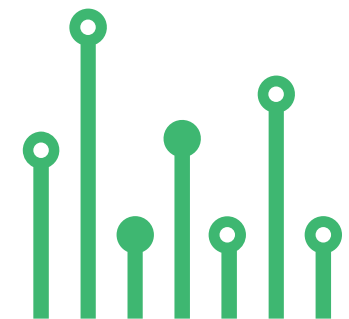


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# Joystick Stepper Motor Controller



SKU: EL140709

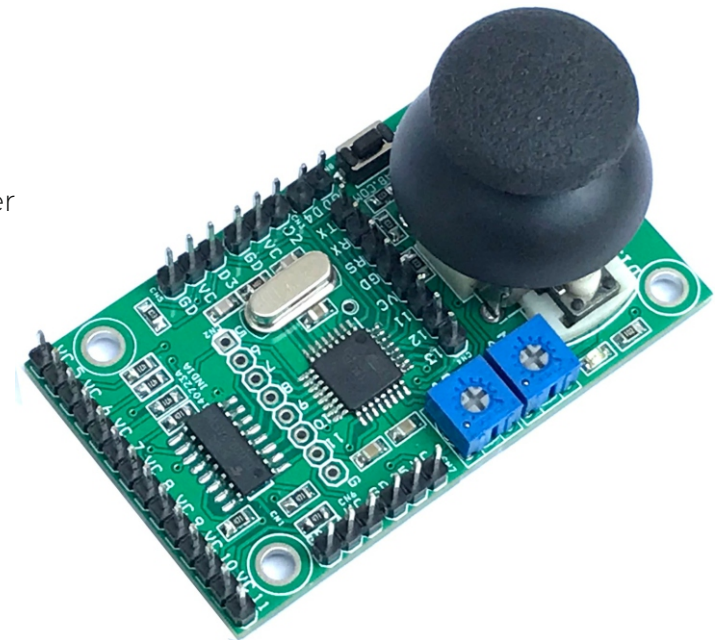
# Joystick Stepper Motor Controller



This is a pulse generator for a stepper motor driver using a joystick. It is a board that contains an Arduino-compatible microcontroller and circuitry for controlling up to 2-channel (2-axis) stepper motors. The board has multiple options to develop stepper motor-related control systems, from a 2-axis analog joystick to a trimmer potentiometer to a 7-channel open collector TTL output to interface stepper drivers with optocoupler inputs, etc.

## Key Features

- ATMEGA328 Arduino Compatible Microcontroller
- Connector for Arduino Programming/Bootloader
- 2 Axis (2 Channel Joystick) Cab used to drive stepper Forward, Reverse
- 2 Trimmer Potentiometer Can be used to set acceleration/deacceleration or other function
- One Tactile Switch
- Connector for 7 Outputs Open Collector Type
- Optional Connector for Direct 7 Outputs
- Connector CN3 and CN5 for Limits switch or other function (With Pull-ups)
- Connector CN6 and CN7 for Analog Input
- Connector CN8 I/O
- One Tactile Switch Internal Joystick
- ULN2003 Chip Open connector to connect with stepper drivers
- Function LED Connected to D12
- Power LED
- Breakout Connectors with Pullups to Connect Limit Switches



## Features

- Power Supply 5V DC
- Two Stepper Motor Controlled Using Joystick
- All Step and Direction Signals Open Collector Type and TTL Level (7 Outputs)
- On Board Optional Connector CN2 for Direct Output from Arduino
- Various hardware options available for development of many applications for stepper motors
- 4X3MM Mounting Holes
- PCB Dimension 61.28X36.20MM

## Application

- Stepper Motor Based Linear/Rotary Actuator
- Turn Tables
- Camera Sliders
- Camera Pan Tilt Head
- Robotics Arms
- Robotics
- Automation
- Animatronics

## Arduino Example Code

Arduino code is available for testing purposes. Before we start with a new ATMEGA328, it requires a bootloader and Arduino code. Check the link below to learn more about programming:

