USB HOST & 4PORT HUB

USB Connector & ESD

usb_input.sch

USB MUX

U4
MAX4999ETJ

USB–UART ADAPTORS

UART Adaptor power control

U2
MCP23008-E_SS

Address: 0100.001

USB Serial Adaptor

usb_serial.sch

sheet5F60125E

sheet5F5E2B79

sheet60471F6A

sheet5F60125D

sheet60538E3D

sheet5F862C2E

sheet605E2F25

UART PATH SELECTION

TX/RX swap occurs here

Serial Matrix Switching

serial_matrix.sch

DEVICES UNDER TEST

1 sheet5EF69F18

5 Sheet5EC0D2F6

6 sheet5EF5AF0B

2 sheet5EF71681

4 sheet5EF5EAB5

3 sheet5EF6DAC2

7 sheet5EF662B8

8 sheet5EF626C1

dut.sch

Target power control, stimulus and feedback

U5
MCP23008-E_SS

Address: 0100.011

U6
MCP23008-E_SS

Address: 0100.100

U7
MCP23008-E_SS

Address: 0100.101

U3
MCP23008-E_SS

MUX control

Address: 0100.000

SUPERVISOR MICRO & USER STATUS/BTN

Management Microcontroller

supervisor.sch

STATUS LEDS

R1 1K00_1608M D11 LED_GREEN_1608M

R2 1K00_1608M D10 LED_YELLOW_1608M

R3 1K00_1608M D9 LED_RED_1608M

MNT1 MNT_M3_PLATED

MNT2 MNT_M3_PLATED

MNT3 MNT_M3_PLATED

MNT4 MNT_M3_PLATED

Sheet path: /

electric ui

PROJECT:	CI/CD Testbed
DESCRIPTION:	Test Matrix Overview
DRAWING NUMBER:	ARENA-1.0.0
DATE:	2020-06-11
SIZE:	A3
SHEET:	1 of 20

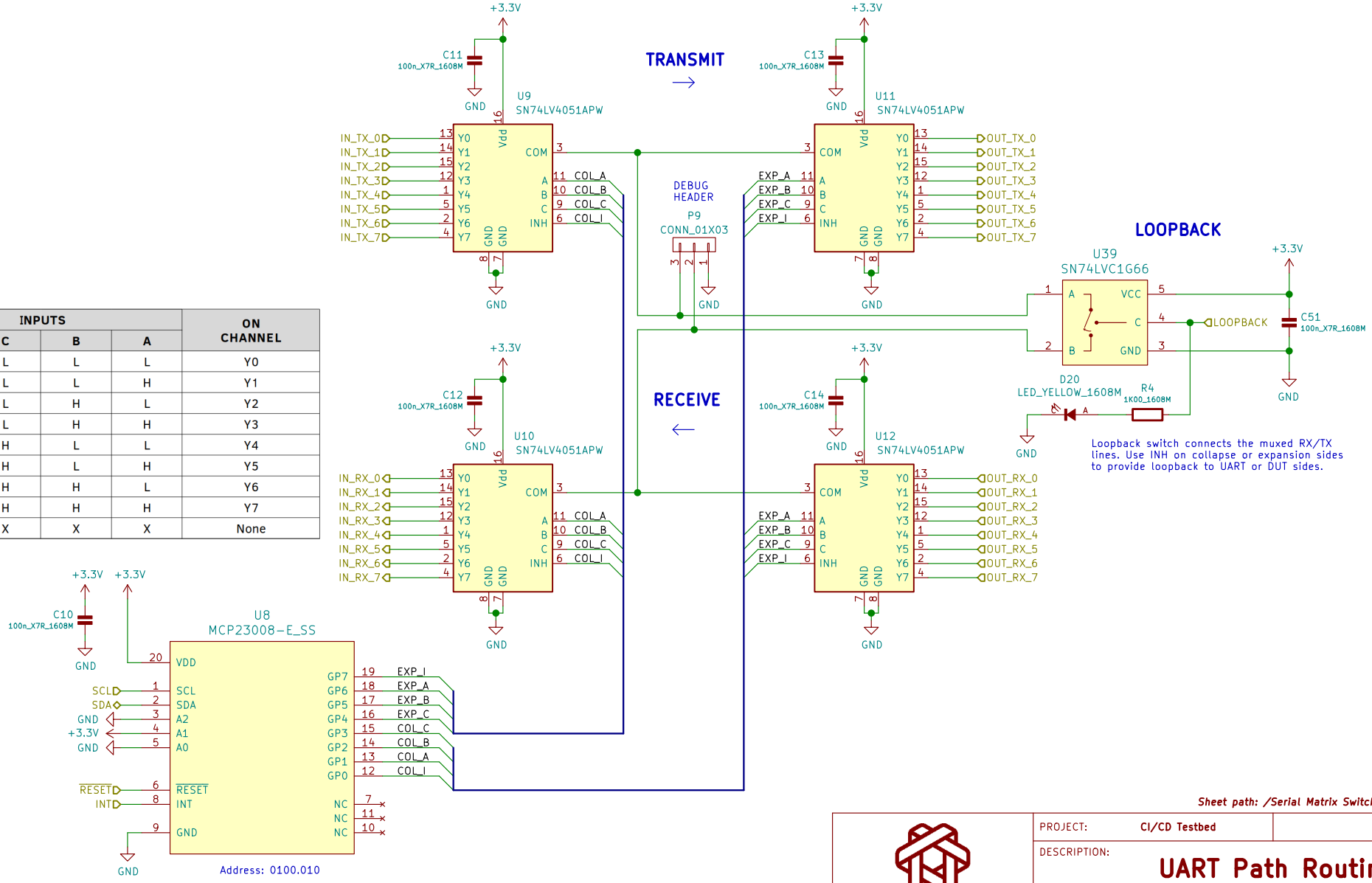
KiCad E.D.A. kicad 5.1.2

hardware.sch

USB Serial converters
feed this side of the matrix

"Collapse" the input array, then
"Expand" it back out to devices to build the
8:8 path selection functionality

