WERKZEUG

C1=15pF, C2=15pF, CL=12pF, Cstray=5,
(C1*C2)/(C1+C2)+Cstray == CL

Y1
EC5-8O-12-33-JGN-TR-12MHZ

XIN — IN/OUT — OUT/IN — XOUT
GND
15pF C1 15pF C2
GND

U1
RP2040
ADC_AVDD
DVDD
IOVDD
USB_VDD
VREG_VIN
VREG_VOUT
RUN
SWCLK
SWD
XIN
XOUT

GPIO0
GPIO1
GPIO2
GPIO3
GPIO4
GPIO5
GPIO6
GPIO7
GPIO8
GPIO9
GPIO10
GPIO11
PMOD_A4
PMOD_A9

GPIO0
GPIO1
GPIO2
GPIO3
GPIO4
GPIO5
GPIO6
GPIO7
GPIO8
GPIO9
GPIO10
GPIO11
GPIO12
GPIO13
GPIO14

QSPI_SCLK
QSPI_SD0
QSPI_SD1
QSPI_SD2
QSPI_SD3
QSPI_CSN

GPIO15
GPIO16
GPIO17
GPIO18
GPIO19
GPIO20
GPIO21
GPIO22
GPIO23
GPIO24
GPIO25
GPIO26/ADC0
GPIO27/ADC1
GPIO28/ADC2
GPIO29/ADC3

USB_DM
USB_DP

TESTEN
GND

RP_QSPI_SCK
RP_QSPI_IO0
RP_QSPI_IO1
RP_QSPI_IO2
RP_QSPI_IO3
RP_QSPI_SS

USB1_DN
USB1_DP

PMOD_A3
PMOD_A8
PMOD_A2
PMOD_A7
PMOD_A1
LED1
LED2
SW_HOST
USB2_DN
USB2_DP
USB2_DP_PU
ADC0
ADC1
ADC2
ADC3

C3 1uF
PWR3V3
PWR1V1
C7 100nF
R5 10K
R6 1K
BOOT
GND

U2
W25Q32JVSS
CS
CLK
VCC
DI(IO0)
DO(IO1)
IO2
IO3
GND
PWR3V3
C15 100nF C16 1uF
GND
RP_QSPI_SS
RP_QSPI_SCK
RP_QSPI_IO0
RP_QSPI_IO1
RP_QSPI_IO2
RP_QSPI_IO3

PWR3V3
LEDR1 D2 LEDR
R12 536R R13 536R
LED1 LED2

H1 MountingHole_Pad
H2 MountingHole_Pad
H3 MountingHole_Pad
H4 MountingHole_Pad
GND

PMOD1
Type 2A
GPIO
IOA0
IOA1
IOA2
IOA3
GND
VCC
IOB0
IOB1
IOB2
IOB3
GND
VCC

PMOD_A1
PMOD_A2
PMOD_A3
PMOD_A4
GND
PWR3V3
PMOD_A7
PMOD_A8
PMOD_A9
PMOD_A10
GND
PWR3V3

SW2
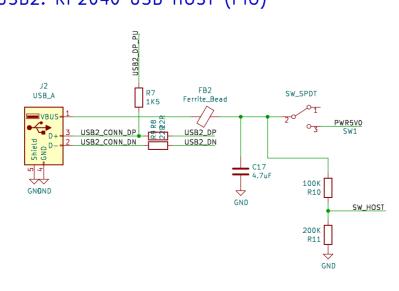BOOT
BOOT
GND

J3
Conn_02x10_Top_Bottom
GPIO0 1 11 GPIO8
GPIO1 2 12 GPIO9
GPIO2 3 13 GPIO10
GPIO3 4 14 GPIO11
GPIO4 5 15 ADC0
GPIO5 6 16 ADC1
GPIO6 7 17 ADC2
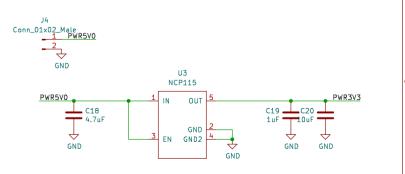GPIO7 8 18 ADC3
GND   9 19 GND
PWR3V3 10 20 PWR3V3

USB1: FPGA USB DEVICE & POWER

J1
TYPE-C-31-M-12-FIXED
CC1
DP1
DN1
SBU1
VBUS
SBU2
DN2
DP2
CC2
SHIELD
GND
FB1
Ferrite_Bead
PWR5V0
C13 4.7uF
GND
USB1_CONN_DP
USB1_CONN_DN
USB1_CONN_DN
USB1_CONN_DP
R1 5K1
GND
R4 5K1
GND
R2 27R
R3 27R
USB1_CONN_DN — USB1_DN
USB1_CONN_DP — USB1_DP

USB2: RP2040 USB HOST (PIO)

J2
USB_A
VBUS
D+
D-
GND
Shield
GND
USB2_DP_PU
R7 1K5
R8 22R
R9 22R
FB2
Ferrite_Bead
USB2_CONN_DP
USB2_CONN_DN
USB2_DP
USB2_DN
SW_SPDT
PWR5V0
SW1
C17 4.7uF
GND
100K R10
200K R11
SW_HOST
GND

J4
Conn_01x02_Male
PWR5V0
GND

U3
NCP115
IN
EN
GND
GND2
OUT
PWR5V0
C18 4.7uF
GND
C19 1uF C20 10uF
PWR3V3
GND GND

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Sheet: /
File: ldp.kicad_sch
Title: Werkzeug USB Multi-Tool
Size: A2   Date: 2022-08-12   Rev: V2
KiCad E.D.A. kicad 6.0.5-a6ca702e91-116-ubuntu20.04.1   Id: 1/1