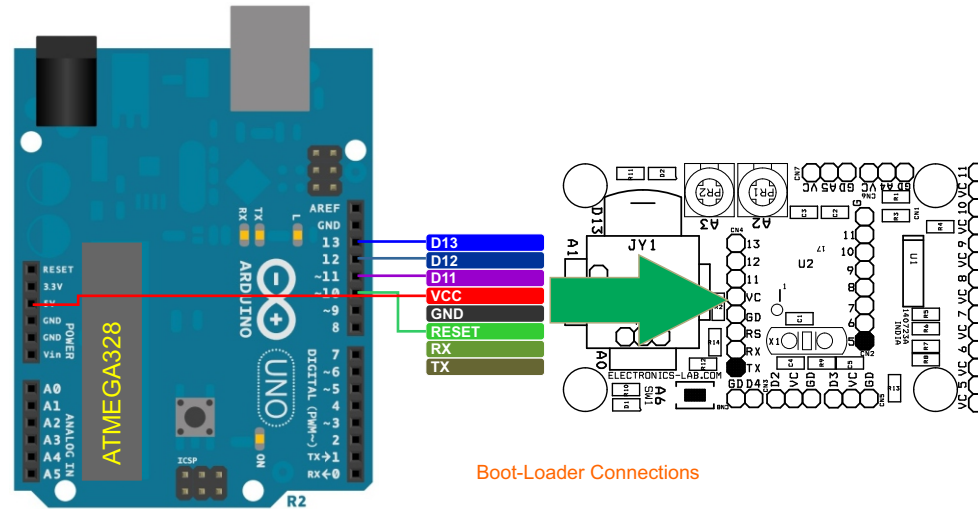
<https://www.electronics-lab.com/project/installing-the-arduino-bootloader-on-the-atmega328p-microcontroller/>  
<https://docs.arduino.cc/built-in-examples/arduino-isp/ArduinoToBreadboard>

## Hardware has many I/O lines, following hardware are used with example Arduino code.

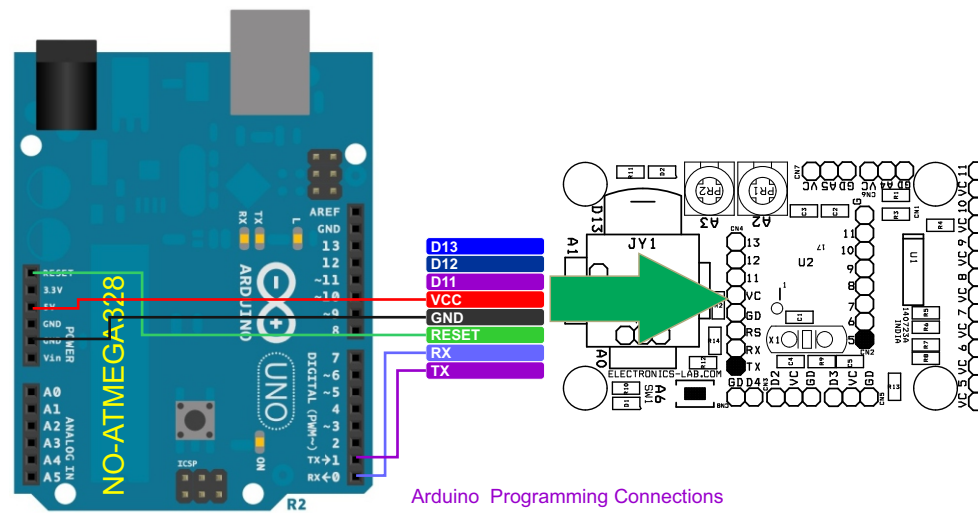
- Joystick 2 Axis
- Axis-1 Arduino D5 Step Pulse Out, D8 Direction Output (Outputs are Open Collector Types for Stepper drivers optocouplers)
- Axis-2 Arduino D6 Step Pulse Out, D7 Direction Output (Outputs are Open Collector Types for stepper drivers optocouplers)

The user will be able to run two stepper drivers using the joystick. Pls, check the connections diagram.

