



The FXCore development board allows users to develop programs for and experiment with the FXCore DSP from Experimental Noise.

The development board can be powered by USB when connected to a computer or act stand alone and powered by a 9VDC pedal style power supply.

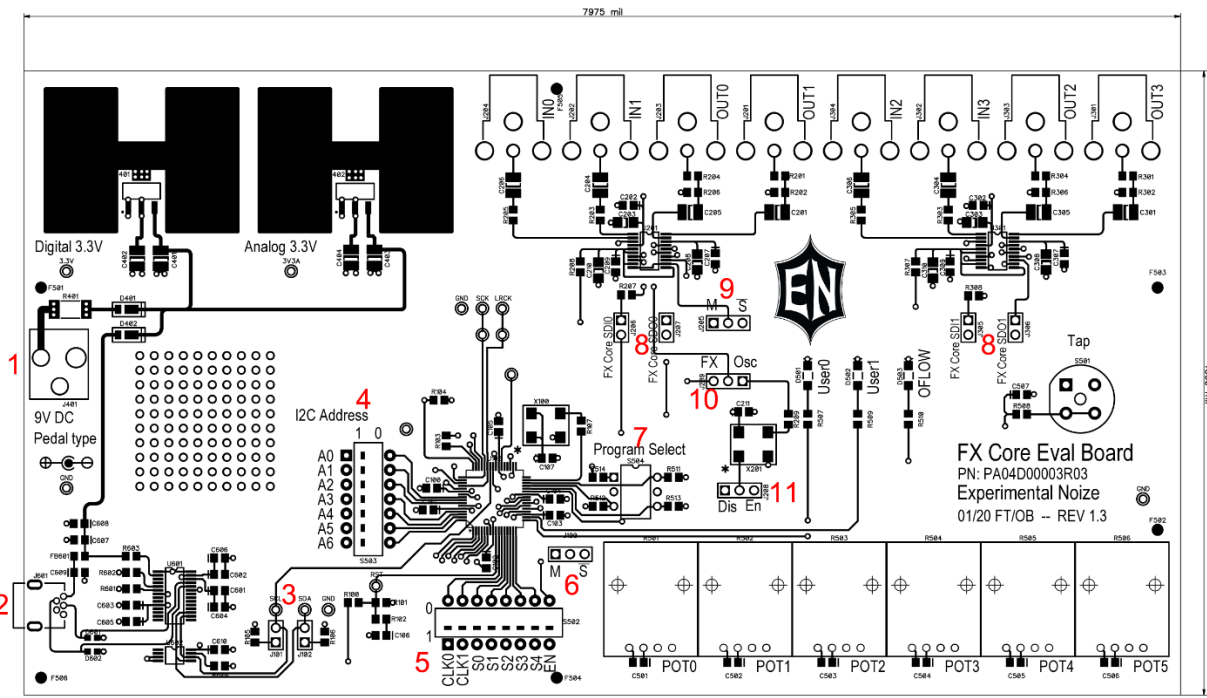
The board has a number of jumpers and switches to configure its operation and to allow multiple boards to be daisy chained together and controlled from a USB attached computer.

NOTE: When daisy chaining boards it is best to only power the first board by USB and any additional boards by a 9VDC power supply so you do not draw too much current from the computer's USB port. Doing so can cause the computer to disable USB power or damage the computer.

Boards are typically shipped with the I2C address set to 0x30, 48KHz sample rate, FXCore as the master word clock and the CODECs in slave mode with their system clock supplied by the FXCore. This configuration matches the default configuration of the FXCore Assembler.

The development board does not require any specific driver, it presents as an HID device so the systems default HID driver is used. There is a DLL that is installed in the same directory as the FXCore Asm program executable that allows the program to talk to the board through the system HID driver.

The following image indicates the location and function of important connections, switches and jumpers.





