

Ki cordless kitchen transmitter evaluation kit



The picture shown is for illustration purpose only.
Actual product may vary depending on buyer's selection and availability.

Features

- 2.2 kW at 230 Vac Ki cordless kitchen transmitter
 - New upcoming standard from Wireless Power Consortium - WPC
- Inverter topology: half-bridge
- Digitally controlled with user interface
- NFC based communication between transmitter and receiver
 - Enables auxiliary power and bidirectional data path
 - Provides advanced features via connectivity
 - Essential for interoperability and safety
- Fast and high-resolution power control
 - Phase cutting (reusing communications gaps)
 - Duty-cycle control
 - Frequency control
- Control type 0 and type 1
- Comprehensive safety mechanisms
 - Over current protection
 - Cycle-by-cycle current protection
 - Hard-switching detection
 - Over power protection
 - Over temperature protection

Description

The **STEVAL-KITXCB** is an evaluation kit for Ki cordless kitchen transmitter. The evaluation kit includes power inverter board, auxiliary power supply board, NFC board, inverter microcontroller board, power coil and NFC coil, and GUI display board. Thanks to the modular design approach, it becomes easier for the user to test and debug the various sections involved.

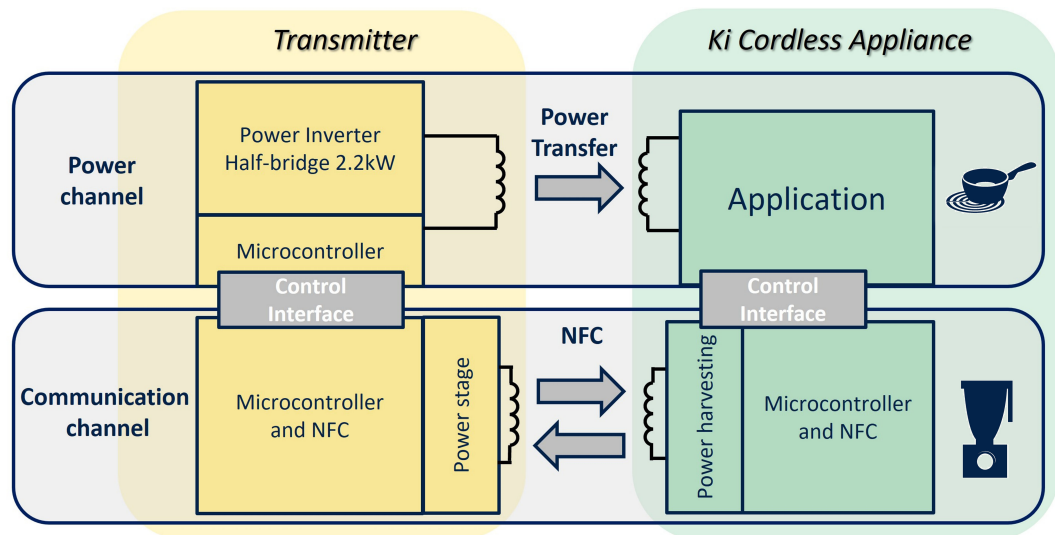
Ki cordless kitchen standard targets to replace traditional kitchen appliances using power cords (for example: mixer, toaster, rice cooker, coffee makers etc.) and to combine eventually with an induction cooktop. This Ki cordless kitchen standard defines wireless power transfer to all kitchen appliances up to 2.2 kW. At every zero-crossing of input mains voltage the power transfer is stopped to have reliable NFC communication with the receiver.

Product summary	
Evaluation kit for Ki cordless kitchen transmitter	STEVAL-KITXCB
High performance NFC universal device and EMVCo reader	ST25R3916-AQET
Mainstream Arm Cortex-M4 MCU 170 MHz with 512 Kbytes of Flash memory, Math Accelerator, HR Timer, High Analog level integration	STM32G474RET6
Trench gate field-stop IGBT, 650 V, 50 A soft switching IH series in a TO-247 long leads package	STGWA50IH65DF
High voltage high and low-side 4 A gate driver	L6491D
Energy Saving Off-line High Voltage Converter	VIPER318HDTR
38 V, 1.5 A synchronous step-down converter with low quiescent current	L6981NDR
Applications	Induction Cooking

1 Block diagrams

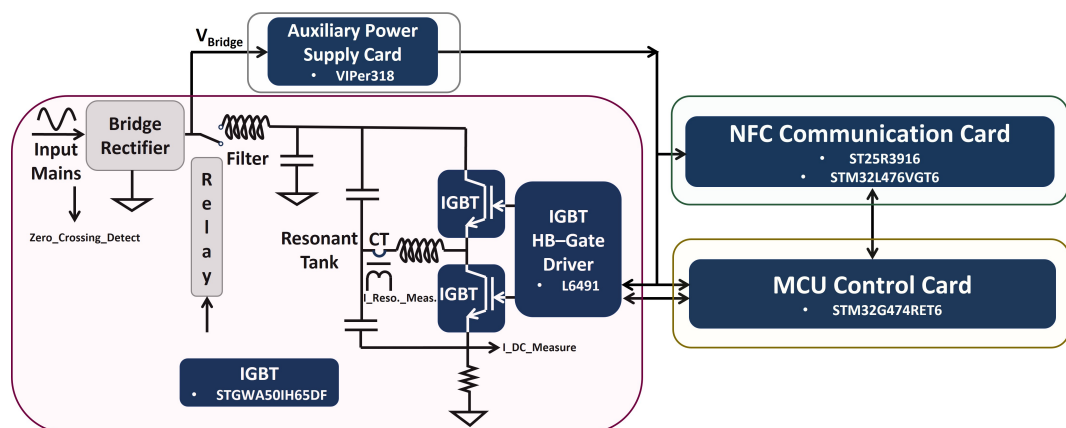
1.1 Ki cordless kitchen architecture block diagram

Figure 1. Ki cordless kitchen architecture



1.2 STEVAL-KITXCB Ki cordless kitchen transmitter

Figure 2. STEVAL-KITXCB Ki cordless kitchen transmitter



Notice: These schematics are for illustration purpose only. Actual product may vary depending on buyer's selection and availability.