The matrix output supplies the
serial output to a selected target



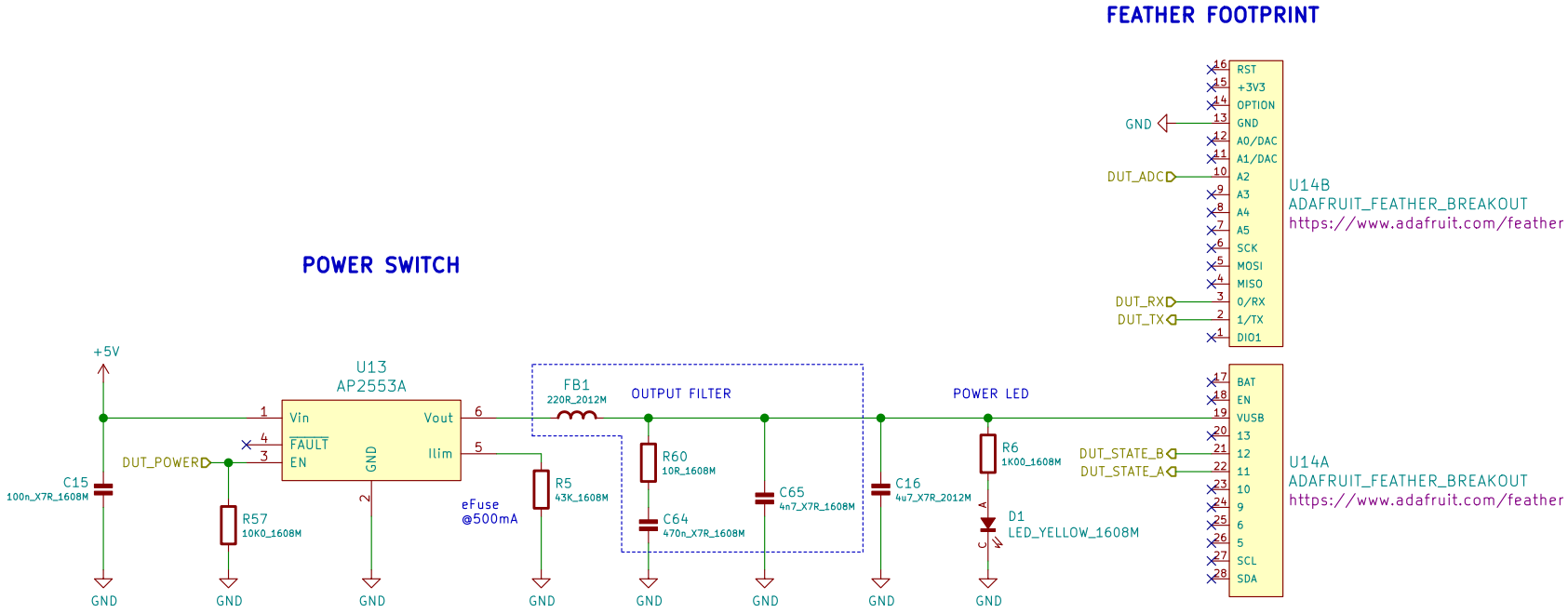
INPUTS				ON CHANNEL
INH	C	B	A	
L	L	L	L	Y0
L	L	L	H	Y1
L	L	H	L	Y2
L	L	H	H	Y3
L	H	L	L	Y4
L	H	L	H	Y5
L	H	H	L	Y6
L	H	H	H	Y7
H	X	X	X	None

Loopback switch connects the muxed RX/TX lines. Use INH on collapse or expansion sides to provide loopback to UART or DUT sides.

Sheet path: /Serial Matrix Switching/

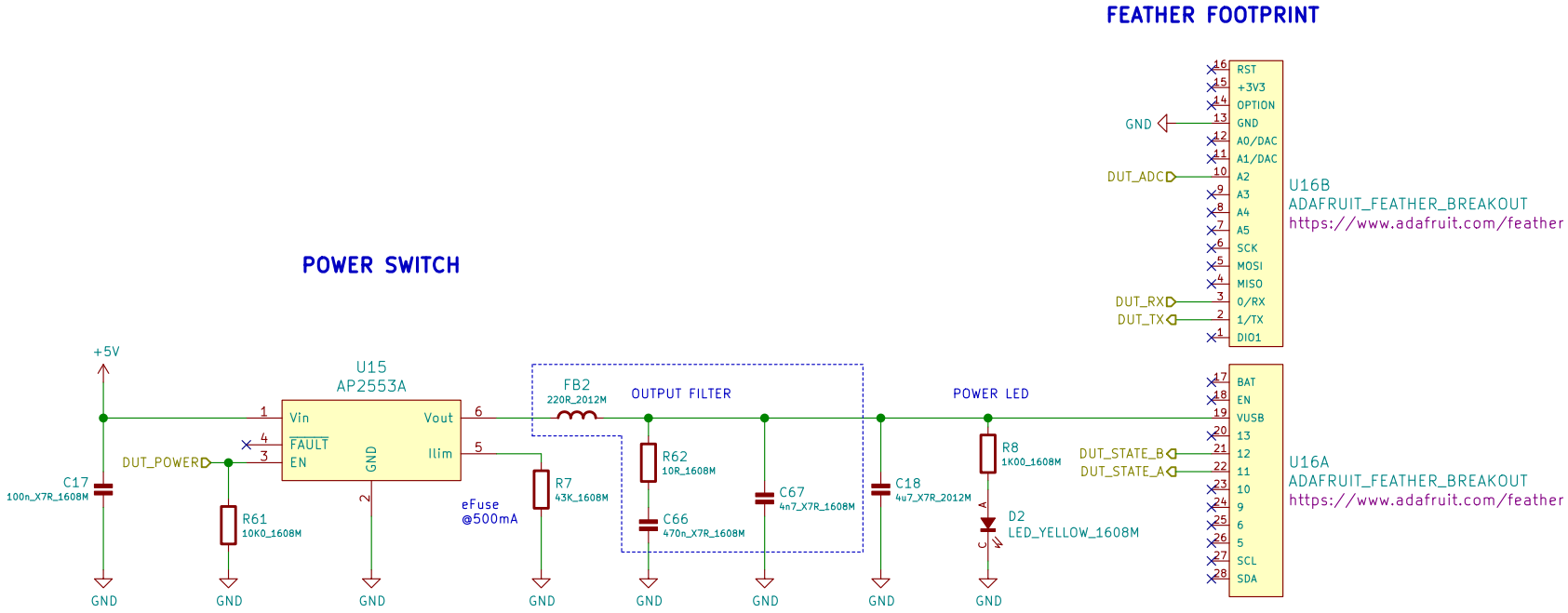
electric ui

PROJECT:	CI/CD Testbed
DESCRIPTION:	UART Path Routing
DRAWING NUMBER:	ARENA-1.0.0
DATE:	
SIZE:	A4
SHEET:	2 of 20



