# 8 Channel Infra-Red Remote Control Arduino Shield Using ULN2803

This is an 8 channel infra-red remote-control Arduino shield that can drive 8 high current loads such as LEDs, solenoids, multiple toy DC Motors, dual unipolar stepper motor, filament lamps, etc. Each channel consists of two parallel NPN transistors with freewheel diodes which are important to drive inductive loads like motors. The shield consists of 2 x ULN2803 Chips, Infrared receiver TSOP1838, trimmer potentiometer, 4 tactile switches with pull-down resistors. The shield is compatible with Arduino UNO. Arduino code is also provided to test the shield. I have used a cheap IR remote to test this shield, this remote transmit NEC code but any other remote can be used with this shield and it will require to decode the remote switches.

Further details on decoding IR Remote is available here: https://randomnerdtutorials.com/arduino-ir-remote-control/

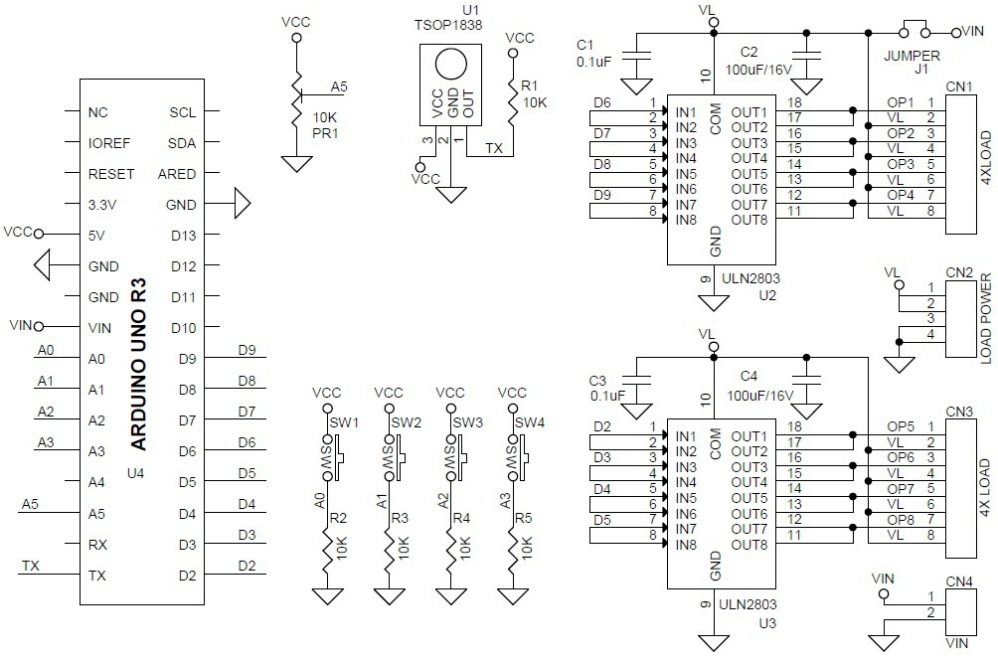
Note: Operating voltage of this circuit is 12V DC hence it can drive load up to 12V, for higher voltage 12V to 50V operation remove jumper J1, change capacitor C2, and C4 to higher voltage and use CN2 to power the load, in this case, Arduino will require 5V USB power or DC jack power.

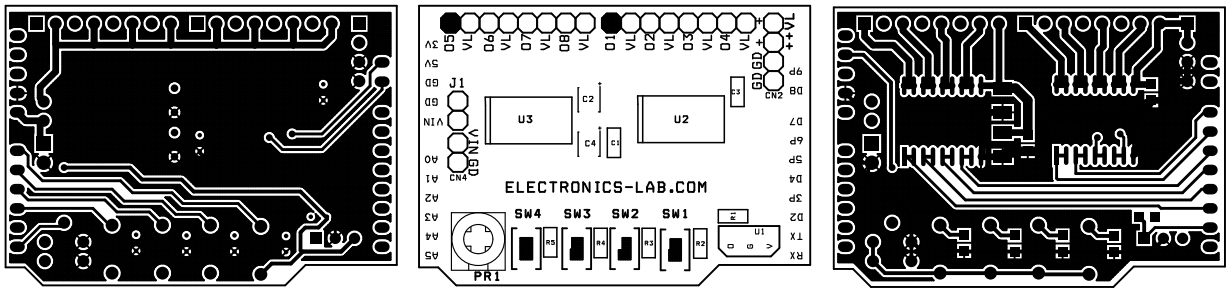
**Applications**
Infra-Red Remote-Control LED Driver
Infra-Red Remote-DC Motor Driver
Infra-Red Remote-Unipolar Stepper Motor Driver
Infra-Red Remote-Solenoid Driver
Infra-Red Remote-High Current Relay Driver
Infra-Red Remote-RGB LED Strip Drivers
LED Sequencer

**Features**
Load Supply 12V DC (For Supply 12 to 50V Read Note)
8 X 1Amps Load (1Amp Peak)
TSOP1838 Infra-Red Receiver
4 Tactile Switches with pull down resistors
Trimmer Pot


