

Sound to Colour Light Effects – Arduino Compatible Project

This is a fun-loving project based on the Arduino platform. The project creates color light effects with sound level sense by an onboard condenser microphone. The project consists 20 x WS2812B RGB LEDs, an Atmega328 micro-controller, condenser microphone along with pre-amplifier, RCA connector, and trimmer potentiometer to direct feed audio. The project can be used in fun parties, disco parties etc. Just power the board and RGB LEDs will create different colors as per sound level. Board has the option of direct audio input or sound sense by the microphone, users may change the Arduino example code as per requirement or write their own code.

The default Arduino code works with the microphone as the sound sensor. The project also works with direct audio signal input. In this case use RCA connector J1 to feed the audio, trimmer potentiometer PR1 provided to adjust the audio input signal level. The input audio signal should not be more than 4Vpp (peak to peak.). The audio signal is connected to A1 analog pin of Arduino. Since the project is Arduino compatible, many applications such as sound to light effects, audio to light effects, VU meter, sound level meter are possible with this board.

Arduino Code

Arduino example code is available as a download. A new Atmega328 chip requires, Bootloader and Arduino code, follow the links below to learn more about programming the chip.

<https://www.electronics-lab.com/project/installing-the-arduino-bootloader-on-the-atmega328p-microcontroller/>
<https://www.arduino.cc/en/Tutorial/BuiltInExamples/ArduinoToBreadboard>

Arduino Pin Configuration

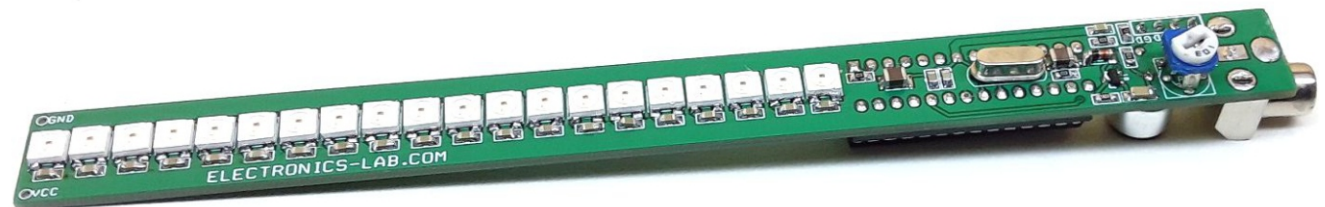
Digital pin **D2** is connected to WS2812B LED, Analog pin **A0** to Microphone, Analog pin **A1** direct audio signal input.

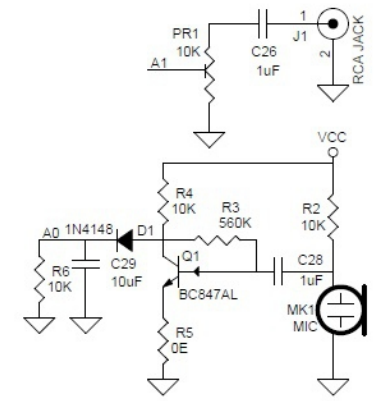
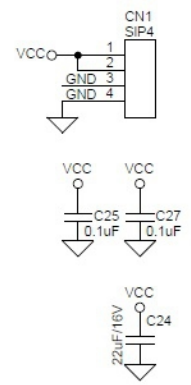
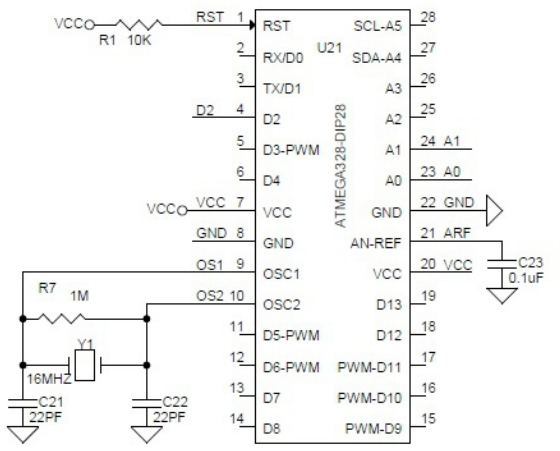
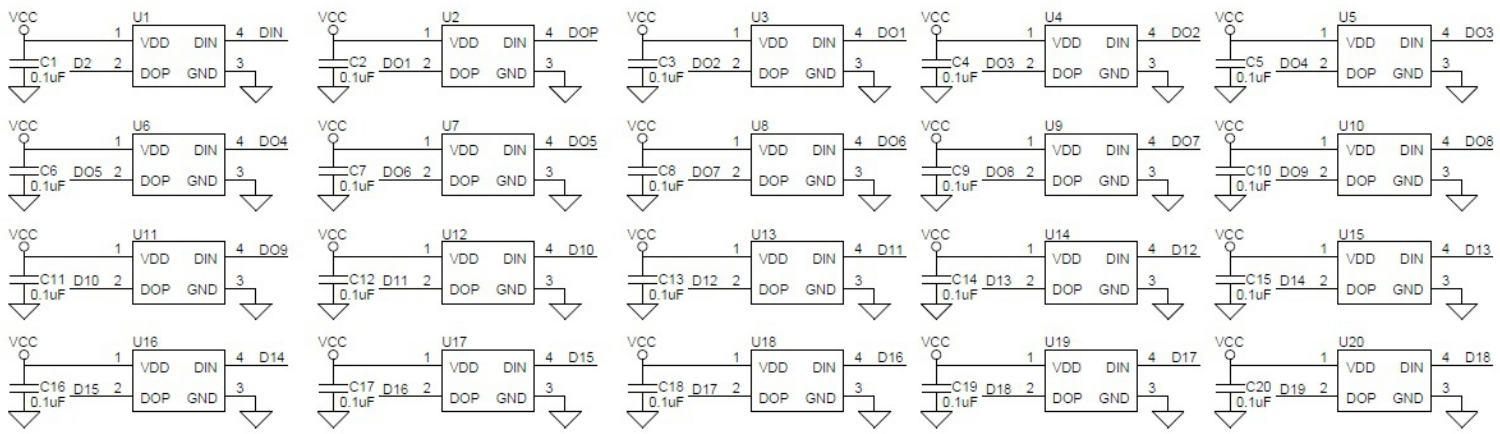
Applications