Sheet path: /Sheet5EC0D2F6/

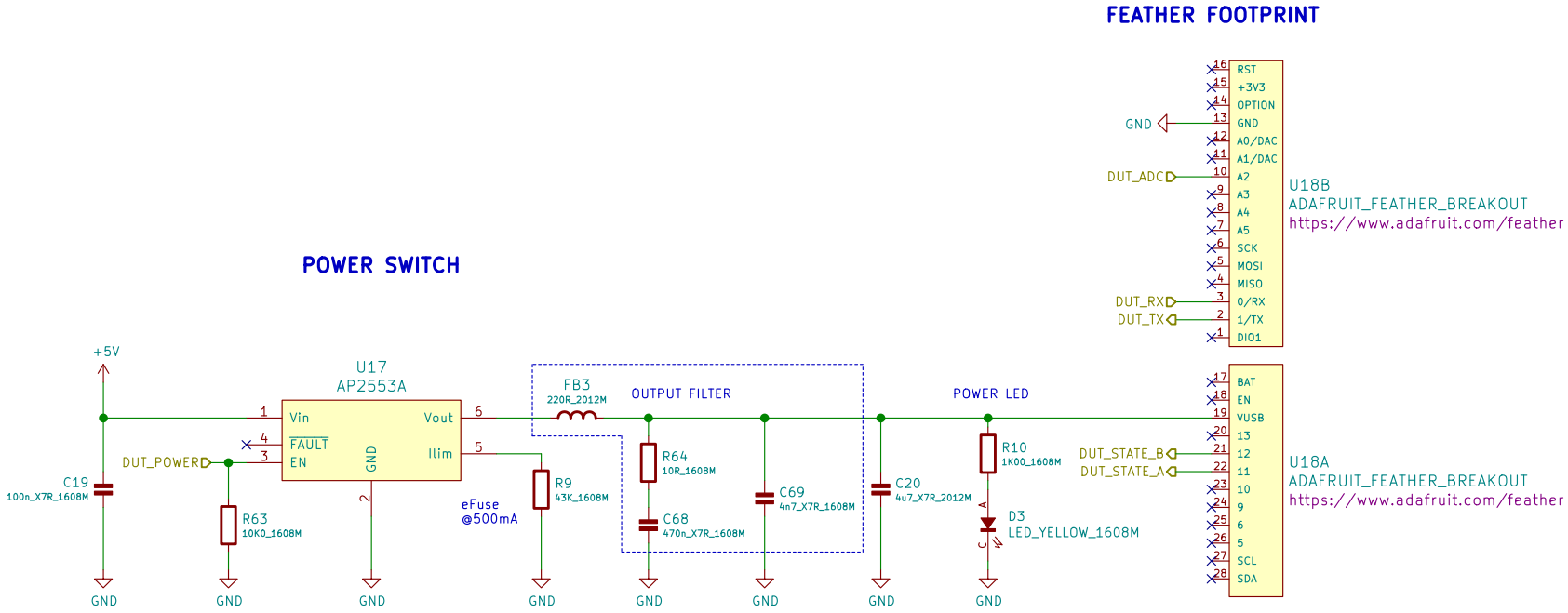
electric ui	PROJECT: CI/CD Testbed	
	DESCRIPTION: Test Device	
	DRAWING NUMBER: ARENA-1.0.0	DATE: 2020-05-17 SIZE: A4 SHEET: 3 of 20



Sheet path: /sheet5EF5AF0B/

electric ui

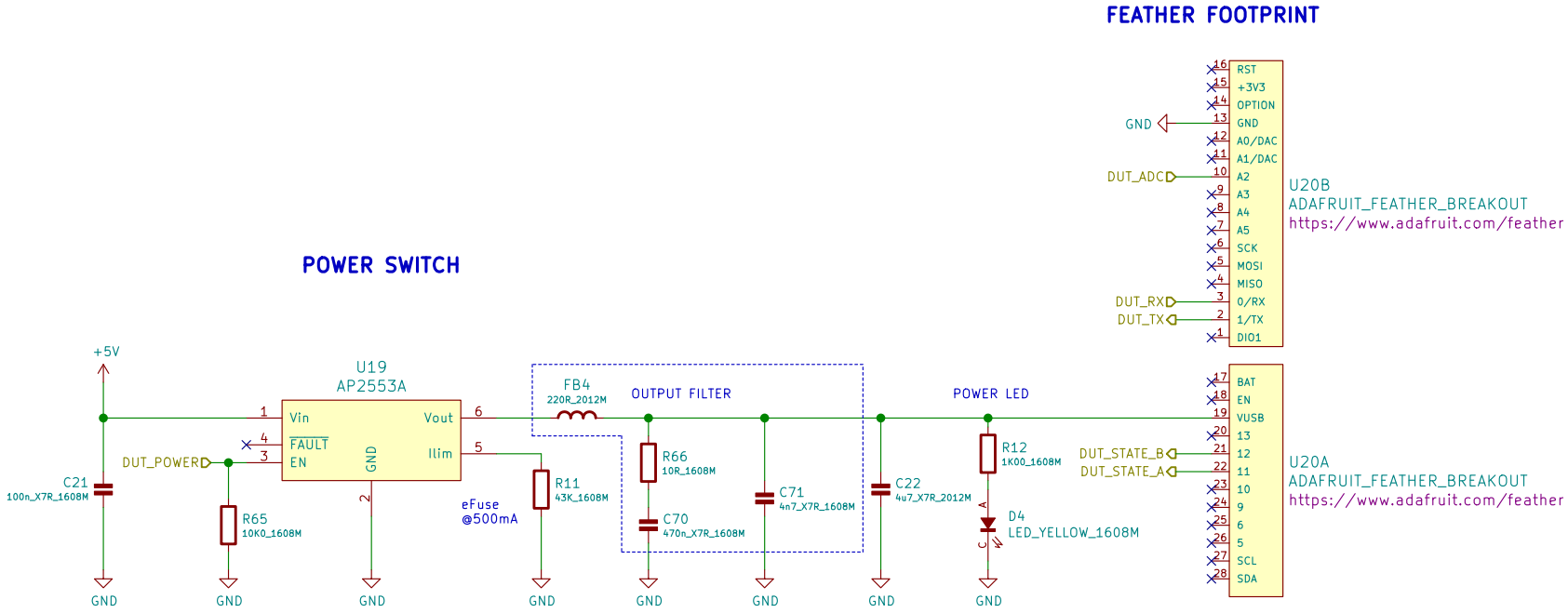
PROJECT:	CI/CD Testbed
DESCRIPTION:	Test Device
DRAWING NUMBER:	ARENA-1.0.0
DATE:	2020-05-17
SIZE:	A4
SHEET:	4 of 20



