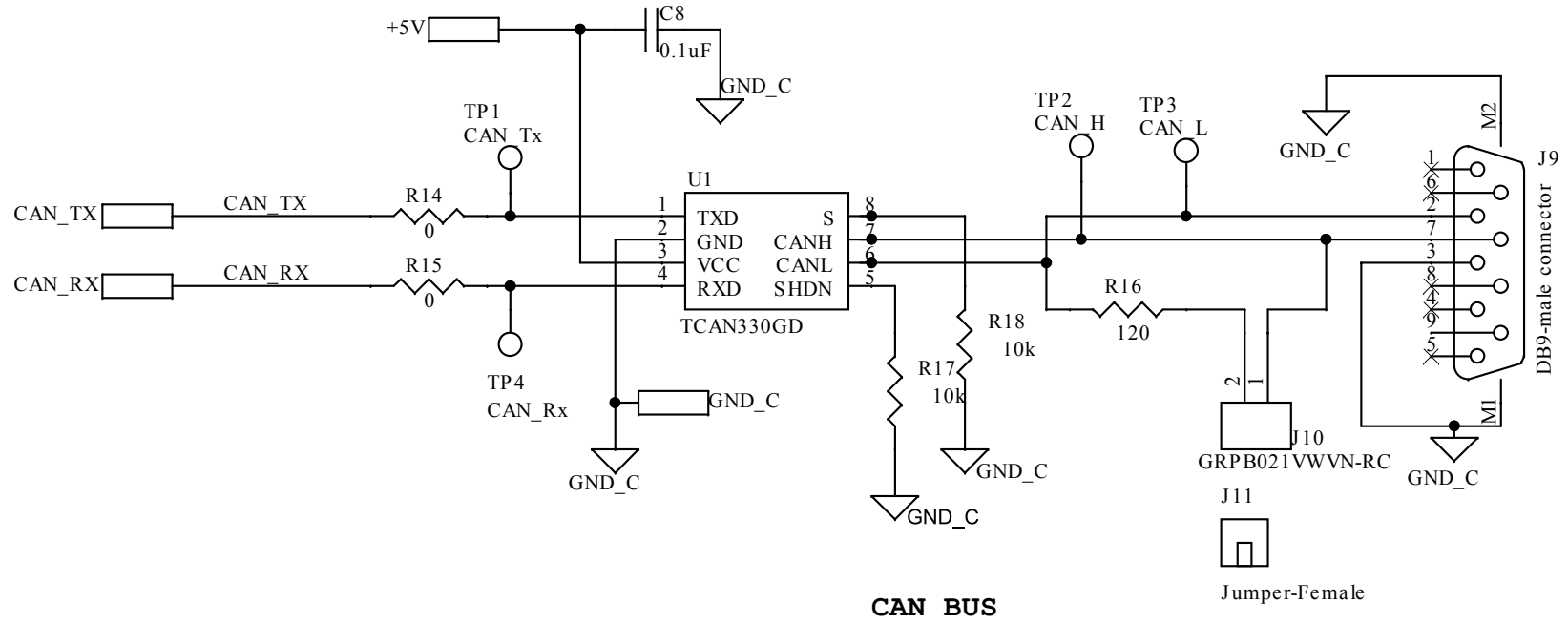


Figure 3. STEVAL-TTM007A schematic diagram (3 of 10)

