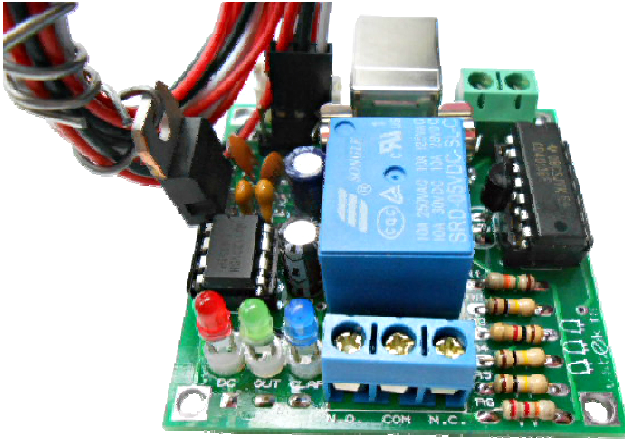


## Clap switch V2 Datasheet



### Technical Features

**Layers :**2

**PCB Thickness :** 1.6mm

**Dimensions :** 50 mm x 50 mm ( 2 inch x 2 inch )

**Operating Voltage :** 5 Vdc via usb cable or  
7.2 to 30 Vdc via external power supply or 9v  
bat.

**Operating current :** 100 ma max

**Rel.date:**03/03/13

## Fuctionality

Mic converts the sound signals from your claps into small electrical signals. The first opamp of the lm358 amplify these small signals. Then the amplified pass through a peak detector circuit.

The second opamp operates as a comparator.

With the potentiometer in series with resistor R6 provides us the required reference voltage (0-3.8 volt).This is our sensitivity control.

The output of the comparator lights up the blue led (that indicates to us the clap) and triggers the cd4013 dual flip-flop.The first flip-flop change its output.

Because of the three state arrangement of the flip-flop , one more clap is needed to change the output state of the second flip-flop.

Second clap sets the flip-flop output to high and this forward biases a npn transistor (2N3904).

The transistor drives a Relay and then you can get both the N.O. and the N.C output contacts through a 3 pin terminal block.The maximum load should be less than 6 amps continously.

The connected device to the relay switches on.

Same procedure applies for the opposite.

When you clap your hands twice, relay closes and turns off the device connected to it.