Sheet path: /sheet5EF5EAB5/

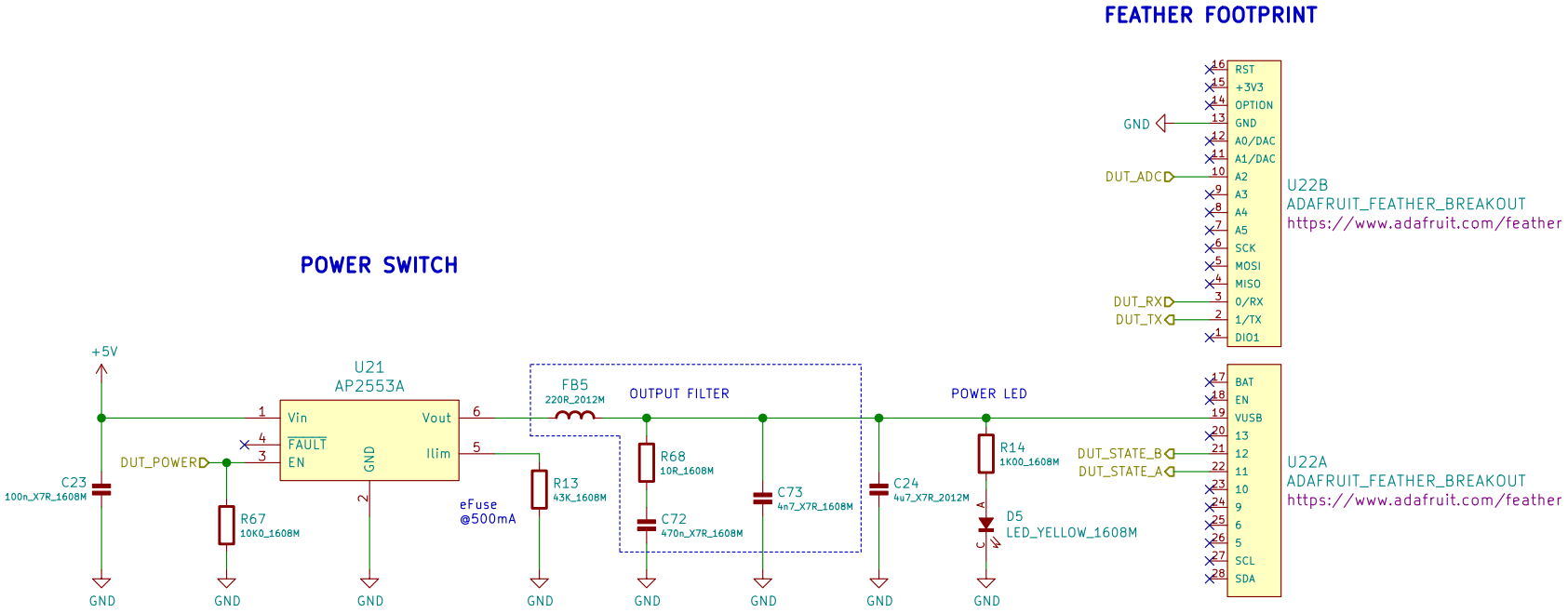
electric ui

PROJECT:	CI/CD Testbed
DESCRIPTION:	Test Device
DRAWING NUMBER:	ARENA-1.0.0
DATE:	2020-05-17
SIZE:	A4
SHEET:	5 of 20



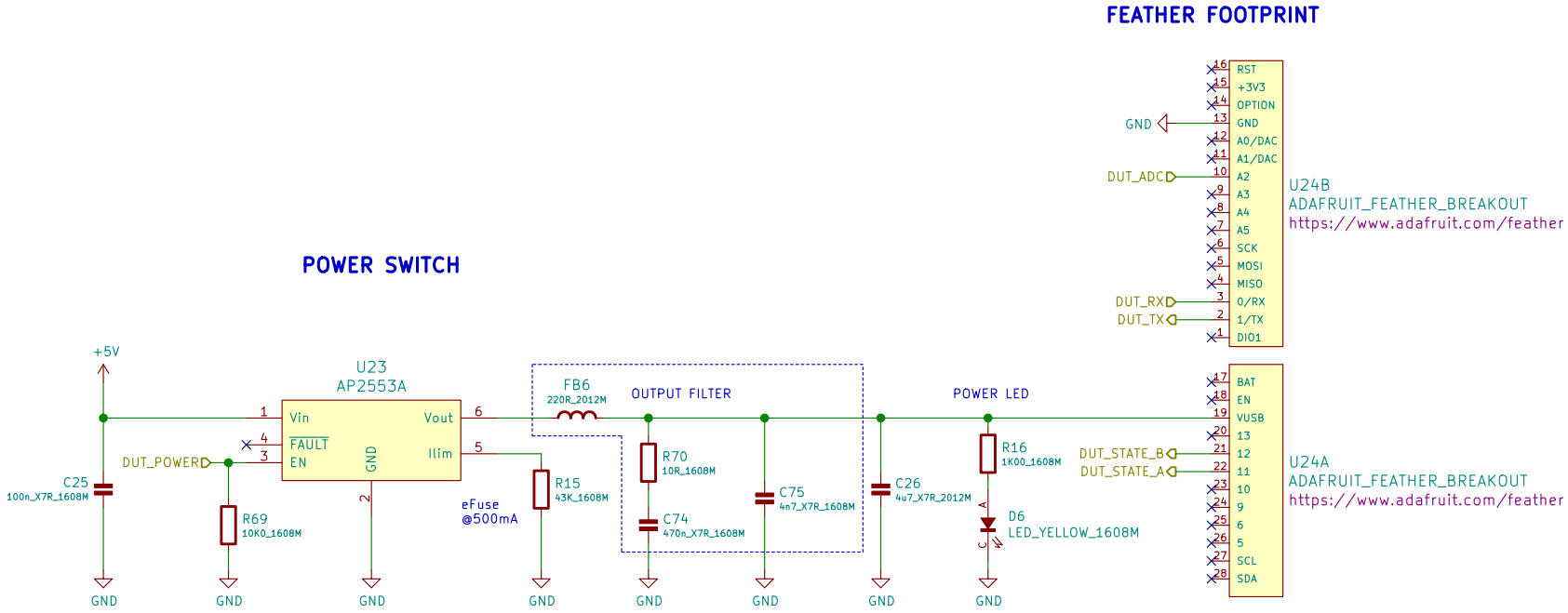
Sheet path: /sheet5EF626C1/

electric ui	PROJECT: CI/CD Testbed	
	DESCRIPTION: Test Device	
	DRAWING NUMBER: ARENA-1.0.0	DATE: 2020-05-17 SIZE: A4 SHEET: 6 of 20



