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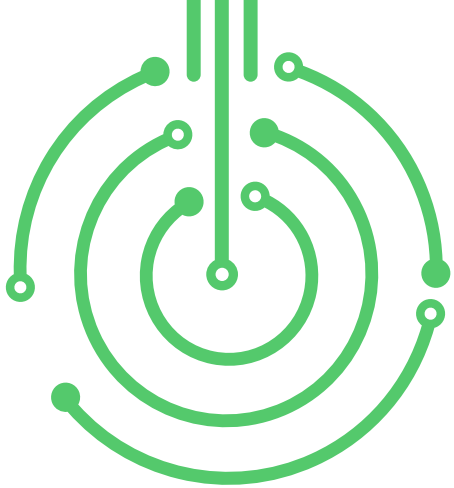


Bluetooth Smart LED Dimmer – 4 Channel Bluetooth ON/OFF Switch

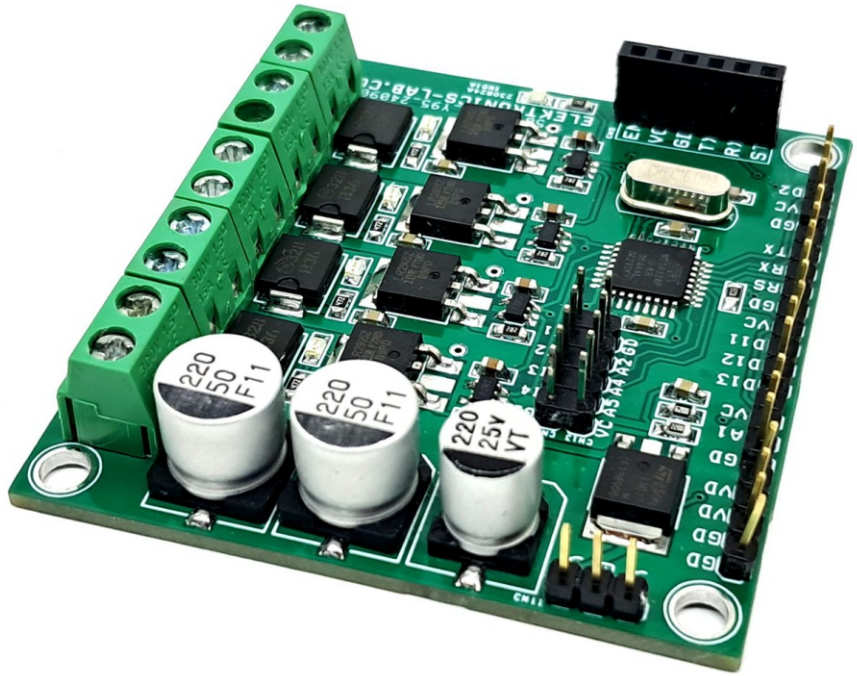
SKU: EL153807

Bluetooth Smart LED Dimmer – 4 Channel Bluetooth ON/OFF Switch

This Bluetooth Smart LED Dimmer, 4 Channel ON/OFF Switch is a versatile device that enables users to control various devices, including lights, fans, and DC motors, using a Bluetooth app on an Android device. The device features a 4-channel dimmer that can handle inductive or resistive loads with a power supply range of 12V to 48V and a current capacity of up to 3A per channel. The project is designed to work with DC loads and includes freewheeling diodes across all 4 MOSFETs to handle inductive loads such as DC motors and solenoids. The device requires a dual power supply, with a logic supply of 12V-15V and a load supply of 12V to 48V. However, it can also operate with a single supply of 12V-15V by tying the VDD and VL pins together.

