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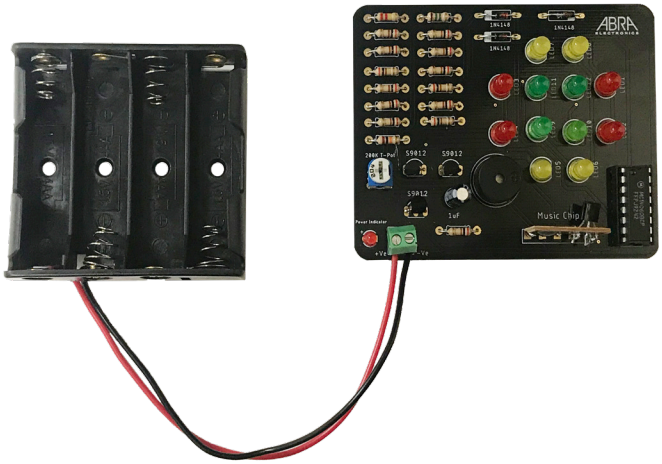
D.I.Y Flashing LED Music Kit



AK-192

Component List:

- 1 x PCB
- 12 x 5mm LED (Red, Green and Yellow)
- 1 x 3mm Red LED
- 16 x 1/4 W Resistors (1M (1), 10K (1), 220K(1), 200(13))
- 1 x 200K 1/4W 6mm Horizontal Trim Potentiometer
- 1 x 1uf 50V Polarized Capacitor
- 3 x PNP Transistor (S9012)
- 1 x NPN Transistor (S9013)
- 3 x 1N4148 Zener diode
- 1 x CD4060 Binary Counter IC
- 1 x Buzzer
- 1 x PX088 Music Chip
- 1 x 16 Pin IC Base
- 1 x 3.5mm Two Pin Screw Terminal
- 1 x 4-AA Battery Holder

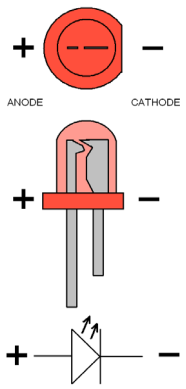
**batteries not included

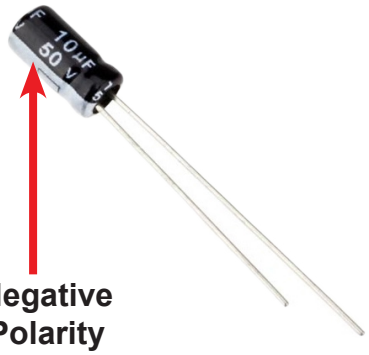
Component Polarity:

When dealing with polarized components, it is important to be able to identify which pins represent the anode (positive) and Cathode (negative).

Here are a few ways of doing so for LEDs and polarized capacitors:

- The shorter pin usually is the cathode (negative).
- However, for LEDs if the leads are cut you can assume the cathode lead is on the side of the LED that has a flat cut. For capacitors, there usually is a polarity marking on the component itself indicating which lead is cathode (-).

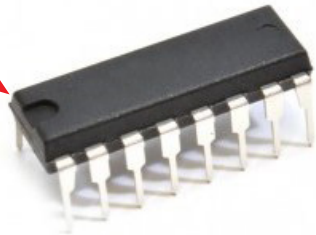


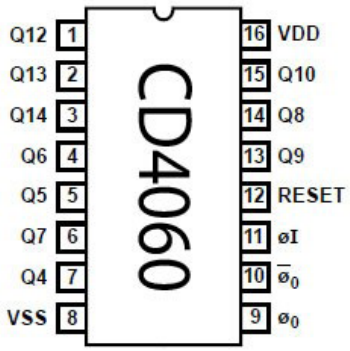


Negative Polarity Marking

Chip Pinout:

Use **NOTCH** and dot as reference





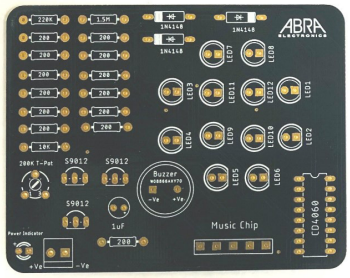
Assembly:

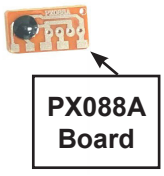
Turn the soldering iron on and set the temperature to 285°C (545°F), if you are using 60/40 solder.
Please note: Make sure the board is facing upwards when inserting the components, and the soldering is done on the bottom side of the board.