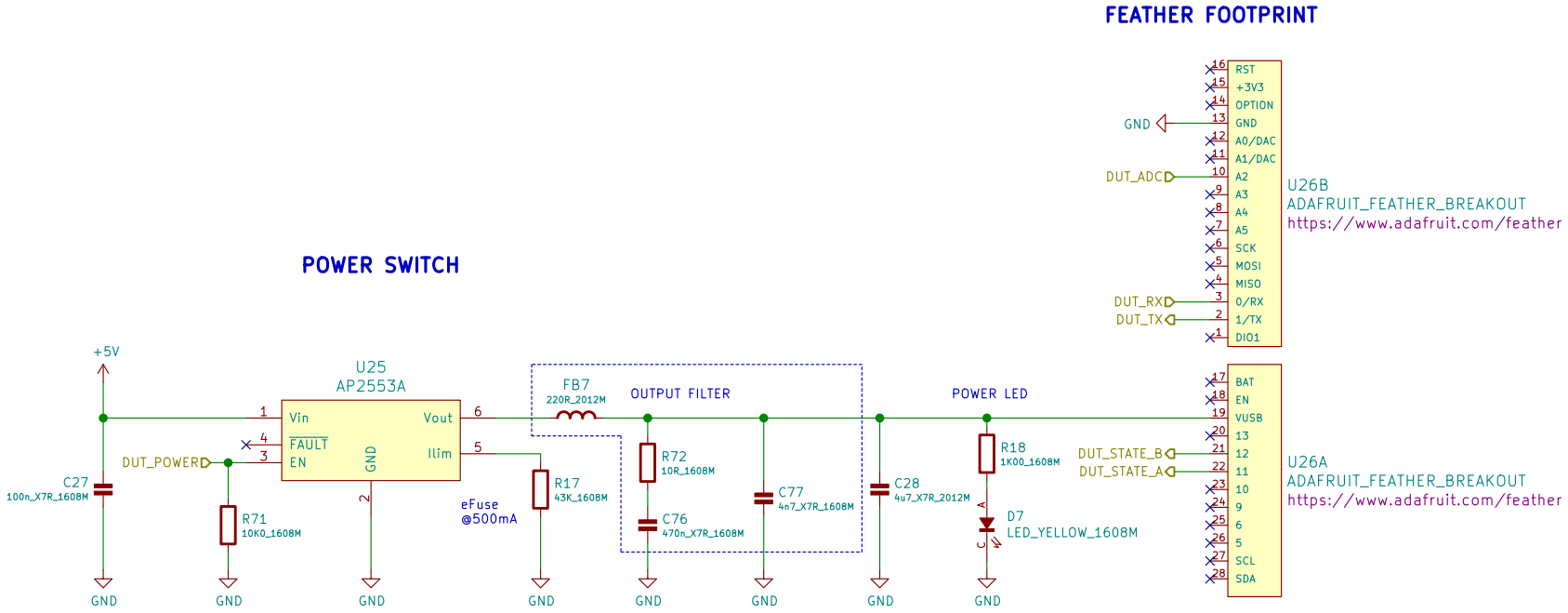
Sheet path: /sheet5EF662B8/

electric ui	PROJECT: CI/CD Testbed	
	DESCRIPTION: Test Device	
	DRAWING NUMBER: ARENA-1.0.0	DATE: 2020-05-17 SIZE: A4 SHEET: 7 of 20



Sheet path: /sheet5EF69F18/

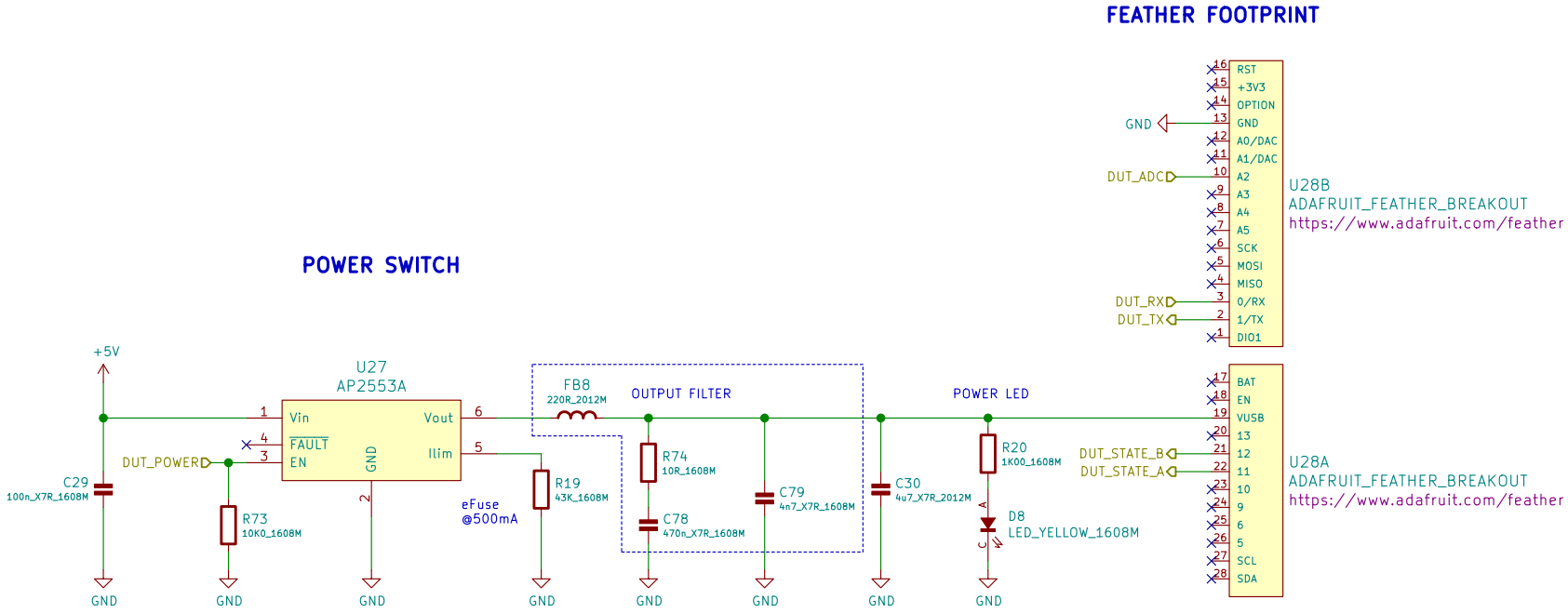
electric ui	PROJECT: CI/CD Testbed	
	DESCRIPTION: Test Device	
	DRAWING NUMBER: ARENA-1.0.0	DATE: 2020-05-17 SIZE: A4 SHEET: 8 of 20



Sheet path: /sheet5EF6DAC2/

electric ui

PROJECT:	CI/CD Testbed
DESCRIPTION:	Test Device
DRAWING NUMBER:	ARENA-1.0.0
DATE:	2020-05-17
SIZE:	A4
SHEET:	9 of 20