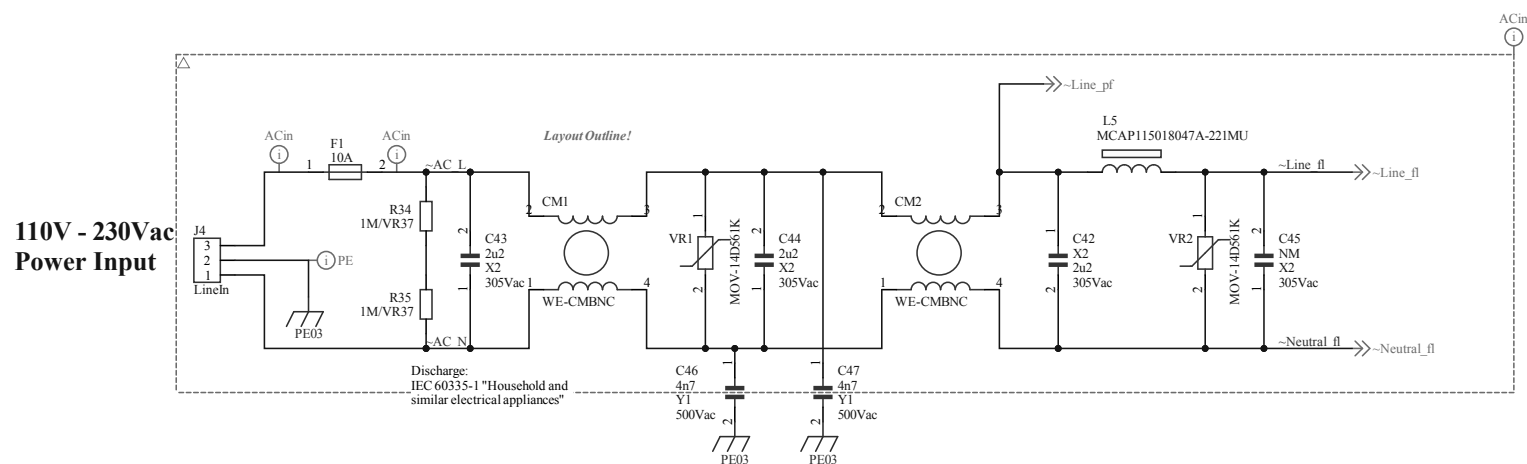
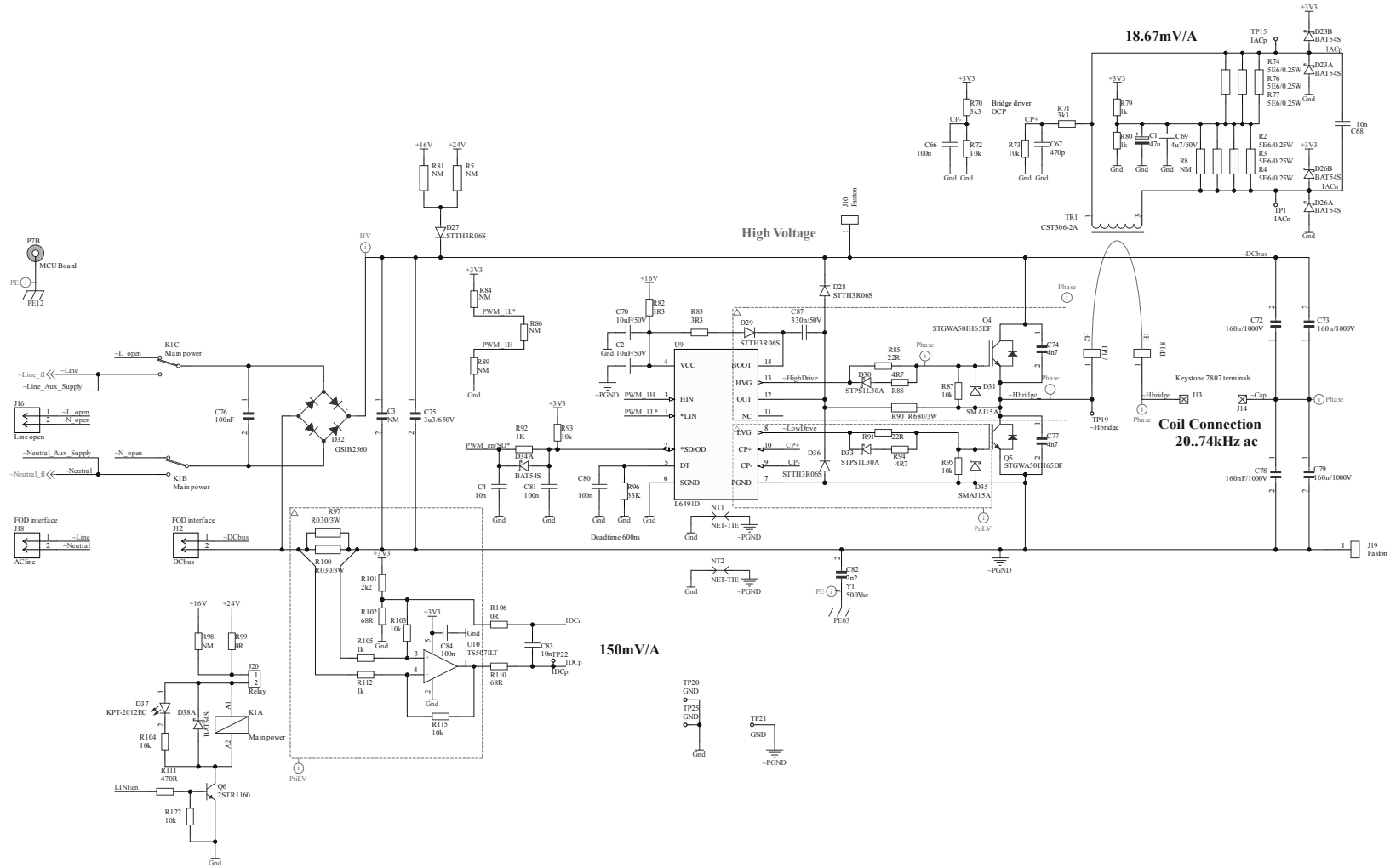