1. 9VDC power jack
This jack accepts a standard 9VDC pedal type power supply and can be used when USB power is not available
2. USB connector
This is the connection to the computer for program download and can power the board from USB power. If there are multiple boards daisy chained together then only the first should be powered by USB and other should be powered from their 9VDC jack.
3. SDA and SCL resistor jumpers
These jumpers connect the pull-up resistors to the SDA and SCL lines. If boards are daisy chained and sharing the SDA and SCL lines then only the last board should have the jumpers in place, all others should have them removed.
4. I2C address switches
These switches set the I2C address of the FXCore. If multiple boards are daisy chained and sharing SDA and SCL then each one should have a unique address so they do not conflict.
NOTE: Do not set the address to the ranges of 0x00-0x07 or 0x78-0x7F, these are reserved addresses and many I2S devices will not respond to them.
NOTE: Do not set the address to the range 0x50 – 0x57 this range is used by the USB interface chip for its EEPROM. This is not a limit of the FXCore but of the USB interface chip.
5. Sample rate select, user and enable
CLK0 and CLK1 set the sample rate of FXCore in master mode, see the FXCore datasheet for available sample rates. S0 – S4 are user switches that can be read under program control. EN is the enable/bypass switch, when enabled the outputs are the result of the program, when in bypass the outputs are tied to the inputs internally.
6. FXCore “M”aster/”S”lave
When in master mode the FXCore generates the word clock (LRCK), bit clock and system clock for the CODECs. When in slave mode the FXCore expect to receive the word clock and bit clock from a word clock master device. If FXCore is set to master then the CODECs should be set to slave and the CODEC 12.288MHz oscillator should be disabled. In a daisy chained system only one device should be set to master, all other devices should be set to slave with the word clock and bit clock daisy chained between boards.
7. Program select switch
Selects which program is loaded and run from the internal EEPROM.



8. SDI and SDO lines
These are the serial data in and out lines between the FXCore and the CODECs. These can be removed to allow connection to external CODECs or other digital data source.
9. CODEC “M”aster/”S”lave
If the FXCore is set to master then this should be set to slave and vice versa. If this is set to master then “FX Osc” (10 below) should be set to OSC to provide the CODECs with a system clock and “Dis En” (11 below) should be set to En.
10. “FX Osc” system clock selection
This jumper selects whether the CODECs receive their system clock from the FXCore or the oscillator located below this jumper. If the CODECs are in slave mode then set this to FX, if CODECs are in master mode then set this to Osc.
11. “Dis En” CODEC oscillator
If the CODECs are in slave mode then set this jumper to Dis to disable the oscillator, if CODECs are in master mode then set this to En to enable the oscillator.

Note that the FXCore only checks configuration settings when reset is released, if you change a configuration setting then you must reapply reset to the FXCore.

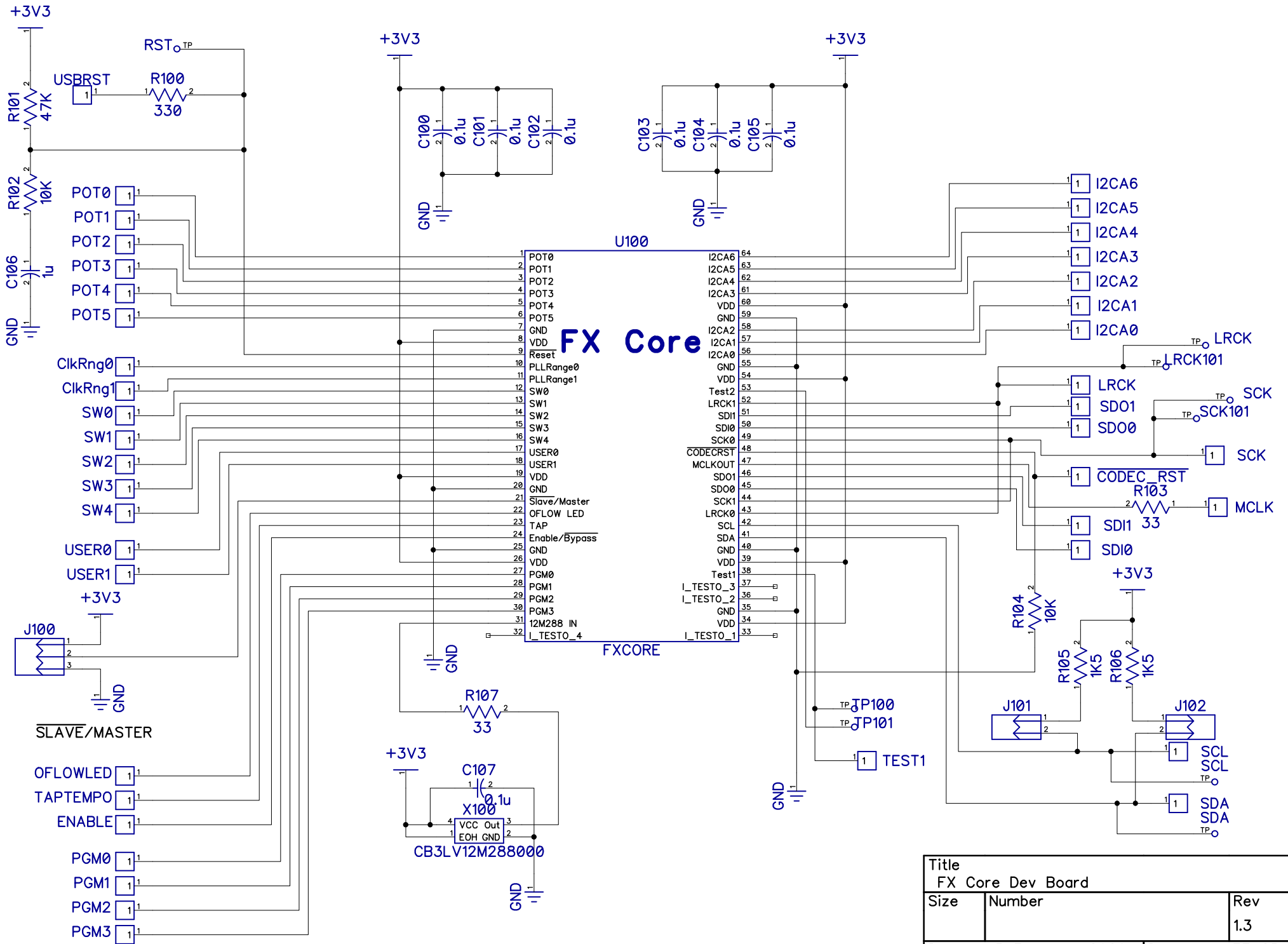
When daisy chaining multiple boards or interfacing to external CODECs or other digital data source the exact configuration to support this may change from the above descriptions. For example if FXCore boards are daisy chained and the first boards FXCore is the master word clock then on the other boards both the FXCore and the CODECs should be in slave mode.