FEATURE:

- ATMEGA328 microcontroller compatible with Arduino
- 4XMOSFETS for switching and dimming
- 4XMOSFET gate driver for efficient switching
- HC-05 Bluetooth module for wireless connectivity
- Screw terminals for connecting loads and power supply
- Power LED indicator
- On Board Regulator to Power the Micro-Controller (5V DC)
- 4X LED indicators for channel output
- 8-pin header connector for Arduino programming and bootloader
- High Value DC Bus Capacitor for Smooth Operations
- 4 X 4MM Mounting Holes
- PCB Dimensions 64.45X59.69MM



Power Supply:

- Logic Supply 12V to 15V
- Load Supply 12V to 48V
- Project Can work with Single Power if load supply 12V to 15V (By Tying VDD and VL Pins)
- Load Each Channel 3Amps

Applications

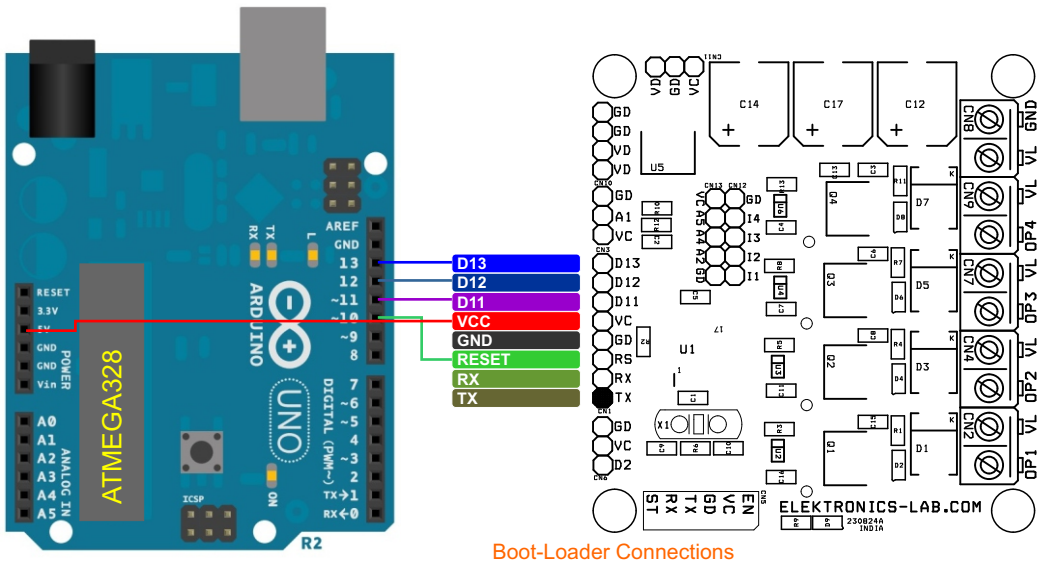
- 4-channel on/off switch for LED, lamp, fan, and other devices
- 4-channel dimmer for adjusting brightness levels
- DC motor on/off control
- DC motor speed control
- 4-channel solenoid driver

Arduino Programming

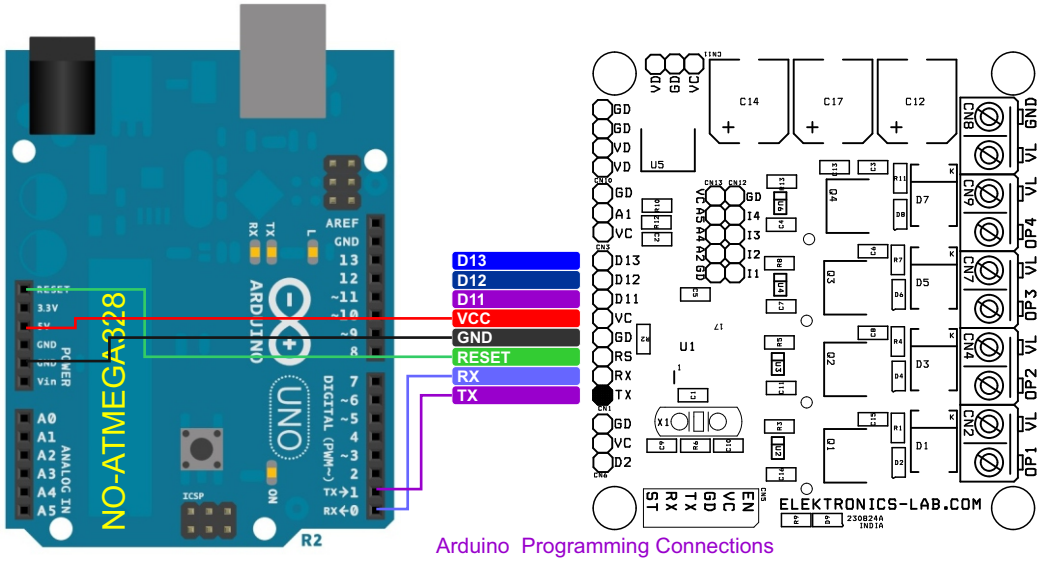
Users must download and upload the Arduino code to the ATMEGA328 microcontroller to test the board. Before uploading the code, it is essential to ensure that the bootloader is installed on the new ATMEGA328. The connections diagram provides instructions for Arduino programming and bootloader installation.