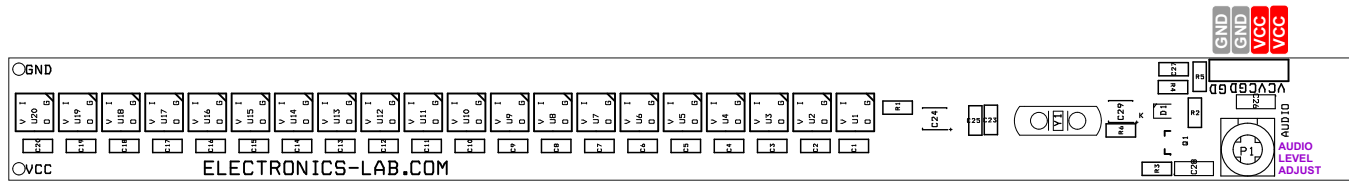
- Sound to Light Effects
- Audio Signal to Light Effects
- Sound Level Meter
- Audio VU Meter

Features

- Supply 5V DC @ 250mA when all LEDs are ON
- Detect Sound using on Board Microphone
- Direct Audio Signal Input RCA Connector
- PCB Dimensions 179.71 x 16.51 mm







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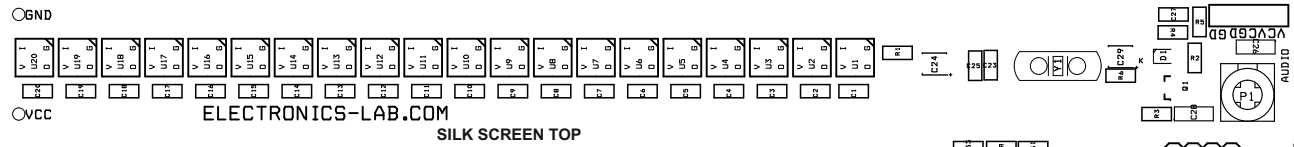




BOM

NO	QNTY.	REF	DESC.	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	1	CN1	4 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5317-ND
2	23	C1,C2,C3,C4,C5,C6,C7,C8,C9,C10,C11,C12,C13,C14,C15,C16,C17,C18,C19,C20,C23,C25,C27	0.1uF/50V SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
3	2	C21,C22	22PF/50V SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
4	1	C24	22uF/16V SMD SIZE 1210	TDK	DIGIKEY	445-1436-1-ND
5	2	C26,C28	1uF/25V SMD SIZE 1206	MURATA/YAGEO	DIGIKEY	
6	1	C29	10uF/16V SMD 1206 OR 1210	MURATA/YAGEO	DIGIKEY	
7	1	D1	1N4148	MICROCHIP	DIGIKEY	1N4148UR-1-ND
8	1	J1	RCA JACK	CUI DEVICES	DIGIKEY	CP-1459-2-ND
9	1	MK1	MIC	CUI DEVICES	DIGIKEY	102-1721-ND
10	5	R1,PR1,R2,R4,R6	10K 5% SMD SIZE 0805			
11	1	Q1	BC847AL	ON SEMI	DIGIKEY	2156-BC847ALT1G-OS-ND
12	1	R3	560K 5% SMD SIZE 0805		DIGIKEY	
13	1	R5	0E		DIGIKEY	
14	1	R7	1M 5% SMD SIZE 0805		DIGIKEY	
15	20	U1,U2,U3,U4,U5,U6,U7,U8,U9,U10,U11,U12,U13,U14,U15,U16,U17,U18,U19,U20	WS2812B	SPARKFUN	DIGIKEY	1568-COM-16347CT-ND
16	1	U21	ATMEGA328-DIP28	MICROCHIP	DIGIKEY	ATMEGA328-PU-ND
17	1	Y1	16MHZ	ECS INC	DIGIKEY	X1103-ND





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