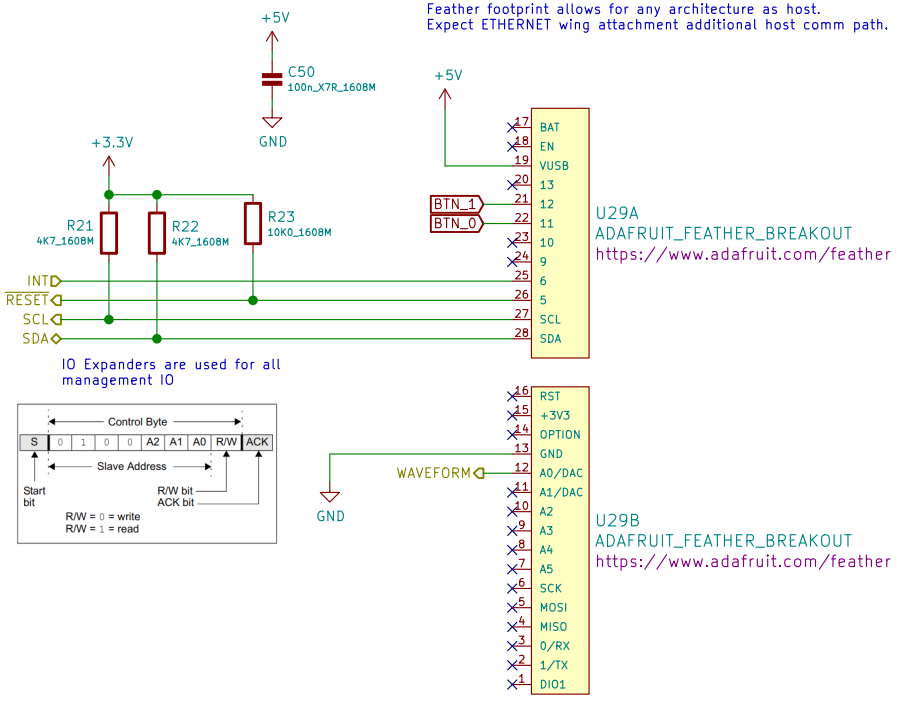
Sheet path: /sheet5EF71681/

electric ui

PROJECT:	CI/CD Testbed
DESCRIPTION:	Test Device
DRAWING NUMBER:	ARENA-1.0.0
DATE:	2020-05-17
SIZE:	A4
SHEET:	10 of 20

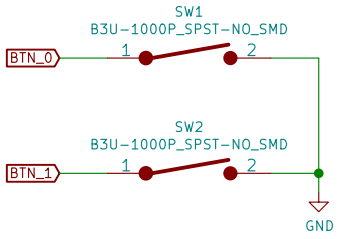
MICROCONTROLLER

Feather footprint allows for any architecture as host.
Expect ETHERNET wing attachment additional host comm path.



As the ethernet wings have the 8P8C facing away from the USB connector, the feather footprint should be rotated opposite conventional style

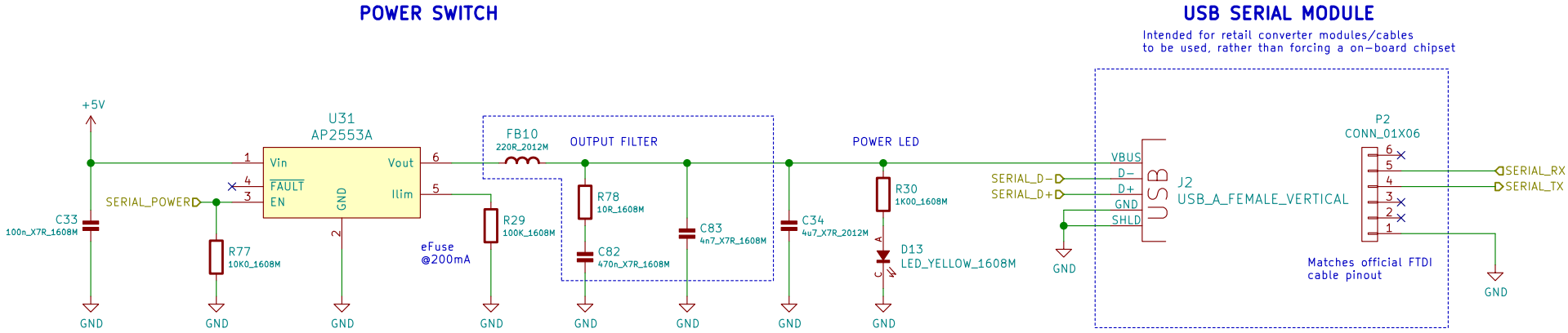
MANUAL CONTROL



Sheet path: /Management Microcontroller/

electric ui

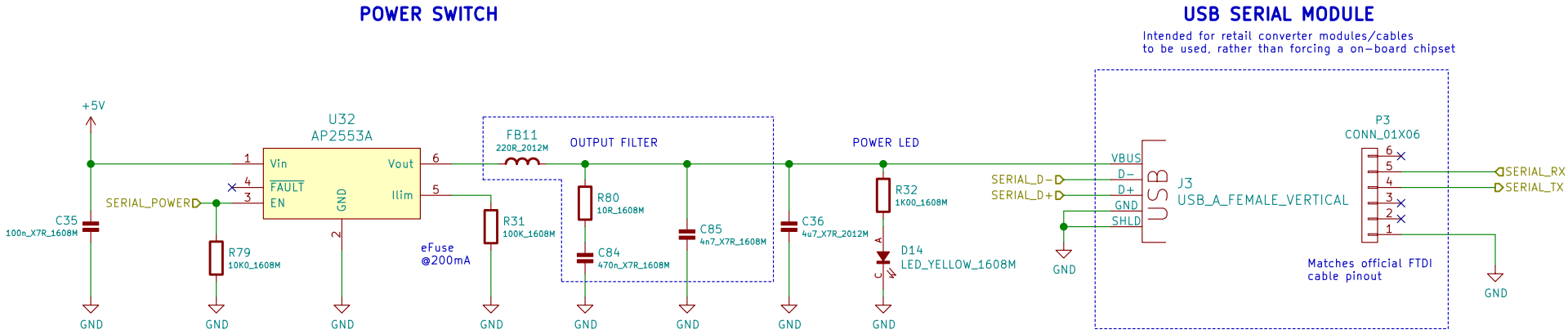
PROJECT:	CI/CD Testbed
DESCRIPTION:	Supervisor Micro
DRAWING NUMBER:	ARENA-1.0.0
DATE:	
SIZE:	A4
SHEET:	11 of 20



Sheet path: /sheet5F5E2B79/

electric ui

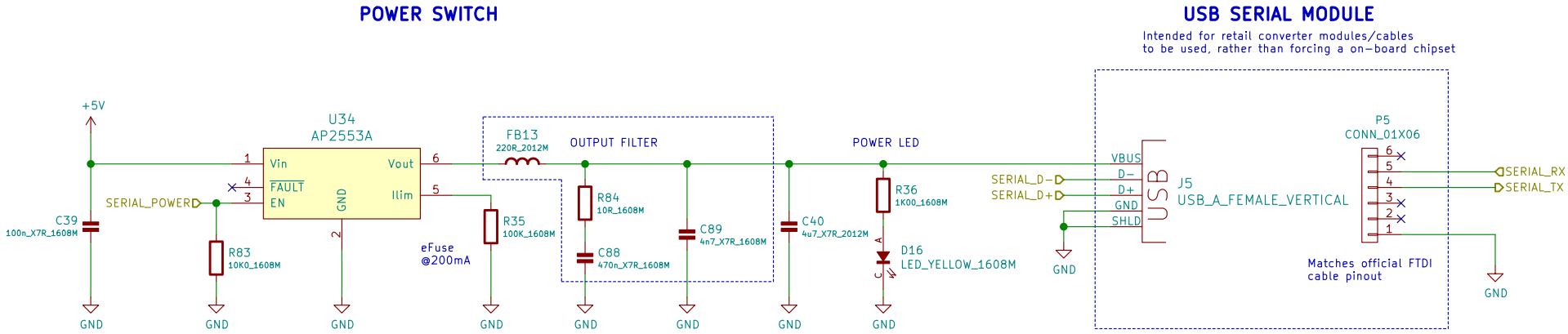
PROJECT:	CI/CD Testbed
DESCRIPTION:	USB Adaptor
DRAWING NUMBER:	ARENA-1.0.0
DATE:	
SIZE:	A4
SHEET:	12 of 20