Federal Communications Commission Notice

This device is test equipment and consequently is exempt from part 15 of the FCC Rules under section 15.103 (c).

Class A

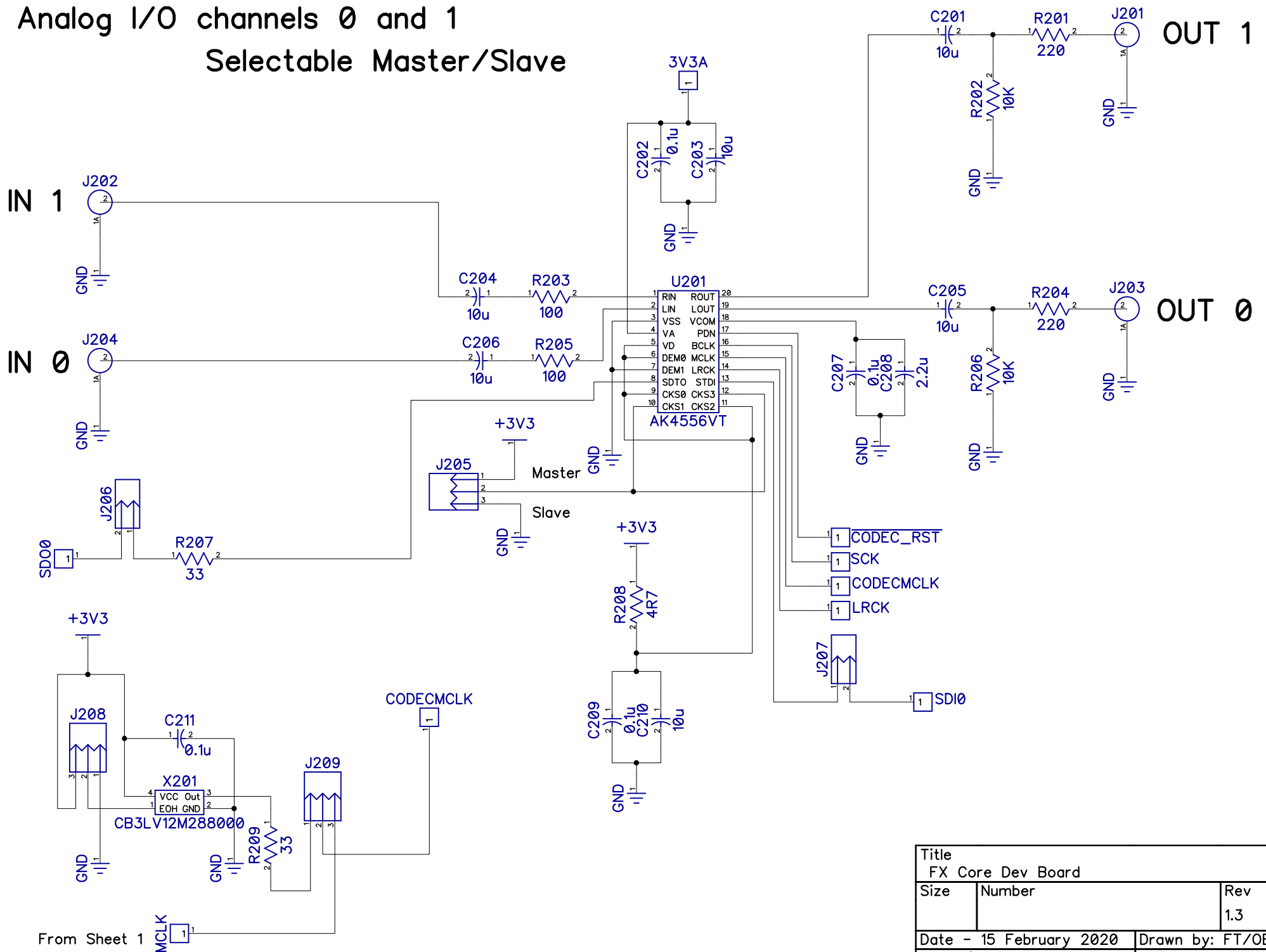
Important: This is a Class A device. In residential areas, this device may cause radio interference. The user should take the necessary precautions, if appropriate.