Figure 4. STEVAL-KITXCB power board - inverter stage



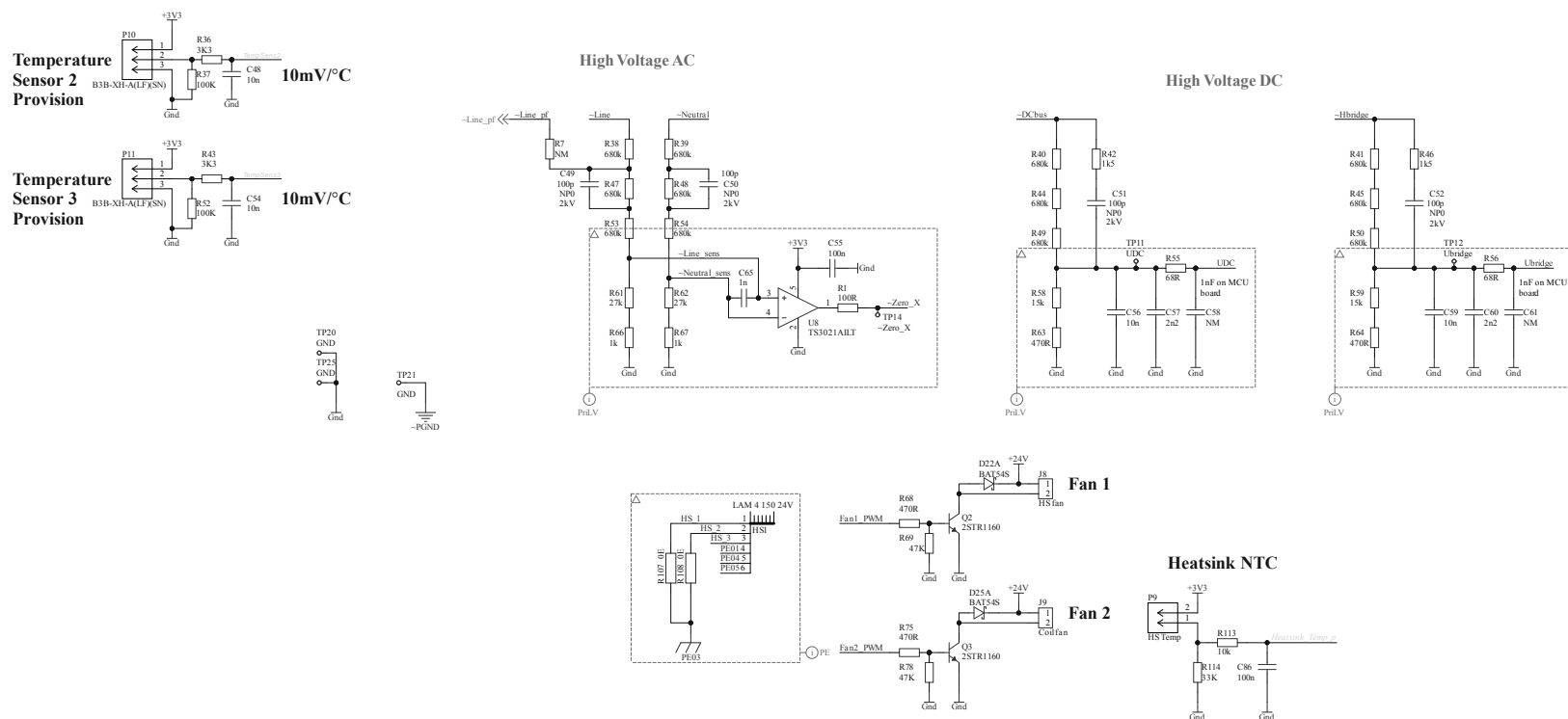
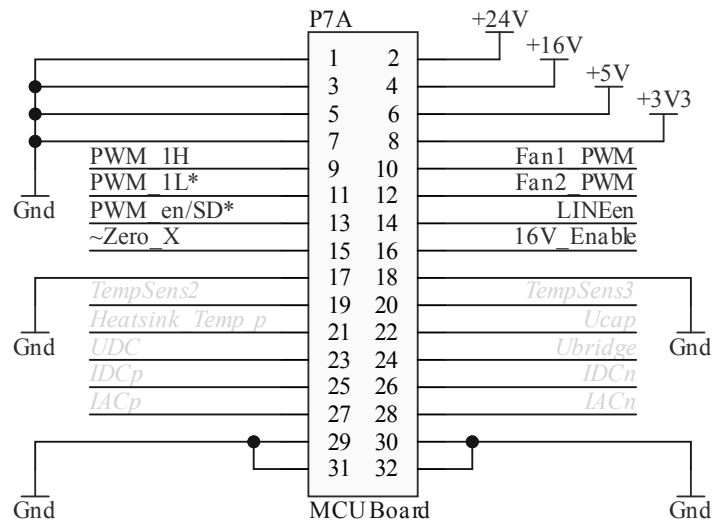