# Arduino Programming

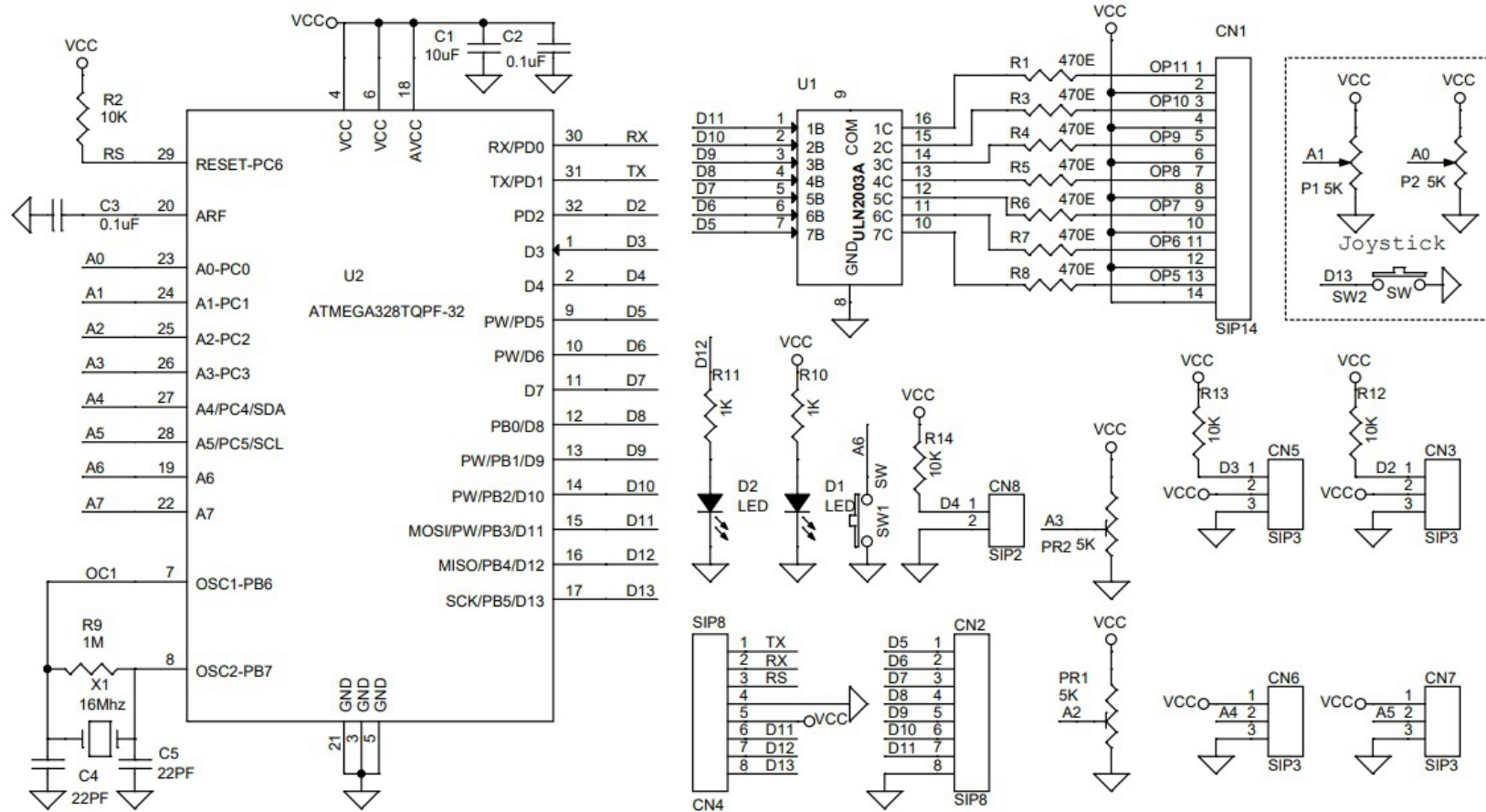


Boot-Loader Connections

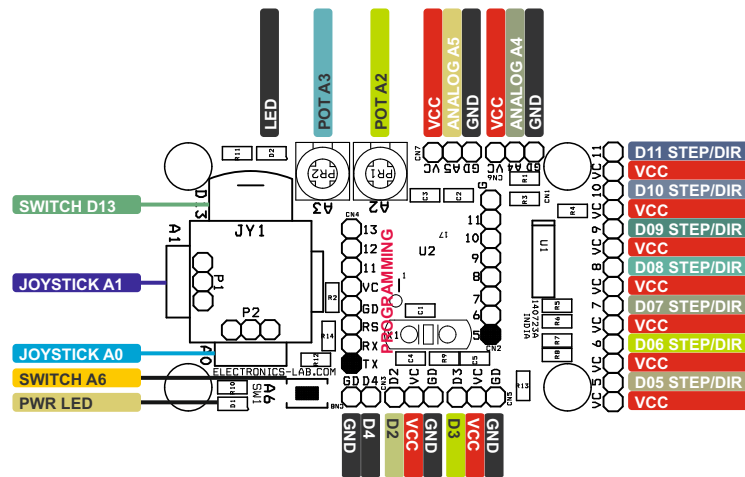


Arduino Programming Connections