Title FX Core Dev Board		
Size	Number	Rev 1.3
Date - 15 February 2020		Drawn by: FT/OB
XN_Chip_Dev_1_3.dch		Sheet 1

Analog I/O channels 0 and 1

Selectable Master/Slave

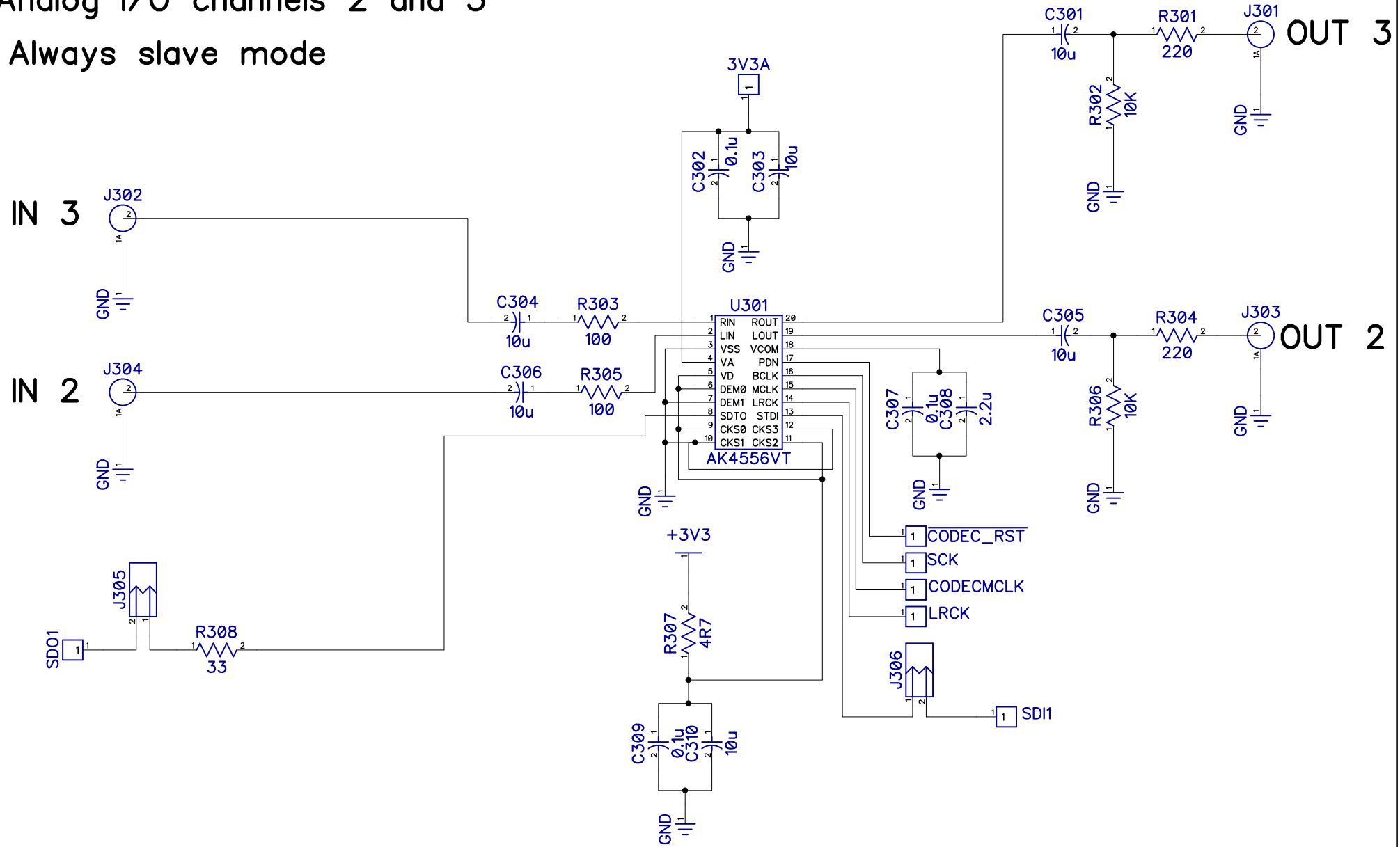


Title		
FX Core Dev Board		
Size	Number	Rev
		1.3
Date - 15 February 2020		Drawn by: FT/OB
XN_Chip_Dev_1_3.dch		Sheet 2