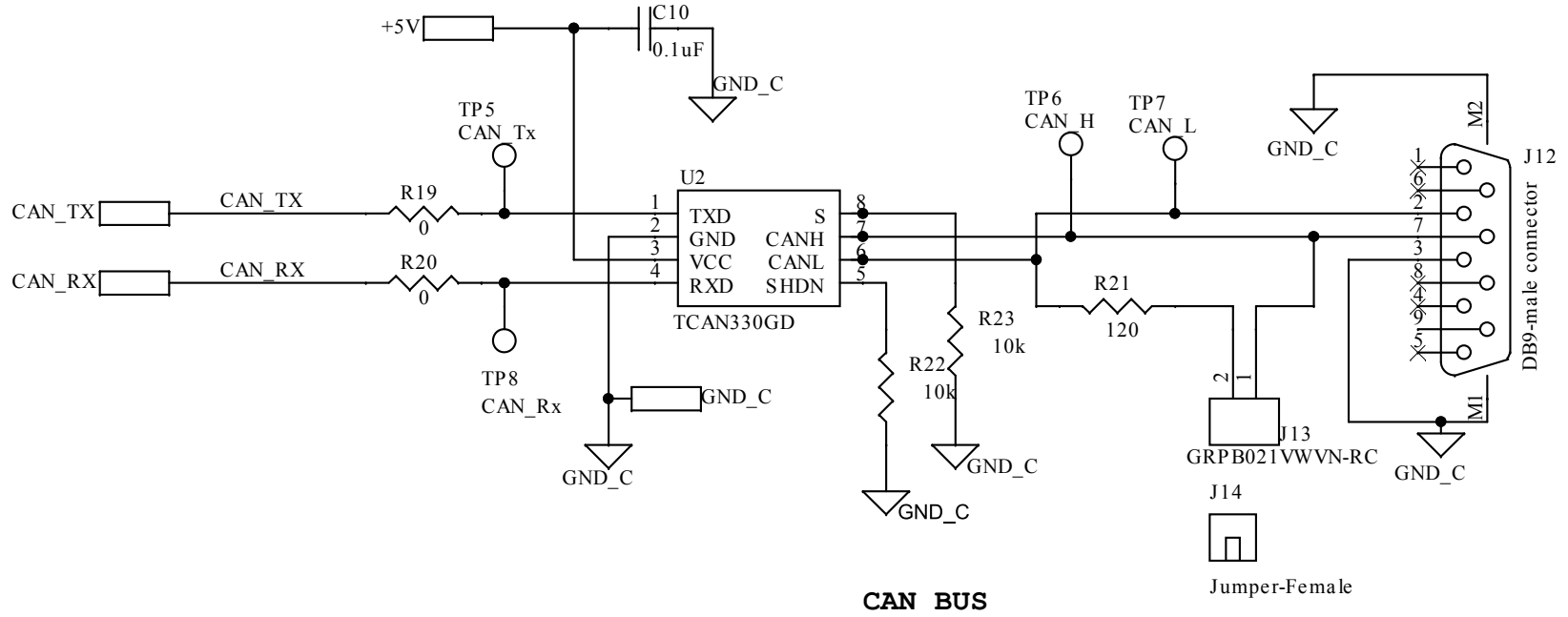
