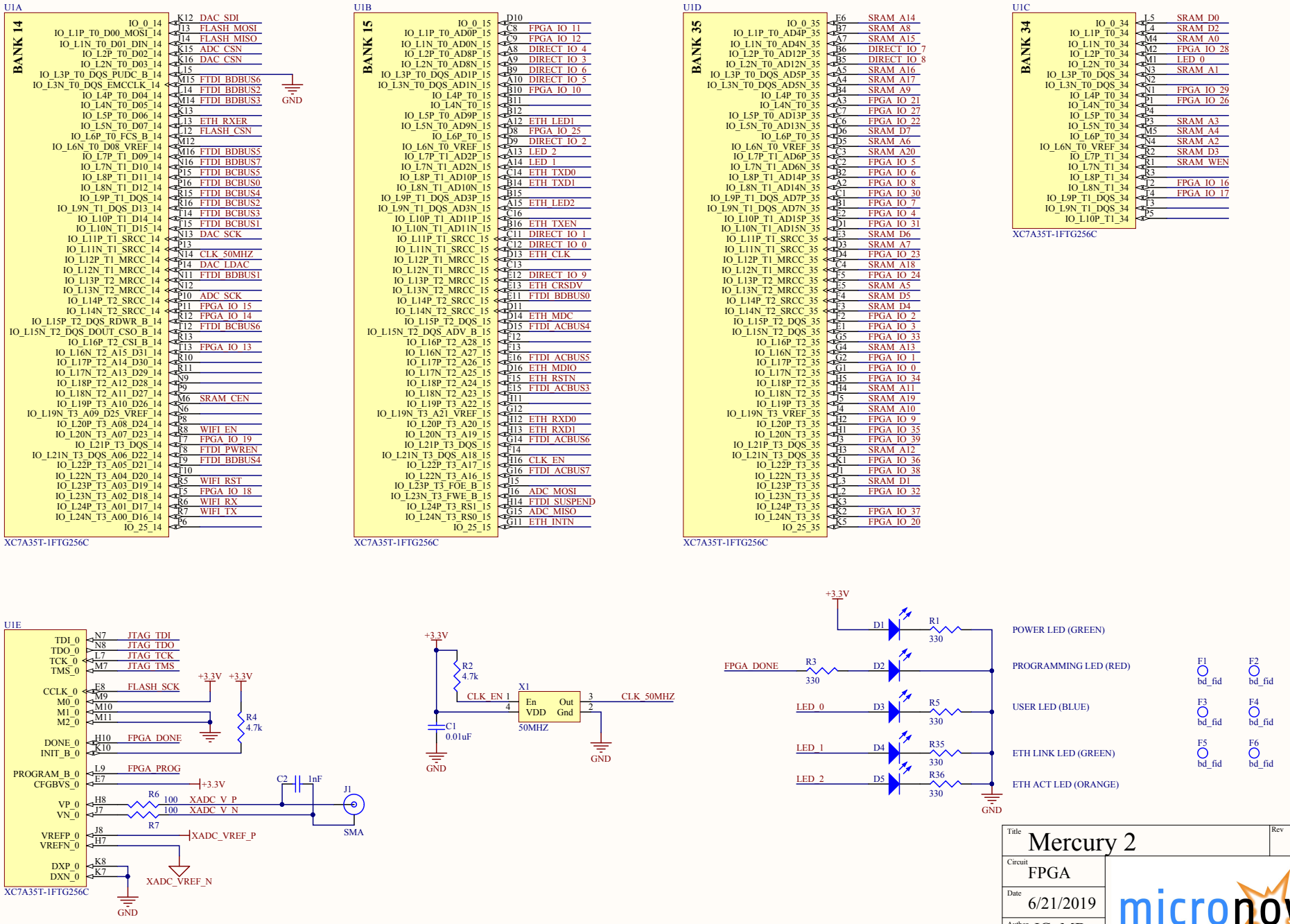
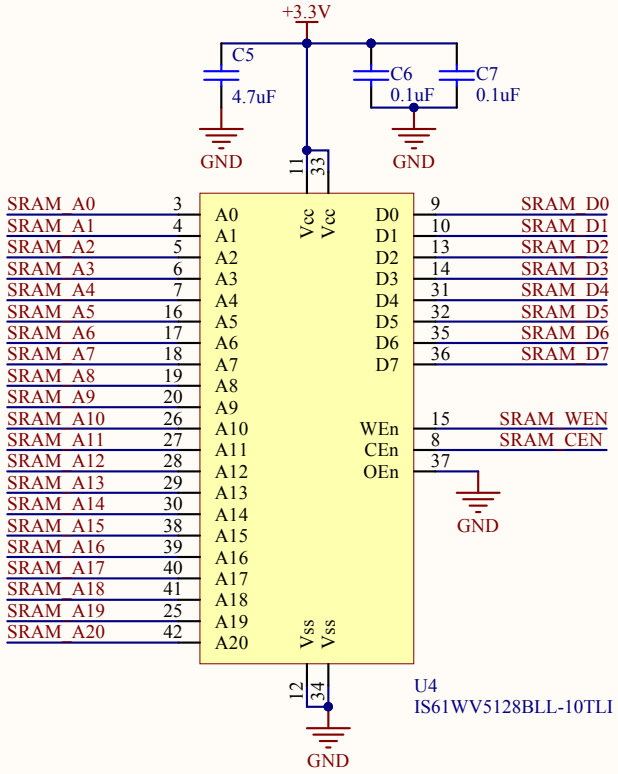