From Sheet 1

Analog I/O channels 2 and 3

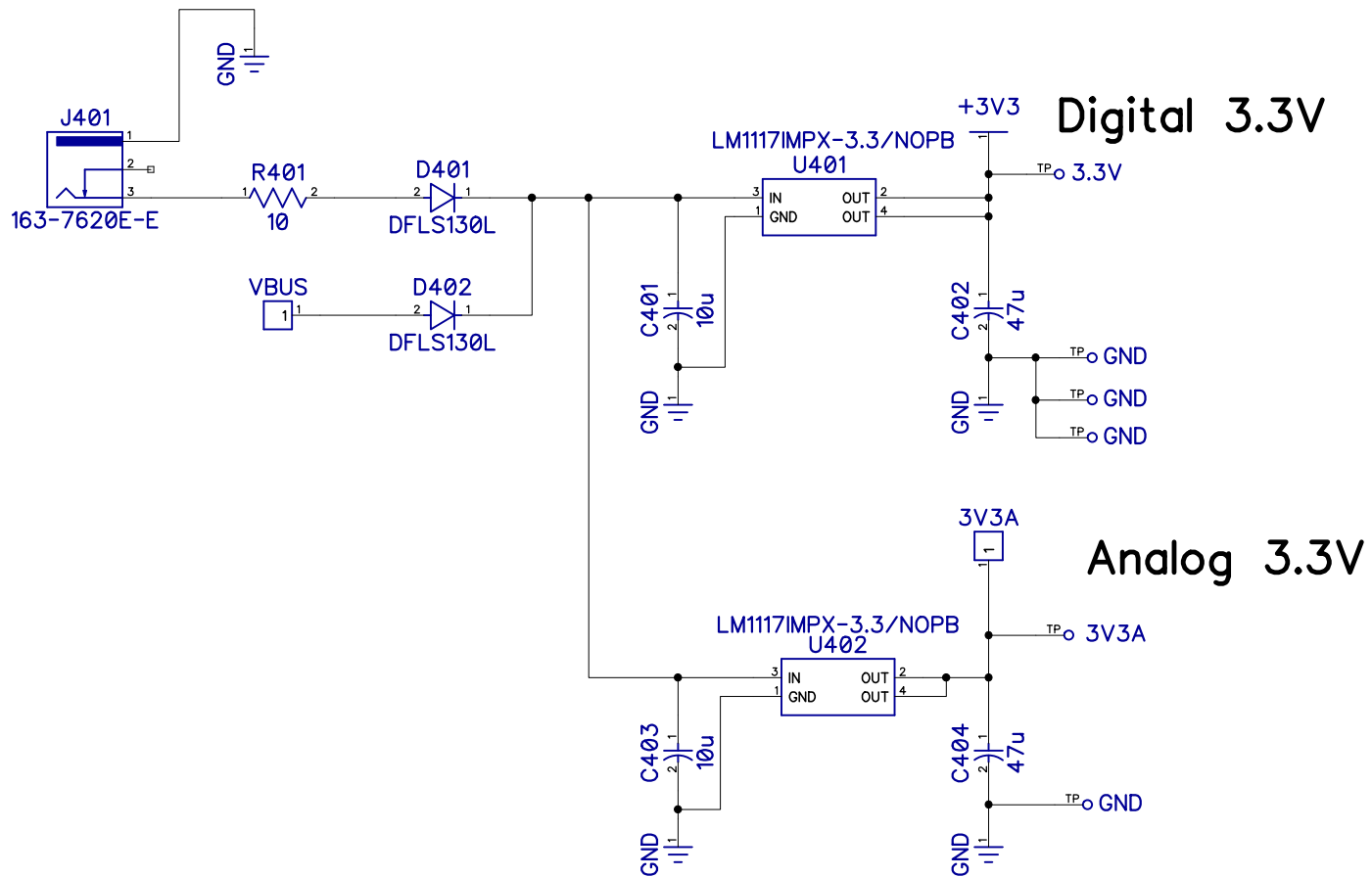
Always slave mode



Title FX Core Dev Board		
Size	Number	Rev 1.3
Date - 15 February 2020		Drawn by: FT/OB