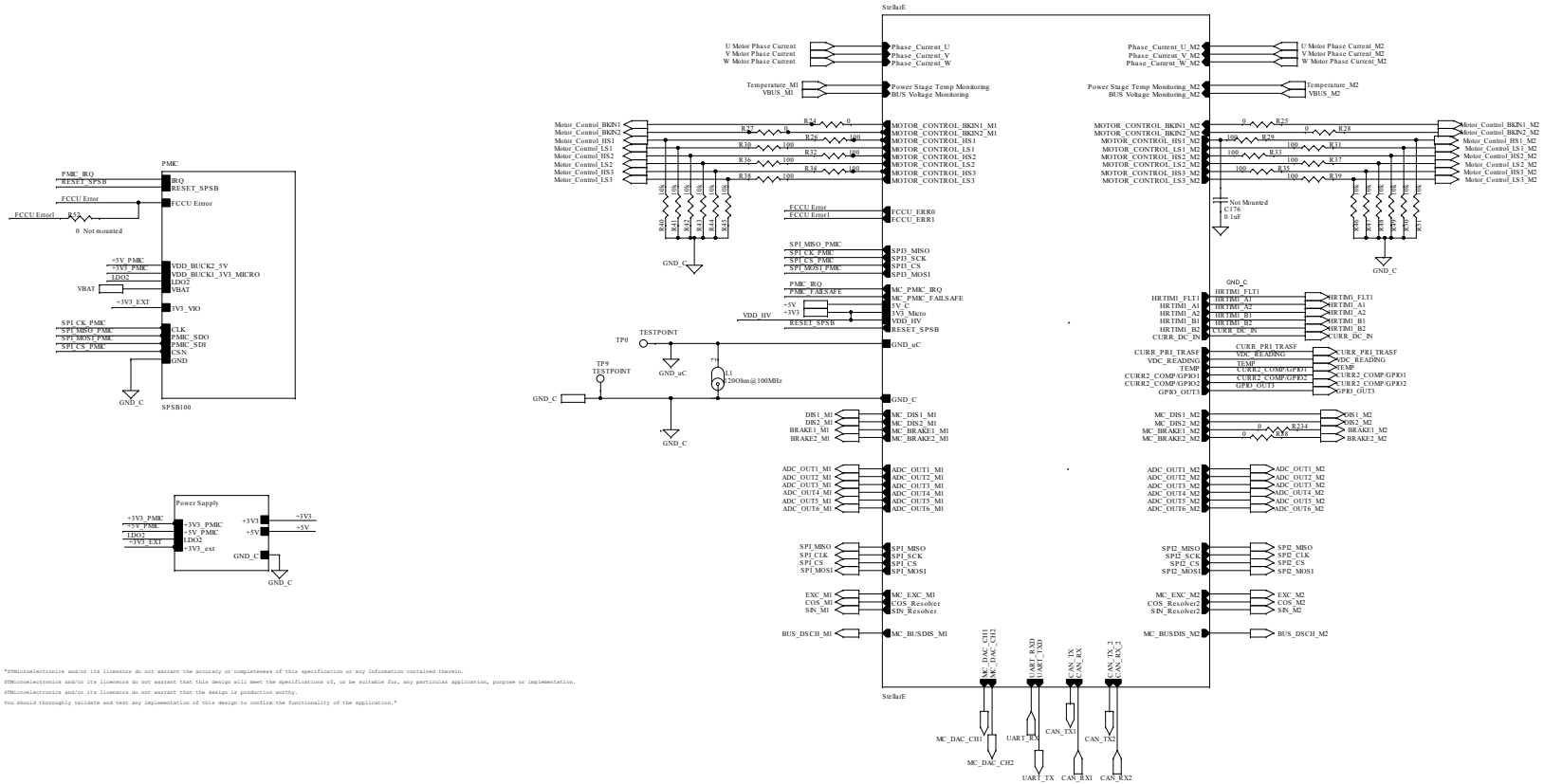


