A

VCC

R1
10K

RESET

C1 18pF
C2 18pF
GND
X1
16Mhz

C3
0.1uF
GND

U1
ATMEGA32U4-MU

34 VCC
43 GND
13 RESET
16 XTAL2
17 XTAL1
44 AVCC
24 AVCC
42 AREF
14 VCC
15 GND
23 GND
35 GND
6 UCAP
2 UVCC
3 D-
4 D+
5 UGND
7 VBUS

PB7(PCINT7/OC0A/OC1C/RTS) 12 D11
PB6(PCINT6/OC1B/OC4B/ADC13) 30 D10
PB5(PCINT5/OC1A/OC4B/ADC12) 29 D9
PB4(ADC11/PCINT4) 28 D8
PD3(MISO/PCINT3) 11 MISO
PB2(PDI/MOSI/PCINT2) 10 MOSI
PB1(SCLK/PCINT1) 9 SCK
PB0(SS/PCINT0) 8

PC7(ICP3/CLK0/OC4A) 32 D13 LED
PC6(OC3A/OC4A) 31 D5

PE6(INT6/AIN0) 1 D7
PE2(HWB) 33

PD7(T0/OC4D/ADC10) 27 D6
PD6(T1/OC4D/ADC9) 26 D12
PD5(XCK1/CTS) 22
PD4(ICP1/ADC8) 25 D4 ESP_RST
PD3(TXD1/INT3) 21 D1 RX
PD2(RXD1/INT2) 20 D2 TX
PD1(SDA/INT1) 19 D2 SDA
PD0(OC0B/SCL/INT0) 18 D3 SCL

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

45 GND
GND

GND

VUSB

H4
VBUS 2
D- 3
D+ 4
ID
GND 5
1981584-1
Micro USB
GND

R2 22R
R3 22R

C6 10uF
C7 0.1uF
C8 1uF
GND GND GND GND

H1
ESP8266
TX 1 TXD GND 2 GND
3 CH_PD GPIO2 4
ESP_RST 5 RST GPIO0 6
VCC 7 +3.3V RXD 8 RX
C4
220uF
GND

U2
AP1117E33G-13
VIN VOUT GND
3 2 1
VUSB
C9 10uF
C10 0.1uF
GND GND
VCC
3.3V
C11 10uF
C12 10uF
GND GND

VCC VCC
R6 4.7K
R5 4.7K
SDA
SCL
VCC

4 3 2 1
H3
Small OLED
GND

ICSP
H2
VCC
MISO 1 2
SCK 3 4 MOSI
RESET 5 6
GND

LED
R4 1K
D2
Amber LED
GND

Component list

Altium

Think it, Design it, Build it™

#	Designator	Quantity	Vendor	PartNumber	Description	Manufacturer	Comment
1	C1, C2	2	Digi-Key	C0603C180J5GACTU	CAP CER 18PF 50V 5% NP0 0603	Kemet	18pF
2	C3, C7, C10	3	Digi-Key	GRM188R71C104KA01D	CAP CER 0.1UF 16V 10% X7R 0603	Murata	0.1uF
3	C4	1	Digi-Key	T495C227K006ATE225	CAP TANT 220UF 6.3V 10% 2312	Kemet	220uF
4	C6, C9, C11, C12	4	Digi-Key	CL31B106KAHNNNE	CAP CER 10UF 25V 10% X7R 1206	Samsung	10uF
5	C8	1	Digi-Key	C1608X7R1C105K080AC	CAP CER 1UF 16V 10% X7R 0603	TDK	1uF
6	D2	1	Digi-Key	HSMA-C190	LED 595NM AMB DIFF 0603 SMD	Avago	LED_0603
7	H1	1	Aliexpress	ESP8266			
8	H3	1	Digi-Key	0901200764	CONN HEADER 4POS .100" STR GOLD	Molex	CON4
9	H4	1	Digi-Key	1981584-1	CONN RCPT MICRO USB TYPE AB	TE Connectivity	Micro USB
10	R1	1	Digi-Key	ERJ-3EKF1002V	RES SMD 10K OHM 1% 1/10W 0603	Panasonic	10K
11	R2, R3	2	Digi-Key	ERJ-3EKF22R0V	RES SMD 22 OHM 1% 1/10W 0603	Panasonic	22R
12	R4	1	Digi-Key	ERJ-3EKF1001V	RES SMD 1K OHM 1% 1/10W 0603	Panasonic	1K
13	R5, R6	2	Digi-key	ERJ-3EKF4701V	RES SMD 4.7K OHM 1% 1/10W 0603	Panasonic	4.7K
14	U1	1	Digi-Key	ATMEGA32U4-MU	IC MCU 8BIT 32KB FLASH 44QFN	Atmel	ATmega32U4
15	U2	1	Digi-Key	AP1117E33G-13	IC REG LDO 3.3V 1A SOT223-3	Diodes Inc	AP1117E33G-13
16	X1	1	Digi-Key	ABM8-16.000MHZ-B2-T	CRYSTAL 16.000MHZ 18PF SMD	Abracon	16Mhz

Approved

Notes