XN_Chip_Dev_1_3.dch		Sheet 3

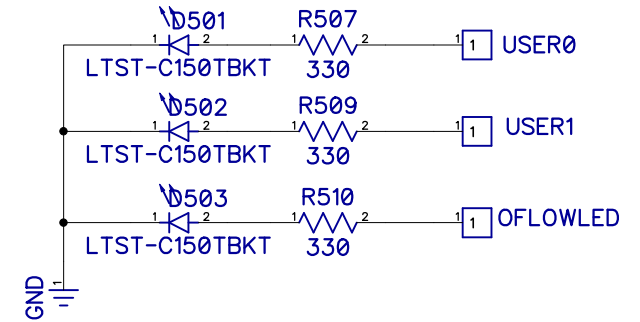
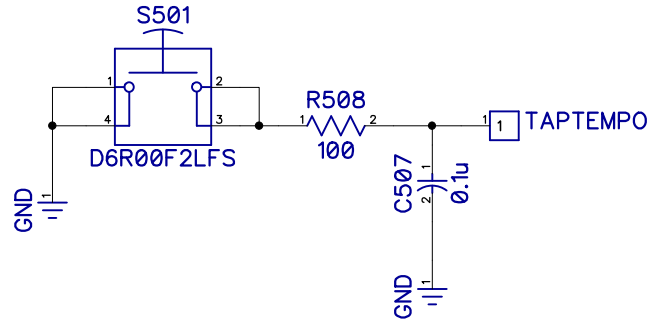
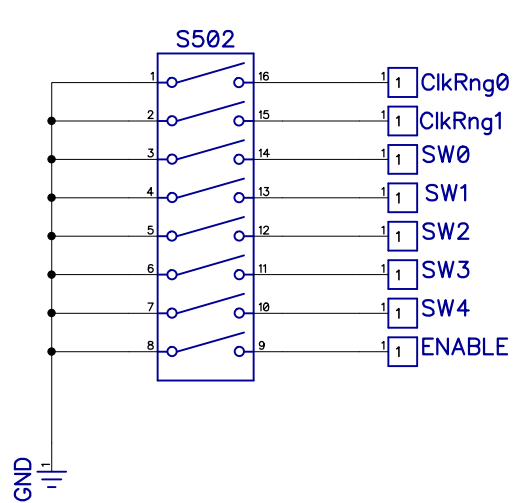
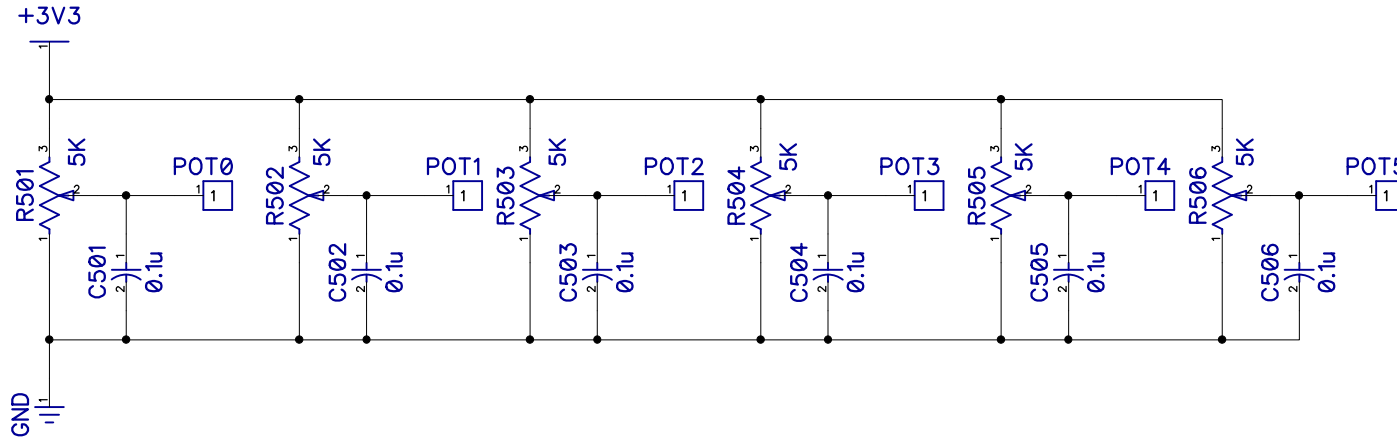
Power