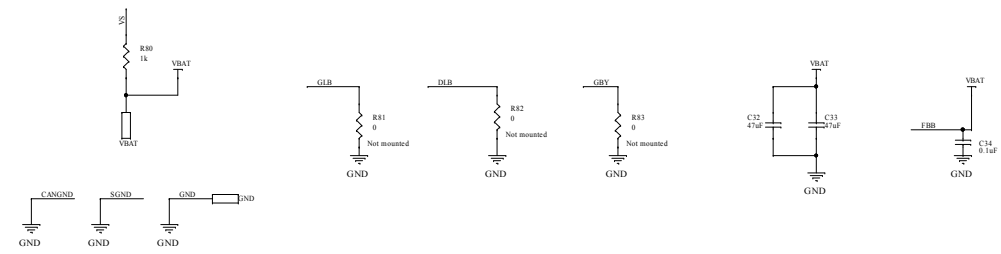
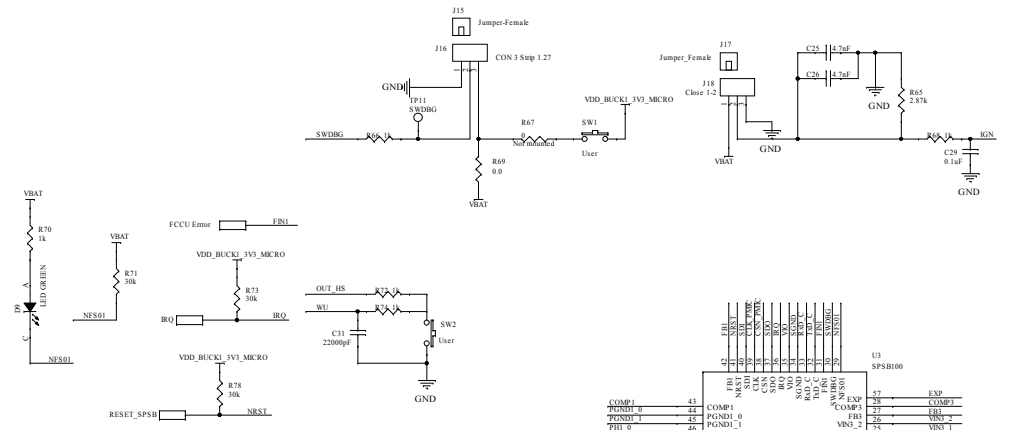
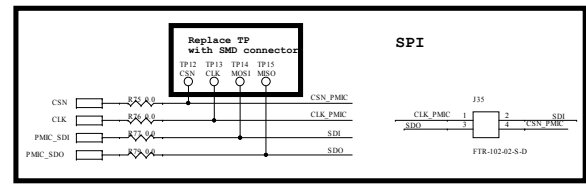
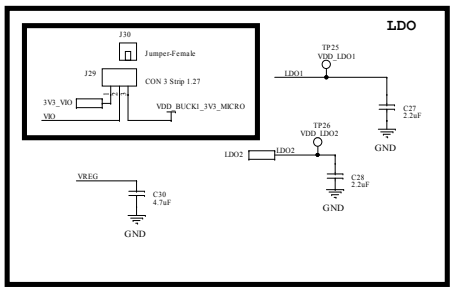
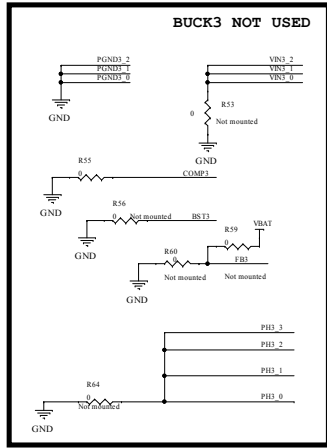
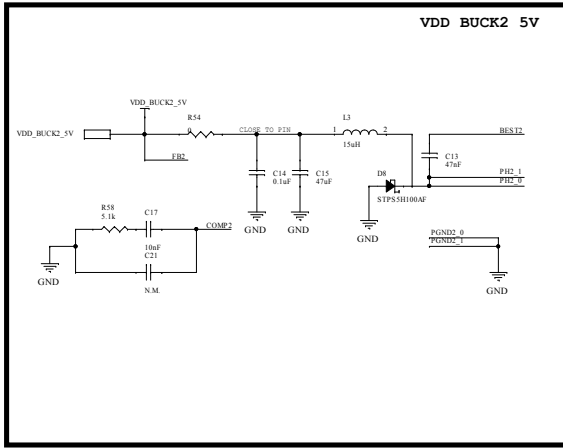
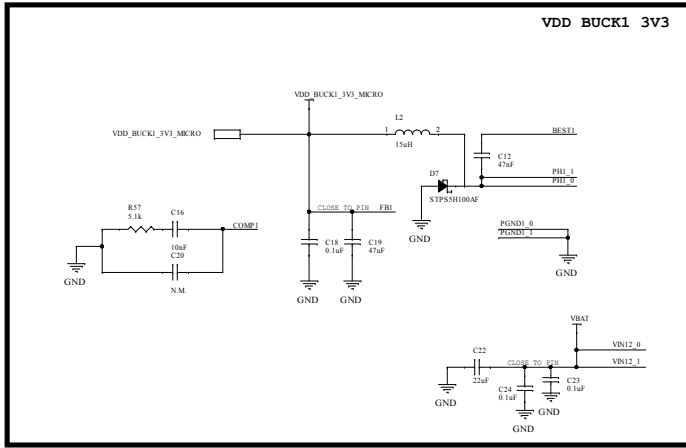
Figure 4. STEVAL-TTM007A schematic diagram (4 of 10)