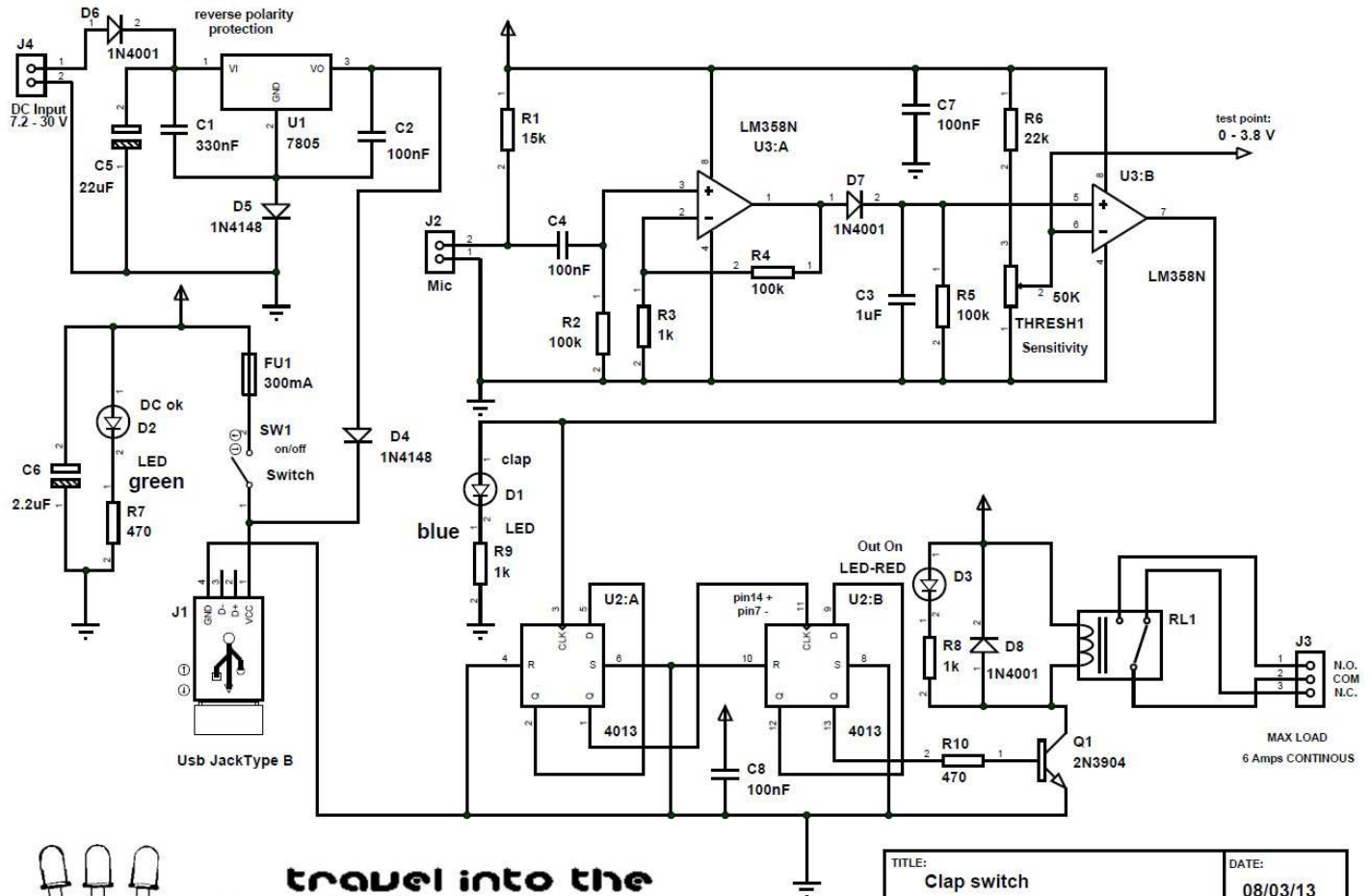
**You can adjust the sensitivity of the circuit via the 50k trimmer.**

**When you first power up turn the trimmer until blue led turns on.This is the start point.**

**The trimmer has 25 turns until the lowest sensitivity level.**

You should adjust the trimmer till the room noise does not affect the switch operation.

## The circuit schematic



## Part list

<u>Reference</u>	<u>Type</u>	<u>Value</u>	<u>Reference</u>	<u>Type</u>	<u>Value</u>
C1	Ceramic Capacitor	330nF	J3	Terminal Block	3 pin contacts output
C2	Ceramic Capacitor	100nF	J4	Terminal Block	2 pin Dc input
C3	Ceramic Capacitor	1uF	Q1	NPN Transistor	3904
C4	Ceramic Capacitor	100nF	R1	RESISTOR	15k
C5	Electrolytic Capacitor	22uF	R2	RESISTOR	100k
C6	Electrolytic Capacitor	2.2uF	R3	RESISTOR	1k
C7	Electrolytic Capacitor	2.2uF	R4	RESISTOR	100k
C8	Smd 0603 Capacitor	100n	R5	RESISTOR	100k
D1	3mm Diffused Led	Blue	R6	RESISTOR	22k
D2	3mm Diffused Led	Green	R7	RESISTOR	470
D3	3mm Diffused Led	Red	R8	RESISTOR	1k
D4	High speed Diode	1N4148	R9	RESISTOR	1k
D5	High speed Diode	1N4148	R10	RESISTOR	470
D6	rectifier Diode	1N4001	RL1	Relay double contacts	5V coil
D7	rectifier Diode	1N4001	RV1	jst 3pin cable	3296 Trimmer 50k
D8	rectifier Diode	1N4001	SW1	jst 2 pin cable	ON/OFF Switch
FUSE	Fuse Glass 20mm	300ma	U1	Voltage Regulator	7805
J1	Usb jack	Type B	U2	Flip-Flop	4013
J2	jst 2pin cable	Mic input	U3	dual opamp	LM358