Microprocessor

U1
ESP32-WROVER-B

Reset
SW2
PTS810SJK250SMTR

Boot Strapping pins
ESP_IO2
ESP_IO0

Programmer / UART to USB

U6
CP2102N

Transistors to generate programming signals
Q2A MBT3904DW1
Q2B MBT3904DW1
CP_TX — ESP_RX0
CP_RX — ESP_TX0

Motors Driver

U2
DRV8833

Note:
Use R31 to activate the motor drive only when the Switch is in the ON position.
To activate the motor drive without using a battery, R30 must be soldered and R31 removed.

Motor Connectors

Motor Connections
MR1 Motor connector 01x06 1.5mm
ML1 Motor connector 01x06 1.5mm

Q3A MBT3904DW1
Q4A MBT3904DW1
Q3B MBT3904DW1
Q4B MBT3904DW1

Mounting Holes

Mounting Holes Using M3
M1 M2 M3 M4 M5 M6 Mounting_Hole

Mounting Holes Using M2
M10 M11 M12 M13 Mounting_Hole

Motor case holder Using M2.5
M6 M7 M8 M9 Mounting_Hole

LED indicators

D2 WS2812B
D3 WS2812B

Extra 'wheel' option
LED D8

IR Proximity Sensors

IR1 TCRT1000 Q5 TDV303N
IR2 TCRT1000 Q6 TDV303N
IR3 TCRT1000 Q7 TDV303N
IR4 TCRT1000 Q8 TDV303N
IR5 TCRT1000 Q9 TDV303N

Note. aiming for a 40mA current per IR led

Power-Programming Switch

SW1A OS202011MS2QS1
SW1B OS202011MS2QS1
RAW_BATT
BATT_post_Switch

Note:
Using both poles to increase Max current capacity

USB/BATT switcher

Q1
BATT_post_Switch

Note: If VBUS_FIL is present then the battery is disconnected. If it is not present the battery is connected to the VCC

IO Expander

U3
MCP23008-xSS

Note:
If R2 is NC and R6 is 0, then address is 0x20
If R2 is 0 and R6 is NC, then address is 0x21

Expander connector

J7
Conn_02x04_Odd_Even
ESP_SDA ESP_GPIO14
ESP_SCL ESP_GPIO27
ESP_GPIO25 ESP_GPIO26

Line follower connector

J2
Conn_01x05
ADC_0 ADC_1 ADC_2

Battery Connector

J1
Conn_01x02 1.5mm pitch
Battery connector
RAW_BATT ESP_ADC0

Batt Charger

U8
LTC4054ES5-4.2
CHRG PROG BAT
RAW_BATT

IMU

U9
LSM9DS1TR

Note:
I2C address is set to 0x6B for the accel/gyro
I2C address is set to 0x1E for the magnetometer

ADC

U5
ADS7830

Note:
If R13 is NC and R20 is 0, then address is 0x48
If R13 is 0 and R20 is NC, then address is 0x4A

F2 Ferrite_Bead

USB connector

F1 Ferrite_Bead
USB0

Voltage Regulator 3V3

U4
MCP1826S

Wireless Charging Input

J3
Note:
Use it with something like the DF Robot Wireless Charging Module
5V/300mA It needs to be 5V regulated

By :Bart Garcia Nathan
Sheet: /
File: MONA.sch
Title: MONA_ESP
Size: A2   Date: 2022-07-05   Rev: V2.2
KiCad E.D.A. kicad 6.0.2-378541a8eb-116-ubuntu18.04.1   Id: 1/1