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Figure 5. STEVAL-TTM007A schematic diagram (5 of 10)



U3	SPS8100	U3	SPS8100
COMP1	43	EXP	27
PGND1_0	44	COMP2	27
PGND1_1	45	FB1	28
PH1_0	46	VIN3_1	25
PH1_1	47	VIN3_2	23
PH1_2	48	VIN3_3	21
PH1_3	49	PH3_0	21
VIN12_0	50	PH3_1	20
VIN12_1	51	PH3_2	19
VIN12_2	52	PH3_3	18
PH2_0	53	PGND3_0	17
PH2_1	54	PGND3_1	16
PGND2_0	55	PGND3_2	15
PGND2_1	56	PGND3_3	14
COMP2	56	COMP2	13



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

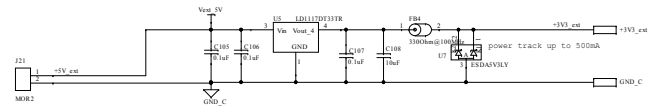
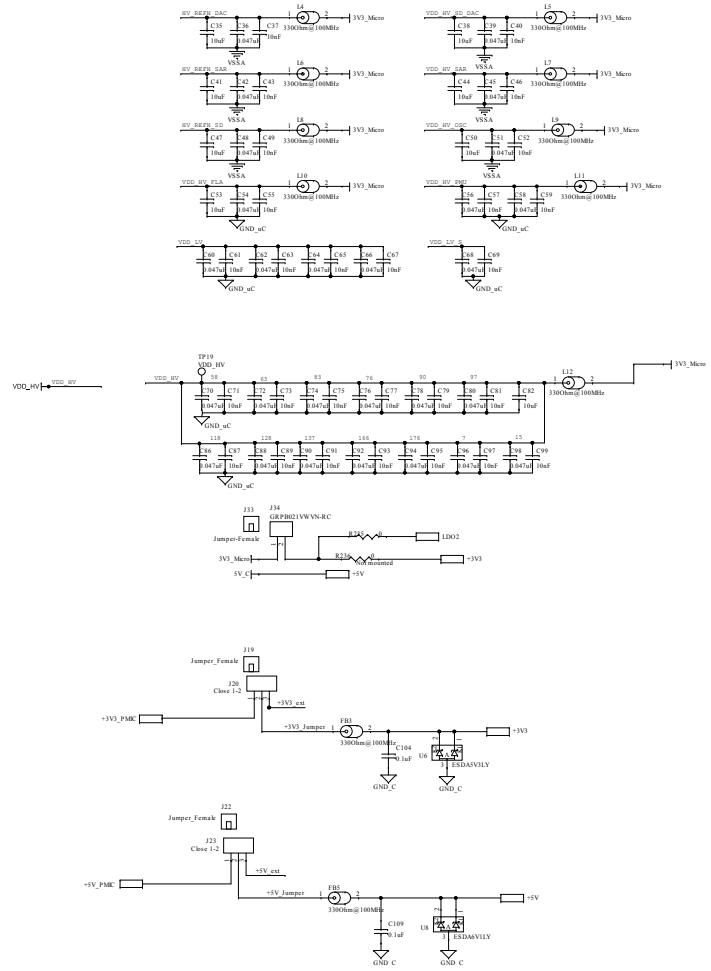
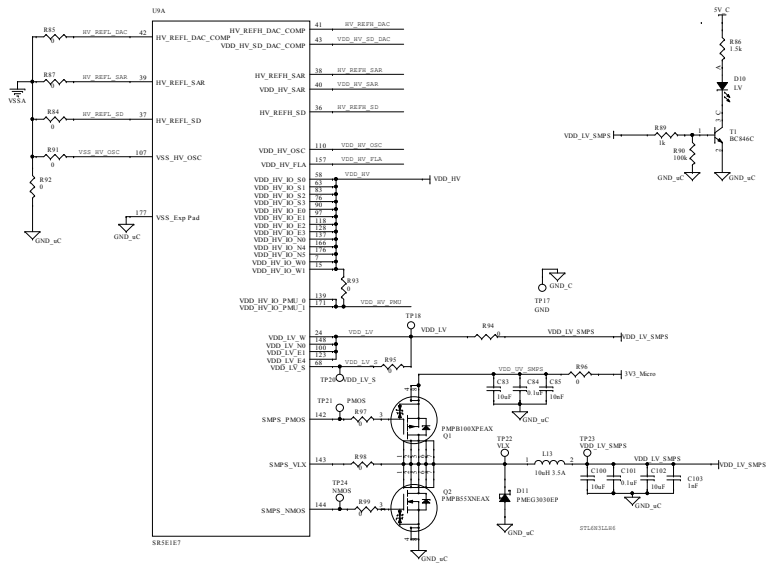
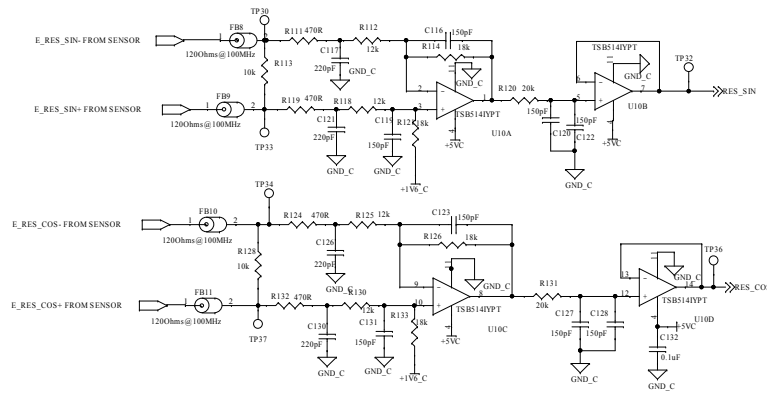
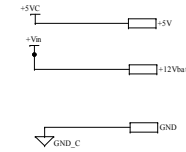
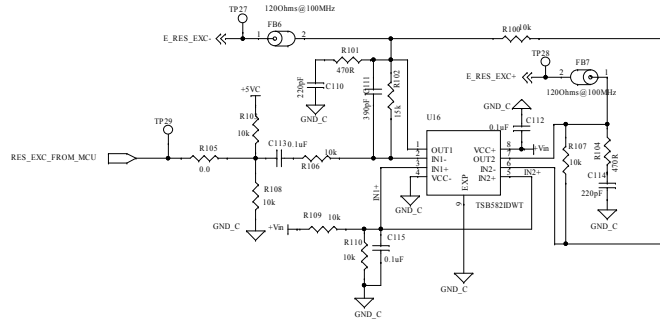
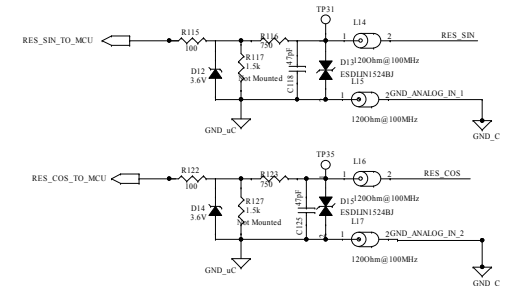