Figure 6. STEVAL-KITXCB power board - connectors

Inverter-interface



Supply Connectors

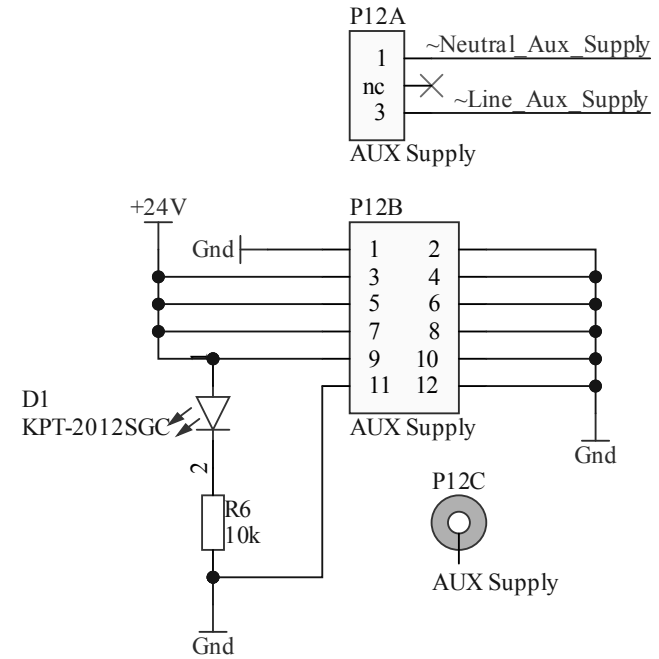


Figure 7. STEVAL-KITXCB power board - voltage regulators

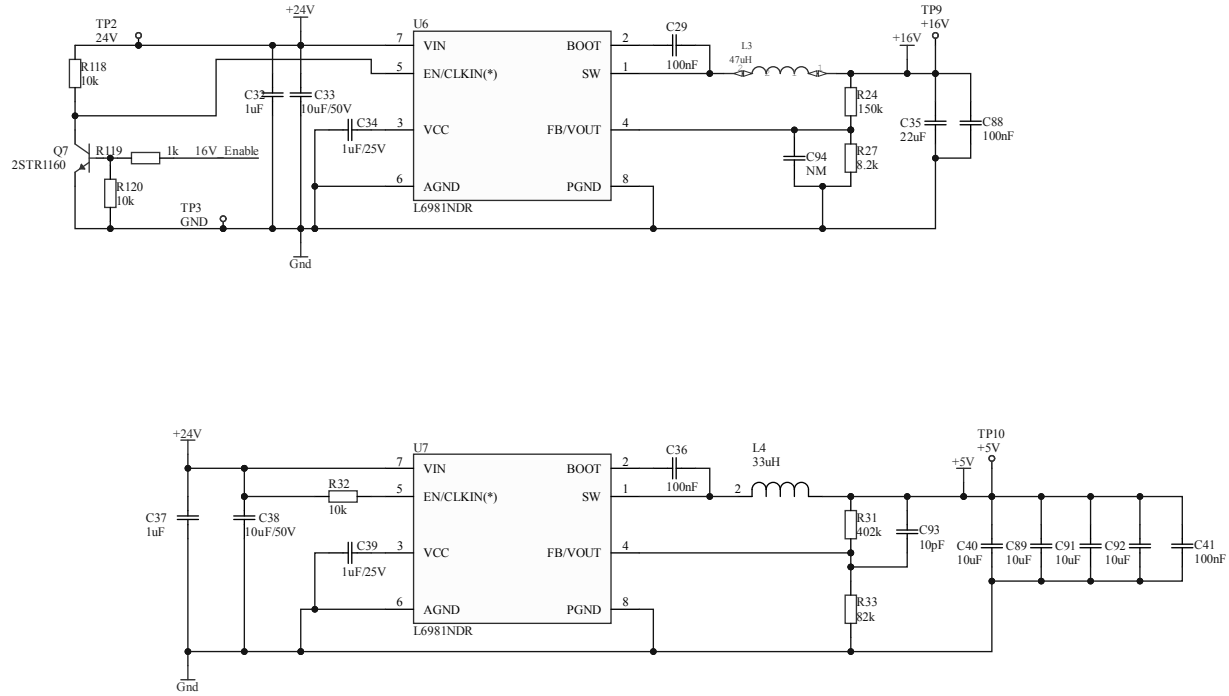
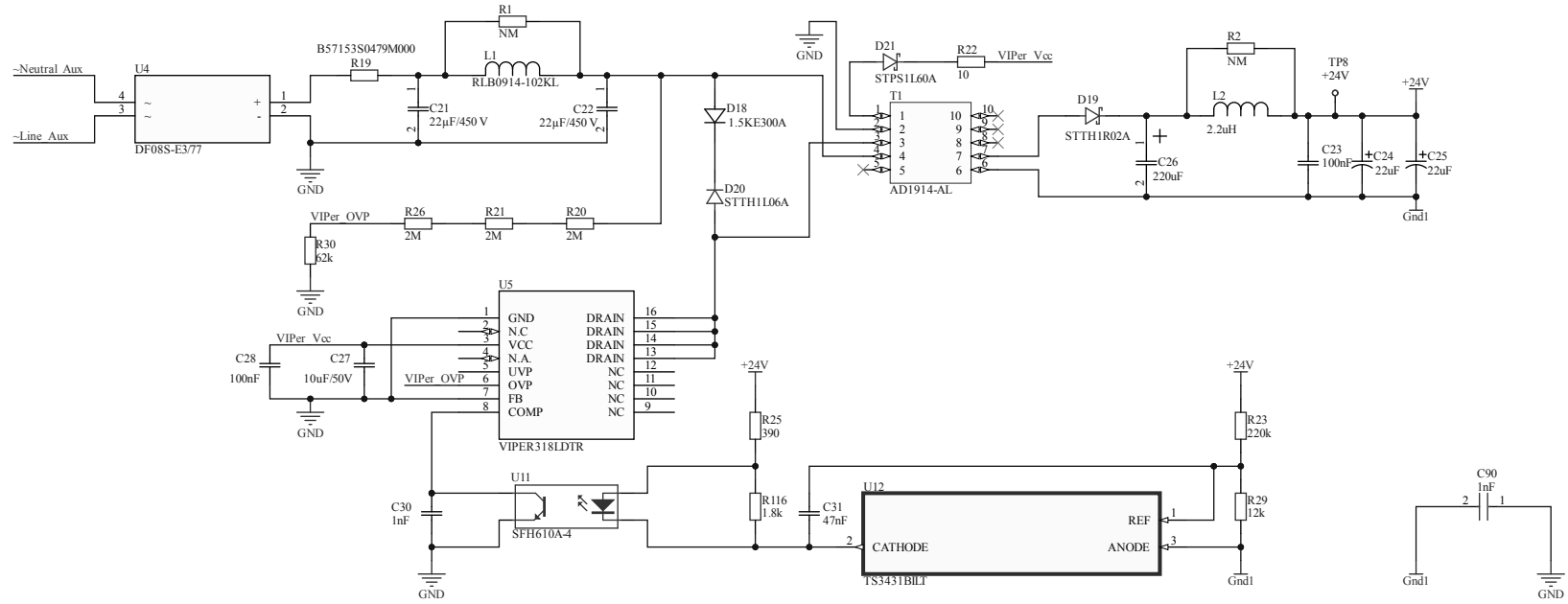