Bootloader and Arduino Programming info

https://docs.arduino.cc/built-in-examples/arduino-isp/ArduinoToBreadboard/



Boot-Loader Connections



Arduino Programming Connections

Arduino Code

The Arduino code for the Bluetooth Smart LED Dimmer, 4 Channel ON/OFF Switch is available for download, allowing users to test the board and its various features. Additionally, an Android app is also available for download, which enables users to control the 4 loads (LED, lamp, fan, etc.) remotely using their Android device.

The Android app provides a user-friendly interface for turning the loads on and off, and users can also create their own code to implement dimming functionality for the LEDs and speed control for DC motors. The 4 x MOSFET drivers are connected to the PWM (Pulse Width Modulation) pins of the Arduino microcontroller, which enables precise control over the output voltage and current to the loads.

By using the PWM pins, users can adjust the brightness of the LEDs and the speed of the DC motors, making the device suitable for a wide range of applications. The availability of the Arduino code and Android app makes it easy for users to get started with the device and explore its various features and capabilities.

Overall, the Arduino code and Android app provide a comprehensive solution for controlling and managing the Bluetooth Smart LED Dimmer, 4 Channel ON/OFF Switch, making it an ideal choice for various applications, including home automation, robotics, and IoT projects.

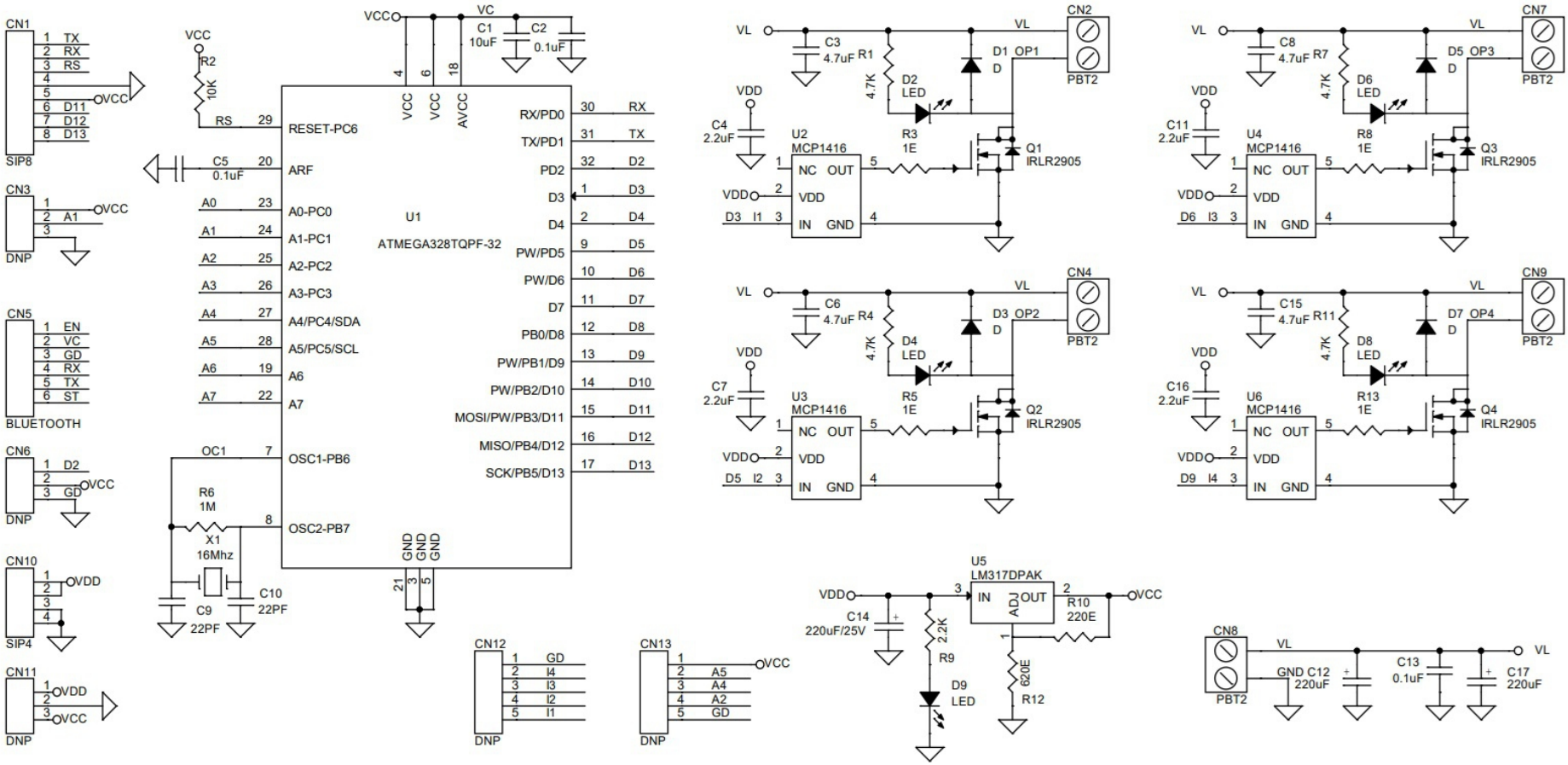
Android App

https://github.com/engrpanda/Arduino-Bluetooth-Controller

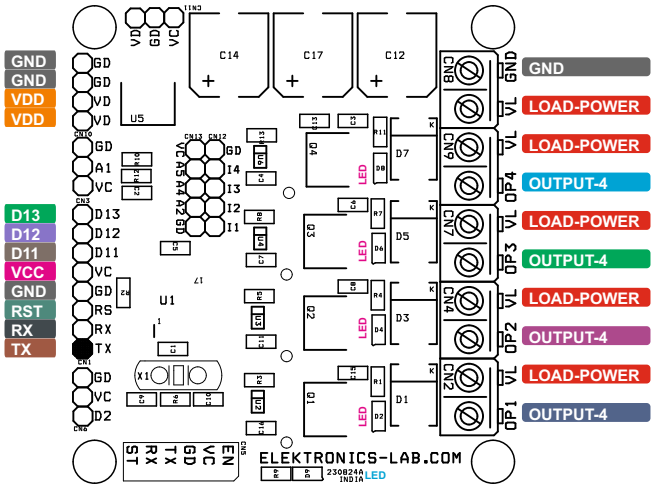
Arduino Code

https://github.com/engrpanda/Arduino-Bluetooth-Controller/blob/master/ARDUINO%20PROGRAM/SWITCH_CODE/SWITCH_CODE.ino