Sheet path: /sheet5F60125D/

electric ui

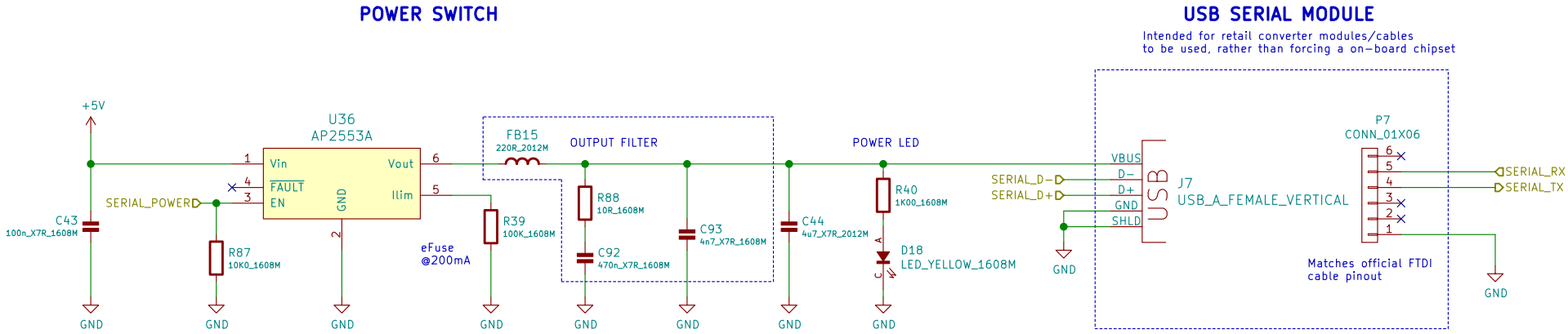
PROJECT:	CI/CD Testbed
DESCRIPTION:	USB Adaptor
DRAWING NUMBER:	ARENA-1.0.0
DATE:	
SIZE:	A4
SHEET:	13 of 20



Sheet path: /sheet5F862C2E/

electric ui

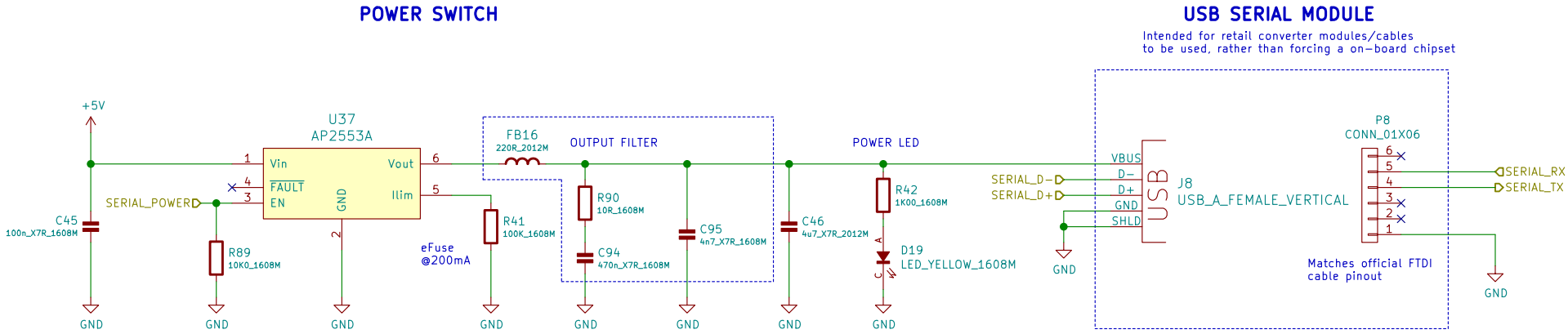
PROJECT:	CI/CD Testbed
DESCRIPTION:	USB Adaptor
DRAWING NUMBER:	ARENA-1.0.0
DATE:	
SIZE:	A4
SHEET:	14 of 20



Sheet path: /sheet60538E3D/

electric ui

PROJECT:	CI/CD Testbed
DESCRIPTION:	USB Adaptor
DRAWING NUMBER:	ARENA-1.0.0
DATE:	
SIZE:	A4
SHEET:	15 of 20



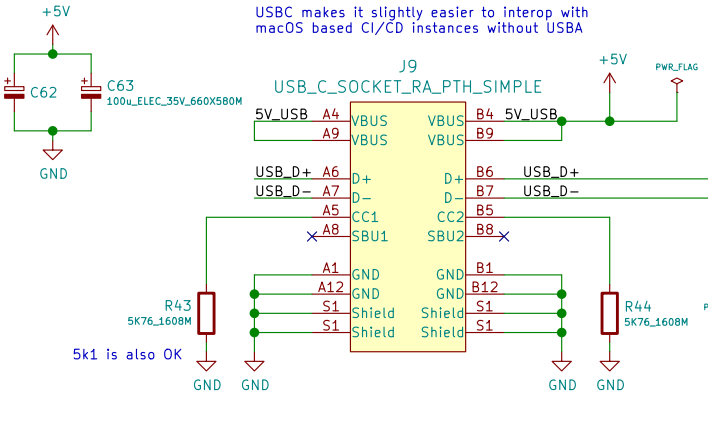
Sheet path: /sheet605E2F25/

electric ui

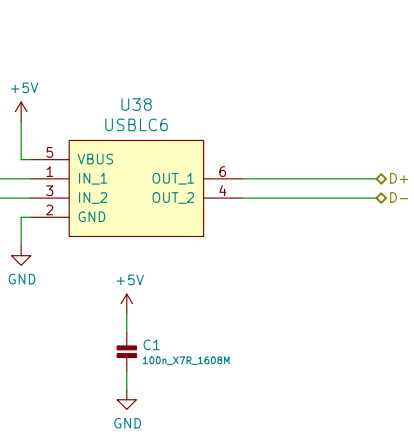
PROJECT:	CI/CD Testbed
DESCRIPTION:	USB Adaptor
DRAWING NUMBER:	ARENA-1.0.0
DATE:	
SIZE:	A4
SHEET:	16 of 20