Figure 8. STEVAL-KITXCB - auxiliary power supply



Supply Connector

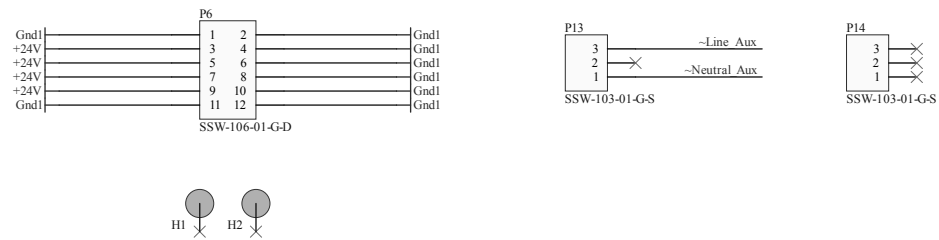


Figure 9. STEVAL-KITXCB MCU board - Microcontroller, LEDs

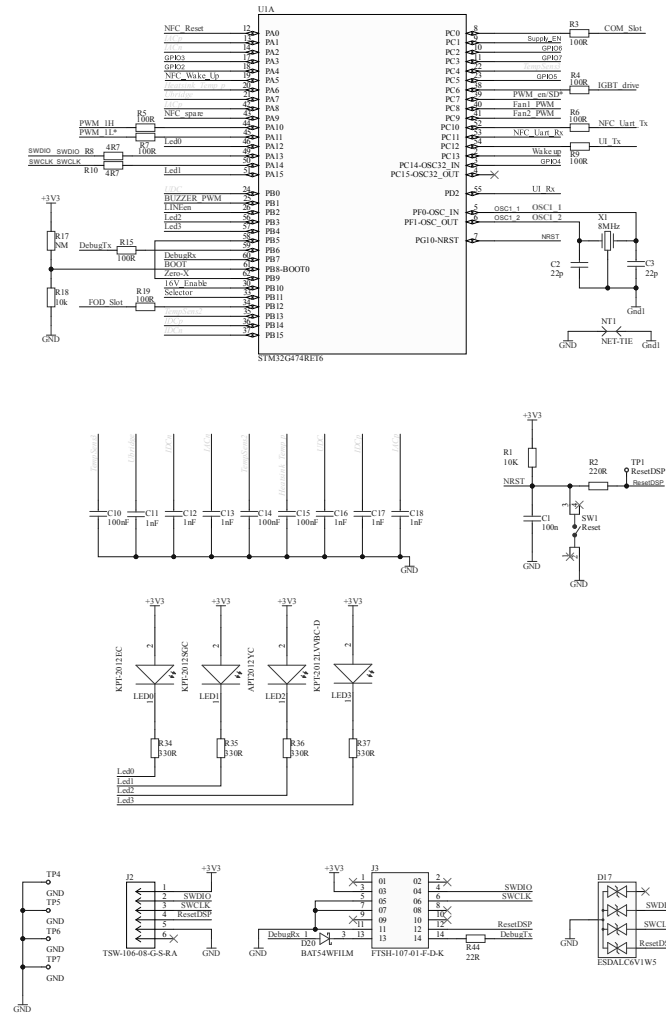


Figure 10. STEVAL-KITXCB MCU board - Microcontroller decoupling, voltage regulator