Schematic


CN1
SIP8
CN3
DNP
CN5
BLUETOOTH
CN6
DNP
CN10
SIP4
CN11
DNP
U1
ATMEGA328TQPF-32
RESET-PC6
ARF
A0-PC0
A1-PC1
A2-PC2
A3-PC3
A4/PC4/SDA
A5/PC5/SCL
A6
A7
OSC1-PB6
OSC2-PB7
RX/PD0
TX/PD1
PD2
D3
D4
PW/PD5
PW/D6
D7
PB0/D8
PW/PB1/D9
PW/PB2/D10
MOSI/PW/PB3/D11
MISO/PB4/D12
SCK/PB5/D13
C1 10uF
C2 0.1uF
C5 0.1uF
R2 10K
R6 1M
X1 16Mhz
C9 22PF
C10 22PF
CN12
DNP
CN13
DNP
CN2
CN4
CN7
CN9
PBT2
U2 MCP1416
U3 MCP1416
U4 MCP1416
U6 MCP1416
Q1 IRLR2905
Q2 IRLR2905
Q3 IRLR2905
Q4 IRLR2905
U5 LM317DPAK
R10 220E
R12 620E
R9 2.2K
C14 220uF/25V
C8 220uF
C12 220uF
C13 0.1uF
C17 220uF
CN8
PBT2

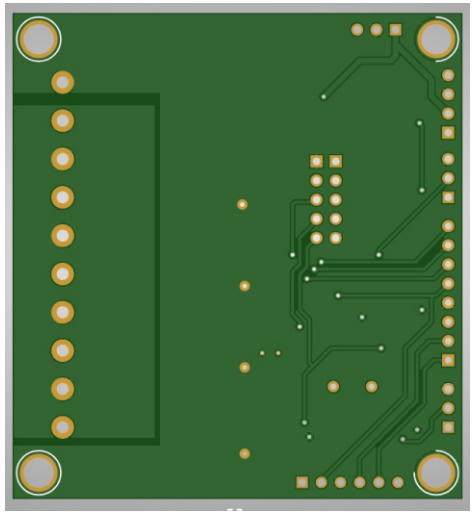
Connections

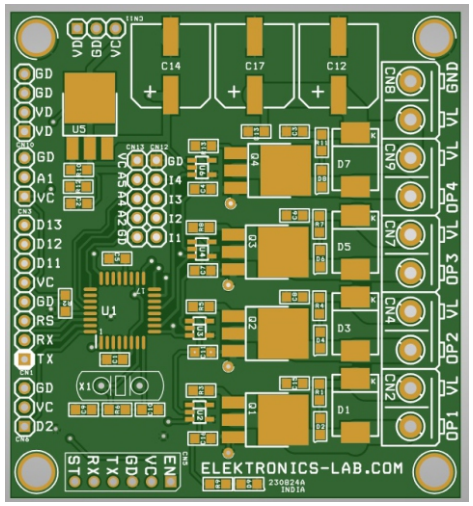


Connections

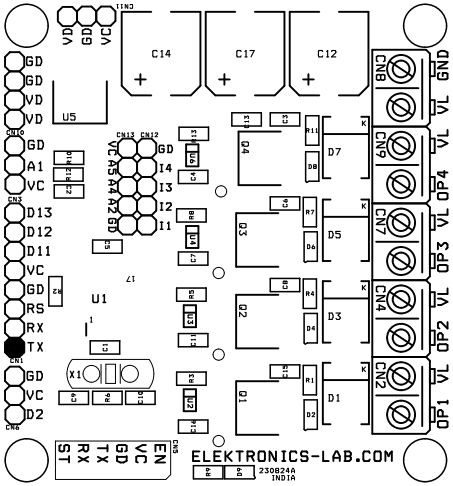
- CN1 Programming/Bootloader: Pin 1 = TX, Pin 2 = RX, Pin 3 = Reset, Pin 4 = GND, Pin 5 = VCC, Pin 6 = D11, Pin 7 = D12, Pin 8 = D13
- CN2: Pin 1 = +Load-1, Pin 2 = Load-1
- CN3: Optional No Use
- CN4: Pin 1 = +Load-1, Pin 2 = Load-2
- CN5: Optional No Use
- CN6: Optional No Use
- CN7: Pin 1 = +Load-3, Pin 2 = Load-3
- CN8 Power Supply: Pin 1 = 12V to 48V Load Power Supply, Pin 2 = GND
- CN9: Pin 1 = +Load-4, Pin 2 = Load-4
- CN10: Optional No Use
- CN11: Optional No Use
- D1: Power LED
- D2, D4, D6, D8: Function LED – 4 Channel