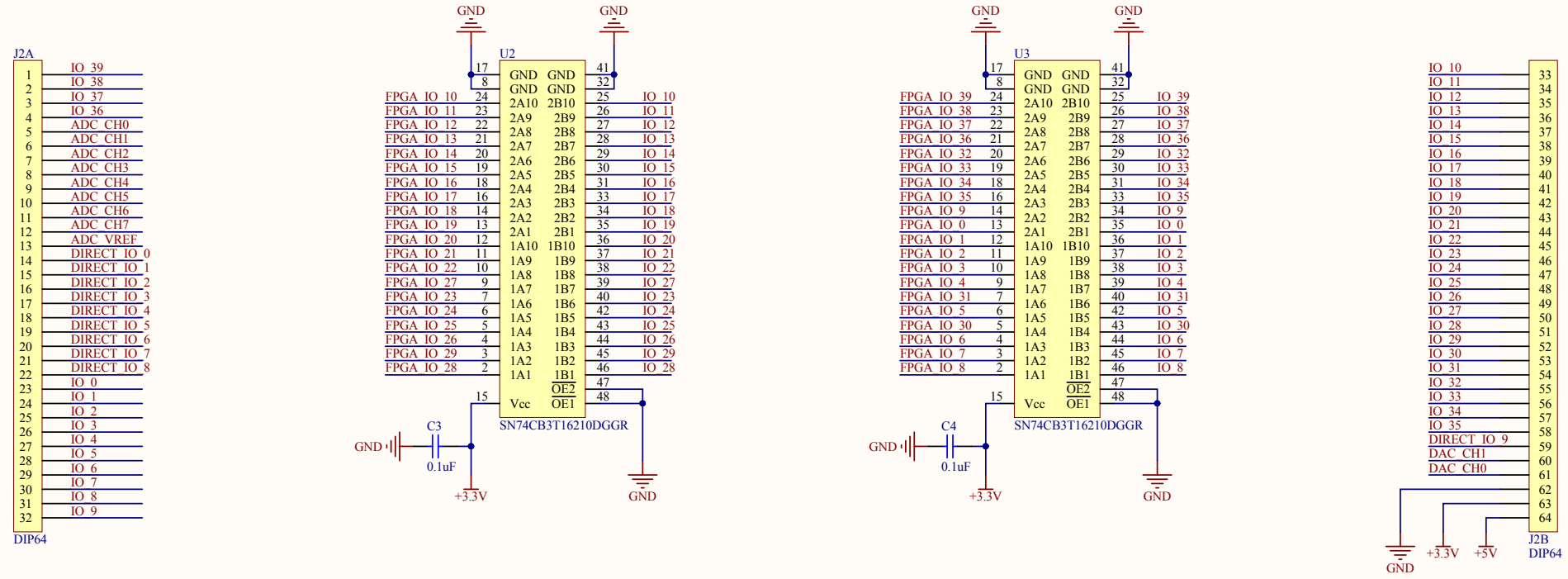

