Boost Converter 5.5V

+3.3V

L1
XEL4030-102MEC

U1
TPS61023

VIN SW
EN VOUT
GND FB

TP1
TEST +5V5

VCC

C2 C3
100n 10u

R1
820k

R2
100k

C1 C4
10u 10u

GND GND GND GND GND GND

Reference Voltage 2.5V

VCC

U5
REF3025-AIDBZR

TP2
TEST +2V5

+2V5

IN OUT
GND

C5
10u

GND GND

DAC A – Laser Setpoint

VCC VCC

C14 C15
10u 100n

GND GND

VCC VCC VCC

C16 C17
10u 100n

GND GND GND

VCC +2V5

U9C
MCP6022

V+ 8

U8
MCP4922-ESL

MOSI 5 SDI VDD
CLK 4 SCK VrefA VoutA 14
CS_A 3 CS
8 LDAC VrefB VoutB 10
9 SHDN AVSS

U9A
MCP6022
DAC_A0

U9B
MCP6022
DAC_A1

GND VCC GND +2V5

Motor Control

+3.3V

J1
Conn_01x02_Pin

D1
SM4007PL

PWM

Q1
AO3400A

R3
10k

GND GND

DAC B – Laser Setpoint

VCC VCC

C10 C11
10u 100n

GND GND

VCC VCC VCC

C12 C13
10u 100n

GND GND GND

VCC +2V5

U7C
MCP6022

V+ 8

U6
MCP4922-ESL

MOSI 5 SDI VDD
CLK 4 SCK VrefA VoutA 14
CS_B 3 CS
8 LDAC VrefB VoutB 10
9 SHDN AVSS

U7A
MCP6022
DAC_B0

U7B
MCP6022
DAC_B1

GND VCC GND +2V5

MCU – Raspberry Pi Pico

+3.3V

U2
SC0915

VBUS 40
VSYS 39
3V3_OUT 36
ADC_VREF 35

SWCLK D1 SWDCLK
SWDIO D3 SWDIO

SWO 1 GP0
2 GP1
CLK 4 GP2
MOSI 5 GP3
6 GP4
CS_A 7 GP5
CS_B 9 GP6
CS_C 10 GP7
11 GP8
12 GP9
PWM 14 GP10
15 GP11
16 GP12

GP13 17
GP14 19
GP15 20
GP16 21
GP17 22
GP18 24
GP19 25
GP20 26
GP21 27
GP22 29
GP26 31
GP27 32
GP28 34

3V3_EN 37
RUN 30

TP6_BOOTSEL TP6
TP2_USB_DM TP2
TP3_USB_DP TP3
TP4_GPIO23/SMPS_PS TP4
TP5_GPIO25/LED TP5
TP1_GND TP1

USB_SHIELD

AGND 33
GND

+3.3V

J8
FTSH-105-01-F-DV-P-TR

01 01 02 02
03 03 04 04 SWDIO
05 05 06 06 SWDCLK
07 07 08 08 SWO
09 09 10 10

GND GND

DAC C – Laser Setpoint

VCC VCC

C9 C7
10u 100n

GND GND

VCC VCC VCC

C8 C6
10u 100n

GND GND GND

VCC +2V5

U3C
MCP6022

V+ 8

U4
MCP4922-ESL

MOSI 5 SDI VDD
CLK 4 SCK VrefA VoutA 14
CS_C 3 CS
8 LDAC VrefB VoutB 10
9 SHDN AVSS

U3A
MCP6022
DAC_C0

U3B
MCP6022
DAC_C1

GND VCC GND +2V5

DAC OUTPUTS – Laser Setpoint

DAC_A0 2
1
Conn_01x02_Pin
J2

DAC_A1 2
1
Conn_01x02_Pin
J3

DAC_B0 2
1
Conn_01x02_Pin
J5

DAC_B1 2
1
Conn_01x02_Pin

DAC_C0 2
1
Conn_01x02_Pin

DAC_C1 2
1
Conn_01x02_Pin

GND