# Power

U5
AMS1117-1.8
+5V → VI VO → +1V8
ADJ
C38 0.1uF  C39 10uF  C43 22uF  C42 0.1uF
GND GND GND GND

U4
AMS1117-3.3
+5V → VI VO → +3.3V
GND
C41 0.1uF  C40 10uF  C36 22uF  C37 0.1uF
GND GND GND GND

# IO

## POWER LED
R19 470 Ohm  L6 LED_R
+3.3V → GND

## IO LED
R3 470 Ohm  LED_B
+3.3V → GPIO_19
R4 470 Ohm  L2 LED_B
+3.3V → GPIO_21
R5 470 Ohm  L3 LED_B
+3.3V → GPIO_22

## RESET
+3.3V
D1 D
R12 100k Ohm
C28 10nF
SW2 SW_SPST
AON_ERST
GND

## WAKE
+3.3V
R8 100k Ohm
SW1 SW_SPST
AON_PMU_DWAKEUP
GND

# Flash memory

R9 100k Ohm  +3.3V
U3 W25Q32JVSSIQ
MEM_CS → CS
MEM_SD → SO(D1)
MEM_WP → WP(D2)
GND
VCC
HOLD(D3)
SCK
SI(DO)
C27 0.1uF  GND
MEM_HOLD
MEM_SCK
MEM_SI

QSPI_SCK → MEM_SCK
QSPI_DQ_0 → MEM_SI
QSPI_DQ_1 → MEM_SO
QSPI_DQ_2 → MEM_WP
QSPI_DQ_3 → MEM_HOLD
QSPI_CS → MEM_CS

# 2.54 Breakout

J1 Conn_01x14_Female
J2 Conn_01x14_Female
J4 Conn_01x14_Female
J3 Conn_01x14_Female
GND
GPIO_13
GPIO_16
GPIO_17
GPIO_18
GPIO_19
GPIO_20
GPIO_21
GPIO_22
GPIO_23
+1V8
+3.3V
AON_ERST
AON_PMU_OUT_0
AON_PMU_DWAKEUP
AON_PMU_OUT_1
JTAG_TMS
JTAG_TDI
JTAG_TDO
JTAG_TCK
+1V8
GND
QSPI_SCK
QSPI_DQ_0
QSPI_DQ_1
QSPI_DQ_2
QSPI_DQ_3
QSPI_CS
+3.3V

# MCU

+1V8
R1 120 Ohm
C8 0.1uF  C9 0.1uF

U1 FE310-G002
VDD
VDD
VDD
PLL_AVDD
PLL_AVSS
JTAG_TCK → JTAG_TCK
JTAG_TMS → JTAG_TMS
JTAG_TDI → JTAG_TDI
JTAG_TDO → JTAG_TDO
XTAL_XI
XTAL_XO

Y1 16Mhz
R2 1M Ohm
GND
C15 15pF  C17 15pF
GND

GPIO_0 → GPIO_0/PWM0_0
GPIO_1 → GPIO_1/PWM0_1
GPIO_2 → GPIO_2/SPI1_CS0/PWM0_2
GPIO_3 → GPIO_3/SPI1_MOSI/PWM0_3
GPIO_4 → GPIO_4/SPI1_MISO
GPIO_5 → GPIO_5/SPI1_SCK
GPIO_9 → GPIO_9/SPI1_SS2
GPIO_10 → GPIO_10/SPI1_SS3/PWM2_0
GPIO_11 → GPIO_11/PWM2_1
GPIO_12 → GPIO_12/PWM2_2/I2C_SDA
GPIO_13 → GPIO_13/PWM2_3/I2C_SCL
GPIO_16 → GPIO_16/UART0_RX
GPIO_17 → GPIO_17/UART0_TX

IVDD
IVDD
IVDD
AON_IVDD
AON_IVDD
OTP_AVDD
AON_PMU_OUT_0 → AON_PMU_OUT_0
AON_PMU_OUT_1 → AON_PMU_OUT_1
AON_PMU_DWAKEUP → AON_PMU_DWAKEUP
AON_ERST → AON_ERST
AON_PSD_LFALTCLK
AON_PSD_LFCLKSEL