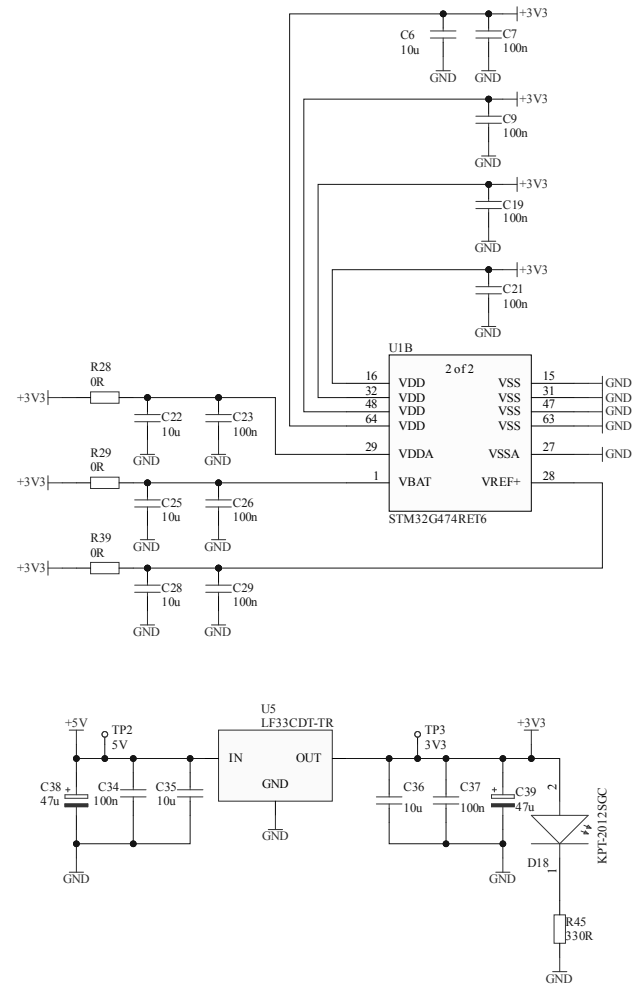


Figure 11. STEVAL-KITXCB MCU board - cook-type control, buzzer and unused GPIOs

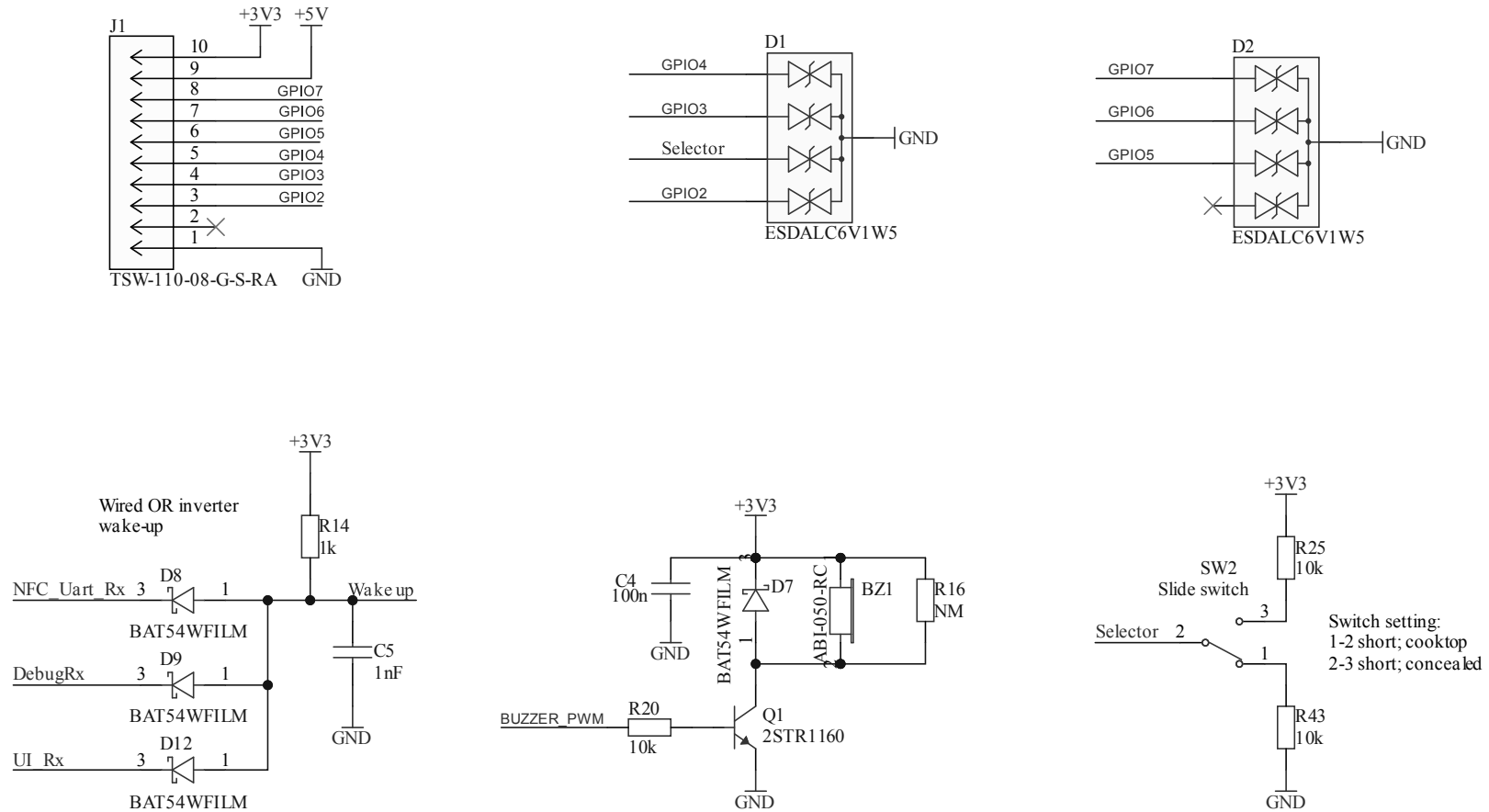
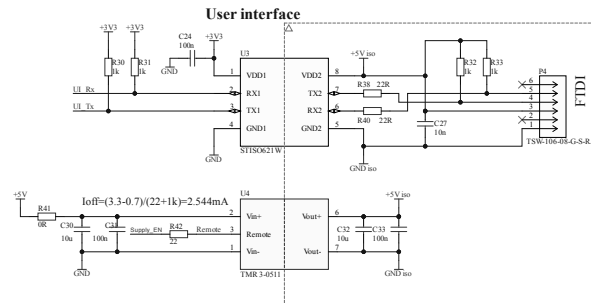
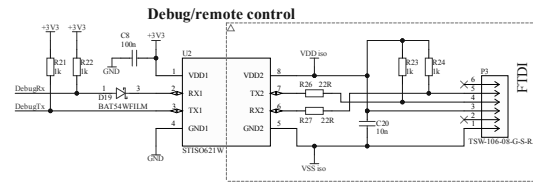
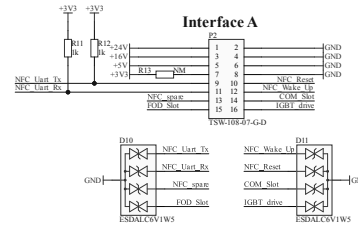
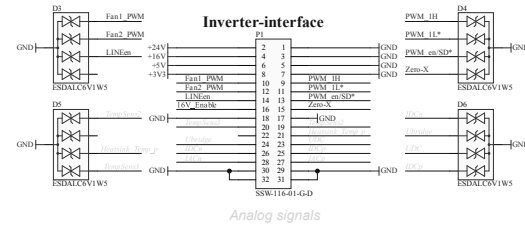