Figure 7. STEVAL-TTM007A schematic diagram (7 of 10)



Excitation signal amplitude=
 a) 9Vpp with opamp supplied at 5V,
 $R2=15k\Omega$, $R3=10k\Omega$
 b) 18Vpp with TSBS82 supplied at 12V,
 $R2=30k\Omega$, $R3=10k\Omega$
 $V(RES_EXC)=3.3V_{pk}$



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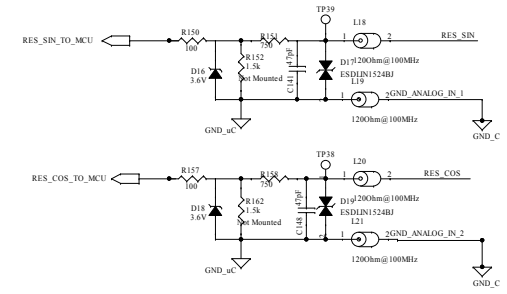
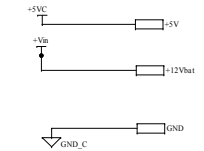
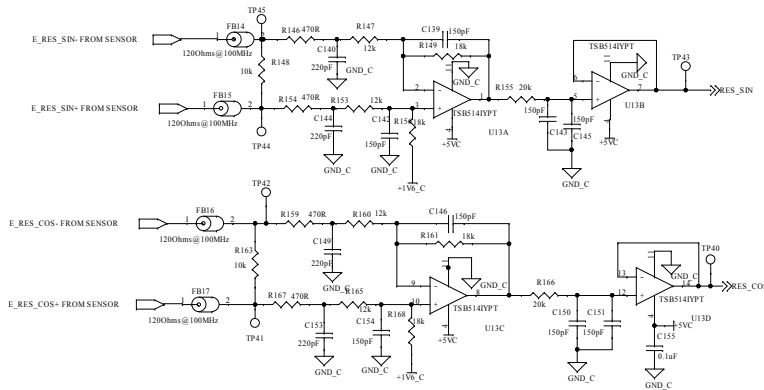
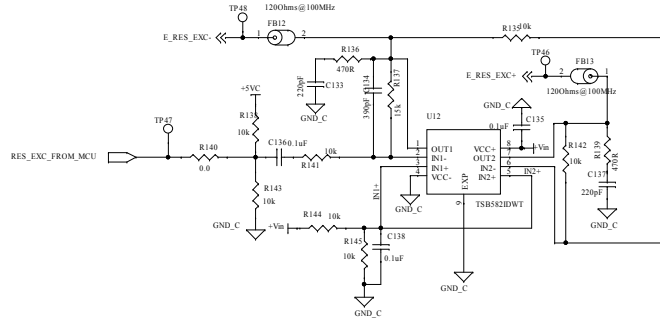
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Figure 8. STEVAL-TTM007A schematic diagram (8 of 10)



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Figure 9. STEVAL-TTM007A schematic diagram (9 of 10)