PCB

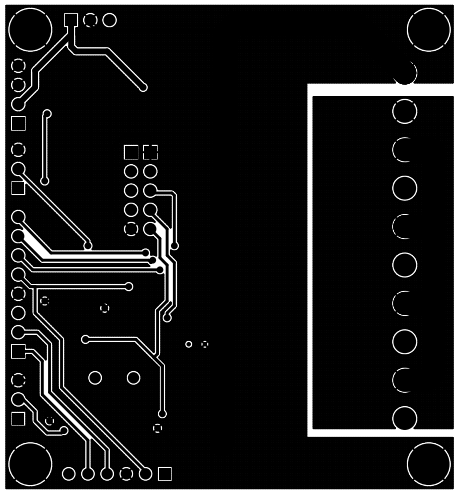




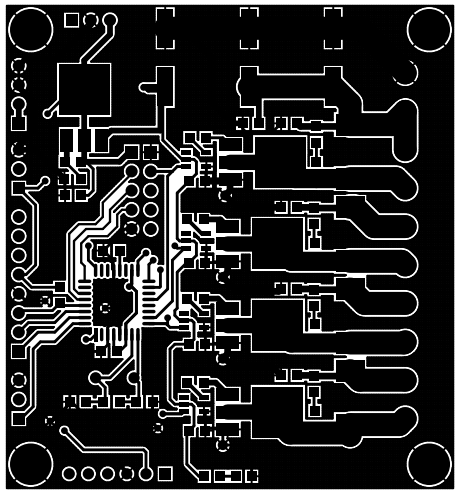
PCB GERBER FILES AVAILABLE



SILK SCREEN TOP



BOTTOM LAYER



TOP LAYER

PCB DIMENSIONS 64.45X59.69MM

Parts List

BOM						
NO.	QNTY.	REF.	DESC.	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	1	CN1	8 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5321-ND
2	5	CN2,CN4,CN7,CN8,CN9	2 PIN SCREW TERMINAL PITCH 5.08MM	SCREW TERMINAL	DIGIKEY	277-1247-ND
3	5	CN3,CN6,CN11,CN12,CN13	DNP			
4	1	CN5	BLUETOOTH MODULE HC-05	AMAZON/EBAY	DIGIKEY	
5	1	CN10	4 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5317-ND
6	1	C1	10uF/16V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
7	3	C2,C5,C13	0.1uF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
8	4	C3,C6,C8,C15	4.7uF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
9	4	C4,C7,C11,C16	2.2uF/25V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
10	2	C9,C10	22PF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
11	2	C12,C17	220uF/50V ELEKTROLYTIC	RUBYCON	DIGIKEY	1189-1654-1-ND
12	1	C14	220uF/25V ELEKTROLYTIC	PANASONIC	DIGIKEY	PCE3800CT-ND
13	4	D1,D3,D5,D7	MBRS360	VISHAY	DIGIKEY	VS-MBRS360-M3/9ATGICT-ND
14	5	D2,D4,D6,D8,D9	LED RED SMD SIZE 0805	OSRAM	DIGIKEY	475-1278-1-ND
15	4	Q1,Q2,Q3,Q4	IRLR2905 DPAK	INFINEON	DIGIKEY	IRLR2905ZTRPBFCT-ND
16	4	R1,R4,R7,R11	4.7K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
17	1	R2	10K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
18	4	R3,R5,R8,R13	1E 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
19	1	R6	1M 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
20	1	R9	2.2K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
21	1	R10	220E 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
22	1	R12	620E 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
23	1	U1	ATMEGA328TQPF-32	MICROCHIP	DIGIKEY	ATMEGA328P-AU-ND
24	4	U2,U3,U4,U6	MCP1416	MICROCHIP	DIGIKEY	MCP1416T-E/OTCT-ND
25	1	U5	LM317DPAK	TI	DIGIKEY	LM317MDTNS/NOPB-ND
26	1	X1	16Mhz	ECS INC	DIGIKEY	X1103-ND

Notes

APP

Android App

DOWNLOAD

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

SCAN QR CODE

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