Figure 12. STEVAL-KITXCB MCU board - connectors



STEVAL-KITXCB

Schematic diagrams

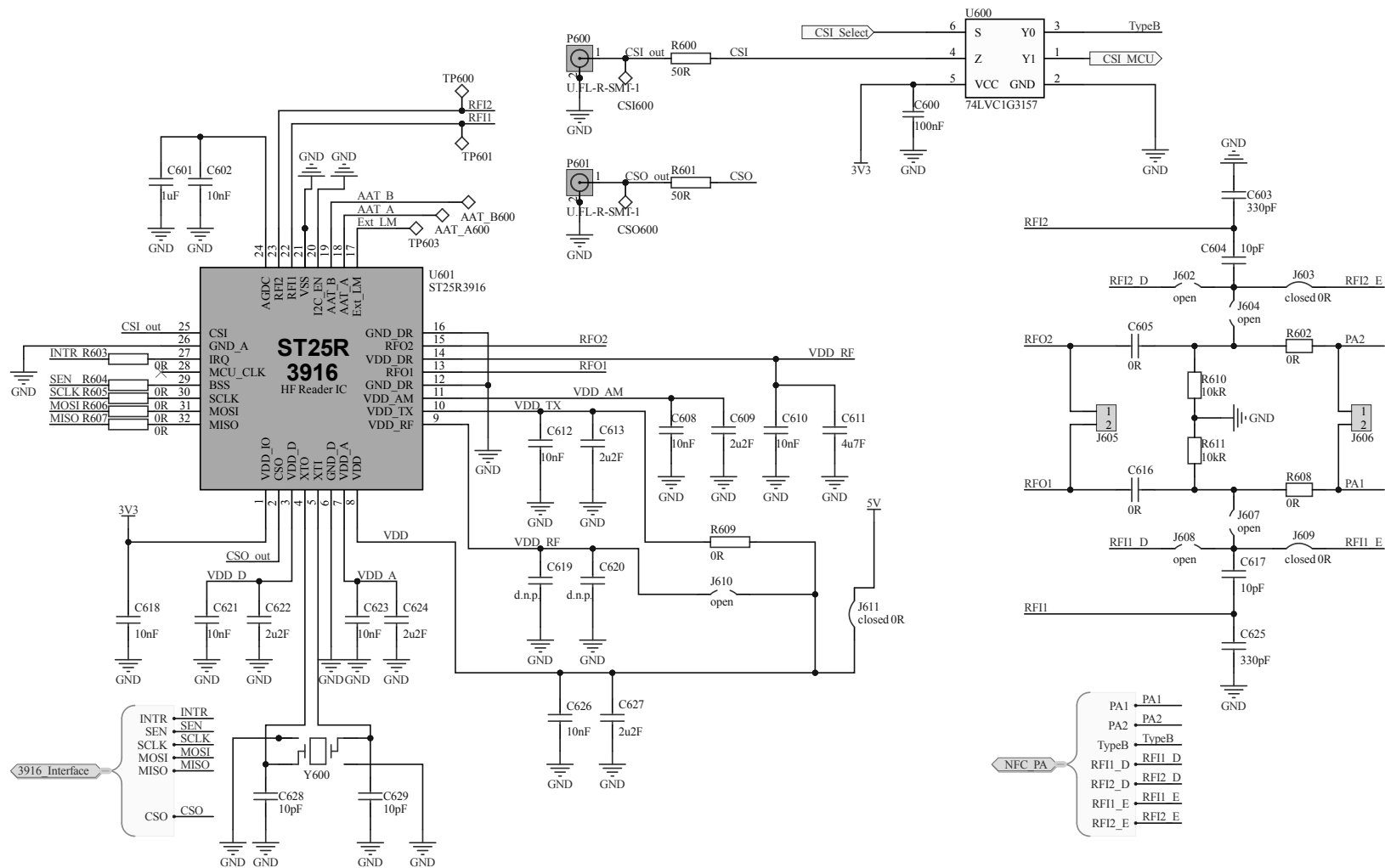
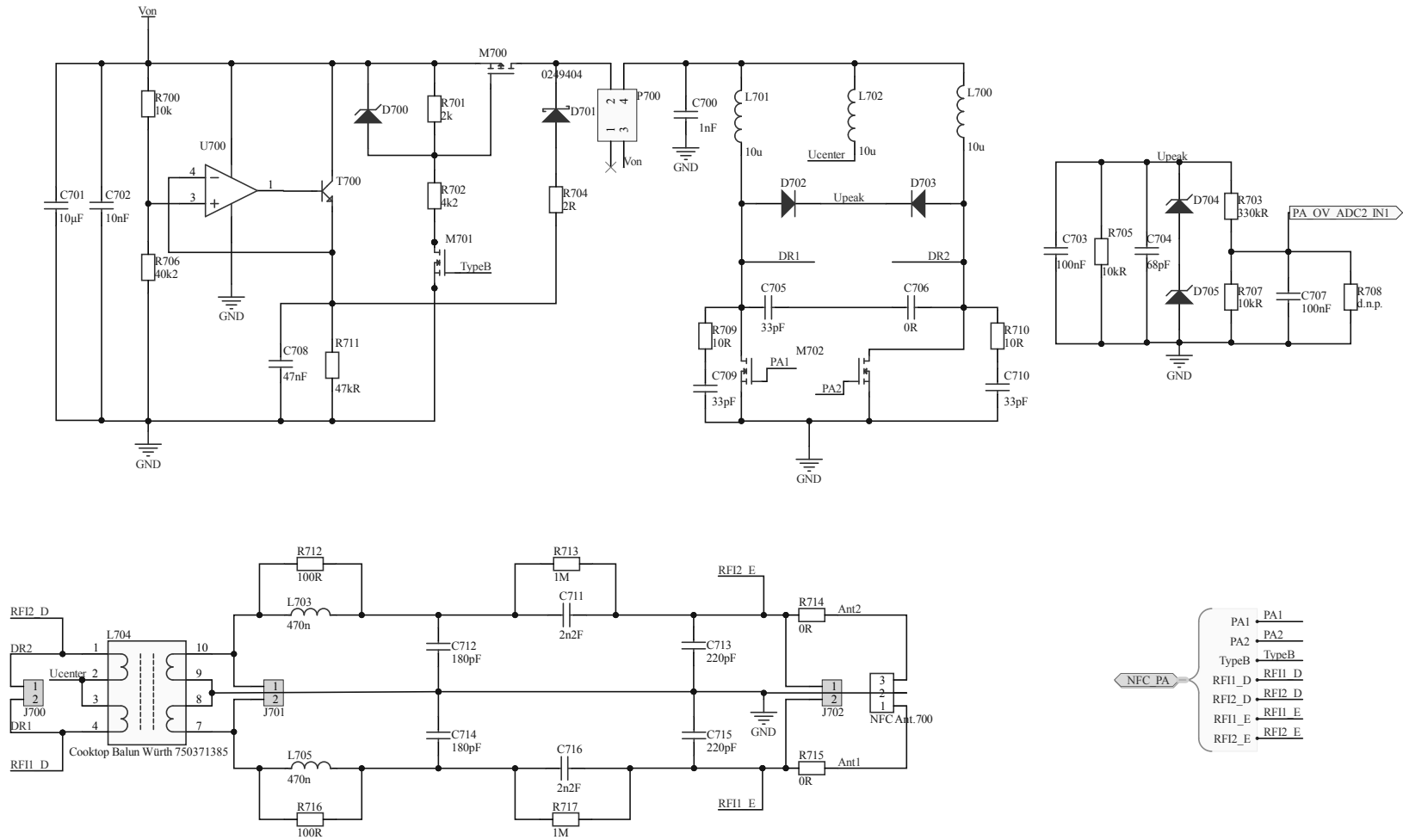