U1A
BANK 14
IO_0_14 K12 DAC_SDI
IO_L1P_T0_D00_MOSI_14 J13 FLASH_MOSI
IO_L1N_T0_D01_DIN_14 J14 FLASH_MISO
IO_L2P_T0_D02_14 E15 ADC_CSN
IO_L2N_T0_D03_14 E16 DAC_CSN
IO_L3P_T0_DQS_PUDC_B_14 L15
IO_L3N_T0_DQS_EMCCLK_14 M15 FTDI_BDBUS6
IO_L4P_T0_D04_14 L14 FTDI_BDBUS2
IO_L4N_T0_D05_14 M14 FTDI_BDBUS3
IO_L5P_T0_D06_14 K13
IO_L5N_T0_D07_14 L13 ETH_RXER
IO_L6P_T0_FCS_B_14 L12 FLASH_CSN
IO_L6N_T0_D08_VREF_14 M12
IO_L7P_T1_D09_14 M16 FTDI_BDBUS5
IO_L7N_T1_D10_14 N16 FTDI_BDBUS7
IO_L8P_T1_D11_14 P15 FTDI_BCBUS5
IO_L8N_T1_D12_14 P16 FTDI_BCBUS0
IO_L9P_T1_DQS_14 R15 FTDI_BCBUS4
IO_L9N_T1_DQS_D13_14 R16 FTDI_BCBUS2
IO_L10P_T1_D14_14 T14 FTDI_BCBUS3
IO_L10N_T1_D15_14 T15 FTDI_BCBUS1
IO_L11P_T1_SRCC_14 N13 DAC_SCK
IO_L11N_T1_SRCC_14 P13
IO_L12P_T1_MRCC_14 N14 CLK_50MHZ
IO_L12N_T1_MRCC_14 P14 DAC_LDAC
IO_L13P_T2_MRCC_14 N11 FTDI_BDBUS1
IO_L13N_T2_MRCC_14 N12
IO_L14P_T2_SRCC_14 P10 ADC_SCK
IO_L14N_T2_SRCC_14 P11 FPGA_IO_15
IO_L15P_T2_DQS_RDWR_B_14 R12 FPGA_IO_14
IO_L15N_T2_DQS_DOUT_CSO_B_14 T12 FTDI_BCBUS6
IO_L16P_T2_CSI_B_14 R13
IO_L16N_T2_A15_D31_14 T13 FPGA_IO_13
IO_L17P_T2_A14_D30_14 R10
IO_L17N_T2_A13_D29_14 R11
IO_L18P_T2_A12_D28_14 N9
IO_L18N_T2_A11_D27_14 P9
IO_L19P_T3_A10_D26_14 M6 SRAM_CEN
IO_L19N_T3_A09_D25_VREF_14 N6
IO_L20P_T3_A08_D24_14 P8
IO_L20N_T3_A07_D23_14 R8 WIFI_EN
IO_L21P_T3_DQS_14 T7 FPGA_IO_19
IO_L21N_T3_DQS_A06_D22_14 T8 FTDI_PWREN
IO_L22P_T3_A05_D21_14 T9 FTDI_BDBUS4
IO_L22N_T3_A04_D20_14 T10
IO_L23P_T3_A03_D19_14 R5 WIFI_RST
IO_L23N_T3_A02_D18_14 T5 FPGA_IO_18
IO_L24P_T3_A01_D17_14 R6 WIFI_RX
IO_L24N_T3_A00_D16_14 R7 WIFI_TX
IO_25_14 P6
XC7A35T-1FTG256C
GND
U1B
BANK 15
IO_0_15 D10
IO_L1P_T0_AD0P_15 C8 FPGA_IO_11
IO_L1N_T0_AD0N_15 C9 FPGA_IO_12
IO_L2P_T0_AD8P_15 A8 DIRECT_IO_4
IO_L2N_T0_AD8N_15 A9 DIRECT_IO_3
IO_L3P_T0_DQS_AD1P_15 B9 DIRECT_IO_6
IO_L3N_T0_DQS_AD1N_15 A10 DIRECT_IO_5
IO_L4P_T0_15 B10 FPGA_IO_10
IO_L4N_T0_15 B11
IO_L5P_T0_AD9P_15 B12
IO_L5N_T0_AD9N_15 A12 ETH_LED1
IO_L6P_T0_15 D8 FPGA_IO_25
IO_L6N_T0_VREF_15 D9 DIRECT_IO_2
IO_L7P_T1_AD2P_15 A13 LED_2
IO_L7N_T1_AD2N_15 A14 LED_1
IO_L8P_T1_AD10P_15 C14 ETH_TXD0
IO_L8N_T1_AD10N_15 B14 ETH_TXD1
IO_L9P_T1_DQS_AD3P_15 B15
IO_L9N_T1_DQS_AD3N_15 A15 ETH_LED2
IO_L10P_T1_AD11P_15 C16
IO_L10N_T1_AD11N_15 B16 ETH_TXEN
IO_L11P_T1_SRCC_15 E11 DIRECT_IO_1
IO_L11N_T1_SRCC_15 G12 DIRECT_IO_0
IO_L12P_T1_MRCC_15 D13 ETH_CLK
IO_L12N_T1_MRCC_15 C13
IO_L13P_T2_MRCC_15 E12 DIRECT_IO_9
IO_L13N_T2_MRCC_15 E13 ETH_CRSDV
IO_L14P_T2_SRCC_15 E11 FTDI_BDBUS0
IO_L14N_T2_SRCC_15 D11
IO_L15P_T2_DQS_15 D14 ETH_MDC
IO_L15N_T2_DQS_ADV_B_15 D15 FTDI_ACBUS4
IO_L16P_T2_A28_15 F12
IO_L16N_T2_A27_15 F13
IO_L17P_T2_A26_15 E16 FTDI_ACBUS5
IO_L17N_T2_A25_15 D16 ETH_MDIO
IO_L18P_T2_A24_15 F15 ETH_RSTN
IO_L18N_T2_A23_15 E15 FTDI_ACBUS3
IO_L19P_T3_A22_15 H11
IO_L19N_T3_A21_VREF_15 G12
IO_L20P_T3_A20_15 H12 ETH_RXD0
IO_L20N_T3_A19_15 H13 ETH_RXD1
IO_L21P_T3_DQS_15 G14 FTDI_ACBUS6
IO_L21N_T3_DQS_A18_15 F14
IO_L22P_T3_A17_15 H16 CLK_EN
IO_L22N_T3_A16_15 G16 FTDI_ACBUS7