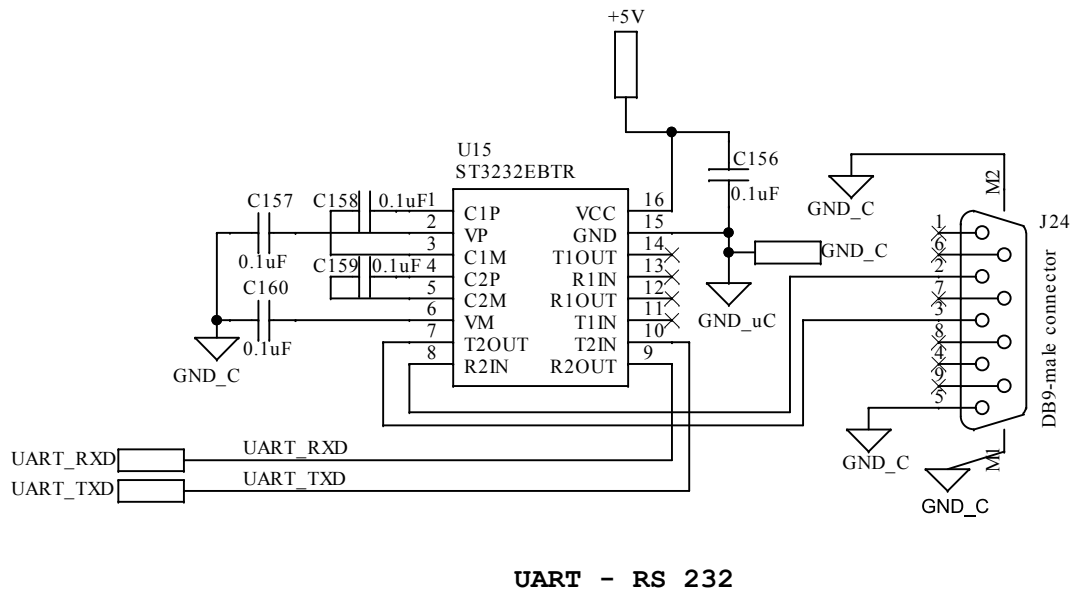
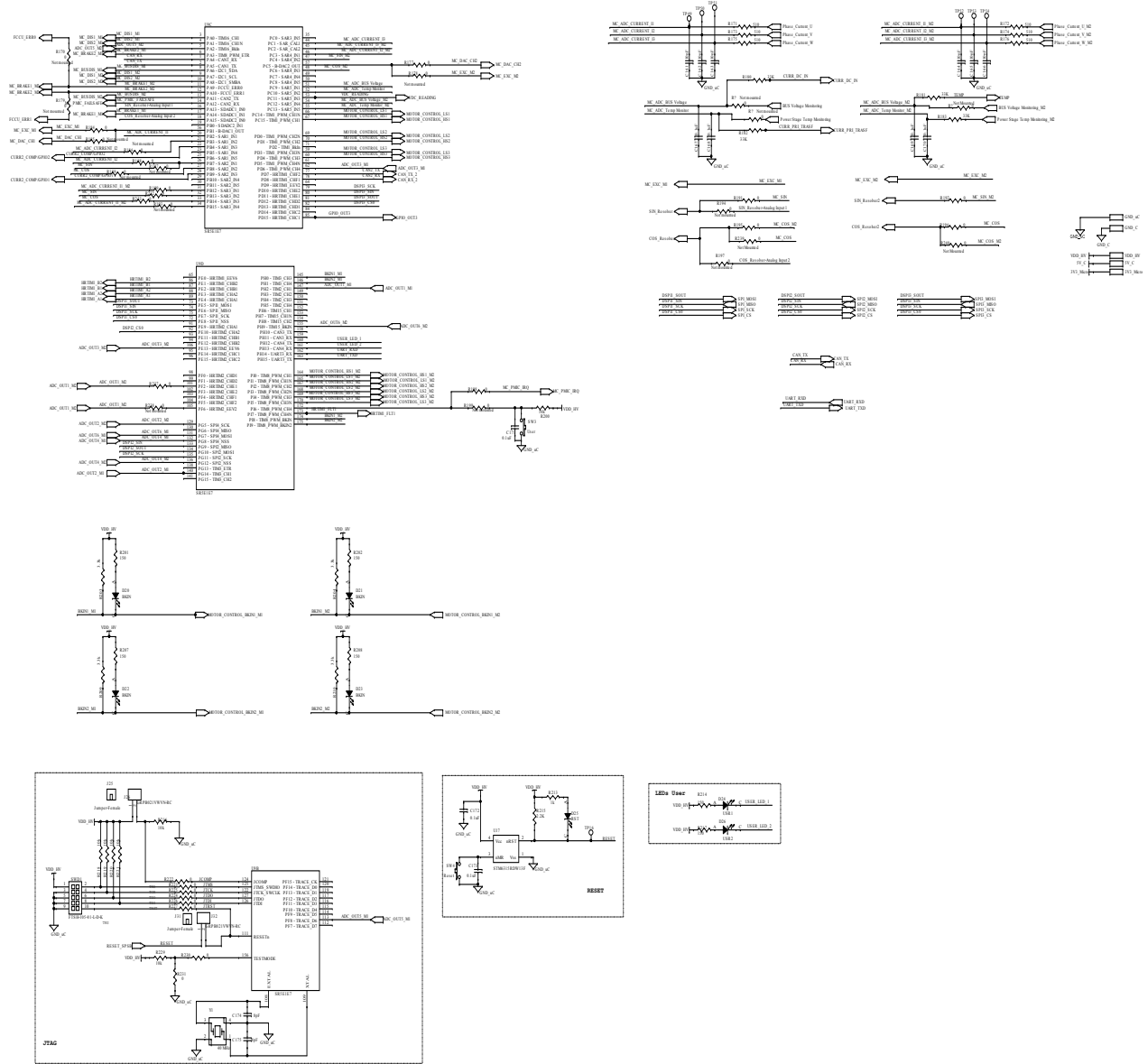


Figure 10. STEVAL-TTM007A schematic diagram (10 of 10)



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.

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