USB HOST CONNECTOR

USBC makes it slightly easier to interop with
macOS based CI/CD instances without USBA

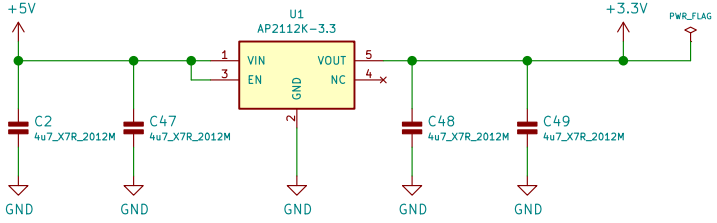


ESD PROTECTION



3.3V REGULATOR

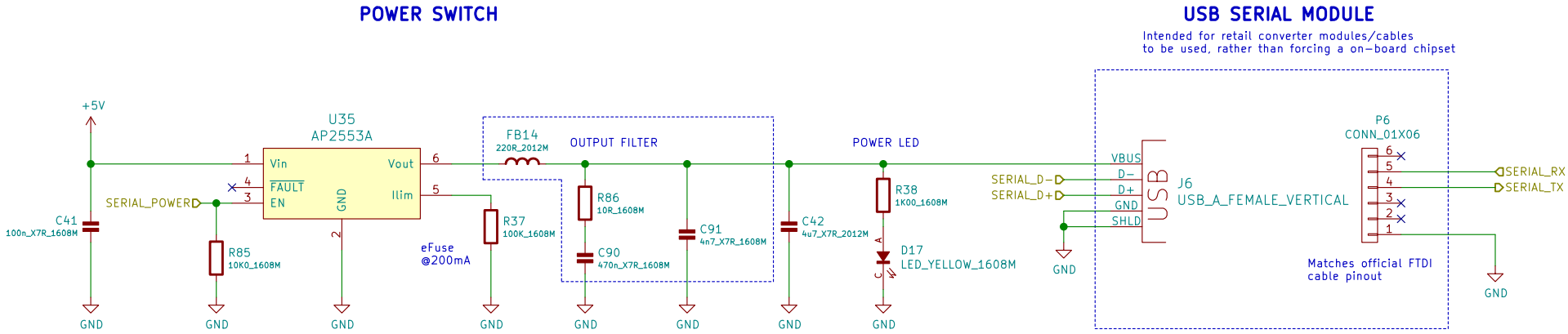
Powers the USB mux, I2C IO expanders



Sheet path: /USB Connector & ESD/

electric ui

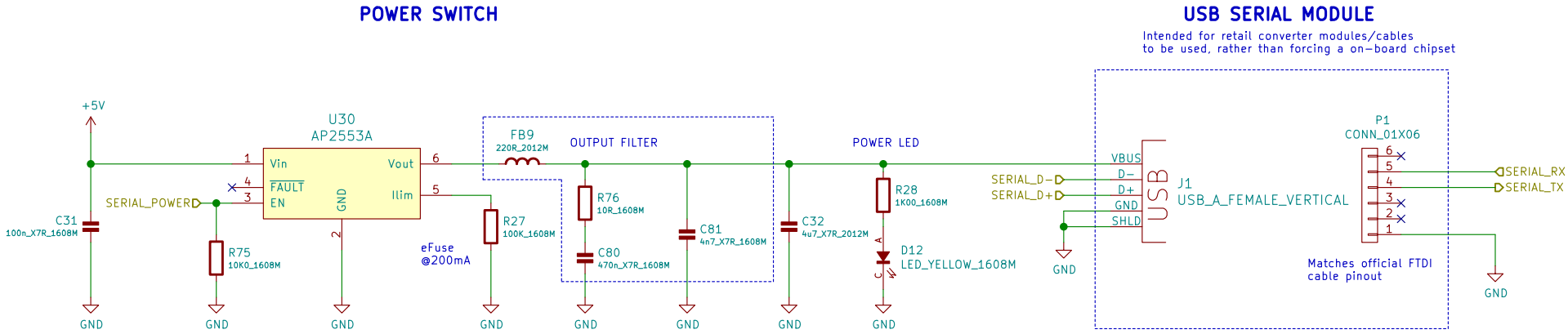
PROJECT:	CI/CD Testbed
DESCRIPTION:	Input Connection
DRAWING NUMBER:	ARENA-1.0.0
DATE:	
SIZE:	A4
SHEET:	17 of 20



Sheet path: /sheet60471F6A/

electric ui

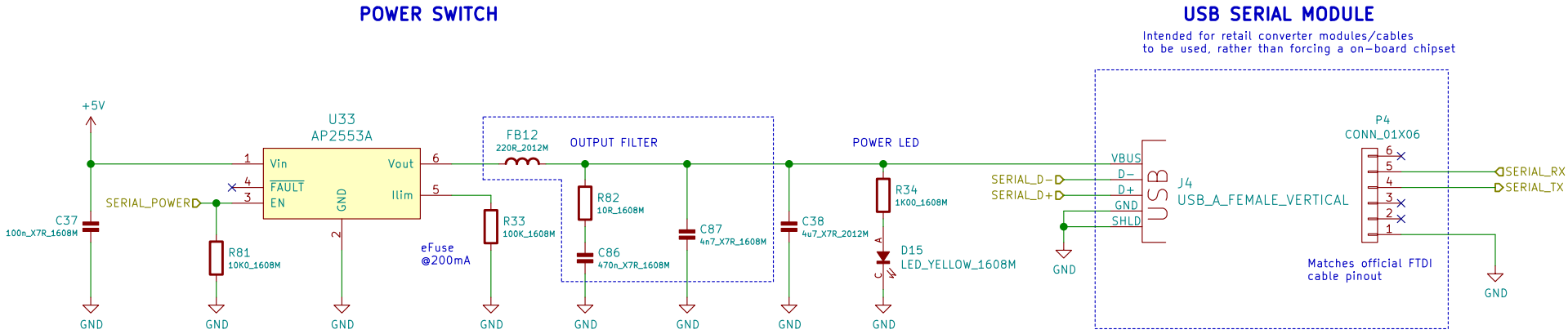
PROJECT:	CI/CD Testbed
DESCRIPTION:	USB Adaptor
DRAWING NUMBER:	ARENA-1.0.0
DATE:	
SIZE:	A4
SHEET:	18 of 20



Sheet path: /USB Serial Adaptor/

electric ui

PROJECT:	CI/CD Testbed
DESCRIPTION:	USB Adaptor
DRAWING NUMBER:	ARENA-1.0.0
DATE:	
SIZE:	A4
SHEET:	19 of 20



Sheet path: /sheet5F60125E/

electric ui

PROJECT:	CI/CD Testbed
DESCRIPTION:	USB Adaptor
DRAWING NUMBER:	ARENA-1.0.0
DATE:	
SIZE:	A4
SHEET:	20 of 20