IO_L23P_T3_FOE_B_15 J15
IO_L23N_T3_FWE_B_15 J16 ADC_MOSI
IO_L24P_T3_RS1_15 H14 FTDI_SUSPEND
IO_L24N_T3_RS0_15 G15 ADC_MISO
IO_25_15 G11 ETH_INTN
XC7A35T-1FTG256C
U1D
BANK 35
IO_0_35 E6 SRAM_A14
IO_L1P_T0_AD4P_35 B7 SRAM_A8
IO_L1N_T0_AD4N_35 A7 SRAM_A15
IO_L2P_T0_AD12P_35 B6 DIRECT_IO_7
IO_L2N_T0_AD12N_35 B5 DIRECT_IO_8
IO_L3P_T0_DQS_AD5P_35 A5 SRAM_A16
IO_L3N_T0_DQS_AD5N_35 A4 SRAM_A17
IO_L4P_T0_35 B4 SRAM_A9
IO_L4N_T0_35 A3 FPGA_IO_21
IO_L5P_T0_AD13P_35 C7 FPGA_IO_27
IO_L5N_T0_AD13N_35 C6 FPGA_IO_22
IO_L6P_T0_35 D6 SRAM_D7
IO_L6N_T0_VREF_35 D5 SRAM_A6
IO_L7P_T1_AD6P_35 C3 SRAM_A20
IO_L7N_T1_AD6N_35 C2 FPGA_IO_5
IO_L8P_T1_AD14P_35 B2 FPGA_IO_6
IO_L8N_T1_AD14N_35 A2 FPGA_IO_8
IO_L9P_T1_DQS_AD7P_35 C1 FPGA_IO_30
IO_L9N_T1_DQS_AD7N_35 B1 FPGA_IO_7
IO_L10P_T1_AD15P_35 E2 FPGA_IO_4
IO_L10N_T1_AD15N_35 D1 FPGA_IO_31
IO_L11P_T1_SRCC_35 E3 SRAM_D6
IO_L11N_T1_SRCC_35 D3 SRAM_A7
IO_L12P_T1_MRCC_35 D4 FPGA_IO_23
IO_L12N_T1_MRCC_35 C4 SRAM_A18
IO_L13P_T2_MRCC_35 F5 FPGA_IO_24
IO_L13N_T2_MRCC_35 E5 SRAM_A5
IO_L14P_T2_SRCC_35 F4 SRAM_D5
IO_L14N_T2_SRCC_35 F3 SRAM_D4
IO_L15P_T2_DQS_35 F2 FPGA_IO_2
IO_L15N_T2_DQS_35 E1 FPGA_IO_3
IO_L16P_T2_35 G5 FPGA_IO_33
IO_L16N_T2_35 G4 SRAM_A13
IO_L17P_T2_35 G2 FPGA_IO_1
IO_L17N_T2_35 G1 FPGA_IO_0
IO_L18P_T2_35 H5 FPGA_IO_34
IO_L18N_T2_35 H4 SRAM_A11
IO_L19P_T3_35 J5 SRAM_A19
IO_L19N_T3_VREF_35 J4 SRAM_A10
IO_L20P_T3_35 H2 FPGA_IO_9
IO_L20N_T3_35 H1 FPGA_IO_35
IO_L21P_T3_DQS_35 J3 FPGA_IO_39
IO_L21N_T3_DQS_35 H3 SRAM_A12
IO_L22P_T3_35 K1 FPGA_IO_36
IO_L22N_T3_35 J1 FPGA_IO_38
IO_L23P_T3_35 L3 SRAM_D1
IO_L23N_T3_35 L2 FPGA_IO_32
IO_L24P_T3_35 K3
IO_L24N_T3_35 K2 FPGA_IO_37
IO_25_35 K5 FPGA_IO_20
XC7A35T-1FTG256C
U1C
BANK 34
IO_0_34 L5 SRAM_D0
IO_L1P_T0_34 L4 SRAM_D2
IO_L1N_T0_34 M4 SRAM_A0
IO_L2P_T0_34 M2 FPGA_IO_28
IO_L2N_T0_34 M1 LED_0
IO_L3P_T0_DQS_34 N3 SRAM_A1
IO_L3N_T0_DQS_34 N2
IO_L4P_T0_34 N1 FPGA_IO_29
IO_L4N_T0_34 P1 FPGA_IO_26
IO_L5P_T0_34 P4
IO_L5N_T0_34 P3 SRAM_A3
IO_L6P_T0_34 M5 SRAM_A4
IO_L6N_T0_VREF_34 N4 SRAM_A2
IO_L7P_T1_34 R2 SRAM_D3
IO_L7N_T1_34 R1 SRAM_WEN
IO_L8P_T1_34 R3
IO_L8N_T1_34 T2 FPGA_IO_16
IO_L9P_T1_DQS_34 T4 FPGA_IO_17
IO_L9N_T1_DQS_34 T3
IO_L10P_T1_34 P5
XC7A35T-1FTG256C
U1E
TDI_0 N7 JTAG_TDI
TDO_0 N8 JTAG_TDO
TCK_0 L7 JTAG_TCK
TMS_0 M7 JTAG_TMS
CCLK_0 E8 FLASH_SCK
M0_0 M9
M1_0 M10
M2_0 M11
DONE_0 H10 FPGA_DONE
INIT_B_0 K10
PROGRAM_B_0 L9 FPGA_PROG
CFGBVS_0 E7
VP_0 H8
VN_0 J7
VREFP_0 J8
VREFN_0 H7
DXP_0 K8
DXN_0 K7
XC7A35T-1FTG256C
+3.3V
R4 4.7k
+3.3V
R6 100 XADC_V_P
R7 100 XADC_V_N
C2 1nF
J1
SMA
XADC_VREF_P
XADC_VREF_N
GND
+3.3V
R2 4.7k
CLK_EN 1
4
X1
En Out
VDD Gnd
3 CLK_50MHZ
2
50MHZ
C1 0.01uF
GND
+3.3V
D1 R1 330 POWER LED (GREEN)
FPGA_DONE R3 330 D2 PROGRAMMING LED (RED)
LED_0 D3 R5 330 USER LED (BLUE)
LED_1 D4 R35 330 ETH LINK LED (GREEN)
LED_2 D5 R36 330 ETH ACT LED (ORANGE)
GND
F1 bd_fid
F2 bd_fid
F3 bd_fid
F4 bd_fid
F5 bd_fid
F6 bd_fid
Title Mercury 2
Rev 1.0
Circuit FPGA
Date 6/21/2019
Author JG, MB
Sheet # 1 of 7
micronova
© 2019