Figure 14. STEVAL-KITXCB NFC board - power stage



STEVAL-KITXCB

Schematic diagrams

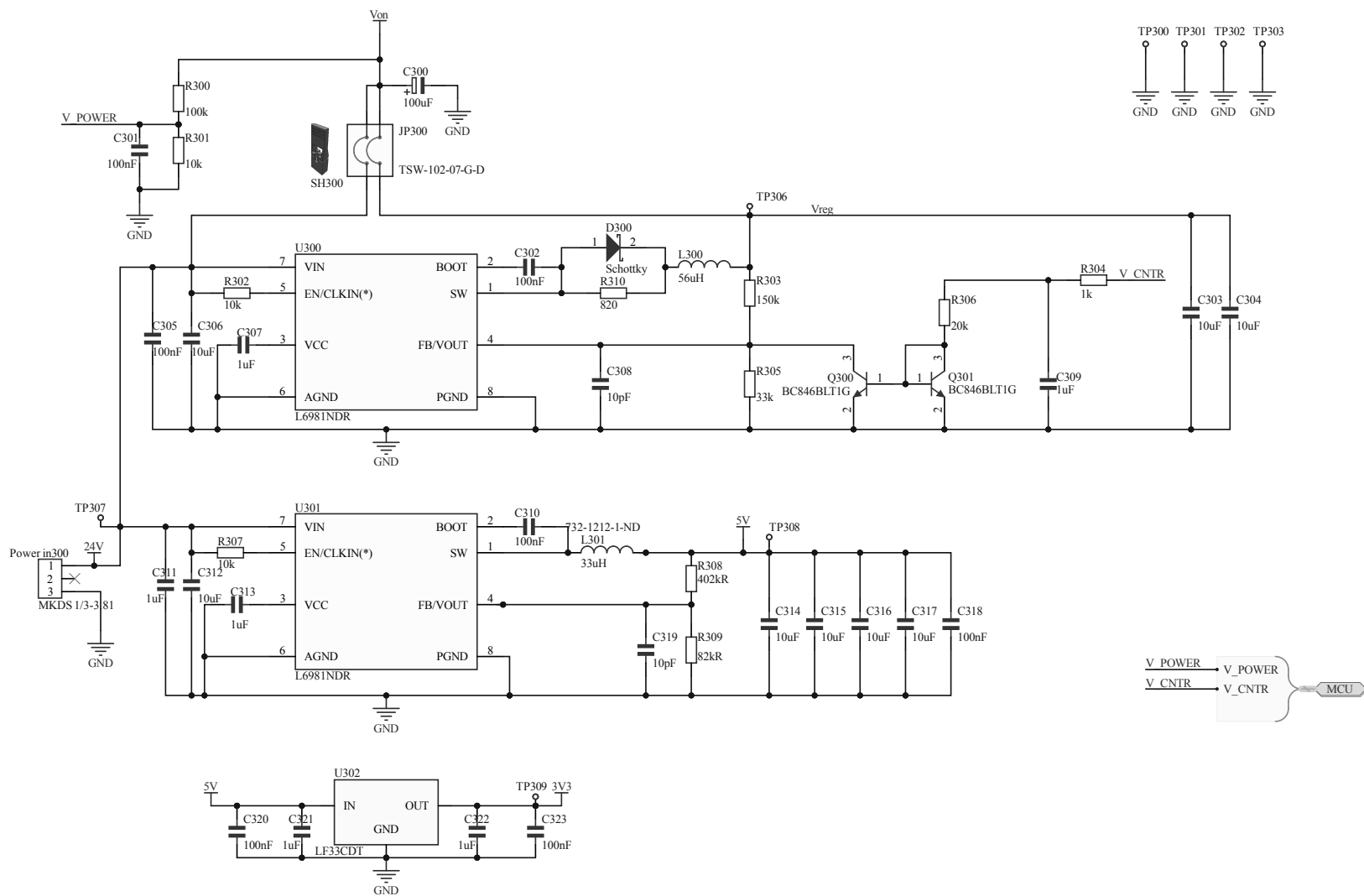
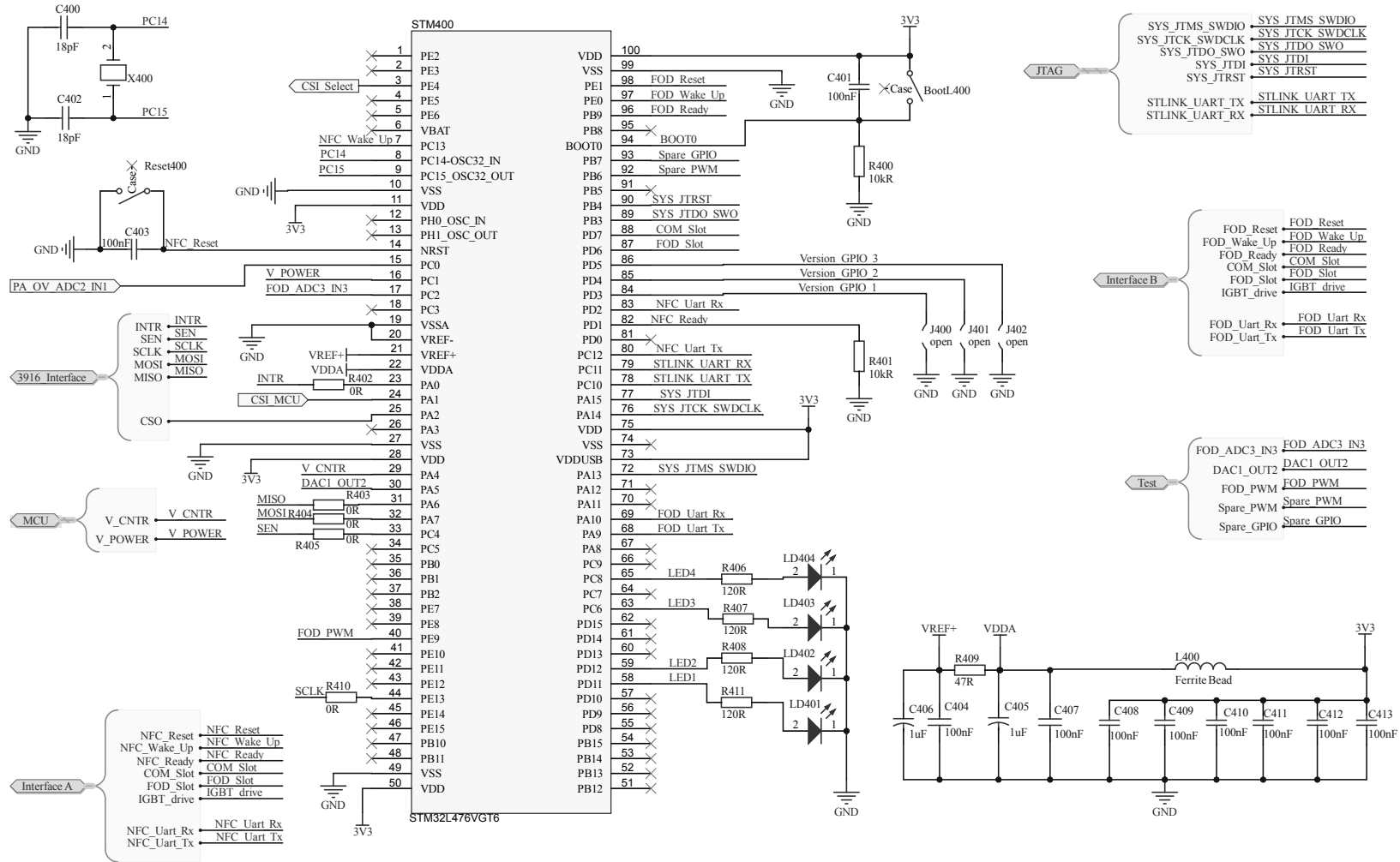
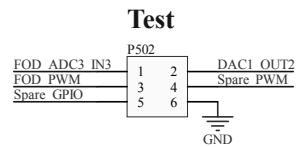
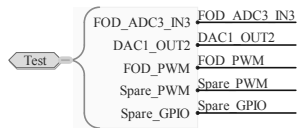
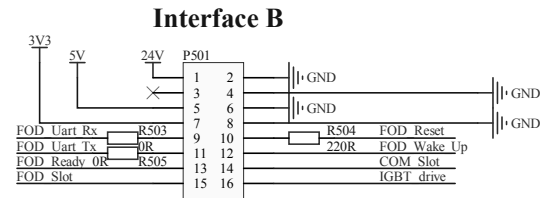
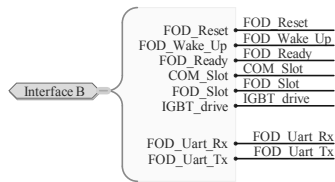
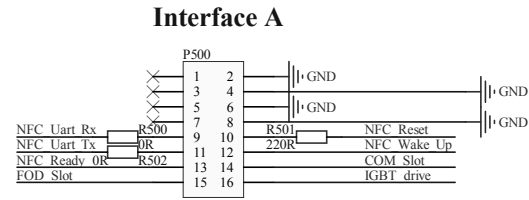
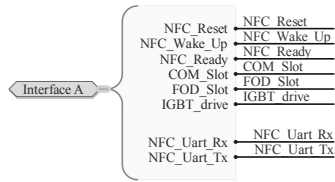
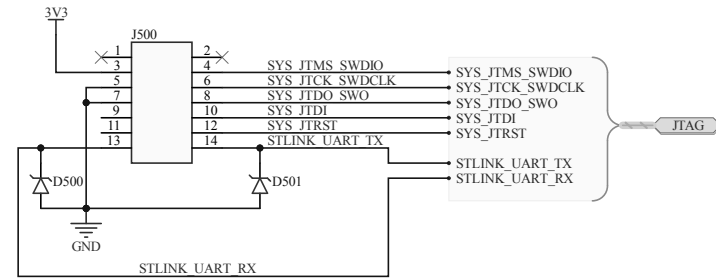


Figure 16. STEVAL-KITXCB NFC board - Microcontroller





JTAG



3 Custom evaluation boards information

Notice: These evaluation boards are custom designed and built, in small quantities, according to specific requests from customers and are destined for evaluation and testing of ST products in a research and development setting. Please contact ST to provide your specific requests and get your custom built board(s).

Revision history

Table 1. Document revision history

Date	Version	Changes
06-Dec-2023	1	Initial release.
05-Apr-2024	2	Minor text change in Section Description .

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