# Schematic



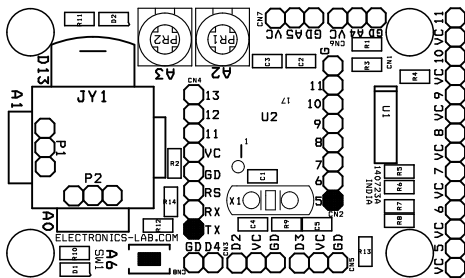
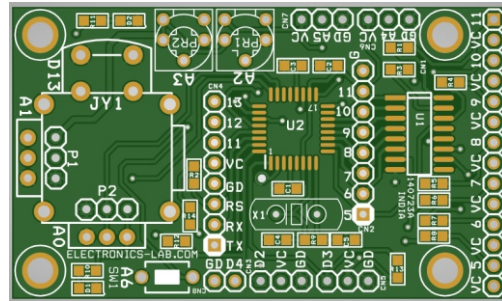
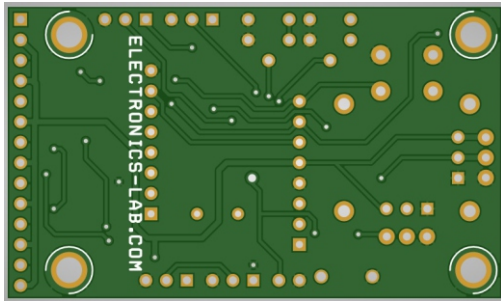
# Connections