Title	Mercury 2
Rev	1.0
Circuit	SRAM
Date	6/21/2019
Author	JG, MB
Sheet #	2 of 7

micronova

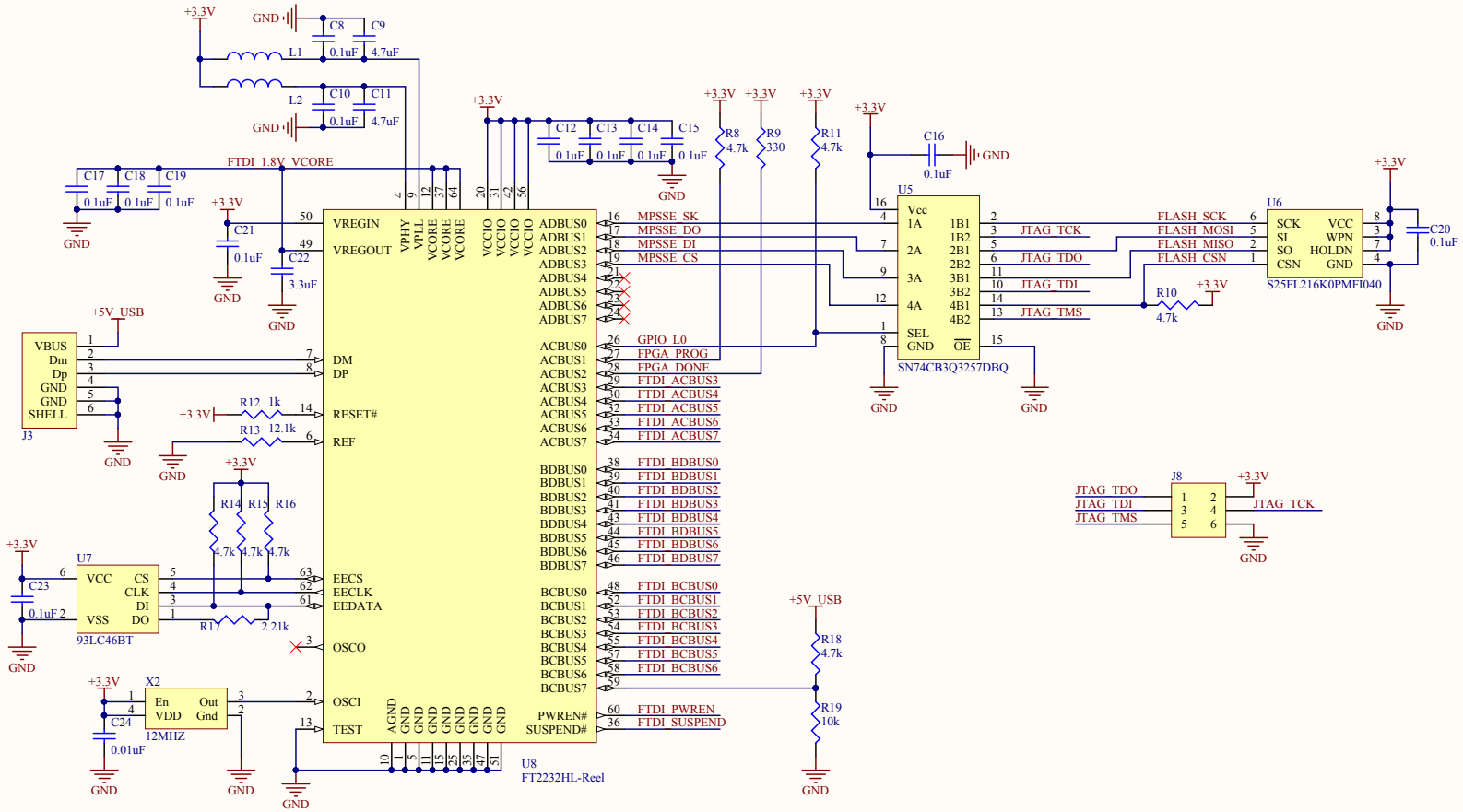
© 2019



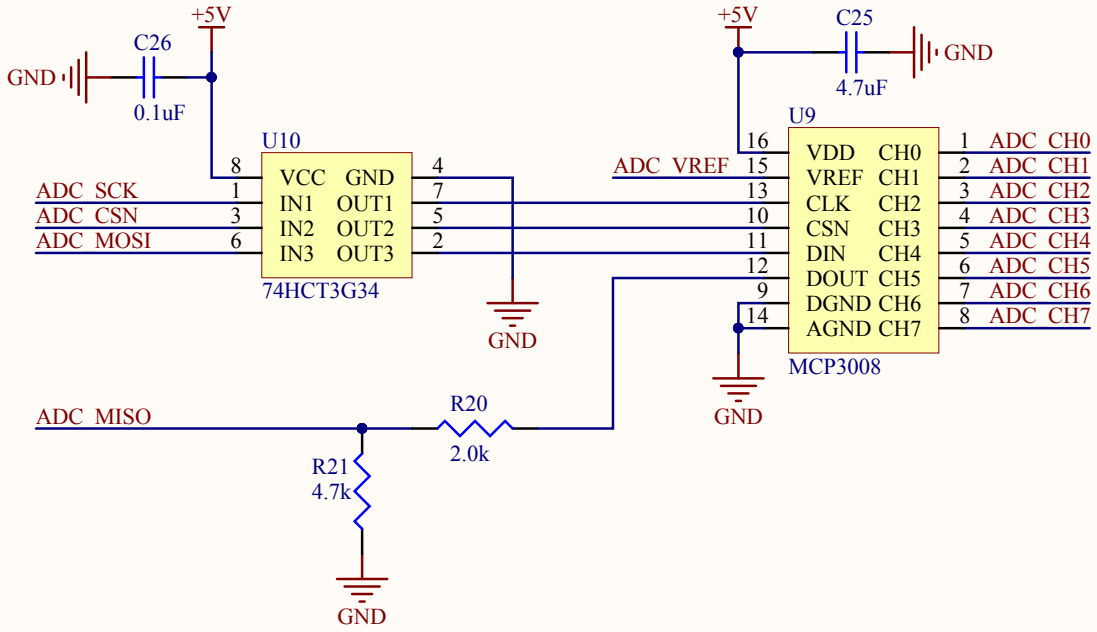
Title	Mercury 2
Rev	1.0
Circuit	I/O
Date	5/1/2019
Author	JG, MB
Sheet #	3 of 7

micronova

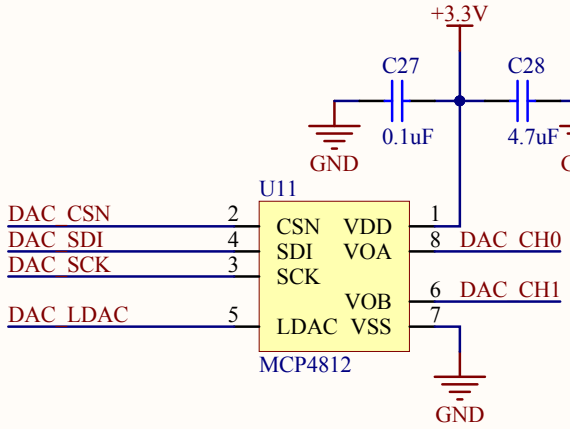
© 2019


+3.3V
GND
C8
C9
L1
0.1uF
4.7uF
L2
C10
C11
C12
C13
C14
C15
R8
4.7k
R9
330
R11
C16
FTDI_1.8V_VCORE
C17
C18
C19
C21
C22
3.3uF
U5
SN74CB3Q3257DBQ
U6
S25FL216K0PMFI040
C20
R10
JTAG_TCK
JTAG_TDO
JTAG_TDI
JTAG_TMS
FLASH_SCK
FLASH_MOSI
FLASH_MISO
FLASH_CSN
+5V_USB
J3
VBUS
Dm
Dp
SHELL
R12 1k
R13 12.1k
R14
R15
R16
U7
93LC46BT
C23
R17 2.21k
X2
12MHZ
C24
0.01uF
J8
VREGIN
VREGOUT
RESET#
REF
EECS
EECLK
EEDATA
OSCO
OSCI
TEST
PWREN#
SUSPEND#
GPIO_L0
FPGA_PROG
FPGA_DONE
R18
4.7k
R19
10k
U8
FT2232HL-Reel
Title
Mercury 2
Rev
1.0
Circuit
CONFIG
Date
5/1/2019
Author
JG, MB
Sheet # 4 of 7
micronova
© 2019

ADC



DAC

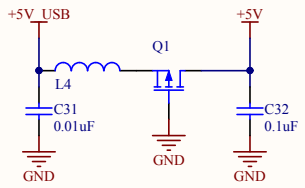


Title	Mercury 2
Rev	1.0
Circuit	ADC/DAC
Date	5/1/2019
Author	JG, MB
Sheet #	5 of 7

