Power Input with Reverse Polarity Protection

J1
Barrel_Jack

Q1
FQP27P06

+12V

PWR_FLAG

D1
10V 0.5W

R5
2k

PWR_FLAG

GND

I_z,max=50mA
I_z=1mA @ V_in=12V

5V 5A Synchronous Buck Converter

+12V

~60% Capacitance @ 12VDC

BUCK_VIN

C5
0.1uF

C_vcc

GND

TP11
TestPoint

C7
22uF X7R 25V

C1
22uF X7R 25V

GND

U1
AOZ6605PI-1

EN 3 VIN
COMP 2 VCC 6
SS 7
1 GND 8
4

BST 5
LX 9
FB 8

R4
0R

R_bst

C4
0.1uF

C_bst

L1
4.7uH 6A

BUCK_VOUT

R2
110k 1%
R_fb1

C10
DNP
C_feed

R1
10k
R_comp

C2
1nF
C_comp

C3
33nF
C_ss

TP10
TestPoint

BUCK_FB

R_fb2

R3
15k 1%

GND

C6 C8 C9 C11 C12 C13
22uF X7R 25V (each)

C_out

~20% Capacitance @ 5VDC

+5V

TP9
TestPoint

PWR_FLAG

V_f=2.05V @ I_f=10mA

D3
RED LED

R7
300R

GND

Power Outputs

2x 5V 2A Power Outputs
(External Screen and Microscope)

J3
61400826021

VBUS1 1
VBUS2 2
D1+ 3
D1- 4
D2+ 5
D2- 6
GND2 8
GND1 4
Shield 9

GND

+12V Power Output

+12V

D2
40V 3A

J2
MSTBA 5.08mm 01x02

GND

V_f=0.7V @
I_f=2A, T_j=25°C

Test Points / Controls

+3V3
TP1
TestPoint

TestPoint
TP3

GND

U2
Pico
Raspberry Pi

GPIO0 1   VBUS 40
GPIO1 2   VSYS 39
GND 3   GND 38
GPIO2 4   3V3_EN 37
GPIO3 5   3V3 36
GPIO4 6   ADC_VREF 35
GPIO5 7   GPIO28_ADC2 34
GND 8   AGND 33
GPIO6 9   GPIO27_ADC1 32
GPIO7 10   GPIO26_ADC0 31
GPIO8 11   RUN 30
GPIO9 12   GPIO22 29
GND 13   GND 28
GPIO10 14   GPIO21 27
GPIO11 15   GPIO20 26
GPIO12 16   GPIO19 25
GPIO13 17   GPIO18 24
GND 18   GND 23
GPIO14 19   GPIO17 22
GPIO15 20   GPIO16 21

+5V
+3V3
PWR_FLAG
GND

Color Control
TestPoint TP6
RV2 10k
+3V3
GND

Brightness Control
RV1 10k
TestPoint TP7
+3V3
GND

COLOR_CTRL
BRIGHTNESS_CTRL

TestPoint TP4
LED_LEFT_DATA
LED_RIGHT_DATA
TestPoint TP5

+5V

J4
0.1" Male 01x03

J5
0.1" Male 01x03

GND

H1 MountingHole
H2 MountingHole
H3 MountingHole
H4 MountingHole

GRAPHIC1
GRAPHIC

PCB1
main_board
REV B
PCB