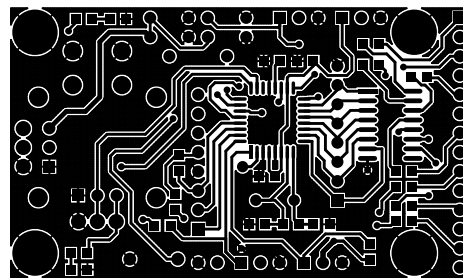
## Connections and Hardware Details

- CN1: Pin 1 = OP11(D11), Pin 2 = VCC, Pin 3 = OP10(D10), Pin 4 = VCC, Pin 5 = OP9(D9), Pin 6 = VCC, Pin 7 = OP8(D8), Pin 8 = VCC, Pin 9 = OP7(D7), Pin 10 = VCC, Pin 11 = OP6(D6), Pin 12 = VCC, Pin 13 = OP5(D5), Pin 14 = VCC
- CN2: DNP (D5, D6, D6, D7, D8, D9, D10, D11) Direct I/O (Optional)
- CN3: Pin 1 = D2-Pullup, Pin 2 = VCC, Pin 3 = GND
- CN4: Pin1 = TX, Pin 2 = RX, Pin 3 = Reset, Pin 4 = GND, Pin 5 = VC, Pin 6 = D11, Pin 7 = D12, Pin 8 = D13
- CN5: Pin 1 = D3-With Pullup, Pin 2 = VCC, Pin 3 = GND
- CN6: Pin 1 VCC, Pin 2 = A4, Pin 3 = GND
- CN7: Pin 1 VCC, Pin 2 = A5, Pin 3 = GND
- CN8: Pin1 = D4-With Pullup, Pin2 = GND
- SW1: Tactile Switch = Analog Pin A6
- D2: LED = D12
- D1: Power LED
- P1: Joystick X Axis = Analog A1
- P2: Joystick Y Axis = Analog A0
- PR1: Trimmer Potentiometer = Analog A2
- PR2: Trimmer Potentiometer = Analog A3