Steps:

1. Start by placing the resistors and make sure their values match, refer to the component list, resistor color code chart and the silkscreen.

2. Solder the leftover leads of the placed resistors to the pads and cut them off using a flush cutter once done soldering.



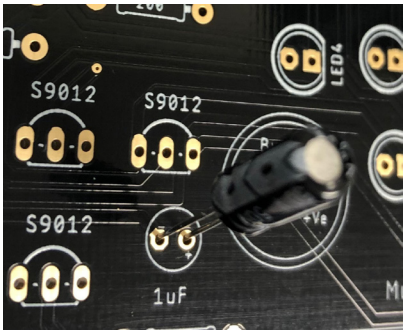


3. Next, begin placing the capacitor. When placing the polarized capacitor, refer to previous notes about identifying components polarity. You must make sure the positive lead of the capacitor is placed in + sign on the silkscreen.

4. Solder the capacitor leads and cut when done.

5. Now place the 9012 PNP transistors. Refer to the white layout on the board to properly place the transistors. It is very important to make sure you place the transistors as shown in the picture below and to verify, they are 9012 transistors.

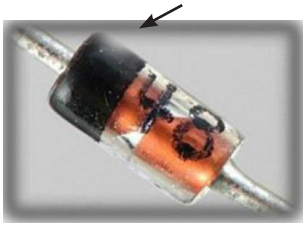
Tip: *Use curve of the transistor to help for placing it.*



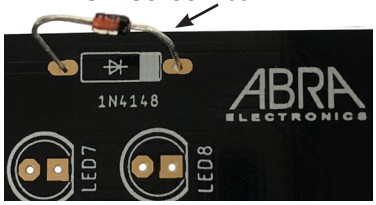
6. Now, place the 1N4148 diodes.

Important: You must place the diodes in the right orientation. There is a black bar drawn around the component. This bar is representative of the cathode lead of the diode. Use this along with the silkscreen to help you place the diode.

Cathode (-)

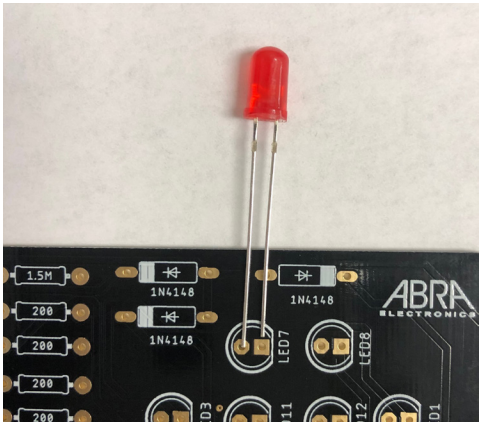


Black Bar aligns with silkscreen bar



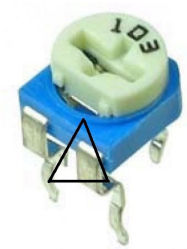
7. Start placing the LEDs. Always be aware of the polarity of these components, refer to previous notes concerning this and to the silkscreen on the top of the board. The square pads of the LEDs on the silkscreen represent negative side of the LED's. For 3mm Led, a small near the screw terminal, is for power indication. Notice a small + on the silkscreen that represents the anode(+Ve) of the led.

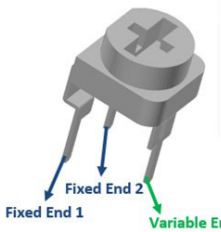
Note: It is recommended that you gradually place and solder the LEDs on the board to avoid overcrowding the back which can cause annoyance when soldering

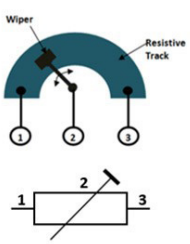


8. Solder the leads and cut. (Save the cut leads for further use in this kit)

9. Next, place the trim pot. Think of the three leads as the three corners of an isosceles triangle and place the pot that fits exactly.