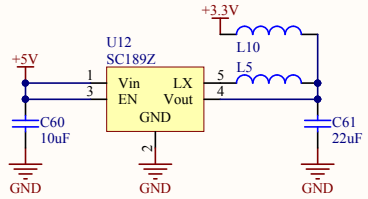
micronova

© 2019

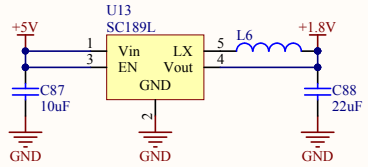
5V POWER INPUT



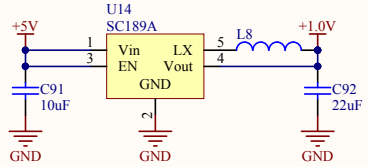
3.3V REGULATOR



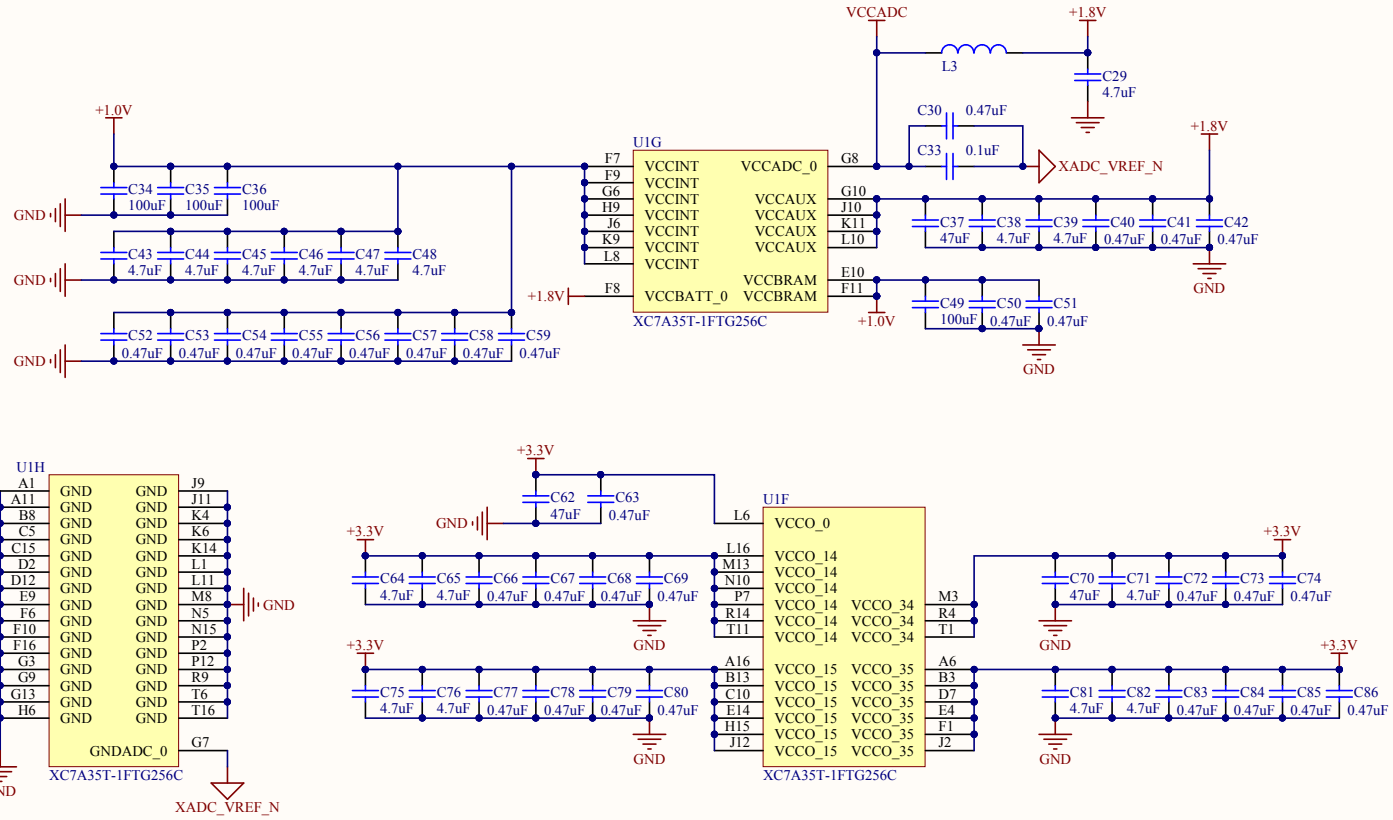
1.8V REGULATOR



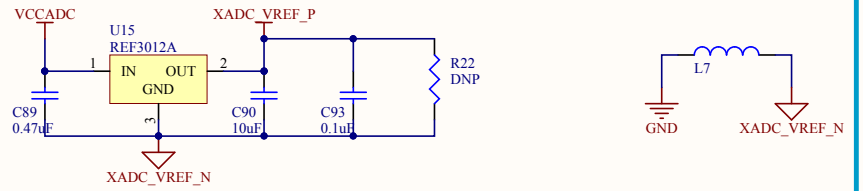
1.0V REGULATOR



FPGA POWER



FPGA XADC REFERENCE