9VDC center negative 2.1mm - standard pedal power supply



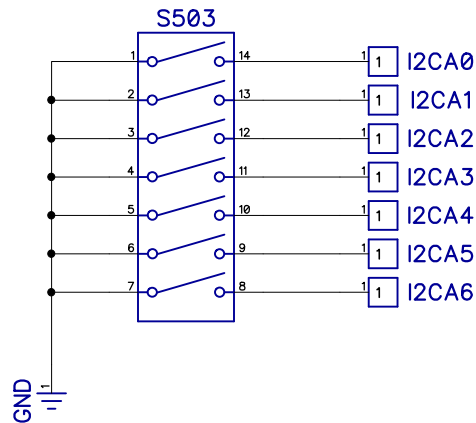
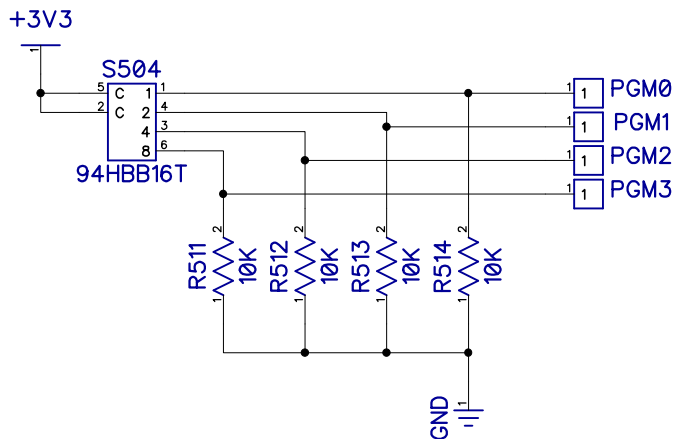
Title		
FX Core Dev Board		
Size	Number	Rev
		1.3
Date - 15 February 2020		Drawn by: FT/OB
XN_Chip_Dev_1_3.dch		Sheet 4