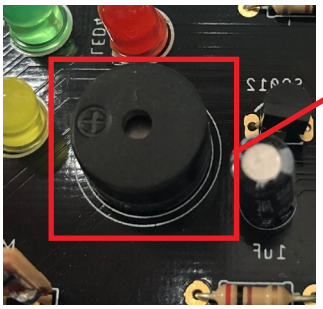




10. Next, place the buzzer. Make sure the positive sign on the component aligns with the one on the silkscreen of the board.

11. Solder and cut the leads if needed.

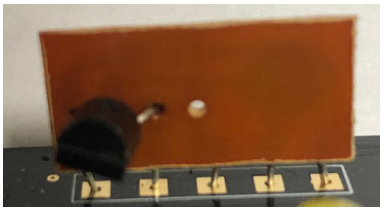
12. Now, place the screw terminal. Make sure it is facing away from the board that it is way easy to the screw inputs. Solder and cut.



You can see the + sign on Buzzer

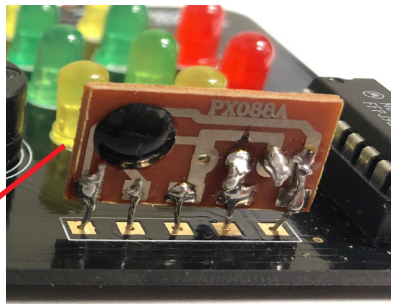
Facing Away

13. Now take the PX088A board. Place the S9013 NPN Transistor on the PX088A board, make sure the direction is the same as the picture below.



14. Solder and cut.

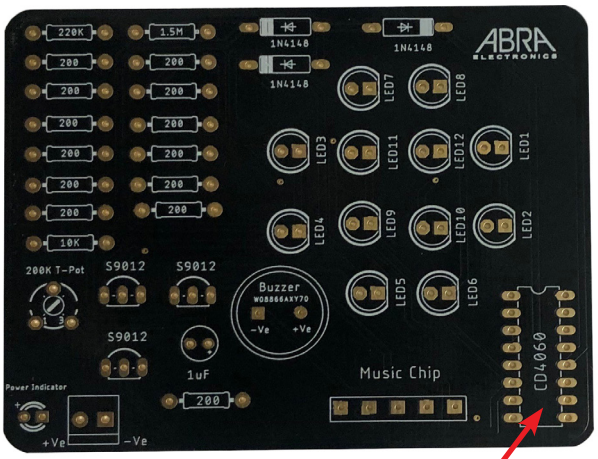
15. Now take the cut leads you saved or unshielded copper wire strips and solder it to the PX088A board pins as shown below. Then solder them to the PCB near the music chip. Make sure it is facing away from the board.



Facing Away

16. Now, place the 16-pin IC socket near the CD4060 and solder it. Now place the IC on the top of the socket. Keep in mind the orientation of the chip.

Important: Make sure that the notch on the chip aligns with the notch on the silkscreen layout. Refer to previous notes if needed. The IC socket provided also has a notch.



You can see the notch, the IC should be place on the socket in the same direction.

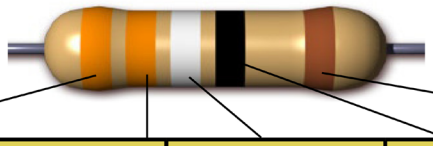
17. Once the assembly is done, connect the board to a 5V power supply. Make sure red wire is connected to the +Ve side of the screw terminal.

Note:

1. For music frequency, trim the potentiometer.

2. Make sure you provide 5V or more for better sound quality.

Resistor Color Code Chart



Color	1st Band	2nd Band	*3rd Band	Multiplier	Tolerance
Black	0	0	0	1 Ω	
Brown	1	1	1	10 Ω	±1% (F)
Red	2	2	2	100 Ω	±2% (G)
Orange	3	3	3	1K Ω	
Yellow	4	4	4	10K Ω	
Green	5	5	5	100K Ω	±0.5% (D)
Blue	6	6	6	1M Ω	±0.25% (C)
Violet	7	7	7	10M Ω	±0.10% (B)
Grey	8	8	8		
White	9	9	9		
Gold				0.1 Ω	±5% (J)
Sliver				0.01 Ω	±10% (K)

***NOTE:** FOR CARBON FILM RESISTORS EXCLUDE THIS COLUMN