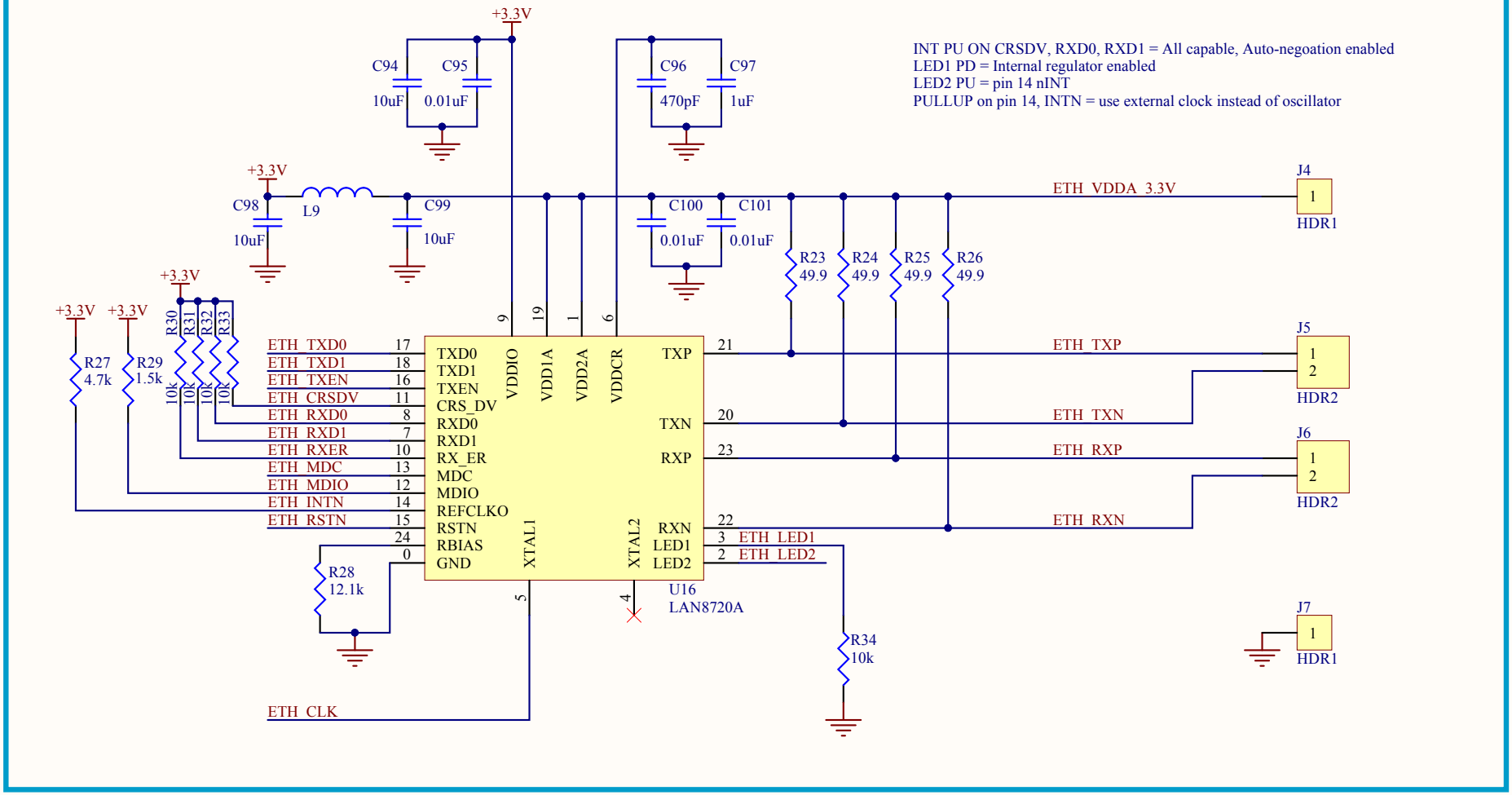


Title	Mercury 2
Rev	1.0
Circuit	POWER
Date	5/1/2019
Author	JG, MB
Sheet #	6 of 7

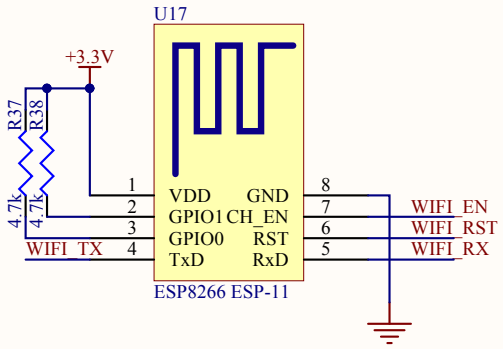
micronova

© 2019

Ethernet



Optional WiFi



Title	Mercury 2
Rev	1.0
Circuit	ETH
Date	5/1/2019
Author	JG, MB
Sheet #	7 of 7

micronova

© 2019