Switches/POTs/LEDs



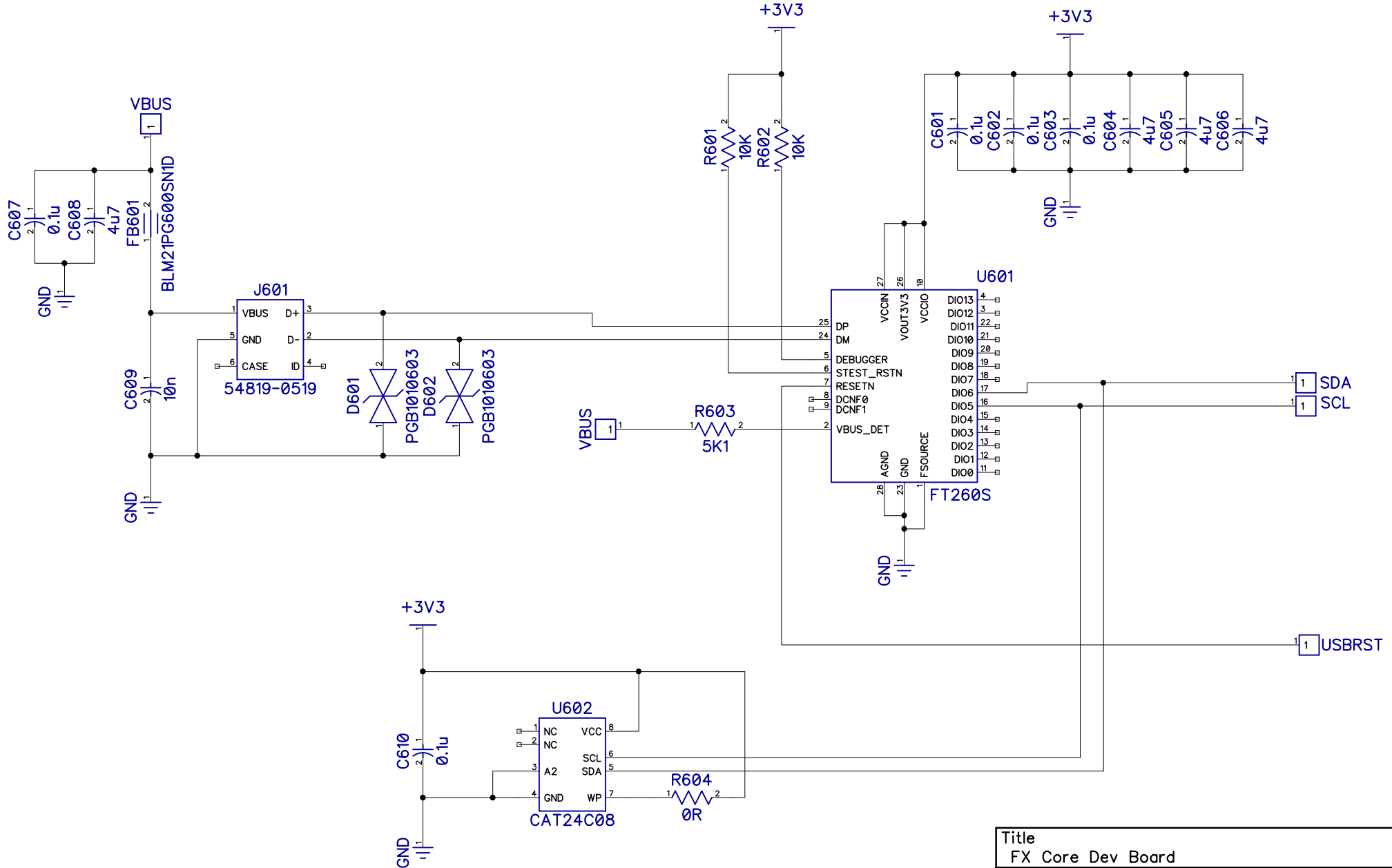
F501 F502 F503 F504 F505 F506

Fiducials - Optical targets for pick and place



Title FX Core Dev Board		
Size	Number	Rev 1.3
Date - 15 February 2020		Drawn by: FT/OB
XN_Chip_Dev_1_3.dch		Sheet 5

USB Interface



Title		
FX Core Dev Board		
Size	Number	Rev
		1.3
Date - 15 February 2020		Drawn by: FT/OB
XN_Chip_Dev_1_3.dch		Sheet 6



Experimental Noize Inc. reserves the right to make changes to, or to discontinue availability of, any product or service without notice.

Experimental Noize Inc. assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using any Experimental Noize Inc. product or service. To minimize the risks associated with customer products or applications, customers should provide adequate design and operating safeguards.

Experimental Noize Inc. make no warranty, expressed or implied, of the fitness of any product or service for any particular application.

In no even shall Experimental Noize Inc. be liable for any direct, indirect, consequential, punitive, special or incidental damages including, without limitation, damages for loss and profits, business interruption, or loss of information arising out of the use or inability to use any product or document, even if Experimental Noize Inc. has been advised of the possibility of such damage.

SAFETY-CRITICAL, MILITARY, AND AUTOMOTIVE APPLICATIONS DISCLAIMER: Experimental Noize Inc. products are not designed for and will not be used in connection with any applications where the failure of such products would reasonably be expected to result in significant personal injury or death (“Safety-Critical Applications”). Safety-Critical Applications include, without limitation, life support devices and systems, equipment or systems for the operation of nuclear facilities and weapons systems. Experimental Noize Inc. products are not designed nor intended for use in military or aerospace applications or environments. Experimental Noize Inc. products are not designed nor intended for use in automotive applications.

Experimental Noize Inc.

Scottsdale, AZ USA

www.xnoize.com

sales@xnoize.com