**Connections**
Connector CN1: Load 1, Load2, Load3, Load 4
Connector CN3: Load5, Load6, Load7, Load 8
Connector CN1: DC power 12V for Arduino and Load.
Connector CN2: Load Supply 12V-50V (Remove J1 Jumper If 12-50V Load Power Supply is used)
Jumper J1: Close this Jumper for 12V Supply from Arduino DC Jack or Cn2

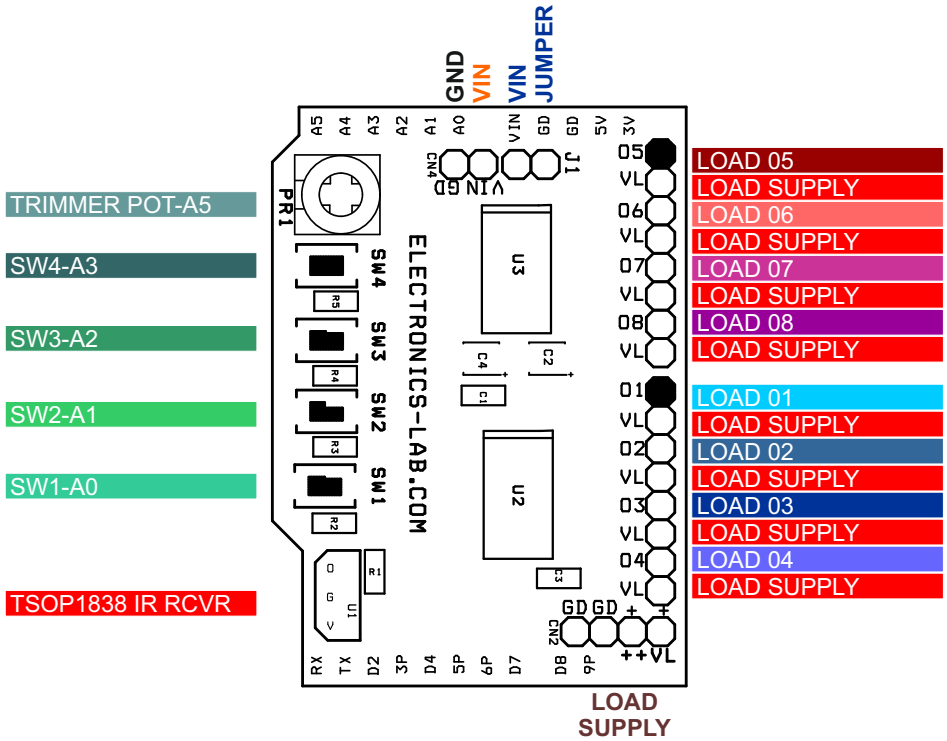
**Arduino Pins Description**
D2>>OP5 Load, D3>>OP6 Load, D4>>OP7 Load, D5>>OP8 Load, D6>>OP1 Load, D7>>OP2 Load, D8>>OP3 Load, D9>>OP4 Load
A0>> Tactile Switch 1, A1>> Tactile Switch 2, A2>> Tactile Switch 3, A3>> Tactile Switch 4
A5>> Trimmer Potentiometer
D1 (TX)>> Infra-Red Receiver TSOP1838


ARDUINO UNO R3
U4
NC
IOREF
RESET
3.3V
5V
GND
GND
VIN
A0
A1
A2
A3
A4
A5
RX
TX
SCL
SDA
ARED
GND
D13
D12
D11
D10
D9
D8
D7
D6
D5
D4
D3
D2
VCC
A5
10K
PR1
U1
TSOP1838
VCC
GND
OUT
R1
10K
TX
SW1
SW2
SW3
SW4
R2
R3
R4
R5
10K
C1
0.1uF
C2
100uF/16V
JUMPER
J1
VIN
VL
CN1
4XLOAD
ULN2803
U2
CN2
LOAD POWER
C3
0.1uF
C4
100uF/16V
CN3
4X LOAD
ULN2803
U3
CN4
IN1
IN2
IN3
IN4
IN5
IN6
IN7
IN8
OUT1
OUT2
OUT3
OUT4
OUT5
OUT6
OUT7
OUT8
COM
GND




BOTTOM LAYER SILK SCREEN TOP TOP LAYER

PCB DIMENSIONS 51.38MM X 36.26MM




| SR. | QNTY. | REF | DESC |
|---|---|---|---|
| 1 | 1 | CN1 | 8 PIN MALE HEADER 2.54MM |
| 2 | 1 | CN2 | 4 PIN MALE HEADER 2.54MM |
| 3 | 1 | CN3 | 8 PIN MALE HEADER 2.54MM |
| 4 | 1 | CN4 | 2 PIN MALE HEADER 2.54MM |
| 5 | 2 | C1,C3 | 0.1uF SMD 0805 |
| 6 | 2 | C2,C4 | 100uF/16V SMD 1210 |
| 7 | 1 | J1 | JUMPER/CLOSER |
| 8 | 5 | R1,R2,R3,R4,R5 | 10K SMD 0805 |
| 9 | 4 | SW1,SW2,SW3,SW4 | 2 PIN TACTILE SWITCH |
| 10 | 1 | U1 | TSOP1838 IR SENSOR |
| 11 | 2 | U2,U3 | ULN2803 SO |
| 12 | 1 | U4 | ARDUINO UNO R3 |
| 13 | 1 | PR1 | 10K PRESET |