+3.3V
X1 32.7680kHz
OUTDRE/B0
GND
C16 15pF
GND

QSPI_SCK → QSPI_SCK
QSPI_CS → QSPI_CS
QSPI_DQ_0 → QSPI_DQ_0
QSPI_DQ_1 → QSPI_DQ_1
QSPI_DQ_2 → QSPI_DQ_2
QSPI_DQ_3 → QSPI_DQ_3

GPIO_18/UART1_TX → GPIO_18
GPIO_19/PWM1_0 → GPIO_19
GPIO_20/PWM1_1 → GPIO_20
GPIO_21/PWM1_2 → GPIO_21
GPIO_22/PWM1_3 → GPIO_22
GPIO_23/UART1_RX → GPIO_23
GND

+3.3V
C2 0.1uF  C14 0.1uF  C12 0.1uF  C5 0.1uF
+3.3V
C3 10uF  C13 10uF  C11 10uF  C10 10uF
+1V8
C1 10uF  C6 0.1uF  C7 0.1uF
GND

# Programming Interface

## USB Module
J5 USB_C_Receptacle_USB2.0
GND
C34 0.1uF
VBUS
+5V
R16 5.1R10hm
CC1
CC2
R15 5.1k Ohm
A7
B7
A6
B6
D- → FTDI_D-
D- 
D+ → FTDI_D+
D+
GND
SHIELD
SBU1
SBU2
GND

+3.3V
C30 0.1uF  C32 4.7uF
GND
C31 0.1uF  C33 4.7uF
GND
C23 0.1uF

VDC
C20 0.1uF  C21 4.7uF
GND

VDC
C18 0.1uF  C29 0.1uF  C25 0.1uF
GND

+3.3V
C22 0.1uF  C24 0.1uF  C19 0.1uF
GND

U2 FT2232HQ-REEL
VREGIN
VREGOUT
VPHY
VPLL
VCORE
VCORE
VCORE
VCCIO
VCCIO
VCCIO

FTDI_D- → DM
FTDI_D+ → DP
REF
RESET

ADBUS0 → MPSSE_TCK
ADBUS1 → MPSSE_TDI
ADBUS2 → MPSSE_TDO
ADBUS3 → MPSSE_TMS
ADBUS4
ADBUS5
ADBUS6
ADBUS7
R10 1k Ohm  R11 1k Ohm
GND

ACBUS0
ACBUS1
ACBUS2
ACBUS3
ACBUS4
ACBUS5
ACBUS6
ACBUS7

R14 12K Ohm
+3.3V
R13 12K Ohm
GND

EECS
EECLK
EEDATA

BDBUS0 → R7 1k Ohm → GPIO_16
BDBUS1 → GPIO_17
BDBUS2
BDBUS3
BDBUS4
BDBUS5  R6 1k Ohm
BDBUS6
BDBUS7

+3.3V  +3.3V
R17 470 Ohm  R18 470 Ohm
LED_B  L5 LED_B

OSCI
Y2 12Mhz
GND
OSCO
TEST
C26 27pF  C35 27pF
GND

BCBUS0
BCBUS1
BCBUS2
BCBUS3
BCBUS4
BCBUS5
BCBUS6
BCBUS7

PWREN
SUSPEND
AGND
GND
GND

# FTDI interface with HKSPI
MPSSE_TCK → JTAG_TCK
MPSSE_TDI → JTAG_TDI
MPSSE_TDO → JTAG_TDO
MPSSE_TMS → JTAG_TMS

Yatharth Agarwal
VLSISytemDesign
Sheet: /
File: squadron_sifive_1A.kicad_sch
Title: Vsdsquadron
Size: A2    Date: 2023-12-15    Rev: V2.3
KiCad E.D.A. 8.0.1    Id: 1/1