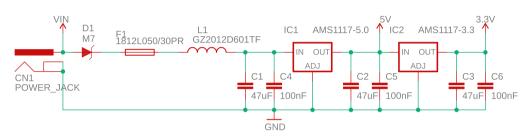# Power input and 5V and 3.3V generation

VIN

D1
M7

F1
1812L050/30PR

L1
GZ2012D601TF

IC1   AMS1117-5.0   IC2   AMS1117-3.3

5V   3.3V

IN   OUT   IN   OUT
        ADJ   ADJ

CN1
POWER_JACK

C1   C4   C2   C5   C3   C6

47uF   100nF   47uF   100nF   47uF   100nF

GND

Power selection

VIN

R4   100K   3.3V   5V

                    2   8   LM358D
                              1

R5   100K   3   +   IC3A
                    4

GND   GND

C11   100nF

GND

VUSB   5V

T1   AO3401A

Disabled

5V

R11   100K

                5   +   IC3B
                         7
R13   100K   6   -   LM358D

GND

USB connector

F2
1812L050/30PR

L2
GZ2012D601TF

VBUS   1   XUSB   VUSB
D-   2   XUSB_D_M   R1   22R   USB_D_M
D+   3   XUSB_D_P   R2   22R   USB_D_P
ID   4
GND   5

SHIELD   SH1*6   GND   USB_SHIELD

CN2
47346-0001

LED indicators

5V 5V 5V 5V

LED1 GREEN   LED2 BLUE   LED3 BLUE   LED4 YELLOW

R7 1K   R8 1K   R9 1K   R10 1K

RX_LED   TX_LED   D13_SCK

T2 2N7002

GND

Main MCU crystal

C12 12pF   16MHz   MCU_OSC_IN

Q2 16MHz

C13 12pF   R6 1M   MCU_OSC_OUT

GND

Main MCU

U2

5V

14*2	VCC	PF7(ADC7)	36	A0
24*2	AVCC	PF6(ADC6)	37	A1
13	RESET	PF5(ADC5)	38	A2
42	AREF	PF4(ADC4)	39	A3
		PF1(ADC1)	40	A4
		PF0(ADC0)	41	A5

AVCC 24*2
RESET 13
AREF 42

7	VBUS	PD2(RX)	20	D0_RX
2	UVCC	PD3(TX)	21	D1_TX
6	UCAP	PD1(SDA)	19	D2_SDA
		PD0(SCL)	18	D3_SCL
4	D+	PD4(ADC8)	25	D4
3	D-	PC6	31	D5_PWM
		PD7(ADC10)	27	D6_PWM
		PE6	1	D7
		PB4(ADC11)	28	D8
17	XTAL1	PB5(ADC12)	29	D9_PWM
16	XTAL2	PB6(ADC13)	30	D10_SS
		PB7	12	D11_MOSI
		PD6(ADC9)	26	D12_MISO
33	PE2/HWB	PC7	32	D13_SCK
		PB0(SS)	8	RX_LED
		PB1(SCK)	9	SPI_SCK
		PB2(MOSI)	10	SPI_MOSI
		PB3(MISO)	11	SPI_MISO
5*5	GND	PD5	22	TX_LED

VUSB 7
UCAP 6
USB_D_P 4
USB_D_M 3
MCU_OSC_OUT 17
MCU_OSC_IN 16
HWB 33

GND

ATMEGA32U4-AU

Arduino connectors

DIGITAL10   CN3   DIGITAL8   CN4

D3_SCL 1   D13_SCK 6   D7 1
D2_SDA 2   D12_MISO 7   D6_PWM 2
AREF 3   D11_MOSI 8   D5_PWM 3
4   D10_SS 9   D4 4
D8 10   D3_SCL 5
D9_PWM   D2_SDA 6
D1_TX 7
D0_RX 8

GND

CN5   5V

SPI_MISO 1   2
SPI_SCK 3   4 SPI_MOSI
RESET 5   6

ICSP   GND

POWER8

5V 3.3V 5V   RESET   VIN

CN6
8 7 6 5 4 3 2 1

GND

ANALOG6

A0 A1 A2 A3 A4 A5

CN7
6 5 4 3 2 1

Main MCU reset

5V

HWB

R12 10K

R3 10K   RESET

S1 RESET

GND   GND

UCAP   AREF   5V   5V   5V   5V   5V VIN

C7 1uF   C19 100nF   C14 100nF   C15 100nF   C16 100nF   C17 10uF   L3 GZ2012D601TF

AVCC

C9 100nF

GND   GND   GND   GND   GND   GND   GND

RSN URL

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REV: 1.0

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Main MCU (extra optional footprint)

U1

5V

Pin	Signal		Signal	Pin	Net

14*2 VCC
24*2 AVCC — AVCC
13 RESET — RESET
42 AREF — AREF

PF7(ADC7) 36 A0
PF6(ADC6) 37 A1
PF5(ADC5) 38 A2
PF4(ADC4) 39 A3
PF1(ADC1) 40 A4
PF0(ADC0) 41 A5

7 VBUS — VUSB
2 UVCC
6 UCAP — UCAP

4 D+ — USB_D_P
3 D- — USB_D_M

PD2(RX) 20 D0_RX
PD3(TX) 21 D1_TX
PD1(SDA) 19 D2_SDA
PD0(SCL) 18 D3_SCL
PD4(ADC8) 25 D4
PC6 31 D5_PWM
PD7(ADC10) 27 D6_PWM
PE6 1 D7
PB4(ADC11) 28 D8
PB5(ADC12) 29 D9_PWM
PB6(ADC13) 30 D10_SS
PB7 12 D11_MOSI
PD6(ADC9) 26 D12_MISO
PC7 32 D13_SCK
PB0(SS) 8 RX_LED
PB1(SCK) 9 SPI_SCK
PB2(MOSI) 10 SPI_MOSI
PB3(MISO) 11 SPI_MISO

17 MCU_OSC_OUT — XTAL1
16 MCU_OSC_IN — XTAL2

33 HWB — PE2/HWB

5*5 GND — GND
GND

PD5 22 TX_LED

ATMEGA32U4-MU