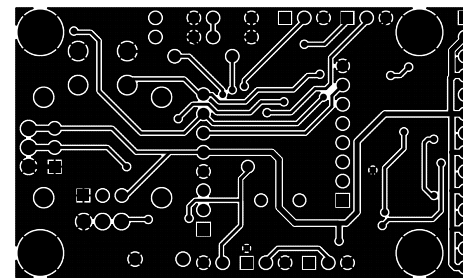
# PCB



SILK SCREEN TOP



BOTTOM LAYER



TOP LAYER

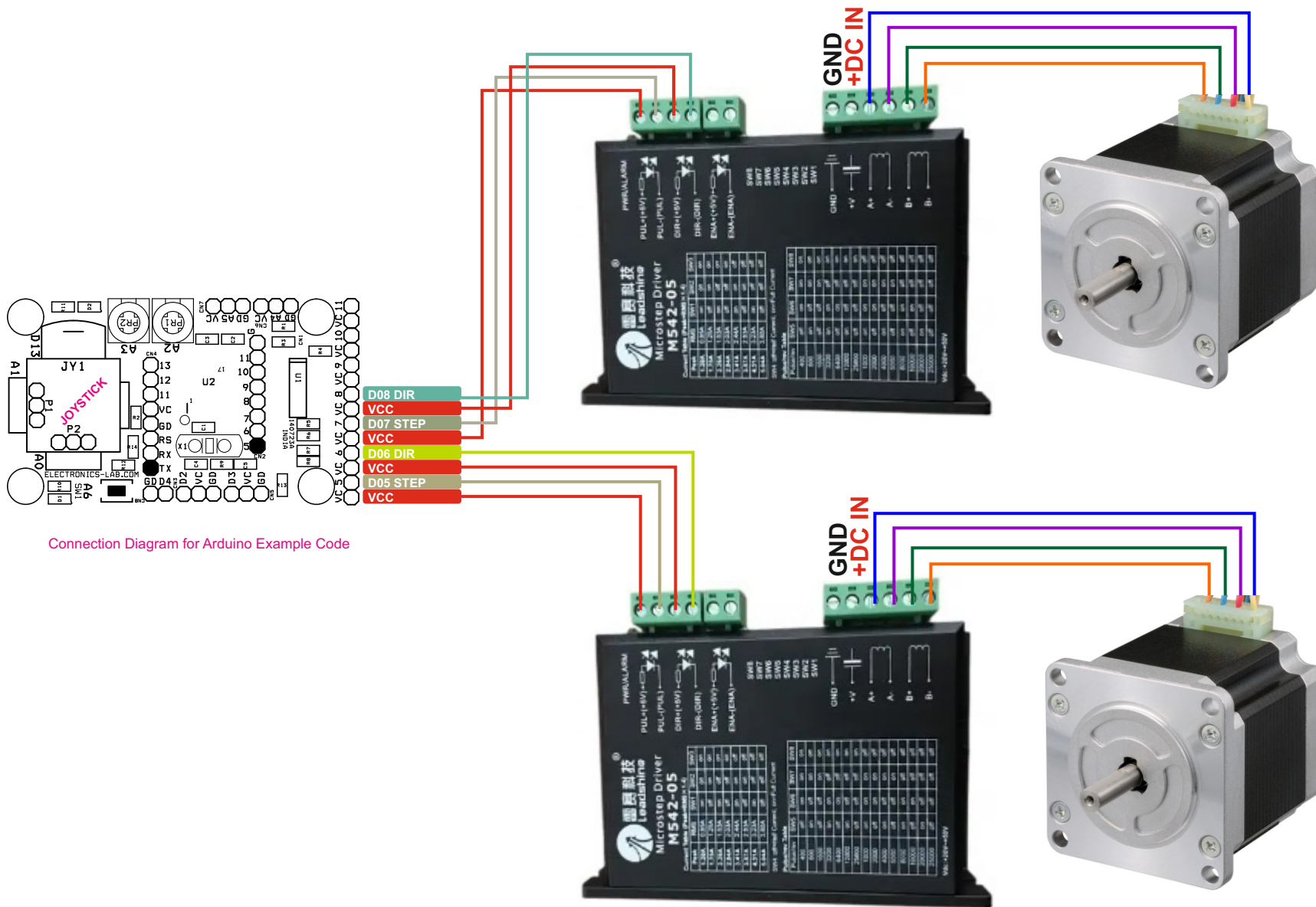
PCB DIMENSIONS 61.28X36.20MM



# Parts List

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BOM						
NO	QNTY.	REF.	DESC	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	1	CN1	14 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5325-ND
2	2	CN2,CN4	8 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5321-ND
3	4	CN3,CN5,CN6,CN7	3 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5316-ND
4	1	CN8	2 PIN MALE HEADER PITCH	WURTH	DIGIKEY	732-5315-ND
5	1	C1	10uF/10V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
6	2	C2,C3	0.1uF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
7	2	C4,C5	22PF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
8	2	D1,D2	LED RED SMD SIZE 0805	OSRAM	DIGIKEY	475-1278-1-ND
9	4	PR1,PR2	5K TRIMMER POTENTIOMETER	BOURNS	DIGIKEY	3362P-502LF-ND
10	7	R1,R3,R4,R5,R6,R7,R8	470E 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
11	4	R2,R12,R13,R14	10K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
12	1	R9	1M 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
13	2	R10,R11	1K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
14	1	SW1	TACTILE SWITCH	E-SWITCH	DIGIKEY	EG2513-ND
15	1	U1	ULN2003A	TI	DIGIKEY	296-1368-1-ND
16	1	U2	ATMEGA328TQPF-32	MICROCHIP	DIGIKEY	ATMEGA328PB-AURCT-ND
17	1	X1	16Mhz	ECS INC	DIGIKEY	X1103-ND
18	1	JOYSTICK P1,P2	JOYSTICK WITH SWITCH AND POT 5/10K	C&K	DIGIKEY	108-THB001P-ND



Connection Diagram for Arduino Example Code

# Notes

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## APP

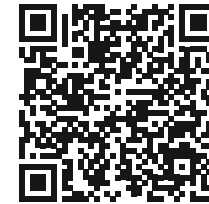


### Android App

DOWNLOAD

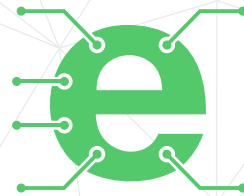
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Android App launched in 2017 and has 100k+ downloads - rated with 4.5 stars.



SCAN QR CODE





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